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New Features in this Release

JavaScript version 1.3 provides the following new features and enhancements:

- **ECMA compliance.** JavaScript 1.3 is fully compatible with ECMA-262. See the *Client-Side JavaScript Guide* for details.

- **Unicode support.** The Unicode character set can be used for all known encoding, and you can use the Unicode escape sequence in string literals. See `escape` and `unescape`. See the *Client-Side JavaScript Guide* for details.

- **Changes to the Array object.**
  - When you specify a single numeric parameter with the `Array` constructor, you specify the initial length of the array.
  - The `push` method returns the new length of the array rather than the last element added to the array.
  - The `splice` method always returns an array containing the removed elements, even if only one element is removed.
  - The `toString` method joins an array and returns a string containing each array element separated by commas, rather than returning a string representing the source code of the array.
  - The `length` property contains an unsigned, 32-bit integer with a value less than $2^{32}$. 
• **Changes to the Date object.**
  - Removed platform dependencies to provide a uniform behavior across platforms.
  - Changed the range for dates to -100,000,000 days to 100,000,000 days relative to 01 January, 1970 UTC.
  - Added a milliseconds parameter to the Date constructor.
  - Added the `getFullYear`, `setFullYear`, `getMilliseconds`, and `setMilliseconds` methods.
  - Added the `getUTCDate`, `getUTCDay`, `getUTCFullYear`, `getUTCHours`, `getUTCMilliseconds`, `getUTCMonth`, `getUTCSeconds`, `setUTCDate`, `setUTCFullYear`, `setUTCHours`, `setUTCMilliseconds`, `setUTCMonth`, `setUTCSeconds`, and `toUTCString` methods.
  - Added a day parameter to the `setMonth` method.
  - Added minutes, seconds, and milliseconds parameters to the `setHours` method.
  - Added seconds and milliseconds parameters to the `setMinutes` method.
  - Added a milliseconds parameter to the `setSeconds` method.
  - Added a milliseconds parameter to the UTC method.
  - Deprecated the `getYear`, `setYear`, and `toGMTString` methods.

• **Changes to the Function object.**
  - Added the `apply` method, which allows you to apply a method of another object in the context of a different object (the calling object).
  - Added the `call` method, which allows you to call (execute) a method of another object in the context of a different object (the calling object).
  - Deprecated the `arguments.caller` property.
• **Changes to the String object.**
  - The `charCodeAt` and `fromCharCode` methods use Unicode values rather than ISO-Latin-1 values.
  - The `replace` method supports the nesting of a function in place of the second argument.

• **New method `toSource`.** The `toSource` method returns a string representing the source code of the object. See `Array.toSource`, `Boolean.toSource`, `Date.toSource`, `Function.toSource`, `Number.toSource`, `Object.toSource`, `RegExp.toSource`, and `String.toSource`.

• **New top-level properties Infinity, NaN, and undefined.** Infinity is a numeric value representing infinity. NaN is a value representing Not-A-Number. undefined is the value undefined.

• **New top-level function `isFinite`.** `isFinite` evaluates an argument to determine whether it is a finite number.

• **Changes to the top-level eval function.** You should not indirectly use the `eval` function by invoking it via a name other than `eval`.

• **New strict equality operators `===` and `!==`.** The `===` (strict equal) operator returns true if the operands are equal and of the same type. The `!==` (strict not equal) operator returns true if the operands are not equal and/or not of the same type. See “Comparison Operators” on page 635 and “Using the Equality Operators” on page 637.

• **Changes to the equality operators `==` and `!=`.** The use of the `==` (equal) and `!=` (not equal) operators reverts to the JavaScript 1.1 implementation. If the two operands are not of the same type, JavaScript attempts to convert the operands to an appropriate type for the comparison. See “Using the Equality Operators” on page 637.
• **Changes to the behavior of conditional tests.**
  
  • You should not use simple assignments in a conditional statement; for example, do not specify the condition `if (x = y)`. Previous JavaScript versions converted `if (x = y)` to `if (x == y)`, but 1.3 generates a runtime error. See “if...else” on page 623.

  • Any object whose value is not `undefined` or `null`, including a Boolean object whose value is false, evaluates to true when passed to a conditional statement. See “Boolean” on page 51.

• **The JavaScript console.** The JavaScript console is a window that can display all JavaScript error messages. Then, when a JavaScript error occurs, the error message is directed to the JavaScript console and no dialog box appears. See the *Client-Side JavaScript Guide* for details.
### New Features in this Release

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JavaScript is Netscape's cross-platform, object-based scripting language for client and server applications. This book is a reference manual for the JavaScript language, including both core and client-side JavaScript.

This preface contains the following sections:
• New Features in this Release
• What You Should Already Know
• JavaScript Versions
• Where to Find JavaScript Information
• Document Conventions

New Features in this Release

For a summary of JavaScript 1.3 features, see “New Features in this Release” on page 3. Information on these features has been incorporated in this manual.

What You Should Already Know

This book assumes you have the following basic background:
• A general understanding of the Internet and the World Wide Web (WWW).
• Good working knowledge of HyperText Markup Language (HTML).

Some programming experience with a language such as C or Visual Basic is useful, but not required.
JavaScript Versions

Each version of Navigator supports a different version of JavaScript. To help you write scripts that are compatible with multiple versions of Navigator, this manual lists the JavaScript version in which each feature was implemented.

The following table lists the JavaScript version supported by different Navigator versions. Versions of Navigator prior to 2.0 do not support JavaScript.

Table 1 JavaScript and Navigator versions

<table>
<thead>
<tr>
<th>JavaScript version</th>
<th>Navigator version</th>
</tr>
</thead>
<tbody>
<tr>
<td>JavaScript 1.0</td>
<td>Navigator 2.0</td>
</tr>
<tr>
<td>JavaScript 1.1</td>
<td>Navigator 3.0</td>
</tr>
<tr>
<td>JavaScript 1.2</td>
<td>Navigator 4.0–4.05</td>
</tr>
<tr>
<td>JavaScript 1.3</td>
<td>Navigator 4.06–4.5</td>
</tr>
</tbody>
</table>

Each version of the Netscape Enterprise Server also supports a different version of JavaScript. To help you write scripts that are compatible with multiple versions of the Enterprise Server, this manual uses an abbreviation to indicate the server version in which each feature was implemented.

Table 2 JavaScript and Netscape Enterprise Server versions

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Enterprise Server version</th>
</tr>
</thead>
<tbody>
<tr>
<td>NES 2.0</td>
<td>Netscape Enterprise Server 2.0</td>
</tr>
<tr>
<td>NES 3.0</td>
<td>Netscape Enterprise Server 3.0</td>
</tr>
</tbody>
</table>
Where to Find JavaScript Information

The client-side JavaScript documentation includes the following books:

- The *Client-Side JavaScript Guide* provides information about the JavaScript language and its objects. This book contains information for both core and client-side JavaScript.

- The *Client-Side JavaScript Reference* (this book) provides reference material for the JavaScript language, including both core and client-side JavaScript.

If you are new to JavaScript, start with the *Client-Side JavaScript Guide*. Once you have a firm grasp of the fundamentals, you can use the *Client-Side JavaScript Reference* to get more details on individual objects and statements.

If you are developing a client-server JavaScript application, use the material in the client-side books to familiarize yourself with core and client-side JavaScript. Then, use the *Server-Side JavaScript Guide* and *Server-Side JavaScript Reference* for help developing a server-side JavaScript application.

DevEdge, Netscape’s online developer resource, contains information that can be useful when you’re working with JavaScript. The following URLs are of particular interest:


  The JavaScript page of the DevEdge library contains documents of interest about JavaScript. This page changes frequently. You should visit it periodically to get the newest information.


  The DevEdge library contains documentation on many Netscape products and technologies.

- [http://developer.netscape.com](http://developer.netscape.com)

  The DevEdge home page gives you access to all DevEdge resources.
Document Conventions

Occasionally this book tells you where to find things in the user interface of Navigator. In these cases, the book describes the user interface in Navigator 4.5. The interface may be different in earlier versions of the browser.

JavaScript applications run on many operating systems; the information in this book applies to all versions. File and directory paths are given in Windows format (with backslashes separating directory names). For Unix versions, the directory paths are the same, except that you use slashes instead of backslashes to separate directories.

This book uses uniform resource locators (URLs) of the following form:

http://server.domain/path/file.html

In these URLs, server represents the name of the server on which you run your application, such as research1 or www; domain represents your Internet domain name, such as netscape.com or uiuc.edu; path represents the directory structure on the server; and file.html represents an individual file name. In general, items in italics in URLs are placeholders and items in normal monospace font are literals. If your server has Secure Sockets Layer (SSL) enabled, you would use https instead of http in the URL.

This book uses the following font conventions:

- The monospace font is used for sample code and code listings, API and language elements (such as method names and property names), file names, path names, directory names, HTML tags, and any text that must be typed on the screen. (Monospace italic font is used for placeholders embedded in code.)

- *Italic type* is used for book titles, emphasis, variables and placeholders, and words used in the literal sense.

- **Boldface type** is used for glossary terms.
Object Reference

- Objects, Methods, and Properties
- Top-Level Properties and Functions
- Event Handlers
This chapter documents all the JavaScript objects, along with their methods and properties. It is an alphabetical reference for the main features of JavaScript.

The reference is organized as follows:

- Full entries for each object appear in alphabetical order; properties and functions not associated with any object appear in Chapter 2, “Top-Level Properties and Functions.”

  Each entry provides a complete description for an object. Tables included in the description of each object summarize the object’s methods and properties.

- Full entries for an object’s methods and properties appear in alphabetical order after the object’s entry.

  These entries provide a complete description for each method or property, and include cross-references to related features in the documentation.
Anchor

A place in a document that is the target of a hypertext link.

*Client-side object*

*Implemented in* JavaScript 1.0

JavaScript 1.2: added name, text, x, and y properties

**Created by** Using the HTML A tag or calling the `String.anchor` method. The JavaScript runtime engine creates an Anchor object corresponding to each A tag in your document that supplies the NAME attribute. It puts these objects in an array in the `document.anchors` property. You access an Anchor object by indexing this array.

To define an anchor with the `String.anchor` method:

```
theString .anchor(nameAttribute)
```

where:

- `theString`: A String object.
- `nameAttribute`: A string.

To define an anchor with the A tag, use standard HTML syntax. If you specify the NAME attribute, you can use the value of that attribute to index into the anchors array.

**Description** If an Anchor object is also a Link object, the object has entries in both the anchors and links arrays.

**Property Summary**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>A string specifying the anchor's name.</td>
</tr>
<tr>
<td>text</td>
<td>A string specifying the text of an anchor.</td>
</tr>
<tr>
<td>x</td>
<td>The horizontal position of the anchor's left edge, in pixels, relative to the left edge of the document.</td>
</tr>
<tr>
<td>y</td>
<td>The vertical position of the anchor's top edge, in pixels, relative to the top edge of the document.</td>
</tr>
</tbody>
</table>

**Method Summary** This object inherits the watch and unwatch methods from Object.
Examples

**Example 1: An anchor.** The following example defines an anchor for the text “Welcome to JavaScript”:

```html
<A NAME="javascript_intro"><H2>Welcome to JavaScript</H2></A>
```

If the preceding anchor is in a file called `intro.html`, a link in another file could define a jump to the anchor as follows:

```html
<A HREF="intro.html#javascript_intro">Introduction</A>
```

**Example 2: anchors array.** The following example opens two windows. The first window contains a series of buttons that set `location.hash` in the second window to a specific anchor. The second window defines four anchors named “0,” “1,” “2,” and “3.” (The anchor names in the document are therefore 0, 1, 2, ... `(document.anchors.length-1`).) When a button is pressed in the first window, the `onClick` event handler verifies that the anchor exists before setting `window2.location.hash` to the specified anchor name.

`link1.html`, which defines the first window and its buttons, contains the following code:

```html
<HTML>
<HEAD>
<TITLE>Links and Anchors: Window 1</TITLE>
</HEAD>
<BODY>
<SCRIPT>
window2=open("link2.html","secondLinkWindow",
"scrollbars=yes,width=250, height=400")
function linkToWindow(num) {
  if (window2.document.anchors.length > num)
    window2.location.hash=num
  else
    alert("Anchor does not exist!")
}
</SCRIPT>
```
<B>Links and Anchors</B>

FORM

Click a button to display that anchor in window #2

INPUT TYPE="button" VALUE="0" NAME="link0_button"
onClick="linkToWindow(this.value)"

INPUT TYPE="button" VALUE="1" NAME="link0_button"
onClick="linkToWindow(this.value)"

INPUT TYPE="button" VALUE="2" NAME="link0_button"
onClick="linkToWindow(this.value)"

INPUT TYPE="button" VALUE="3" NAME="link0_button"
onClick="linkToWindow(this.value)"

INPUT TYPE="button" VALUE="4" NAME="link0_button"
onClick="linkToWindow(this.value)"

</FORM>

</BODY>

</HTML>

link2.html, which contains the anchors, contains the following code:

<HTML>

<HEAD>

<TITLE>Links and Anchors: Window 2</TITLE>

</HEAD>

<BODY>

<A NAME="0"><B>Some numbers</B> (Anchor 0)</A>

<UL>

<LI>one

<LI>two

<LI>three

<LI>four

</UL>

</BODY>

</HTML>

See also Link
name

A string specifying the anchor’s name.

**Property of Anchor**

**Read-only**

**Implemented in JavaScript 1.2**

**Description** The `name` property reflects the value of the `NAME` attribute.

**Examples** The following example displays the name of the first anchor in a document:

```javascript
alert("The first anchor is " + document.anchors[0].name)
```

text

A string specifying the text of an anchor.

**Property of Anchor**

**Read-only**

**Implemented in JavaScript 1.2**

**Description** The `text` property specifies the string that appears within the `<a>` tag.

**Examples** The following example displays the text of the first anchor in a document:

```javascript
alert("The text of the first anchor is " + document.anchors[0].text)
```

x

The horizontal position of the anchor’s left edge, in pixels, relative to the left edge of the document.

**Property of Anchor**

**Read-only**

**Implemented in JavaScript 1.2**

**See also** Anchor.y
Anchor.y

**y**

The vertical position of the anchor’s top edge, in pixels, relative to the top edge of the document.

- **Property of** Anchor
- **Read-only**
- **Implemented in** JavaScript 1.2

**See also** Anchor.x
Applet

Includes a Java applet in a web page.

Client-side object

Implemented in JavaScript 1.1

### Created by
The HTML APPLET tag. The JavaScript runtime engine creates an Applet object corresponding to each applet in your document. It puts these objects in an array in the document.applets property. You access an Applet object by indexing this array.

To define an applet, use standard HTML syntax. If you specify the NAME attribute, you can use the value of that attribute to index into the applets array. To refer to an applet in JavaScript, you must supply the MAYSCRIPT attribute in its definition.

Description
The author of an HTML page must permit an applet to access JavaScript by specifying the MAYSCRIPT attribute of the APPLET tag. This prevents an applet from accessing JavaScript on a page without the knowledge of the page author. For example, to allow the musicPicker.class applet access to JavaScript on your page, specify the following:

<APPLET CODE="musicPicker.class" WIDTH=200 HEIGHT=35
    NAME="musicApp" MAYSCRIPT>

Accessing JavaScript when the MAYSCRIPT attribute is not specified results in an exception.

For more information on using applets, see the LiveConnect information in the Client-Side JavaScript Guide.

### Property Summary
The Applet object inherits all public properties of the Java applet.

### Method Summary
The Applet object inherits all public methods of the Java applet.
Examples

The following code launches an applet called musicApp:

```html
<APPLET CODE="musicSelect.class" WIDTH=200 HEIGHT=35
         NAME="musicApp" MAYSCRIPT>
</APPLET>
```

For more examples, see the LiveConnect information in the Client-Side JavaScript Guide.

See also

MimeType, Plugin
Area

Defines an area of an image as an image map. When the user clicks the area, the area’s hypertext reference is loaded into its target window. Area objects are a type of Link object.

Client-side object

Implemented in JavaScript 1.1

For information on Area objects, see Link.
Array

Lets you work with arrays.

*Core object*

Implemented in: JavaScript 1.1, NES 2.0

- JavaScript 1.3: added `toSource` method; changed `length` property; changed `push` and `splice` methods.

ECMA version: ECMA-262

**Created by**

The `Array` object constructor:

```javascript
new Array(arrayLength)
new Array(element0, element1, ..., elementN)
```

An array literal:

```
[element0, element1, ..., elementN]
```

*JavaScript 1.2 when you specify `LANGUAGE="JavaScript1.2"` in the `<SCRIPT>` tag:*

```javascript
new Array(element0, element1, ..., elementN)
```

*JavaScript 1.2 when you do not specify `LANGUAGE="JavaScript1.2"` in the `<SCRIPT>` tag:*

```javascript
new Array([arrayLength])
new Array([element0[, element1[, ..., elementN]]])
```

*JavaScript 1.1:*

```javascript
new Array([arrayLength])
new Array([element0[, element1[, ..., elementN]]])
```

**Parameters**

- `arrayLength` The initial length of the array. You can access this value using the `length` property. If the value specified is not a number, an array of length 1 is created, with the first element having the specified value. The maximum length allowed for an array is 4,294,967,295.

- `elementN` A list of values for the array's elements. When this form is specified, the array is initialized with the specified values as its elements, and the array's `length` property is set to the number of arguments.
An array is an ordered set of values associated with a single variable name.

The following example creates an `Array` object with an array literal; the `coffees` array contains three elements and a length of three:

```javascript
coffees = ["French Roast", "Columbian", "Kona"]
```

**Indexing an array.** You index an array by its ordinal number. For example, assume you define the following array:

```javascript
myArray = new Array("Wind", "Rain", "Fire")
```

You then refer to the first element of the array as `myArray[0]` and the second element of the array as `myArray[1]`.

**Specifying a single parameter.** When you specify a single numeric parameter with the `Array` constructor, you specify the initial length of the array. The following code creates an array of five elements:

```javascript
billingMethod = new Array(5)
```

The behavior of the `Array` constructor depends on whether the single parameter is a number.

- If the value specified is a number, the constructor converts the number to an unsigned, 32-bit integer and generates an array with the `length` property (size of the array) set to the integer. The array initially contains no elements, even though it might have a non-zero length.

- If the value specified is not a number, an array of length 1 is created, with the first element having the specified value.

The following code creates an array of length 25, then assigns values to the first three elements:

```javascript
musicTypes = new Array(25)
musicTypes[0] = "R&B"
musicTypes[1] = "Blues"
musicTypes[2] = "Jazz"
```

You can construct a *dense* array of two or more elements starting with index 0 if you define initial values for all elements. A dense array is one in which each element has a value. The following code creates a dense array with three elements:

```javascript
myArray = new Array("Hello", myVar, 3.14159)
```
Increasing the array length indirectly. An array's length increases if you assign a value to an element higher than the current length of the array. The following code creates an array of length 0, then assigns a value to element 99. This changes the length of the array to 100.

```javascript
colors = new Array()
colors[99] = "midnightblue"
```

Creating an array using the result of a match. The result of a match between a regular expression and a string can create an array. This array has properties and elements that provide information about the match. An array is the return value of `RegExp.exec`, `String.match`, and `String.replace`. To help explain these properties and elements, look at the following example and then refer to the table below:

```javascript
<SCRIPT LANGUAGE="JavaScript1.2">
//Match one d followed by one or more b's followed by one d
//Remember matched b's and the following d
//Ignore case
myRe=/d(b+)(d)/i;
myArray = myRe.exec("cdbBdbsbz");
</SCRIPT>
```

The properties and elements returned from this match are as follows:

<table>
<thead>
<tr>
<th>Property/Element</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>input</td>
<td>A read-only property that reflects the original string against which the regular expression was matched.</td>
<td>cdbBdbsbz</td>
</tr>
<tr>
<td>index</td>
<td>A read-only property that is the zero-based index of the match in the string.</td>
<td>1</td>
</tr>
<tr>
<td>[0]</td>
<td>A read-only element that specifies the last matched characters.</td>
<td>dbBd</td>
</tr>
<tr>
<td>[1], ...[n]</td>
<td>Read-only elements that specify the parenthesized substring matches, if included in the regular expression. The number of possible parenthesized substrings is unlimited.</td>
<td>[1]=bB [2]=d</td>
</tr>
</tbody>
</table>
Array

**Backward Compatibility**

**JavaScript 1.2.** When you specify a single parameter with the `Array` constructor, the behavior depends on whether you specify `LANGUAGE="JavaScript1.2"` in the `<SCRIPT>` tag:

- If you specify `LANGUAGE="JavaScript1.2"` in the `<SCRIPT>` tag, a single-element array is returned. For example, `new Array(5)` creates a one-element array with the first element being 5. A constructor with a single parameter acts in the same way as a multiple parameter constructor. You cannot specify the `length` property of an `Array` using a constructor with one parameter.

- If you do not specify `LANGUAGE="JavaScript1.2"` in the `<SCRIPT>` tag, you specify the initial length of the array as with other JavaScript versions.

**JavaScript 1.1 and earlier.** When you specify a single parameter with the `Array` constructor, you specify the initial length of the array. The following code creates an array of five elements:

```javascript
billingMethod = new Array(5)
```

**JavaScript 1.0.** You must index an array by its ordinal number; for example `myArray[0]`.

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<td></td>
<td><code>index</code></td>
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<td></td>
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Method Summary

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<td>Returns the primitive value of the array. Overrides the Object.valueOf method.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the watch and unwatch methods from Object.
Examples  

Example 1. The following example creates an array, `msgArray`, with a length of 0, then assigns values to `msgArray[0]` and `msgArray[99]`, changing the length of the array to 100.

```javascript
msgArray = new Array()
msgArray[0] = "Hello"
msgArray[99] = "world"
// The following statement is true,
// because defined msgArray[99] element.
if (msgArray.length == 100)
  myVar="The length is 100."
```

See also the examples for `onError`.

Example 2: Two-dimensional array. The following code creates a two-dimensional array and assigns the results to `myVar`.

```javascript
myVar="Multidimensional array test; 

a = new Array(4)
for (i=0; i<4; i++) {
  a[i] = new Array(4)
  for (j=0; j<4; j++) {
    a[i][j] = "["+i+","+j+"]"
  }
}
for (i=0; i<4; i++) {
  str = "Row "+i+":
  for (j=0; j<4; j++) {
    str += a[i][j]
  }
  myVar += str +"; 
}
```

This example assigns the following string to `myVar` (line breaks are used here for readability):

```
Multidimensional array test;
Row 0:[0,0][0,1][0,2][0,3];
Row 1:[1,0][1,1][1,2][1,3];
Row 2:[2,0][2,1][2,2][2,3];
Row 3:[3,0][3,1][3,2][3,3];
```

See also  Image
**concat**

Joins two arrays and returns a new array.

*Method of*  
Array

*Implemented in*  
JavaScript 1.2, NES 3.0

**Syntax**

```javascript
concat(arrayName2, arrayName3, ..., arrayNameN)
```

**Parameters**

- `arrayName2...`  
Arrays to concatenate to this array.
- `arrayNameN`

**Description**

`concat` does not alter the original arrays, but returns a “one level deep” copy that contains copies of the same elements combined from the original arrays. Elements of the original arrays are copied into the new array as follows:

- **Object references (and not the actual object):** `concat` copies object references into the new array. Both the original and new array refer to the same object. If a referenced object changes, the changes are visible to both the new and original arrays.

- **Strings and numbers (not `String` and `Number` objects):** `concat` copies strings and numbers into the new array. Changes to the string or number in one array does not affect the other arrays.

If a new element is added to either array, the other array is not affected.

The following code concatenates two arrays:

```javascript
alpha=new Array("a","b","c")
numeric=new Array(1,2,3)
alphaNumeric=alpha.concat(numeric) // creates array ["a","b","c",1,2,3]
```

The following code concatenates three arrays:

```javascript
num1=[1,2,3]
num2=[4,5,6]
num3=[7,8,9]
nums=num1.concat(num2,num3) // creates array [1,2,3,4,5,6,7,8,9]
```
**constructor**

Specifies the function that creates an object’s prototype. Note that the value of this property is a reference to the function itself, not a string containing the function’s name.

*Property of* `Array`

*Implemented in* JavaScript 1.1, NES 2.0

*ECMA version* ECMA-262

**Description**

See `Object.constructor`.

---

**index**

For an array created by a regular expression match, the zero-based index of the match in the string.

*Property of* `Array`

*Static*

*Implemented in* JavaScript 1.2, NES 3.0

---

**input**

For an array created by a regular expression match, reflects the original string against which the regular expression was matched.

*Property of* `Array`

*Static*

*Implemented in* JavaScript 1.2, NES 3.0
**join**

Joins all elements of an array into a string.

*Method of*  
Array

*Implemented in*  
JavaScript 1.1, NES 2.0

*ECMA version*  
ECMA-262

**Syntax**  
`join(separator)`

**Parameters**

- `separator`  
  Specifies a string to separate each element of the array. The separator is converted to a string if necessary. If omitted, the array elements are separated with a comma.

**Description**  
The string conversions of all array elements are joined into one string.

**Examples**  
The following example creates an array, `a`, with three elements, then joins the array three times: using the default separator, then a comma and a space, and then a plus.

```javascript
a = new Array("Wind","Rain","Fire")
myVar1=a.join() // assigns "Wind,Rain,Fire" to myVar1
myVar2=a.join(", ") // assigns "Wind, Rain, Fire" to myVar1
myVar3=a.join(" + ") // assigns "Wind + Rain + Fire" to myVar1
```

**See also**  
Array.reverse
**Array.length**

An unsigned, 32-bit integer that specifies the number of elements in an array.

**Property of**  Array

**Implemented in**  JavaScript 1.1, NES 2.0

JavaScript 1.3: `length` is an unsigned, 32-bit integer with a value less than $2^{32}$.

**ECMA version**  ECMA-262

**Description**

The value of the `length` property is an integer with a positive sign and a value less than $2$ to the $32$ power ($2^{32}$).

You can set the `length` property to truncate an array at any time. When you extend an array by changing its `length` property, the number of actual elements does not increase; for example, if you set `length` to 3 when it is currently 2, the array still contains only 2 elements.

**Examples**

In the following example, the `getChoice` function uses the `length` property to iterate over every element in the `musicType` array. `musicType` is a select element on the `musicForm` form.

```javascript
function getChoice() {
    for (var i = 0; i < document.musicForm.musicType.length; i++) {
        if (document.musicForm.musicType.options[i].selected == true) {
            return document.musicForm.musicType.options[i].text
        }
    }
}
```

The following example shortens the array `statesUS` to a length of 50 if the current length is greater than 50.

```javascript
if (statesUS.length > 50) {
    statesUS.length=50
}
```
**Array.pop**

---

**pop**

Removes the last element from an array and returns that element. This method changes the length of the array.

*Method of* Array

*Implemented in* JavaScript 1.2, NES 3.0

**Syntax**

`pop()`

**Parameters**

None.

**Example**

The following code creates the `myFish` array containing four elements, then removes its last element.

```javascript
myFish = ["angel", "clown", "mandarin", "surgeon"];
popped = myFish.pop();
```

**See also** push, shift, unshift

---

**prototype**

Represents the prototype for this class. You can use the prototype to add properties or methods to all instances of a class. For information on prototypes, see `Function.prototype`.

*Property of* Array

*Implemented in* JavaScript 1.1, NES 2.0

*ECMA version* ECMA-262
push

Adds one or more elements to the end of an array and returns the new length of the array. This method changes the length of the array.

**Method of** Array

**Implemented in** JavaScript 1.2, NES 3.0

JavaScript 1.3: push returns the new length of the array rather than the last element added to the array.

**Syntax**

`push(element1, ..., elementN)`

**Parameters**

- `element1, ..., elementN` The elements to add to the end of the array.

**Description**

The behavior of the `push` method is analogous to the `push` function in Perl 4. Note that this behavior is different in Perl 5.

**Backward Compatibility**

JavaScript 1.2. The `push` method returns the last element added to an array.

**Example**

The following code creates the `myFish` array containing two elements, then adds two elements to it. After the code executes, `pushed` contains 4. (In JavaScript 1.2, `pushed` contains “lion” after the code executes.)

```javascript
myFish = ["angel", "clown"];
pushed = myFish.push("drum", "lion");
```

**See also** pop, shift, unshift
**reverse**

Transposes the elements of an array: the first array element becomes the last and the last becomes the first.

*Method of* Array

*Implemented in* JavaScript 1.1, NES 2.0

*ECMA version* ECMA-262

**Syntax**

reverse()

**Parameters**

None

**Description**

The `reverse` method transposes the elements of the calling array object.

**Examples**

The following example creates an array `myArray`, containing three elements, then reverses the array.

```javascript
myArray = new Array("one", "two", "three")
myArray.reverse()
```

This code changes `myArray` so that:

- `myArray[0]` is “three”
- `myArray[1]` is “two”
- `myArray[2]` is “one”

**See also** Array.join, Array.sort

**shift**

Removes the first element from an array and returns that element. This method changes the length of the array.

*Method of* Array

*Implemented in* JavaScript 1.2, NES 3.0

**Syntax**

shift()

**Parameters**

None.
Example  The following code displays the `myFish` array before and after removing its first element. It also displays the removed element:

```javascript
myFish = ["angel", "clown", "mandarin", "surgeon"];
document.writeln("myFish before: " + myFish);
shifted = myFish.shift();
document.writeln("myFish after: " + myFish);
document.writeln("Removed this element: " + shifted);
```

This example displays the following:

- myFish before: ["angel", "clown", "mandarin", "surgeon"]
- myFish after: ["clown", "mandarin", "surgeon"]
- Removed this element: angel

See also  pop, push, unshift

slice  

Extracts a section of an array and returns a new array.

Method of  Array

Implemented in  JavaScript 1.2, NES 3.0

Syntax  `slice(begin[, end])`

Parameters  

- `begin`  Zero-based index at which to begin extraction.
- `end`  Zero-based index at which to end extraction:
  - `slice` extracts up to but not including `end`. `slice(1, 4)` extracts the second element through the fourth element (elements indexed 1, 2, and 3).
  - As a negative index, `end` indicates an offset from the end of the sequence. `slice(2, -1)` extracts the third element through the second to last element in the sequence.
  - If `end` is omitted, `slice` extracts to the end of the sequence.
Array.slice

**Description**

slice does not alter the original array, but returns a new “one level deep” copy that contains copies of the elements sliced from the original array. Elements of the original array are copied into the new array as follows:

- For object references (and not the actual object), slice copies object references into the new array. Both the original and new array refer to the same object. If a referenced object changes, the changes are visible to both the new and original arrays.

- For strings and numbers (not String and Number objects), slice copies strings and numbers into the new array. Changes to the string or number in one array does not affect the other array.

If a new element is added to either array, the other array is not affected.

**Example**

In the following example, slice creates a new array, newCar, from myCar. Both include a reference to the object myHonda. When the color of myHonda is changed to purple, both arrays reflect the change.

```
<SCRIPT LANGUAGE="JavaScript1.2">
//Using slice, create newCar from myCar.
myHonda = {color:"red",wheels:4,engine:{cylinders:4,size:2.2}}
myCar = [myHonda, 2, "cherry condition", "purchased 1997"]
newCar = myCar.slice(0,2)

//Write the values of myCar, newCar, and the color of myHonda
// referenced from both arrays.
document.write("myCar = " + myCar + "<BR>")
document.write("newCar = " + newCar + "<BR>")
document.write("myCar[0].color = " + myCar[0].color + "<BR>")
document.write("newCar[0].color = " + newCar[0].color + "<BR><BR>")

//Change the color of myHonda.
myHonda.color = "purple"
document.write("The new color of my Honda is " + myHonda.color + "<BR><BR>")

//Write the color of myHonda referenced from both arrays.
document.write("myCar[0].color = " + myCar[0].color + "<BR>")
document.write("newCar[0].color = " + newCar[0].color + "<BR>"

</SCRIPT>
```
This script writes:

```javascript
myCar = [{color:"red", wheels:4, engine:{cylinders:4, size:2.2}}, 2,
         "cherry condition", "purchased 1997"]
newCar = [{color:"red", wheels:4, engine:{cylinders:4, size:2.2}}, 2]
myCar[0].color = red newCar[0].color = red
The new color of my Honda is purple
myCar[0].color = purple
newCar[0].color = purple
```

**sort**

Sorts the elements of an array.

*Method of* Array

*Implemented in* JavaScript 1.1, NES 2.0

JavaScript 1.2: modified behavior.

*ECMA version* ECMA-262

**Syntax**

```
sort(compareFunction)
```

**Parameters**

- `compareFunction` Specifies a function that defines the sort order. If omitted, the array is sorted lexicographically (in dictionary order) according to the string conversion of each element.

**Description**

If `compareFunction` is not supplied, elements are sorted by converting them to strings and comparing strings in lexicographic (“dictionary” or “telephone book,” *not* numerical) order. For example, “80” comes before “9” in lexicographic order, but in a numeric sort 9 comes before 80.

If `compareFunction` is supplied, the array elements are sorted according to the return value of the compare function. If `a` and `b` are two elements being compared, then:

- If `compareFunction(a, b)` is less than 0, sort `b` to a lower index than `a`.
- If `compareFunction(a, b)` returns 0, leave `a` and `b` unchanged with respect to each other, but sorted with respect to all different elements.
- If `compareFunction(a, b)` is greater than 0, sort `b` to a higher index than `a`. 
So, the compare function has the following form:

```javascript
function compare(a, b) {
  if (a is less than b by some ordering criterion)
    return -1
  if (a is greater than b by the ordering criterion)
    return 1
  // a must be equal to b
  return 0
}
```

To compare numbers instead of strings, the compare function can simply subtract b from a:

```javascript
function compareNumbers(a, b) {
  return a - b
}
```

JavaScript uses a stable sort: the index partial order of a and b does not change if a and b are equal. If a's index was less than b's before sorting, it will be after sorting, no matter how a and b move due to sorting.

The behavior of the `sort` method changed between JavaScript 1.1 and JavaScript 1.2.

In JavaScript 1.1, on some platforms, the sort method does not work. This method works on all platforms for JavaScript 1.2.

In JavaScript 1.2, this method no longer converts undefined elements to null; instead it sorts them to the high end of the array. For example, assume you have this script:

```javascript
<SCRIPT>
a = new Array();
a[0] = "Ant";
a[5] = "Zebra";
function writeArray(x) {
  for (i = 0; i < x.length; i++) {
    document.write(x[i]);
    if (i < x.length-1) document.write(",");
  }
}
writeArray(a);
a.sort();
document.write("<BR><BR>");
writeArray(a);
</SCRIPT>
```
In JavaScript 1.1, JavaScript prints:

ant, null, null, null, null, zebra
ant, null, null, null, null, zebra

In JavaScript 1.2, JavaScript prints:

ant, undefined, undefined, undefined, undefined, zebra
ant, zebra, undefined, undefined, undefined, undefined

**Examples**  The following example creates four arrays and displays the original array, then the sorted arrays. The numeric arrays are sorted without, then with, a compare function.

```html
<SCRIPT>
stringArray = new Array("Blue","Humpback","Beluga")
numericStringArray = new Array("80","9","700")
numberArray = new Array(40,1,5,200)
mixedNumericArray = new Array("80","9","700",40,1,5,200)

function compareNumbers(a, b) {
  return a - b
}

document.write("<B>stringArray:</B> " + stringArray.join() +"<BR>")
document.write("<B>Sorted:</B> " + stringArray.sort() +"<P>"

document.write("<B>numberArray:</B> " + numberArray.join() +"<BR>")
document.write("<B>Sorted without a compare function:</B> " + numberArray.sort() +"<BR>")
document.write("<B>Sorted with compareNumbers:</B> " + numberArray.sort(compareNumbers) +"<BR>")

document.write("<B>numericStringArray:</B> " + numericStringArray.join() +"<BR>")
document.write("<B>Sorted without a compare function:</B> " + numericStringArray.sort() +"<BR>")
document.write("<B>Sorted with compareNumbers:</B> " + numericStringArray.sort(compareNumbers) +"<BR>")

document.write("<B>mixedNumericArray:</B> " + mixedNumericArray.join() +"<BR>")
document.write("<B>Sorted without a compare function:</B> " + mixedNumericArray.sort() +"<BR>")
document.write("<B>Sorted with compareNumbers:</B> " + mixedNumericArray.sort(compareNumbers) +"<BR>")
</SCRIPT>

Array.sort
This example produces the following output. As the output shows, when a compare function is used, numbers sort correctly whether they are numbers or numeric strings.

**stringArray**: Blue, Humpback, Beluga  
**Sorted**: Beluga, Blue, Humpback

**numberArray**: 40, 1, 5, 200  
**Sorted without a compare function**: 1, 200, 40, 5  
**Sorted with compareNumbers**: 1, 5, 40, 200

**numericStringArray**: 80, 9, 700  
**Sorted without a compare function**: 700, 80, 9  
**Sorted with compareNumbers**: 9, 80, 700

**mixedNumericArray**: 80, 9, 700, 40, 1, 5, 200  
**Sorted without a compare function**: 1, 200, 40, 5, 700, 80, 9  
**Sorted with compareNumbers**: 1, 5, 9, 40, 80, 200, 700

See also Array.join, Array.reverse

### splice

Changes the content of an array, adding new elements while removing old elements.

**Method of**  
Array

**Implemented in**  
JavaScript 1.2, NES 3.0

JavaScript 1.3: returns an array containing the removed elements

**Syntax**  
splice(index, howMany, [element1][, ..., elementN])

**Parameters**

- **index**  
  Index at which to start changing the array.

- **howMany**  
  An integer indicating the number of old array elements to remove. If howMany is 0, no elements are removed. In this case, you should specify at least one new element.

- **element1, ..., elementN**  
  The elements to add to the array. If you don't specify any elements, splice simply removes elements from the array.

**Description**

If you specify a different number of elements to insert than the number you're removing, the array will have a different length at the end of the call.

The splice method returns an array containing the removed elements. If only one element is removed, an array of one element is returned.
Array.splice

**Backward Compatibility**

**JavaScript 1.2.** The splice method returns the element removed, if only one element is removed (howMany parameter is 1); otherwise, the method returns an array containing the removed elements.

**Examples**

The following script illustrate the use of splice:

```javascript
<SCRIPT LANGUAGE="JavaScript1.2">

myFish = ["angel", "clown", "mandarin", "surgeon"]; 
document.writeln("myFish : "+ myFish + "<BR>");

removed = myFish.splice(2, 0, "drum");
document.writeln("After adding 1 : "+ myFish);
document.writeln("removed is : " + removed + "<BR>");

removed = myFish.splice(3, 1)
document.writeln("After removing 1 : " + myFish);
document.writeln("removed is : " + removed + "<BR>");

removed = myFish.splice(2, 1, "trumpet")
document.writeln("After replacing 1 : " + myFish);
document.writeln("removed is : " + removed + "<BR>");

removed = myFish.splice(0, 2, "parrot", "anemone", "blue")
document.writeln("After replacing 2 : " + myFish);
document.writeln("removed is : " + removed);

</SCRIPT>

This script displays:

myFish: ["angel", "clown", "mandarin", "surgeon"]

After adding 1: ["angel", "clown", "drum", "mandarin", "surgeon"]
removed is: undefined

After removing 1: ["angel", "clown", "drum", "surgeon"]
removed is: mandarin

After replacing 1: ["angel", "clown", "trumpet", "surgeon"]
removed is: drum

After replacing 2: ["parrot", "anemone", "blue", "trumpet", "surgeon"]
removed is: ["angel", "clown"]
### toSource

Returns a string representing the source code of the array.

**Method of**  
Array

**Implemented in**  
JavaScript 1.3

**Syntax**

toSource()

**Parameters**  
None

**Description**
The `toSource` method returns the following values:

- For the built-in `Array` object, `toSource` returns the following string indicating that the source code is not available:

  ```javascript
  function Array() {
      [native code]
  }
  ```

- For instances of `Array`, `toSource` returns a string representing the source code.

This method is usually called internally by JavaScript and not explicitly in code. You can call `toSource` while debugging to examine the contents of an array.

**Examples**

To examine the source code of an array:

```javascript
alpha = new Array("a", "b", "c")
alpha.toSource()  // returns ["a", "b", "c"]
```

**See also**

Array.toString
Array.toString

**toString**

Returns a string representing the specified array and its elements.

*Method of:* Array

*Implemented in:* JavaScript 1.1, NES 2.0

*ECMA version:* ECMA-262

**Syntax**

```javascript
toString()
```

**Parameters**

None.

**Description**

The `Array` object overrides the `toString` method of `Object`. For `Array` objects, the `toString` method joins the array and returns one string containing each array element separated by commas. For example, the following code creates an array and uses `toString` to convert the array to a string.

```javascript
var monthNames = new Array("Jan","Feb","Mar","Apr")
myVar=monthNames.toString() // assigns "Jan,Feb,Mar,Apr" to myVar
```

JavaScript calls the `toString` method automatically when an array is to be represented as a text value or when an array is referred to in a string concatenation.

**Backward Compatibility**

JavaScript 1.2. In JavaScript 1.2 and earlier versions, `toString` returns a string representing the source code of the array. This value is the same as the value returned by the `toSource` method in JavaScript 1.3 and later versions.

**See also**

`Array.toSource`

---

unshift

Adds one or more elements to the beginning of an array and returns the new length of the array.

*Method of:* Array

*Implemented in:* JavaScript 1.2, NES 3.0

**Syntax**

```javascript
arrayName.unshift(element1,..., elementN)
```

**Parameters**

*element1,...,* The elements to add to the front of the array.

*elementN*
**Example**  The following code displays the `myFish` array before and after adding elements to it.

```javascript
myFish = ["angel", "clown"];
document.writeln("myFish before: " + myFish);
unshifted = myFish.unshift("drum", "lion");
document.writeln("myFish after: " + myFish);
document.writeln("New length: " + unshifted);
```

This example displays the following:

- `myFish before: ["angel", "clown"]`
- `myFish after: ["drum", "lion", "angel", "clown"]`
- `New length: 4`

**See also**  `pop`, `push`, `shift`  

**valueOf**  

Returns the primitive value of an array.

**Method of**  `Array`

**Implemented in**  JavaScript 1.1

**ECMA version**  ECMA-262

**Syntax**  `valueOf()`  

**Parameters**  None  

**Description**  The `Array` object inherits the `valueOf` method of `Object`. The `valueOf` method of `Array` returns the primitive value of an array or the primitive value of its elements as follows:

<table>
<thead>
<tr>
<th>Object type of element</th>
<th>Data type of returned value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boolean</td>
<td>Boolean</td>
</tr>
<tr>
<td>Number or Date</td>
<td>number</td>
</tr>
<tr>
<td>All others</td>
<td>string</td>
</tr>
</tbody>
</table>

This method is usually called internally by JavaScript and not explicitly in code.

**See also**  `Object.valueOf`
The Boolean object is an object wrapper for a boolean value.

`Core object`

`Implemented in` JavaScript 1.1, NES 2.0

JavaScript 1.3: added `toSource` method

`ECMA version` ECMA-262

**Created by** The Boolean constructor:

```
new Boolean(value)
```

**Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>value</code></td>
<td>The initial value of the Boolean object. The value is converted to a boolean value, if necessary. If value is omitted or is 0, -0, null, false, NaN, undefined, or the empty string (&quot;&quot;), the object has an initial value of false. All other values, including any object or the string &quot;false&quot;, create an object with an initial value of true.</td>
</tr>
</tbody>
</table>

**Description**

Do not confuse the primitive Boolean values true and false with the true and false values of the Boolean object.

Any object whose value is not `undefined` or `null`, including a Boolean object whose value is false, evaluates to true when passed to a conditional statement. For example, the condition in the following `if` statement evaluates to `true`:

```
x = new Boolean(false);
if(x) //the condition is true
```

This behavior does not apply to Boolean primitives. For example, the condition in the following `if` statement evaluates to `false`:

```
x = false;
if(x) //the condition is false
```

Do not use a Boolean object to convert a non-boolean value to a boolean value. Instead, use `Boolean` as a function to perform this task:

```
x = Boolean(expression) //preferred
x = new Boolean(expression) //don't use
```
If you specify any object, including a Boolean object whose value is false, as the initial value of a Boolean object, the new Boolean object has a value of true.

```javascript
myFalse = new Boolean(false) // initial value of false
g = new Boolean(myFalse) // initial value of true
myString = new String("Hello") // string object
s = new Boolean(myString) // initial value of true
```

In JavaScript 1.3 and later versions, do not use a Boolean object in place of a Boolean primitive.

### Backward Compatibility

**JavaScript 1.2 and earlier versions.** When a Boolean object is used as the condition in a conditional test, JavaScript returns the value of the Boolean object. For example, a Boolean object whose value is false is treated as the primitive value false, and a Boolean object whose value is true is treated as the primitive value true in conditional tests. If the Boolean object is a false object, the conditional statement evaluates to false.

### Property Summary

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>constructor</td>
<td>Specifies the function that creates an object's prototype.</td>
</tr>
<tr>
<td>prototype</td>
<td>Defines a property that is shared by all Boolean objects.</td>
</tr>
</tbody>
</table>

### Method Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>toSource</td>
<td>Returns an object literal representing the specified Boolean object; you can use this value to create a new object. Overrides the Object.toSource method.</td>
</tr>
<tr>
<td>toString</td>
<td>Returns a string representing the specified object. Overrides the Object.toString method.</td>
</tr>
<tr>
<td>valueOf</td>
<td>Returns the primitive value of a Boolean object. Overrides the Object.valueOf method.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the watch and unwatch methods from Object.
Examples
The following examples create Boolean objects with an initial value of false:

bNoParam = new Boolean()
bZero = new Boolean(0)
bNull = new Boolean(null)
bEmptyString = new Boolean("")
bfalse = new Boolean(false)

The following examples create Boolean objects with an initial value of true:

btrue = new Boolean(true)
btrueString = new Boolean("true")
bfalseString = new Boolean("false")
bSuLin = new Boolean("Su Lin")

constructor

Specifies the function that creates an object's prototype. Note that the value of this property is a reference to the function itself, not a string containing the function's name.

Property of Boolean
Implemented in JavaScript 1.1, NES 2.0
ECMA version ECMA-262

Description See Object.constructor.

prototype

Represents the prototype for this class. You can use the prototype to add properties or methods to all instances of a class. For information on prototypes, see Function.prototype.

Property of Boolean
Implemented in JavaScript 1.1, NES 2.0
ECMA version ECMA-262
toSource

Returns a string representing the source code of the object.

**Syntax**
```
toSource()
```

**Parameters**
None

**Description**
The `toSource` method returns the following values:

- For the built-in Boolean object, `toSource` returns the following string indicating that the source code is not available:
  ```javascript
  function Boolean() {
      [native code]
  }
  ```

- For instances of Boolean, `toSource` returns a string representing the source code.

This method is usually called internally by JavaScript and not explicitly in code.

**See also**
Object.toSource

toString

Returns a string representing the specified Boolean object.

**Syntax**
```
toString()
```

**Parameters**
None.

**Description**
The Boolean object overrides the `toString` method of the Object object; it does not inherit `Object.toString`. For Boolean objects, the `toString` method returns a string representation of the object.

JavaScript calls the `toString` method automatically when a Boolean is to be represented as a text value or when a Boolean is referred to in a string concatenation.
Boolean.valueOf

For Boolean objects and values, the built-in `toString` method returns the string "true" or "false" depending on the value of the boolean object. In the following code, `flag.toString` returns "true".

```javascript
var flag = new Boolean(true)
var myVar=flag.toString()
```

See also Object.toString

**valueOf**

Returns the primitive value of a Boolean object.

*Method of* Boolean

*Implemented in* JavaScript 1.1

*ECMA version* ECMA-262

**Syntax**

`valueOf()`

**Parameters** None

**Description** The `valueOf` method of Boolean returns the primitive value of a Boolean object or literal Boolean as a Boolean data type.

This method is usually called internally by JavaScript and not explicitly in code.

**Examples**

```javascript
x = new Boolean();
myVar=x.valueOf()  //assigns false to myVar
```

See also Object.valueOf
Button

A push button on an HTML form.

*Client-side object*

Implemented in JavaScript 1.0

JavaScript 1.1: added type property; added onBlur and onFocus event handlers; added blur and focus methods.

JavaScript 1.2: added handleEvent method.

**Created by**
The HTML INPUT tag, with "button" as the value of the TYPE attribute. For a given form, the JavaScript runtime engine creates appropriate Button objects and puts these objects in the elements array of the corresponding Form object. You access a Button object by indexing this array. You can index the array either by number or, if supplied, by using the value of the NAME attribute.

**Event handlers**
- onBlur
- onClick
- onFocus
- onMouseDown
- onMouseUp

**Description**
A Button object on a form looks as follows:

A Button object is a form element and must be defined within a FORM tag. The Button object is a custom button that you can use to perform an action you define. The button executes the script specified by its onClick event handler.
In addition, this object inherits the `watch` and `unwatch` methods from `Object`.

**Examples**
The following example creates a button named `calcButton`. The text “Calculate” is displayed on the face of the button. When the button is clicked, the function `calcFunction` is called.

```html
<input type="button" value="Calculate" name="calcButton" onClick="calcFunction(this.form)"/>
```

**See also** Form, Reset, Submit

---

**blur**

Removes focus from the button.

**Method of** Button

**Implemented in** JavaScript 1.0

**Syntax** `blur()`

**Parameters** None
Examples  The following example removes focus from the button element userButton:
userButton.blur()

This example assumes that the button is defined as
<INPUT TYPE="button" NAME="userButton">

See also  Button.focus

---

**click**

Simulates a mouse-click on the button, but does not trigger the button’s onClick event handler.

*Method of*  Button  
*Implemented in*  JavaScript 1.0

**Syntax**  click()

**Parameters**  None.

**Security**  Submitting a form to a mailto: or news: URL requires the UniversalSendMail privilege. For information on security, see the *Client-Side JavaScript Guide*.

---

**focus**

Navigates to the button and gives it focus.

*Method of*  Button  
*Implemented in*  JavaScript 1.0

**Syntax**  focus()

**Parameters**  None.

**See also**  Button.blur
form

An object reference specifying the form containing the button.

Property of Button

Read-only

Implemented in JavaScript 1.0

Description
Each form element has a `form` property that is a reference to the element’s parent form. This property is especially useful in event handlers, where you might need to refer to another element on the current form.

Examples

Example 1. In the following example, the form `myForm` contains a `Text` object and a button. When the user clicks the button, the value of the `Text` object is set to the form’s name. The button’s `onClick` event handler uses `this.form` to refer to the parent form, `myForm`.

```html
<FORM NAME="myForm">
  Form name:<INPUT TYPE="text" NAME="text1" VALUE="Beluga">
  <P>
  <INPUT NAME="button1" TYPE="button" VALUE="Show Form Name"
    onClick="this.form.text1.value=this.form.name">
  </FORM>
</script>
```

Example 2. The following example shows a form with several elements. When the user clicks `button2`, the function `showElements` displays an alert dialog box containing the names of each element on the form `myForm`.

```javascript
function showElements(theForm) {
  str = "Form Elements of form " + theForm.name + ": \n"
  for (i = 0; i < theForm.length; i++)
    str += theForm.elements[i].name + "\n"
  alert(str)
}
</script>
```

```html
<FORM NAME="myForm">
  Form name:<INPUT TYPE="text" NAME="text1" VALUE="Beluga">
  <P>
  <INPUT NAME="button1" TYPE="button" VALUE="Show Form Name"
    onClick="this.form.text1.value=this.form.name">
  <INPUT NAME="button2" TYPE="button" VALUE="Show Form Elements"
    onClick="showElements(this.form)">
  </FORM>
```
The alert dialog box displays the following text:

```
JavaScript Alert:
Form Elements of form myForm:
text1
button1
button2
```

**Example 3.** The following example uses an object reference, rather than the `this` keyword, to refer to a form. The code returns a reference to `myForm`, which is a form containing `myButton`.

```
document.myForm.myButton.form
```

**See also** Form

---

### handleEvent

Invokes the handler for the specified event.

**Method of** Button  
**Implemented in** JavaScript 1.2

**Syntax**

```
handleEvent(event)
```

**Parameters**

- `event`:
  - The name of an event for which the object has an event handler.

**Description**

For information on handling events, see the *Client-Side JavaScript Guide*.

---

### name

A string specifying the button's name.

**Property of** Button  
**Implemented in** JavaScript 1.0

**Security**

**JavaScript 1.1.** This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.
Button.name

Description  The name property initially reflects the value of the NAME attribute. Changing the name property overrides this setting.

Do not confuse the name property with the label displayed on a button. The value property specifies the label for the button. The name property is not displayed on the screen; it is used to refer programmatically to the object.

If multiple objects on the same form have the same NAME attribute, an array of the given name is created automatically. Each element in the array represents an individual Form object. Elements are indexed in source order starting at 0. For example, if two Text elements and a Button element on the same form have their NAME attribute set to "myField", an array with the elements myField[0], myField[1], and myField[2] is created. You need to be aware of this situation in your code and know whether myField refers to a single element or to an array of elements.

Examples  In the following example, the valueGetter function uses a for loop to iterate over the array of elements on the valueTest form. The msgWindow window displays the names of all the elements on the form:

```javascript
newWindow=window.open("http://home.netscape.com")

function valueGetter() {
    var msgWindow=window.open("")
    for (var i = 0; i < newWindow.document.valueTest.elements.length; i++) {
        msgWindow.document.write(newWindow.document.valueTest.elements[i].name + "<BR>")
    }
}
```

In the following example, the first statement creates a window called netscapeWin. The second statement displays the value "netscapeHomePage" in the Alert dialog box, because "netscapeHomePage" is the value of the windowName argument of netscapeWin.

```javascript
netscapeWin=window.open("http://home.netscape.com","netscapeHomePage")
alert(netscapeWin.name)
```

See also  Button.value
**Button.type**

---

**type**

For all `Button` objects, the value of the `type` property is "button". This property specifies the form element's type.

- **Property of**: `Button`
- **Read-only**: Not applicable
- **Implemented in**: JavaScript 1.1

**Examples**

The following example writes the value of the `type` property for every element on a form.

```javascript
for (var i = 0; i < document.form1.elements.length; i++) {
    document.writeln("<BR>type is " + document.form1.elements[i].type)
}
```

---

**value**

A string that reflects the button's VALUE attribute.

- **Property of**: `Button`
- **Read-only on Mac and UNIX; modifiable on Windows**
- **Implemented in**: JavaScript 1.0

**Security**: `JavaScript 1.1`. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**

This string is displayed on the face of the button.

- The `value` property is read-only for Macintosh and UNIX systems. On Windows, you can change this property.
- When a VALUE attribute is not specified in HTML, the `value` property is an empty string.
- Do not confuse the `value` property with the `name` property. The `name` property is not displayed on the screen; it is used to refer programmatically to the objects.
**Examples**

The following function evaluates the `value` property of a group of buttons and displays it in the `msgWindow` window:

```javascript
function valueGetter() {
    var msgWindow=window.open(""
    msgWindow.document.write("submitButton.value is "+
        document.valueTest.submitButton.value + "\n"
    msgWindow.document.write("resetButton.value is " +
        document.valueTest.resetButton.value + "\n"
    msgWindow.document.write("helpButton.value is " +
        document.valueTest.helpButton.value + "\n"
    msgWindow.document.close()
}
```

This example displays the following values:

Query  Submit  
Reset  Help

The previous example assumes the buttons have been defined as follows:

```html
<INPUT TYPE="submit" NAME="submitButton">
<INPUT TYPE="reset" NAME="resetButton">
<INPUT TYPE="button" NAME="helpButton" VALUE="Help">
```

**See also**  Button.name
Checkbox

A checkbox on an HTML form. A checkbox is a toggle switch that lets the user set a value on or off.

**Client-side object**

*Implemented in* JavaScript 1.0

JavaScript 1.1: added type property; added onBlur and onFocus event handlers; added blur and focus methods.

JavaScript 1.2: added handleEvent method.

**Created by** The HTML `INPUT` tag, with "checkbox" as the value of the TYPE attribute. For a given form, the JavaScript runtime engine creates appropriate `Checkbox` objects and puts these objects in the `elements` array of the corresponding `Form` object. You access a `Checkbox` object by indexing this array. You can index the array either by number or, if supplied, by using the value of the `NAME` attribute.

**Event handlers**

- onBlur
- onClick
- onFocus
A Checkbox object on a form looks as follows:

A Checkbox object is a form element and must be defined within a FORM tag.

Use the checked property to specify whether the checkbox is currently checked. Use the defaultChecked property to specify whether the checkbox is checked when the form is loaded or reset.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>checked</td>
<td>Boolean property that reflects the current state of the checkbox.</td>
</tr>
<tr>
<td>defaultChecked</td>
<td>Boolean property that reflects the CHECKED attribute.</td>
</tr>
<tr>
<td>form</td>
<td>Specifies the form containing the Checkbox object.</td>
</tr>
<tr>
<td>name</td>
<td>Reflects the NAME attribute.</td>
</tr>
<tr>
<td>type</td>
<td>Reflects the TYPE attribute.</td>
</tr>
<tr>
<td>value</td>
<td>Reflects the TYPE attribute.</td>
</tr>
</tbody>
</table>
Checkbox

**Method Summary**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>blur</td>
<td>Removes focus from the checkbox.</td>
</tr>
<tr>
<td>click</td>
<td>Simulates a mouse-click on the checkbox.</td>
</tr>
<tr>
<td>focus</td>
<td>Gives focus to the checkbox.</td>
</tr>
<tr>
<td>handleEvent</td>
<td>Invokes the handler for the specified event.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the `watch` and `unwatch` methods from `Object`.

**Examples**

**Example 1.** The following example displays a group of four checkboxes that all appear checked by default:

```html
<B>Specify your music preferences (check all that apply):</B>
<br><input type="checkbox" name="musicpref_rnb" checked> R&B
<br><input type="checkbox" name="musicpref_jazz" checked> Jazz
<br><input type="checkbox" name="musicpref_blues" checked> Blues
<br><input type="checkbox" name="musicpref_newage" checked> New Age
```

**Example 2.** The following example contains a form with three text boxes and one checkbox. The user can use the checkbox to choose whether the text fields are converted to uppercase. Each text field has an `onChange` event handler that converts the field value to uppercase if the checkbox is checked. The checkbox has an `onClick` event handler that converts all fields to uppercase when the user checks the checkbox.

```html
<html>
<head>
<title>Checkbox object example</title>
</head>
<body>
<script>
function convertField(field) {
    if (document.form1.convertUpper.checked) {
        field.value = field.value.toUpperCase();
    }
}
function convertAllFields() {
    document.form1.lastName.value = document.form1.lastName.value.toUpperCase();
    document.form1.firstName.value = document.form1.firstName.value.toUpperCase();
    document.form1.cityName.value = document.form1.cityName.value.toUpperCase();
}
</script>
</body>
</html>
```
<BODY>
<FORM NAME="form1">
<B>Last name:</B>
<input type="text" name="lastName" size=20 onChange="convertField(this)">
<br>
<B>First name:</B>
<input type="text" name="firstName" size=20 onChange="convertField(this)">
<br>
<B>City:</B>
<input type="text" name="cityName" size=20 onChange="convertField(this)">
<br>
<p><input type="checkbox" name="convertUpper"
onClick="if (this.checked) {convertAllFields()}"
> Convert fields to upper case</p>
</FORM>
</BODY>

See also Form, Radio

---

**blur**

Removes focus from the checkbox.

*Method of* Checkbox

*Implemented in* JavaScript 1.0

**Syntax** blur()

**Parameters** None

See also Checkbox.focus

---

**checked**

A Boolean value specifying the selection state of the checkbox.

*Property of* Checkbox

*Implemented in* JavaScript 1.0

**Security** JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide.*

**Description** If a checkbox button is selected, the value of its checked property is true; otherwise, it is false.

You can set the checked property at any time. The display of the checkbox button updates immediately when you set the checked property.
See also Checkbox.defaultChecked

click

Simulates a mouse-click on the checkbox, but does not trigger its onClick event handler. The method checks the checkbox and sets toggles its value.

Method of Checkbox

Implemented in JavaScript 1.0

Syntax click()

Parameters None.

Examples The following example toggles the selection status of the newAge checkbox on the musicForm form:

\`document.musicForm.newAge.click()\`

defaultChecked

A Boolean value indicating the default selection state of a checkbox button.

Property of Checkbox

Implemented in JavaScript 1.0

Security JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description If a checkbox is selected by default, the value of the defaultChecked property is true; otherwise, it is false. defaultChecked initially reflects whether the CHECKED attribute is used within an INPUT tag; however, setting defaultChecked overrides the CHECKED attribute.

You can set the defaultChecked property at any time. The display of the checkbox does not update when you set the defaultChecked property, only when you set the checked property.

See also Checkbox.checked
**focus**

Gives focus to the checkbox.

*Method of* Checkbox

*Implemented in* JavaScript 1.0

**Syntax**

`focus()`

**Parameters**

None

**Description**

Use the `focus` method to navigate to a checkbox and give it focus. The user can then toggle the state of the checkbox.

**See also** Checkbox.blur

---

**form**

An object reference specifying the form containing the checkbox.

*Property of* Checkbox

*Read-only*

*Implemented in* JavaScript 1.0

**Description**

Each form element has a `form` property that is a reference to the element's parent form. This property is especially useful in event handlers, where you might need to refer to another element on the current form.

**See also** Form

---

**handleEvent**

Invokes the handler for the specified event.

*Method of* Checkbox

*Implemented in* JavaScript 1.2

**Syntax**

`handleEvent(event)`

**Parameters**

- `event` The name of an event for which the specified object has an event handler.
Checkbox.name

---

**name**

A string specifying the checkbox’s name.

*Property of* Checkbox

*Implemented in*  JavaScript 1.0

**Security**  JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**  If multiple objects on the same form have the same NAME attribute, an array of the given name is created automatically. Each element in the array represents an individual Form object. Elements are indexed in source order starting at 0. For example, if two Text elements and a Button element on the same form have their NAME attribute set to "myField", an array with the elements myField[0], myField[1], and myField[2] is created. You need to be aware of this situation in your code and know whether myField refers to a single element or to an array of elements.

**Examples**  In the following example, the valueGetter function uses a for loop to iterate over the array of elements on the valueTest form. The msgWindow window displays the names of all the elements on the form:

```javascript
newWindow=window.open("http://home.netscape.com")

function valueGetter() {
    var msgWindow=window.open("")
    for (var i = 0; i < newWindow.document.valueTest.elements.length; i++) {
        msgWindow.document.write(newWindow.document.valueTest.elements[i].name + "<BR>"
    }
}
```
type

For all Checkbox objects, the value of the type property is "checkbox". This property specifies the form element's type.

Property of Checkbox
Read-only
Implemented in JavaScript 1.1

Examples
The following example writes the value of the type property for every element on a form.

```javascript
for (var i = 0; i < document.form1.elements.length; i++) {
  document.writeln("<BR>type is " + document.form1.elements[i].type);
}
```

value

A string that reflects the VALUE attribute of the checkbox.

Property of Checkbox
Implemented in JavaScript 1.0

Security
JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-side JavaScript Guide.

See also
Checkbox.checked, Checkbox.defaultChecked
Date

Let's you work with dates and times.

Core object

Implemented in JavaScript 1.0, NES 2.0

- JavaScript 1.1: added prototype property
- JavaScript 1.3: removed platform dependencies to provide a uniform behavior across platforms; added ms_num parameter to Date constructor; added getFullYear, setFullYear, getMilliseconds, setMilliseconds, toSource, and UTC methods (such as getUTCDate and setUTCDate).

ECMA version ECMA-262

Created by The Date constructor:

new Date()
new Date(milliseconds)
new Date(dateString)
new Date(yr_num, mo_num, day_num
    [, hr_num, min_num, sec_num, ms_num])

Versions prior to JavaScript 1.3:

new Date()
new Date(milliseconds)
new Date(dateString)
new Date(yr_num, mo_num, day_num[, hr_num, min_num, sec_num])

Parameters

- milliseconds Integer value representing the number of milliseconds since 1 January 1970 00:00:00.
- dateString String value representing a date. The string should be in a format recognized by the Date.parse method.
- yr_num, mo_num, day_num Integer values representing part of a date. As an integer value, the month is represented by 0 to 11 with 0=January and 11=December.
- hr_num, min_num, sec_num, ms_num Integer values representing part of a date.
If you supply no arguments, the constructor creates a `Date` object for today's date and time according to local time. If you supply some arguments but not others, the missing arguments are set to 0. If you supply any arguments, you must supply at least the year, month, and day. You can omit the hours, minutes, seconds, and milliseconds.

The date is measured in milliseconds since midnight 01 January, 1970 UTC. A day holds 86,400,000 milliseconds. The `Date` object range is -100,000,000 days to 100,000,000 days relative to 01 January, 1970 UTC.

The `Date` object provides uniform behavior across platforms.

The `Date` object supports a number of UTC (universal) methods, as well as local time methods. UTC, also known as Greenwich Mean Time (GMT), refers to the time as set by the World Time Standard. The local time is the time known to the computer where JavaScript is executed.

For compatibility with millennium calculations (in other words, to take into account the year 2000), you should always specify the year in full; for example, use 1998, not 98. To assist you in specifying the complete year, JavaScript includes the methods `getFullYear`, `setFullYear`, `getFullUTCYear`, and `setFullUTCYear`.

The following example returns the time elapsed between `timeA` and `timeB` in milliseconds.

```javascript
getTimeA = new Date();
// Statements here to take some action.
getTimeB = new Date();
timeDifference = timeB - timeA;
```

### Backward Compatibility

**JavaScript 1.2 and earlier.** The `Date` object behaves as follows:

- Dates prior to 1970 are not allowed.
- JavaScript depends on platform-specific date facilities and behavior; the behavior of the `Date` object varies from platform to platform.

### Property Summary

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<td><code>getUTCMilliseconds</code></td>
<td>Returns the milliseconds in the specified date according to universal time.</td>
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<td>Returns the minutes in the specified date according to universal time.</td>
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### Date

<table>
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<tr>
<td>setHours</td>
<td>Sets the hours for a specified date according to local time.</td>
</tr>
<tr>
<td>setMilliseconds</td>
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</tr>
<tr>
<td>setMinutes</td>
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</tr>
<tr>
<td>setMonth</td>
<td>Sets the month for a specified date according to local time.</td>
</tr>
<tr>
<td>setSeconds</td>
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<tr>
<td>setTime</td>
<td>Sets the value of a Date object according to local time.</td>
</tr>
<tr>
<td>setUTCDate</td>
<td>Sets the day of the month for a specified date according to universal time.</td>
</tr>
<tr>
<td>setUTCFullYear</td>
<td>Sets the full year for a specified date according to universal time.</td>
</tr>
<tr>
<td>setUTCHours</td>
<td>Sets the hour for a specified date according to universal time.</td>
</tr>
<tr>
<td>setUTCMilliseconds</td>
<td>Sets the milliseconds for a specified date according to universal time.</td>
</tr>
<tr>
<td>setUTCMinutes</td>
<td>Sets the minutes for a specified date according to universal time.</td>
</tr>
<tr>
<td>setUTCMonth</td>
<td>Sets the month for a specified date according to universal time.</td>
</tr>
</tbody>
</table>
In addition, this object inherits the `watch` and `unwatch` methods from `Object`.

**Examples**  
The following examples show several ways to assign dates:

```javascript
let today = new Date();
let birthday = new Date("December 17, 1995 03:24:00");
let birthday = new Date(95, 11, 17);
let birthday = new Date(95, 11, 17, 3, 24, 0);
```
**constructor**

Specifies the function that creates an object's prototype. Note that the value of this property is a reference to the function itself, not a string containing the function's name.

*Property of* Date  
*Implemented in* JavaScript 1.1, NES 2.0  
*ECMA version* ECMA-262

**Description**  
See Object.constructor.

**getDate**

Returns the day of the month for the specified date according to local time.

*Method of* Date  
*Implemented in* JavaScript 1.0, NES 2.0  
*ECMA version* ECMA-262

**Syntax**  
`getDate()`

**Parameters**  
None

**Description**  
The value returned by `getDate` is an integer between 1 and 31.

**Examples**  
The second statement below assigns the value 25 to the variable `day`, based on the value of the Date object `Xmas95`.

```javascript
Xmas95 = new Date("December 25, 1995 23:15:00")
day = Xmas95.getDate()
```

**See also**  
Date.getUTCDate, Date.getUTCDay, Date.setDate
getDay

Returns the day of the week for the specified date according to local time.

Method of: Date
Implemented in: JavaScript 1.0, NES 2.0
ECMA version: ECMA-262

Syntax: `getDay()`

Parameters: None

Description: The value returned by `getDay` is an integer corresponding to the day of the week: 0 for Sunday, 1 for Monday, 2 for Tuesday, and so on.

Examples: The second statement below assigns the value 1 to `weekday`, based on the value of the `Date` object `Xmas95`. December 25, 1995, is a Monday.

```
Xmas95 = new Date("December 25, 1995 23:15:00")
weekday = Xmas95.getDay()
```

See also: `Date.getUTCDay`, `Date.setDate`

getFullYear

Returns the year of the specified date according to local time.

Method of: Date
Implemented in: JavaScript 1.3
ECMA version: ECMA-262

Syntax: `getFullYear()`

Parameters: None

Description: The value returned by `getFullYear` is an absolute number. For dates between the years 1000 and 9999, `getFullYear` returns a four-digit number, for example, 1995. Use this function to make sure a year is compliant with years after 2000.

Use this method instead of the `getYear` method.
### getHours

Returns the hour for the specified date according to local time.

**Syntax**

getHours()

**Parameters**

None

**Description**

The value returned by `getHours` is an integer between 0 and 23.

**Examples**

The second statement below assigns the value 23 to the variable `hours`, based on the value of the Date object `Xmas95`.

```javascript
Xmas95 = new Date("December 25, 1995 23:15:00")
hours = Xmas95.getHours()
```

**See also**

`Date.getUTCHours`, `Date.setHours`

### getMilliseconds

Returns the milliseconds in the specified date according to local time.

**Syntax**

getMilliseconds()

**Parameters**

None

**Description**

The value returned by `getMilliseconds` is a number between 0 and 999.

**Examples**

The following example assigns the four-digit value of the current year to the variable `yr`.

```javascript
var yr;
Today = new Date();
yr = Today.getFullYear();
```

**See also**

`Date.getYear`, `Date.getUTCFullYear`, `Date.setFullYear`
**getMinutes**

Returns the minutes in the specified date according to local time.

- **Syntax**
  
  `getMinutes()`

- **Parameters**
  
  None

- **Description**
  
  The value returned by `getMinutes` is an integer between 0 and 59.

- **Examples**
  
  The second statement below assigns the value 15 to the variable `minutes`, based on the value of the `Date` object `Xmas95`.

  ```javascript
  Xmas95 = new Date("December 25, 1995 23:15:00")
  minutes = Xmas95.getMinutes()
  ```

- **See also**
  
  `Date.getUTCMilliseconds`, `Date.setMilliseconds`

---

**getMonth**

Returns the month in the specified date according to local time.

- **Syntax**
  
  `getMonth()`

- **Parameters**
  
  None

- **Description**
  
  The value returned by `getMonth` is an integer between 0 and 11. 0 corresponds to January, 1 to February, and so on.
Examples

The second statement below assigns the value 11 to the variable month, based on the value of the Date object Xmas95.

```javascript
Xmas95 = new Date("December 25, 1995 23:15:00")
month = Xmas95.getMonth()
```

See also Date.getUTCMonth, Date.setMonth

---

**getSeconds**

Returns the seconds in the current time according to local time.

**Syntax**

```
getSeconds()
```

**Parameters**

None

**Description**

The value returned by `getSeconds` is an integer between 0 and 59.

**Examples**

The second statement below assigns the value 30 to the variable secs, based on the value of the Date object Xmas95.

```javascript
Xmas95 = new Date("December 25, 1995 23:15:30")
secs = Xmas95.getSeconds()
```

See also Date.getUTCSeconds, Date.setSeconds

---

**getTime**

Returns the numeric value corresponding to the time for the specified date according to local time.

**Syntax**

```
getTime()
```

**Parameters**

None
**Date.getTimezoneOffset**

Description: The value returned by the `getTime` method is the number of milliseconds since 1 January 1970 00:00:00. You can use this method to help assign a date and time to another `Date` object.

Examples: The following example assigns the date value of `theBigDay` to `sameAsBigDay`:

```javascript
theBigDay = new Date("July 1, 1999")
sameAsBigDay = new Date()
sameAsBigDay.setTime(theBigDay.getTime())
```

See also: `Date.getUTCHours`, `Date.setTime`

**getTimezoneOffset**

Returns the time-zone offset in minutes for the current locale.

Method of: `Date`

Implemented in: JavaScript 1.0, NES 2.0

ECMA version: ECMA-262

Syntax: `getTimezoneOffset()`

Parameters: None

Description: The time-zone offset is the difference between local time and Greenwich Mean Time (GMT). Daylight savings time prevents this value from being a constant.

Examples: `x = new Date()
currentTimeZoneOffsetInHours = x.getTimezoneOffset() / 60`

**getUTCDate**

Returns the day (date) of the month in the specified date according to universal time.

Method of: `Date`

Implemented in: JavaScript 1.3

ECMA version: ECMA-262

Syntax: `getUTCDate()`

Parameters: None

Description: The value returned by `getUTCDate` is an integer between 1 and 31.
Examples

The following example assigns the day portion of the current date to the variable d.

```javascript
var d;
Today = new Date();
d = Today.getUTCDate();
```

See also Date.getDate, Date.getUTCDay, Date.setUTCDate

getUTCDay

Returns the day of the week in the specified date according to universal time.

Method of Date

Implemented in JavaScript 1.3

ECMA version ECMA-262

Syntax getUTCDay()

Parameters None

Description The value returned by getUTCDay is an integer corresponding to the day of the week: 0 for Sunday, 1 for Monday, 2 for Tuesday, and so on.

Examples

The following example assigns the weekday portion of the current date to the variable ms.

```javascript
var weekday;
Today = new Date();
weekday = Today.getUTCDay();
```

See also Date.getDay, Date.getUTCDate, Date.setUTCDate

getUTCFullYear

Returns the year in the specified date according to universal time.

Method of Date

Implemented in JavaScript 1.3

ECMA version ECMA-262

Syntax getUTCFullYear()

Parameters None
Date.getUTCHours

**Description**  The value returned by `getUTCFullYear` is an absolute number that is compliant with year-2000, for example, 1995.

**Examples**  The following example assigns the four-digit value of the current year to the variable `yr`.

```javascript
var yr;
Today = new Date();
yr = Today.getUTCFullYear();
```

**See also**  `Date.getFullYear`, `Date.setFullYear`

---

**getUTCHours**

Returns the hours in the specified date according to universal time.

**Method of**  `Date`

**Implemented in**  JavaScript 1.3

**ECMA version**  ECMA-262

**Syntax**

```javascript
getUTCHours()
```

**Parameters**  None

**Description**  The value returned by `getUTCHours` is an integer between 0 and 23.

**Examples**  The following example assigns the hours portion of the current time to the variable `hrs`.

```javascript
var hrs;
Today = new Date();
hrs = Today.getUTCHours();
```

**See also**  `Date.getHours`, `Date.setUTCHours`
getUTCMilliseconds

Returns the milliseconds in the specified date according to universal time.

Method of  Date

Implemented in  JavaScript 1.3

ECMA version  ECMA-262

Syntax  getUTCMilliseconds()

Parameters  None

Description  The value returned by getUTCMilliseconds is an integer between 0 and 999.

Examples  The following example assigns the milliseconds portion of the current time to the variable ms.

```javascript
var ms;
Today = new Date();
ms = Today.getUTCMilliseconds();
```

See also  Date.getMilliseconds, Date.setUTCMilliseconds

getUTCMilliseconds

Returns the minutes in the specified date according to universal time.

Method of  Date

Implemented in  JavaScript 1.3

ECMA version  ECMA-262

Syntax  getUTCMinutes()

Parameters  None

Description  The value returned by getUTCMinutes is an integer between 0 and 59.
**getUTCMonth**

Returns the month according in the specified date according to universal time.

**Method of** Date

**Implemented in** JavaScript 1.3

**ECMA version** ECMA-262

**Syntax**

```javascript
getUTCMonth()
```

**Parameters** None

**Description** The value returned by `getUTCMonth` is an integer between 0 and 11 corresponding to the month. 0 for January, 1 for February, 2 for March, and so on.

**Examples** The following example assigns the month portion of the current date to the variable `mon`.

```javascript
var mon;
Today = new Date();
mon = Today.getUTCMonth();
```

**See also** `Date.getMonth`, `Date.setUTCMonth`

---

**Examples** The following example assigns the minutes portion of the current time to the variable `min`.

```javascript
var min;
Today = new Date();
min = Today.getUTCMinutes();
```

**See also** `Date.getMinutes`, `Date.setUTCMinutes`
getUTCSeconds

Returns the seconds in the specified date according to universal time.

Method of
Date

Implemented in
JavaScript 1.3

ECMA version
ECMA-262

Syntax
getUTCSeconds()

Parameters
None

Description
The value returned by getUTCSeconds is an integer between 0 and 59.

Examples
The following example assigns the seconds portion of the current time to the variable sec.

```javascript
var sec;
Today = new Date();
sec = Today.getUTCSeconds();
```

See also
Date.getSeconds, Date.setUTCSeconds

getYear

Returns the year in the specified date according to local time.

Method of
Date

Implemented in
JavaScript 1.0, NES 2.0

JavaScript 1.3: deprecated; also, getYear returns the year minus 1900 regardless of the year specified

ECMA version
ECMA-262

Syntax
getYear()

Parameters
None
Description  

`getYear` is no longer used and has been replaced by the `getFullYear` method.

The `getYear` method returns the year minus 1900; thus:

- For years above 2000, the value returned by `getYear` is 100 or greater. For example, if the year is 2026, `getYear` returns 126.

- For years between and including 1900 and 1999, the value returned by `getYear` is between 0 and 99. For example, if the year is 1976, `getYear` returns 76.

- For years less than 1900 or greater than 1999, the value returned by `getYear` is less than 0. For example, if the year is 1800, `getYear` returns -100.

To take into account years before and after 2000, you should use `Date.getFullYear` instead of `getYear` so that the year is specified in full.

Backward Compatibility  

**JavaScript 1.2 and earlier versions.** The `getYear` method returns either a 2-digit or 4-digit year:

- For years between and including 1900 and 1999, the value returned by `getYear` is the year minus 1900. For example, if the year is 1976, the value returned is 76.

- For years less than 1900 or greater than 1999, the value returned by `getYear` is the four-digit year. For example, if the year is 1856, the value returned is 1856. If the year is 2026, the value returned is 2026.

Examples  

**Example 1.** The second statement assigns the value 95 to the variable `year`.

```javascript
Xmas = new Date("December 25, 1995 23:15:00")
year = Xmas.getYear() // returns 95
```

**Example 2.** The second statement assigns the value 100 to the variable `year`.

```javascript
Xmas = new Date("December 25, 2000 23:15:00")
year = Xmas.getYear() // returns 100
```

**Example 3.** The second statement assigns the value -100 to the variable `year`.

```javascript
Xmas = new Date("December 25, 1800 23:15:00")
year = Xmas.getYear() // returns -100
```
Example 4. The second statement assigns the value 95 to the variable `year`, representing the year 1995.

```javascript
Xmas.setYear(95)
year = Xmas.getYear() // returns 95
```

See also Date.getFullYear, Date.getUTCFullYear, Date.setYear

**parse**

Returns the number of milliseconds in a date string since January 1, 1970, 00:00:00, local time.

**Method of** Date

**Static**

**Implemented in** JavaScript 1.0, NES 2.0

**ECMA version** ECMA-262

**Syntax** `Date.parse(dateString)`

**Parameters**

- `dateString`: A string representing a date.

**Description**

The `parse` method takes a date string (such as "Dec 25, 1995") and returns the number of milliseconds since January 1, 1970, 00:00:00 (local time). This function is useful for setting date values based on string values, for example in conjunction with the `setTime` method and the `Date` object.

Given a string representing a time, `parse` returns the time value. It accepts the IETF standard date syntax: "Mon, 25 Dec 1995 13:30:00 GMT". It understands the continental US time-zone abbreviations, but for general use, use a time-zone offset, for example, "Mon, 25 Dec 1995 13:30:00 GMT+0430" (4 hours, 30 minutes west of the Greenwich meridian). If you do not specify a time zone, the local time zone is assumed. GMT and UTC are considered equivalent.

Because `parse` is a static method of `Date`, you always use it as `Date.parse()`, rather than as a method of a `Date` object you created.
Examples
If IPOdate is an existing Date object, then you can set it to August 9, 1995 as follows:
IPOdate.setTime(Date.parse("Aug 9, 1995"))

See also Date.UTC

prototype
Represents the prototype for this class. You can use the prototype to add properties or methods to all instances of a class. For information on prototypes, see Function.prototype.

Property of Date
Implemented in JavaScript 1.1, NES 2.0
ECMA version ECMA-262

setDate
Sets the day of the month for a specified date according to local time.

Method of Date
Implemented in JavaScript 1.0, NES 2.0
ECMA version ECMA-262

Syntax setDate(dayValue)

Parameters
dayValue An integer from 1 to 31, representing the day of the month.

Examples The second statement below changes the day for theBigDay to July 24 from its original value.
theBigDay = new Date("July 27, 1962 23:30:00")
theBigDay.setDate(24)

See also Date.getDate, Date.setUTCDate
**setFullYear**

Sets the full year for a specified date according to local time.

*Method of*  
`Date`

*Implemented in*  
JavaScript 1.3

*ECMA version*  
ECMA-262

**Syntax**

```
setFullYear(yearValue[, monthValue, dayValue])
```

**Parameters**

- **yearValue**: An integer specifying the numeric value of the year, for example, 1995.
- **monthValue**: An integer between 0 and 11 representing the months January through December.
- **dayValue**: An integer between 1 and 31 representing the day of the month. If you specify the dayValue parameter, you must also specify the monthValue.

**Description**

If you do not specify the monthValue and dayValue parameters, the values returned from the `getMonth` and `getDate` methods are used.

If a parameter you specify is outside of the expected range, `setFullYear` attempts to update the other parameters and the date information in the `Date` object accordingly. For example, if you specify 15 for monthValue, the year is incremented by 1 (year + 1), and 3 is used for the month.

**Examples**

```
theBigDay = new Date();
theBigDay.setFullYear(1997);
```

**See also**  
`Date.getUTCFullYear`, `Date.setUTCFullYear`, `Date.setYear`
setHours

Sets the hours for a specified date according to local time.

**Method of**  
Date

**Implemented in**  
JavaScript 1.0, NES 2.0

JavaScript 1.3: Added `minutesValue`, `secondsValue`, and `msValue` parameters

**ECMA version**  
ECMA-262

**Syntax**

```
setHours(hoursValue[, minutesValue, secondsValue, msValue])
```

**Versions prior to JavaScript 1.3:**

```
setHours(hoursValue)
```

**Parameters**

- `hoursValue`: An integer between 0 and 23, representing the hour.
- `minutesValue`: An integer between 0 and 59, representing the minutes.
- `secondsValue`: An integer between 0 and 59, representing the seconds. If you specify the `secondsValue` parameter, you must also specify the `minutesValue`.
- `msValue`: A number between 0 and 999, representing the milliseconds. If you specify the `msValue` parameter, you must also specify the `minutesValue` and `secondsValue`.

**Description**

If you do not specify the `minutesValue`, `secondsValue`, and `msValue` parameters, the values returned from the `getUTCMinutes`, `getUTCSecsonds`, and `getMilliseconds` methods are used.

If a parameter you specify is outside of the expected range, `setHours` attempts to update the date information in the Date object accordingly. For example, if you use 100 for `secondsValue`, the minutes will be incremented by 1 (min + 1), and 40 will be used for seconds.

**Examples**

```
theBigDay.setHours(7)
```

**See also**  
Date.getHours, Date.setUTCHours
**setMilliseconds**

Sets the milliseconds for a specified date according to local time.

*Method of*  
Date

*Implemented in*  
JavaScript 1.3

*ECMA version*  
ECMA-262

**Syntax**

```
setMilliseconds(millisecondsValue)
```

**Parameters**

- `millisecondsValue`: A number between 0 and 999, representing the milliseconds.

**Description**

If you specify a number outside the expected range, the date information in the `Date` object is updated accordingly. For example, if you specify 1005, the number of seconds is incremented by 1, and 5 is used for the milliseconds.

**Examples**

```javascript
theBigDay = new Date();
theBigDay.setMilliseconds(100);
```

**See also**

`Date.getMilliseconds`, `Date.setUTCMilliseconds`

---

**setMinutes**

Sets the minutes for a specified date according to local time.

*Method of*  
Date

*Implemented in*  
JavaScript 1.0, NES 2.0

*Implemented in*  
JavaScript 1.3: Added `secondsValue` and `msValue` parameters

*ECMA version*  
ECMA-262

**Syntax**

```
setMinutes(minutesValue[, secondsValue, msValue])
```

**Versions prior to JavaScript 1.3:**

```
setMinutes(minutesValue)
```
Date.setMonth

**Parameters**

- **minutesValue**
  - An integer between 0 and 59, representing the minutes.
- **secondsValue**
  - An integer between 0 and 59, representing the seconds. If you specify the `secondsValue` parameter, you must also specify the `minutesValue`.
- **msValue**
  - A number between 0 and 999, representing the milliseconds. If you specify the `msValue` parameter, you must also specify the `minutesValue` and `secondsValue`.

**Examples**

```
theBigDay.setMinutes(45)
```

**Description**

If you do not specify the `secondsValue` and `msValue` parameters, the values returned from `getSeconds` and `getMilliseconds` methods are used.

If a parameter you specify is outside of the expected range, `setMinutes` attempts to update the date information in the `Date` object accordingly. For example, if you use 100 for `secondsValue`, the minutes (`minutesValue`) will be incremented by 1 (`minutesValue + 1`), and 40 will be used for seconds.

**See also**

- `Date.getMinutes`
- `Date.setUTCMilliseconds`

---

**setMonth**

Sets the month for a specified date according to local time.

**Method of**

`Date`

**Implemented in**

- JavaScript 1.0, NES 2.0
- JavaScript 1.3: Added `dayValue` parameter

**ECMA version**

ECMA-262

**Syntax**

```
setMonth(monthValue[, dayValue])
```

**Versions prior to JavaScript 1.3:**

```
setMonth(monthValue)
```

**Parameters**

- **monthValue**
  - An integer between 0 and 11 (representing the months January through December).
- **dayValue**
  - An integer from 1 to 31, representing the day of the month.
Description

If you do not specify the dayValue parameter, the value returned from the getDate method is used.

If a parameter you specify is outside of the expected range, setMonth attempts to update the date information in the Date object accordingly. For example, if you use 15 for monthValue, the year will be incremented by 1 (year + 1), and 3 will be used for month.

Examples

theBigDay.setMonth(6)

See also Date.getMonth, Date.setUTCMonth

setSeconds

Sets the seconds for a specified date according to local time.

Method of Date

Implemented in JavaScript 1.0, NES 2.0

- JavaScript 1.3: Added msValue parameter

ECMA version ECMA-262

Syntax

setSeconds(secondsValue[, msValue])

Versions prior to JavaScript 1.3:

setSeconds(secondsValue)

Parameters

secondsValue An integer between 0 and 59.

msValue A number between 0 and 999, representing the milliseconds.

Description

If you do not specify the msValue parameter, the value returned from the getMilliseconds methods is used.

If a parameter you specify is outside of the expected range, setSeconds attempts to update the date information in the Date object accordingly. For example, if you use 100 for secondsValue, the minutes stored in the Date object will be incremented by 1, and 40 will be used for seconds.

Examples

theBigDay.setSeconds(30)

See also Date.getSeconds, Date.setUTCSeconds
**setTime**

Sets the value of a `Date` object according to local time.

*Method of* `Date`

*Implemented in* JavaScript 1.0, NES 2.0

*ECMA version* ECMA-262

**Syntax**

```javascript
setTime(timevalue)
```

**Parameters**

- `timevalue` An integer representing the number of milliseconds since 1 January 1970 00:00:00.

**Description**

Use the `setTime` method to help assign a date and time to another `Date` object.

**Examples**

```javascript
theBigDay = new Date("July 1, 1999")
sameAsBigDay = new Date()
sameAsBigDay.setTime(theBigDay.getTime())
```

**See also** `Date.getTime`, `Date.setUTCHours`

**setUTCDate**

Sets the day of the month for a specified date according to universal time.

*Method of* `Date`

*Implemented in* JavaScript 1.3

*ECMA version* ECMA-262

**Syntax**

```javascript
setUTCDate(dayValue)
```

**Parameters**

- `dayValue` An integer from 1 to 31, representing the day of the month.

**Description**

If a parameter you specify is outside of the expected range, `setUTCDate` attempts to update the date information in the `Date` object accordingly. For example, if you use 40 for `dayValue`, and the month stored in the `Date` object is June, the day will be changed to 10 and the month will be incremented to July.
Date.setUTCFullYear

**Examples**
theBigDay = new Date();
theBigDay.setUTCDate(20);

**See also** Date.getUTCDate, Date.setDate

---

**setUTCFullYear**

Sets the full year for a specified date according to universal time.

*Method of* Date

*Implemented in* JavaScript 1.3

*ECMA version* ECMA-262

**Syntax**

```javascript
setUTCFullYear(yearValue[, monthValue, dayValue])
```

**Parameters**

- **yearValue**
  - An integer specifying the numeric value of the year, for example, 1995.

- **monthValue**
  - An integer between 0 and 11 representing the months January through December.

- **dayValue**
  - An integer between 1 and 31 representing the day of the month. If you specify the dayValue parameter, you must also specify the monthValue.

**Description**

If you do not specify the monthValue and dayValue parameters, the values returned from the getMonth and getDate methods are used.

If a parameter you specify is outside of the expected range, setUTCFullYear attempts to update the other parameters and the date information in the Date object accordingly. For example, if you specify 15 for monthValue, the year is incremented by 1 (year + 1), and 3 is used for the month.

**Examples**

theBigDay = new Date();
theBigDay.setUTCFullYear(1997);

**See also** Date.getUTCFullYear, Date.setFullYear
**setUTCHours**

Sets the hour for a specified date according to universal time.

**Method of**  
Date

**Implemented in**  
JavaScript 1.3

**ECMA version**  
ECMA-262

**Syntax**  
`setUTCHour(hoursValue[, minutesValue, secondsValue, msValue])`

**Parameters**

- `hoursValue`  
An integer between 0 and 23, representing the hour.

- `minutesValue`  
An integer between 0 and 59, representing the minutes.

- `secondsValue`  
An integer between 0 and 59, representing the seconds. If you specify the `secondsValue` parameter, you must also specify the `minutesValue`.

- `msValue`  
A number between 0 and 999, representing the milliseconds. If you specify the `msValue` parameter, you must also specify the `minutesValue` and `secondsValue`.

**Description**  
If you do not specify the `minutesValue`, `secondsValue`, and `msValue` parameters, the values returned from the `getUTCMilliseconds`, `getUTCSeconds`, and `getUTCMinutes` methods are used.

If a parameter you specify is outside of the expected range, `setUTCHours` attempts to update the date information in the `Date` object accordingly. For example, if you use 100 for `secondsValue`, the minutes will be incremented by 1 (min + 1), and 40 will be used for seconds.

**Examples**

```javascript
theBigDay = new Date();
theBigDay.setUTCHour(8);
```

**See also**  
`Date.getUTCHours`, `Date.setHours`
setUTCMilliseconds

Sets the milliseconds for a specified date according to universal time.

**Method of**  Date

**Implemented in**  JavaScript 1.3

**ECMA version**  ECMA-262

**Syntax**  setUTCMilliseconds(millisecondsValue)

**Parameters**

millisecondsValue  A number between 0 and 999, representing the milliseconds.

**Description**  If a parameter you specify is outside of the expected range, setUTCMilliseconds attempts to update the date information in the Date object accordingly. For example, if you use 1100 for millisecondsValue, the seconds stored in the Date object will be incremented by 1, and 100 will be used for milliseconds.

**Examples**

```javascript
theBigDay = new Date();
theBigDay.setUTCMilliseconds(500);
```

**See also**  Date.getUTCMilliseconds, Date.setMilliseconds

setUTCMilliseconds

Sets the minutes for a specified date according to universal time.

**Method of**  Date

**Implemented in**  JavaScript 1.3

**ECMA version**  ECMA-262

**Syntax**  setUTCMilliseconds(minutesValue[, secondsValue, msValue])

**Parameters**

minutesValue  An integer between 0 and 59, representing the minutes.

secondsValue  An integer between 0 and 59, representing the seconds. If you specify the secondsValue parameter, you must also specify the minutesValue.

msValue  A number between 0 and 999, representing the milliseconds. If you specify the msValue parameter, you must also specify the minutesValue and secondsValue.
**Description** If you do not specify the `secondsValue` and `msValue` parameters, the values returned from `getUTCSeconds` and `getUTCMilliseconds` methods are used.

If a parameter you specify is outside of the expected range, `setUTCMinutes` attempts to update the date information in the `Date` object accordingly. For example, if you use 100 for `secondsValue`, the minutes (`minutesValue`) will be incremented by 1 (`minutesValue + 1`), and 40 will be used for seconds.

**Examples**

```javascript
theBigDay = new Date();
theBigDay.setUTCMinutes(43);
```

**See also** `Date.getUTCMinutes`, `Date.setMinutes`

---

**setUTCMonth**

Sets the month for a specified date according to universal time.

**Method of** `Date`

**Implemented in** JavaScript 1.3

**ECMA version** ECMA-262

**Syntax**

```javascript
setUTC Month(monthValue[, dayValue])
```

**Parameters**

- **monthValue**
  
  An integer between 0 and 11, representing the months January through December.

- **dayValue**
  
  An integer from 1 to 31, representing the day of the month.

**Description** If you do not specify the `dayValue` parameter, the value returned from the `getUTCDate` method is used.

If a parameter you specify is outside of the expected range, `setUTCMonth` attempts to update the date information in the `Date` object accordingly. For example, if you use 15 for `monthValue`, the year will be incremented by 1 (`year + 1`), and 3 will be used for month.

**Examples**

```javascript
theBigDay = new Date();
theBigDay.setUTCMonth(11);
```

**See also** `Date.getUTCMonth`, `Date.setMonth`
setUTCSeconds

Sets the seconds for a specified date according to universal time.

Method of   Date
Implemented in  JavaScript 1.3
ECMA version   ECMA-262

Syntax  setUTCSeconds(secondsValue[, msValue])

Parameters

secondsValue  An integer between 0 and 59.
msValue       A number between 0 and 999, representing the milliseconds.

Description  If you do not specify the msValue parameter, the value returned from the getUTCMilliseconds methods is used.

If a parameter you specify is outside of the expected range, setUTCSeconds attempts to update the date information in the Date object accordingly. For example, if you use 100 for secondsValue, the minutes stored in the Date object will be incremented by 1, and 40 will be used for seconds.

Examples  theBigDay = new Date();
          theBigDay.setUTCSeconds(20);

See also  Date.getUTCMilliseconds, Date.setSeconds

setYear

Sets the year for a specified date according to local time.

Method of   Date
Implemented in  JavaScript 1.0, NES 2.0
      Deprecated in JavaScript 1.3
ECMA version   ECMA-262

Syntax  setYear(yearValue)

Parameters

yearValue  An integer.
**Description**

`setYear` is no longer used and has been replaced by the `setFullYear` method.

If `yearValue` is a number between 0 and 99 (inclusive), then the year for `dateObjectName` is set to `1900 + yearValue`. Otherwise, the year for `dateObjectName` is set to `yearValue`.

To take into account years before and after 2000, you should use `setFullYear` instead of `setYear` so that the year is specified in full.

**Examples**

Note that there are two ways to set years in the 20th century.

**Example 1.** The year is set to 1996.

```javascript
theBigDay.setYear(96)
```

**Example 2.** The year is set to 1996.

```javascript
theBigDay.setYear(1996)
```

**Example 3.** The year is set to 2000.

```javascript
theBigDay.setYear(2000)
```

**See also**

`Date.getYear`, `Date.setFullYear`, `Date.setUTCFullYear`, `toGMTString`
Date.toLocaleString

**Description**

`toGMTString` is no longer used and has been replaced by the `toUTCString` method.

The exact format of the value returned by `toGMTString` varies according to the platform.

You should use `Date.toUTCString` instead of `toGMTString`.

**Examples**

In the following example, `today` is a `Date` object:

```
today.toGMTString()
```

In this example, the `toGMTString` method converts the date to GMT (UTC) using the operating system's time-zone offset and returns a string value that is similar to the following form. The exact format depends on the platform.

```
Mon, 18 Dec 1995 17:28:35 GMT
```

**See also**

`Date.toLocaleString`, `Date.toUTCString`

---

**toLocaleString**

Converts a date to a string, using the current locale's conventions.

*Method of* Date

*Implemented in* JavaScript 1.0, NES 2.0

*ECMA version* ECMA-262

**Syntax**

```
toLocaleString()
```

**Parameters**

None

**Description**

If you pass a date using `toLocaleString`, be aware that different platforms assemble the string in different ways. Methods such as `getHours`, `getMinutes`, and `getSeconds` give more portable results.

The `toLocaleString` method relies on the underlying operating system in formatting dates. It converts the date to a string using the formatting convention of the operating system where the script is running. For example, in the United States, the month appears before the date (04/15/98), whereas in Germany the date appears before the month (15.04.98). If the operating system is not year-2000 compliant and does not use the full year for years before 1900 or over 2000, `toLocaleString` returns a string that is not year-2000 compliant. `toLocaleString` behaves similarly to `toString` when converting a year that the operating system does not properly format.
Examples

In the following example, today is a Date object:

```javascript
today = new Date(95, 11, 18, 17, 28, 35); // months are represented by 0 to 11
console.log(today.toLocaleString());
```

In this example, `toLocaleString` returns a string value that is similar to the following form. The exact format depends on the platform.

12/18/95 17:28:35

See also Date.toGMTString, Date.toUTCString

toSource

Returns a string representing the source code of the object.

Method of Date

Implemented in JavaScript 1.3

ECMA version ECMA-262

Syntax toSource()

Parameters None

Description The toSource method returns the following values:

- For the built-in Date object, toSource returns the following string indicating that the source code is not available:

```javascript
function Date() {
    [native code]
}
```

- For instances of Date, toSource returns a string representing the source code.

This method is usually called internally by JavaScript and not explicitly in code.

See also Object.toSource
**toString**

Returns a string representing the specified Date object.

*Method of*  
Date

*Implemented in*  
JavaScript 1.1, NES 2.0

*ECMA version*  
ECMA-262

**Syntax**

```javascript
toString()
```

**Parameters**  
None.

**Description**  
The Date object overrides the toString method of the Object object; it does not inherit Object.toString. For Date objects, the toString method returns a string representation of the object.

JavaScript calls the toString method automatically when a date is to be represented as a text value or when a date is referred to in a string concatenation.

**Examples**  
The following example assigns the toString value of a Date object to myVar:

```javascript
x = new Date();
myVar=x.toString();  //assigns a value to myVar similar to:
  //Mon Sep 28 14:36:22 GMT-0700 (Pacific Daylight Time) 1998
```

**See also**  
Object.toString

**toUTCString**

Converts a date to a string, using the universal time convention.

*Method of*  
Date

*Implemented in*  
JavaScript 1.3

*ECMA version*  
ECMA-262

**Syntax**

```javascript
toUTCString()
```

**Parameters**  
None

**Description**  
The value returned by toUTCString is a readable string formatted according to UTC convention. The format of the return value may vary according to the platform.
Date.UTC

**Examples**

```javascript
var UTCstring;
Today = new Date();
UTCstring = Today.toUTCString();
```

**See also** Date.toLocaleString, Date.toUTCString

---

**UTC**

Returns the number of milliseconds in a Date object since January 1, 1970, 00:00:00, universal time.

**Method of** Date

**Static**

**Implemented in** JavaScript 1.0, NES 2.0

JavaScript 1.3: added ms parameter

**ECMA version** ECMA-262

**Syntax**

```javascript
Date.UTC(year, month, day[, hrs, min, sec, ms])
```

**Parameters**

- **year**
  A year after 1900.
- **month**
  An integer between 0 and 11 representing the month.
- **date**
  An integer between 1 and 31 representing the day of the month.
- **hrs**
  An integer between 0 and 23 representing the hours.
- **min**
  An integer between 0 and 59 representing the minutes.
- **sec**
  An integer between 0 and 59 representing the seconds.
- **ms**
  An integer between 0 and 999 representing the milliseconds.

**Description**

UTC takes comma-delimited date parameters and returns the number of milliseconds between January 1, 1970, 00:00:00, universal time and the time you specified.

You should specify a full year for the year; for example, 1998. If a year between 0 and 99 is specified, the method converts the year to a year in the 20th century (1900 + year); for example, if you specify 95, the year 1995 is used.
The UTC method differs from the Date constructor in two ways.

- `Date.UTC` uses universal time instead of the local time.
- `Date.UTC` returns a time value as a number instead of creating a `Date` object.

If a parameter you specify is outside of the expected range, the UTC method updates the other parameters to allow for your number. For example, if you use 15 for `month`, the year will be incremented by 1 (year + 1), and 3 will be used for the month.

Because UTC is a static method of `Date`, you always use it as `Date.UTC()`, rather than as a method of a `Date` object you created.

**Examples**

The following statement creates a `Date` object using GMT instead of local time:

```javascript
gmtDate = new Date(Date.UTC(96, 11, 1, 0, 0, 0))
```

**See also** `Date.parse`

---

**valueOf**

Returns the primitive value of a Date object.

- **Method of** `Date`
- **Implemented in** JavaScript 1.1
- **ECMA version** ECMA-262

**Syntax**

`valueOf()`

**Parameters** None

**Description** The `valueOf` method of `Date` returns the primitive value of a `Date` object as a number data type, the number of milliseconds since midnight 01 January, 1970 UTC.

This method is usually called internally by JavaScript and not explicitly in code.

**Examples**

```javascript
x = new Date(56, 6, 17);
myVar=x.valueOf()  //assigns -424713600000 to myVar
```

**See also** `Object.valueOf`
**document**

Contains information about the current document, and provides methods for displaying HTML output to the user.

*Client-side object*

*Implemented in JavaScript 1.0*

- JavaScript 1.1: added `onBlur` and `onFocus` syntax; added `applets`, `domain`, `embeds`, `forms`, `formName`, `images`, and `plugins` properties.
- JavaScript 1.2: added `classes`, `ids`, `layers`, and `tags` properties; added `captureEvents`, `contextual`, `getSelection`, `handleEvent`, `releaseEvents`, and `routeEvent` methods.

**Created by**

The HTML `BODY` tag. The JavaScript runtime engine creates a document object for each HTML page. Each `window` object has a document property whose value is a document object.

To define a document object, use standard HTML syntax for the `BODY` tag with the addition of JavaScript event handlers.

**Event handlers**

The `onBlur`, `onFocus`, `onLoad`, and `onUnload` event handlers are specified in the `BODY` tag but are actually event handlers for the `window` object. The following are event handlers for the `document` object.
- `onClick`
- `onDb1Click`
- `onKeyDown`
- `onKeyPress`
- `onKeyUp`
- `onMouseDown`
- `onMouseUp`

**Description**

An HTML document consists of `HEAD` and `BODY` tags. The `HEAD` tag includes information on the document's title and base (the absolute URL base to be used for relative URL links in the document). The `BODY` tag encloses the body of a document, which is defined by the current URL. The entire body of the document (all other HTML elements for the document) goes within the `BODY` tag.
You can load a new document by setting the `window.location` property.

You can clear the document pane (and remove the text, form elements, and so on so they do not redisplay) with these statements:

```javascript
document.close();
document.open();
document.write();
```

You can omit the `document.open` call if you are writing text or HTML, since `write` does an implicit open of that MIME type if the document stream is closed.

You can refer to the anchors, forms, and links of a document by using the `anchors`, `forms`, and `links` arrays. These arrays contain an entry for each anchor, form, or link in a document and are properties of the `document` object.

Do not use `location` as a property of the `document` object; use the `document.URL` property instead. The `document.location` property, which is a synonym for `document.URL`, is deprecated.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>alinkColor</code></td>
<td>A string that specifies the ALINK attribute.</td>
</tr>
<tr>
<td>anchors</td>
<td>An array containing an entry for each anchor in the document.</td>
</tr>
<tr>
<td>applets</td>
<td>An array containing an entry for each applet in the document.</td>
</tr>
<tr>
<td>bgColor</td>
<td>A string that specifies the BGCOLOR attribute.</td>
</tr>
<tr>
<td>classes</td>
<td>Creates a <code>Style</code> object that can specify the styles of HTML tags with a specific CLASS attribute.</td>
</tr>
<tr>
<td>cookie</td>
<td>Specifies a cookie.</td>
</tr>
<tr>
<td>domain</td>
<td>Specifies the domain name of the server that served a document.</td>
</tr>
<tr>
<td>embeds</td>
<td>An array containing an entry for each plug-in in the document.</td>
</tr>
<tr>
<td>bgColor</td>
<td>A string that specifies the TEXT attribute.</td>
</tr>
<tr>
<td>forms</td>
<td>A separate property for each named form in the document.</td>
</tr>
<tr>
<td>forms</td>
<td>An array a containing an entry for each form in the document.</td>
</tr>
<tr>
<td>height</td>
<td>The height of the document, in pixels.</td>
</tr>
<tr>
<td>Property</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>ids</td>
<td>Creates a Style object that can specify the style of individual HTML tags.</td>
</tr>
<tr>
<td>images</td>
<td>An array containing an entry for each image in the document.</td>
</tr>
<tr>
<td>lastModified</td>
<td>A string that specifies the date the document was last modified.</td>
</tr>
<tr>
<td>layers</td>
<td>Array containing an entry for each layer within the document.</td>
</tr>
<tr>
<td>linkColor</td>
<td>A string that specifies the LINK attribute.</td>
</tr>
<tr>
<td>links</td>
<td>An array containing an entry for each link in the document.</td>
</tr>
<tr>
<td>plugins</td>
<td>An array containing an entry for each plug-in in the document.</td>
</tr>
<tr>
<td>referrer</td>
<td>A string that specifies the URL of the calling document.</td>
</tr>
<tr>
<td>tags</td>
<td>Creates a Style object that can specify the styles of HTML tags.</td>
</tr>
<tr>
<td>title</td>
<td>A string that specifies the contents of the TITLE tag.</td>
</tr>
<tr>
<td>URL</td>
<td>A string that specifies the complete URL of a document.</td>
</tr>
<tr>
<td>vlinkColor</td>
<td>A string that specifies the VLINK attribute.</td>
</tr>
<tr>
<td>width</td>
<td>The width of the document, in pixels.</td>
</tr>
</tbody>
</table>

**Method Summary**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>captureEvents</td>
<td>Sets the document to capture all events of the specified type.</td>
</tr>
<tr>
<td>close</td>
<td>Closes an output stream and forces data to display.</td>
</tr>
<tr>
<td>contextual</td>
<td>Uses contextual selection criteria to specify a Style object that can set the style of individual HTML tags.</td>
</tr>
<tr>
<td>getSelection</td>
<td>Returns a string containing the text of the current selection.</td>
</tr>
<tr>
<td>handleEvent</td>
<td>Invokes the handler for the specified event.</td>
</tr>
<tr>
<td>open</td>
<td>Opens a stream to collect the output of write or writeln methods.</td>
</tr>
<tr>
<td>releaseEvents</td>
<td>Sets the window or document to release captured events of the specified type, sending the event to objects further along the event hierarchy.</td>
</tr>
<tr>
<td>routeEvent</td>
<td>Passes a captured event along the normal event hierarchy.</td>
</tr>
</tbody>
</table>
In addition, this object inherits the watch and unwatch methods from Object.

**Examples**

The following example creates two frames, each with one document. The document in the first frame contains links to anchors in the document of the second frame. Each document defines its colors.

**doc0.html**, which defines the frames, contains the following code:

```html
<HTML>
<HEAD>
<TITLE>Document object example</TITLE>
</HEAD>
<FRAMESET COLS="30%,70%">
<FRAME SRC="doc1.html" NAME="frame1">
<FRAME SRC="doc2.html" NAME="frame2">
</FRAMESET>
</HTML>
```

**doc1.html**, which defines the content for the first frame, contains the following code:

```html
<HTML>
<SCRIPT>
</SCRIPT>
<BODY

BGCOLOR="antiquewhite"

TEXT="darkviolet"
LINK="fuchsia"
ALINK="forestgreen"
VLINK="navy">

Some links</B>

</P><LI><A HREF="doc2.html#numbers" TARGET="frame2">Numbers</A>
<LI><A HREF="doc2.html#colors" TARGET="frame2">Colors</A>
<LI><A HREF="doc2.html#musicTypes" TARGET="frame2">Music types</A>
<LI><A HREF="doc2.html#countries" TARGET="frame2">Countries</A>
</BODY>
</HTML>
```
doc2.html, which defines the content for the second frame, contains the following code:

```html
<HTML>
<SCRIPT>
</SCRIPT>
<BODY
  BGCOLOR="oldlace" onLoad="alert('Hello, World.')"
  TEXT="navy">
  <P><A NAME="numbers"><B>Some numbers</B></A>
  <UL><LI>one
       <LI>two
       <LI>three
       <LI>four</LI></UL>
  <P><A NAME="colors"><B>Some colors</B></A>
  <UL><LI>red
       <LI>orange
       <LI>yellow
       <LI>green</UL>
  <P><A NAME="musicTypes"><B>Some music types</B></A>
  <UL><LI>R&B
       <LI>Jazz
       <LI>Soul
       <LI>Reggae</UL>
  <P><A NAME="countries"><B>Some countries</B></A>
  <UL><LI>Afghanistan
       <LI>Brazil
       <LI>Canada
       <LI>Finland</UL>
</BODY>
</HTML>
```

See also Frame, window

### alinkColor

A string specifying the color of an active link (after mouse-button down, but before mouse-button up).

**Property of** document

**Implemented in** JavaScript 1.0

**Description** The `alinkColor` property is expressed as a hexadecimal RGB triplet or as a string literal (see the *Client-Side JavaScript Guide*). This property is the JavaScript reflection of the ALINK attribute of the BODY tag.
If you express the color as a hexadecimal RGB triplet, you must use the format rrggbb. For example, the hexadecimal RGB values for salmon are red=FA, green=80, and blue=72, so the RGB triplet for salmon is "FA8072".

**Examples**
The following example sets the color of active links using a string literal:
```
document.alinkColor="aqua"
```
The following example sets the color of active links to aqua using a hexadecimal triplet:
```
document.alinkColor="00FFFF"
```

**See also**
document.bgColor, document.fgColor, document.linkColor, document.vlinkColor

---

**anchors**

An array of objects corresponding to named anchors in source order.

*Property of* document

*Read-only*

*Implemented in* JavaScript 1.0

**Description**
You can refer to the Anchor objects in your code by using the anchors array. This array contains an entry for each &lt;a&gt; tag containing a NAME attribute in a document; these entries are in source order. For example, if a document contains three named anchors whose NAME attributes are anchor1, anchor2, and anchor3, you can refer to the anchors either as:
```
document.anchors["anchor1"]
document.anchors["anchor2"]
document.anchors["anchor3"]
```
or as:
```
document.anchors[0]
document.anchors[1]
document.anchors[2]
```

To obtain the number of anchors in a document, use the `length` property:
```
document.anchors.length
```
If a document names anchors in a systematic way using natural numbers, you can use the anchors array and its length property to validate an anchor name before using it in operations such as setting `location.hash`. 

---

**document.anchors**
**applets**

An array of objects corresponding to the applets in a document in source order.

*Property of* document

*Read-only*

*Implemented in* JavaScript 1.1

**Description**

You can refer to the applets in your code by using the `applets` array. This array contains an entry for each Applet object (APPLET tag) in a document; these entries are in source order. For example, if a document contains three applets whose NAME attributes are `app1`, `app2`, and `app3`, you can refer to the anchors either as:

```javascript
document.applets["app1"]
document.applets["app2"]
document.applets["app3"]
```

or as:

```javascript
document.applets[0]
document.applets[1]
document.applets[2]
```

To obtain the number of applets in a document, use the `length` property:

```javascript
document.applets.length
```

**bgColor**

A string specifying the color of the document background.

*Property of* document

*Implemented in* JavaScript 1.0

**Description**

The `bgColor` property is expressed as a hexadecimal RGB triplet or as a string literal (see the *Client-Side JavaScript Guide*). This property is the JavaScript reflection of the BGCOLOR attribute of the BODY tag. The default value of this property is set by the user with the preferences dialog box.

If you express the color as a hexadecimal RGB triplet, you must use the format `rrggbb`. For example, the hexadecimal RGB values for salmon are `red=FA`, `green=80`, and `blue=72`, so the RGB triplet for salmon is "FA8072".
Examples  The following example sets the color of the document background to aqua using a string literal:

```javascript
document.bgColor="aqua"
```

The following example sets the color of the document background to aqua using a hexadecimal triplet:

```javascript
document.bgColor="00FFFF"
```

See also  `document.alinkColor`, `document.fgColor`, `document.linkColor`, `document.vlinkColor`

captureEvents  

Sets the document to capture all events of the specified type.

**Method of**  `document`

**Implemented in**  JavaScript 1.2

**Syntax**  `captureEvents(eventType)`

**Parameters**

- `eventType`  The type of event to be captured. The available event types are listed with the `event` object.

**Description**  When a window with frames wants to capture events in pages loaded from different locations (servers), you need to use `window.captureEvents` in a signed script and precede it with `window.enableExternalCapture`. For more information and an example, see `window.enableExternalCapture`.

captureEvents works in tandem with `releaseEvents`, `routeEvent`, and `handleEvent`. For more information on events, see the *Client-Side JavaScript Guide*. 
classes

Creates a Style object that can specify the styles of HTML tags with a specific CLASS attribute.

Property of document

Implemented in JavaScript 1.2

Syntax  
document.classes.className.tagName

Parameters

ClassName  The case-insensitive value of the CLASS attribute of the specified HTML tag in tagName.

tagName  The case-insensitive name of any HTML tag, such as h1 or BLOCKQUOTE. If the value of tagName is all, tagName refers to all HTML tags.

Description  
Use the classes property to specify the style of HTML tags that have a specific CLASS attribute. For example, you can specify that the color of the GreenBody class of both the P or the BLOCKQUOTE tags is green. See the Style object for a description of the style properties you can specify for classes.

If you use the classes property within the STYLE tag (instead of within the SCRIPT tag), you can optionally omit document from the classes syntax. The classes property always applies to the current document object.

Examples  
This example sets the color of all tags using the GreenBody CLASS attribute to green:

```html
<style type="text/javascript">
  classes.GreenBody.all.color="green"
</style>
```

Notice that you can omit the document object within the STYLE tag. Within the SCRIPT tag, you must specify the document object as follows:

```html
<script language="JavaScript1.2">
  document.classes.GreenBody.all.color="green"
</script>
```

In this example, text appearing within either of the following tags appears green:

```html
<p class="GreenBody">
  <blockquote class="GreenBody">
```

property of

implemented in
document.close

**See also**  
document.contextual, document.ids, document.tags, Style

---

**close**

Closes an output stream and forces data sent to layout to display.

*Method of:*  
document

*Implemented in:*  
JavaScript 1.0

**Syntax**

close()

**Parameters**

None.

**Description**

The `close` method closes a stream opened with the `document.open` method. If the stream was opened to layout, the `close` method forces the content of the stream to display. Font style tags, such as `BIG` and `CENTER`, automatically flush a layout stream.

The `close` method also stops the “meteor shower” in the Netscape icon and displays Document: Done in the status bar.

**Examples**

The following function calls `document.close` to close a stream that was opened with `document.open`. The `document.close` method forces the content of the stream to display in the window.

```javascript
function windowWriter1() {
  var myString = "Hello, world!"
  msgWindow.document.open()
  msgWindow.document.write(myString + "<P>"
  msgWindow.document.close()
}
```

**See also**  
document.open, document.write, document.writeln
contextual

Uses contextual selection criteria to specify a Style object that can set the style of individual HTML tags.

Method of document

Implemented in JavaScript 1.2

Syntax
contextual(context1, ...[contextN], affectedStyle)

Parameters
- context1, ...
- [contextN]
- affectedStyle

The Style objects, described by document.classes or document.tags, that establish the context for the affected Style object.

The Style object whose style properties you want to change.

Description
The contextual method provides a fine level of control for specifying styles. It lets you selectively apply a style to an HTML element that appears in a very specific context. For example, you can specify that the color of text within any EM tag that appears in an H1 is blue.

You can further narrow the selection by specifying multiple contexts. For example, you can set the color of any LI tags with two or more UL parents by specifying UL for the first two contexts.

Examples

Example 1. This example sets the color of text within any EM tag that appears in an H1 to blue.

```
<STYLE TYPE="text/javascript">
  contextual(document.tags.H1, document.tags.EM).color="blue";
</STYLE>
```

Notice that you can omit the document object within the STYLE tag. Within the SCRIPT tag, you must specify the document object as follows:

```
<SCRIPT LANGUAGE="JavaScript1.2">
  document.contextual(document.tags.H1, document.tags.EM).color="blue";
</SCRIPT>
```

In this example, text appearing within the EM tag is blue:

```
<H1 CLASS="Main">The following text is <EM>blue</EM></H1>
```
Example 2. This example sets the color of an LI element with two or more UL parents to red.

```html
<STYLE TYPE="text/javascript">
    contextual(tags.UL, tags.UL, tags.LI).color="red";
</STYLE>
```

See also  document.classes, document.tags, Style

**cookie**

String value representing all of the cookies associated with this document.

- **Property of** document
- **Implemented in** JavaScript 1.0

**Security**  JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description** A cookie is a small piece of information stored by the web browser in the cookies.txt file. Use string methods such as `substring`, `charAt`, `indexOf`, and `lastIndexOf` to determine the value stored in the cookie. See Appendix C, “Netscape Cookies” for a complete specification of the cookie syntax.

You can set the `cookie` property at any time.

The "expires=" component in the cookie file sets an expiration date for the cookie, so it persists beyond the current browser session. This date string is formatted as follows:

```
Wdy, DD-Mon-YY HH:MM:SS GMT
```

This format represents the following values:

- **Wdy** is a string representing the full name of the day of the week.
- **DD** is an integer representing the day of the month.
- **Mon** is a string representing the three-character abbreviation of the month.
- **YY** is an integer representing the last two digits of the year.
- **HH**, **MM**, and **SS** are 2-digit representations of hours, minutes, and seconds, respectively.
For example, a valid cookie expiration date is

\texttt{expires=Wednesday, 09-Nov-99 23:12:40 GMT}

The cookie date format is the same as the date returned by \texttt{toGMTString}, with the following exceptions:

- Dashes are added between the day, month, and year.
- The year is a 2-digit value for cookies.

\textbf{Examples} The following function uses the \texttt{cookie} property to record a reminder for users of an application. The cookie expiration date is set to one day after the date of the reminder.

\begin{verbatim}
function RecordReminder(time, expression) {
    // Record a cookie of the form "@<T>=<E>" to map
    // from <T> in milliseconds since the epoch,
    // returned by Date.getTime(), onto an encoded expression,
    // <E> (encoded to contain no white space, semicolon,
    // or comma characters)
    document.cookie = "@" + time + "=" + expression + ";"
    // set the cookie expiration time to one day
    // beyond the reminder time
    document.cookie += "expires=" + cookieDate(time + 24*60*60*1000)
    // cookieDate is a function that formats the date
    // according to the cookie spec
}
\end{verbatim}

\textbf{See also} Hidden

\textbf{domain}

Specifies the domain name of the server that served a document.

\begin{itemize}
    \item \textit{Property of} document
    \item \textit{Implemented in} JavaScript 1.1
\end{itemize}

\textbf{Security} JavaScript 1.1. This property is tainted by default. For information on data tainting, see the \textit{Client-Side JavaScript Guide}. 

**Description**  
**JavaScript 1.1.** The `domain` property lets scripts on multiple servers share properties when data tainting is not enabled. With tainting disabled, a script running in one window can read properties of another window only if both windows come from the same Web server. But large Web sites with multiple servers might need to share properties among servers. For example, a script on the host `www.royalairways.com` might need to share properties with a script on the host `search.royalairways.com`.

If scripts on two different servers change their `domain` property so that both scripts have the same domain name, both scripts can share properties. For example, a script loaded from `search.royalairways.com` could set its `domain` property to "royalairways.com". A script from `www.royalairways.com` running in another window could also set its `domain` property to "royalairways.com". Then, since both scripts have the domain "royalairways.com", these two scripts can share properties, even though they did not originate from the same server.

You can change `domain` only in a restricted way. Initially, `domain` contains the hostname of the Web server from which the document was loaded. You can set `domain` only to a domain suffix of itself. For example, a script from `search.royalairways.com` can't set its `domain` property to "search.royalairways". And a script from `IWantYourMoney.com` cannot set its `domain` to "royalairways.com".

Once you change the `domain` property, you cannot change it back to its original value. For example, if you change `domain` from "search.royalairways.com" to "royalairways.com", you cannot reset it to "search.royalairways.com".

**Examples**  
The following statement changes the `domain` property to "braveNewWorld.com". This statement is valid only if "braveNewWorld.com" is a suffix of the current domain, such as "www.braveNewWorld.com".

```
document.domain="braveNewWorld.com"
```
**embeds**

An array containing an entry for each object embedded in the document.

*Property of*  
*document*

*Read-only*

*Implemented in*  
*JavaScript 1.1*

**Description**

You can refer to embedded objects (created with the `EMBED` tag) in your code by using the `embeds` array. This array contains an entry for each `EMBED` tag in a document in source order. For example, if a document contains three embedded objects whose `NAME` attributes are `e1`, `e2`, and `e3`, you can refer to the objects either as:

```javascript
document.embeds["e1"]
document.embeds["e2"]
document.embeds["e3"]
```

or as:

```javascript
document.embeds[0]
document.embeds[1]
document.embeds[2]
```

To obtain the number of embedded objects in a document, use the `length` property: `document.embeds.length`.

Elements in the `embeds` array may have public callable functions, if they refer to a plug-in that uses LiveConnect. See the LiveConnect information in the *Client-Side JavaScript Guide*.

Use the elements in the `embeds` array to interact with the plug-in that is displaying the embedded object. If a plug-in is not Java-enabled, you cannot do anything with its element in the `embeds` array. The fields and methods of the elements in the `embeds` array vary from plug-in to plug-in; see the documentation supplied by the plug-in manufacturer.

When you use the `EMBED` tag to generate output from a plug-in application, you are not creating a `Plugin` object.

**Examples**

The following code includes an audio plug-in in a document.

```html
<EMBED SRC="train.au" HEIGHT=50 WIDTH=250>
```

**See also**

Plugin
**fgColor**

A string specifying the color of the document (foreground) text.

*Property of* document

*Implemented in* JavaScript 1.0

**Description**

The `fgColor` property is expressed as a hexadecimal RGB triplet or as a string literal (see the *Client-Side JavaScript Guide*). This property is the JavaScript reflection of the `TEXT` attribute of the `BODY` tag. The default value of this property is set by the user with the preferences dialog box. You cannot set this property after the HTML source has been through layout.

If you express the color as a hexadecimal RGB triplet, you must use the format `rrggbb`. For example, the hexadecimal RGB values for salmon are red=`FA`, green=`80`, and blue=`72`, so the RGB triplet for salmon is "FA8072".

You can override the value set in the `fgColor` property in either of the following ways:

- Setting the `COLOR` attribute of the `FONT` tag.
- Using the `fontcolor` method.

**formName**

*Property of* document

*Implemented in* JavaScript 1.1

The document object contains a separate property for each form in the document. The name of this property is the value of its `NAME` attribute. See `Hidden` for information on Form objects. You cannot add new forms to the document by creating new properties, but you can modify the form by modifying this object.
forms

An array containing an entry for each form in the document.

Property of: document
Read-only
Implemented in: JavaScript 1.1

Security: JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description: You can refer to the forms in your code by using the forms array (you can also use the form name). This array contains an entry for each Form object (FORM tag) in a document; these entries are in source order. For example, if a document contains three forms whose NAME attributes are form1, form2, and form3, you can refer to the objects in the forms array either as:

document.forms["form1"]
document.forms["form2"]
document.forms["form3"]

or as:

document.forms[0]
document.forms[1]
document.forms[2]

Additionally, the document object has a separate property for each named form, so you could refer to these forms also as:

document.form1
document.form2
document.form3

For example, you would refer to a Text object named quantity in the second form as document.forms[1].quantity. You would refer to the value property of this Text object as document.forms[1].quantity.value.

The value of each element in the forms array is <object nameAttribute>, where nameAttribute is the NAME attribute of the form.

To obtain the number of forms in a document, use the length property:

document.forms.length.
**getSelection**

Returns a string containing the text of the current selection.

Method of  document

Implemented in  JavaScript 1.2

Syntax  `getSelection()`

Description  This method works only on the current document.

Security  You cannot determine selected areas in another window.

Examples  If you have a form with the following code and you click on the button, JavaScript displays an alert box containing the currently selected text from the window containing the button:

```html
<INPUT TYPE="BUTTON" NAME="getstring" VALUE="Show highlighted text (if any)"
    onClick="alert('You have selected:
'+document.getSelection());">
```

**handleEvent**

Invokes the handler for the specified event.

Method of  document

Implemented in  JavaScript 1.2

Syntax  `handleEvent(event)`

Parameters  

- `event`  The name of an event for which the specified object has an event handler.

Description  For information on handling events, see the *Client-Side JavaScript Guide*. 
**height**

The height of a document, in pixels.

Property of  
document

Implemented in  
JavaScript 1.2

See also  
document.width

**ids**

Creates a Style object that can specify the style of individual HTML tags.

Property of  
document

Implemented in  
JavaScript 1.2

Syntax  
document.ids.idValue

Parameters  
idValue  
The case-insensitive value of the ID attribute of any HTML tag.

Description  
Use the ids property to specify the style of any HTML tag that has a specific ID attribute. For example, you can specify that the color of the NewTopic ID is green. See the Style object for a description of the style properties you can specify for ids.

The ids property is useful when you want to provide an exception to a class defined in the document.classes property.

If you use the ids property within the STYLE tag (instead of within the SCRIPT tag), you can optionally omit document from the ids syntax. The ids property always applies to the current document object.

Examples  
This example sets the Main CLASS attribute to 18-point bold green, but provides an exception for tags whose ID is NewTopic:

```html
<STYLE TYPE="text/javascript">
  classes.Main.all.color="green"
  classes.Main.all.fontSize="18pt"
  classes.Main.all.fontWeight="bold"
  ids.NewTopic.all.fontWeight="bold"
  ids.NewTopic.color="blue"
</STYLE>
```
Notice that you can omit the document object within the STYLE tag. Within the SCRIPT tag, you must specify the document object as follows:

```html
<SCRIPT LANGUAGE="JavaScript1.2">
    document.classes.Main.all.color="green"
    document.classes.Main.all.fontSize="18pt"
    document.classes.Main.all.fontWeight="bold"
    document.ids.NewTopic.color="blue"
</SCRIPT>
```

In this example, text appearing within the following tag is 18-point bold green:

```html
<H1 CLASS="Main">Green head</H1>
```

However, text appearing within the following tag is 18-point bold blue:

```html
<H1 CLASS="Main" ID="NewTopic">Blue head</H1>
```

**See also** document.classes, document.contextual, document.tags, Style

### images

An array containing an entry for each image in the document.

*Property of* document

*Read-only*

*Implemented in* JavaScript 1.1

You can refer to the images in a document by using the `images` array. This array contains an entry for each Image object (IMG tag) in a document; the entries are in source order. Images created with the Image constructor are not included in the `images` array. For example, if a document contains three images whose NAME attributes are `im1`, `im2`, and `im3`, you can refer to the objects in the `images` array either as:

```javascript
document.images["im1"]
document.images["im2"]
document.images["im3"]
```

or as:

```javascript
document.images[0]
document.images[1]
document.images[2]
```

To obtain the number of images in a document, use the `length` property:

```javascript
document.images.length.
```
**lastModified**

A string representing the date that a document was last modified.

*Property of* `document`

*Read-only*

*Implemented in* JavaScript 1.0

**Security**  
JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**  
The `lastModified` property is derived from the HTTP header data sent by the web server. Servers generally obtain this date by examining the file's modification date.

The last modified date is not a required portion of the header, and some servers do not supply it. If the server does not return the last modified information, JavaScript receives a 0, which it displays as January 1, 1970 GMT. The following code checks the date returned by `lastModified` and prints out a value that corresponds to unknown.

```javascript
lastmod = document.lastModified // get string of last modified date
lastmoddate = Date.parse(lastmod) // convert modified string to date
if(lastmoddate == 0) {// unknown date (or January 1, 1970 GMT)
    document.writeln("Lastmodified: Unknown")
} else {
    document.writeln("LastModified: " + lastmod)
}
```

**Examples**  
In the following example, the `lastModified` property is used in a `SCRIPT` tag at the end of an HTML file to display the modification date of the page:

```html
document.write("This page updated on " + document.lastModified)
```
layers

The layers property is an array containing an entry for each layer within the document.

**Property of** document

**Implemented in** JavaScript 1.2

**Description** You can refer to the layers in your code by using the `layers` array. This array contains an entry for each `Layer` object (`LAYER` or `ILAYER` tag) in a document; these entries are in source order. For example, if a document contains three layers whose `NAME` attributes are `layer1`, `layer2`, and `layer3`, you can refer to the objects in the `layers` array either as:

```javascript
document.layers["layer1"]
document.layers["layer2"]
document.layers["layer3"]
```

or as:

```javascript
document.layers[0]
document.layers[1]
document.layers[2]
```

When accessed by integer index, array elements appear in z-order from back to front, where 0 is the bottommost layer and higher layers are indexed by consecutive integers. The index of a layer is not the same as its `zIndex` property, as the latter does not necessarily enumerate layers with consecutive integers. Adjacent layers can have the same `zIndex` property values.

These are valid ways of accessing layer objects:

```javascript
document.layerName
document.layers[index]
document.layers["layerName"]
```

// example of using layers property to access nested layers:
```javascript
document.layers["parentLayer"].layers["childLayer"]
```

Elements of a layers array are JavaScript objects that cannot be set by assignment, though their properties can be set. For example, the statement

```javascript
document.layers[0]="music"
```

is invalid (and ignored) because it attempts to alter the `layers` array. However, the properties of the objects in the array readable and some are writable. For example, the statement

```javascript
document.layers["suspect1"].left = 100;
```
is valid. This sets the layer's horizontal position to 100. The following example
sets the background color to blue for the layer bluehouse which is nested in
the layer houses.

document.layers["houses"].layers["bluehouse"].bgColor="blue";

To obtain the number of layers in a document, use the length property:

document.layers.length.

**linkColor**

A string specifying the color of the document hyperlinks.

*Property of*  
document

*Implemented in*  
JavaScript 1.0

**Description**  
The `linkColor` property is expressed as a hexadecimal RGB triplet or as a
string literal (see the *Client-Side JavaScript Guide*). This property is the
JavaScript reflection of the LINK attribute of the BODY tag. The default value of
this property is set by the user with the preferences dialog box. You cannot set
this property after the HTML source has been through layout.

If you express the color as a hexadecimal RGB triplet, you must use the format
`rrggbb`. For example, the hexadecimal RGB values for salmon are `red=FA`,
`green=80`, and `blue=72`, so the RGB triplet for salmon is "FA8072".

**Examples**  
The following example sets the color of document links to aqua using a string
literal:

document.linkColor="aqua"

The following example sets the color of document links to aqua using a
hexadecimal triplet:

document.linkColor="00FFFF"

**See also**  
document.alinkColor, document.bgColor, document.fgColor,
document.vlinkColor
**links**

An array of objects corresponding to `Area` and `Link` objects in source order.

*Property of*  
document

*Read-only*

*Implemented in*  
JavaScript 1.0

**Security**  
JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**  
You can refer to the `Area` and `Link` objects in your code by using the `links` array. This array contains an entry for each `Area (<AREA HREF="...">)` and `Link (<A HREF="...">)` object in a document in source order. It also contains links created with the `link` method. For example, if a document contains three links, you can refer to them as:

- `document.links[0]`
- `document.links[1]`
- `document.links[2]`

To obtain the number of links in a document, use the `length` property:

`document.links.length`.

**open**

Opens a stream to collect the output of `write` or `writeln` methods.

*Method of*  
document

*Implemented in*  
JavaScript 1.0

JavaScript 1.1: added "replace" parameter; `document.open()` or `document.open("text/html")` clears the current document if it has finished loading.

**Syntax**  
`open([mimeType, [replace]])`

**Parameters**

- `mimeType`  
  A string specifying the type of document to which you are writing.
  If you do not specify `mimeType`, `text/html` is the default.

- `replace`  
  The string "replace". If you supply this parameter, `mimeType` must be "text/html". Causes the new document to reuse the history entry that the previous document used.
**Description**  
Sample values for `mimeType` are:

- `text/html` specifies a document containing ASCII text with HTML formatting.

- `text/plain` specifies a document containing plain ASCII text with end-of-line characters to delimit displayed lines.

- `image/gif` specifies a document with encoded bytes constituting a GIF header and pixel data.

- `image/jpeg` specifies a document with encoded bytes constituting a JPEG header and pixel data.

- `image/x-bitmap` specifies a document with encoded bytes constituting a bitmap header and pixel data.

- `plugIn` loads the specified plug-in and uses it as the destination for `write` and `writeln` methods. For example, "x-world/vrml" loads the VR Scout VRML plug-in from Chaco Communications, and "application/x-director" loads the Macromedia Shockwave plug-in. Plug-in MIME types are only valid if the user has installed the required plug-in software.

The `open` method opens a stream to collect the output of `write` or `writeln` methods. If the `mimeType` is `text` or `image`, the stream is opened to layout; otherwise, the stream is opened to a plug-in. If a document exists in the target window, the `open` method clears it.

End the stream by using the `document.close` method. The `close` method causes text or images that were sent to layout to display. After using `document.close`, call `document.open` again when you want to begin another output stream.

In JavaScript 1.1 and later, `document.open` or `document.open("text/html")` clears the current document if it has finished loading. This is because this type of `open` call writes a default `<BASE HREF=>` tag so you can generate relative URLs based on the generating script's document base.

The "replace" keyword causes the new document to reuse the history entry that the previous document used. When you specify "replace" while opening a document, the target window's history length is not incremented even after you write and close.
"replace" is typically used on a window that has a blank document or an "about:blank" URL. After "replace" is specified, the write method typically generates HTML for the window, replacing the history entry for the blank URL. Take care when using generated HTML on a window with a blank URL. If you do not specify "replace", the generated HTML has its own history entry, and the user can press the Back button and back up until the frame is empty.

After `document.open("text/html","replace")` executes, `history.current` for the target window is the URL of document that executed `document.open`.

**Examples**

**Example 1.** The following function calls `document.open` to open a stream before issuing a `write` method:

```javascript
function windowWriter1() {
  var myString = "Hello, world!"
  msgWindow.document.open()
  msgWindow.document.write("<P>" + myString)
  msgWindow.document.close()
}
```

**Example 2.** The following function calls `document.open` with the "replace" keyword to open a stream before issuing `write` methods. The HTML code in the `write` methods is written to `msgWindow`, replacing the current history entry. The history length of `msgWindow` is not incremented.

```javascript
function windowWriter2() {
  var myString = "Hello, world!"
  msgWindow.document.open("text/html","replace")
  msgWindow.document.write("<P>" + myString)
  msgWindow.document.write("<P>history.length is " +
                          msgWindow.history.length)
  msgWindow.document.close()
}
```

The following code creates the `msgWindow` window and calls the function:

```javascript
msgWindow=window.open('','','
  'toolbar=yes,scrollbars=yes,width=400,height=300')
windowWriter2()
```
**Example 3.** In the following example, the `probePlugIn` function determines whether a user has the Shockwave plug-in installed:

```javascript
function probePlugIn(mimeType) {
    var havePlugIn = false
    var tiny = window.open("", "teensy", "width=1,height=1")
    if (tiny != null) {
        if (tiny.document.open(mimeType) != null)
            havePlugIn = true
        tiny.close()
    }
    return havePlugIn
}

var haveShockwavePlugIn = probePlugIn("application/x-director")
```

**See also**  
document.close, document.write, document.writeln, Location.reload, Location.replace

**plugins**

An array of objects corresponding to `Plugin` objects in source order.

*Property of*  
document

*Read-only*

*Implemented in*  
JavaScript 1.1

You can refer to the `Plugin` objects in your code by using the `plugins` array. This array contains an entry for each `Plugin` object in a document in source order. For example, if a document contains three plugins, you can refer to them as:

```javascript
document.plugins[0]
document.plugins[1]
document.plugins[2]
```
referrer

Specifies the URL of the calling document when a user clicks a link.

Property of document
Read-only
Implemented in JavaScript 1.0

Security JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description When a user navigates to a destination document by clicking a Link object on a source document, the referrer property contains the URL of the source document.

referrer is empty if the user typed a URL in the Location box, or used some other means to get to the current URL. referrer is also empty if the server does not provide environment variable information.

Examples In the following example, the getReferrer function is called from the destination document. It returns the URL of the source document.

```javascript
function getReferrer() {
    return document.referrer
}
```

releaseEvents

Sets the document to release captured events of the specified type, sending the event to objects further along the event hierarchy.

Method of document
Implemented in JavaScript 1.2

Note If the original target of the event is a window, the window receives the event even if it is set to release that type of event.

Syntax releaseEvents(eventType)

Parameters

eventType Type of event to be captured.
routeEvent

Passes a captured event along the normal event hierarchy.

**Syntax**

```javascript
routeEvent(event)
```

**Parameters**

- **event** Name of the event to be routed.

**Description**

If a sub-object (document or layer) is also capturing the event, the event is sent to that object. Otherwise, it is sent to its original target.

routeEvent works in tandem with captureEvents, releaseEvents, and handleEvent. For more information on events, see the *Client-Side JavaScript Guide*.

tags

Creates a `Style` object that can specify the styles of HTML tags.

**Syntax**

```javascript
document.tags.tagName
```

**Parameters**

- **tagName** The case-insensitive name of any HTML tag, such as `h1` or `BLOCKQUOTE`.

**Description**

Use the `tags` property to specify the style of HTML tags. For example, you can specify that the color of any `h1` tag is blue, and that the alignment of any `h1` or `h2` tag is centered. See the `Style` object for a description of the properties you can specify for HTML tags.
Because all HTML elements inherit from the `BODY` tag, you can specify a default document style by setting the style properties of `BODY`.

If you use the `tags` property within the `STYLE` tag (instead of within the `SCRIPT` tag), you can optionally omit `document` from the `tags` syntax. The `tags` property always applies to the current document object.

**Examples**

**Example 1.** This example sets the color of all `H1` tags to blue:

```html
<STYLE TYPE="text/javascript">
    tags.H1.color="blue"
</STYLE>
```

Notice that you can omit the `document` object within the `STYLE` tag. Within the `SCRIPT` tag, you must specify the `document` object as follows:

```html
<SCRIPT LANGUAGE="JavaScript1.2">
    document.tags.H1.color="blue"
</SCRIPT>
```

**Example 2.** This example sets a universal left margin for a document:

```html
document.tags.Body.marginLeft="20pt"
```

Because all HTML tags inherit from `BODY`, this example sets the left margin for the entire document to 20 points.

**See also** `document.classes`, `document.contextual`, `document.ids`, `Style` title

---

**title**

A string representing the title of a document.

- **Property of** `document`
- **Read-only**
- **Implemented in** JavaScript 1.0

**Security**

JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**

The `title` property is a reflection of the value specified between the `TITLE` start and end tags. If a document does not have a title, the `title` property is null.
Examples
In the following example, the value of the title property is assigned to a variable called docTitle:

```javascript
var newWindow = window.open("http://home.netscape.com")
var docTitle = newWindow.document.title
```

**URL**

A string specifying the complete URL of the document.

- **Property of** document
- **Read-only**
- **Implemented in** JavaScript 1.0

**Security** JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description** URL is a string-valued property containing the full URL of the document. It usually matches what `window.location.href` is set to when you load the document, but redirection may change `location.href`.

**Examples** The following example displays the URL of the current document:

```javascript
document.write("The current URL is " + document.URL)
```

**See also** Location.href

**vlinkColor**

A string specifying the color of visited links.

- **Property of** document
- **Implemented in** JavaScript 1.0

**Description** The vlinkColor property is expressed as a hexadecimal RGB triplet or as a string literal (see the *Client-Side JavaScript Guide*). This property is the JavaScript reflection of the VLINK attribute of the BODY tag. The default value of this property is set by the user with the preferences dialog box. You cannot set this property after the HTML source has been through layout.

If you express the color as a hexadecimal RGB triplet, you must use the format `rrggbh`. For example, the hexadecimal RGB values for salmon are `red=FA`, `green=80`, and `blue=72`, so the RGB triplet for salmon is "FA8072".
Examples

The following example sets the color of visited links to aqua using a string literal:

```javascript
document.vlinkColor="aqua"
```

The following example sets the color of active links to aqua using a hexadecimal triplet:

```javascript
document.vlinkColor="00FFFF"
```

See also

document.alinkColor, document.bgColor, document fgColor, document.linkColor

---

**width**

The width of a document, in pixels.

Property of document

Implemented in JavaScript 1.2

See also document.height

---

**write**

Writes one or more HTML expressions to a document in the specified window.

Method of document

Implemented in JavaScript 1.0

Syntax

```javascript
document.write(expr1[, ..., exprN])
```

Parameters

`expr1, ... exprN` Any JavaScript expressions.

Description

The `write` method displays any number of expressions in the document window. You can specify any JavaScript expression with the `write` method, including numeric, string, or logical expressions.

The `write` method is the same as the `writeln` method, except the `write` method does not append a newline character to the end of the output.
Use the `write` method within any `SCRIPT` tag or within an event handler. Event handlers execute after the original document closes, so the `write` method implicitly opens a new document of `mimeType` `text/html` if you do not explicitly issue a `document.open` method in the event handler.

You can use the `write` method to generate HTML and JavaScript code. However, the HTML parser reads the generated code as it is being written, so you might have to escape some characters. For example, the following `write` method generates a comment and writes it to `window2`:

```javascript
window2=window.open('', 'window2')
beginComment=""""--""
endComment=""""--""
window2.document.write(beginComment)
window2.document.write(" This some text inside a comment. ")
window2.document.write(endComment)
```

**Printing, saving, and viewing generated HTML.** In Navigator 3.0 and later, users can print and save generated HTML using the commands on the File menu.

If you choose Page Source from the Navigator View menu or View Frame Source from the right-click menu, the web browser displays the content of the HTML file with the generated HTML. (This is what would be displayed using a wysiwyg: URL.)

If you instead want to view the HTML source showing the scripts which generate HTML (with the `document.write` and `document.writeln` methods), do not use the Page Source or View Frame Source menu items. In this situation, use the `view-source:` protocol.

For example, assume the file `file:///c|/test.html` contains this text:

```html
<HTML>
<BODY>
Hello,
<SCRIPT>document.write(" there.")</SCRIPT>
</BODY>
</HTML>
```

If you load this URL into the web browser, it displays the following:

```
Hello, there.
```
If you choose View Document Source, the browser displays:

```html
<HTML>
<BODY>
Hello,
there.
</BODY>
</HTML>
```

If you load `view-source:file://c|/test.html`, the browser displays:

```html
<HTML>
<BODY>
Hello,
<SCRIPT>document.write(" there.")</SCRIPT>
</BODY>
</HTML>
```

For information on specifying the `view-source:` protocol in the `location` object, see the `Location` object.

**Examples**

In the following example, the `write` method takes several arguments, including strings, a numeric, and a variable:

```javascript
var mystery = "world"
// Displays Hello world testing 123
msgWindow.document.write("Hello ", mystery, " testing ", 123)
```

In the following example, the `write` method takes two arguments. The first argument is an assignment expression, and the second argument is a string literal.

```javascript
//Displays Hello world...
msgWindow.document.write(mystr = "Hello ", "world...")
```

In the following example, the `write` method takes a single argument that is a conditional expression. If the value of the variable `age` is less than 18, the method displays “Minor.” If the value of `age` is greater than or equal to 18, the method displays “Adult.”

```javascript
msgWindow.document.write(status = (age >= 18) ? "Adult" : "Minor")
```

**See also**

`document.close`, `document.open`, `document.writeln`
**writeln**

Writes one or more HTML expressions to a document in the specified window and follows them with a newline character.

*Method of* document

*Implemented in* JavaScript 1.0

**Syntax**

```javascript
writeln(expr1[, ... exprN])
```

**Parameters**

`expr1[, ... exprN]` Any JavaScript expressions.

**Description**

The `writeln` method displays any number of expressions in a document window. You can specify any JavaScript expression, including numeric, string, or logical expressions.

The `writeln` method is the same as the `write` method, except the `writeln` method appends a newline character to the end of the output. HTML ignores the newline character, except within certain tags such as the `PRE` tag.

Use the `writeln` method within any `SCRIPT` tag or within an event handler. Event handlers execute after the original document closes, so the `writeln` method will implicitly open a new document of `mimeType text/html` if you do not explicitly issue a `document.open` method in the event handler.

In Navigator 3.0 and later, users can print and save generated HTML using the commands on the File menu.

**Examples**

All the examples used for the `write` method are also valid with the `writeln` method.

**See also**

document.close, document.open, document.write
**event**

The `event` object contains properties that describe a JavaScript event, and is passed as an argument to an event handler when the event occurs.

*Client-side object*

*Implemented in* JavaScript 1.2

In the case of a mouse-down event, for example, the `event` object contains the type of event (in this case `MouseDown`), the x and y position of the cursor at the time of the event, a number representing the mouse button used, and a field containing the modifier keys (Control, Alt, Meta, or Shift) that were depressed at the time of the event. The properties used within the `event` object vary from one type of event to another. This variation is provided in the descriptions of individual event handlers.

See Chapter 3, “Event Handlers,” for complete information about event handlers. For more information on handling events, see the *Client-Side JavaScript Guide*.

**Created by**

`event` objects are created by Communicator when an event occurs. You do not create them yourself.

**Security**

Setting any property of this object requires the `UniversalBrowserWrite` privilege. In addition, getting the `data` property of the `DragDrop` event requires the `UniversalBrowserRead` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**Property Summary**

Not all of these properties are relevant to each event type. To learn which properties are used by an event, see the “Event object properties used” section of the individual event handler.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>Returns an array of strings containing the URLs of the dropped objects. Passed with the DragDrop event.</td>
</tr>
<tr>
<td>height</td>
<td>Represents the height of the window or frame.</td>
</tr>
<tr>
<td>layerX</td>
<td>Number specifying either the object width when passed with the resize event, or the cursor's horizontal position in pixels relative to the layer in which the event occurred. Note that <code>layerX</code> is synonymous with <code>x</code>.</td>
</tr>
</tbody>
</table>
Method Summary  This object inherits the **watch** and **unwatch** methods from **Object**.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>layerY</td>
<td>Number specifying either the object height when passed with the resize event, or the cursor's vertical position in pixels relative to the layer in which the event occurred. Note that layerY is synonymous with y.</td>
</tr>
<tr>
<td>modifiers</td>
<td>String specifying the modifier keys associated with a mouse or key event. Modifier key values are: ALT_MASK, CONTROL_MASK, SHIFT_MASK, and META_MASK.</td>
</tr>
<tr>
<td>pageX</td>
<td>Number specifying the cursor's horizontal position in pixels, relative to the page.</td>
</tr>
<tr>
<td>pageY</td>
<td>Number specifying the cursor's vertical position in pixels relative to the page.</td>
</tr>
<tr>
<td>screenX</td>
<td>Number specifying the cursor's horizontal position in pixels, relative to the screen.</td>
</tr>
<tr>
<td>screenY</td>
<td>Number specifying the cursor's vertical position in pixels, relative to the screen.</td>
</tr>
<tr>
<td>target</td>
<td>String representing the object to which the event was originally sent. (All events)</td>
</tr>
<tr>
<td>type</td>
<td>String representing the event type. (All events)</td>
</tr>
<tr>
<td>which</td>
<td>Number specifying either the mouse button that was pressed or the ASCII value of a pressed key. For a mouse, 1 is the left button, 2 is the middle button, and 3 is the right button.</td>
</tr>
<tr>
<td>width</td>
<td>Represents the width of the window or frame.</td>
</tr>
<tr>
<td>x</td>
<td>Synonym for layerX.</td>
</tr>
<tr>
<td>y</td>
<td>Synonym for layerY.</td>
</tr>
</tbody>
</table>
Examples

The following example uses the event object to provide the type of event to the alert message.

```html
<A HREF="http://home.netscape.com" onClick='alert("Link got an event: " + event.type)'>Click for link event</A>
```

The following example uses the event object in an explicitly called event handler.

```html
<SCRIPT>
function fun1(evnt) {
    alert("Document got an event: " + evnt.type);
    alert("x position is " + evnt.layerX);
    alert("y position is " + evnt.layerY);
    if (evnt.modifiers & Event.ALT_MASK)
        alert("Alt key was down for event.");
    return true;
}
document.onmousedown = fun1;
</SCRIPT>
```

---

data

For the DragDrop event, returns an array of strings containing the URLs of the dropped objects.

Property of event

Implemented in JavaScript 1.2

Security

Setting this property requires the UniversalBrowserWrite privilege. In addition, getting this property for the DragDrop event requires the UniversalBrowserRead privilege. For information on security, see the Client-Side JavaScript Guide.

height

Represents the height of the window or frame.

Property of event

Implemented in JavaScript 1.2

Security

Setting this property requires the UniversalBrowserWrite privilege. For information on security, see the Client-Side JavaScript Guide.

See also event.width
event.layerX

---

**layerX**

Number specifying either the object width when passed with the resize event, or the cursor's horizontal position in pixels relative to the layer in which the event occurred.

*Property of* event  
*Implemented in* JavaScript 1.2

**Security** Setting this property requires the UniversalBrowserWrite privilege. For information on security, see the *Client-Side JavaScript Guide.*

**Description** This property is synonymous with the `event.x` property.

**See also** `event.layerY`

---

**layerY**

Number specifying either the object height when passed with the resize event, or the cursor's vertical position in pixels relative to the layer in which the event occurred.

*Property of* event  
*Implemented in* JavaScript 1.2

**Security** Setting this property requires the UniversalBrowserWrite privilege. For information on security, see the *Client-Side JavaScript Guide.*

**Description** This property is synonymous with the `event.y` property.

**See also** `event.layerX`
modifiers

String specifying the modifier keys associated with a mouse or key event. Modifier key values are: ALT_MASK, CONTROL_MASK, SHIFT_MASK, and META_MASK.

Property of  event
Implemented in  JavaScript 1.2

Security  Setting this property requires the UniversalBrowserWrite privilege. For information on security, see the Client-Side JavaScript Guide.

See also  event.which

pageX

Number specifying the cursor's horizontal position in pixels, relative to the page.

Property of  event
Implemented in  JavaScript 1.2

Security  Setting this property requires the UniversalBrowserWrite privilege. For information on security, see the Client-Side JavaScript Guide.

See also  event.pageY

pageY

Number specifying the cursor's vertical position in pixels relative to the page.

Property of  event
Implemented in  JavaScript 1.2

Security  Setting this property requires the UniversalBrowserWrite privilege. For information on security, see the Client-Side JavaScript Guide.

See also  event.pageX
**screenX**

Number specifying the cursor's horizontal position in pixels, relative to the screen.

*Property of*  
*event*

*Implemented in*  
*JavaScript 1.2*

**Security**  
Setting this property requires the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**See also**  
`event.screenY`

**screenY**

Number specifying the cursor's vertical position in pixels, relative to the screen.

*Property of*  
*event*

*Implemented in*  
*JavaScript 1.2*

**Security**  
Setting this property requires the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**See also**  
`event.screenX`

**target**

String representing the object to which the event was originally sent.

*Property of*  
*event*

*Implemented in*  
*JavaScript 1.2*

**Security**  
Setting this property requires the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**See also**  
`event.type`
**type**

String representing the event type.

Property of `event`

Implemented in JavaScript 1.2

**Security** Setting this property requires the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**See also** `event.target`

**which**

Number specifying either the mouse button that was pressed or the ASCII value of a pressed key. For a mouse, 1 is the left button, 2 is the middle button, and 3 is the right button.

Property of `event`

Implemented in JavaScript 1.2

**Security** Setting this property requires the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**See also** `event.modifiers`

**width**

Represents the width of the window or frame.

Property of `event`

Implemented in JavaScript 1.2

**Security** Setting this property requires the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**See also** `event.height`
**event.x**

Number specifying either the object width when passed with the resize event, or the cursor's horizontal position in pixels relative to the layer in which the event occurred.

*Property of* `event`  
*Implemented in* JavaScript 1.2

**Security** Setting this property requires the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**Description** This property is synonymous with the `event.layerX` property.

**See also** `event.y`

**y**

Synonym for `layerY`.

*Property of* `event`  
*Implemented in* JavaScript 1.2

**Security** Setting this property requires the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**Description** This property is synonymous with the `event.layerY` property.

**See also** `event.x`
**FileUpload**

A file upload element on an HTML form. A file upload element lets the user supply a file as input.

*Client-side object*

*Implemented in* JavaScript 1.0

JavaScript 1.1: added type property

JavaScript 1.2: added handleEvent method.

**Created by** The HTML INPUT tag, with "file" as the value of the TYPE attribute. For a given form, the JavaScript runtime engine creates appropriate FileUpload objects and puts these objects in the elements array of the corresponding Form object. You access a FileUpload object by indexing this array. You can index the array either by number or, if supplied, by using the value of the NAME attribute.

**Event handlers**

- onBlur
- onChange
- onFocus

**Description** A FileUpload object on a form looks as follows:

![Image of FileUpload object on a form]

A FileUpload object is a form element and must be defined within a FORM tag.
FileUpload

**Property Summary**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>form</td>
<td>Specifies the form containing the FileUpload object.</td>
</tr>
<tr>
<td>name</td>
<td>Reflects the NAME attribute.</td>
</tr>
<tr>
<td>type</td>
<td>Reflects the TYPE attribute.</td>
</tr>
<tr>
<td>value</td>
<td>Reflects the current value of the file upload element’s field; this corresponds to the name of the file to upload.</td>
</tr>
</tbody>
</table>

**Method Summary**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>blur</td>
<td>Removes focus from the object.</td>
</tr>
<tr>
<td>focus</td>
<td>Gives focus to the object.</td>
</tr>
<tr>
<td>handleEvent</td>
<td>Invokes the handler for the specified event.</td>
</tr>
<tr>
<td>select</td>
<td>Selects the input area of the file upload field.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the watch and unwatch methods from Object.

**Examples**

The following example places a FileUpload object on a form and provides two buttons that let the user display current values of the name and value properties.

```html
<form name="form1">
File to send: <input type="file" name="myUploadObject">

Get properties
<input type="button" value="name" onClick="alert('name: ' + document.form1.myUploadObject.name)"
    value="value" onClick="alert('value: ' + document.form1.myUploadObject.value)">
</form>
```

**See also** Text
**blur**

Removes focus from the object.

*Method of* FileUpload  
*Implemented in* JavaScript 1.0

**Syntax** `blur()`

**Parameters** None

**See also** FileUpload.focus, FileUpload.select

**focus**

Navigates to the FileUpload field and give it focus.

*Method of* FileUpload  
*Implemented in* JavaScript 1.0

**Syntax** `focus()`

**Parameters** None

**See also** FileUpload.blur, FileUpload.select

**form**

An object reference specifying the form containing the object.

*Property of* FileUpload  
*Read-only*  
*Implemented in* JavaScript 1.0

**Description** Each form element has a `form` property that is a reference to the element’s parent form. This property is especially useful in event handlers, where you might need to refer to another element on the current form.
**FileUpload.handleEvent**

Invokes the handler for the specified event.

**Syntax**

```javascript
handleEvent(event)
```

**Method of**  
FileUpload

**Implemented in**  
JavaScript 1.2

**Parameters**

- **event**  
The name of an event for which the object has an event handler.

**Description**  
For information on handling events, see the *Client-Side JavaScript Guide*.

---

**name**

A string specifying the name of this object.

**Property of**  
FileUpload

**Read-only**

**Implemented in**  
JavaScript 1.0

**Security**  
JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**

The `name` property initially reflects the value of the `NAME` attribute. The `name` property is not displayed on-screen; it is used to refer to the objects programmatically.

If multiple objects on the same form have the same `NAME` attribute, an array of the given name is created automatically. Each element in the array represents an individual `Form` object. Elements are indexed in source order starting at 0.

For example, if two `Text` elements and a `FileUpload` element on the same form have their `NAME` attribute set to "myField", an array with the elements `myField[0]`, `myField[1]`, and `myField[2]` is created. You need to be aware of this situation in your code and know whether `myField` refers to a single element or to an array of elements.
Examples
In the following example, the valueGetter function uses a for loop to iterate over the array of elements on the valueTest form. The msgWindow window displays the names of all the elements on the form:

```javascript
newWindow = window.open("http://home.netscape.com")
function valueGetter() {
    var msgWindow = window.open('"
    for (var i = 0; i < newWindow.document.valueTest.elements.length; i++) {
        msgWindow.document.write(newWindow.document.valueTest.elements[i].name + "<BR>")
    }
}
```

**select**

Selects the input area of the file upload field.

*Method of*  
FileUpload

*Implemented in*  
JavaScript 1.0

**Syntax**

`select()`

**Parameters**  
None

**Description**

Use the `select` method to highlight the input area of a file upload field. You can use the `select` method with the `focus` method to highlight a field and position the cursor for a user response. This makes it easy for the user to replace all the text in the field.

**See also**  
FileUpload.blur, FileUpload.focus
type

For all FileUpload objects, the value of the type property is "file". This property specifies the form element's type.

Property of: FileUpload
Read-only
Implemented in: JavaScript 1.1

Examples
The following example writes the value of the type property for every element on a form.

```javascript
for (var i = 0; i < document.form1.elements.length; i++) {
    document.writeln("<BR>type is " + document.form1.elements[i].type)
}
```

value

A string that reflects the VALUE attribute of the object.

Property of: FileUpload
Read-only
Implemented in: JavaScript 1.0

Security
Setting a file upload widget requires the UniversalFileRead privilege. For information on security, see the Client-Side JavaScript Guide.

JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description
Use the value property to obtain the file name that the user typed into a FileUpload object.
Form

Let users input text and make choices from Form elements such as checkboxes, radio buttons, and selection lists. You can also use a form to post data to a server.

**Created by** The HTML FORM tag. The JavaScript runtime engine creates a Form object for each FORM tag in the document. You access FORM objects through the document.forms property and through named properties of that object.

To define a form, use standard HTML syntax with the addition of JavaScript event handlers. If you supply a value for the NAME attribute, you can use that value to index into the forms array. In addition, the associated document object has a named property for each named form.

**Event handlers**
- onReset
- onSubmit

**Description** Each form in a document is a distinct object. You can refer to a form's elements in your code by using the element's name (from the NAME attribute) or the Form.elements array. The elements array contains an entry for each element (such as a Checkbox, Radio, or Text object) in a form.

If multiple objects on the same form have the same NAME attribute, an array of the given name is created automatically. Each element in the array represents an individual Form object. Elements are indexed in source order starting at 0. For example, if two Text elements and a TextArea element on the same form have their NAME attribute set to "myField", an array with the elements myField[0], myField[1], and myField[2] is created. You need to be aware of this situation in your code and know whether myField refers to a single element or to an array of elements.
In addition, this object inherits the watch and unwatch methods from Object.

**Examples**

Example 1: Named form. The following example creates a form called myForm that contains text fields for first name and last name. The form also contains two buttons that change the names to all uppercase or all lowercase. The function setCase shows how to refer to the form by its name.

```html
<html>
<head>
<title>Form object example</title>
</head>
<script>
function setCase (caseSpec){
    if (caseSpec == "upper") {
        document.myForm.firstName.value=document.myForm.firstName.value.toUpperCase()
        document.myForm.lastName.value=document.myForm.lastName.value.toUpperCase()
    } else {
        document.myForm.firstName.value=document.myForm.firstName.value.toLowerCase()
        document.myForm.lastName.value=document.myForm.lastName.value.toLowerCase()
    }
}
</script>
</html>
```
Example 2: forms array. The onLoad event handler in the following example displays the name of the first form in an Alert dialog box.

```html
<BODY onLoad="alert('You are looking at the ' + document.forms[0] + ' form!')">
If the form name is musicType, the alert displays the following message:

You are looking at the <object musicType> form!

Example 3: onSubmit event handler. The following example shows an onSubmit event handler that determines whether to submit a form. The form contains one Text object where the user enters three characters. onSubmit calls a function, checkData, that returns true if there are 3 characters; otherwise, it returns false. Notice that the form's onSubmit event handler, not the submit button's onClick event handler, calls the checkData function. Also, the onSubmit handler contains a return statement that returns the value obtained with the function call; this prevents the form from being submitted if invalid data is specified. See onSubmit for more information.

```html
```
Example 4: submit method. The following example is similar to the previous one, except it submits the form using the submit method instead of a Submit object. The form’s onSubmit event handler does not prevent the form from being submitted. The form uses a button’s onClick event handler to call the checkData function. If the value is valid, the checkData function submits the form by calling the form’s submit method.

```
<HTML>
<HEAD>
<TITLE>Form object/submit method example</TITLE>
</HEAD>
<SCRIPT>
var dataOK=false
function checkData (){
if (document.myForm.threeChar.value.length == 3) {
  document.myForm.submit();
} else {
  alert("Enter exactly three characters. " +
  document.myForm.threeChar.value +
  " is not valid.");
  return false;
}
</SCRIPT>
<BODY>
<form NAME="myForm" onSubmit="alert('Form is being submitted.')">
  <p><b>Enter 3 characters:</b> <input TYPE="text" NAME="threeChar" SIZE=3>
  <button VALUE="Done" NAME="submit1" onClick="document.myForm.threeChar.value=document.myForm.threeChar.value.toUpperCase()">
</form>
</BODY>
</HTML>
```

See also Button, Checkbox, FileUpload, Hidden, Password, Radio, Reset, Select, Submit, Text, Textarea.
**action**

A string specifying a destination URL for form data that is submitted.

Property of Form

Implemented in JavaScript 1.0

**Security**

Submitting a form to a mailto: or news: URL requires the UniversalSendMail privilege. For information on security, see the Client-Side JavaScript Guide.

**JavaScript 1.1.** This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

**Description**

The `action` property is a reflection of the `ACTION` attribute of the FORM tag.

Each section of a URL contains different information. See Location for a description of the URL components.

**Examples**

The following example sets the `action` property of the `musicForm` form to the value of the variable `urlName`:

```javascript
document.musicForm.action=urlName
```

**See also** Form.encoding, Form.method, Form.target

**elements**

An array of objects corresponding to form elements (such as checkbox, radio, and Text objects) in source order.

Property of Form

Read-only

Implemented in JavaScript 1.0

**Description**

You can refer to a form’s elements in your code by using the elements array. This array contains an entry for each object (Button, Checkbox, FileUpload, Hidden, Password, Radio, Reset, Select, Submit, Text, or Textarea object) in a form in source order. Each radio button in a Radio object appears as a separate element in the elements array. For example, if a form called `myForm` has a text field and two checkboxes, you can refer to these elements `myForm.elements[0]`, `myForm.elements[1]`, and `myForm.elements[2]`. 
Although you can also refer to a form's elements by using the element's name (from the NAME attribute), the elements array provides a way to refer to Form objects programmatically without using their names. For example, if the first object on the userInfo form is the userName Text object, you can evaluate it in either of the following ways:

userInfo.userName.value
userInfo.elements[0].value

The value of each element in the elements array is the full HTML statement for the object.

To obtain the number of elements in a form, use the length property:

myForm.elements.length.

**Examples**  See the examples for window.

### encoding

*A string specifying the MIME encoding of the form.*

*Property of*  Form

*Implemented in*  JavaScript 1.0

**Description**  The encoding property initially reflects the ENCTYPE attribute of the FORM tag; however, setting encoding overrides the ENCTYPE attribute.

**Examples**  The following function returns the value of the encoding property of musicForm:

```javascript
function getEncoding() {
    return document.musicForm.encoding
}
```

**See also**  Form.action, Form.method, Form.target
**handleEvent**

Invokes the handler for the specified event.

*Method of* Form

*Implemented in* JavaScript 1.2

**Syntax**

```javascript
handleEvent(event)
```

**Parameters**

- `event` The name of an event for which the specified object has an event handler.

**Description**

For information on handling events, see the *Client-Side JavaScript Guide*.

---

**length**

The number of elements in the form.

*Property of* Form

*Read-only*

*Implemented in* JavaScript 1.0

**Description**

The `form.length` property tells you how many elements are in the form. You can get the same information using `form.elements.length`.

---

**method**

A string specifying how form field input information is sent to the server.

*Property of* Form

*Implemented in* JavaScript 1.0

**Description**

The `method` property is a reflection of the `METHOD` attribute of the `FORM` tag. The `method` property should evaluate to either "get" or "post".
Examples  The following function returns the value of the musicForm method property:

```javascript
function getMethod() {
    return document.musicForm.method
}
```

See also  Form.action, Form.encoding, Form.target

name

A string specifying the name of the form.

Property of Form

Implemented in JavaScript 1.0

Security  JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description  The name property initially reflects the value of the NAME attribute. Changing the name property overrides this setting.

Examples  In the following example, the valueGetter function uses a for loop to iterate over the array of elements on the valueTest form. The msgWindow window displays the names of all the elements on the form:

```javascript
newWindow=window.open("http://home.netscape.com")

function valueGetter() {
    var msgWindow=window.open(""
    for (var i = 0; i < newWindow.document.valueTest.elements.length; i++) {
        msgWindow.document.write(newWindow.document.valueTest.elements[i].name + "<BR>")
    }
}
```
**reset**

Simulates a mouse click on a reset button for the calling form.

*Method of* Form

*Implemented in* JavaScript 1.1

**Syntax**

```javascript
reset()
```

**Parameters**

None

**Description**

The `reset` method restores a form element’s default values. A reset button does not need to be defined for the form.

**Examples**

The following example displays a Text object in which the user is to type “CA” or “AZ”. The Text object’s `onChange` event handler calls a function that executes the form’s `reset` method if the user provides incorrect input. When the `reset` method executes, defaults are restored and the form’s `onReset` event handler displays a message:

```html
<SCRIPT>
function verifyInput(textObject) {
  if (textObject.value == 'CA' || textObject.value == 'AZ') {
    alert('Nice input')
  } else { document.myForm.reset() }
}
</SCRIPT>

<form name="myForm" onReset="alert('Please enter CA or AZ.')">
  Enter CA or AZ:
  <input type="text" name="state" size="2" onChange=verifyInput(this)>
</form>
```

**See also** onReset, Reset
submit

Submits a form.

*Method of* Form

*Implemented in* JavaScript 1.0

**Syntax**
submit()

**Parameters**
None

**Security**
Submitting a form to a mailto: or news: URL requires the UniversalSendMail privilege. For information on security, see the *Client-Side JavaScript Guide*.

JavaScript 1.1: The `submit` method fails without notice if the form's `action` is a mailto:, news:, or snews: URL. Users can submit forms with such URLs by clicking a submit button, but a confirming dialog will tell them that they are about to give away private or sensitive information.

**Description**
The `submit` method submits the specified form. It performs the same action as a submit button.

Use the `submit` method to send data back to an HTTP server. The `submit` method returns the data using either “get” or “post,” as specified in `Form.method`.

**Examples**
The following example submits a form called `musicChoice`:

document.musicChoice.submit()

If `musicChoice` is the first form created, you also can submit it as follows:

document.forms[0].submit()

See also the example for `Form`.

**See also**
Submit, onSubmit
target

A string specifying the name of the window that responses go to after a form has been submitted.

Property of Form

Implemented in JavaScript 1.0

Description The target property initially reflects the TARGET attribute of the A, AREA, and FORM tags; however, setting target overrides these attributes.

You can set target using a string, if the string represents a window name. The target property cannot be assigned the value of a JavaScript expression or variable.

Examples The following example specifies that responses to the musicInfo form are displayed in the msgWindow window:

document.musicInfo.target="msgWindow"

See also Form.action, Form.encoding, Form.method
Frame

A window can display multiple, independently scrollable frames on a single screen, each with its own distinct URL. These frames are created using the `<FRAME>` tag inside a `<FRAMESET>` tag. A series of frames makes up a page. Each frame can point to different URLs and be targeted by other URLs, all within the same page.

The Frame object is provided a convenience for referring to the objects that constitute frames. However, JavaScript actually represents a frame using a window object. Every Frame object is a window object, and has all the methods and properties of a window object. However, a window that is a frame differs slightly from a top-level window.

See window for complete information on frames.

Client-side object

Implemented in JavaScript 1.0

JavaScript 1.1: added `blur` and `focus` methods; added `onBlur` and `onFocus` event handlers
**Function**

Specifies a string of JavaScript code to be compiled as a function.

*Core object*

*Implemented in* JavaScript 1.1, NES 2.0

- JavaScript 1.2: added `arity`, `arguments.callee` properties; added ability to nest functions
- JavaScript 1.3: added `apply`, `call`, and `toSource` methods; deprecated `arguments.caller` property

*ECMA version* ECMA-262

**Created by** The Function constructor:

```javascript
new Function ([arg1[, arg2[, ... argN]]], functionBody)
```

The function statement (see “function” on page 622 for details):

```javascript
function name((param[, param[, ... param]])) {
    statements
}
```

**Parameters**

- `arg1`, `arg2`, ...
  `argN` Names to be used by the function as formal argument names. Each must be a string that corresponds to a valid JavaScript identifier; for example "x" or "theValue".
- `functionBody` A string containing the JavaScript statements comprising the function definition.
- `name` The function name.
- `param` The name of an argument to be passed to the function. A function can have up to 255 arguments.
- `statements` The statements comprising the body of the function.

**Description** Function objects created with the Function constructor are evaluated each time they are used. This is less efficient than declaring a function and calling it within your code, because declared functions are compiled.

To return a value, the function must have a return statement that specifies the value to return.
All parameters are passed to functions by value; the value is passed to the function, but if the function changes the value of the parameter, this change is not reflected globally or in the calling function. However, if you pass an object as a parameter to a function and the function changes the object’s properties, that change is visible outside the function, as shown in the following example:

```javascript
function myFunc(theObject) {
  theObject.make="Toyota"
}
mycar = {make:"Honda", model:"Accord", year:1998}
x=mycar.make  // returns Honda
myFunc(mycar)  // pass object mycar to the function
y=mycar.make  // returns Toyota (prop was changed by the function)
```

The this keyword does not refer to the currently executing function, so you must refer to Function objects by name, even within the function body.

**Accessing a function’s arguments with the arguments array.** You can refer to a function’s arguments within the function by using the arguments array. See arguments.

**Specifying arguments with the Function constructor.** The following code creates a Function object that takes two arguments.

```javascript
var multiply = new Function("x", "y", "return x * y")
```

The arguments "x" and "y" are formal argument names that are used in the function body, "return x * y".

The preceding code assigns a function to the variable multiply. To call the Function object, you can specify the variable name as if it were a function, as shown in the following examples.

```javascript
var theAnswer = multiply(7,6)
var myAge = 50
if (myAge >=39) {myAge=multiply (myAge,.5)}
```
Assigning a function to a variable with the Function constructor.

Suppose you create the variable `multiply` using the `Function` constructor, as shown in the preceding section:

```javascript
var multiply = new Function("x", "y", "return x * y")
```

This is similar to declaring the following function:

```javascript
function multiply(x, y) {
  return x * y
}
```

Assigning a function to a variable using the `Function` constructor is similar to declaring a function with the `function` statement, but they have differences:

- When you assign a function to a variable using `var multiply = new Function("...")`, `multiply` is a variable for which the current value is a reference to the function created with `new Function()`.
- When you create a function using `function multiply() {...}`, `multiply` is not a variable, it is the name of a function.

Nesting functions. You can nest a function within a function. The nested (inner) function is private to its containing (outer) function:

- The inner function can be accessed only from statements in the outer function.
- The inner function can use the arguments and variables of the outer function. The outer function cannot use the arguments and variables of the inner function.

The following example shows nested functions:

```javascript
function addSquares (a, b) {
  function square(x) {
    return x * x
  }
  return square(a) + square(b)
}
```

```javascript
a = addSquares(2, 3) // returns 13
b = addSquares(3, 4) // returns 25
c = addSquares(4, 5) // returns 41
```
When a function contains a nested function, you can call the outer function and specify arguments for both the outer and inner function:

```javascript
function outside(x) {
    function inside(y) {
        return x+y
    }
    return inside
}
result=outside(3)(5) // returns 8
```

**Specifying an event handler with a Function object.** The following code assigns a function to a window's `onFocus` event handler (the event handler must be spelled in all lowercase):

```javascript
window.onfocus = new Function("document.bgColor='antiquewhite'")
```

If a function is assigned to a variable, you can assign the variable to an event handler. The following code assigns a function to the variable `setBGColor`.

```javascript
var setBGColor = new Function("document.bgColor='antiquewhite'")
```

You can use this variable to assign a function to an event handler in either of the following ways:

```javascript
document.form1.colorButton.onclick=setBGColor
```

Once you have a reference to a Function object, you can use it like a function and it will convert from an object to a function:

```javascript
window.onfocus()
```

Event handlers do not take arguments, so you cannot declare any arguments in a Function constructor for an event handler. For example, you cannot call the function `multiply` by setting a button's onclick property as follows:

```javascript
document.form1.button1.onclick=multFun(5,10)
```

---

**Backward Compatibility**

**JavaScript 1.1 and earlier versions.** You cannot nest a function statement in another statement or in itself.
### Property Summary

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>arguments</td>
<td>An array corresponding to the arguments passed to a function.</td>
</tr>
<tr>
<td>arguments.callee</td>
<td>Specifies the function body of the currently executing function.</td>
</tr>
<tr>
<td>arguments.caller</td>
<td>Specifies the name of the function that invoked the currently executing function.</td>
</tr>
<tr>
<td>arguments.length</td>
<td>Specifies the number of arguments passed to the function.</td>
</tr>
<tr>
<td>arity</td>
<td>Specifies the number of arguments expected by the function.</td>
</tr>
<tr>
<td>constructor</td>
<td>Specifies the function that creates an object’s prototype.</td>
</tr>
<tr>
<td>length</td>
<td>Specifies the number of arguments expected by the function.</td>
</tr>
<tr>
<td>prototype</td>
<td>Allows the addition of properties to a Function object.</td>
</tr>
</tbody>
</table>

### Method Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>apply</td>
<td>Allows you to apply a method of another object in the context of a different object (the calling object).</td>
</tr>
<tr>
<td>call</td>
<td>Allows you to call (execute) a method of another object in the context of a different object (the calling object).</td>
</tr>
<tr>
<td>toSource</td>
<td>Returns a string representing the source code of the function. Overrides the Object.toSource method.</td>
</tr>
<tr>
<td>toString</td>
<td>Returns a string representing the source code of the function. Overrides the Object.toString method.</td>
</tr>
<tr>
<td>valueOf</td>
<td>Returns a string representing the source code of the function. Overrides the Object.valueOf method.</td>
</tr>
</tbody>
</table>
Examples

Example 1. The following function returns a string containing the formatted representation of a number padded with leading zeros.

```javascript
// This function returns a string padded with leading zeros
function padZeros(num, totalLen) {
    var numStr = num.toString(); // Initialize return value
    // as string
    var numZeros = totalLen - numStr.length; // Calculate no. of zeros
    if (numZeros > 0) {
        for (var i = 0; i <= numZeros; i++) {
            numStr = "0" + numStr
        }
    }
    return numStr
}
```

The following statements call the padZeros function.

```
result=padZeros(42,4) // returns "0042"
result=padZeros(42,2) // returns "42"
result=padZeros(5,4) // returns "0005"
```

Example 2. You can determine whether a function exists by comparing the function name to null. In the following example, func1 is called if the function noFunc does not exist; otherwise func2 is called. Notice that the window name is needed when referring to the function name noFunc.

```
if (window.noFunc == null)
    func1()
else func2()
```

Example 3. The following example creates onFocus and onBlur event handlers for a frame. This code exists in the same file that contains the FRAMESET tag. Note that this is the only way to create onFocus and onBlur event handlers for a frame, because you cannot specify the event handlers in the FRAME tag.

```
frames[0].onfocus = new Function("document.bgColor='antiquewhite'")
frames[0].onblur = new Function("document.bgColor='lightgrey'")
```
apply

Allows you to apply a method of another object in the context of a different object (the calling object).

Method of Function
Implemented in JavaScript 1.3

Syntax

```
apply(thisArg[, argArray])
```

Parameters

- **thisArg**: Parameter for the calling object
- **argArray**: An argument array for the object

Description

You can assign a different this object when calling an existing function. this refers to the current object, the calling object. With apply, you can write a method once and then inherit it in another object, without having to rewrite the method for the new object.

apply is very similar to call, except for the type of arguments it supports. You can use an arguments array instead of a named set of parameters. With apply, you can use an array literal, for example, `apply(this, [name, value])`, or an Array object, for example, `apply(this, new Array(name, value))`.

You can also use arguments for the argArray parameter. arguments is a local variable of a function. It can be used for all unspecified arguments of the called object. Thus, you do not have to know the arguments of the called object when you use the apply method. You can use arguments to pass all the arguments to the called object. The called object is then responsible for handling the arguments.
**Examples** You can use `apply` to chain constructors for an object, similar to Java. In the following example, the constructor for the `product` object is defined with two parameters, `name` and `value`. Another object, `prod_dept`, initializes its unique variable (`dept`) and calls the constructor for `product` in its constructor to initialize the other variables. In this example, the parameter `arguments` is used for all arguments of the `product` object's constructor.

```javascript
function product(name, value){
  this.name = name;
  if(value > 1000)
    this.value = 999;
  else
    this.value = value;
}

function prod_dept(name, value, dept){
  this.dept = dept;
  product.apply(product, arguments);
}

prod_dept.prototype = new product();

// since 5 is less than 100 value is set
cheese = new prod_dept("feta", 5, "food");

// since 5000 is above 1000, value will be 999
car = new prod_dept("honda", 5000, "auto");
```

**See also** `Function.call`
arguments

An array corresponding to the arguments passed to a function.

Local variable of All function objects

Property of Function (deprecated)

Implemented in JavaScript 1.1, NES 2.0

JavaScript 1.2: added arguments.callee property

JavaScript 1.3: deprecated arguments.caller property; removed support for argument names and local variable names as properties of the arguments array

ECMA version ECMA-262

Description You can refer to a function’s arguments within the function by using the arguments array. This array contains an entry for each argument passed to the function. For example, if a function is passed three arguments, you can refer to the arguments as follows:

arguments[0]
arguments[1]
arguments[2]

The arguments array can also be preceded by the function name:

myFunc.arguments[0]
myFunc.arguments[1]
myFunc.arguments[2]

The arguments array is available only within a function body. Attempting to access the arguments array outside a function declaration results in an error.

You can use the arguments array if you call a function with more arguments than it is formally declared to accept. This technique is useful for functions that can be passed a variable number of arguments. You can use arguments.length to determine the number of arguments passed to the function, and then process each argument by using the arguments array. (To determine the number of arguments declared when a function was defined, use the Function.length property.)
The `arguments` array has the following properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>arguments.callee</code></td>
<td>Specifies the function body of the currently executing function.</td>
</tr>
<tr>
<td><code>arguments.caller</code></td>
<td>Specifies the name of the function that invoked the currently executing function. (Deprecated)</td>
</tr>
<tr>
<td><code>arguments.length</code></td>
<td>Specifies the number of arguments passed to the function.</td>
</tr>
</tbody>
</table>

**Backward Compatibility**

**JavaScript 1.1 and 1.2.** The following features that were available in JavaScript 1.1 and JavaScript 1.2 have been removed:

- Each local variable of a function is a property of the `arguments` array. For example, if a function `myFunc` has a local variable named `myLocalVar`, you can refer to the variable as `arguments.myLocalVar`.

- Each formal argument of a function is a property of the `arguments` array. For example, if a function `myFunc` has two arguments named `arg1` and `arg2`, you can refer to the arguments as `arguments.arg1` and `arguments.arg2`. (You can also refer to them as `arguments[0]` and `arguments[1].`)

**Examples**

**Example 1.** This example defines a function that concatenates several strings. The only formal argument for the function is a string that specifies the characters that separate the items to concatenate. The function is defined as follows:

```javascript
function myConcat(separator) {
  result="" // initialize list
  // iterate through arguments
  for (var i=1; i<arguments.length; i++) {
    result += arguments[i] + separator
  }
  return result
}
```
You can pass any number of arguments to this function, and it creates a list using each argument as an item in the list.

// returns "red, orange, blue,"
myConcat("","red","orange","blue")

// returns "elephant; giraffe; lion; cheetah;"
myConcat(";","elephant","giraffe","lion","cheetah")

// returns "sage. basil. oregano. pepper. parsley."
myConcat( ",","sage","basil","oregano","pepper","parsley")

**Example 2.** This example defines a function that creates HTML lists. The only formal argument for the function is a string that is "U" if the list is to be unordered (bulleted), or "O" if the list is to be ordered (numbered). The function is defined as follows:

```javascript
function list(type) {
    document.write("<" + type + "L>") // begin list
    // iterate through arguments
    for (var i=1; i<arguments.length; i++) {
        document.write("<LI>" + arguments[i])
    }
    document.write("</" + type + "L>") // end list
}
```

You can pass any number of arguments to this function, and it displays each argument as an item in the type of list indicated. For example, the following call to the function

list("U", "One", "Two", "Three")

results in this output:

```html
<UL>
    <LI>One
    <LI>Two
    <LI>Three
</UL>
```
**arguments.callee**

Specifies the function body of the currently executing function.

*Property of*  
arguments local variable; Function (deprecated)

*Implemented in*  
JavaScript 1.2

*ECMA version*  
ECMA-262

**Description**

The `callee` property is available only within the body of a function.

The `this` keyword does not refer to the currently executing function. Use the `callee` property to refer to a function within the function body.

**Examples**

The following function returns the value of the function’s `callee` property.

```javascript
function myFunc() {
    return arguments.callee
}
```

The following value is returned:

```javascript
function myFunc() { return arguments.callee; }
```

**See also**

Function.arguments

---

**arguments.caller**

Specifies the name of the function that invoked the currently executing function.

*Property of*  
Function

*Implemented in*  
JavaScript 1.1, NES 2.0

Deprecation in JavaScript 1.3

**Description**

`caller` is no longer used.

The `caller` property is available only within the body of a function.

If the currently executing function was invoked by the top level of a JavaScript program, the value of `caller` is null.

The `this` keyword does not refer to the currently executing function, so you must refer to functions and Function objects by name, even within the function body.
The `caller` property is a reference to the calling function, so

- If you use it in a string context, you get the result of calling `functionName.toString`. That is, the decompiled canonical source form of the function.
- You can also call the calling function, if you know what arguments it might want. Thus, a called function can call its caller without knowing the name of the particular caller, provided it knows that all of its callers have the same form and fit, and that they will not call the called function again unconditionally (which would result in infinite recursion).

Examples

The following code checks the value of a function's `caller` property.

```javascript
function myFunc() {
    if (arguments.caller == null) {
        return "The function was called from the top!"
    } else return "This function's caller was " + arguments.caller
}
```

See also `Function.arguments`.

---

**arguments.length**

Specifies the number of arguments passed to the function.

**Property of** arguments local variable; Function (deprecated)

**Implemented in** JavaScript 1.1

**ECMA version** ECMA-262

**Description** `arguments.length` provides the number of arguments actually passed to a function. By contrast, the `Function.length` property indicates how many arguments a function expects.

**Example** The following example demonstrates the use of `Function.length` and `arguments.length`.

```javascript
function addNumbers(x,y){
    if (arguments.length === addNumbers.length) {
        return (x+y)
    } else return 0
}
```
If you pass more than two arguments to this function, the function returns 0:

```javascript
result=addNumbers(3,4,5) // returns 0
result=addNumbers(3,4)  // returns 7
result=addNumbers(103,104) // returns 207
```

**See also** Function.arguments

---

**arity**

Specifies the number of arguments expected by the function.

**Property of** Function

**Implemented in** JavaScript 1.2, NES 3.0

**Description**  
arity is external to the function, and indicates how many arguments a function expects. By contrast, arguments.length provides the number of arguments actually passed to a function.

**Example**  
The following example demonstrates the use of arity and arguments.length.

```javascript
function addNumbers(x,y){
    if (arguments.length == addNumbers.length) {
        return (x+y)
    }
    else return 0
}
```

If you pass more than two arguments to this function, the function returns 0:

```javascript
result=addNumbers(3,4,5) // returns 0
result=addNumbers(3,4)  // returns 7
result=addNumbers(103,104) // returns 207
```

**See also** arguments.length, Function.length
Function.call

### call

Allows you to call (execute) a method of another object in the context of a different object (the calling object).

*Method of* Function  
*Implemented in* JavaScript 1.3

**Syntax**

\[
\text{call}(\text{thisArg}, \text{arg1}, \text{arg2}, \ldots)]
\]

**Parameters**

- **thisArg** Parameter for the calling object
- **arg1, arg2, ...** Arguments for the object

**Description**

You can assign a different this object when calling an existing function. this refers to the current object, the calling object.

With `call`, you can write a method once and then inherit it in another object, without having to rewrite the method for the new object.

**Examples**

You can use `call` to chain constructors for an object, similar to Java. In the following example, the constructor for the `product` object is defined with two parameters, `name` and `value`. Another object, `prod_dept`, initializes its unique variable (`dept`) and calls the constructor for `product` in its constructor to initialize the other variables.

```javascript
function product(name, value){
    this.name = name;
    if(value > 1000)
        this.value = 999;
    else
        this.value = value;
}

function prod_dept(name, value, dept){
    this.dept = dept;
    product.call(this, name, value);
}
prod_dept.prototype = new product();
// since 5 is less than 100 value is set
cheese = new prod_dept("feta", 5, "food");
// since 5000 is above 1000, value will be 999
car = new prod_dept("honda", 5000, "auto");
```
See also  Function.apply

**constructor**

Specifies the function that creates an object’s prototype. Note that the value of this property is a reference to the function itself, not a string containing the function’s name.

- Property of  Function
- Implemented in  JavaScript 1.1, NES 2.0
- ECMA version  ECMA-262

Description  See Object.constructor.

**length**

Specifies the number of arguments expected by the function.

- Property of  Function
- Implemented in  JavaScript 1.1
- ECMA version  ECMA-262

Description  `length` is external to a function, and indicates how many arguments the function expects. By contrast, `arguments.length` is local to a function and provides the number of arguments actually passed to the function.

Example  See the example for `arguments.length`.

See also  `arguments.length`
**prototype**

A value from which instances of a particular class are created. Every object that can be created by calling a constructor function has an associated `prototype` property.

*Property of* Function  
*Implemented in* JavaScript 1.1, NES 2.0  
*ECMA version* ECMA-262

**Description**

You can add new properties or methods to an existing class by adding them to the prototype associated with the constructor function for that class. The syntax for adding a new property or method is:

```javascript
fun.prototype.name = value
```

where

- `fun` The name of the constructor function object you want to change.
- `name` The name of the property or method to be created.
- `value` The value initially assigned to the new property or method.

If you add a property to the prototype for an object, then all objects created with that object's constructor function will have that new property, even if the objects existed before you created the new property. For example, assume you have the following statements:

```javascript
var array1 = new Array();
var array2 = new Array(3);
Array.prototype.description=null;
array1.description="Contains some stuff"
array2.description="Contains other stuff"
```

After you set a property for the prototype, all subsequent objects created with `Array` will have the property:

```javascript
anotherArray=new Array()
anotherArray.description="Currently empty"
```
Example

The following example creates a method, `str_rep`, and uses the statement `String.prototype.rep = str_rep` to add the method to all `String` objects. All objects created with `new String()` then have that method, even objects already created. The example then creates an alternate method and adds that to one of the `String` objects using the statement `s1.rep = fake_rep`. The `str_rep` method of the remaining `String` objects is not altered.

```javascript
var s1 = new String("a")
var s2 = new String("b")
var s3 = new String("c")

// Create a repeat-string-N-times method for all String objects
function str_rep(n) {
    var s = ",",
    t = this.toString()
    while (--n >= 0) s += t
    return s
}

String.prototype.rep = str_rep

s1a=s1.rep(3) // returns "aaa"
s2a=s2.rep(5) // returns "bbbbbb"
s3a=s3.rep(2) // returns "cc"

// Create an alternate method and assign it to only one String variable
function fake_rep(n) {
    return "repeat " + this + " " + n + " times."
}

s1.rep = fake_rep
s1b=s1.rep(1) // returns "repeat a 1 times."
s2b=s2.rep(4) // returns "bbbb"
s3b=s3.rep(6) // returns "cccccc"

The function in this example also works on `String` objects not created with the `String` constructor. The following code returns "zzz".

"z".rep(3)
toSource

Returns a string representing the source code of the function.

*Method of:* Function  
*Implemented in:* JavaScript 1.3

**Syntax**

toSource()

**Parameters**

None

**Description**

The `toSource` method returns the following values:

- For the built-in `Function` object, `toSource` returns the following string indicating that the source code is not available:

  ```javascript
  function Function() {
      [native code]
  }
  ```

- For custom functions, `toSource` returns the JavaScript source that defines the object as a string.

This method is usually called internally by JavaScript and not explicitly in code. You can call `toSource` while debugging to examine the contents of an object.

*See also:* `Function.toString`, `Object.valueOf`

toString

Returns a string representing the source code of the function.

*Method of:* Function  
*Implemented in:* JavaScript 1.1, NES 2.0, ECMA-262

**Syntax**

toString()

**Parameters**

None.
Description

The `Function` object overrides the `toString` method of the `Object` object; it does not inherit `Object.toString`. For `Function` objects, the `toString` method returns a string representation of the object.

JavaScript calls the `toString` method automatically when a `Function` is to be represented as a text value or when a `Function` is referred to in a string concatenation.

For `Function` objects, the built-in `toString` method decompiles the function back into the JavaScript source that defines the function. This string includes the function keyword, the argument list, curly braces, and function body.

For example, assume you have the following code that defines the `Dog` object type and creates `theDog`, an object of type `Dog`:

```javascript
function Dog(name, breed, color, sex) {
    this.name = name
    this.breed = breed
    this.color = color
    this.sex = sex
}

theDog = new Dog("Gabby","Lab","chocolate","girl")
```

Any time `Dog` is used in a string context, JavaScript automatically calls the `toString` function, which returns the following string:

```javascript
function Dog(name, breed, color, sex) { this.name = name; this.breed = breed; this.color = color; this.sex = sex; }
```

See also

`Object.toString`

----------

**valueOf**

Returns a string representing the source code of the function.

*Method of*  
`Function`

*Implemented in*  
JavaScript 1.1

*ECMA version*  
ECMA-262

**Syntax**

`valueOf()`

**Parameters**

None
**Description**

The `valueOf` method returns the following values:

- For the built-in `Function` object, `valueOf` returns the following string indicating that the source code is not available:

  ```javascript
  function Function() {
      [native code]
  }
  ```

- For custom functions, `toSource` returns the JavaScript source that defines the object as a string. The method is equivalent to the `toString` method of the function.

  ```javascript
  function Example() {
      return 'Custom function example';
  }
  ```

This method is usually called internally by JavaScript and not explicitly in code.

**See also**

`Function.toString`, `Object.valueOf`
Hidden

A Text object that is suppressed from form display on an HTML form. A Hidden object is used for passing name/value pairs when a form submits.

**Client-side object**

Implemented in JavaScript 1.0

JavaScript 1.1: added type property

**Created by**

The HTML INPUT tag, with "hidden" as the value of the TYPE attribute. For a given form, the JavaScript runtime engine creates appropriate Hidden objects and puts these objects in the elements array of the corresponding Hidden object. You access a Hidden object by indexing this array. You can index the array either by number or, if supplied, by using the value of the NAME attribute.

**Description**

A Hidden object is a form element and must be defined within a FORM tag.

A Hidden object cannot be seen or modified by an end user, but you can programmatically change the value of the object by changing its value property. You can use Hidden objects for client/server communication.

### Property Summary

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>form</td>
<td>Specifies the form containing the Hidden object.</td>
</tr>
<tr>
<td>name</td>
<td>Reflects the NAME attribute.</td>
</tr>
<tr>
<td>type</td>
<td>Reflects the TYPE attribute.</td>
</tr>
<tr>
<td>value</td>
<td>Reflects the current value of the Hidden object.</td>
</tr>
</tbody>
</table>

### Method Summary

This object inherits the watch and unwatch methods from Object.

### Examples

The following example uses a Hidden object to store the value of the last object the user clicked. The form contains a “Display hidden value” button that the user can click to display the value of the Hidden object in an Alert dialog box.

```html
<HTML>
<HEAD>
<TITLE>Hidden object example</TITLE>
</HEAD>
<BODY>
Click some of these objects, then click the "Display value" button to see the value of the last object clicked.
```
Hidden.form

```html
<FORM NAME="myForm">
  <INPUT TYPE="hidden" NAME="hiddenObject" VALUE="None">
  <P>
  <INPUT TYPE="button" VALUE="Click me" NAME="button1"
      onClick="document.myForm.hiddenObject.value=this.value">
  <P>
  <INPUT TYPE="radio" NAME="musicChoice" VALUE="soul-and-r&b"
      onClick="document.myForm.hiddenObject.value=this.value"> Soul and R&B
  <INPUT TYPE="radio" NAME="musicChoice" VALUE="jazz"
      onClick="document.myForm.hiddenObject.value=this.value"> Jazz
  <INPUT TYPE="radio" NAME="musicChoice" VALUE="classical"
      onClick="document.myForm.hiddenObject.value=this.value"> Classical
  <P>
  <SELECT NAME="music_type_single"
      onFocus="document.myForm.hiddenObject.value=this.options[this.selectedIndex].text">
      <OPTION SELECTED> Red <OPTION> Orange <OPTION> Yellow
  </SELECT>
  <P><INPUT TYPE="button" VALUE="Display hidden value" NAME="button2"
      onClick="alert('Last object clicked: ' +
      document.myForm.hiddenObject.value)">
  </FORM>
</BODY>
</HTML>
```

See also  
document.cookie

form

An object reference specifying the form containing this object.

Property of  
Hidden

Read-only

Implemented in  
JavaScript 1.0

Description  
Each form element has a form property that is a reference to the element's parent form. This property is especially useful in event handlers, where you might need to refer to another element on the current form.
Examples  

**Example 1.** In the following example, the form `myForm` contains a `Hidden` object and a button. When the user clicks the button, the value of the `Hidden` object is set to the form’s name. The button’s `onClick` event handler uses `this.form` to refer to the parent form, `myForm`.

```html
<FORM NAME="myForm">
  Form name:<INPUT TYPE="hidden" NAME="h1" VALUE="Beluga">
  <P>
  <INPUT NAME="button1" TYPE="button" VALUE="Store Form Name"
    onClick="this.form.h1.value=this.form.name">
</FORM>
```

**Example 2.** The following example uses an object reference, rather than the `this` keyword, to refer to a form. The code returns a reference to `myForm`, which is a form containing `myHiddenObject`.

```javascript
document.myForm.myHiddenObject.form
```

See also  

`Hidden` name

---

**name**

A string specifying the name of this object.

*Property of*  
`Hidden`

*Implemented in*  
JavaScript 1.0

**Security**  

*JavaScript 1.1.* This property is tainted by default. For information on data tainting, see the [Client-Side JavaScript Guide](#).

---

**type**

For all `Hidden` objects, the value of the `type` property is "hidden". This property specifies the form element’s type.

*Property of*  
`Hidden`

*Read-only*  

*Implemented in*  
JavaScript 1.1
Examples  The following example writes the value of the type property for every element on a form.

```javascript
for (var i = 0; i < document.myForm.elements.length; i++) {
  document.writeln("<BR>type is " + document.myForm.elements[i].type)
}
```

value

A string that reflects the VALUE attribute of the object.

*Property of* Hidden

*Implemented in* JavaScript 1.0

Security  JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

Examples  The following function evaluates the value property of a group of buttons and displays it in the msgWindow window:

```javascript
function valueGetter() {
  var msgWindow=window.open(""
  msgWindow.document.write("The submit button says " +
  document.valueTest.submitButton.value + "<BR>"))
  msgWindow.document.write("The reset button says " +
  document.valueTest.resetButton.value + "<BR>"))
  msgWindow.document.write("The hidden field says " +
  document.valueTest.hiddenField.value + "<BR>"))
  msgWindow.document.close()
}
```

This example displays the following values:

- The submit button says Query Submit
- The reset button says Reset
- The hidden field says pipefish are cute.

The previous example assumes the buttons have been defined as follows:

```html
<input type="submit" name="submitButton">
<input type="reset" name="resetButton">
<input type="hidden" name="hiddenField" value="pipefish are cute.">
```
History

Contains an array of information on the URLs that the client has visited within a window. This information is stored in a history list and is accessible through the browser’s Go menu.

*History* is a client-side object that is implemented in JavaScript 1.0. JavaScript 1.1 added the `current`, `next`, and `previous` properties to the `window` object.

**Created by**

History objects are predefined JavaScript objects that you access through the `history` property of a `window` object.

**Description**

To change a window’s current URL without generating a history entry, you can use the `Location.replace` method. This replaces the current page with a new one without generating a history entry. See `Location.replace`.

You can refer to the history entries by using the `window.history` array. This array contains an entry for each history entry in source order. Each array entry is a string containing a URL. For example, if the history list contains three named entries, these entries are reflected as `history[0]`, `history[1]`, and `history[2]`.

If you access the `history` array without specifying an array element, the browser returns a string of HTML which displays a table of URLs, each of which is a link.

**Property Summary**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>current</code></td>
<td>Specifies the URL of the current history entry.</td>
</tr>
<tr>
<td><code>length</code></td>
<td>Reflects the number of entries in the history list.</td>
</tr>
<tr>
<td><code>next</code></td>
<td>Specifies the URL of the next history entry.</td>
</tr>
<tr>
<td><code>previous</code></td>
<td>Specifies the URL of the previous history entry.</td>
</tr>
</tbody>
</table>
In addition, this object inherits the `watch` and `unwatch` methods from the `Object`.

### Examples

**Example 1.** The following example goes to the URL the user visited three clicks ago in the current window.

```
history.go(-3)
```

**Example 2.** You can use the `history` object with a specific window or frame. The following example causes `window2` to go back one item in its window (or session) history:

```
window2.history.back()
```

**Example 3.** The following example causes the second frame in a frameset to go back one item:

```
parent.frames[1].history.back()
```

**Example 4.** The following example causes the frame named `frame1` in a frameset to go back one item:

```
parent.frame1.history.back()
```

**Example 5.** The following example causes the frame named `frame2` in `window2` to go back one item:

```
window2.frame2.history.back()
```

**Example 6.** The following code determines whether the first entry in the `history` array contains the string "NETSCAPE". If it does, the function `myFunction` is called.

```
if (history[0].indexOf("NETSCAPE") != -1) {
    myFunction(history[0])
}
```
Example 7. The following example displays the entire history list:

```javascript
document.writeln("<B>history is</B> " + history)
```

This code displays output similar to the following:

```
history is
Welcome to Netscape http://home.netscape.com/
Sun Microsystems http://www.sun.com/
Royal Airways http://www.supernet.net/~dugbrown/
```

See also Location, Location.replace

**back**

Loads the previous URL in the history list.

Method of History

Implemented in JavaScript 1.0

Syntax `back()`

Parameters None

Description This method performs the same action as a user choosing the Back button in the browser. The `back` method is the same as `history.go(-1)`.

Examples The following custom buttons perform the same operation as the browser's Back button:

```html
<P><INPUT TYPE="button" VALUE="< Go Back"
onClick="history.back()">
<P><INPUT TYPE="button" VALUE="> Go Back"
onClick="myWindow.back()">```

See also History.forward, History.go
**current**

A string specifying the complete URL of the current history entry.

*Property of* History

*Read-only*  
*Implemented in* JavaScript 1.1

**Security**

Getting the value of this property requires the UniversalBrowserRead privilege. It has no value if you do not have this privilege. For information on security, see the *Client-Side JavaScript Guide*.

**JavaScript 1.1**. This property is tainted by default. It has no value of data tainting is disabled. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Examples**

The following example determines whether `history.current` contains the string "netscape.com". If it does, the function `myFunction` is called.

```javascript
if (history.current.indexOf("netscape.com") != -1) {
  myFunction(history.current)
}
```

**See also** History.next, History.previous

---

**forward**

Loads the next URL in the history list.

*Method of* History

*Implemented in* JavaScript 1.0

**Syntax**

`forward()`

**Parameters** None

**Description**

This method performs the same action as a user choosing the Forward button in the browser. The `forward` method is the same as `history.go(1)`.
Examples

The following custom buttons perform the same operation as the browser's Forward button:

```html
<P><INPUT TYPE="button" VALUE="< Forward"
 onClick="history.forward()">
<P><INPUT TYPE="button" VALUE="> Forward"
 onClick="myWindow.forward()">
```

See also  History.back, History.go

---

### go

Loads a URL from the history list.

**Method of**  History

**Implemented in**  JavaScript 1.0

**Syntax**  

```javascript
go(delta)
go(location)
```

**Parameters**

- `delta`  
  An integer representing a relative position in the history list.

- `location`  
  A string representing all or part of a URL in the history list.

**Description**

The `go` method navigates to the location in the history list determined by the specified parameter.

If the `delta` argument is 0, the browser reloads the current page. If it is an integer greater than 0, the `go` method loads the URL that is that number of entries forward in the history list; otherwise, it loads the URL that is that number of entries backward in the history list.

The `location` argument is a string. Use `location` to load the nearest history entry whose URL contains `location` as a substring. Matching the URL to the `location` parameter is case-insensitive. Each section of a URL contains different information. See Location for a description of the URL components.

The `go` method creates a new entry in the history list. To load a URL without creating an entry in the history list, use Location.replace.
**Examples**  
The following button navigates to the nearest history entry that contains the string "home.netscape.com":

```html
<P><INPUT TYPE="button" VALUE="Go"
onClick="history.go('home.netscape.com')">
```

The following button navigates to the URL that is three entries backward in the history list:

```html
<P><INPUT TYPE="button" VALUE="Go"
onClick="history.go(-3)">
```

**See also**  
`History.back`, `History.forward`, `Location.reload`, `Location.replace`

---

**length**

The number of elements in the `history` array.

*Property of*  
`History`

*Read-only*

*Implemented in*  
JavaScript 1.0

**Security**  
Getting the value of this property requires the `UniversalBrowserRead` privilege. For information on security, see the *Client-Side JavaScript Guide*.

---

**next**

A string specifying the complete URL of the next history entry.

*Property of*  
`History`

*Read-only*

*Implemented in*  
JavaScript 1.1

**Security**  
Getting the value of this property requires the `UniversalBrowserRead` privilege. It has no value if you do not have this privilege. For information on security, see the *Client-Side JavaScript Guide*.

**JavaScript 1.1.**  
This property is tainted by default. It has no value if data tainting is disabled. For information on data tainting, see the *Client-Side JavaScript Guide*.
Description  The `next` property reflects the URL that would be used if the user chose Forward from the Go menu.

Examples  The following example determines whether `history.next` contains the string "NETSCAPE.COM". If it does, the function `myFunction` is called.

```javascript
if (history.next.indexOf("NETSCAPE.COM") !== -1) {
    myFunction(history.next)
}
```

See also  `History.current`, `History.previous`

### previous

A string specifying the complete URL of the previous history entry.

**Property of**  `History`

**Read-only**

**Implemented in**  JavaScript 1.1

**Security**  Getting the value of this property requires the `UniversalBrowserRead` privilege. It has no value if you do not have this privilege. For information on security, see the `Client-Side JavaScript Guide`.

**JavaScript 1.1.** This property is tainted by default. It has no value of data tainting is disabled. For information on data tainting, see the `Client-Side JavaScript Guide`.

Description  The `previous` property reflects the URL that would be used if the user chose Back from the Go menu.

Examples  The following example determines whether `history.previous` contains the string "NETSCAPE.COM". If it does, the function `myFunction` is called.

```javascript
if (history.previous.indexOf("NETSCAPE.COM") !== -1) {
    myFunction(history.previous)
}
```

See also  `History.current`, `History.next`
An image on an HTML form.

*Client-side object*

*Implemented in* JavaScript 1.1

JavaScript 1.2: added handleEvent method

**Created by** The `Image` constructor or the `IMG` tag.

The JavaScript runtime engine creates an `Image` object corresponding to each `IMG` tag in your document. It puts these objects in an array in the `document.images` property. You access an `Image` object by indexing this array.

To define an image with the `IMG` tag, use standard HTML syntax with the addition of JavaScript event handlers. If specify a value for the `NAME` attribute, you can use that name when indexing the `images` array.

To define an image with its constructor, use the following syntax:

```javascript
new Image([width,] [height])
```

**Parameters**

- `width` The image width, in pixels.
- `height` The image height, in pixels.

**Event handlers**

- `onAbort`
- `onError`
- `onKeyDown`
- `onKeyPress`
- `onKeyUp`
- `onLoad`
To define an event handler for an Image object created with the Image constructor, set the appropriate property of the object. For example, if you have an Image object named imageName and you want to set one of its event handlers to a function whose name is handlerFunction, use one of the following statements:

```javascript
imageName.onabort = handlerFunction
imageName.onerror = handlerFunction
imageName.onkeydown = handlerFunction
imageName.onkeypress = handlerFunction
imageName.onkeyup = handlerFunction
imageName.onload = handlerFunction
```

Image objects do not have onClick, onMouseOut, and onMouseOver event handlers. However, if you define an Area object for the image or place the IMG tag within a Link object, you can use the Area or Link object's event handlers. See Link.

**Description**

The position and size of an image in a document are set when the document is displayed in the web browser and cannot be changed using JavaScript (the width and height properties are read-only for these objects). You can change which image is displayed by setting the src and lowsrc properties. (See the descriptions of Image.src and Image.lowsrc.)

You can use JavaScript to create an animation with an Image object by repeatedly setting the src property, as shown in Example 4 below. JavaScript animation is slower than GIF animation, because with GIF animation the entire animation is in one file; with JavaScript animation, each frame is in a separate file, and each file must be loaded across the network (host contacted and data transferred).

The primary use for an Image object created with the Image constructor is to load an image from the network (and decode it) before it is actually needed for display. Then when you need to display the image within an existing image cell, you can set the src property of the displayed image to the same value as that used for the previously fetched image, as follows.

```javascript
myImage = new Image()
myImage.src = "seasotter.gif"
...
document.images[0].src = myImage.src
```
The resulting image will be obtained from cache, rather than loaded over the network, assuming that sufficient time has elapsed to load and decode the entire image. You can use this technique to create smooth animations, or you could display one of several images based on form input.

### Property Summary

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>border</td>
<td>Reflects the BORDER attribute.</td>
</tr>
<tr>
<td>complete</td>
<td>Boolean value indicating whether the web browser has completed its attempt to load the image.</td>
</tr>
<tr>
<td>height</td>
<td>Reflects the HEIGHT attribute.</td>
</tr>
<tr>
<td>hspace</td>
<td>Reflects the HSPACE attribute.</td>
</tr>
<tr>
<td>lowsrc</td>
<td>Reflects the LOWSRC attribute.</td>
</tr>
<tr>
<td>name</td>
<td>Reflects the NAME attribute.</td>
</tr>
<tr>
<td>src</td>
<td>Reflects the SRC attribute.</td>
</tr>
<tr>
<td>vspace</td>
<td>Reflects the VSPACE attribute.</td>
</tr>
<tr>
<td>width</td>
<td>Reflects the WIDTH attribute.</td>
</tr>
</tbody>
</table>

### Method Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>handleEvent</td>
<td>Invokes the handler for the specified event.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the watch and unwatch methods from Object.

### Examples

**Example 1: Create an image with the IMG tag.** The following code defines an image using the IMG tag:

```html
<IMG NAME="aircraft" SRC="f15e.gif" ALIGN="left" VSPACE="10">
```

The following code refers to the image:

```javascript
document.aircraft.src='f15e.gif'
```

When you refer to an image by its name, you must include the form name if the image is on a form. The following code refers to the image if it is on a form:

```javascript
document.myForm.aircraft.src='f15e.gif'
```
Example 2: Create an image with the Image constructor. The following example creates an Image object, myImage, that is 70 pixels wide and 50 pixels high. If the source URL, seaotter.gif, does not have dimensions of 70x50 pixels, it is scaled to that size.

myImage = new Image(70, 50)
myImage.src = "seaotter.gif"

If you omit the width and height arguments from the Image constructor, myImage is created with dimensions equal to that of the image named in the source URL.

myImage = new Image()
myImage.src = "seaotter.gif"

Example 3: Display an image based on form input. In the following example, the user selects which image is displayed. The user orders a shirt by filling out a form. The image displayed depends on the shirt color and size that the user chooses. All possible image choices are preloaded to speed response time. When the user clicks the button to order the shirt, the allShirts function displays the images of all the shirts.

```javascript
<SCRIPT>
    shirts = new Array()
    shirts[0] = "R-S"
    shirts[1] = "R-M"
    shirts[2] = "R-L"
    shirts[3] = "W-S"
    shirts[4] = "W-M"
    shirts[5] = "W-L"
    shirts[6] = "B-S"
    shirts[7] = "B-M"
    shirts[8] = "B-L"

    doneThis = 0
    shirtImg = new Array()

    // Preload shirt images
    for(idx=0; idx < 9; idx++) {
        shirtImg[idx] = new Image()
        shirtImg[idx].src = "shirt-" + shirts[idx] + ".gif"
    }
</SCRIPT>
function changeShirt(form) {
    shirtColor = form.color.options[form.color.selectedIndex].text
    shirtSize = form.size.options[form.size.selectedIndex].text
    newSrc = "shirt-" + shirtColor.charAt(0) + "-" + shirtSize.charAt(0) + ".gif"
    document.shirt.src = newSrc
}

function allShirts() {
    document.shirt.src = shirtImg[doneThis].src
    doneThis++
    if(doneThis != 9)setTimeout("allShirts()", 500)
    else doneThis = 0
    return
}
</SCRIPT><FONT SIZE=+2><B>Netscape Polo Shirts!</FONT></B><TABLE CELLSPACING=20 BORDER=0>
<TR><TD><IMG name="shirt" SRC="shirt-W-L.gif"></TD>
<TD><FORM><B>Color</B><SELECT SIZE=3 NAME="color" onChange="changeShirt(this.form)">
    <OPTION> Red
    <OPTION SELECTED> White
    <OPTION> Blue
</SELECT>
    <P><B>Size</B><SELECT SIZE=3 NAME="size" onChange="changeShirt(this.form)">
        <OPTION> Small
        <OPTION> Medium
        <OPTION SELECTED> Large
    </SELECT>
    <P><INPUT type="button" name="buy" value="Buy This Shirt!"
        onClick="allShirts()"/>
</FORM></TD>
</TR>
</TABLE>
Example 4: JavaScript animation. The following example uses JavaScript to create an animation with an Image object by repeatedly changing the value of the src property. The script begins by preloading the 10 images that make up the animation (image1.gif, image2.gif, image3.gif, and so on). When the Image object is placed on the document with the IMG tag, image1.gif is displayed and the onLoad event handler starts the animation by calling the animate function. Notice that the animate function does not call itself after changing the src property of the Image object. This is because when the src property changes, the image’s onLoad event handler is triggered and the animate function is called.

```html
<SCRIPT>
delay = 100
imageNum = 1

// Preload animation images
theImages = new Array()
for(i = 1; i < 11; i++) {
    theImages[i] = new Image()
    theImages[i].src = "image " + i + ".gif"
}

function animate() {
    document.animation.src = theImages[imageNum].src
    imageNum++
    if(imageNum > 10) {
        imageNum = 1
    }
}

function slower() {
    delay+=10
    if(delay > 4000) delay = 4000
}

function faster() {
    delay-=10
    if(delay < 0) delay = 0
}
</SCRIPT>

<BODY BGCOLOR="white">
<IMG NAME="animation" SRC="image1.gif" ALT="[Animation]"
    onLoad="setTimeout('animate()', delay)"
>
<FORM>
    <INPUT TYPE="button" Value="Slower" onClick="slower()"/>
    <INPUT TYPE="button" Value="Faster" onClick="faster()"
    </FORM>
</BODY>
```
See also the examples for the onAbort, onError, and onLoad event handlers.

**See also** Link, onClick, onMouseOut, onMouseOver

---

### border

A string specifying the width, in pixels, of an image border.

*Property of* | Image
---|---
*Read-only* | 
*Implemented in* | JavaScript 1.1

**Description**
The `border` property reflects the `BORDER` attribute of the `IMG` tag. For images created with the `Image` constructor, the value of the `border` property is 0.

**Examples**
The following function displays the value of an image’s `border` property if the value is not 0.

```javascript
function checkBorder(theImage) {
    if (theImage.border==0) {
        alert('The image has no border!')
    } else {
        alert('The image's border is ' + theImage.border)
    }
}
```

**See also** `Image.height`, `Image.hspace`, `Image.vspace`, `Image.width`

---

### complete

A boolean value that indicates whether the web browser has completed its attempt to load an image.

*Property of* | Image
---|---
*Read-only* | 
*Implemented in* | JavaScript 1.1
**Examples**  The following example displays an image and three radio buttons. The user can click the radio buttons to choose which image is displayed. Clicking another button lets the user see the current value of the `complete` property.

```html
<B>Choose an image:</B><BR>
<INPUT TYPE="radio" NAME="imageChoice" VALUE="image1" CHECKED onClick="document.images[0].src='f15e.gif'">F-15 Eagle<BR>
<INPUT TYPE="radio" NAME="imageChoice" VALUE="image2" onClick="document.images[0].src='f15e2.gif'">F-15 Eagle 2<BR>
<INPUT TYPE="radio" NAME="imageChoice" VALUE="image3" onClick="document.images[0].src='ah64.gif'">AH-64 Apache<BR>
<INPUT TYPE="button" VALUE="Is the image completely loaded?" onClick="alert('The value of the complete property is ' + document.images[0].complete)""><BR>
<IMG NAME="aircraft" SRC="f15e.gif" ALIGN="left" VSPACE="10"><BR>
```

See also  Image.lowsrc, Image.src

---

**handleEvent**

Invokes the handler for the specified event.

**Method of**  Image

**Implemented in**  JavaScript 1.2

**Syntax**  `handleEvent(event)`

**Parameters**

- `event`  The name of an event for which the specified object has an event handler.

**Description**  For information on handling events, see the *Client-Side JavaScript Guide*. 
**height**

A string specifying the height of an image in pixels.

*Property of* Image

*Read-only*

*Implemented in* JavaScript 1.1

**Description**
The height property reflects the HEIGHT attribute of the IMG tag. For images created with the Image constructor, the value of the height property is the actual, not the displayed, height of the image.

**Examples**
The following function displays the values of an image’s height, width, hspace, and vspace properties.

```javascript
function showImageSize(theImage) {
    alert('height=' + theImage.height +
    '; width=' + theImage.width +
    '; hspace=' + theImage.hspace +
    '; vspace=' + theImage.vspace)
}
```

*See also* Image.border, Image.hspace, Image.vspace, Image.width

**hspace**

A string specifying a margin in pixels between the left and right edges of an image and the surrounding text.

*Property of* Image

*Read-only*

*Implemented in* JavaScript 1.1

**Description**
The hspace property reflects the HSPACE attribute of the IMG tag. For images created with the Image constructor, the value of the hspace property is 0.

**Examples**
See the examples for the height property.

*See also* Image.border, Image.height, Image.vspace, Image.width
Image.lowsrc

---

**lowsrc**

A string specifying the URL of a low-resolution version of an image to be displayed in a document.

*Property of* Image

*Implemented in* JavaScript 1.1

**Description**
The `lowsrc` property initially reflects the `L O W S R C` attribute of the `IMG` tag. The web browser loads the smaller image specified by `lowsrc` and then replaces it with the larger image specified by the `src` property. You can change the `lowsrc` property at any time.

**Examples**
See the examples for the `src` property.

**See also** Image.complete, Image.src

---

**name**

A string specifying the name of an object.

*Property of* Image

*Read-only*

*Implemented in* JavaScript 1.1

**Security** JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide.*

**Description**
Represents the value of the `NAME` attribute. For images created with the Image constructor, the value of the `name` property is null.

**Examples**
In the following example, the `valueGetter` function uses a `for` loop to iterate over the array of elements on the `valueTest` form. The `msgWindow` window displays the names of all the elements on the form:

```javascript
newWindow=window.open("http://home.netscape.com")
function valueGetter() {
    var msgWindow=window.open(""
    for (var i = 0; i < newWindow.document.valueTest.elements.length; i++) {
        msgWindow.document.write(newWindow.document.valueTest.elements[i].name + "<BR>")
    }
}
```
In the following example, the first statement creates a window called `netscapeWin`. The second statement displays the value "netscapeHomePage" in the Alert dialog box, because "netscapeHomePage" is the value of the `windowName` argument of `netscapeWin`.

```javascript
netscapeWin = window.open("http://home.netscape.com","netscapeHomePage")
alert(netscapeWin.name)
```

**src**

A string specifying the URL of an image to be displayed in a document.

*Property of* Image

*Implemented in* JavaScript 1.1

**Description**

The `src` property initially reflects the `SRC` attribute of the `IMG` tag. Setting the `src` property begins loading the new URL into the image area (and aborts the transfer of any image data that is already loading into the same area). Therefore, if you plan to alter the `lowsrc` property, you should do so before setting the `src` property.

If the URL in the `src` property refers to an image that is not the same size as the image cell it is loaded into, the source image is scaled to fit.

When you change the `src` property of a displayed image, the new image you specify is displayed in the area defined for the original image. For example, suppose an `Image` object originally displays the file `beluga.gif`:

```html
<IMG NAME="myImage" SRC="beluga.gif" ALIGN="left">
```

If you set `myImage.src='seaotter.gif'`, the image `seaotter.gif` is scaled to fit in the same space originally used by `beluga.gif`, even if `seaotter.gif` is not the same size as `beluga.gif`.

You can change the `src` property at any time.
Examples  The following example displays an image and three radio buttons. The user can click the radio buttons to choose which image is displayed. Each image also uses the `lowsr` property to display a low-resolution image.

```html
<SCRIPT>
function displayImage(lowRes,highRes) {
    document.images[0].lowsr=lowRes
    document.images[0].src=highRes
}
</SCRIPT>

<FORM NAME="imageForm">
    <B>Choose an image:</B>
    <BR><INPUT TYPE="radio" NAME="imageChoice" VALUE="image1" CHECKED onClick="displayImage('f15el.gif','f15e.gif')">F-15 Eagle
    <BR><INPUT TYPE="radio" NAME="imageChoice" VALUE="image2" onClick="displayImage('f15e2l.gif','f15e2.gif')">F-15 Eagle 2
    <BR><INPUT TYPE="radio" NAME="imageChoice" VALUE="image3" onClick="displayImage('ah64l.gif','ah64.gif')">AH-64 Apache
    <BR>
    <IMG NAME="aircraft" SRC="f15e.gif" LOWSRC="f15el.gif" ALIGN="left" VSPACE="10"><BR></FORM>

See also  `Image.complete`, `Image.lowsr`

**vspace**

A string specifying a margin in pixels between the top and bottom edges of an image and the surrounding text.

*Property of*  `Image`

*Read-only*

*Implemented in*  JavaScript 1.1

**Description**  The `vspace` property reflects the `VSPACE` attribute of the `IMG` tag. For images created with the `Image` constructor, the value of the `vspace` property is 0.

**Examples**  See the examples for the `height` property.

**See also**  `Image.border`, `Image.height`, `Image.hspace`, `Image.width`
**width**

A string specifying the width of an image in pixels.

*Property of* Image

*Read-only*

*Implemented in* JavaScript 1.1

**Description**
The `width` property reflects the `WIDTH` attribute of the `IMG` tag. For images created with the `Image` constructor, the value of the `width` property is the actual, not the displayed, width of the image.

**Examples**
See the examples for the `height` property.

**See also** Image.border, Image.height, Image.hspace, Image.vspace
java

A top-level object used to access any Java class in the package \texttt{java.*}.

Created by
The \texttt{java} object is a top-level, predefined JavaScript object. You can automatically access it without using a constructor or calling a method.

Description
The \texttt{java} object is a convenience synonym for the property \texttt{Packages.java}.

See also
\texttt{Packages, Packages.java}
A wrapped Java array accessed from within JavaScript code is a member of the type `JavaArray`.

**Core object**

`JavaArray`

**Implemented in** JavaScript 1.1, NES 2.0

**Created by**

Any Java method which returns an array. In addition, you can create a `JavaArray` with an arbitrary data type using the `newInstance` method of the `Array` class:

```java
public static Object newInstance(Class componentType, int length) throws NegativeArraySizeException
```

**Description**

The `JavaArray` object is an instance of a Java array that is created in or passed to JavaScript. `JavaArray` is a wrapper for the instance; all references to the array instance are made through the `JavaArray`.

You must specify a class object, such as one returned by `java.lang.Object.forName`, for the `componentType` parameter of `newInstance` when you use this method to create an array. You cannot use a `JavaClass` object for the `componentType` parameter.

Use zero-based indexes to access the elements in a `JavaArray` object, just as you do to access elements in an array in Java. For example:

```javascript
var javaString = new java.lang.String("Hello world!");
var byteArray = javaString.getBytes();
byteArray[0] // returns 72
byteArray[1] // returns 101
```

Any Java data brought into JavaScript is converted to JavaScript data types. When the `JavaArray` is passed back to Java, the array is unwrapped and can be used by Java code. See the *Client-Side JavaScript Guide* for more information about data type conversions.

**Property Summary**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>length</td>
<td>The number of elements in the Java array represented by <code>JavaArray</code>.</td>
</tr>
</tbody>
</table>
JavaArray.length

Method Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>toString</td>
<td>Returns a string identifying the object as a JavaArray.</td>
</tr>
</tbody>
</table>

Examples

Example 1. Instantiating a JavaArray in JavaScript.

In this example, the JavaArray byteArray is created by the java.lang.String.getBytes method, which returns an array.

```javascript
var javaString = new java.lang.String("Hello world!");
var byteArray = javaString.getBytes();
```

Example 2. Instantiating a JavaArray in JavaScript with the newInstance method.

Use a class object returned by java.lang.Class.forName as the argument for the newInstance method, as shown in the following code:

```javascript
var dataType = java.lang.Class.forName("java.lang.String")
var dogs = java.lang.reflect.Array.newInstance(dataType, 5)
```

length

The number of elements in the Java array represented by the JavaArray object.

Property of JavaArray

Implemented in JavaScript 1.1, NES 2.0

Description

Unlike Array.length, JavaArray.length is a read-only property. You cannot change the value of the JavaArray.length property because Java arrays have a fixed number of elements.

See also Array.length
toString

Returns a string representation of the JavaArray.

Method of  JavaArray

Implemented in  JavaScript 1.1, NES 2.0

Parameters  None

Description  The toString method is inherited from the Object object and returns the following value:

[object JavaArray]
JavaClass

A JavaScript reference to a Java class.

Core object

Implemented in JavaScript 1.1, NES 2.0

Created by A reference to the class name used with the Packages object:

`Packages.JavaClass`

where `JavaClass` is the fully-specified name of the object's Java class. The
LiveConnect java, sun, and netscape objects provide shortcuts for
commonly used Java packages and also create `JavaClass` objects.

Description A `JavaClass` object is a reference to one of the classes in a Java package,
such as `netscape.javascript.JSObject`. A `JavaPackage` object is a
reference to a Java package, such as `netscape.javascript`. In JavaScript,
the `JavaPackage` and `JavaClass` hierarchy reflect the Java package and
class hierarchy.

You must create a wrapper around an instance of `java.lang.Class` before
you pass it as a parameter to a Java method—`JavaClass` objects are not
automatically converted to instances of `java.lang.Class`.

Property Summary The properties of a `JavaClass` object are the static fields of the Java class.

Method Summary The methods of a `JavaClass` object are the static methods of the Java class.

Examples In the following example, `x` is a `JavaClass` object referring to
`java.awt.Font`. Because `BOLD` is a static field in the `Font` class, it is also a
property of the `JavaClass` object.

```javascript
x = java.awt.Font
myFont = x("helv",x.BOLD,10) // creates a Font object
```

The previous example omits the `Packages` keyword and uses the `java`
synonym because the `Font` class is in the `java` package.

See also `JavaArray`, `JavaObject`, `JavaPackage`, `Packages`
JavaObject

The type of a wrapped Java object accessed from within JavaScript code.

*Core object*

*Implemented in* JavaScript 1.1, NES 2.0

**Created by** Any Java method which returns an object type. In addition, you can explicitly construct a JavaObject using the object’s Java constructor with the Packages keyword:

```java
new Packages.JavaClass(parameterList)
```

where `JavaClass` is the fully-specified name of the object’s Java class.

**Parameters**

| parameterList | An optional list of parameters, specified by the constructor in the Java class. |

**Description**

The JavaObject object is an instance of a Java class that is created in or passed to JavaScript. JavaObject is a wrapper for the instance; all references to the class instance are made through the JavaObject.

Any Java data brought into JavaScript is converted to JavaScript data types. When the JavaObject is passed back to Java, it is unwrapped and can be used by Java code. See the *Client-Side JavaScript Guide* for more information about data type conversions.

**Property Summary**

Inherits public data members from the Java class of which it is an instance as properties. It also inherits public data members from any superclass as properties.

**Method Summary**

Inherits public methods from the Java class of which it is an instance. The JavaObject also inherits methods from `java.lang.Object` and any other superclass.

**Examples**

**Example 1.** Instantiating a Java object in JavaScript.

The following code creates the JavaObject `theString`, which is an instance of the class `java.lang.String`:

```javascript
var theString = new Packages.java.lang.String("Hello, world")
```
Because the `String` class is in the `java` package, you can also use the `java` synonym and omit the `Packages` keyword when you instantiate the class:

```javascript
var theString = new java.lang.String("Hello, world")
```

**Example 2.** Accessing methods of a Java object.

Because the `JavaObject` `theString` is an instance of `java.lang.String`, it inherits all the public methods of `java.lang.String`. The following example uses the `startsWith` method to check whether `theString` begins with “Hello”.

```javascript
var theString = new java.lang.String("Hello, world")
theString.startsWith("Hello") // returns true
```

**Example 3.** Accessing inherited methods.

Because `getClass` is a method of `Object`, and `java.lang.String` extends `Object`, the `String` class inherits the `getClass` method. Consequently, `getClass` is also a method of the `JavaObject` which instantiates `String` in JavaScript.

```javascript
var theString = new java.lang.String("Hello, world")
theString.getClass() // returns java.lang.String
```

**See also** JavaArray, JavaClass, JavaPackage, Packages
JavaPackage

A JavaScript reference to a Java package.

Core object

Implemented in JavaScript 1.1, NES 2.0

Created by A reference to the package name used with the Packages keyword:

`Packages.JavaPackage`

where `JavaPackage` is the name of the object's Java package. If the package is in the java, netscape, or sun packages, the Packages keyword is optional.

Description In Java, a package is a collection of Java classes or other Java packages. For example, the netscape package contains the package `netscape.javascript`; the `netscape.javascript` package contains the classes `JSObject` and `JException`.

In JavaScript, a `JavaPackage` is a reference to a Java package. For example, a reference to `netscape` is a `JavaPackage`. `netscape.javascript` is both a `JavaPackage` and a property of the `netscape JavaPackage`.

A `JavaClass` object is a reference to one of the classes in a package, such as `netscape.javascript.JSObject`. The `JavaPackage` and `JavaClass` hierarchy reflect the Java package and class hierarchy.

Although the packages and classes contained in a `JavaPackage` are its properties, you cannot use a for...in statement to enumerate them as you can enumerate the properties of other objects.

Property Summary The properties of a `JavaPackage` are the `JavaClass` objects and any other `JavaPackage` objects it contains.

Examples Suppose the Redwood corporation uses the Java `redwood` package to contain various Java classes that it implements. The following code creates the `JavaPackage` `red`:

```
var red = Packages.redwood
```

See also `JavaArray`, `JavaClass`, `JavaObject`, `Packages`
Layer

Corresponds to a layer in an HTML page and provides a means for manipulating that layer.

*Client-side object*

*Implemented in* JavaScript 1.2

**Created by**

The HTML `LAYER` or `ILAYER` tag, or using cascading style sheet syntax. The JavaScript runtime engine creates a `Layer` object corresponding to each layer in your document. It puts these objects in an array in the `document.layers` property. You access a `Layer` object by indexing this array.

To define a layer, use standard HTML syntax. If you specify the `id` attribute, you can use the value of that attribute to index into the `layers` array.

For a complete description of layers, see *Dynamic HTML in Netscape Communicator*.

Some layer properties can be directly modified by assignment; for example, "mylayer.visibility = hide". A layer object also has methods that can affect these properties.

**Event handlers**

- `onMouseOver`
- `onMouseOut`
- `onLoad`
- `onFocus`
- `onBlur`

**Property Summary**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>above</code></td>
<td>The <code>Layer</code> object above this one in z-order, among all layers in the document or the enclosing window object if this layer is topmost.</td>
</tr>
<tr>
<td><code>background</code></td>
<td>The image to use as the background for the layer's canvas.</td>
</tr>
<tr>
<td><code>bgColor</code></td>
<td>The color to use as a solid background color for the layer's canvas.</td>
</tr>
<tr>
<td><code>below</code></td>
<td>The <code>Layer</code> object below this one in z-order, among all layers in the document or null if this layer is at the bottom.</td>
</tr>
<tr>
<td><code>clip.bottom</code></td>
<td>The bottom edge of the clipping rectangle (the part of the layer that is visible.)</td>
</tr>
<tr>
<td>Property</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>clip.height</td>
<td>The height of the clipping rectangle (the part of the layer that is visible.)</td>
</tr>
<tr>
<td>clip.left</td>
<td>The left edge of the clipping rectangle (the part of the layer that is visible.)</td>
</tr>
<tr>
<td>clip.right</td>
<td>The right edge of the clipping rectangle (the part of the layer that is visible.)</td>
</tr>
<tr>
<td>clip.top</td>
<td>The top edge of the clipping rectangle (the part of the layer that is visible.)</td>
</tr>
<tr>
<td>clip.width</td>
<td>The width of the clipping rectangle (the part of the layer that is visible.)</td>
</tr>
<tr>
<td>document</td>
<td>The layer's associated document.</td>
</tr>
<tr>
<td>left</td>
<td>The horizontal position of the layer's left edge, in pixels, relative to the origin of its parent layer.</td>
</tr>
<tr>
<td>name</td>
<td>A string specifying the name assigned to the layer through the ID attribute in the LAYER tag.</td>
</tr>
<tr>
<td>pageX</td>
<td>The horizontal position of the layer, in pixels, relative to the page.</td>
</tr>
<tr>
<td>pageY</td>
<td>The vertical position of the layer, in pixels, relative to the page.</td>
</tr>
<tr>
<td>parentLayer</td>
<td>The layer object that contains this layer, or the enclosing window object if this layer is not nested in another layer.</td>
</tr>
<tr>
<td>siblingAbove</td>
<td>The layer object above this one in z-order, among all layers that share the same parent layer, or null if the layer has no sibling above.</td>
</tr>
<tr>
<td>siblingBelow</td>
<td>The layer object below this one in z-order, among all layers that share the same parent layer, or null if layer is at the bottom.</td>
</tr>
<tr>
<td>src</td>
<td>A string specifying the URL of the layer's content.</td>
</tr>
<tr>
<td>top</td>
<td>The vertical position of the layer's top edge, in pixels, relative to the origin of its parent layer.</td>
</tr>
<tr>
<td>visibility</td>
<td>Whether or not the layer is visible.</td>
</tr>
<tr>
<td>window</td>
<td>The window or Frame object that contains the layer, regardless of whether the layer is nested within another layer.</td>
</tr>
<tr>
<td>x</td>
<td>A convenience synonym for Layer.left.</td>
</tr>
<tr>
<td>y</td>
<td>A convenience synonym for Layer.top.</td>
</tr>
<tr>
<td>zIndex</td>
<td>The relative z-order of this layer with respect to its siblings.</td>
</tr>
</tbody>
</table>
## Method Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>captureEvents</td>
<td>Sets the window or document to capture all events of the specified type.</td>
</tr>
<tr>
<td>handleEvent</td>
<td>Invokes the handler for the specified event.</td>
</tr>
<tr>
<td>load</td>
<td>Changes the source of a layer to the contents of the specified file, and simultaneously changes the width at which the layer's HTML contents will be wrapped.</td>
</tr>
<tr>
<td>moveAbove</td>
<td>Stacks this layer above the layer specified in the argument, without changing either layer's horizontal or vertical position.</td>
</tr>
<tr>
<td>moveBelow</td>
<td>Stacks this layer below the specified layer, without changing either layer's horizontal or vertical position.</td>
</tr>
<tr>
<td>moveBy</td>
<td>Changes the layer position by applying the specified deltas, measured in pixels.</td>
</tr>
<tr>
<td>moveTo</td>
<td>Moves the top-left corner of the window to the specified screen coordinates.</td>
</tr>
<tr>
<td>moveToAbsolute</td>
<td>Changes the layer position to the specified pixel coordinates within the page (instead of the containing layer.)</td>
</tr>
<tr>
<td>releaseEvents</td>
<td>Sets the layer to release captured events of the specified type, sending the event to objects further along the event hierarchy.</td>
</tr>
<tr>
<td>resizeBy</td>
<td>Resizes the layer by the specified height and width values (in pixels).</td>
</tr>
<tr>
<td>resizeTo</td>
<td>Resizes the layer to have the specified height and width values (in pixels).</td>
</tr>
<tr>
<td>routeEvent</td>
<td>Passes a captured event along the normal event hierarchy.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the watch and unwatch methods from Object.

**Note** Just as in the case of a document, if you want to define mouse click response for a layer, you must capture `onMouseDown` and `onMouseUp` events at the level of the layer and process them as you want.

For details about capturing events, see the *Client-Side JavaScript Guide*. 
If an event occurs in a point where multiple layers overlap, the topmost layer gets the event, even if it is transparent. However, if a layer is hidden, it does not get events.

---

**above**

The layer object above this one in z-order, among all layers in the document or the enclosing window object if this layer is topmost.

*Property of Layer*

*Read-only*

*Implemented in JavaScript 1.2*

---

**background**

The image to use as the background for the layer's canvas (which is the part of the layer within the clip rectangle).

*Property of Layer*

*Implemented in JavaScript 1.2*

**Description**

Each layer has a background property, whose value is an image object, whose src attribute is a URL that indicates the image to use to provide a tiled backdrop. The value is null if the layer has no backdrop. For example:

```
layer.background.src = "fishbg.gif";
```

---

**below**

The layer object below this one in z-order, among all layers in the document or null if this layer is at the bottom.

*Property of Layer*

*Read-only*

*Implemented in JavaScript 1.2*
Layer.bgColor

---

**bgColor**

A string specifying the color to use as a solid background color for the layer's canvas (the part of the layer within the clip rectangle).

*Property of Layer*

*Implemented in JavaScript 1.2*

**Description**

The `bgColor` property is expressed as a hexadecimal RGB triplet or as a string literal (see the *Client-Side JavaScript Guide*). This property is the JavaScript reflection of the `BGCOLOR` attribute of the `BODY` tag.

You can set the `bgColor` property at any time.

If you express the color as a hexadecimal RGB triplet, you must use the format `rrggbb`. For example, the hexadecimal RGB values for salmon are red=FA, green=80, and blue=72, so the RGB triplet for salmon is "FA8072".

**Examples**

The following example sets the background color of the `myLayer` layer's canvas to aqua using a string literal:

```javascript
myLayer.bgColor="aqua"
```

The following example sets the background color of the `myLayer` layer's canvas to aqua using a hexadecimal triplet:

```javascript
myLayer.bgColor="00FFFF"
```

**See also**

`Layer.bgColor`

---

**captureEvents**

Sets the window or document to capture all events of the specified type.

*Method of Layer*

*Implemented in JavaScript 1.2*

**Syntax**

```javascript
captureEvents(eventType)
```

**Parameters**

- `eventType` Type of event to be captured. Available event types are listed in the *Client-Side JavaScript Guide*. 
Description
When a window with frames wants to capture events in pages loaded from
different locations (servers), you need to use captureEvents in a signed script
and precede it with enableExternalCapture. For more information and an
example, see enableExternalCapture.
captureEvents works in tandem with releaseEvents, routeEvent, and
handleEvent. For information on handling events, see the Client-Side
JavaScript Guide.

clip.bottom
The bottom edge of the clipping rectangle (the part of the layer that is visible.)
Any part of a layer that is outside the clipping rectangle is not displayed.
Property of Layer
Implemented in JavaScript 1.2

clip.height
The height of the clipping rectangle (the part of the layer that is visible.) Any
part of a layer that is outside the clipping rectangle is not displayed.
Property of Layer
Implemented in JavaScript 1.2

clip.left
The left edge of the clipping rectangle (the part of the layer that is visible.) Any
part of a layer that is outside the clipping rectangle is not displayed.
Property of Layer
Implemented in JavaScript 1.2

clip.right
The right edge of the clipping rectangle (the part of the layer that is visible.)
Any part of a layer that is outside the clipping rectangle is not displayed.
Property of Layer
Implemented in JavaScript 1.2
**clip.top**

The top edge of the clipping rectangle (the part of the layer that is visible.) Any part of a layer that is outside the clipping rectangle is not displayed.

*Property of* Layer  
*Implemented in* JavaScript 1.2

**clip.width**

The width of the clipping rectangle (the part of the layer that is visible.) Any part of a layer that is outside the clipping rectangle is not displayed.

*Property of* Layer  
*Implemented in* JavaScript 1.2

**document**

The layer's associated document.

*Property of* Layer  
*Read-only*  
*Implemented in* JavaScript 1.2

**Description** Each layer object contains its own document object. This object can be used to access the images, applets, embeds, links, anchors and layers that are contained within the layer. Methods of the document object can also be invoked to change the contents of the layer.

**handleEvent**

Invokes the handler for the specified event.

*Method of* Layer  
*Implemented in* JavaScript 1.2

**Syntax** `handleEvent(event)`

**Parameters**

- **event** Name of an event for which the specified object has an event handler.
Layer.left

Description
handleEvent works in tandem with captureEvents, releaseEvents, and routeEvent. For information on handling events, see the Client-Side JavaScript Guide.

left

The horizontal position of the layer's left edge, in pixels, relative to the origin of its parent layer.

Property of Layer
Implemented in JavaScript 1.2

The Layer.x property is a convenience synonym for the left property.

See also Layer.top

load

Changes the source of a layer to the contents of the specified file and simultaneously changes the width at which the layer's HTML contents are wrapped.

Method of Layer
Implemented in JavaScript 1.2

Syntax
load(sourcestring, width)

Parameters
sourcestring A string indicating the external file name.
width The width of the layer as a pixel value.
**moveAbove**

Stacks this layer above the layer specified in the argument, without changing either layer's horizontal or vertical position. After re-stacking, both layers will share the same parent layer.

*Method of* Layer
*Implemented in* JavaScript 1.2

**Syntax**

moveAbove(aLayer)

**Parameters**

aLayer  The layer above which to move the current layer.

**moveBelow**

Stacks this layer below the specified layer, without changing either layer's horizontal or vertical position. After re-stacking, both layers will share the same parent layer.

*Method of* Layer
*Implemented in* JavaScript 1.2

**Syntax**

moveBelow(aLayer)

**Parameters**

aLayer  The layer below which to move the current layer.

**moveBy**

Changes the layer position by applying the specified deltas, measured in pixels.

*Method of* Layer
*Implemented in* JavaScript 1.2

**Syntax**

moveBy(horizontal, vertical)

**Parameters**

horizontal  The number of pixels by which to move the layer horizontally.
vertical  The number of pixels by which to move the layer vertically.
**moveTo**

Moves the top-left corner of the window to the specified screen coordinates.

*Method of:* Layer  
*Implemented in:* JavaScript 1.2

**Syntax**

```
moveTo(x-coordinate, y-coordinate)
```

**Parameters**

- **x-coordinate**: An integer representing the top edge of the window in screen coordinates.
- **y-coordinate**: An integer representing the left edge of the window in screen coordinates.

**Security**

To move a window offscreen, call the `moveTo` method in a signed script. For information on security, see the *Client-Side JavaScript Guide*.

**Description**

Changes the layer position to the specified pixel coordinates within the containing layer. For ILayers, moves the layer relative to the natural inflow position of the layer.

**See also**

`Layer.moveTo` `Layer.moveBy`

---

**moveToAbsolute**

Changes the layer position to the specified pixel coordinates within the page (instead of the containing layer.)

*Method of:* Layer  
*Implemented in:* JavaScript 1.2

**Syntax**

```
moveToAbsolute(x, y)
```

**Parameters**

- **x**: An integer representing the top edge of the window in pixel coordinates.
- **y**: An integer representing the left edge of the window in pixel coordinates.

**Description**

This method is equivalent to setting both the `pageX` and `pageY` properties of the `layer` object.
name

A string specifying the name assigned to the layer through the ID attribute in the LAYER tag.

Property of Layer

Read-only

Implemented in JavaScript 1.2

pageX

The horizontal position of the layer, in pixels, relative to the page.

Property of Layer

Implemented in JavaScript 1.2

pageY

The vertical position of the layer, in pixels, relative to the page.

Property of Layer

Implemented in JavaScript 1.2

parentLayer

The layer object that contains this layer, or the enclosing window object if this layer is not nested in another layer.

Property of Layer

Read-only

Implemented in JavaScript 1.2
releaseEvents

Sets the window or document to release captured events of the specified type, sending the event to objects further along the event hierarchy.

**Syntax**

```
releaseEvents(eventType)
```

**Parameters**

- `eventType` Type of event to be captured.

**Description**

If the original target of the event is a window, the window receives the event even if it is set to release that type of event. `releaseEvents` works in tandem with `captureEvents`, `routeEvent`, and `handleEvent`. For more information, see the *Client-Side JavaScript Guide*.

resizeBy

Resizes the layer by the specified height and width values (in pixels).

**Syntax**

```
resizeBy(width, height)
```

**Parameters**

- `width` The number of pixels by which to resize the layer horizontally.
- `height` The number of pixels by which to resize the layer vertically.

**Description**

This does not layout any HTML contained in the layer again. Instead, the layer contents may be clipped by the new boundaries of the layer. This method has the same effect as adding `width` and `height` to `clip.width` and `clip.height`. 
Layer.resizeTo

resizeto

Resizes the layer to have the specified height and width values (in pixels).

Method of Layer

Implemented in JavaScript 1.2

Description This does not layout any HTML contained in the layer again. Instead, the layer contents may be clipped by the new boundaries of the layer.

Syntax resizeTo(width, height)

Parameters

width An integer representing the layer’s width in pixels.

height An integer representing the layer’s height in pixels.

Description This method has the same effect setting clip.width and clip.height.

routeEvent

Passes a captured event along the normal event hierarchy.

Method of Layer

Implemented in JavaScript 1.2

Syntax routeEvent(event)

Parameters

event The event to route.

Description If a sub-object (document or layer) is also capturing the event, the event is sent to that object. Otherwise, it is sent to its original target.

routeEvent works in tandem with captureEvents, releaseEvents, and handleEvent. For more information, see the Client-Side JavaScript Guide.
**siblingAbove**

The layer object above this one in z-order, among all layers that share the same parent layer or null if the layer has no sibling above.

*Property of* Layer  
*Read-only*  
*Implemented in* JavaScript 1.2

**siblingBelow**

The layer object below this one in z-order, among all layers that share the same parent layer or null if layer is at the bottom.

*Property of* Layer  
*Read-only*  
*Implemented in* JavaScript 1.2

**src**

A URL string specifying the source of the layer’s content. Corresponds to the SRC attribute.

*Property of* Layer  
*Implemented in* JavaScript 1.2

**top**

The vertical position of the layer’s left edge, in pixels, relative to the origin of its parent layer.

*Property of* Layer  
*Implemented in* JavaScript 1.2

The Layer.y property is a convenience synonym for the top property.

**See also** Layer.left
Layer.visibility

**visibility**

Whether or not the layer is visible.

*Property of* Layer

*Implemented in* JavaScript 1.2

**Description**

A value of `show` means show the layer; `hide` means hide the layer; `inherit` means inherit the visibility of the parent layer.

**window**

The `window` or `Frame` object that contains the layer, regardless of whether the layer is nested within another layer.

*Property of* Layer

*Read-only*

*Implemented in* JavaScript 1.2

**x**

The horizontal position of the layer’s left edge, in pixels, relative to the origin of its parent layer.

*Property of* Layer

*Implemented in* JavaScript 1.2

The `x` property is a convenience synonym for the `Layer.left` property.

**See also** Layer.y
**y**

The vertical position of the layer's left edge, in pixels, relative to the origin of its parent layer.

*Property of* Layer

*Implemented in* JavaScript 1.2

The `y` property is a convenience synonym for the `Layer.top` property.

**See also** `Layer.x`

**zIndex**

The relative z-order of this layer with respect to its siblings.

*Method of* Layer

*Implemented in* JavaScript 1.2

**Description** Sibling layers with lower numbered z-indexes are stacked underneath this layer. The value of `zIndex` must be 0 or a positive integer.
Link

A piece of text, an image, or an area of an image identified as a hypertext link. When the user clicks the link text, image, or area, the link hypertext reference is loaded into its target window. Area objects are a type of Link object.

**Client-side object**

**Implemented in** JavaScript 1.0

JavaScript 1.1: added onMouseOut event handler; added Area objects; links array contains areas created with `<AREA HREF="...">`

JavaScript 1.2: added x and y properties; added handleEvent method

**Created by**

By using the HTML `A` or `AREA` tag or by a call to the `String.link` method. The JavaScript runtime engine creates a Link object corresponding to each `A` and `AREA` tag in your document that supplies the `HREF` attribute. It puts these objects as an array in the `document.links` property. You access a Link object by indexing this array.

To define a link with the `A` or `AREA` tag, use standard HTML syntax with the addition of JavaScript event handlers.

To define a link with the `String.link` method:

```javascript
theString.link(hrefAttribute)
```

where:

- `theString` A `String` object.
- `hrefAttribute` Any string that specifies the `HREF` attribute of the `A` tag; it should be a valid URL (relative or absolute).
Event handlers

Area objects have the following event handlers:

- onDblClick
- onMouseOut
- onMouseOver

Link objects have the following event handlers:

- onClick
- onDblClick
- onKeyDown
- onKeyPress
- onKeyUp
- onMouseDown
- onMouseOut
- onMouseUp
- onMouseOver

Description

Each Link object is a location object and has the same properties as a location object.

If a Link object is also an Anchor object, the object has entries in both the anchors and links arrays.

When a user clicks a Link object and navigates to the destination document (specified by HREF="locationOrURL"), the destination document’s referrer property contains the URL of the source document. Evaluate the referrer property from the destination document.

You can use a Link object to execute a JavaScript function rather than link to a hypertext reference by specifying the javascript: URL protocol for the link’s HREF attribute. You might want to do this if the link surrounds an Image object and you want to execute JavaScript code when the image is clicked. Or you might want to use a link instead of a button to execute JavaScript code.

For example, when a user clicks the following links, the slower and faster functions execute:

```html
<A HREF="javascript:slower()">Slower</A>
<A HREF="javascript:faster()">Faster</A>
```
You can use a Link object to do nothing rather than link to a hypertext reference by specifying the javascript: void(0) URL protocol for the link's HREF attribute. You might want to do this if the link surrounds an Image object and you want to use the link's event handlers with the image. When a user clicks the following link or image, nothing happens:

```html
<A HREF="javascript:void(0)">Click here to do nothing</A>
<A HREF="javascript:void(0)"
    <IMG SRC="images\globe.gif" ALIGN="top" HEIGHT="50" WIDTH="50">
</A>
```

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>hash</td>
<td>Specifies an anchor name in the URL.</td>
</tr>
<tr>
<td>host</td>
<td>Specifies the host and domain name, or IP address, of a network host.</td>
</tr>
<tr>
<td>hostname</td>
<td>Specifies the host:port portion of the URL.</td>
</tr>
<tr>
<td>href</td>
<td>Specifies the entire URL.</td>
</tr>
<tr>
<td>pathname</td>
<td>Specifies the URL-path portion of the URL.</td>
</tr>
<tr>
<td>port</td>
<td>Specifies the communications port that the server uses.</td>
</tr>
<tr>
<td>protocol</td>
<td>Specifies the beginning of the URL, including the colon.</td>
</tr>
<tr>
<td>search</td>
<td>Specifies a query string.</td>
</tr>
<tr>
<td>target</td>
<td>Reflects the TARGET attribute.</td>
</tr>
<tr>
<td>text</td>
<td>A string containing the content of the corresponding A tag.</td>
</tr>
<tr>
<td>x</td>
<td>The horizontal position of the link's left edge, in pixels, relative to the left edge of the document.</td>
</tr>
<tr>
<td>y</td>
<td>The vertical position of the link's top edge, in pixels, relative to the top edge of the document.</td>
</tr>
</tbody>
</table>

**Method Summary**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>handleEvent</td>
<td>Invokes the handler for the specified event.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the watch and unwatch methods from Object.
Examples

Example 1. The following example creates a hypertext link to an anchor named javascript_intro:

```
<A HREF="#javascript_intro">Introduction to JavaScript</A>
```

Example 2. The following example creates a hypertext link to an anchor named numbers in the file doc3.html in the window window2. If window2 does not exist, it is created.

```
<L1><A HREF=doc3.html#numbers TARGET="window2">Numbers</A>
```

Example 3. The following example takes the user back x entries in the history list:

```
<A HREF="javascript:history.go(-1 * x)">Click here</A>
```

Example 4. The following example creates a hypertext link to a URL. The user can use the set of radio buttons to choose between three URLs. The link's onClick event handler sets the URL (the link's href property) based on the selected radio button. The link also has an onMouseOver event handler that changes the window's status property. As the example shows, you must return true to set the window.status property in the onMouseOver event handler.

```
<SCRIPT>
var destHREF="http://home.netscape.com/"
</SCRIPT>

<FORM NAME="form1">
  <B>Choose a destination from the following list, then click "Click me" below.</B>
  <BR><INPUT TYPE="radio" NAME="destination" VALUE="netscape"
          onClick="destHREF='http://home.netscape.com/'"> Netscape home page
  <BR><INPUT TYPE="radio" NAME="destination" VALUE="sun"
          onClick="destHREF='http://www.sun.com/'"> Sun home page
  <BR><INPUT TYPE="radio" NAME="destination" VALUE="rfc1867"
          onClick="destHREF='http://www.ics.uci.edu/pub/ietf/html/rfc1867.txt'"> RFC 1867
<br>
<A HREF=""
      onMouseOver="window.status='Click this if you dare!'; return true"
      onClick="this.href=destHREF">
    <B>Click me</B></A>
</FORM>
```
**Example 5: links array.** In the following example, the linkGetter function uses the links array to display the value of each link in the current document. The example also defines several links and a button for running linkGetter.

```javascript
function linkGetter() {
  var msgWindow=window.open("","msg","width=400,height=400")
  msgWindow.document.write("links.length is " +
    document.links.length + "<BR>")
  for (var i = 0; i < document.links.length; i++) {
    msgWindow.document.write(document.links[i] + "<BR>")
  }
}

<A HREF="http://home.netscape.com">Netscape Home Page</A>
<A HREF="http://www.catalog.com/fwcfc/">China Adoptions</A>
<A HREF="http://www.supernet.net/~dugbrown/">Bad Dog Chronicles</A>
<A HREF="http://www.best.com/~doghouse/homecnt.shtml">Lab Rescue</A>

Example 6: Refer to Area object with links array. The following code refers to the href property of the first Area object shown in Example 1.

document.links[0].href

Example 7: Area object with onMouseOver and onMouseOut event handlers. The following example displays an image, globe.gif. The image uses an image map that defines areas for the top half and the bottom half of the image. The onMouseOver and onMouseOut event handlers display different status bar messages depending on whether the mouse passes over or leaves the top half or bottom half of the image. The HREF attribute is required when using the onMouseOver and onMouseOut event handlers, but in this example the image does not need a hypertext link, so the HREF attribute executes javascript:void(0), which does nothing.

```html
<MAP NAME="worldMap">
  <AREA NAME="topWorld" COORDS="0,0,50,25" HREF="javascript:void(0)"
    onMouseOver="self.status='You are on top of the world';return true"
    onMouseOut="self.status='You have left the top of the world';return true">
  <AREA NAME="bottomWorld" COORDS="0,25,50,50" HREF="javascript:void(0)"
    onMouseOver="self.status='You are on the bottom of the world';return true"
    onMouseOut="self.status='You have left the bottom of the world';return true">
</MAP>

<IMG SRC="images\globe.gif" ALIGN="top" HEIGHT="50" WIDTH="50" USEMAP="#worldMap">
```
Example 8: Simulate an Area object's onClick using the HREF attribute.
The following example uses an Area object's HREF attribute to execute a
JavaScript function. The image displayed, colors.gif, shows two sample
colors. The top half of the image is the color antiquewhite, and the bottom half
is white. When the user clicks the top or bottom half of the image, the function
setBGColor changes the document's background color to the color shown in
the image.

```html
<SCRIPT>
function setBGColor(theColor) {
    document.bgColor=theColor
}
</SCRIPT>
Click the color you want for this document's background color
<MAP NAME="colorMap">
    <AREA NAME="topColor" COORDS="0,0,50,25" HREF="javascript:setBGColor('antiquewhite')">
    <AREA NAME="bottomColor" COORDS="0,25,50,50" HREF="javascript:setBGColor('white')">
</MAP>
<IMG SRC="images\colors.gif" ALIGN="top" HEIGHT="50" WIDTH="50" USEMAP="#colorMap">

See also Anchor, Image, link

handleEvent

Invokes the handler for the specified event.

Method of Link

Implemented in JavaScript 1.2

Syntax handleEvent(event)

Parameters

event The name of an event for which the specified object has an event
handler.

Description For information on handling events, see the Client-Side JavaScript Guide.
### hash

A string beginning with a hash mark (#) that specifies an anchor name in the URL.

*Property of*  
Link

*Implemented in*  
JavaScript 1.0

**Security**  
JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**  
The `hash` property specifies a portion of the URL. This property applies to HTTP URLs only.

Be careful using this property. Assume `document.links[0]` contains:

```plaintext
ttp://royalairways.com/fish.htm#angel
```

Then `document.links[0].hash` returns `#angel`. Assume you have this code:

```javascript
hash = document.links[0].hash;
document.links[0].hash = hash;
```

Now, `document.links[0].hash` returns `##angel`.

This behavior may change in a future release.

You can set the `hash` property at any time, although it is safer to set the `href` property to change a location. If the hash that you specify cannot be found in the current location, you get an error.

Setting the `hash` property navigates to the named anchor without reloading the document. This differs from the way a document is loaded when other `link` properties are set.


**See also**  
Link.host, Link.hostname, Link.href, Link.pathname, Link.port, Link.protocol, Link.search
**host**

A string specifying the server name, subdomain, and domain name.

*Property of* Link  
*Implemented in* JavaScript 1.0

**Security**  
*JavaScript 1.1.* This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide.*

**Description**  
The host property specifies a portion of a URL. The host property is a substring of the hostname property. The hostname property is the concatenation of the host and port properties, separated by a colon. When the port property is null, the host property is the same as the hostname property.

You can set the host property at any time, although it is safer to set the href property to change a location. If the host that you specify cannot be found in the current location, you get an error.


**See also**  
Link.hash, Link.hostname, Link.href, Link.pathname, Link.port, Link.protocol, Link.search

**hostname**

A string containing the full hostname of the server, including the server name, subdomain, domain, and port number.

*Property of* Link  
*Implemented in* JavaScript 1.0

**Security**  
*JavaScript 1.1.* This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide.*

**Description**  
The hostname property specifies a portion of a URL. The hostname property is the concatenation of the host and port properties, separated by a colon. When the port property is 80 (the default), the host property is the same as the hostname property.
You can set the `hostname` property at any time, although it is safer to set the `href` property to change a location. If the hostname that you specify cannot be found in the current location, you get an error.

See Section 3.1 of RFC 1738 (http://www.cis.ohio-state.edu/htbin/rfc/rfc1738.html) for complete information about the hostname.

**See also** Link.host, Link.hash, Link.href, Link.pathname, Link.port, Link.protocol, Link.search

**href**

A string specifying the entire URL.

- **Property of** Link
- **Implemented in** JavaScript 1.0

**Security** JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

**Description** The `href` property specifies the entire URL. Other link object properties are substrings of the `href` property.

You can set the `href` property at any time.

See RFC 1738 (http://www.cis.ohio-state.edu/htbin/rfc/rfc1738.html) for complete information about the URL.

**See also** Link.hash, Link.host, Link.hostname, Link.pathname, Link.port, Link.protocol, Link.search

**pathname**

A string specifying the URL-path portion of the URL.

- **Property of** Link
- **Implemented in** JavaScript 1.0

**Security** JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.
The pathname property specifies a portion of the URL. The pathname supplies the details of how the specified resource can be accessed. You can set the pathname property at any time, although it is safer to set the href property to change a location. If the pathname that you specify cannot be found in the current location, you get an error. See Section 3.1 of RFC 1738 (http://www.cis.ohio-state.edu/htbin/rfc/rfc1738.html) for complete information about the pathname.

See also Link.host, Link.hostname, Link.hash, Link.href, Link.port, Link.protocol, Link.search

A string specifying the communications port that the server uses.

Property of Link

Implemented in JavaScript 1.0

Security JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description The port property specifies a portion of the URL. The port property is a substring of the hostname property. The hostname property is the concatenation of the host and port properties, separated by a colon. When the port property is 80 (the default), the host property is the same as the hostname property.

You can set the port property at any time, although it is safer to set the href property to change a location. If the port that you specify cannot be found in the current location, you will get an error. If the port property is not specified, it defaults to 80 on the server.

See Section 3.1 of RFC 1738 (http://www.cis.ohio-state.edu/htbin/rfc/rfc1738.html) for complete information about the port.

See also Link.host, Link.hostname, Link.hash, Link.href, Link.pathname, Link.protocol, Link.search
protocol

A string specifying the beginning of the URL, up to and including the first colon.

Property of Link

Implemented in JavaScript 1.0

Security JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description The protocol property specifies a portion of the URL. The protocol indicates the access method of the URL. For example, the value "http:" specifies HyperText Transfer Protocol, and the value "javascript:" specifies JavaScript code.

You can set the protocol property at any time, although it is safer to set the href property to change a location. If the protocol that you specify cannot be found in the current location, you get an error.

The protocol property represents the scheme name of the URL. See Section 2.1 of RFC 1738 (http://www.cis.ohio-state.edu/htbin/rfc/rfc1738.html) for complete information about the protocol.

See also Link.host, Link.hostname, Link.hash, Link.href, Link.pathname, Link.port, Link.search

search

A string beginning with a question mark that specifies any query information in the URL.

Property of Link

Implemented in JavaScript 1.0

Security JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.
Link.target

**Description**  
The `search` property specifies a portion of the URL. This property applies to http URLs only.

The `search` property contains variable and value pairs; each pair is separated by an ampersand. For example, two pairs in a search string could look like the following:

```html
?q=x=7&y=5
```

You can set the `search` property at any time, although it is safer to set the `href` property to change a location. If the search that you specify cannot be found in the current location, you get an error.


**See also**  
`Link.host`, `Link.hostname`, `Link.hash`, `Link.href`, `Link.pathname`, `Link.port`, `Link.protocol`

---

**target**

A string specifying the name of the window that displays the content of a clicked hypertext link.

**Property of**  
`Link`

**Implemented in**  
JavaScript 1.0

**Description**  
The `target` property initially reflects the `TARGET` attribute of the `A` or `AREA` tags; however, setting `target` overrides this attribute.

You can set `target` using a string, if the string represents a window name. The `target` property cannot be assigned the value of a JavaScript expression or variable.

You can set the `target` property at any time.

**Examples**  
The following example specifies that responses to the `musicInfo` form are displayed in the `msgWindow` window:

```javascript
document.musicInfo.target="msgWindow"
```

**See also**  
`Form`
Link.text

**text**

A string containing the content of the corresponding `a` tag.

*Property of* Link

*Implemented in* JavaScript 1.2

---

**x**

The horizontal position of the link’s left edge, in pixels, relative to the left edge of the document.

*Property of* Link

*Read-only*

*Implemented in* JavaScript 1.2

See also Link.y

---

**y**

The vertical position of the link’s top edge, in pixels, relative to the top edge of the document.

*Property of* Link

*Read-only*

*Implemented in* JavaScript 1.2

See also Link.x
Location

Contains information on the current URL.

Client-side object

Implemented in  JavaScript 1.0

JavaScript 1.1: added reload, replace methods

Created by Location objects are predefined JavaScript objects that you access through the location property of a window object.

Description The location object represents the complete URL associated with a given window object. Each property of the location object represents a different portion of the URL.

In general, a URL has this form:

protocol://host:port/pathname#hash?search

For example:

http://home.netscape.com/assist/extensions.html#topic1?x=7&y=2

These parts serve the following purposes:

• protocol represents the beginning of the URL, up to and including the first colon.

• host represents the host and domain name, or IP address, of a network host.

• port represents the communications port that the server uses for communications.

• pathname represents the URL-path portion of the URL.

• hash represents an anchor name fragment in the URL, including the hash mark (#). This property applies to HTTP URLs only.

• search represents any query information in the URL, including the question mark (?). This property applies to HTTP URLs only. The search string contains variable and value pairs; each pair is separated by an ampersand (&).
A `Location` object has a property for each of these parts of the URL. See the individual properties for more information. A `Location` object has two other properties not shown here:

- `href` represents a complete URL.
- `hostname` represents the concatenation `host:port`.

If you assign a string to the `location` property of an object, JavaScript creates a `location` object and assigns that string to its `href` property. For example, the following two statements are equivalent and set the URL of the current window to the Netscape home page:

```javascript
window.location.href = "http://home.netscape.com/"
window.location = "http://home.netscape.com/"
```

The `location` object is contained by the `window` object and is within its scope. If you refer to a `location` object without specifying a window, the `location` object represents the current location. If you refer to a `location` object and specify a window name, as in `windowReference.location`, the `location` object represents the location of the specified window.

In event handlers, you must specify `window.location` instead of simply using `location`. Due to the scoping of static objects in JavaScript, a call to `location` without specifying an object name is equivalent to `document.location`, which is a synonym for `document.URL`.

Location is not a property of the `document` object; its equivalent is the `document.URL` property. The `document.location` property, which is a synonym for `document.URL`, is deprecated.

**How documents are loaded when location is set.** When you set the `location` object or any of its properties except `hash`, whether a new document is loaded depends on which version of the browser you are running:

- In JavaScript 1.0, setting `location` does a conditional ("If-modified-since") HTTP GET operation, which returns no data from the server unless the document has been modified since the last version downloaded.

- In JavaScript 1.1 and later, the effect of setting `location` depends on the user's setting for comparing a document to the original over the network. The user interface option for setting this preference differs in browser versions. The user decides whether to check a document in cache every
time it is accessed, once per session, or never. The document is reloaded from cache if the user sets never or once per session; the document is reloaded from the server only if the user chooses every time.

**Syntax for common URL types.** When you specify a URL, you can use standard URL formats and JavaScript statements. The following table shows the syntax for specifying some of the most common types of URLs.

<table>
<thead>
<tr>
<th>URL type</th>
<th>Protocol</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>JavaScript code</td>
<td>javascript:</td>
<td>javascript.history.go(-1)</td>
</tr>
<tr>
<td>Navigator info</td>
<td>about:</td>
<td>about:cache</td>
</tr>
<tr>
<td>File</td>
<td>file://</td>
<td>file:///javascript/methods.html</td>
</tr>
<tr>
<td>MailTo</td>
<td>mailto:</td>
<td><a href="mailto:info@netscape.com">mailto:info@netscape.com</a></td>
</tr>
<tr>
<td>Usenet</td>
<td>news://</td>
<td>news://news.scruzznet.com/comp.lang.javascript</td>
</tr>
<tr>
<td>Gopher</td>
<td>gopher:</td>
<td>gopher.myhost.com</td>
</tr>
</tbody>
</table>

The following list explains some of the protocols:

- The `javascript:` protocol evaluates the expression after the colon (:), if there is one, and loads a page containing the string value of the expression, unless it is undefined. If the expression evaluates to undefined (by calling a `void` function, for example `javascript: void(0)`), no new page loads. Note that loading a new page over your script's page clears the page's variables, functions, and so on.

- The `view-source:` protocol displays HTML code that was generated with JavaScript `document.write` and `document.writeln` methods. For information on printing and saving generated HTML, see `document.write`.
• The about: protocol provides information on Navigator. For example:
  — about: by itself is the same as choosing About Communicator from the Navigator Help menu.
  — about:cache displays disk-cache statistics.
  — about:plugins displays information about plug-ins you have configured. This is the same as choosing About Plug-ins from the Navigator Help menu.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>hash</td>
<td>Specifies an anchor name in the URL.</td>
</tr>
<tr>
<td>host</td>
<td>Specifies the host and domain name, or IP address, of a network host.</td>
</tr>
<tr>
<td>hostname</td>
<td>Specifies the host:port portion of the URL.</td>
</tr>
<tr>
<td>href</td>
<td>Specifies the entire URL.</td>
</tr>
<tr>
<td>pathname</td>
<td>Specifies the URL-path portion of the URL.</td>
</tr>
<tr>
<td>port</td>
<td>Specifies the communications port that the server uses.</td>
</tr>
<tr>
<td>protocol</td>
<td>Specifies the beginning of the URL, including the colon.</td>
</tr>
<tr>
<td>search</td>
<td>Specifies a query.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the watch and unwatch methods from Object.

Examples  Example 1. The following two statements are equivalent and set the URL of the current window to the Netscape home page:

```javascript
window.location.href="http://home.netscape.com/
window.location="http://home.netscape.com/
```
Example 2. The following statement sets the URL of a frame named frame2 to the Sun home page:

parent.frame2.location.href="http://www.sun.com/"

See also the examples for Anchor.

See also History, document.URL

hash

A string beginning with a hash mark (#) that specifies an anchor name in the URL.

Property of Location

Implemented in JavaScript 1.0

Security JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description The hash property specifies a portion of the URL. This property applies to HTTP URLs only.

You can set the hash property at any time, although it is safer to set the href property to change a location. If the hash that you specify cannot be found in the current location, you get an error.

Setting the hash property navigates to the named anchor without reloading the document. This differs from the way a document is loaded when other location properties are set (see “How documents are loaded when location is set” on page 252).

See RFC 1738 (http://www.cis.ohio-state.edu/htbin/rfc/rfc1738.html) for complete information about the hash.
Examples

In the following example, the `window.open` statement creates a window called `newWindow` and loads the specified URL into it. The `document.write` statements display properties of `newWindow.location` in a window called `msgWindow`.

```javascript
newWindow = window.open
  ("http://home.netscape.com/comprod/products/navigator/
version_2.0/script/script_info/objects.html#checkbox_object")

msgWindow.document.write("newWindow.location.href = " +
  newWindow.location.href + "<p>"
)
msgWindow.document.write("newWindow.location.hash = " +
  newWindow.location.hash + "<p>"
)
msgWindow.document.close()
```

The previous example displays output such as the following:

```javascript
newWindow.location.href = http://home.netscape.com/comprod/products/navigator/
version_2.0/script/script_info/objects.html#checkbox_object
newWindow.location.hash = #checkbox_object
```

See also

`Location.host`, `Location.hostname`, `Location.href`, `Location.pathname`, `Location.port`, `Location.protocol`, `Location.search`

host

A string specifying the server name, subdomain, and domain name.

Property of Location

Implemented in JavaScript 1.0

Security

JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description

The `host` property specifies a portion of a URL. The `host` property is a substring of the `hostname` property. The `hostname` property is the concatenation of the `host` and `port` properties, separated by a colon. When the `port` property is null, the `host` property is the same as the `hostname` property.

You can set the `host` property at any time, although it is safer to set the `href` property to change a location. If the host that you specify cannot be found in the current location, you get an error.
Location.hostname

See Section 3.1 of RFC 1738 (http://www.cis.ohio-state.edu/htbin/rfc/rfc1738.html) for complete information about the hostname and port.

Examples

In the following example, the window.open statement creates a window called newWindow and loads the specified URL into it. The document.write statements display properties of newWindow.location in a window called msgWindow.

```javascript
newWindow = window.open
(http://home.netscape.com/comprod/products/navigator/
  version_2.0/script/script_info/objects.html#checkbox_object"

msgWindow.document.write("newWindow.location.href = " +
  newWindow.location.href + "<P>"
msgWindow.document.write("newWindow.location.host = " +
  newWindow.location.host + "<P>"
msgWindow.document.close()
```

The previous example displays output such as the following:

```javascript
newWindow.location.href =
  http://home.netscape.com/comprod/products/navigator/
  version_2.0/script/script_info/objects.html#checkbox_object
newWindow.location.host = home.netscape.com
```

See also Location.hash, Location.hostname, Location.href, Location.pathname, Location.port, Location.protocol, Location.search

hostname

A string containing the full hostname of the server, including the server name, subdomain, domain, and port number.

Property of Location

Implemented in JavaScript 1.0

Security

JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description

The hostname property specifies a portion of a URL. The hostname property is the concatenation of the host and port properties, separated by a colon. When the port property is 80 (the default), the host property is the same as the hostname property.
You can set the `hostname` property at any time, although it is safer to set the `href` property to change a location. If the hostname that you specify cannot be found in the current location, you get an error.


### Examples

In the following example, the `window.open` statement creates a window called `newWindow` and loads the specified URL into it. The `document.write` statements display properties of `newWindow.location` in a window called `msgWindow`.

```javascript
newWindow=window.open
    ("http://home.netscape.com/comprod/products/navigator/
     version_2.0/script/script_info/objects.html#checkbox_object")
msgWindow.document.write("newWindow.location.href = " +
    newWindow.location.href + ";<P>")
msgWindow.document.write("newWindow.location.hostName = " +
    newWindow.location.hostName + ";<P>")
msgWindow.document.close()
```

The previous example displays output such as the following:

```javascript
newWindow.location.href =
    http://home.netscape.com/comprod/products/navigator/
    version_2.0/script/script_info/objects.html#checkbox_object
newWindow.location.hostName = home.netscape.com
```

### See also

`Location.hash`, `Location.host`, `Location.href`, `Location.pathname`, `Location.port`, `Location.protocol`, `Location.search`

---

### href

A string specifying the entire URL.

*Property of* `Location`

*Implemented in* JavaScript 1.0

**Security**

JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*. 
Location.href

**Description**  The `href` property specifies the entire URL. Other `location` object properties are substrings of the `href` property. If you want to change the URL associated with a window, you should do so by changing the `href` property; this correctly updates all of the other properties.

You can set the `href` property at any time.

Omitting a property name from the `location` object is equivalent to specifying `location.href`. For example, the following two statements are equivalent and set the URL of the current window to the Netscape home page:

```javascript
window.location.href = "http://home.netscape.com/
window.location = "http://home.netscape.com/"
```

See RFC 1738 (http://www.cis.ohio-state.edu/htbin/rfc/rfc1738.html) for complete information about the URL.

**Examples**  In the following example, the `window.open` statement creates a window called `newWindow` and loads the specified URL into it. The `document.write` statements display all the properties of `newWindow.location` in a window called `msgWindow`.

```javascript
newWindow = window.open
  ("http://home.netscape.com/comprod/products/navigator/
   version_2.0/script/script_info/objects.html#checkbox_object")

msgWindow.document.write("newWindow.location.href = " +
  newWindow.location.href + "<P>")
msgWindow.document.write("newWindow.location.protocol = " +
  newWindow.location.protocol + "<P>")
msgWindow.document.write("newWindow.location.host = " +
  newWindow.location.host + "<P>")
msgWindow.document.write("newWindow.location.hostName = " +
  newWindow.location.hostName + "<P>")
msgWindow.document.write("newWindow.location.port = " +
  newWindow.location.port + "<P>")
msgWindow.document.write("newWindow.location.pathname = " +
  newWindow.location.pathname + "<P>")
msgWindow.document.write("newWindow.location.hash = " +
  newWindow.location.hash + "<P>")
msgWindow.document.write("newWindow.location.search = " +
  newWindow.location.search + "<P>")
msgWindow.document.close()
```
Location.pathname

The previous example displays output such as the following:

```javascript
newWindow.location.href =
    http://home.netscape.com/comprod/products/navigator/
    version_2.0/script/script_info/objects.html#checkbox_object
newWindow.location.protocol = http:
newWindow.location.host = home.netscape.com
newWindow.location.hostName = home.netscape.com
newWindow.location.port =
/newWindow.location.pathname =
    /comprod/products/navigator/version_2.0/script/
    script_info/objects.html
newWindow.location.hash = #checkbox_object
newWindow.location.search =
```

See also Location.hash, Location.host, Location.hostname, Location.pathname, Location.port, Location.protocol, Location.search

pathname

A string specifying the URL-path portion of the URL.

**Property of** Location

**Implemented in** JavaScript 1.0

**Security** JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

**Description** The pathname property specifies a portion of the URL. The pathname supplies the details of how the specified resource can be accessed.

You can set the pathname property at any time, although it is safer to set the href property to change a location. If the pathname that you specify cannot be found in the current location, you get an error.

See Section 3.1 of RFC 1738 (http://www.cis.ohio-state.edu/htbin/rfc/rfc1738.html) for complete information about the pathname.
Location.port

Examples
In the following example, the `window.open` statement creates a window called `newWindow` and loads the specified URL into it. The `document.write` statements display properties of `newWindow.location` in a window called `msgWindow`.

```javascript
newWindow = window.open
  ("http://home.netscape.com/comprod/products/navigator/
   version_2.0/script/script_info/objects.html#checkbox_object")

msgWindow.document.write("newWindow.location.href = " + 
  newWindow.location.href + "<P>"
msgWindow.document.write("newWindow.location.pathname = " + 
  newWindow.location.pathname + "<P>"
msgWindow.document.close()
```

The previous example displays output such as the following:

```javascript
newWindow.location.href = 
  http://home.netscape.com/comprod/products/navigator/
   version_2.0/script/script_info/objects.html#checkbox_object
newWindow.location.pathname = 
  /comprod/products/navigator/version_2.0/script/
   script_info/objects.html
```

See also Location.hash, Location.host, Location.hostname, Location.href, Location.port, Location.protocol, Location.search

port

A string specifying the communications port that the server uses.

Property of Location

Implemented in JavaScript 1.0

Security JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description The `port` property specifies a portion of the URL. The `port` property is a substring of the `hostname` property. The `hostname` property is the concatenation of the `host` and `port` properties, separated by a colon.

You can set the `port` property at any time, although it is safer to set the `href` property to change a location. If the `port` that you specify cannot be found in the current location, you get an error. If the `port` property is not specified, it defaults to 80.
Location.protocol

See Section 3.1 of RFC 1738 (http://www.cis.ohio-state.edu/htbin/rfc/rfc1738.html) for complete information about the port.

**Examples**

In the following example, the `window.open` statement creates a window called `newWindow` and loads the specified URL into it. The `document.write` statements display properties of `newWindow.location` in a window called `msgWindow`.

```javascript
newWindow = window.open
    ("http://home.netscape.com/comprod/products/navigator/
     version_2.0/script/script_info/objects.html#checkbox_object")
msgWindow.document.write("newWindow.location.href = " +
    newWindow.location.href + "<P>"
msgWindow.document.write("newWindow.location.port = " +
    newWindow.location.port + "<P>"
msgWindow.document.close()
```

The previous example displays output such as the following:

```
newWindow.location.href =
    http://home.netscape.com/comprod/products/navigator/
    version_2.0/script/script_info/objects.html#checkbox_object
newWindow.location.port =
```

**See also**

`Location.hash`, `Location.host`, `Location.hostname`, `Location.href`, `Location.pathname`, `Location.protocol`, `Location.search`

**protocol**

A string specifying the beginning of the URL, up to and including the first colon.

*Property of* Location

*Implemented in* JavaScript 1.0

**Security**

JavaScript 1.1. This property is tainted by default. For information on data tainting, see the [Client-Side JavaScript Guide](#).

**Description**

The `protocol` property specifies a portion of the URL. The protocol indicates the access method of the URL. For example, the value "http:" specifies HyperText Transfer Protocol, and the value "javascript:" specifies JavaScript code.
You can set the `protocol` property at any time, although it is safer to set the `href` property to change a location. If the protocol that you specify cannot be found in the current location, you get an error.

The `protocol` property represents the scheme name of the URL. See Section 2.1 of RFC 1738 (http://www.cis.ohio-state.edu/htbin/rfc/rfc1738.html) for complete information about the protocol.

**Examples**

In the following example, the `window.open` statement creates a window called `newWindow` and loads the specified URL into it. The `document.write` statements display properties of `newWindow.location` in a window called `msgWindow`.

```javascript
newWindow = window.open
   ("http://home.netscape.com/comprod/products/navigator/
    version_2.0/script/script_info/objects.html#checkbox_object")

msgWindow.document.write("newWindow.location.href = " +
   newWindow.location.href + "<P>")
msgWindow.document.write("newWindow.location.protocol = " +
   newWindow.location.protocol + "<P>")
msgWindow.document.close()
```

The previous example displays output such as the following:

```javascript
newWindow.location.href =
   http://home.netscape.com/comprod/products/navigator/
   version_2.0/script/script_info/objects.html#checkbox_object
newWindow.location.protocol = http:
```

**See also**

`Location.hash`, `Location.host`, `Location.hostname`, `Location.href`, `Location.pathname`, `Location.port`, `Location.search`
**reload**

Forces a reload of the window’s current document (the document specified by the `Location.href` property).

*Syntax*

```javascript
reload([forceGet])
```

*Parameters*

- `forceGet` If you supply `true`, forces an unconditional HTTP GET of the document from the server. This should not be used unless you have reason to believe that disk and memory caches are off or broken, or the server has a new version of the document (for example, if it is generated by a CGI on each request).

*Description*

This method uses the same policy that the browser’s Reload button uses. The user interface for setting the default value of this policy varies for different browser versions.

By default, the `reload` method does not force a transaction with the server. However, if the user has set the preference to check every time, the method does a “conditional GET” request using an If-modified-since HTTP header, to ask the server to return the document only if its last-modified time is newer than the time the client keeps in its cache. In other words, `reload` reloads from the cache, unless the user has specified to check every time *and* the document has changed on the server since it was last loaded and saved in the cache.

*Examples*

The following example displays an image and three radio buttons. The user can click the radio buttons to choose which image is displayed. Clicking another button lets the user reload the document.

```html
<script>
function displayImage(theImage) {
    document.images[0].src=theImage;
}
</script>
```
<FORM NAME="imageForm">
Choose an image:

<input type="radio" name="imageChoice" value="image1" checked onclick="displayImage('seaotter.gif')"> Sea otter
<input type="radio" name="imageChoice" value="image2" onclick="displayImage('orca.gif')"> Killer whale
<input type="radio" name="imageChoice" value="image3" onclick="displayImage('humpback.gif')"> Humpback whale

<img name="marineMammal" src="seaotter.gif" align="left" vspace="10">

<input type="button" value="Click here to reload" onclick="window.location.reload()">
</FORM>

See also Location.replace

replace

Loads the specified URL over the current history entry.

Method of Location

Implemented in JavaScript 1.1

Syntax replace(URL)

Parameters

URL A string specifying the URL to load.

Description

The replace method loads the specified URL over the current history entry. After calling the replace method, the user cannot navigate to the previous URL by using browser's Back button.

If your program will be run with JavaScript 1.0, you could put the following line in a SCRIPT tag early in your program. This emulates replace, which was introduced in JavaScript 1.1:

```javascript
if (location.replace == null)
    location.replace = location.assign
```

The replace method does not create a new entry in the history list. To create an entry in the history list while loading a URL, use the History.go method.
Examples

The following example lets the user choose among several catalogs to display. The example displays two sets of radio buttons which let the user choose a season and a category, for example the Spring/Summer Clothing catalog or the Fall/Winter Home & Garden catalog. When the user clicks the Go button, the displayCatalog function executes the replace method, replacing the current URL with the URL appropriate for the catalog the user has chosen. After invoking displayCatalog, the user cannot navigate to the previous URL (the list of catalogs) by using browser's Back button.

```javascript
function displayCatalog() {
    var seaName=""
    var catName=""

    for (var i=0; i < document.catalogForm.season.length; i++) {
        if (document.catalogForm.season[i].checked) {
            seaName=document.catalogForm.season[i].value
            i=document.catalogForm.season.length
        }
    }

    for (var i in document.catalogForm.category) {
        if (document.catalogForm.category[i].checked) {
            catName=document.catalogForm.category[i].value
            i=document.catalogForm.category.length
        }
    }

    fileName=seaName + catName + ".html"
    location.replace(fileName)
}

</SCRIPT>

<FORM NAME="catalogForm">
    <B>Which catalog do you want to see?</B>
    <P><B>Season</B>
    <BR><INPUT TYPE="radio" NAME="season" VALUE="q1" CHECKED> Spring/Summer
    <BR><INPUT TYPE="radio" NAME="season" VALUE="q3"> Fall/Winter

    <P><B>Category</B>
    <BR><INPUT TYPE="radio" NAME="category" VALUE="clo" CHECKED> Clothing
    <BR><INPUT TYPE="radio" NAME="category" VALUE="lin"> Linens
    <BR><INPUT TYPE="radio" NAME="category" VALUE="hom"> Home & Garden

    <P><INPUT TYPE="button" VALUE="Go" onClick="displayCatalog()">
</FORM>

See also  History, window.open, History.go, Location.reload
search

A string beginning with a question mark that specifies any query information in the URL.

Property of Location

Implemented in JavaScript 1.0

Security JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description The search property specifies a portion of the URL. This property applies to HTTP URLs only.

The search property contains variable and value pairs; each pair is separated by an ampersand. For example, two pairs in a search string could look as follows:

?x=7&y=5

You can set the search property at any time, although it is safer to set the href property to change a location. If the search that you specify cannot be found in the current location, you get an error.

See Section 3.3 of RFC 1738 (http://www.cis.ohio-state.edu/htbin/rfc/rfc1738.html) for complete information about the search.

Examples In the following example, the window.open statement creates a window called newWindow and loads the specified URL into it. The document.write statements display properties of newWindow.location in a window called msgWindow.

```javascript
newWindow=window.open
msgWindow.document.write("newWindow.location.href = " +
  newWindow.location.href + "<P>")
msgWindow.document.close()
msgWindow.document.write("newWindow.location.search = " +
  newWindow.location.search + "<P>")
msgWindow.document.close()
```

The previous example displays the following output:

```
newWindow.location.search = ?qt=RFC+1738+&col=WW
```
Location.search

See also Location.hash, Location.host, Location.hostname, Location.href, Location.pathname, Location.port, Location.protocol
Math

A built-in object that has properties and methods for mathematical constants and functions. For example, the Math object’s PI property has the value of pi.

**Core object**

*Implemented in* JavaScript 1.0, NES 2.0

*ECMA version* ECMA-262

**Created by**

The Math object is a top-level, predefined JavaScript object. You can automatically access it without using a constructor or calling a method.

**Description**

All properties and methods of Math are static. You refer to the constant PI as Math.PI and you call the sine function as Math.sin(x), where x is the method’s argument. Constants are defined with the full precision of real numbers in JavaScript.

It is often convenient to use the with statement when a section of code uses several Math constants and methods, so you don’t have to type “Math” repeatedly. For example,

```javascript
with (Math) {
  a = PI * r * r
  y = r*sin(theta)
  x = r*cos(theta)
}
```

**Property Summary**

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<tr>
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<td>Natural logarithm of 10, approximately 2.302.</td>
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<tr>
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<td>Natural logarithm of 2, approximately 0.693.</td>
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<tr>
<td>LOG10E</td>
<td>Base 10 logarithm of E (approximately 0.434).</td>
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<td>Base 2 logarithm of E (approximately 1.442).</td>
</tr>
<tr>
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<td>Ratio of the circumference of a circle to its diameter, approximately 3.14159.</td>
</tr>
<tr>
<td>SQRT1_2</td>
<td>Square root of 1/2; equivalently, 1 over the square root of 2, approximately 0.707.</td>
</tr>
<tr>
<td>SQRT2</td>
<td>Square root of 2, approximately 1.414.</td>
</tr>
</tbody>
</table>
Method Summary

<table>
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<tr>
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<tr>
<td>exp</td>
<td>Returns (E^{\text{number}}), where (\text{number}) is the argument, and (E) is Euler's constant, the base of the natural logarithms.</td>
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<td>Returns the natural logarithm (base (E)) of a number.</td>
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<td>Returns base to the exponent power, that is, (\text{base}^{\text{exponent}}).</td>
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<td>random</td>
<td>Returns a pseudo-random number between 0 and 1.</td>
</tr>
<tr>
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<td>Returns the value of a number rounded to the nearest integer.</td>
</tr>
<tr>
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<td>Returns the sine of a number.</td>
</tr>
<tr>
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<td>Returns the square root of a number.</td>
</tr>
<tr>
<td>tan</td>
<td>Returns the tangent of a number.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the `watch` and `unwatch` methods from `Object`. 
### abs

Returns the absolute value of a number.

**Method of** Math  
**Static**  
**Implemented in** JavaScript 1.0, NES 2.0  
**ECMA version** ECMA-262

**Syntax**  
`abs(x)`

**Parameters**  
`x` A number

**Examples**  
The following function returns the absolute value of the variable `x`:

```javascript
function getAbs(x) {
  return Math.abs(x)
}
```

**Description**  
Because `abs` is a static method of Math, you always use it as `Math.abs()`, rather than as a method of a Math object you created.

### acos

Returns the arccosine (in radians) of a number.

**Method of** Math  
**Static**  
**Implemented in** JavaScript 1.0, NES 2.0  
**ECMA version** ECMA-262

**Syntax**  
`acos(x)`

**Parameters**  
`x` A number

**Description**  
The `acos` method returns a numeric value between 0 and pi radians. If the value of `number` is outside this range, it returns NaN.

Because `acos` is a static method of Math, you always use it as `Math.acos()`, rather than as a method of a Math object you created.
Math.asin

**Examples** The following function returns the arccosine of the variable \( x \):

```javascript
function getAcos(x) {
    return Math.acos(x)
}
```

If you pass -1 to `getAcos`, it returns 3.141592653589793; if you pass 2, it returns NaN because 2 is out of range.

**See also** Math.asin, Math.atan, Math.atan2, Math.cos, Math.sin, Math.tan

---

**asin**

Returns the arcsine (in radians) of a number.

*Method of* Math  
*Static*  
*Implemented in* JavaScript 1.0, NES 2.0  
*ECMA version* ECMA-262

**Syntax** `asin(x)`

**Parameters**

- `x` - A number

**Description** The `asin` method returns a numeric value between -\( \pi/2 \) and \( \pi/2 \) radians. If the value of `number` is outside this range, it returns NaN.

Because `asin` is a static method of `Math`, you always use it as `Math.asin()`, rather than as a method of a `Math` object you created.

**Examples** The following function returns the arcsine of the variable \( x \):

```javascript
function getAsin(x) {
    return Math.asin(x)
}
```

If you pass `getAsin` the value 1, it returns 1.570796326794897 (\( \pi/2 \)); if you pass it the value 2, it returns NaN because 2 is out of range.

**See also** Math.acos, Math.atan, Math.atan2, Math.cos, Math.sin, Math.tan
Math.atan

atan

Returns the arctangent (in radians) of a number.

Syntax
atan(x)

Parameters
x
A number

Description
The atan method returns a numeric value between -pi/2 and pi/2 radians.

Because atan is a static method of Math, you always use it as Math.atan(), rather than as a method of a Math object you created.

Examples
The following function returns the arctangent of the variable x:

```javascript
function getAtan(x) {
  return Math.atan(x)
}
```

If you pass getAtan the value 1, it returns 0.7853981633974483; if you pass it the value .5, it returns 0.4636476090008061.

See also
atan2

Returns the arctangent of the quotient of its arguments.

*Method of* Math

*Static*

*Implemented in* JavaScript 1.0, NES 2.0

*ECMA version* ECMA-262

**Syntax**

```
atan2(y, x)
```

**Parameters**

- `y`, `x`  Number

**Description**

The `atan2` method returns a numeric value between -π and π representing the angle theta of an `(x, y)` point. This is the counterclockwise angle, measured in radians, between the positive X axis, and the point `(x, y)`. Note that the arguments to this function pass the y-coordinate first and the x-coordinate second.

`atan2` is passed separate `x` and `y` arguments, and `atan` is passed the ratio of those two arguments.

Because `atan2` is a static method of `Math`, you always use it as `Math.atan2()`, rather than as a method of a `Math` object you created.

**Examples**

The following function returns the angle of the polar coordinate:

```javascript
function getAtan2(x, y) {
    return Math.atan2(x, y)
}
```

If you pass `getAtan2` the values (90,15), it returns 1.4056476493802699; if you pass it the values (15,90), it returns 0.16514867741462683.

**See also** Math.acos, Math.asin, Math.atan, Math.cos, Math.sin, Math.tan
**Math.ceil**

Returns the smallest integer greater than or equal to a number.

*Method of* Math  
*Static*  
*Implemented in* JavaScript 1.0, NES 2.0  
*ECMA version* ECMA-262

**Syntax**

```javascript
ceil(x)
```

**Parameters**

- `x` A number

**Description**

Because `ceil` is a static method of `Math`, you always use it as `Math.ceil()`, rather than as a method of a `Math` object you created.

**Examples**

The following function returns the `ceil` value of the variable `x`:

```javascript
function getCeil(x) {
    return Math.ceil(x)
}
```

If you pass 45.95 to `getCeil`, it returns 46; if you pass -45.95, it returns -45.

**See also** Math.floor

---

**Math.cos**

Returns the cosine of a number.

*Method of* Math  
*Static*  
*Implemented in* JavaScript 1.0, NES 2.0  
*ECMA version* ECMA-262

**Syntax**

```javascript
cos(x)
```

**Parameters**

- `x` A number
**Description**  The `cos` method returns a numeric value between -1 and 1, which represents the cosine of the angle.

Because `cos` is a static method of `Math`, you always use it as `Math.cos()`, rather than as a method of a `Math` object you created.

**Examples**  The following function returns the cosine of the variable `x`:

```javascript
function getCos(x) {
    return Math.cos(x)
}
```

If `x` equals `2*Math.PI`, `getCos` returns 1; if `x` equals `Math.PI`, the `getCos` method returns -1.

**See also**  `Math.acos`, `Math.asin`, `Math.atan`, `Math.atan2`, `Math.sin`, `Math.tan`

---

**E**

Euler's constant and the base of natural logarithms, approximately 2.718.

**Property of**  `Math`

**Static, Read-only**

**Implemented in**  JavaScript 1.0, NES 2.0

**ECMA version**  ECMA-262

**Description**  Because `E` is a static property of `Math`, you always use it as `Math.E`, rather than as a property of a `Math` object you created.

**Examples**  The following function returns Euler's constant:

```javascript
function getEuler() {
    return Math.E
}
```
exp

Returns \( E^x \), where \( x \) is the argument, and \( E \) is Euler’s constant, the base of the natural logarithms.

*Method of*: Math

*Static*

*Implemented in*: JavaScript 1.0, NES 2.0

*ECMA version*: ECMA-262

**Syntax**

```
exp(x)
```

**Parameters**

\( x \) A number

**Description**

Because `exp` is a static method of `Math`, you always use it as `Math.exp()`, rather than as a method of a `Math` object you created.

**Examples**

The following function returns the exponential value of the variable \( x \):

```
function getExp(x) {
    return Math.exp(x)
}
```

If you pass `getExp` the value 1, it returns 2.718281828459045.

**See also**  `Math.E`, `Math.log`, `Math.pow`

floor

Returns the largest integer less than or equal to a number.

*Method of*: Math

*Static*

*Implemented in*: JavaScript 1.0, NES 2.0

*ECMA version*: ECMA-262

**Syntax**

```
floor(x)
```

**Parameters**

\( x \) A number
**Math.LN10**

The natural logarithm of 10, approximately 2.302.

Property of Math

Static, Read-only

Implemented in JavaScript 1.0, NES 2.0

ECMA version ECMA-262

**Examples**

The following function returns the natural log of 10:

```javascript
function getNatLog10() {
    return Math.LN10
}
```

**Description**

Because LN10 is a static property of Math, you always use it as Math.LN10, rather than as a property of a Math object you created.

---

**LN2**

The natural logarithm of 2, approximately 0.693.

Property of Math

Static, Read-only

Implemented in JavaScript 1.0, NES 2.0

ECMA version ECMA-262
Examples  The following function returns the natural log of 2:

```javascript
function getNatLog2() {
    return Math.LN2
}
```

Description  Because LN2 is a static property of Math, you always use it as Math.LN2, rather than as a property of a Math object you created.

log

Returns the natural logarithm (base e) of a number.

Method of  Math

Static

Implemented in  JavaScript 1.0, NES 2.0

ECMA version  ECMA-262

Syntax  \( \log(x) \)

Parameters  

\( x \)  A number

Description  If the value of number is negative, the return value is always NaN.

Because \( \log \) is a static method of Math, you always use it as Math.log(), rather than as a method of a Math object you created.

Examples  The following function returns the natural log of the variable \( x \):

```javascript
function getLog(x) {
    return Math.log(x)
}
```

If you pass `getLog` the value 10, it returns 2.302585092994046; if you pass it the value 0, it returns -Infinity; if you pass it the value -1, it returns NaN because -1 is out of range.

See also  Math.exp, Math.pow
**LOG10E**

The base 10 logarithm of E (approximately 0.434).

*Property of* Math

*Static, Read-only*

*Implemented in* JavaScript 1.0, NES 2.0

*ECMA version* ECMA-262

**Examples**

The following function returns the base 10 logarithm of E:

```javascript
function getLog10e() {
    return Math.LOG10E
}
```

**Description**

Because LOG10E is a static property of Math, you always use it as Math.LOG10E, rather than as a property of a Math object you created.

---

**LOG2E**

The base 2 logarithm of E (approximately 1.442).

*Property of* Math

*Static, Read-only*

*Implemented in* JavaScript 1.0, NES 2.0

*ECMA version* ECMA-262

**Examples**

The following function returns the base 2 logarithm of E:

```javascript
function getLog2e() {
    return Math.LOG2E
}
```

**Description**

Because LOG2E is a static property of Math, you always use it as Math.LOG2E, rather than as a property of a Math object you created.
Math.max

Returns the larger of two numbers.

Method of Math
Static
Implemented in JavaScript 1.0, NES 2.0
ECMA version ECMA-262

Syntax max(x, y)

Parameters x, y Numbers.

Description Because max is a static method of Math, you always use it as Math.max(), rather than as a method of a Math object you created.

Examples The following function evaluates the variables x and y:

```javascript
function getMax(x, y) {
    return Math.max(x, y)
}
```

If you pass getMax the values 10 and 20, it returns 20; if you pass it the values -10 and -20, it returns -10.

See also Math.min

Math.min

Returns the smaller of two numbers.

Method of Math
Static
Implemented in JavaScript 1.0, NES 2.0
ECMA version ECMA-262

Syntax min(x, y)

Parameters x, y Numbers.
Description  Because \( \text{min} \) is a static method of \( \text{Math} \), you always use it as \( \text{Math.min()} \), rather than as a method of a \( \text{Math} \) object you created.

Examples  The following function evaluates the variables \( x \) and \( y \):

```javascript
function getMin(x,y) {
    return Math.min(x,y)
}
```

If you pass \( \text{getMin} \) the values 10 and 20, it returns 10; if you pass it the values -10 and -20, it returns -20.

See also  \( \text{Math.max} \)

---

**PI**

The ratio of the circumference of a circle to its diameter, approximately 3.14159.

Property of  \( \text{Math} \)

Static, Read-only

Implemented in  JavaScript 1.0, NES 2.0

ECMA version  ECMA-262

Examples  The following function returns the value of \( \pi \):

```javascript
function getPi() {
    return Math.PI
}
```

Description  Because \( \pi \) is a static property of \( \text{Math} \), you always use it as \( \text{Math.PI} \), rather than as a property of a \( \text{Math} \) object you created.

---

**pow**

Returns base to the exponent power, that is, \( \text{base}^{\text{exponent}} \).

Method of  \( \text{Math} \)

Static

Implemented in  JavaScript 1.0, NES 2.0

ECMA version  ECMA-262

Syntax  \( \text{pow}(x, y) \)
**Math.random**

Returns a pseudo-random number between 0 and 1. The random number generator is seeded from the current time, as in Java.

**Method of**
Math

**Static**

**Implemented in**
JavaScript 1.0, NES 2.0: Unix only

JavaScript 1.1, NES 2.0: all platforms

**ECMA version**
ECMA-262

**Syntax**
random()

**Parameters**
None.

**Description**
Because random is a static method of Math, you always use it as Math.random(), rather than as a method of a Math object you created.

**Examples**

```javascript
//Returns a random number between 0 and 1
function getRandom() {
    return Math.random()
}
```
### round

Returns the value of a number rounded to the nearest integer.

**Method of** Math

**Static**

**Implemented in** JavaScript 1.0, NES 2.0

**ECMA version** ECMA-262

**Syntax**

```
round(x)
```

**Parameters**

- `x` A number

**Description** If the fractional portion of `number` is .5 or greater, the argument is rounded to the next higher integer. If the fractional portion of `number` is less than .5, the argument is rounded to the next lower integer.

Because `round` is a static method of Math, you always use it as `Math.round()`, rather than as a method of a Math object you created.

**Examples**

//Returns the value 20
x=Math.round(20.49)

//Returns the value 21
x=Math.round(20.5)

//Returns the value -20
x=Math.round(-20.5)

//Returns the value -21
x=Math.round(-20.51)

---

### sin

Returns the sine of a number.

**Method of** Math

**Static**

**Implemented in** JavaScript 1.0, NES 2.0

**ECMA version** ECMA-262

**Syntax**

```
sin(x)
```
Math.sqrt

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>A number</td>
</tr>
</tbody>
</table>

Description

The sin method returns a numeric value between -1 and 1, which represents the sine of the argument.

Because sin is a static method of Math, you always use it as `Math.sin()`, rather than as a method of a `Math` object you created.

Examples

The following function returns the sine of the variable `x`:

```javascript
function getSine(x) {
  return Math.sin(x);
}
```

If you pass `getSine` the value `Math.PI/2`, it returns 1.

See also


sqrt

Returns the square root of a number.

Method of Math

Static

Implemented in JavaScript 1.0, NES 2.0

ECMA version ECMA-262

Syntax

`sqrt(x)`

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>A number</td>
</tr>
</tbody>
</table>

Description

If the value of `number` is negative, `sqrt` returns NaN.

Because `sqrt` is a static method of `Math`, you always use it as `Math.sqrt()`, rather than as a method of a `Math` object you created.
Math.SQRT1_2

Examples  The following function returns the square root of the variable \( x \):

```javascript
function getRoot(x) {
    return Math.sqrt(x)
}
```

If you pass `getRoot` the value 9, it returns 3; if you pass it the value 2, it returns 1.414213562373095.

**SQRT1_2**

The square root of 1/2; equivalently, 1 over the square root of 2, approximately 0.707.

*Property of*  Math

*Static, Read-only*

*Implemented in*  JavaScript 1.0, NES 2.0

*ECMA version*  ECMA-262

Examples  The following function returns 1 over the square root of 2:

```javascript
function getRoot1_2() {
    return Math.SQRT1_2
}
```

Description  Because SQRT1_2 is a static property of Math, you always use it as Math.SQRT1_2, rather than as a property of a Math object you created.

**SQRT2**

The square root of 2, approximately 1.414.

*Property of*  Math

*Static, Read-only*

*Implemented in*  JavaScript 1.0, NES 2.0

*ECMA version*  ECMA-262

Examples  The following function returns the square root of 2:

```javascript
function getRoot2() {
    return Math.SQRT2
}
```
Description Because \( \text{SQRT2} \) is a static property of \text{Math}, you always use it as \text{Math.SQRT2}, rather than as a property of a \text{Math} object you created.

\[ \text{Math.tan} \]

Returns the tangent of a number.

**Method of** \text{Math}

**Static**

**Implemented in** JavaScript 1.0, NES 2.0

**ECMA version** ECMA-262

**Syntax** \text{tan}(x)

**Parameters**

\( x \) A number

**Description** The \text{tan} method returns a numeric value that represents the tangent of the angle.

Because \text{tan} is a static method of \text{Math}, you always use it as \text{Math.tan()}, rather than as a method of a \text{Math} object you created.

**Examples** The following function returns the tangent of the variable \( x \):

```javascript
function getTan(x) {
    return Math.tan(x);
}
```

**See also** \text{Math.acos}, \text{Math.asin}, \text{Math.atan}, \text{Math.atan2}, \text{Math.cos}, \text{Math.sin}
**MimeType**

A MIME type (Multipart Internet Mail Extension) supported by the client.

*Client-side object*

*Implemented in* JavaScript 1.1

**Created by** You do not create `MimeType` objects yourself. These objects are predefined JavaScript objects that you access through the `mimeTypes` array of the `navigator` or `Plugin` object:

```javascript
navigator.mimeTypes[index]
```

where `index` is either an integer representing a MIME type supported by the client or a string containing the type of a `MimeType` object (from the `MimeType.type` property).

**Description** Each `MimeType` object is an element in a `mimeTypes` array. The `mimeTypes` array is a property of both `navigator` and `Plugin` objects. For example, the following table summarizes the values for displaying JPEG images:

<table>
<thead>
<tr>
<th>Expression</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>navigator.mimeTypes[&quot;image/jpeg&quot;].type</code></td>
<td><code>image/jpeg</code></td>
</tr>
<tr>
<td><code>navigator.mimeTypes[&quot;image/jpeg&quot;].description</code></td>
<td><code>JPEG Image</code></td>
</tr>
<tr>
<td><code>navigator.mimeTypes[&quot;image/jpeg&quot;].suffixes</code></td>
<td><code>jpeg, jpg, jpe, jfif, pjjpeg, pjp</code></td>
</tr>
<tr>
<td><code>navigator.mimeTypes[&quot;image/jpeg&quot;].enabledPlugins</code></td>
<td><code>null</code></td>
</tr>
</tbody>
</table>

**Property Summary**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>description</code></td>
<td>A description of the MIME type.</td>
</tr>
<tr>
<td><code>enabledPlugin</code></td>
<td>Reference to the <code>Plugin</code> object configured for the MIME type.</td>
</tr>
<tr>
<td><code>suffixes</code></td>
<td>A string listing possible filename extensions for the MIME type, for example &quot;mpeg, mpg, mpe, mpv, vbs, mpegv&quot;.</td>
</tr>
<tr>
<td><code>type</code></td>
<td>The name of the MIME type, for example &quot;video/mpeg&quot; or &quot;audio/x-wav&quot;.</td>
</tr>
</tbody>
</table>
Method Summary

This object inherits the watch and unwatch methods from Object.

Examples

The following code displays the type, description, suffixes, and enabledPlugin properties for each MimeType object on a client:

```javascript
document.writeln("<TABLE BORDER=1><TR VALIGN=TOP> ",
            "<TH ALIGN=left>i",
            "<TH ALIGN=left>type",
            "<TH ALIGN=left>description",
            "<TH ALIGN=left>suffixes",
            "<TH ALIGN=left>enabledPlugin.name</TR>")
for (i=0; i < navigator.mimeTypes.length; i++) {
    document.writeln("<TR VALIGN=TOP><TD>",i,
            "<TD>",navigator.mimeTypes[i].type,
            "<TD>",navigator.mimeTypes[i].description,
            "<TD>",navigator.mimeTypes[i].suffixes)
if (navigator.mimeTypes[i].enabledPlugin==null) {
    document.writeln("<TD>None",
            "</TR>")
} else {
    document.writeln("<TD>",navigator.mimeTypes[i].enabledPlugin.name,
            "</TR>")
}
```

The preceding example displays output similar to the following:

<table>
<thead>
<tr>
<th>i</th>
<th>type</th>
<th>description</th>
<th>suffixes</th>
<th>enabledPlugin.name</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>audio/aiff</td>
<td>AIFF</td>
<td>aif, aiff</td>
<td>LiveAudio</td>
</tr>
<tr>
<td>1</td>
<td>audio/wav</td>
<td>WAV</td>
<td>wav</td>
<td>LiveAudio</td>
</tr>
<tr>
<td>2</td>
<td>audio/x-midi</td>
<td>MIDI</td>
<td>mid, midi</td>
<td>LiveAudio</td>
</tr>
<tr>
<td>3</td>
<td>audio/midi</td>
<td>MIDI</td>
<td>mid, midi</td>
<td>LiveAudio</td>
</tr>
<tr>
<td>4</td>
<td>video/msvideo</td>
<td>Video for Windows</td>
<td>avi</td>
<td>NPAVI32 Dynamic Link Library</td>
</tr>
<tr>
<td>5</td>
<td>*</td>
<td>Netscape Default Plugin</td>
<td></td>
<td>Netscape Default Plugin</td>
</tr>
<tr>
<td>6</td>
<td>zz-application/zz-winassoc-TGZ</td>
<td>TGZ</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

See also navigator, navigator.mimeTypes, Plugin
**description**

A human-readable description of the data type described by the MIME type object.

*Property of* MimeType  
*Read-only*  
*Implemented in* JavaScript 1.1

**enabledPlugin**

The Plugin object for the plug-in that is configured for the specified MIME type. If the MIME type does not have a plug-in configured, enabledPlugin is null.

*Property of* MimeType  
*Read-only*  
*Implemented in* JavaScript 1.1

**Description**

Use the enabledPlugin property to determine which plug-in is configured for a specific MIME type. Each plug-in may support multiple MIME types, and each MIME type could potentially be supported by multiple plug-ins. However, only one plug-in can be configured for a MIME type. (On Macintosh and Unix, the user can configure the handler for each MIME type; on Windows, the handler is determined at browser start-up time.)

The enabledPlugin property is a reference to a Plugin object that represents the plug-in that is configured for the specified MIME type.

You might need to know which plug-in is configured for a MIME type, for example, to dynamically emit an EMBED tag on the page if the user has a plug-in configured for the MIME type.
Examples
The following example determines whether the Shockwave plug-in is installed.
If it is, a movie is displayed.

```javascript
// Can we display Shockwave movies?
mimetype = navigator.mimeTypes["application/x-director"]
if (mimetype) {
    // Yes, so can we display with a plug-in?
    plugin = mimetype.enabledPlugin
    if (plugin)
        // Yes, so show the data in-line
        document.writeln("Here's a movie: <EMBED SRC=mymovie.dir HEIGHT=100 WIDTH=100>")
    else
        // No, so provide a link to the data
        document.writeln("<A HREF='mymovie.dir'>Click here</A> to see a movie.")
} else {
    // No, so tell them so
    document.writeln("Sorry, can't show you this cool movie.")
}
```

**suffixes**

A string listing possible file suffixes (also known as filename extensions) for the
MIME type.

*Property of* MimeType

*Read-only*

*Implemented in* JavaScript 1.1

**Description**
The *suffixes* property is a string consisting of each valid suffix (typically three
letters long) separated by commas. For example, the *suffixes* for the "audio/x-midi"
MIME type are "mid, midi".

**type**

A string specifying the name of the MIME type. This string distinguishes the
MIME type from all others; for example "video/mpeg" or "audio/x-wav".

*Property of* MimeType

*Read-only*

*Implemented in* JavaScript 1.1

*Property of* MimeType
navigator

Contains information about the version of Navigator in use.

*Client-side object*

*Implemented in* JavaScript 1.0

JavaScript 1.1: added mimeTypes and plugins properties; added javaEnabled and taintEnabled methods.

JavaScript 1.2: added language and platform properties; added preference and savePreferences methods.

**Created by**  
The JavaScript runtime engine on the client automatically creates the navigator object.

**Description**  
Use the navigator object to determine which version of the Navigator your users have, what MIME types the user’s Navigator can handle, and what plug-ins the user has installed. All of the properties of the navigator object are read-only.

**Property Summary**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>appCodeName</td>
<td>Specifies the code name of the browser.</td>
</tr>
<tr>
<td>appName</td>
<td>Specifies the name of the browser.</td>
</tr>
<tr>
<td>appVersion</td>
<td>Specifies version information for the Navigator.</td>
</tr>
<tr>
<td>language</td>
<td>Indicates the translation of the Navigator being used.</td>
</tr>
<tr>
<td>mimeTypes</td>
<td>An array of all MIME types supported by the client.</td>
</tr>
<tr>
<td>platform</td>
<td>Indicates the machine type for which the Navigator was compiled.</td>
</tr>
<tr>
<td>plugins</td>
<td>An array of all plug-ins currently installed on the client.</td>
</tr>
<tr>
<td>userAgent</td>
<td>Specifies the user-agent header.</td>
</tr>
</tbody>
</table>
Method Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>javaEnabled</td>
<td>Tests whether Java is enabled.</td>
</tr>
<tr>
<td>plugins.refresh</td>
<td>Makes newly installed plug-ins available and optionally reloads open documents that contain plug-ins.</td>
</tr>
<tr>
<td>preference</td>
<td>Allows a signed script to get and set certain Navigator preferences.</td>
</tr>
<tr>
<td>savePreferences</td>
<td>Saves the Navigator preferences to the local file prefs.js.</td>
</tr>
<tr>
<td>taintEnabled</td>
<td>Specifies whether data tainting is enabled.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the watch and unwatch methods from Object.

**appCodeName**

A string specifying the code name of the browser.

*Property of* navigator
*Read-only*
*Implemented in* JavaScript 1.0

**Examples**
The following example displays the value of the appCodeName property:

```javascript
document.write("The value of navigator.appCodeName is "+
navigator.appCodeName)
```

For Navigator 2.0 and later, this displays the following:

The value of navigator.appCodeName is Mozilla
app\texttt{Name}

A string specifying the name of the browser.

\textit{Property of} \hspace{1em} \texttt{navigator}

\textit{Read-only}

\textit{Implemented in} \hspace{1em} JavaScript 1.0

\textbf{Examples} \hspace{.5em} The following example displays the value of the \texttt{appName} property:

\begin{verbatim}
document.write("The value of navigator.appName is " +
navigator.appName)
\end{verbatim}

For Navigator 2.0 and 3.0, this displays the following:

The value of navigator.appName is Netscape

app\texttt{Version}

A string specifying version information for the Navigator.

\textit{Property of} \hspace{1em} \texttt{navigator}

\textit{Read-only}

\textit{Implemented in} \hspace{1em} JavaScript 1.0

\textbf{Description} \hspace{.5em} The \texttt{appVersion} property specifies version information in the following format:

\texttt{releaseNumber (platform; country)}

The values contained in this format are the following:

- \texttt{releaseNumber} is the version number of the Navigator. For example, "2.0b4" specifies Navigator 2.0, beta 4.

- \texttt{platform} is the platform upon which the Navigator is running. For example, "Win16" specifies a 16-bit version of Windows such as Windows 3.1.

- \texttt{country} is either "I" for the international release, or "U" for the domestic U.S. release. The domestic release has a stronger encryption feature than the international release.
Examples

**Example 1.** The following example displays version information for the Navigator:

```javascript
document.write("The value of navigator.appVersion is " + navigator.appVersion);
```

For Navigator 2.0 on Windows 95, this displays the following:

The value of navigator.appVersion is 2.0 (Win95, I)

For Navigator 3.0 on Windows NT, this displays the following:

The value of navigator.appVersion is 3.0 (WinNT, I)

**Example 2.** The following example populates a `Textarea` object with newline characters separating each line. Because the newline character varies from platform to platform, the example tests the `appVersion` property to determine whether the user is running Windows (`appVersion` contains "Win" for all versions of Windows). If the user is running Windows, the newline character is set to \r\n; otherwise, it's set to \n, which is the newline character for Unix and Macintosh.

```javascript
<SCRIPT>
var newline=null
function populate(textareaObject){
  if (navigator.appVersion.lastIndexOf('Win') != -1)
    newline="\r\n"
  else newline="\n"
  textareaObject.value="line 1" + newline + "line 2" + newline + "line 3"
}
</SCRIPT>

<FORM NAME="form1">
<BR><TEXTAREA NAME="testLines" ROWS=8 COLS=55></TEXTAREA>
<P><INPUT TYPE="button" VALUE="Populate the Textarea object" 
onClick="populate(document.form1.testLines)">
</TEXTAREA>
</FORM>
```
**javaEnabled**

Tests whether Java is enabled.

*Method of* navigator

*Static*

*Implemented in* JavaScript 1.1

**Syntax**

`javaEnabled()`

**Parameters**

None.

**Description**

`javaEnabled` returns true if Java is enabled; otherwise, false. The user can enable or disable Java by through user preferences.

**Examples**

The following code executes `function1` if Java is enabled; otherwise, it executes `function2`.

```javascript
if (navigator.javaEnabled()) {
    function1()
} else function2()
```

**See also**

`navigator.appCodeName`, `navigator.appName`, `navigator.userAgent`

**language**

Indicates the translation of the Navigator being used.

*Property of* navigator

*Read-only*

*Implemented in* JavaScript 1.2

**Description**

The value for language is usually a 2-letter code, such as "en" and occasionally a five-character code to indicate a language subtype, such as "zh_CN".

Use this property to determine the language of the Navigator client software being used. For example you might want to display translated text for the user.
mimeTypes

An array of all MIME types supported by the client.

Property of navigator
Read-only
Implemented in JavaScript 1.1

The mimeTypes array contains an entry for each MIME type supported by the client (either internally, via helper applications, or by plug-ins). For example, if a client supports three MIME types, these MIME types are reflected as navigator.mimeTypes[0], navigator.mimeTypes[1], and navigator.mimeTypes[2].

Each element of the mimeTypes array is a MimeType object.

To obtain the number of supported mime types, use the length property: navigator.mimeTypes.length.

See also MimeType

platform

Indicates the machine type for which the Navigator was compiled.

Property of navigator
Read-only
Implemented in JavaScript 1.2

Description Platform values are Win32, Win16, Mac68k, MacPPC and various Unix.

The machine type the Navigator was compiled for may differ from the actual machine type due to version differences, emulators, or other reasons.

If you use SmartUpdate to download software to a user’s machine, you can use this property to ensure that the trigger downloads the appropriate JAR files. The triggering page checks the Navigator version before checking the platform property. For information on using SmartUpdate, see Using JAR Installation Manager for SmartUpdate.
plugins

An array of all plug-ins currently installed on the client.

Property of navigator
Read-only
Implemented in JavaScript 1.1

You can refer to the Plugin objects installed on the client by using this array. Each element of the plugins array is a Plugin object. For example, if three plug-ins are installed on the client, these plug-ins are reflected as navigator.plugins[0], navigator.plugins[1], and navigator.plugins[2].

To use the plugins array:

1. navigator.plugins[index]
2. navigator.plugins[index][mimeTypeIndex]

index is an integer representing a plug-in installed on the client or a string containing the name of a Plugin object (from the name property). The first form returns the Plugin object stored at the specified location in the plugins array. The second form returns theMimeType object at the specified index in that Plugin object.

To obtain the number of plug-ins installed on the client, use the length property: navigator.plugins.length.

plugins.refresh. The plugins array has its own method, refresh. This method makes newly installed plug-ins available, updates related arrays such as the plugins array, and optionally reloads open documents that contain plug-ins. You call this method with one of the following statements:

navigator.plugins.refresh(true)
navigator.plugins.refresh(false)

If you supply true, refresh refreshes the plugins array to make newly installed plug-ins available and reloads all open documents that contain embedded objects (EMBED tag). If you supply false, it refreshes the plugins array, but does not reload open documents.

When the user installs a plug-in, that plug-in is not available until refresh is called or the user closes and restarts Navigator.
Examples
The following code refreshes arrays and reloads open documents containing embedded objects:

```javascript
navigator.plugins.refresh(true)
```

See also the examples for the `Plugin` object.

**preference**

Allows a signed script to get and set certain Navigator preferences.

**Method of**

`navigator`

**Static**

**Implemented in**

JavaScript 1.2

**Syntax**

```javascript
preference(prefName[, setValue])
```

**Parameters**

- `prefName` A string representing the name of the preference you want to get or set. Allowed preferences are listed below.
- `setValue` The value you want to assign to the preference. This can be a string, number, or Boolean.

**Description**

This method returns the value of the preference. If you use the method to set the value, it returns the new value.

With permission, you can get and set the preferences shown in the following table.

**Table 1.2 Preferences.**

<table>
<thead>
<tr>
<th>To do this...</th>
<th>Set this preference...</th>
<th>To this value...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatically load images</td>
<td><code>general.always_load_images</code></td>
<td>true or false</td>
</tr>
<tr>
<td>Enable Java</td>
<td><code>security.enable_java</code></td>
<td>true or false</td>
</tr>
<tr>
<td>Enable JavaScript</td>
<td><code>javascript.enabled</code></td>
<td>true or false</td>
</tr>
<tr>
<td>Enable style sheets</td>
<td><code>browser.enable_style_sheets</code></td>
<td>true or false</td>
</tr>
<tr>
<td>Enable SmartUpdate</td>
<td><code>autoupdate.enabled</code></td>
<td>true or false</td>
</tr>
<tr>
<td>Accept all cookies</td>
<td><code>network.cookie.cookieBehavior</code></td>
<td>0</td>
</tr>
</tbody>
</table>
Reading a preference with the `preference` method requires the `UniversalPreferencesRead` privilege. Setting a preference with this method requires the `UniversalPreferencesWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**See also** `savePreferences`

### `savePreferences`

Saves the Navigator preferences to the local file `prefs.js`.

**Method of** `navigator`

**Static**

**Implemented in** JavaScript 1.2

**Security** Saving user preferences requires the `UniversalPreferencesWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**Syntax** `SavePreferences()`

**Description** This method immediately saves the current Navigator preferences to the user's `prefs.js` settings file. Navigator also saves preferences automatically when it exits.

**See also** `preference`
taintEnabled

Specifies whether data tainting is enabled.

Method of navigator

Static

Implemented in JavaScript 1.1

JavaScript 1.2: removed

Syntax

navigator.taintEnabled()

Description

Tainting prevents other scripts from passing information that should be secure and private, such as directory structures or user session history. JavaScript cannot pass tainted values on to any server without the end user's permission.

Use taintEnabled to determine if data tainting is enabled. taintEnabled returns true if data tainting is enabled, false otherwise. The user enables or disables data tainting by using the environment variable NS_ENABLE_TAINT.

Examples

The following code executes function1 if data tainting is enabled; otherwise it executes function2.

if (navigator.taintEnabled()) {
  function1()
}
else function2()

See also taint, untaint
userAgent

A string representing the value of the user-agent header sent in the HTTP protocol from client to server.

Property of navigator

Read-only

Implemented in JavaScript 1.0

Description

Servers use the value sent in the user-agent header to identify the client.

Examples

The following example displays userAgent information for the Navigator:

```javascript
document.write("The value of navigator.userAgent is " + navigator.userAgent)
```

For Navigator 2.0, this displays the following:

The value of navigator.userAgent is Mozilla/2.0 (Win16; I)
netscape

A top-level object used to access any Java class in the package netscape.*.

Core object

Implemented in JavaScript 1.1, NES 2.0

Created by The netscape object is a top-level, predefined JavaScript object. You can automatically access it without using a constructor or calling a method.

Description The netscape object is a convenience synonym for the property Packages.netscape.

See also Packages, Packages.netscape
Number

Lets you work with numeric values. The Number object is an object wrapper for primitive numeric values.

Core object

Implemented in JavaScript 1.1, NES 2.0

JavaScript 1.2: modified behavior of Number constructor

JavaScript 1.3: added toSource method

ECMA version ECMA-262

Created by The Number constructor:

new Number(value)

Parameters

value The numeric value of the object being created.

Description The primary uses for the Number object are:

- To access its constant properties, which represent the largest and smallest representable numbers, positive and negative infinity, and the Not-a-Number value.

- To create numeric objects that you can add properties to. Most likely, you will rarely need to create a Number object.

The properties of Number are properties of the class itself, not of individual Number objects.

JavaScript 1.2: Number(x) now produces NaN rather than an error if x is a string that does not contain a well-formed numeric literal. For example,

```javascript
x=Number("three");
document.write(x + "<BR>");
```

prints NaN

You can convert any object to a number using the top-level Number function.
## Property Summary

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>constructor</td>
<td>Specifies the function that creates an object’s prototype.</td>
</tr>
<tr>
<td>MAX_VALUE</td>
<td>The largest representable number.</td>
</tr>
<tr>
<td>MIN_VALUE</td>
<td>The smallest representable number.</td>
</tr>
<tr>
<td>NaN</td>
<td>Special “not a number” value.</td>
</tr>
<tr>
<td>NEGATIVE_INFINITY</td>
<td>Special value representing negative infinity; returned on overflow.</td>
</tr>
<tr>
<td>POSITIVE_INFINITY</td>
<td>Special value representing infinity; returned on overflow.</td>
</tr>
<tr>
<td>prototype</td>
<td>Allows the addition of properties to a Number object.</td>
</tr>
</tbody>
</table>

## Method Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>toSource</td>
<td>Returns an object literal representing the specified Number object; you can use this value to create a new object. Overrides the Object.toSource method.</td>
</tr>
<tr>
<td>toString</td>
<td>Returns a string representing the specified object. Overrides the Object.toString method.</td>
</tr>
<tr>
<td>valueOf</td>
<td>Returns the primitive value of the specified object. Overrides the Object.valueOf method.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the `watch` and `unwatch` methods from `Object`.

### Examples

**Example 1.** The following example uses the `Number` object’s properties to assign values to several numeric variables:

```javascript
biggestNum = Number.MAX_VALUE
smallestNum = Number.MIN_VALUE
infiniteNum = Number.POSITIVE_INFINITY
negInfiniteNum = Number.NEGATIVE_INFINITY
notANum = Number.NaN
```
**Example 2.** The following example creates a `Number` object, `myNum`, then adds a description property to all `Number` objects. Then a value is assigned to the `myNum` object’s description property.

```javascript
myNum = new Number(65)
Number.prototype.description=null
myNum.description="wind speed"
```

---

**constructor**

Specifies the function that creates an object’s prototype. Note that the value of this property is a reference to the function itself, not a string containing the function’s name.

Property of: `Number`

Implemented in: `JavaScript 1.1, NES 2.0`

ECMA version: `ECMA-262`

**Description** See `Object.constructor`.

---

**MAX_VALUE**

The maximum numeric value representable in JavaScript.

Property of: `Number`

Static, Read-only

Implemented in: `JavaScript 1.1, NES 2.0`

ECMA version: `ECMA-262`

**Description** The `MAX_VALUE` property has a value of approximately 1.79E+308. Values larger than `MAX_VALUE` are represented as "Infinity".

Because `MAX_VALUE` is a static property of `Number`, you always use it as `Number.MAX_VALUE`, rather than as a property of a `Number` object you created.

**Examples** The following code multiplies two numeric values. If the result is less than or equal to `MAX_VALUE`, the `func1` function is called; otherwise, the `func2` function is called.

```javascript
if (num1 * num2 <= Number.MAX_VALUE)
    func1()
else
    func2()
```
**MIN_VALUE**

The smallest positive numeric value representable in JavaScript.

*Property of* Number  
*Static, Read-only*  
*Implemented in* JavaScript 1.1, NES 2.0  
*ECMA version* ECMA-262

**Description**

The **MIN_VALUE** property is the number closest to 0, not the most negative number, that JavaScript can represent.

**MIN_VALUE** has a value of approximately 5e-324. Values smaller than **MIN_VALUE** ("underflow values") are converted to 0.

Because **MIN_VALUE** is a static property of **Number**, you always use it as **Number.MIN_VALUE**, rather than as a property of a **Number** object you created.

**Examples**

The following code divides two numeric values. If the result is greater than or equal to **MIN_VALUE**, the **func1** function is called; otherwise, the **func2** function is called.

```javascript
if (num1 / num2 >= Number.MIN_VALUE)
  func1()
else
  func2()
```

**NaN**

A special value representing Not-A-Number. This value is represented as the unquoted literal NaN.

*Property of* Number  
*Read-only*  
*Implemented in* JavaScript 1.1, NES 2.0  
*ECMA version* ECMA-262
**Description**

JavaScript prints the value `Number.NaN` as `NaN`. `NaN` is always unequal to any other number, including `NaN` itself; you cannot check for the not-a-number value by comparing to `Number.NaN`. Use the `isNaN` function instead.

You might use the `NaN` property to indicate an error condition for a function that should return a valid number.

**Examples**

In the following example, if `month` has a value greater than 12, it is assigned `NaN`, and a message is displayed indicating valid values.

```javascript
var month = 13
if (month < 1 || month > 12) {
  month = Number.NaN
  alert("Month must be between 1 and 12.")
}
```

**See also**  
`NaN`, `isNaN`, `parseFloat`, `parseInt`, `NEGATIVE_INFINITY`.

---

**NEGATIVE_INFINITY**

A special numeric value representing negative infinity. This value is represented as the unquoted literal `-Infinity`.

**Property of**  
`Number`

**Static, Read-only**

**Implemented in**  
JavaScript 1.1, NES 2.0

**ECMA version**  
ECMA-262

**Description**

This value behaves slightly differently than mathematical infinity:

- Any positive value, including `POSITIVE_INFINITY`, multiplied by `NEGATIVE_INFINITY` is `NEGATIVE_INFINITY`.
- Any negative value, including `NEGATIVE_INFINITY`, multiplied by `NEGATIVE_INFINITY` is `POSITIVE_INFINITY`.
- Zero multiplied by `NEGATIVE_INFINITY` is `NaN`.
- `NaN` multiplied by `NEGATIVE_INFINITY` is `NaN`.
- `NEGATIVE_INFINITY`, divided by any negative value except `NEGATIVE_INFINITY`, is `POSITIVE_INFINITY`.
- `NEGATIVE_INFINITY`, divided by any positive value except `POSITIVE_INFINITY`, is `NEGATIVE_INFINITY`. 
- NEGATIVE_INFINITY, divided by either NEGATIVE_INFINITY or POSITIVE_INFINITY, is NaN.
- Any number divided by NEGATIVE_INFINITY is Zero.

Because NEGATIVE_INFINITY is a static property of Number, you always use it as Number.NEGATIVE_INFINITY, rather than as a property of a Number object you created.

**Examples**

In the following example, the variable smallNumber is assigned a value that is smaller than the minimum value. When the if statement executes, smallNumber has the value "-Infinity", so the func1 function is called.

```javascript
var smallNumber = -Number.MAX_VALUE*10
if (smallNumber == Number.NEGATIVE_INFINITY)
  func1()
else
  func2()
```

**See also** Infinity, isFinite

---

**POSITIVE_INFINITY**

A special numeric value representing infinity. This value is represented as the unquoted literal "Infinity".

**Property of** Number

**Static, Read-only**

**Implemented in** JavaScript 1.1, NES 2.0

**ECMA version** ECMA-262

**Description**

This value behaves slightly differently than mathematical infinity:

- Any positive value, including POSITIVE_INFINITY, multiplied by POSITIVE_INFINITY is POSITIVE_INFINITY.
- Any negative value, including NEGATIVE_INFINITY, multiplied by POSITIVE_INFINITY is NEGATIVE_INFINITY.
- Zero multiplied by POSITIVE_INFINITY is NaN.
- NaN multiplied by POSITIVE_INFINITY is NaN.
- POSITIVE_INFINITY, divided by any negative value except NEGATIVE_INFINITY, is NEGATIVE_INFINITY.
- POSITIVE_INFINITY, divided by any positive value except POSITIVE_INFINITY, is POSITIVE_INFINITY.
• \text{POSITIVE\_INFINITY}, divided by either \text{NEGATIVE\_INFINITY} or \text{POSITIVE\_INFINITY}, is \text{NaN}.
• Any number divided by \text{POSITIVE\_INFINITY} is \text{Zero}.

Because \text{POSITIVE\_INFINITY} is a static property of \text{Number}, you always use it as \text{Number.POSITIVE\_INFINITY}, rather than as a property of a \text{Number} object you created.

**Examples**

In the following example, the variable \text{bigNumber} is assigned a value that is larger than the maximum value. When the \text{if} statement executes, \text{bigNumber} has the value "Infinity", so the \text{func1} function is called.

```javascript
var bigNumber = Number.MAX_VALUE * 10
if (bigNumber == Number.POSITIVE_INFINITY)
  func1()
else
  func2()
```

**See also** \text{Infinity, isFinite}

---

**Number.prototype**

Represents the prototype for this class. You can use the prototype to add properties or methods to all instances of a class. For information on prototypes, see \text{Function.prototype}.

- **Property of** \text{Number}
- **Implemented in** JavaScript 1.1, NES 2.0
- **ECMA version** ECMA-262

**toSource**

Returns a string representing the source code of the object.

- **Method of** \text{Number}
- **Implemented in** JavaScript 1.3

**Syntax** \text{toSource()}

**Parameters** None
Number.toString

Description
The `toSource` method returns the following values:

- For the built-in `Number` object, `toSource` returns the following string indicating that the source code is not available:
  ```javascript
  function Number() {
    [native code]
  }
  ```
- For instances of `Number`, `toSource` returns a string representing the source code.

This method is usually called internally by JavaScript and not explicitly in code.

See also `Object.toSource`

toString

Returns a string representing the specified `Number` object.

Method of `Number`

Implemented in JavaScript 1.1

ECMA version ECMA-262

Syntax
```
toString()
toString([radix])
```

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>radix</code></td>
<td>An integer between 2 and 36 specifying the base to use for representing numeric values.</td>
</tr>
</tbody>
</table>

Description

The `Number` object overrides the `toString` method of the `Object` object; it does not inherit `Object.toString`. For `Number` objects, the `toString` method returns a string representation of the object.

JavaScript calls the `toString` method automatically when a number is to be represented as a text value or when a number is referred to in a string concatenation.

For `Number` objects and values, the built-in `toString` method returns the string representing the value of the number.
You can use `toString` on numeric values, but not on numeric literals:

```javascript
// The next two lines are valid
var howMany=10
alert("howMany.toString() is " + howMany.toString())

// The next line causes an error
alert("45.toString() is " + 45.toString())
```

---

### `valueOf`

Returns the primitive value of a Number object.

**Method of** Number

**Implemented in** JavaScript 1.1

**ECMA version** ECMA-262

**Syntax**

```javascript
valueOf()
```

**Parameters** None

**Description** The `valueOf` method of `Number` returns the primitive value of a Number object as a number data type.

This method is usually called internally by JavaScript and not explicitly in code.

**Examples**

```javascript
x = new Number();
alert(x.valueOf()) // displays 0
```

**See also** `Object.valueOf`
Object

Object is the primitive JavaScript object type. All JavaScript objects are descended from Object. That is, all JavaScript objects have the methods defined for Object.

*Core object*

**Implemented in**
- JavaScript 1.0: `toString` method
  - JavaScript 1.1, NES 2.0: added `eval` and `valueOf` methods; `constructor` property
  - JavaScript 1.2: deprecated `eval` method
  - JavaScript 1.3: added `toSource` method

**ECMA version**
- ECMA-262

**Created by**
The `Object` constructor:

```javascript
new Object()
```

**Parameters**
None

**Property Summary**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>constructor</td>
<td>Specifies the function that creates an object's prototype.</td>
</tr>
<tr>
<td>prototype</td>
<td>Allows the addition of properties to all objects.</td>
</tr>
</tbody>
</table>

**Method Summary**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>eval</code></td>
<td>Deprecated. Evaluates a string of JavaScript code in the context of the specified object.</td>
</tr>
<tr>
<td><code>toSource</code></td>
<td>Returns an object literal representing the specified object; you can use this value to create a new object.</td>
</tr>
<tr>
<td><code>toString</code></td>
<td>Returns a string representing the specified object.</td>
</tr>
<tr>
<td><code>unwatch</code></td>
<td>Removes a watchpoint from a property of the object.</td>
</tr>
<tr>
<td><code>valueOf</code></td>
<td>Returns the primitive value of the specified object.</td>
</tr>
<tr>
<td><code>watch</code></td>
<td>Adds a watchpoint to a property of the object.</td>
</tr>
</tbody>
</table>
**constructor**

Specifies the function that creates an object’s prototype. Note that the value of this property is a reference to the function itself, not a string containing the function’s name.

*Property of* Object

*Implemented in* JavaScript 1.1, NES 2.0

*ECMA version* ECMA-262

**Description**

All objects inherit a `constructor` property from their prototype:

```javascript
o = new Object // or o = {} in JavaScript 1.2
o.constructor == Object

a = new Array // or a = [] in JavaScript 1.2
a.constructor == Array

n = new Number(3)
n.constructor == Number
```

Even though you cannot construct most HTML objects, you can do comparisons. For example,

```javascript
document.constructor == Document
document.form3.constructor == Form
```

**Examples**

The following example creates a prototype, `Tree`, and an object of that type, `theTree`. The example then displays the `constructor` property for the object `theTree`.

```javascript
function Tree(name) {
    this.name=name
}

theTree = new Tree("Redwood")
document.writeln("<B>theTree.constructor is</B> " +
    theTree.constructor + "<P>")
```

This example displays the following output:

```
theTree.constructor is function Tree(name) { this.name = name; }
```
eval

Deprecated. Evaluates a string of JavaScript code in the context of an object.

**Method of**  
Object

**Implemented in**  
JavaScript 1.1, NES 2.0

JavaScript 1.2, NES 3.0: deprecated as method of objects; retained as top-level function

**Syntax**  
eval(string)

**Parameters**

*string*  
Any string representing a JavaScript expression, statement, or sequence of statements. The expression can include variables and properties of existing objects.

**Description**  
eval as a method of Object and every object derived from Object is deprecated. Use the top-level eval function.

**Backward Compatibility**

JavaScript 1.1. eval is a method of Object and every object derived from Object.

**See also**  
eval

---

**prototype**

Represents the prototype for this class. You can use the prototype to add properties or methods to all instances of a class. For more information, see Function.prototype.

**Property of**  
Object

**Implemented in**  
JavaScript 1.1

**ECMA version**  
ECMA-262
**toSource**

Returns a string representing the source code of the object.

*Method of* Object

*Implemented in* JavaScript 1.3

**Syntax**

```
toSource()
```

**Parameters**

None

**Description**

The `toSource` method returns the following values:

- For the built-in `Object` object, `toSource` returns the following string indicating that the source code is not available:

```javascript
function Object() {
    [native code]
}
```

- For instances of `Object`, `toSource` returns a string representing the source code.

- For custom objects, `toSource` returns the JavaScript source that defines the object as a string.

This method is usually called internally by JavaScript and not explicitly in code. You can call `toSource` while debugging to examine the contents of an object.

**Examples**

The following code defines the `Dog` object type and creates `theDog`, an object of type `Dog`:

```javascript
function Dog(name, breed, color, sex) {
    this.name = name
    this.breed = breed
    this.color = color
    this.sex = sex
}
theDog = new Dog("Gabby", "Lab", "chocolate", "girl")
```

Calling the `toSource` method of `theDog` displays the JavaScript source that defines the object:

```
theDog.toSource()
//returns "{name:"Gabby", breed:"Lab", color:"chocolate", sex:"girl"}"
```

**See also**

`Object.toString`
Object.toString

**toString**

Returns a string representing the specified object.

*Method of* Object

*Implemented in* JavaScript 1.0

*ECMA version* ECMA-262

**Syntax**

toString()

**Security**

JavaScript 1.1: This method is tainted by default for the following objects:
Button, Checkbox, FileUpload, Hidden, History, Link, Location, Password, Radio, Reset, Select, Submit, Text, and Textarea. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**

Every object has a **toString** method that is automatically called when it is to be represented as a text value or when an object is referred to in a string concatenation. For example, the following examples require **theDog** to be represented as a string:

document.write(theDog)
document.write("The dog is " + theDog)

By default, the **toString** method is inherited by every object descended from Object. You can override this method for custom objects that you create. If you do not override **toString** in a custom object, **toString** returns **[object type]**, where **type** is the object type or the name of the constructor function that created the object.

For example:

```javascript
var o = new Object()
o.toString // returns [object Object]
```

**Built-in toString methods.** Every built-in core JavaScript object overrides the **toString** method of **Object** to return an appropriate value. JavaScript calls this method whenever it needs to convert an object to a string.

Some built-in client-side and server-side JavaScript objects do not override the **toString** method of **Object**. For example, for an Image object named **sealife** defined as shown below, **sealife.toString()** returns **[object Image]**.

```html
<IMG NAME="sealife" SRC="images\seaotter.gif" ALIGN="left" VSPACE="10">
```
Overriding the default `toString` method. You can create a function to be called in place of the default `toString` method. The `toString` method takes no arguments and should return a string. The `toString` method you create can be any value you want, but it will be most useful if it carries information about the object.

The following code defines the `Dog` object type and creates `theDog`, an object of type `Dog`:

```javascript
function Dog(name, breed, color, sex) {
    this.name = name
    this.breed = breed
    this.color = color
    this.sex = sex
}
theDog = new Dog("Gabby", "Lab", "chocolate", "girl")
```

If you call the `toString` method on this custom object, it returns the default value inherited from `Object`:

```javascript
theDog.toString() // returns [object Object]
```

The following code creates `dogToString`, the function that will be used to override the default `toString` method. This function generates a string containing each property, of the form "property = value;".

```javascript
function dogToString() {
    var ret = "Dog " + this.name + " is [\n    for (var prop in this)
        ret += " " + prop + " = " + this[prop] + "\n    return ret + "]";
}
```

The following code assigns the user-defined function to the object’s `toString` method:

```javascript
Dog.prototype.toString = dogToString
```

With the preceding code in place, any time `theDog` is used in a string context, JavaScript automatically calls the `dogToString` function, which returns the following string:

```javascript
Dog Gabby is [
    name is Gabby;
    breed is Lab;
    color is chocolate;
    sex is girl;
]
An object’s `toString` method is usually invoked by JavaScript, but you can invoke it yourself as follows:

```javascript
var dogString = theDog.toString()
```

**Backward Compatibility**

**JavaScript 1.2.** The behavior of the `toString` method depends on whether you specify `LANGUAGE="JavaScript1.2"` in the `<SCRIPT>` tag:

- If you specify `LANGUAGE="JavaScript1.2"` in the `<SCRIPT>` tag, the `toString` method returns an object literal.

- If you do not specify `LANGUAGE="JavaScript1.2"` in the `<SCRIPT>` tag, the `toString` method returns `[object type]`, as with other JavaScript versions.

**Examples**

**Example 1: The location object.** The following example prints the string equivalent of the current location.

```javascript
document.write("location.toString() is " + location.toString() + ":<BR>")
```

The output is as follows:

`location.toString() is file:///C:/TEMP/myprog.html`

**Example 2: Object with no string value.** Assume you have an `Image` object named `sealife` defined as follows:

```html
<IMG NAME="sealife" SRC="images\seaotter.gif" ALIGN="left" VSPACE="10">
```

Because the `Image` object itself has no special `toString` method, `sealife.toString()` returns the following:

`[object Image]`

**Example 3: The radix parameter.** The following example prints the string equivalents of the numbers 0 through 9 in decimal and binary.

```javascript
for (x = 0; x < 10; x++) {
    document.write("Decimal: ", x.toString(10), " Binary: ",
                  x.toString(2), ":<BR>")
}
```
The preceding example produces the following output:

Decimal: 0 Binary: 0
Decimal: 1 Binary: 1
Decimal: 2 Binary: 10
Decimal: 3 Binary: 11
Decimal: 4 Binary: 100
Decimal: 5 Binary: 101
Decimal: 6 Binary: 110
Decimal: 7 Binary: 111
Decimal: 8 Binary: 1000
Decimal: 9 Binary: 1001

See also Object.toSource, Object.valueOf

unwatch

Removes a watchpoint set with the watch method.

Method of Object

Implemented in JavaScript 1.2, NES 3.0

Syntax unwatch(prop)

Parameters

prop The name of a property of the object.

Description The JavaScript debugger has functionality similar to that provided by this method, as well as other debugging options. For information on the debugger, see Getting Started with Netscape JavaScript Debugger.

By default, this method is inherited by every object descended from Object.

Example See watch.
**valueOf**

Returns the primitive value of the specified object.

*Method of*  Object

*Implemented in*  JavaScript 1.1

*ECMA version*  ECMA-262

**Syntax**  

`valueOf()`

**Parameters**  None

**Description**  

JavaScript calls the `valueOf` method to convert an object to a primitive value. You rarely need to invoke the `valueOf` method yourself; JavaScript automatically invokes it when encountering an object where a primitive value is expected.

By default, the `valueOf` method is inherited by every object descended from `Object`. Every built-in core object overrides this method to return an appropriate value. If an object has no primitive value, `valueOf` returns the object itself, which is displayed as:

`[object Object]`

You can use `valueOf` within your own code to convert a built-in object into a primitive value. When you create a custom object, you can override `Object.valueOf` to call a custom method instead of the default `Object` method.

**Overriding valueOf for custom objects.** You can create a function to be called in place of the default `valueOf` method. Your function must take no arguments.

Suppose you have an object type `myNumberType` and you want to create a `valueOf` method for it. The following code assigns a user-defined function to the object's `valueOf` method:

```javascript
myNumberType.prototype.valueOf = new Function(functionText)
```

With the preceding code in place, any time an object of type `myNumberType` is used in a context where it is to be represented as a primitive value, JavaScript automatically calls the function defined in the preceding code.
An object's `valueOf` method is usually invoked by JavaScript, but you can invoke it yourself as follows:

```javascript
myNumber.valueOf()
```

**Note** Objects in string contexts convert via the `toString` method, which is different from `String` objects converting to string primitives using `valueOf`. All string objects have a string conversion, if only `"[object type]"`. But many objects do not convert to number, boolean, or function.

**See also** `parseInt`, `Object.toString`.

### watch

Watches for a property to be assigned a value and runs a function when that occurs.

**Method of** `Object`

**Implemented in** `JavaScript 1.2, NES 3.0`

**Syntax** `watch(prop, handler)`

**Parameters**

- `prop` The name of a property of the object.
- `handler` A function to call.

**Description** Watches for assignment to a property named `prop` in this object, calling `handler(prop, oldval, newval)` whenever `prop` is set and storing the return value in that property. A watchpoint can filter (or nullify) the value assignment, by returning a modified `newval` (or `oldval`).

If you delete a property for which a watchpoint has been set, that watchpoint does not disappear. If you later recreate the property, the watchpoint is still in effect.

To remove a watchpoint, use the `unwatch` method. By default, the `watch` method is inherited by every object descended from `Object`.

The JavaScript debugger has functionality similar to that provided by this method, as well as other debugging options. For information on the debugger, see *Getting Started with Netscape JavaScript Debugger*. 

---

**Object.watch**

---

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Example

```javascript
<script language="JavaScript1.2">
  o = {p:1}
  o.watch("p",
      function (id,oldval,newval) {
        document.writeln("o." + id + " changed from "+ oldval + " to "+ newval)
        return newval
      })
  o.p = 2
  o.p = 3
  delete o.p
  o.p = 4
  o.unwatch('p')
  o.p = 5
</script>

This script displays the following:

  o.p changed from 1 to 2
  o.p changed from 2 to 3
  o.p changed from 3 to 4
```
**Option**

An option in a selection list.

*Client-side object*

*Implemented in*  
JavaScript 1.0

JavaScript 1.1: added `defaultSelected` property; `text` property can be changed to change the text of an option

**Created by**  
The `Option` constructor or the HTML `OPTION` tag. To create an `Option` object with its constructor:

```javascript
new Option([text[, value[, defaultSelected[, selected]]]])
```

Once you've created an `Option` object, you can add it to a selection list using the `Select.options` array.

**Parameters**

- **text**  
  Specifies the text to display in the select list.

- **value**  
  Specifies a value that is returned to the server when the option is selected and the form is submitted.

- **defaultSelected**  
  Specifies whether the option is initially selected (true or false).

- **selected**  
  Specifies the current selection state of the option (true or false).

**Property Summary**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>defaultSelected</code></td>
<td>Specifies the initial selection state of the option</td>
</tr>
<tr>
<td><code>index</code></td>
<td>The zero-based index of an element in the <code>Select.options</code> array.</td>
</tr>
<tr>
<td><code>length</code></td>
<td>The number of elements in the <code>Select.options</code> array.</td>
</tr>
<tr>
<td><code>selected</code></td>
<td>Specifies the current selection state of the option</td>
</tr>
<tr>
<td><code>text</code></td>
<td>Specifies the text for the option</td>
</tr>
<tr>
<td><code>value</code></td>
<td>Specifies the value that is returned to the server when the option is selected and the form is submitted</td>
</tr>
</tbody>
</table>

**Method Summary**  
This object inherits the `watch` and `unwatch` methods from `Object`.  

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*Client-Side JavaScript Reference*
Option objects in the context of a selection list (a Select object). When JavaScript creates a Select object for each SELECT tag in the document, it creates Option objects for the OPTION tags inside the SELECT tag and puts those objects in the options array of the Select object.

In addition, you can create new options using the Option constructor and add those to a selection list. After you create an option and add it to the Select object, you must refresh the document by using history.go(0). This statement must be last. When the document reloads, variables are lost if not saved in cookies or form element values.

You can use the Option.selected and Select.selectedIndex properties to change the selection state of an option.

- The Select.selectedIndex property is an integer specifying the index of the selected option. This is most useful for Select objects that are created without the MULTIPLE attribute. The following statement sets a Select object's selectedIndex property:

  ```javascript
  document.myForm.musicTypes.selectedIndex = i
  ```

- The Option.selected property is a Boolean value specifying the current selection state of the option in a Select object. If an option is selected, its selected property is true; otherwise it is false. This is more useful for Select objects that are created with the MULTIPLE attribute. The following statement sets an option's selected property to true:

  ```javascript
  document.myForm.musicTypes.options[i].selected = true
  ```

To change an option's text, use the Option.text property. For example, suppose a form has the following Select object:

```html
<SELECT name="userChoice">
  <OPTION>Choice 1
  <OPTION>Choice 2
  <OPTION>Choice 3
</SELECT>
```

You can set the text of the i<sup>th</sup> item in the selection based on text entered in a text field named whatsNew as follows:

```javascript
myform.userChoice.options[i].text = myform.whatsNew.value
```

You do not need to reload or refresh after changing an option's text.
Examples  The following example creates two Select objects, one with and one without the MULTIPLE attribute. No options are initially defined for either object. When the user clicks a button associated with the Select object, the populate function creates four options for the Select object and selects the first option.

```html
function populate(inForm) {
    colorArray = new Array("Red", "Blue", "Yellow", "Green")
    var option0 = new Option("Red", "color_red")
    var option1 = new Option("Blue", "color_blue")
    var option2 = new Option("Yellow", "color_yellow")
    var option3 = new Option("Green", "color_green")
    for (var i=0; i < 4; i++) {
        eval("inForm.selectTest.options[i]=option" + i)
        if (i==0) {
            inForm.selectTest.options[i].selected=true
        }
    }
    history.go(0)
}
</SCRIPT>

<H3>Select Option() constructor</H3>

<form>
    <select name="selectTest"></select>
    <input type="button" value="Populate Select List" onclick="populate(this.form)">
</form>

<hr>

<H3>Select-Multiple Option() constructor</H3>

<form>
    <select name="selectTest" multiple></select>
    <input type="button" value="Populate Select List" onclick="populate(this.form)">
</form>
```
defaultSelected

A Boolean value indicating the default selection state of an option in a selection list.

Property of Option

Implemented in JavaScript 1.1

Security JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description

If an option is selected by default, the value of the defaultSelected property is true; otherwise, it is false. defaultSelected initially reflects whether the SELECTED attribute is used within an OPTION tag; however, setting defaultSelected overrides the SELECTED attribute.

You can set the defaultSelected property at any time. The display of the corresponding Select object does not update when you set the defaultSelected property of an option, only when you set the Option.selected or Select.selectedIndex properties.

A Select object created without the MULTIPLE attribute can have only one option selected by default. When you set defaultSelected in such an object, any previous default selections, including defaults set with the SELECTED attribute, are cleared. If you set defaultSelected in a Select object created with the MULTIPLE attribute, previous default selections are not affected.

Examples

In the following example, the restoreDefault function returns the musicType Select object to its default state. The for loop uses the options array to evaluate every option in the Select object. The if statement sets the selected property if defaultSelected is true.

```javascript
function restoreDefault() {
    for (var i = 0; i < document.musicForm.musicType.length; i++) {
        if (document.musicForm.musicType.options[i].defaultSelected == true) {
            document.musicForm.musicType.options[i].selected=true
        }
    }
}
```
Option.index

The previous example assumes that the `Select` object is similar to the following:

```html
<Select NAME="musicType">
  <Option SELECTED> R&B
  <Option> Jazz
  <Option> Blues
  <Option> New Age
</Select>
```

See also Option.selected, Select.selectedIndex

### index

The zero-based index of an element in the `Select.options` array.

Property of Option

Implemented in JavaScript 1.0

**Description**
The `index` property specifies the position of an element in the `Select.options` array, starting with 0.

**Examples**
In the following example, the `getChoice` function returns the value of the `index` property for the selected option. The `for` loop evaluates every option in the `musicType` `Select` object. The `if` statement finds the option that is selected.

```javascript
function getChoice() {
  for (var i = 0; i < document.musicForm.musicType.length; i++) {
    if (document.musicForm.musicType.options[i].selected == true) {
      return document.musicForm.musicType.options[i].index
    }
  }
  return null
}
```

The previous example assumes that the `Select` object is similar to the following:

```html
<Select NAME="musicType">
  <Option SELECTED> R&B
  <Option> Jazz
  <Option> Blues
  <Option> New Age
</Select>
```
Note that you can also determine the index of the selected option in this example by using `document.musicForm.musicType.selectedIndex`.

### length

The number of elements in the `Select.options` array.

**Property of** Option

**Read-only**

**Implemented in** JavaScript 1.0

**Description** This value of this property is the same as the value of `Select.length`.

**Examples** See `Option.index` for an example of the `length` property.

### selected

A Boolean value indicating whether an option in a `Select` object is selected.

**Property of** Option

**Implemented in** JavaScript 1.0

**Security** JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description** If an option in a `Select` object is selected, the value of its `selected` property is true; otherwise, it is false. You can set the `selected` property at any time. The display of the associated `Select` object updates immediately when you set the `selected` property for one of its options.

In general, the `Option.selected` property is more useful than the `Select.selectedIndex` property for `Select` objects that are created with the `MULTIPLE` attribute. With the `Option.selected` property, you can evaluate every option in the `Select.options` array to determine multiple selections, and you can select individual options without clearing the selection of other options.

**Examples** See the examples for `defaultSelected`.

**See also** `Option.defaultSelected`, `Select.selectedIndex`
The `text` property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**
The `text` property initially reflects the text that follows an `OPTION` tag of a `SELECT` tag. You can set the `text` property at any time and the text displayed by the option in the selection list changes.

**Examples**

**Example 1.** In the following example, the `getChoice` function returns the value of the `text` property for the selected option. The `for` loop evaluates every option in the `musicType` `Select` object. The `if` statement finds the option that is selected.

```
function getChoice() {
    for (var i = 0; i < document.musicForm.musicType.length; i++) {
        if (document.musicForm.musicType.options[i].selected == true) {
            return document.musicForm.musicType.options[i].text
        }
    }
    return null
}
```

The previous example assumes that the `Select` object is similar to the following:

```
<SELECT NAME="musicType">
   <OPTION SELECTED> R&B
   <OPTION> Jazz
   <OPTION> Blues
   <OPTION> New Age
</SELECT>
```
Example 2. In the following form, the user can enter some text in the first text field and then enter a number between 0 and 2 (inclusive) in the second text field. When the user clicks the button, the text is substituted for the indicated option number and that option is selected.

The code for this example looks as follows:

```html
<SCRIPT>
function updateList(theForm, i) {
    theForm.userChoice.options[i].text = theForm.whatsNew.value
    theForm.userChoice.options[i].selected = true
}
</SCRIPT>

<FORM>
    <SELECT name="userChoice">
        <OPTION>Choice 1</OPTION>
        <OPTION>Choice 2</OPTION>
        <OPTION>Choice 3</OPTION>
    </SELECT>
    <BR>
    New text for the option: <INPUT TYPE="text" NAME="whatsNew">
    <BR>
    Option to change (0, 1, or 2): <INPUT TYPE="text" NAME="idx">
    <BR>
    <INPUT TYPE="button" VALUE="Change Selection"
    onClick="updateList(this.form, this.form.idx.value)">
</FORM>
```
Option.value

---

**value**

A string that reflects the `VALUE` attribute of the option.

*Property of* Option  
*Read-only*  
*Implemented in* JavaScript 1.0

**Security**  
JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**  
When a `VALUE` attribute is specified in HTML, the `value` property is a string that reflects it. When a `VALUE` attribute is not specified in HTML, the `value` property is the empty string. The `value` property is not displayed on the screen but is returned to the server if the option is selected.

Do not confuse the property with the selection state of the option or the text that is displayed next to it. The `selected` property determines the selection state of the object, and the `defaultSelected` property determines the default selection state. The text that is displayed is specified following the `OPTION` tag and corresponds to the `text` property.
Packages

A top-level object used to access Java classes from within JavaScript code.

Core object

Implemented in JavaScript 1.1, NES 2.0

Created by The Packages object is a top-level, predefined JavaScript object. You can automatically access it without using a constructor or calling a method.

Description The Packages object lets you access the public methods and fields of an arbitrary Java class from within JavaScript. The java, netscape, and sun properties represent the packages java.*, netscape.*, and sun.* respectively. Use standard Java dot notation to access the classes, methods, and fields in these packages. For example, you can access a constructor of the Frame class as follows:

```javascript
var theFrame = new Packages.java.awt.Frame();
```

For convenience, JavaScript provides the top-level netscape, sun, and java objects that are synonyms for the Packages properties with the same names. Consequently, you can access Java classes in these packages without the Packages keyword, as follows:

```javascript
var theFrame = new java.awt.Frame();
```

The className property represents the fully qualified path name of any other Java class that is available to JavaScript. You must use the Packages object to access classes outside the netscape, sun, and java packages.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>className</td>
<td>The fully qualified name of a Java class in a package other than netscape, java, or sun that is available to JavaScript.</td>
</tr>
<tr>
<td>java</td>
<td>Any class in the Java package java.*.</td>
</tr>
<tr>
<td>netscape</td>
<td>Any class in the Java package netscape.*.</td>
</tr>
<tr>
<td>sun</td>
<td>Any class in the Java package sun.*.</td>
</tr>
</tbody>
</table>
The following JavaScript function creates a Java dialog box:

```javascript
function createWindow() {
  var theOwner = new Packages.java.awt.Frame();
  var theWindow = new Packages.java.awt.Dialog(theOwner);
  theWindow.setSize(350,200);
  theWindow.setTitle("Hello, World");
  theWindow.setVisible(true);
}
```

In the previous example, the function instantiates theWindow as a new Packages object. The setSize, setTitle, and setVisible methods are all available to JavaScript as public methods of java.awt.Dialog.

### className

The fully qualified name of a Java class in a package other than netscape, java, or sun that is available to JavaScript.

**Property of**Packages

**Implemented in**JavaScript 1.1, NES 2.0

**Syntax**

`Packages.className`

where `classname` is the fully qualified name of a Java class.

**Description**

You must use the `className` property of the Packages object to access classes outside the netscape, sun, and java packages.

**Examples**

The following code accesses the constructor of the CorbaObject class in the myCompany package from JavaScript:

```javascript
var theObject = new Packages.myCompany.CorbaObject()
```

In the previous example, the value of the `className` property is `myCompany.CorbaObject`, the fully qualified path name of the CorbaObject class.
java

Any class in the Java package java.*.

Syntax Packages.java

Description Use the java property to access any class in the java package from within JavaScript. Note that the top-level object java is a synonym for Packages.java.

Examples The following code accesses the constructor of the java.awt.Frame class:

```javascript
var theOwner = new Packages.java.awt.Frame();
```

You can simplify this code by using the top-level java object to access the constructor as follows:

```javascript
var theOwner = new java.awt.Frame();
```

netscape

Any class in the Java package netscape.*.

Syntax Packages.netscape

Description Use the netscape property to access any class in the netscape package from within JavaScript. Note that the top-level object netscape is a synonym for Packages.netscape.

Examples See the example for Packages.java
Packages.sun

sun

Any class in the Java package sun.*.

Property of Packages

Implemented in JavaScript 1.1, NES 2.0

Syntax Packages.sun

Description Use the sun property to access any class in the sun package from within JavaScript. Note that the top-level object sun is a synonym for Packages.sun.

Examples See the example for Packages.java
Password

A text field on an HTML form that conceals its value by displaying asterisks (*). When the user enters text into the field, asterisks (*) hide entries from view.

Client-side object

* Implemented in JavaScript 1.0
  * JavaScript 1.1: added type property; added onBlur and onFocus event handlers
  * JavaScript 1.2: added handleEvent method.

Created by

The HTML INPUT tag, with "password" as the value of the TYPE attribute. For a given form, the JavaScript runtime engine creates appropriate Password objects and puts these objects in the elements array of the corresponding Form object. You access a Password object by indexing this array. You can index the array either by number or, if supplied, by using the value of the NAME attribute.

Event handlers

* onBlur
* onFocus

Description

A Password object on a form looks as follows:

![Password object on a form](image)

A Password object is a form element and must be defined within a FORM tag.

Security

JavaScript versions 1.2 and later. The value property is returned in plain text and has no security associated with it. Take care when using this property, and avoid storing its value in a cookie.
**Password**

**JavaScript 1.1.** If a user interactively modifies the value in a password field, you cannot evaluate it accurately unless data tainting is enabled. For information on data tainting, see the *Client-Side JavaScript Guide*.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>defaultValue</td>
<td>Reflects the VALUE attribute.</td>
</tr>
<tr>
<td>form</td>
<td>Specifies the form containing the Password object.</td>
</tr>
<tr>
<td>name</td>
<td>Reflects the NAME attribute.</td>
</tr>
<tr>
<td>type</td>
<td>Reflects the TYPE attribute.</td>
</tr>
<tr>
<td>value</td>
<td>Reflects the current value of the Password object’s field.</td>
</tr>
</tbody>
</table>

**Method Summary**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>blur</td>
<td>Removes focus from the object.</td>
</tr>
<tr>
<td>focus</td>
<td>Gives focus to the object.</td>
</tr>
<tr>
<td>handleEvent</td>
<td>Invokes the handler for the specified event.</td>
</tr>
<tr>
<td>select</td>
<td>Selects the input area of the object.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the `watch` and `unwatch` methods from `Object`.

**Examples**
The following example creates a `Password` object with no default value:

```html
<B>Password:</B>  
/Input TYPE="password" NAME="password" VALUE="" SIZE=25>
```

**See also** Form, Text
### blur

Removes focus from the object.

**Method of** Password

**Implemented in** JavaScript 1.0

**Syntax** `blur()`

**Parameters** None

**Examples** The following example removes focus from the password element `userPass`:

```javascript
userPass.blur()
```

This example assumes that the password is defined as

```html
<INPUT TYPE="password" NAME="userPass">
```

**See also** Password.focus, Password.select

### defaultValue

A string indicating the default value of a Password object.

**Property of** Password

**Implemented in** JavaScript 1.0

**Security** *JavaScript 1.1.* This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description** The initial value of `defaultValue` is null (for security reasons), regardless of the value of the `VALUE` attribute.

Setting `defaultValue` programmatically overrides the initial setting. If you programmatically set `defaultValue` for the `Password` object and then evaluate it, JavaScript returns the current value.

You can set the `defaultValue` property at any time. The display of the related object does not update when you set the `defaultValue` property, only when you set the `value` property.

**See also** Password.value
**focus**

Gives focus to the password object.

*Method of* Password  
*Implemented in* JavaScript 1.0

**Syntax**  
`focus()`  

**Parameters**  
None

**Description**  
Use the `focus` method to navigate to the password field and give it focus. You can then either programmatically enter a value in the field or let the user enter a value.

**Examples**  
In the following example, the `checkPassword` function confirms that a user has entered a valid password. If the password is not valid, the `focus` method returns focus to the `Password` object and the `select` method highlights it so the user can reenter the password.

```javascript
function checkPassword(userPass) {
  if (badPassword) {
    alert("Please enter your password again.")
    userPass.focus()
    userPass.select()
  }
}
```

This example assumes that the `Password` object is defined as

```html
<INPUT TYPE="password" NAME="userPass">
```

**See also** Password.blur, Password.select

---

**form**

An object reference specifying the form containing this object.

*Property of* Password  
*Read-only*  
*Implemented in* JavaScript 1.0

**Description**  
Each form element has a `form` property that is a reference to the element's parent form. This property is especially useful in event handlers, where you might need to refer to another element on the current form.
handleEvent

Invokes the handler for the specified event.

**Syntax**

```
handleEvent(event)
```

**Parameters**

- `event`  
  The name of an event for which the object has an event handler.

**Description**

For information on handling events, see the *Client-Side JavaScript Guide*.

name

A string specifying the name of this object.

**Security**

JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**

The `name` property initially reflects the value of the `NAME` attribute. Changing the `name` property overrides this setting. The `name` property is not displayed on-screen; it is used to refer to the objects programmatically.

If multiple objects on the same form have the same `NAME` attribute, an array of the given name is created automatically. Each element in the array represents an individual Form object. Elements are indexed in source order starting at 0. For example, if two Text elements and a Password element on the same form have their `NAME` attribute set to "myField", an array with the elements `myField[0]`, `myField[1]`, and `myField[2]` is created. You need to be aware of this situation in your code and know whether `myField` refers to a single element or to an array of elements.
Examples  In the following example, the valueGetter function uses a for loop to iterate over the array of elements on the valueTest form. The msgWindow window displays the names of all the elements on the form:

```
newWindow=window.open("http://home.netscape.com")

function valueGetter() {
    var msgWindow=window.open(""")
    for (var i = 0; i < newWindow.document.valueTest.elements.length; i++) {
        msgWindow.document.write(newWindow.document.valueTest.elements[i].name + "<BR>")
    }
}
```

**select**

Selects the input area of the password field.

*Method of*  Password  

*Implemented in*  JavaScript 1.0  

**Syntax**  

`select()`  

**Parameters**  

None  

**Description**  

Use the `select` method to highlight the input area of the password field. You can use the `select` method with the `focus` method to highlight a field and position the cursor for a user response.

**Examples**  

In the following example, the checkPassword function confirms that a user has entered a valid password. If the password is not valid, the `select` method highlights the password field and the `focus` method returns focus to it so the user can reenter the password.

```
function checkPassword(userPass) {
    if (badPassword) {
        alert("Please enter your password again.")
        userPass.focus()
        userPass.select()
    }
}
```

This example assumes that the password is defined as

```
<INPUT TYPE="password" NAME="userPass">
```

**See also**  Password.blur, Password.focus
Password.type

**type**

For all Password objects, the value of the type property is "password". This property specifies the form element's type.

*Property of* Password

*Read-only*

*Implemented in* JavaScript 1.1

**Examples**

The following example writes the value of the type property for every element on a form.

```javascript
for (var i = 0; i < document.form1.elements.length; i++) {
    document.writeln("<BR>type is " + document.form1.elements[i].type)
}
```

**value**

A string that initially reflects the VALUE attribute.

*Property of* Password

*Implemented in* JavaScript 1.0

**Security**

*JavaScript versions 1.2 and later.* This property is returned in plain text and has no security associated with it. Take care when using this property, and avoid storing its value in a cookie.

*JavaScript 1.1.* This property is tainted by default. If you programmatically set the value property and then evaluate it, JavaScript returns the current value. If a user interactively modifies the value in the password field, you cannot evaluate it accurately unless data tainting is enabled. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**

This string is represented by asterisks in the Password object field. The value of this property changes when a user or a program modifies the field, but the value is always displayed as asterisks.

**See also** Password.defaultValue
Plugin

A plug-in module installed on the client.

*Client-side object*

*Implemented in* JavaScript 1.1

**Created by** Plugin objects are predefined JavaScript objects that you access through the `navigator.plugins` array.

**Description** A Plugin object is a plug-in installed on the client. A plug-in is a software module that the browser can invoke to display specialized types of embedded data within the browser. The user can obtain a list of installed plug-ins by choosing About Plug-ins from the Help menu.

Each Plugin object is itself an array containing one element for each MIME type supported by the plug-in. Each element of the array is a `MimeType` object. For example, the following code displays the `type` and `description` properties of the first Plugin object’s first `MimeType` object.

```javascript
myPlugin = navigator.plugins[0]
myMimeType = myPlugin[0]
document.writeln('myMimeType.type is ', myMimeType.type, '<BR>'))
document.writeln('myMimeType.description is ', myMimeType.description)
```

The preceding code displays output similar to the following:

```
myMimeType.type is video/quicktime
myMimeType.description is QuickTime for Windows
```

The Plugin object lets you dynamically determine which plug-ins are installed on the client. You can write scripts to display embedded plug-in data if the appropriate plug-in is installed, or display some alternative information such as images or text if not.

Plug-ins can be platform dependent and configurable, so a Plugin object’s array of `MimeType` objects can vary from platform to platform, and from user to user.

Each Plugin object is an element in the `plugins` array.

When you use the `EMBED` tag to generate output from a plug-in application, you are not creating a Plugin object. Use the `document.embeds` array to refer to plug-in instances created with `EMBED` tags. See the `document.embeds` array.
### Property Summary

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>description</td>
<td>A description of the plug-in.</td>
</tr>
<tr>
<td>filename</td>
<td>Name of the plug-in file on disk.</td>
</tr>
<tr>
<td>length</td>
<td>Number of elements in the plug-in’s array of MimeType objects.</td>
</tr>
<tr>
<td>name</td>
<td>Name of the plug-in.</td>
</tr>
</tbody>
</table>

### Method Summary

This object inherits the `watch` and `unwatch` methods from `Object`.

### Examples

**Example 1.** The user can obtain a list of installed plug-ins by choosing About Plug-ins from the Help menu. To see the code the browser uses for this report, choose About Plug-ins from the Help menu, then choose Page Source from the View menu.

```javascript
var myPluginName = navigator.plugins["LiveAudio"].name
var myPluginFile = navigator.plugins["LiveAudio"].filename
var myPluginDesc = navigator.plugins["LiveAudio"].description
```

**Example 2.** The following code assigns shorthand variables for the predefined LiveAudio properties.

```javascript
var myPluginName = navigator.plugins["LiveAudio"].name
var myPluginFile = navigator.plugins["LiveAudio"].filename
var myPluginDesc = navigator.plugins["LiveAudio"].description
```

**Example 3.** The following code displays the message “LiveAudio is configured for audio/wav” if the LiveAudio plug-in is installed and is enabled for the "audio/wav" MIME type:

```javascript
var myPlugin = navigator.plugins["LiveAudio"]
var myType = myPlugin["audio/wav"]
if (myType && myType.enabledPlugin == myPlugin) {
  document.writeln("LiveAudio is configured for audio/wav")
}
```

**Example 4.** The following expression represents the number of MIME types that Shockwave can display:

```javascript
navigator.plugins["Shockwave"].length
```
Example 5. The following code displays the name, filename, description, and length properties for each Plugin object on a client:

```javascript
document.writeln("<TABLE BORDER=1><TR VALIGN=TOP>",
               "<TH ALIGN=left>i",
               "<TH ALIGN=left>name",
               "<TH ALIGN=left>filename",
               "<TH ALIGN=left>description",
               "<TH ALIGN=left># of types</TR>")
for (i=0; i < navigator.plugins.length; i++) {
    document.writeln("<TR VALIGN=TOP><TD>",i,
    "<TD>",navigator.plugins[i].name,
    "<TD>",navigator.plugins[i].filename,
    "<TD>",navigator.plugins[i].description,
    "<TD>",navigator.plugins[i].length,
    "</TD>")
}
document.writeln("</TABLE>")
```

The preceding example displays output similar to the following:

<table>
<thead>
<tr>
<th>i</th>
<th>name</th>
<th>filename</th>
<th>description</th>
<th># of types</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>QuickTime Plug-In</td>
<td>d:\nettools\netscape\nav30\Program\plugins\NPQTW32.DLL</td>
<td>QuickTime Plug-In for Win32 v.1.0.0</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>LiveAudio</td>
<td>d:\nettools\netscape\nav30\Program\plugins\NPAUDIO.DLL</td>
<td>LiveAudio—Netscape Navigator sound playing component</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>NPAVI32 Dynamic Link Library</td>
<td>d:\nettools\netscape\nav30\Program\plugins\npavi32.dll</td>
<td>NPAVI32, avi plugin DLL</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Netscape Default Plugin</td>
<td>d:\nettools\netscape\nav30\Program\plugins\pnul32.dll</td>
<td>Null Plugin</td>
<td>1</td>
</tr>
</tbody>
</table>

See also MimeType, document.embeds
Plugin.description

---

description

A human-readable description of the plug-in. The text is provided by the plug-in developers.

**Property of** Plugin

**Read-only**

**Implemented in** JavaScript 1.1

---

filename

The name of a plug-in file on disk.

**Property of** Plugin

**Read-only**

**Implemented in** JavaScript 1.1

**Description** The `filename` property is the plug-in program’s file name and is supplied by the plug-in itself. This name may vary from platform to platform.

**Examples** See the examples for Plugin.

---

length

The number of elements in the plug-in’s array of MimeType objects.

**Property of** Plugin

**Read-only**

**Implemented in** JavaScript 1.1
**name**

A string specifying the plug-in’s name.

*Property of* Plugin  
*Read-only*  
*Implemented in* JavaScript 1.1

**Security**  
*JavaScript 1.1.* This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide.*

**Description**  
The plug-in’s name, supplied by the plug-in itself. Each plug-in should have a name that uniquely identifies it.
Radio

An individual radio button in a set of radio buttons on an HTML form. The user can use a set of radio buttons to choose one item from a list.

*Client-side object*

**Created by** The HTML `INPUT` tag, with "radio" as the value of the `TYPE` attribute. All the radio buttons in a single group must have the same value for the `NAME` attribute. This allows them to be accessed as a single group.

For a given form, the JavaScript runtime engine creates an individual `Radio` object for each radio button in that form. It puts in a single array all the `Radio` objects that have the same value for the `NAME` attribute. It puts that array in the `elements` array of the corresponding `Form` object. If a single form has multiple sets of radio buttons, the `elements` array has multiple `Radio` objects.

You access a set of buttons by accessing the `Form.elements` array (either by number or by using the value of the `NAME` attribute). To access the individual radio buttons in that set, you use the returned object array. For example, if your document has a form called `emp` with a set of radio buttons whose `NAME` attribute is "dept", you would access the individual buttons as `document.emp.dept[0]`, `document.emp.dept[1]`, and so on.

**Event handlers**

- `onBlur`
- `onClick`
- `onFocus`
Radio

Description  A Radio object on a form looks as follows:

A Radio object is a form element and must be defined within a FORM tag.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>checked</td>
<td>Lets you programmatically select a radio button (property of the individual button).</td>
</tr>
<tr>
<td>defaultChecked</td>
<td>Reflects the CHECKED attribute (property of the individual button).</td>
</tr>
<tr>
<td>form</td>
<td>Specifies the form containing the Radio object (property of the array of buttons).</td>
</tr>
<tr>
<td>name</td>
<td>Reflects the NAME attribute (property of the array of buttons).</td>
</tr>
<tr>
<td>type</td>
<td>Reflects the TYPE attribute (property of the array of buttons).</td>
</tr>
<tr>
<td>value</td>
<td>Reflects the VALUE attribute (property of the array of buttons).</td>
</tr>
</tbody>
</table>
Radio

Method Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>blur</td>
<td>Removes focus from the radio button.</td>
</tr>
<tr>
<td>click</td>
<td>Simulates a mouse-click on the radio button.</td>
</tr>
<tr>
<td>focus</td>
<td>Gives focus to the radio button.</td>
</tr>
<tr>
<td>handleEvent</td>
<td>Invokes the handler for the specified event.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the watch and unwatch methods from Object.

Examples

Example 1. The following example defines a radio button group to choose among three music catalogs. Each radio button is given the same name, NAME="musicChoice", forming a group of buttons for which only one choice can be selected. The example also defines a text field that defaults to what was chosen via the radio buttons but that allows the user to type a nonstandard catalog name as well. The onClick event handler sets the catalog name input field when the user clicks a radio button.

```html
<INPUT TYPE="text" NAME="catalog" SIZE="20">
<INPUT TYPE="radio" NAME="musicChoice" VALUE="soul-and-r&b"
    onClick="musicForm.catalog.value = 'soul-and-r&b'"> Soul and R&B
<INPUT TYPE="radio" NAME="musicChoice" VALUE="jazz"
    onClick="musicForm.catalog.value = 'jazz'"> Jazz
<INPUT TYPE="radio" NAME="musicChoice" VALUE="classical"
    onClick="musicForm.catalog.value = 'classical'"> Classical
```

Example 2. The following example contains a form with three text boxes and three radio buttons. The radio buttons let the user choose whether the text fields are converted to uppercase or lowercase, or not converted at all. Each text field has an onChange event handler that converts the field value depending on which radio button is checked. The radio buttons for uppercase and lowercase have onClick event handlers that convert all fields when the user clicks the radio button.

```html
...
<HTML>
  <HEAD>
    <TITLE>Radio object example</TITLE>
  </HEAD>
  <SCRIPT>
    function convertField(field) {
      if (document.form1.conversion[0].checked) {
        field.value = field.value.toUpperCase();
      } else {
        if (document.form1.conversion[1].checked) {
          field.value = field.value.toLowerCase();
        }
      }
    }
    function convertAllFields(caseChange) {
      if (caseChange == "upper") {
        document.form1.lastName.value = document.form1.lastName.value.toUpperCase();
        document.form1.firstName.value = document.form1.firstName.value.toUpperCase();
        document.form1.cityName.value = document.form1.cityName.value.toUpperCase();
      } else {
        document.form1.lastName.value = document.form1.lastName.value.toLowerCase();
        document.form1.firstName.value = document.form1.firstName.value.toLowerCase();
        document.form1.cityName.value = document.form1.cityName.value.toLowerCase();
      }
    }
  </SCRIPT>
  <BODY>
    <FORM NAME="form1">
      <B>Last name:</B> <INPUT TYPE="text" NAME="lastName" SIZE=20 onChange="convertField(this)"><BR>
      <B>First name:</B> <INPUT TYPE="text" NAME="firstName" SIZE=20 onChange="convertField(this)"><BR>
      <B>City:</B> <INPUT TYPE="text" NAME="cityName" SIZE=20 onChange="convertField(this)"><BR>
    </FORM>
    <p>Convert values to:<BR>
      <B><INPUT TYPE="radio" NAME="conversion" VALUE="upper" onClick="if (this.checked) {convertAllFields('upper')}"> Upper case</B><BR>
      <B><INPUT TYPE="radio" NAME="conversion" VALUE="lower" onClick="if (this.checked) {convertAllFields('lower')}"> Lower case</B><BR>
      <B><INPUT TYPE="radio" NAME="conversion" VALUE="noChange"> No conversion</B></p>
    <FORM>
    </FORM>
  </BODY>
</HTML>

See also the example for Link.

See also Checkbox, Form, Select
Radio.blur

**blur**

Removes focus from the radio button.

*Method of* Radio  
*Implemented in* JavaScript 1.0

**Syntax**  
```
blur()
```

**Parameters**  
None

**See also** Radio.focus

---

**checked**

A Boolean value specifying the selection state of a radio button.

*Property of* Radio  
*Implemented in* JavaScript 1.0

**Security**  
*JavaScript 1.1.* This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide.*

**Description**  
If a radio button is selected, the value of its *checked* property is true; otherwise, it is false. You can set the *checked* property at any time. The display of the radio button updates immediately when you set the *checked* property.

At any given time, only one button in a set of radio buttons can be checked. When you set the *checked* property for one radio button in a group to true, that property for all other buttons in the group becomes false.

**Examples**  
The following example examines an array of radio buttons called *musicType* on the *musicForm* form to determine which button is selected. The VALUE attribute of the selected button is assigned to the *checkedButton* variable.

```javascript
function stateChecker() {
    var checkedButton = ""
    for (var i in document.musicForm.musicType) {
        if (document.musicForm.musicType[i].checked=="1") {
            checkedButton=document.musicForm.musicType[i].value
        }
    }
}
```

**See also** Radio.defaultChecked
**click**

Simulates a mouse-click on the radio button, but does not trigger the button’s onClick event handler.

*Method of*  
Radio

*Implemented in*  
JavaScript 1.0

**Syntax**  
click()

**Parameters**  
None

**Examples**  
The following example toggles the selection status of the first radio button in the musicType Radio object on the musicForm form:

document.musicForm.musicType[0].click()

The following example toggles the selection status of the newAge checkbox on the musicForm form:

document.musicForm.newAge.click()

---

**defaultChecked**

A Boolean value indicating the default selection state of a radio button.

*Property of*  
Radio

*Implemented in*  
JavaScript 1.0

**Security**  
JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**  
If a radio button is selected by default, the value of the defaultChecked property is true; otherwise, it is false. defaultChecked initially reflects whether the CHECKED attribute is used within an INPUT tag; however, setting defaultChecked overrides the CHECKED attribute.

Unlike for the checked property, changing the value of defaultChecked for one button in a radio group does not change its value for the other buttons in the group.

You can set the defaultChecked property at any time. The display of the radio button does not update when you set the defaultChecked property, only when you set the checked property.
Examples  The following example resets an array of radio buttons called musicType on the musicForm form to the default selection state:

```javascript
function radioResetter() {
    var i=""
    for (i in document.musicForm.musicType) {
        if (document.musicForm.musicType[i].defaultChecked==true) {
            document.musicForm.musicType[i].checked=true
        }
    }
}
```

See also  Radio.checked

---

**focus**

Gives focus to the radio button.

*Method of*  Radio

*Implemented in*  JavaScript 1.0

**Syntax**  focus()

**Parameters**  None

**Description**  Use the `focus` method to navigate to the radio button and give it focus. The user can then easily toggle that button.

See also  Radio.blur

---

**form**

An object reference specifying the form containing the radio button.

*Property of*  Radio

*Read-only*  Implemented in  JavaScript 1.0

**Description**  Each form element has a `form` property that is a reference to the element’s parent form. This property is especially useful in event handlers, where you might need to refer to another element on the current form.
Radio.handleEvent

**handleEvent**

Invokes the handler for the specified event.

*Method of* Radio

*Implemented in* JavaScript 1.2

**Syntax**

`handleEvent(event)`

**Parameters**

`event` The name of an event for which the specified object has an event handler.

**name**

A string specifying the name of the set of radio buttons with which this button is associated.

*Property of* Radio

*Implemented in* JavaScript 1.0

**Security** JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**

The `name` property initially reflects the value of the `NAME` attribute. Changing the `name` property overrides this setting.

All radio buttons that have the same value for their `name` property are in the same group and are treated together. If you change the `name` of a single radio button, you change which group of buttons it belongs to.

Do not confuse the `name` property with the label displayed on a Button. The `value` property specifies the label for the button. The `name` property is not displayed onscreen; it is used to refer programmatically to the button.
**Examples** In the following example, the `valueGetter` function uses a `for` loop to iterate over the array of elements on the `valueTest` form. The `msgWindow` window displays the names of all the elements on the form:

```javascript
newWindow=window.open("http://home.netscape.com")
function valueGetter() {
  var msgWindow=window.open(""")
  for (var i = 0; i < newWindow.document.valueTest.elements.length; i++) {
    msgWindow.document.write(newWindow.document.valueTest.elements[i].name + "<BR>"
  }
}
```

**type**

For all `Radio` objects, the value of the `type` property is "radio". This property specifies the form element's type.

- Property of `Radio`
- Read-only
- Implemented in JavaScript 1.1

**Examples** The following example writes the value of the `type` property for every element on a form.

```javascript
for (var i = 0; i < document.form1.elements.length; i++) {
  document.writeln("<BR>type is " + document.form1.elements[i].type)
}
```

**value**

A string that reflects the VALUE attribute of the radio button.

- Property of `Radio`
- Read-only
- Implemented in JavaScript 1.0

**Security** **JavaScript 1.1.** This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.
Description  When a `VALUE` attribute is specified in HTML, the `value` property is a string that reflects it. When a `VALUE` attribute is not specified in HTML, the `value` property is a string that evaluates to "on". The `value` property is not displayed on the screen but is returned to the server if the radio button or checkbox is selected.

Do not confuse the property with the selection state of the radio button or the text that is displayed next to the button. The `checked` property determines the selection state of the object, and the `defaultChecked` property determines the default selection state. The text that is displayed is specified following the `INPUT` tag.

Examples  The following function evaluates the `value` property of a group of radio buttons and displays it in the `msgWindow` window:

```javascript
function valueGetter() {
    var msgWindow = window.open(""
    for (var i = 0; i < document.valueTest.radioObj.length; i++) {
        msgWindow.document.write
            ("The value of radioObj[" + i + "] is " +
                document.valueTest.radioObj[i].value +"<BR>")
    }
    msgWindow.document.close()
}
```

This example displays the following values:

- on
- on
- on
- on

The previous example assumes the buttons have been defined as follows:

```
<RADIO TYPE="radio" NAME="radioObj">R&B
<RADIO TYPE="radio" NAME="radioObj" CHECKED>Soul
<RADIO TYPE="radio" NAME="radioObj">Rock and Roll
<RADIO TYPE="radio" NAME="radioObj">Blues
```

See also  `Radio.checked`, `Radio.defaultChecked`
A regular expression object contains the pattern of a regular expression. It has properties and methods for using that regular expression to find and replace matches in strings.

In addition to the properties of an individual regular expression object that you create using the RegExp constructor function, the predefined RegExp object has static properties that are set whenever any regular expression is used.

Core object

Implemented in  JavaScript 1.2, NES 3.0

JavaScript 1.3: added toSource method

Created by

A literal text format or the RegExp constructor function.

The literal format is used as follows:

```
/pattern/flags
```

The constructor function is used as follows:

```
new RegExp("pattern", "flags")
```

Parameters

- **pattern**: The text of the regular expression.
- **flags**: If specified, flags can have one of the following values:
  - `g`: global match
  - `i`: ignore case
  - `gi`: both global match and ignore case

Notice that the parameters to the literal format do not use quotation marks to indicate strings, while the parameters to the constructor function do use quotation marks. So the following expressions create the same regular expression:

```
/ab+c/i
new RegExp("ab+c", "i")
```
RegExp

Description

When using the constructor function, the normal string escape rules (preceding special characters with \ when included in a string) are necessary. For example, the following are equivalent:

\r = new RegExp("\w+")
\r = /\w+/  

The following table provides a complete list and description of the special characters that can be used in regular expressions.

Table 1.3 Special characters in regular expressions.

<table>
<thead>
<tr>
<th>Character</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>\</td>
<td>For characters that are usually treated literally, indicates that the next character is special and not to be interpreted literally. For example, /b/ matches the character 'b'. By placing a backslash in front of b, that is by using /\b/, the character becomes special to mean match a word boundary. -or- For characters that are usually treated specially, indicates that the next character is not special and should be interpreted literally. For example, * is a special character that means 0 or more occurrences of the preceding character should be matched; for example, /a*/ means match 0 or more a's. To match * literally, precede the it with a backslash; for example, /a*/ matches 'a'.</td>
</tr>
<tr>
<td>^</td>
<td>Matches beginning of input or line. For example, /^A/ does not match the 'A' in &quot;an A,&quot; but does match it in &quot;An A.&quot;</td>
</tr>
<tr>
<td>$</td>
<td>Matches end of input or line. For example, /t.$/ does not match the 't' in &quot;eater&quot;, but does match it in &quot;eat&quot;</td>
</tr>
<tr>
<td>*</td>
<td>Matches the preceding character 0 or more times. For example, /booo*/ matches 'boooo' in &quot;A ghost boooood&quot; and 'b' in &quot;A bird warbled&quot;, but nothing in &quot;A goat grunted&quot;.</td>
</tr>
<tr>
<td>+</td>
<td>Matches the preceding character 1 or more times. Equivalent to {1,}. For example, /a+/ matches the 'a' in &quot;candy&quot; and all the a's in &quot;caaaaaandy.&quot;</td>
</tr>
<tr>
<td>?</td>
<td>Matches the preceding character 0 or 1 time. For example, /e?le?/ matches the 'el' in &quot;angel&quot; and the 'le' in &quot;angle.&quot;</td>
</tr>
</tbody>
</table>
Table 1.3 Special characters in regular expressions. (Continued)

<table>
<thead>
<tr>
<th>Character</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>.</td>
<td>(The decimal point) matches any single character except the newline character. For example, /./ matches 'an' and 'on' in &quot;nay, an apple is on the tree&quot;, but not 'nay'.</td>
</tr>
<tr>
<td>(x)</td>
<td>Matches 'x' and remembers the match. For example, /(foo)/ matches and remembers 'foo' in &quot;foo bar.&quot; The matched substring can be recalled from the resulting array's elements $[1]$, $[2]$, $[n]$, or from the predefined RegExp object's properties $$1$, $$2$, $$9$.</td>
</tr>
<tr>
<td>x</td>
<td>y</td>
</tr>
<tr>
<td>{n}</td>
<td>Where $n$ is a positive integer. Matches exactly $n$ occurrences of the preceding character. For example, /\a{2}/ doesn't match the 'a' in &quot;candy,&quot; but it matches all of the a's in &quot;caandy,&quot; and the first two a's in &quot;caaaaaandy.&quot;</td>
</tr>
<tr>
<td>{n,}</td>
<td>Where $n$ is a positive integer. Matches at least $n$ occurrences of the preceding character. For example, /\a{2,}/ doesn't match the 'a' in &quot;candy,&quot; but matches all of the a's in &quot;caandy&quot; and in &quot;caaaaaaandy.&quot;</td>
</tr>
<tr>
<td>{n,m}</td>
<td>Where $n$ and $m$ are positive integers. Matches at least $n$ and at most $m$ occurrences of the preceding character. For example, /\a{1,3}/ matches nothing in &quot;cndy&quot;, the 'a' in &quot;candy,&quot; the first two a's in &quot;caandy,&quot; and the first three a's in &quot;caaaaaaandy.&quot; Notice that when matching &quot;caaaaaaandy&quot;, the match is &quot;aaa&quot;, even though the original string had more a's in it.</td>
</tr>
<tr>
<td>[xyz]</td>
<td>A character set. Matches any one of the enclosed characters. You can specify a range of characters by using a hyphen. For example, [abed] is the same as [a-c]. They match the 'b' in &quot;brisket&quot; and the 'c' in &quot;ache&quot;.</td>
</tr>
<tr>
<td>[^xyz]</td>
<td>A negated or complemented character set. That is, it matches anything that is not enclosed in the brackets. You can specify a range of characters by using a hyphen. For example, [^{abc}] is the same as [^{a-c}]. They initially match 'r' in &quot;brisket&quot; and 'h' in &quot;chop.&quot;</td>
</tr>
<tr>
<td>[\b]</td>
<td>Matches a backspace. (Not to be confused with \b.)</td>
</tr>
</tbody>
</table>
### Table 1.3 Special characters in regular expressions. (Continued)

<table>
<thead>
<tr>
<th>Character</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>\b</td>
<td>Matches a word boundary, such as a space. (Not to be confused with [\b].) For example, /\bn\w/ matches the 'no' in &quot;noonday&quot;; /\wy\b/ matches the 'ly' in &quot;possibly yesterday.&quot;</td>
</tr>
<tr>
<td>\B</td>
<td>Matches a non-word boundary. For example, /\w\Bn/ matches 'on' in &quot;noonday&quot;, and /\y\B\w/ matches 'ye' in &quot;possibly yesterday.&quot;</td>
</tr>
<tr>
<td>\eX</td>
<td>Where X is a control character. Matches a control character in a string. For example, /\eM/ matches control-M in a string.</td>
</tr>
<tr>
<td>\d</td>
<td>Matches a digit character. Equivalent to [0-9]. For example, /\d/ or /[0-9]/ matches '2' in &quot;B2 is the suite number.&quot;</td>
</tr>
<tr>
<td>\D</td>
<td>Matches any non-digit character. Equivalent to [^0-9]. For example, /\D/ or /[^0-9]/ matches 'B' in &quot;B2 is the suite number.&quot;</td>
</tr>
<tr>
<td>\f</td>
<td>Matches a form-feed.</td>
</tr>
<tr>
<td>\n</td>
<td>Matches a linefeed.</td>
</tr>
<tr>
<td>\r</td>
<td>Matches a carriage return.</td>
</tr>
<tr>
<td>\s</td>
<td>Matches a single white space character, including space, tab, form feed, line feed. Equivalent to [ \f\n\r\t\v]. For example, /\s\w*/ matches ' bar' in &quot;foo bar.&quot;</td>
</tr>
<tr>
<td>\S</td>
<td>Matches a single character other than white space. Equivalent to [^ \f\n\r\t\v]. For example, /\S/\w* matches 'foo' in &quot;foo bar.&quot;</td>
</tr>
<tr>
<td>\t</td>
<td>Matches a tab</td>
</tr>
<tr>
<td>\v</td>
<td>Matches a vertical tab.</td>
</tr>
<tr>
<td>\w</td>
<td>Matches any alphanumeric character including the underscore. Equivalent to [A-Za-z0-9_]. For example, /\w/ matches 'a' in &quot;apple,&quot; '$' in &quot;$5.28,&quot; and '3' in &quot;3D.&quot;</td>
</tr>
<tr>
<td>\W</td>
<td>Matches any non-word character. Equivalent to [^A-Za-z0-9_]. For example, /\W/ or /[^$A-Za-z0-9_]/ matches '%' in &quot;50%.&quot;</td>
</tr>
</tbody>
</table>
The literal notation provides compilation of the regular expression when the expression is evaluated. Use literal notation when the regular expression will remain constant. For example, if you use literal notation to construct a regular expression used in a loop, the regular expression won't be recompiled on each iteration.

The constructor of the regular expression object, for example, `new RegExp("ab+c")`, provides runtime compilation of the regular expression. Use the constructor function when you know the regular expression pattern will be changing, or you don't know the pattern and are getting it from another source, such as user input. Once you have a defined regular expression, and if the regular expression is used throughout the script and may change, you can use the `compile` method to compile a new regular expression for efficient reuse.

A separate predefined `RegExp` object is available in each window; that is, each separate thread of JavaScript execution gets its own `RegExp` object. Because each script runs to completion without interruption in a thread, this assures that different scripts do not overwrite values of the `RegExp` object.

The predefined `RegExp` object contains the static properties `input`, `multiline`, `lastMatch`, `lastParen`, `leftContext`, `rightContext`, and $1$ through $9$. The `input` and `multiline` properties can be preset. The values for the other static properties are set after execution of the `exec` and `test` methods of an individual regular expression object, and after execution of the `match` and `replace` methods of `String`.  

---

### Table 1.3 Special characters in regular expressions. (Continued)

<table>
<thead>
<tr>
<th>Character</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>\n</td>
<td>Where ( n ) is a positive integer. A back reference to the last substring matching the ( n ) parenthetical in the regular expression (counting left parentheses). For example, <code>/apple(,)\ orange\1</code> matches 'apple, orange', in &quot;apple, orange, cherry, peach.&quot; A more complete example follows this table. <strong>Note:</strong> If the number of left parentheses is less than the number specified in ( n ), the ( n ) is taken as an octal escape as described in the next row. Where ( \text{octal} ) is an octal escape value or ( \text{hex} ) is a hexadecimal escape value. Allows you to embed ASCII codes into regular expressions.</td>
</tr>
<tr>
<td>\octal</td>
<td></td>
</tr>
<tr>
<td>\hex</td>
<td></td>
</tr>
</tbody>
</table>
Note that several of the RegExp properties have both long and short (Perl-like) names. Both names always refer to the same value. Perl is the programming language from which JavaScript modeled its regular expressions.

### Property Summary

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1, ..., $9</td>
<td>Parenthesized substring matches, if any.</td>
</tr>
<tr>
<td>$0</td>
<td>See input.</td>
</tr>
<tr>
<td>$*</td>
<td>See multiline.</td>
</tr>
<tr>
<td>$&amp;</td>
<td>See lastMatch.</td>
</tr>
<tr>
<td>$+</td>
<td>See lastParen.</td>
</tr>
<tr>
<td>$'</td>
<td>See leftContext.</td>
</tr>
<tr>
<td>$'</td>
<td>See rightContext.</td>
</tr>
<tr>
<td>constructor</td>
<td>Specifies the function that creates an object's prototype.</td>
</tr>
<tr>
<td>global</td>
<td>Whether or not to test the regular expression against all possible matches in a string, or only against the first.</td>
</tr>
<tr>
<td>ignoreCase</td>
<td>Whether or not to ignore case while attempting a match in a string.</td>
</tr>
<tr>
<td>input</td>
<td>The string against which a regular expression is matched.</td>
</tr>
<tr>
<td>lastIndex</td>
<td>The index at which to start the next match.</td>
</tr>
<tr>
<td>lastMatch</td>
<td>The last matched characters.</td>
</tr>
<tr>
<td>lastParen</td>
<td>The last parenthesized substring match, if any.</td>
</tr>
<tr>
<td>leftContext</td>
<td>The substring preceding the most recent match.</td>
</tr>
<tr>
<td>multiline</td>
<td>Whether or not to search in strings across multiple lines.</td>
</tr>
<tr>
<td>prototype</td>
<td>Allows the addition of properties to all objects.</td>
</tr>
<tr>
<td>rightContext</td>
<td>The substring following the most recent match.</td>
</tr>
<tr>
<td>source</td>
<td>The text of the pattern.</td>
</tr>
</tbody>
</table>

### Method Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>compile</td>
<td>Compiles a regular expression object.</td>
</tr>
<tr>
<td>exec</td>
<td>Executes a search for a match in its string parameter.</td>
</tr>
</tbody>
</table>
In addition, this object inherits the `watch` and `unwatch` methods from `Object`.

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>test</code></td>
<td>Tests for a match in its string parameter.</td>
</tr>
<tr>
<td><code>toSource</code></td>
<td>Returns an object literal representing the specified object; you can use</td>
</tr>
<tr>
<td></td>
<td>this value to create a new object. Overrides the <code>Object.toSource</code> method.</td>
</tr>
<tr>
<td><code>toString</code></td>
<td>Returns a string representing the specified object. Overrides the</td>
</tr>
<tr>
<td></td>
<td><code>Object.toString</code> method.</td>
</tr>
<tr>
<td><code>valueOf</code></td>
<td>Returns the primitive value of the specified object. Overrides the `Object.</td>
</tr>
<tr>
<td></td>
<td><code>valueOf</code> method.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the `watch` and `unwatch` methods from `Object`.

**Examples**

**Example 1.** The following script uses the `replace` method to switch the words in the string. For the replacement text, the script uses the values of the `$1` and `$2` properties of the global `RegExp` object. Note that the `RegExp` object name is not be prepended to the $ properties when they are passed as the second argument to the `replace` method.

```html
<SCRIPT LANGUAGE="JavaScript1.2">
re = /\w+\s\w+/;  
str = "John Smith";
newstr=str.replace(re, "$2, $1");
document.write(newstr)
</SCRIPT>
```

This displays "Smith, John".

**Example 2.** In the following example, `RegExp.input` is set by the Change event. In the `getInfo` function, the `exec` method uses the value of `RegExp.input` as its argument. Note that `RegExp` is prepended to the $ properties.

```html
<SCRIPT LANGUAGE="JavaScript1.2">
function getInfo() { 
  re = /\w+\s\d+/;
  re.exec();
  window.alert(RegExp.$1 + ", your age is " + RegExp.$2);
}
</SCRIPT>
```

Enter your first name and your age, and then press Enter.
$1, ..., $9

Properties that contain parenthesized substring matches, if any.

**Property of**  
RegExp

**Static, Read-only**

**Implemented in**  
JavaScript 1.2, NES 3.0

**Description**

Because `input` is static, it is not a property of an individual regular expression object. Instead, you always use it as `RegExp.input`.

The number of possible parenthesized substrings is unlimited, but the predefined `RegExp` object can only hold the last nine. You can access all parenthesized substrings through the returned array's indexes.

These properties can be used in the replacement text for the `String.replace` method. When used this way, do not prepend them with `RegExp`. The example below illustrates this. When parentheses are not included in the regular expression, the script interprets `$n`'s literally (where $n$ is a positive integer).

**Examples**

The following script uses the `replace` method to switch the words in the string. For the replacement text, the script uses the values of the `$1` and `$2` properties of the global `RegExp` object. Note that the `RegExp` object name is not be prepended to the $ properties when they are passed as the second argument to the `replace` method.

```html
<SCRIPT LANGUAGE="JavaScript1.2">
re = /\w+\s(\w+)/;
str = "John Smith";
newstr=str.replace(re, "$2, $1");
document.write(newstr)
</SCRIPT>
```

This displays "Smith, John".
$ _

See input.

$_*

See multiline.

$_&

See lastMatch.

$_+

See lastParen.

$_'

See leftContext.

$_'

See rightContext.

**compile**

Compiles a regular expression object during execution of a script.

*Method of* RegEx

*Implemented in* JavaScript 1.2, NES 3.0

**Syntax**

```javascript
regexp.compile(pattern[, flags])
```
Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>regexp</code></td>
<td>The name of the regular expression. It can be a variable name or a literal.</td>
</tr>
<tr>
<td><code>pattern</code></td>
<td>A string containing the text of the regular expression.</td>
</tr>
<tr>
<td><code>flags</code></td>
<td>If specified, flags can have one of the following values:</td>
</tr>
<tr>
<td></td>
<td>• &quot;g&quot;: global match</td>
</tr>
<tr>
<td></td>
<td>• &quot;i&quot;: ignore case</td>
</tr>
<tr>
<td></td>
<td>• &quot;gi&quot;: both global match and ignore case</td>
</tr>
</tbody>
</table>

Description

Use the `compile` method to compile a regular expression created with the `RegExp` constructor function. This forces compilation of the regular expression once only which means the regular expression isn't compiled each time it is encountered. Use the `compile` method when you know the regular expression will remain constant (after getting its pattern) and will be used repeatedly throughout the script.

You can also use the `compile` method to change the regular expression during execution. For example, if the regular expression changes, you can use the `compile` method to recompile the object for more efficient repeated use.

Calling this method changes the value of the regular expression's `source`, `global`, and `ignoreCase` properties.

constructor

Specifies the function that creates an object's prototype. Note that the value of this property is a reference to the function itself, not a string containing the function's name.

Property of  `RegExp`

Implemented in  `JavaScript 1.1, NES 2.0`

ECMA version  `ECMA-262`

Description  See `Object.constructor`. 
RegExp.exec

Executes the search for a match in a specified string. Returns a result array.

Method of:
RegExp

Implemented in:
JavaScript 1.2, NES 3.0

Syntax
regexp.exec([str])
regexp([str])

Parameters
regexp
The name of the regular expression. It can be a variable name or a literal.

str
The string against which to match the regular expression. If omitted, the value of RegExp.input is used.

Description
As shown in the syntax description, a regular expression's exec method can be called either directly, (with regexp.exec(str)) or indirectly (with regexp(str)).

If you are executing a match simply to find true or false, use the test method or the String search method.

If the match succeeds, the exec method returns an array and updates properties of the regular expression object and the predefined regular expression object, RegExp. If the match fails, the exec method returns null.

Consider the following example:

<SCRIPT LANGUAGE="JavaScript1.2">
//Match one d followed by one or more b's followed by one d
//Remember matched b's and the following d
//Ignore case
myRe=/d(b+)(d)/ig;
myArray = myRe.exec("cdbBdbsbz");
</SCRIPT>
The following table shows the results for this script:

<table>
<thead>
<tr>
<th>Object</th>
<th>Property/Index</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>myArray</td>
<td>index</td>
<td>The 0-based index of the match in the string</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>input</td>
<td>The original string</td>
<td>cdbBdbsbzb</td>
</tr>
<tr>
<td>[0]</td>
<td></td>
<td>The last matched characters</td>
<td>dbBd</td>
</tr>
<tr>
<td>[1], ...[n]</td>
<td></td>
<td>The parenthesized substring matches, if any. The number of possible parenthesized substrings is unlimited.</td>
<td>[1] = bB [2] = d</td>
</tr>
<tr>
<td>myRe</td>
<td>lastIndex</td>
<td>The index at which to start the next match.</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>ignoreCase</td>
<td>Indicates if the &quot;i&quot; flag was used to ignore case</td>
<td>true</td>
</tr>
<tr>
<td></td>
<td>global</td>
<td>Indicates if the &quot;g&quot; flag was used for a global match</td>
<td>true</td>
</tr>
<tr>
<td></td>
<td>source</td>
<td>The text of the pattern</td>
<td>d(b+)(d)</td>
</tr>
<tr>
<td>RegExp</td>
<td>lastMatch</td>
<td>The last matched characters</td>
<td>dbBd</td>
</tr>
<tr>
<td></td>
<td>$&amp;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>leftContext</td>
<td>$`</td>
<td>The substring preceding the most recent match</td>
<td>c</td>
</tr>
<tr>
<td>rightContext</td>
<td>$'</td>
<td>The substring following the most recent match</td>
<td>bsbz</td>
</tr>
<tr>
<td>$1, ...$9</td>
<td></td>
<td>The parenthesized substring matches, if any. The number of possible parenthesized substrings is unlimited, but RegExp can only hold the last nine.</td>
<td>$1 = bB $2 = d</td>
</tr>
<tr>
<td>lastParen</td>
<td>$+</td>
<td>The last parenthesized substring match, if any.</td>
<td>d</td>
</tr>
</tbody>
</table>
If your regular expression uses the "g" flag, you can use the exec method multiple times to find successive matches in the same string. When you do so, the search starts at the substring of \texttt{str} specified by the regular expression's \texttt{lastIndex} property. For example, assume you have this script:

```javascript
<SCRIPT LANGUAGE="JavaScript1.2">
myRe=/ab*/g;
str = "abbcdefabh"
myArray = myRe.exec(str);
document.writeln("Found " + myArray[0] + ". Next match starts at " + myRe.lastIndex)
mySecondArray = myRe.exec(str);
document.writeln("Found " + mySecondArray[0] + ". Next match starts at " + myRe.lastIndex)
</SCRIPT>
```

This script displays the following text:

Found abb. Next match starts at 3
Found ab. Next match starts at 9

**Examples**

In the following example, the user enters a name and the script executes a match against the input. It then cycles through the array to see if other names match the user's name.

This script assumes that first names of registered party attendees are preloaded into the array \texttt{A}, perhaps by gathering them from a party database.

```html
<SCRIPT LANGUAGE="JavaScript1.2">
</SCRIPT>
```
function lookup() {
    firstName = /\w+/i();
    if (!firstName)
        window.alert (RegExp.input + " isn't a name!");
    else {
        count = 0;
        for (i=0; i<A.length; i++)
            if (firstName[0].toLowerCase() == A[i].toLowerCase()) count++;
        if (count ==1)
            midstring = " other has ";
        else
            midstring = " others have ";
        window.alert ("Thanks, " + count + midstring + "the same name!")
    }
}
</SCRIPT>
Enter your first name and then press Enter.

<FORM> <INPUT TYPE="TEXT" NAME="FirstName" onChange="lookup(this);"> </FORM>
</HTML>

**global**

Whether or not the "g" flag is used with the regular expression.

*Property of*    RegExp

*Read-only*

*Implemented in* JavaScript 1.2, NES 3.0

**Description**

`global` is a property of an individual regular expression object.

The value of `global` is `true` if the "g" flag was used; otherwise, false. The "g" flag indicates that the regular expression should be tested against all possible matches in a string.

You cannot change this property directly. However, calling the `compile` method changes the value of this property.
**ignoreCase**

Whether or not the "i" flag is used with the regular expression.

*Property of*RegExp

*Read-only*

*Implemented in* JavaScript 1.2, NES 3.0

**Description**

ignoreCase is a property of an individual regular expression object.

The value of ignoreCase is true if the "i" flag was used; otherwise, false. The "i" flag indicates that case should be ignored while attempting a match in a string.

You cannot change this property directly. However, calling the compile method changes the value of this property.

**input**

The string against which a regular expression is matched. $_$ is another name for the same property.

*Property of* RegExp

*Static*

*Implemented in* JavaScript 1.2, NES 3.0

**Description**

Because input is static, it is not a property of an individual regular expression object. Instead, you always use it as RegExp.input.

If no string argument is provided to a regular expression's exec or test methods, and if RegExp.input has a value, its value is used as the argument to that method.
The script or the browser can preset the `input` property. If preset and if no string argument is explicitly provided, the value of `input` is used as the string argument to the `exec` or `test` methods of the regular expression object. `input` is set by the browser in the following cases:

- When an event handler is called for a `TEXT` form element, `input` is set to the value of the contained text.
- When an event handler is called for a `TEXTAREA` form element, `input` is set to the value of the contained text. Note that `multiline` is also set to `true` so that the match can be executed over the multiple lines of text.
- When an event handler is called for a `SELECT` form element, `input` is set to the value of the selected text.
- When an event handler is called for a `Link` object, `input` is set to the value of the text between `<A HREF=...>` and `</A>`.

The value of the `input` property is cleared after the event handler completes.

**lastIndex**

A read/write integer property that specifies the index at which to start the next match.

*Property of*  
`RegExp`

*Implemented in*  
JavaScript 1.2, NES 3.0

**Description**  
`lastIndex` is a property of an individual regular expression object.

This property is set only if the regular expression used the "g" flag to indicate a global search. The following rules apply:

- If `lastIndex` is greater than the length of the string, `regexp.test` and `regexp.exec` fail, and `lastIndex` is set to 0.
- If `lastIndex` is equal to the length of the string and if the regular expression matches the empty string, then the regular expression matches input starting at `lastIndex`.
- If `lastIndex` is equal to the length of the string and if the regular expression does not match the empty string, then the regular expression mismatches input, and `lastIndex` is reset to 0.
• Otherwise, `lastIndex` is set to the next position following the most recent match.

For example, consider the following sequence of statements:

```
re = /(hi)?/g  // Matches the empty string.
re("hi")      // Returns ["hi", "hi"] with `lastIndex` equal to 2.
re("hi")      // Returns [""], an empty array whose zeroth element is the match string. In this case, the empty string because `lastIndex` was 2 (and still is 2) and "hi" has length 2.
```

### `lastMatch`

The last matched characters. `$$` is another name for the same property.

*Property of*  
`RegExp`

*Static, Read-only*  
*Implemented in*  
JavaScript 1.2, NES 3.0

**Description**  
Because `lastMatch` is static, it is not a property of an individual regular expression object. Instead, you always use it as `RegExp.lastMatch`.

### `lastParen`

The last parenthesized substring match, if any. `$$` is another name for the same property.

*Property of*  
`RegExp`

*Static, Read-only*  
*Implemented in*  
JavaScript 1.2, NES 3.0

**Description**  
Because `lastParen` is static, it is not a property of an individual regular expression object. Instead, you always use it as `RegExp.lastParen`. 
leftContext

The substring preceding the most recent match. $^*$ is another name for the same property.

Property of RegExp
Static, Read-only
Implemented in JavaScript 1.2, NES 3.0

Description
Because leftContext is static, it is not a property of an individual regular expression object. Instead, you always use it as RegExp.leftContext.

multiline

Reflects whether or not to search in strings across multiple lines. $^*$ is another name for the same property.

Property of RegExp
Static
Implemented in JavaScript 1.2, NES 3.0

Description
Because multiline is static, it is not a property of an individual regular expression object. Instead, you always use it as RegExp.multiline.

The value of multiline is true if multiple lines are searched, false if searches must stop at line breaks.

The script or the browser can preset the multiline property. When an event handler is called for a TEXTAREA form element, the browser sets multiline to true. multiline is cleared after the event handler completes. This means that, if you've preset multiline to true, it is reset to false after the execution of any event handler.
**prototype**

Represents the prototype for this class. You can use the prototype to add properties or methods to all instances of a class. For information on prototypes, see `Function.prototype`.

*Property of*  
`RegExp`  
*Implemented in*  
JavaScript 1.1, NES 2.0  
*ECMA version*  
ECMA-262

**rightContext**

The substring following the most recent match. `$'` is another name for the same property.

*Property of*  
`RegExp`  
*Static, Read-only*  
*Implemented in*  
JavaScript 1.2, NES 3.0

**Description**  
Because `rightContext` is static, it is not a property of an individual regular expression object. Instead, you always use it as `RegExp.rightContext`.

**source**

A read-only property that contains the text of the pattern, excluding the forward slashes and "g" or "i" flags.

*Property of*  
`RegExp`  
*Read-only*  
*Implemented in*  
JavaScript 1.2, NES 3.0

**Description**  
`source` is a property of an individual regular expression object.

You cannot change this property directly. However, calling the `compile` method changes the value of this property.
RegExp.test

### test

Executes the search for a match between a regular expression and a specified string. Returns true or false.

**Method of**  
RegExp

**Implemented in**  
JavaScript 1.2, NES 3.0

**Syntax**

```javascript
regexp.test([str])
```

**Parameters**

- `regexp`  
The name of the regular expression. It can be a variable name or a literal.
- `str`  
The string against which to match the regular expression. If omitted, the value of RegExp.input is used.

**Description**  
When you want to know whether a pattern is found in a string use the test method (similar to the String.search method); for more information (but slower execution) use the exec method (similar to the String.match method).

**Example**  
The following example prints a message which depends on the success of the test:

```javascript
function testinput(re, str){
    if (re.test(str))
        midstring = " contains ";
    else
        midstring = " does not contain ";
    document.write (str + midstring + re.source);
}
```

### toSource

Returns a string representing the source code of the object.

**Method of**  
RegExp

**Implemented in**  
JavaScript 1.3

**Syntax**

```javascript
toSource()
```

**Parameters**  
None
**Description**  The `toSource` method returns the following values:

- For the built-in `RegExp` object, `toSource` returns the following string indicating that the source code is not available:
  ```javascript
  function Boolean() {
    [native code]
  }
  ```
- For instances of `RegExp`, `toSource` returns a string representing the source code.

This method is usually called internally by JavaScript and not explicitly in code.

**See also**  `Object.toSource`

---

**toString**

Returns a string representing the specified object.

**Method of**  `RegExp`

**Implemented in**  JavaScript 1.1, NES 2.0

**ECMA version**  ECMA-262

**Syntax**  `toString()`

**Parameters**  None.

**Description**  The `RegExp` object overrides the `toString` method of the `Object` object; it does not inherit `Object.toString`. For `RegExp` objects, the `toString` method returns a string representation of the object.

**Examples**  The following example displays the string value of a `RegExp` object:

```javascript
myExp = new RegExp("a+b+c");
alert(myExp.toString()) displays "/a+b+c/"
```

**See also**  `Object.toString`
**valueOf**

Returns the primitive value of a RegExp object.

*Method of* RegExp

*Implemented in* JavaScript 1.1

*ECMA version* ECMA-262

**Syntax**

```javascript
valueOf()
```

**Parameters**

None

**Description**

The `valueOf` method of `RegExp` returns the primitive value of a `RegExp` object as a string data type. This value is equivalent to `RegExp.toString`.

This method is usually called internally by JavaScript and not explicitly in code.

**Examples**

```javascript
myExp = new RegExp("a+b+c");
alert(myExp.valueOf());
```

This displays "/a+b+c/"

**See also**

`RegExp.toString`, `Object.valueOf`
Reset

A reset button on an HTML form. A reset button resets all elements in a form to their defaults.

**Client-side object**

*Implemented in* JavaScript 1.0

JavaScript 1.1: added `type` property; added `onBlur` and `onFocus` event handlers; added `blur` and `focus` methods

JavaScript 1.2: added `handleEvent` method

**Created by** The HTML `INPUT` tag, with "reset" as the value of the `TYPE` attribute. For a given form, the JavaScript runtime engine creates an appropriate `Reset` object and puts it in the `elements` array of the corresponding `Form` object. You access a `Reset` object by indexing this array. You can index the array either by number or, if supplied, by using the value of the `NAME` attribute.

**Event handlers**

- `onBlur`
- `onClick`
- `onFocus`
Description

A Reset object on a form looks as follows:

![Reset object in a form]

A Reset object is a form element and must be defined within a FORM tag.

The reset button's onClick event handler cannot prevent a form from being reset; once the button is clicked, the reset cannot be canceled.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>form</td>
<td>Specifies the form containing the Reset object.</td>
</tr>
<tr>
<td>name</td>
<td>Reflects the NAME attribute.</td>
</tr>
<tr>
<td>type</td>
<td>Reflects the TYPE attribute.</td>
</tr>
<tr>
<td>value</td>
<td>Reflects the VALUE attribute.</td>
</tr>
</tbody>
</table>
Method Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>blur</td>
<td>Removes focus from the reset button.</td>
</tr>
<tr>
<td>click</td>
<td>Simulates a mouse-click on the reset button.</td>
</tr>
<tr>
<td>focus</td>
<td>Gives focus to the reset button.</td>
</tr>
<tr>
<td>handleEvent</td>
<td>Invokes the handler for the specified event.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the `watch` and `unwatch` methods from `Object`.

Examples

**Example 1.** The following example displays a `Text` object with the default value “CA” and a reset button with the text “Clear Form” displayed on its face. If the user types a state abbreviation in the `Text` object and then clicks the Clear Form button, the original value of “CA” is restored.

```html
<B>State: </B><INPUT TYPE="text" NAME="state" VALUE="CA" SIZE="2">
<P><INPUT TYPE="reset" VALUE="Clear Form">
```

**Example 2.** The following example displays two `Text` objects, a `Select` object, and three radio buttons; all of these objects have default values. The form also has a reset button with the text “Defaults” on its face. If the user changes the value of any of the objects and then clicks the Defaults button, the original values are restored.

```html
<HTML>
<HEAD>
<TITLE>Reset object example</TITLE>
</HEAD>
<BODY>
<form NAME="form1">
<br><B>City: </B><input type="text" name="city" value="Santa Cruz" size="20">
<br><B>State: </B><input type="text" name="state" value="CA" size="2">
<br><select name="colorChoice">
<option selected> Blue </option>
<option> Yellow </option>
<option> Green </option>
<option> Red </option>
</select>
</form>
</BODY>
</HTML>
```
Reset.blur

\[<p><input type="radio" name="musicChoice" value="soul-and-r&b" checked> Soul and R&B</p><br>
\[<p><input type="radio" name="musicChoice" value="jazz"> Jazz</p><br>
\[<p><input type="radio" name="musicChoice" value="classical"> Classical</p><br>
\[<p><input type="reset" value="Defaults" name="reset1"></p>
\[</form>
\[</body>
\[</html>\]

See also  Button, Form, onReset, Form.reset, Submit

**blur**

Removes focus from the reset button.

*Method of*  Reset

*Implemented in*  JavaScript 1.0

**Syntax**  blur()

**Parameters**  None

**Examples**  The following example removes focus from the reset button userReset:

```javascript
userReset.blur();
```

This example assumes that the button is defined as

```html
<input type="reset" name="userReset">
```

See also  Reset.focus

**click**

Simulates a mouse-click on the reset button, but does not trigger an object's onClick event handler.

*Method of*  Reset

*Implemented in*  JavaScript 1.0

**Syntax**  click()

**Parameters**  None
focus

Navigates to the reset button and gives it focus.

Method of        Reset
Implemented in   JavaScript 1.0

Syntax          focus()
Parameters       None
See also         Reset.blur

form

An object reference specifying the form containing the reset button.

Property of      Reset
Read-only
Implemented in   JavaScript 1.0

Description      Each form element has a form property that is a reference to the element's parent form. This property is especially useful in event handlers, where you might need to refer to another element on the current form.

See also         Form

handleEvent

Invokes the handler for the specified event.

Method of        Reset
Implemented in   JavaScript 1.2

Syntax           handleEvent(event)
Parameters       event        The name of an event for which the specified object has an event handler.
**name**

A string specifying the name of the reset button.

*Property of* Reset  
*Implemented in* JavaScript 1.0

**Security**  
JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**

The value of the *name* property initially reflects the value of the NAME attribute. Changing the *name* property overrides this setting.

Do not confuse the *name* property with the label displayed on the reset button. The *value* property specifies the label for this button. The *name* property is not displayed on the screen; it is used to refer programmatically to the button.

If multiple objects on the same form have the same NAME attribute, an array of the given name is created automatically. Each element in the array represents an individual Form object. Elements are indexed in source order starting at 0. For example, if two Text elements and a Reset element on the same form have their NAME attribute set to "myField", an array with the elements `myField[0]`, `myField[1]`, and `myField[2]` is created. You need to be aware of this situation in your code and know whether `myField` refers to a single element or to an array of elements.

**Examples**

In the following example, the `valueGetter` function uses a `for` loop to iterate over the array of elements on the `valueTest` form. The `msgWindow` window displays the names of all the elements on the form:

```javascript
newWindow=window.open("http://home.netscape.com")

function valueGetter() {
    var msgWindow=window.open("")
    for (var i = 0; i < newWindow.document.valueTest.elements.length; i++) {
        msgWindow.document.write(newWindow.document.valueTest.elements[i].name + "<BR>")
    }
}
```

**See also**  
Reset.value
**type**

For all Reset objects, the value of the `type` property is "reset". This property specifies the form element's type.

*Property of:* Reset  
*Read-only:*  
*Implemented in:* JavaScript 1.1

**Examples**
The following example writes the value of the `type` property for every element on a form.

```javascript
for (var i = 0; i < document.form1.elements.length; i++) {
    document.writeln("<BR>type is " + document.form1.elements[i].type)
}
```

---

**value**

A string that reflects the reset button's VALUE attribute.

*Property of:* Reset  
*Read-only:*  
*Implemented in:* JavaScript 1.0

**Security**  
JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

**Description**
This string is displayed on the face of the button. When a `VALUE` attribute is not specified in HTML, the value property is the string "Reset".

Do not confuse the `value` property with the `name` property. The `name` property is not displayed on the screen; it is used to refer programmatically to the button.
Examples  The following function evaluates the value property of a group of buttons and displays it in the msgWindow window:

    function valueGetter() {
        var msgWindow=window.open("")
        msgWindow.document.write("submitButton.value is " +
            document.valueTest.submitButton.value + "<BR>")
        msgWindow.document.write("resetButton.value is " +
            document.valueTest.resetButton.value + "<BR>")
        msgWindow.document.write("helpButton.value is " +
            document.valueTest.helpButton.value + "<BR>")
        msgWindow.document.close()
    }

This example displays the following values:

Query  Submit
Reset
Help

The previous example assumes the buttons have been defined as follows:

    <INPUT TYPE="submit" NAME="submitButton">
    <INPUT TYPE="reset" NAME="resetButton">
    <INPUT TYPE="button" NAME="helpButton" VALUE="Help">

See also  Reset.name
screen

Contains properties describing the display screen and colors.

*Client-side object*

*Implemented in* JavaScript 1.2

**Created by**
The JavaScript runtime engine creates the `screen` object for you. You can access its properties automatically.

**Description**
This object contains read-only properties that allow you to get information about the user's display.

### Property Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>availHeight</code></td>
<td>Specifies the height of the screen, in pixels, minus permanent or semipermanent user interface features displayed by the operating system, such as the Taskbar on Windows.</td>
</tr>
<tr>
<td><code>availLeft</code></td>
<td>Specifies the x-coordinate of the first pixel that is not allocated to permanent or semipermanent user interface features.</td>
</tr>
<tr>
<td><code>availTop</code></td>
<td>Specifies the y-coordinate of the first pixel that is not allocated to permanent or semipermanent user interface features.</td>
</tr>
<tr>
<td><code>availWidth</code></td>
<td>Specifies the width of the screen, in pixels, minus permanent or semipermanent user interface features displayed by the operating system, such as the Taskbar on Windows.</td>
</tr>
<tr>
<td><code>colorDepth</code></td>
<td>The bit depth of the color palette, if one is in use; otherwise, the value is derived from <code>screen.pixelDepth</code>.</td>
</tr>
<tr>
<td><code>height</code></td>
<td>Display screen height.</td>
</tr>
<tr>
<td><code>pixelDepth</code></td>
<td>Display screen color resolution (bits per pixel).</td>
</tr>
<tr>
<td><code>width</code></td>
<td>Display screen width.</td>
</tr>
</tbody>
</table>

**Method Summary**
This object inherits the `watch` and `unwatch` methods from `Object`. 
The following function creates a string containing the current display properties:

```javascript
function screen_properties() {
    document.examples.results.value = "("+screen.width+" x
    "+screen.height+") pixels, "+
    screen.pixelDepth+" bit depth, "+
    screen.colorDepth+" bit color palette depth.";
} // end function screen_properties
```

### availHeight

Specifies the height of the screen, in pixels, minus permanent or semipermanent user interface features displayed by the operating system, such as the Taskbar on Windows.

**Property of** screen

**Implemented in** JavaScript 1.2

**See also** screen.availTop

### availLeft

Specifies the x-coordinate of the first pixel that is not allocated to permanent or semipermanent user interface features.

**Property of** screen

**Implemented in** JavaScript 1.2

**See also** screen.availWidth

### availTop

Specifies the y-coordinate of the first pixel that is not allocated to permanent or semipermanent user interface features.

**Property of** screen

**Implemented in** JavaScript 1.2

**See also** screen.availHeight
**availWidth**

Specifies the width of the screen, in pixels, minus permanent or semipermanent user interface features displayed by the operating system, such as the Taskbar on Windows.

*Property of* screen

*Implemented in* JavaScript 1.2

**See also** screen.availLeft

**colorDepth**

The bit depth of the color palette in bits per pixel, if a color palette is in use. Otherwise, this property is derived from screen.pixelDepth.

*Property of* screen

*Implemented in* JavaScript 1.2

**height**

Display screen height, in pixels.

*Property of* screen

*Implemented in* JavaScript 1.2

**pixelDepth**

Display screen color resolution, in bits per pixel.

*Property of* screen

*Implemented in* JavaScript 1.2

**width**

Display screen width, in pixels.

*Property of* screen

*Implemented in* JavaScript 1.2
Select

A selection list on an HTML form. The user can choose one or more items from a selection list, depending on how the list was created.

**Client-side object**

*Implemented in* JavaScript 1.0

- JavaScript 1.1: added `type` property; added the ability to add and delete options.
- JavaScript 1.2: added `handleEvent` method.

**Created by**

The HTML `SELECT` tag. For a given form, the JavaScript runtime engine creates appropriate `Select` objects for each selection list and puts these objects in the `elements` array of the corresponding `Form` object. You access a `Select` object by indexing this array. You can index the array either by number or, if supplied, by using the value of the `NAME` attribute.

The runtime engine also creates `Option` objects for each `OPTION` tag inside the `SELECT` tag.

**Event handlers**

- `onBlur`
- `onChange`
- `onFocus`
Select

Description
The following figure shows a form containing two selection lists. The user can choose one item from the list on the left and can choose multiple items from the list on the right:

A Select object is a form element and must be defined within a FORM tag.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>form</td>
<td>Specifies the form containing the selection list.</td>
</tr>
<tr>
<td>length</td>
<td>Reflects the number of options in the selection list.</td>
</tr>
<tr>
<td>name</td>
<td>Reflects the NAME attribute.</td>
</tr>
<tr>
<td>options</td>
<td>Reflects the OPTION tags.</td>
</tr>
<tr>
<td>selectedIndex</td>
<td>Reflects the index of the selected option (or the first selected option, if multiple options are selected).</td>
</tr>
<tr>
<td>type</td>
<td>Specifies that the object is represents a selection list and whether it can have one or more selected options.</td>
</tr>
</tbody>
</table>
Method Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>blur</td>
<td>Removes focus from the selection list.</td>
</tr>
<tr>
<td>focus</td>
<td>Gives focus to the selection list.</td>
</tr>
<tr>
<td>handleEvent</td>
<td>Invokes the handler for the specified event.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the `watch` and `unwatch` methods from `Object`.

Examples

**Example 1.** The following example displays two selection lists. In the first list, the user can select only one item; in the second list, the user can select multiple items.

Choose the music type for your free CD:

```html
<select name="music_type_single">
  <option selected> R&B
  <option> Jazz
  <option> Blues
  <option> New Age
</select>

Choose the music types for your free CDs:

```
<br>
<select name="music_type_multi" multiple>
  <option selected> R&B
  <option> Jazz
  <option> Blues
  <option> New Age
</select>
```

**Example 2.** The following example displays two selection lists that let the user choose a month and day. These selection lists are initialized to the current date. The user can change the month and day by using the selection lists or by choosing preset dates from radio buttons. Text fields on the form display the values of the `Select` object’s properties and indicate the date chosen and whether it is Cinco de Mayo.
Chapter 1, Objects, Methods, and Properties

Select object example

```html
<HTML>
<HEAD>
<TITLE>Select object example</TITLE>
</HEAD>
<BODY>
<SCRIPT>
var today = new Date()
// -----------------
function updatePropertyDisplay(monthObj, dayObj) {
// Get date strings
var monthInteger, dayInteger, monthString, dayString
monthInteger = monthObj.selectedIndex
dayInteger = dayObj.selectedIndex
monthString = monthObj.options[monthInteger].text
dayString = dayObj.options[dayInteger].text
// Display property values
document.selectForm.textFullDate.value = monthString + " " + dayString
document.selectForm.textMonthLength.value = monthObj.length
document.selectForm.textDayLength.value = dayObj.length
document.selectForm.textMonthName.value = monthObj.name
document.selectForm.textDayName.value = dayObj.name
document.selectForm.textMonthIndex.value = monthObj.selectedIndex
document.selectForm.textDayIndex.value = dayObj.selectedIndex
// Is it Cinco de Mayo?
if (monthObj.options[4].selected && dayObj.options[4].selected)
    document.selectForm.textCinco.value = "Yes!"
else
    document.selectForm.textCinco.value = "No"
}
</SCRIPT>
<!----------------->

<FORM NAME="selectForm">

<P><B>Choose a month and day:</B></P>
Month: <SELECT NAME="monthSelection"
onChange="updatePropertyDisplay(this,document.selectForm.daySelection)"
>
<OPTION> January <OPTION> February <OPTION> March
<OPTION> April <OPTION> May <OPTION> June
<OPTION> July <OPTION> August <OPTION> September
<OPTION> October <OPTION> November <OPTION> December
</SELECT>

Day: <SELECT NAME="daySelection"
onChange="updatePropertyDisplay(document.selectForm.monthSelection,this)"
>
<OPTION> 1 <OPTION> 2 <OPTION> 3 <OPTION> 4 <OPTION> 5
<OPTION> 6 <OPTION> 7 <OPTION> 8 <OPTION> 9 <OPTION> 10
<OPTION> 11 <OPTION> 12 <OPTION> 13 <OPTION> 14 <OPTION> 15
<OPTION> 16 <OPTION> 17 <OPTION> 18 <OPTION> 19 <OPTION> 20
<OPTION> 21 <OPTION> 22 <OPTION> 23 <OPTION> 24 <OPTION> 25
<OPTION> 26 <OPTION> 27 <OPTION> 28 <OPTION> 29 <OPTION> 30
<OPTION> 31
</SELECT>
```
Set the date to:

New Year's Day

Cinco de Mayo

Summer Solstice

Date chosen:

Is it Cinco de Mayo?
Example 3. Add an option with the Option constructor. The following example creates two Select objects, one with and one without the MULTIPLE attribute. No options are initially defined for either object. When the user clicks a button associated with the Select object, the populate function creates four options for the Select object and selects the first option.

```javascript
function populate(inForm) {
    colorArray = new Array("Red", "Blue", "Yellow", "Green")
    var option0 = new Option("Red", "color_red")
    var option1 = new Option("Blue", "color_blue")
    var option2 = new Option("Yellow", "color_yellow")
    var option3 = new Option("Green", "color_green")
    for (var i=0; i < 4; i++) {
        eval("inForm.selectTest.options[i]=option" + i)
        if (i==0) {
            inForm.selectTest.options[i].selected=true
        }
    }
    history.go(0)
}
</SCRIPT>

Example 4. Delete an option. The following function removes an option from a Select object.

```javascript
function deleteAnItem(theList,itemNo) {
    theList.options[itemNo]=null
    history.go(0)
}
```

See also Form, Radio
**blur**

Removes focus from the selection list.

*Method of*  
Select

*Implemented in*  
JavaScript 1.0

**Syntax**

`blur()`

**Parameters**

None

**See also**

Select.focus

**focus**

Navigates to the selection list and gives it focus.

*Method of*  
Select

*Implemented in*  
JavaScript 1.0

**Syntax**

`focus()`

**Parameters**

None

**Description**

Use the `focus` method to navigate to a selection list and give it focus. The user can then make selections from the list.

**See also**

Select.blur

**form**

An object reference specifying the form containing the selection list.

*Property of*  
Select

*Read-only*  

*Implemented in*  
JavaScript 1.0

**Description**

Each form element has a `form` property that is a reference to the element’s parent form. This property is especially useful in event handlers, where you might need to refer to another element on the current form.

**See also**

Form
**handleEvent**

Invokes the handler for the specified event.

*Method of* Select  
*Implemented in* JavaScript 1.2

**Syntax**

```javascript
handleEvent(event)
```

**Parameters**

- `event`: The name of an event for which the object has an event handler.

**length**

The number of options in the selection list.

*Property of* Select  
*Read-only*  
*Implemented in* JavaScript 1.0

**Description**

This value of this property is the same as the value of `Option.length`.

**name**

A string specifying the name of the selection list.

*Property of* Select  
*Implemented in* JavaScript 1.0

**Security**

JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**

The `name` property initially reflects the value of the `NAME` attribute. Changing the `name` property overrides this setting. The `name` property is not displayed on the screen; it is used to refer to the list programmatically.

If multiple objects on the same form have the same `NAME` attribute, an array of the given name is created automatically. Each element in the array represents an individual Form object. Elements are indexed in source order starting at 0. For example, if two Text elements and a Select element on the same form have their `NAME` attribute set to "myField", an array with the elements
myField[0], myField[1], and myField[2] is created. You need to be aware of this situation in your code and know whether myField refers to a single element or to an array of elements.

**Examples** In the following example, the valueGetter function uses a for loop to iterate over the array of elements on the valueTest form. The msgWindow window displays the names of all the elements on the form:

```javascript
newWindow=window.open("http://home.netscape.com")
function valueGetter() {
    var msgWindow=window.open('"
    for (var i = 0; i < newWindow.document.valueTest.elements.length; i++) {
        msgWindow.document.write(newWindow.document.valueTest.elements[i].name + "<BR>"
    }
}
```

**options**

An array corresponding to options in a Select object in source order.

*Property of Select*

*Read-only*

*Implemented in* JavaScript 1.0

**Description** You can refer to the options of a Select object by using the options array. This array contains an entry for each option in a Select object (OPTION tag) in source order. For example, if a Select object named musicStyle contains three options, you can access these options as musicStyle.options[0], musicStyle.options[1], and musicStyle.options[2].

To obtain the number of options in the selection list, you can use either Select.length or the length property of the options array. For example, you can get the number of options in the musicStyle selection list with either of these expressions:

```javascript
musicStyle.length
musicStyle.options.length
```
You can add or remove options from a selection list using this array. To add or replace an option to an existing **Select** object, you assign a new **Option** object to a place in the array. For example, to create a new **Option** object called *jeans* and add it to the end of the selection list named *myList*, you could use the following code:

```javascript
jeans = new Option("Blue Jeans", "jeans", false, false);
myList.options[myList.length] = jeans;
```

To delete an option from a **Select** object, you set the appropriate index of the *options* array to null. Removing an option compresses the options array. For example, assume that *myList* has 5 elements in it, the value of the fourth element is "foo", and you execute this statement:

```javascript
myList.options[1] = null
```

Now, *myList* has 4 elements in it and the value of the *third* element is "foo".

After you delete an option, you must refresh the document by using **history.go(0)**. This statement must be last. When the document reloads, variables are lost if not saved in cookies or form element values.

You can determine which option in a selection list is currently selected by using either the *selectedIndex* property of the *options* array or of the **Select** object itself. That is, the following expressions return the same value:

```javascript
musicStyle.selectedIndex
musicStyle.options.selectedIndex
```

For more information about this property, see **Select.selectedIndex**.

For **Select** objects that can have multiple selections (that is, the **SELECT** tag has the *MULTIPLE* attribute), the *selectedIndex* property is not very useful. In this case, it returns the index of the first selection. To find all the selected options, you have to loop and test each option individually. For example, to print a list of all selected options in a selection list named *mySelect*, you could use code such as this:

```javascript
document.write("You’ve selected the following options:
")
for (var i = 0; i < mySelect.options.length; i++) {
    if (mySelect.options[i].selected)
        document.write(" mySelect.options[i].text\n")
}
```

In general, to work with individual options in a selection list, you work with the appropriate **Option** object.
**selectedIndex**

An integer specifying the index of the selected option in a `Select` object.

*Property of* `Select`

*Implemented in* JavaScript 1.0

**Security**  
*JavaScript 1.1.* This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide.*

**Description**  
Options in a `Select` object are indexed in the order in which they are defined, starting with an index of 0. You can set the `selectedIndex` property at any time. The display of the `Select` object updates immediately when you set the `selectedIndex` property.

If no option is selected, `selectedIndex` has a value of -1.

In general, the `selectedIndex` property is more useful for `Select` objects that are created without the `MULTIPLE` attribute. If you evaluate `selectedIndex` when multiple options are selected, the `selectedIndex` property specifies the index of the first option only. Setting `selectedIndex` clears any other options that are selected in the `Select` object.

The `Option.selected` property is more useful in conjunction with `Select` objects that are created with the `MULTIPLE` attribute. With the `Option.selected` property, you can evaluate every option in the `options` array to determine multiple selections, and you can select individual options without clearing the selection of other options.

**Examples**  
In the following example, the `getSelectedIndex` function returns the selected index in the `musicType` `Select` object:

```javascript
function getSelectedIndex() {
    return document.musicForm.musicType.selectedIndex
}
```

The previous example assumes that the `Select` object is similar to the following:

```html
<Select NAME="musicType">
  <OPTION SELECTED> R&B
  <OPTION> Jazz
  <OPTION> Blues
  <OPTION> New Age
</SELECT>
```
See also Option.defaultSelected, Option.selected

type

For all Select objects created with the MULTIPLE keyword, the value of the type property is "select-multiple". For Select objects created without this keyword, the value of the type property is "select-one". This property specifies the form element's type.

Property of Select

Read-only

Implemented in JavaScript 1.1

Examples

The following example writes the value of the type property for every element on a form.

```javascript
for (var i = 0; i < document.form1.elements.length; i++) {
  document.writeln("<BR>type is " + document.form1.elements[i].type);
}
```
String

An object representing a series of characters in a string.

Core object

Implemented in  
JavaScript 1.0: Create a String object only by quoting characters.
JavaScript 1.1, NES 2.0: added String constructor; added prototype property; added split method; added ability to pass strings among scripts in different windows or frames (in previous releases, you had to add an empty string to another window's string to refer to it)
JavaScript 1.2, NES 3.0: added concat, match, replace, search, slice, and substr methods.
JavaScript 1.3: added toSource method; changed charCodeAt, fromCharCode, and replace methods

ECMA version  
ECMA-262

Created by

The String constructor:

new String(string)

Parameters

string  Any string.

Description

The String object is a wrapper around the string primitive data type. Do not confuse a string literal with the String object. For example, the following code creates the string literal s1 and also the String object s2:

s1 = "foo" // creates a string literal value
s2 = new String("foo") // creates a String object

You can call any of the methods of the String object on a string literal value—JavaScript automatically converts the string literal to a temporary String object, calls the method, then discards the temporary String object. You can also use the String.length property with a string literal.
You should use string literals unless you specifically need to use a `String` object, because `String` objects can have counterintuitive behavior. For example:

```javascript
s1 = "2 + 2" // creates a string literal value
s2 = new String("2 + 2") // creates a String object
eval(s1) // returns the number 4
eval(s2) // returns the string "2 + 2"
```

A string can be represented as a literal enclosed by single or double quotation marks; for example, “Netscape” or ‘Netscape’.

You can convert the value of any object into a string using the top-level `String` function.

<table>
<thead>
<tr>
<th>Property Summary</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Property</strong></td>
<td></td>
</tr>
<tr>
<td>constructor</td>
<td>Specifies the function that creates an object's prototype.</td>
</tr>
<tr>
<td>length</td>
<td>Reflects the length of the string.</td>
</tr>
<tr>
<td>prototype</td>
<td>Allows the addition of properties to a <code>String</code> object.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method Summary</th>
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<td>Causes a string to be displayed in a big font as if it were in a <code>BIG</code> tag.</td>
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<td>Causes a string to blink as if it were in a <code>BLINK</code> tag.</td>
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<td>Returns the character at the specified index.</td>
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<tr>
<td>charCodeAt</td>
<td>Returns a number indicating the Unicode value of the character at the given index.</td>
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<td>Combines the text of two strings and returns a new string.</td>
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<td>Causes a string to be displayed in fixed-pitch font as if it were in a <code>TT</code> tag.</td>
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<td>Causes a string to be displayed in the specified color as if it were in a <code>&lt;FONT COLOR=color&gt;</code> tag.</td>
</tr>
</tbody>
</table>
### String

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fontsize</td>
<td>Causes a string to be displayed in the specified font size as if it were in a &lt;FONT SIZE=size&gt; tag.</td>
</tr>
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</tr>
<tr>
<td>indexOf</td>
<td>Returns the index within the calling String object of the first occurrence of the specified value, or -1 if not found.</td>
</tr>
<tr>
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<td>Causes a string to be italic, as if it were in an I tag.</td>
</tr>
<tr>
<td>lastIndexOf</td>
<td>Returns the index within the calling String object of the last occurrence of the specified value, or -1 if not found.</td>
</tr>
<tr>
<td>link</td>
<td>Creates an HTML hypertext link that requests another URL.</td>
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<tr>
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</tr>
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<td>search</td>
<td>Executes the search for a match between a regular expression and a specified string.</td>
</tr>
<tr>
<td>slice</td>
<td>Extracts a section of a string and returns a new string.</td>
</tr>
<tr>
<td>small</td>
<td>Causes a string to be displayed in a small font, as if it were in a SMALL tag.</td>
</tr>
<tr>
<td>split</td>
<td>Splits a String object into an array of strings by separating the string into substrings.</td>
</tr>
<tr>
<td>strike</td>
<td>Causes a string to be displayed as struck-out text, as if it were in a STRIKE tag.</td>
</tr>
<tr>
<td>sub</td>
<td>Causes a string to be displayed as a subscript, as if it were in a SUB tag.</td>
</tr>
<tr>
<td>substr</td>
<td>Returns the characters in a string beginning at the specified location through the specified number of characters.</td>
</tr>
<tr>
<td>substring</td>
<td>Returns the characters in a string between two indexes into the string.</td>
</tr>
<tr>
<td>sup</td>
<td>Causes a string to be displayed as a superscript, as if it were in a SUP tag.</td>
</tr>
<tr>
<td>toLowerCase</td>
<td>Returns the calling string value converted to lowercase.</td>
</tr>
</tbody>
</table>
**Example 1: String literal.** The following statement creates a string literal:

```javascript
var last_name = "Schaefer"
```

**Example 2: String literal properties.** The following statements evaluate to 8, "SCHAEFER," and "schaefer":

```javascript
last_name.length
last_name.toUpperCase()
last_name.toLowerCase()
```

**Example 3: Accessing individual characters in a string.** You can think of a string as an array of characters. In this way, you can access the individual characters in the string by indexing that array. For example, the following code displays “The first character in the string is H”:

```javascript
var myString = "Hello"
myString[0] // returns "H"
```

**Example 4: Pass a string among scripts in different windows or frames.** The following code creates two string variables and opens a second window:

```javascript
var lastName = "Schaefer"
var firstName = "Jesse"
empWindow=window.open('string2.html','window1','width=300,height=300')
```

If the HTML source for the second window (string2.html) creates two string variables, empLastName and empFirstName, the following code in the first window assigns values to the second window’s variables:

```javascript
empWindow.empFirstName=firstName
empWindow.empLastName=lastName
```
The following code in the first window displays the values of the second window’s variables:

```javascript
alert('empFirstName in empWindow is ' + empWindow.empFirstName)
alert('empLastName in empWindow is ' + empWindow.empLastName)
```

---

**anchor**

Creates an HTML anchor that is used as a hypertext target.

**Method of** String

**Implemented in** JavaScript 1.0, NES 2.0

**Syntax**

`anchor(nameAttribute)`

**Parameters**

- nameAttribute: A string.

**Description**

Use the `anchor` method with the `document.write` or `document.writeln` methods to programmatically create and display an anchor in a document. Create the anchor with the `anchor` method, and then call `write` or `writeln` to display the anchor in a document. In server-side JavaScript, use the `write` function to display the anchor.

In the syntax, the `text` string represents the literal text that you want the user to see. The `nameAttribute` string represents the `NAME` attribute of the `A` tag.

Anchors created with the `anchor` method become elements in the `document.anchors` array.

**Examples**

The following example opens the `msgWindow` window and creates an anchor for the table of contents:

```javascript
var myString="Table of Contents"
msgWindow.document.writeln(myString.anchor("contents_anchor"))
```

The previous example produces the same output as the following HTML:

```
<A NAME="contents_anchor">Table of Contents</A>
```

**See also** String.link
**big**

Causes a string to be displayed in a big font as if it were in a BIG tag.

*Method of* String

*Implemented in* JavaScript 1.0, NES 2.0

**Syntax**

big()

**Parameters**

None

**Description**

Use the `big` method with the `write` or `writeln` methods to format and display a string in a document. In server-side JavaScript, use the `write` function to display the string.

**Examples**

The following example uses string methods to change the size of a string:

```javascript
var worldString = "Hello, world"

document.write(worldString.small())
document.write("<P>" + worldString.big())
document.write("<P>" + worldString.fontsize(7))
```

The previous example produces the same output as the following HTML:

```html
<SMALL>Hello, world</SMALL>
<P><BIG>Hello, world</BIG>
<P><FONTSIZE=7>Hello, world</FONTSIZE>
```

**See also** String.fontsize, String.small

---

**blink**

Causes a string to blink as if it were in a BLINK tag.

*Method of* String

*Implemented in* JavaScript 1.0, NES 2.0

**Syntax**

blink()

**Parameters**

None

**Description**

Use the `blink` method with the `write` or `writeln` methods to format and display a string in a document. In server-side JavaScript, use the `write` function to display the string.
Examples  The following example uses string methods to change the formatting of a string:

```javascript
var worldString="Hello, world"
document.write(worldString.blink())
document.write("<P>" + worldString.bold())
document.write("<P>" + worldString.italics())
document.write("<P>" + worldString.strike())
```

The previous example produces the same output as the following HTML:

```html
<BLINK>Hello, world</BLINK>
<P><B>Hello, world</B>
<P><I>Hello, world</I>
<P><STRIKE>Hello, world</STRIKE>
```

See also  String.bold, String.italics, String.strike

## bold

Causes a string to be displayed as bold as if it were in a B tag.

**Syntax**  
```javascript
bold()
```

**Parameters**  None

**Description**  Use the bold method with the write or writeln methods to format and display a string in a document. In server-side JavaScript, use the write function to display the string.

**Examples**  The following example uses string methods to change the formatting of a string:

```javascript
var worldString="Hello, world"
document.write(worldString.blink())
document.write("<P>" + worldString.bold())
document.write("<P>" + worldString.italics())
document.write("<P>" + worldString.strike())
```
The previous example produces the same output as the following HTML:

```
<BLINK>Hello, world</BLINK>
<P><B>Hello, world</B>
<P><I>Hello, world</I>
<P><STRIKE>Hello, world</STRIKE>
```

See also  String.blink, String.italics, String.strike

### charAt

Returns the specified character from the string.

**Method of**  String

**Implemented in**  JavaScript 1.0, NES 2.0

**ECMA version**  ECMA-262

**Syntax**  `charAt(index)`

**Parameters**

- `index`  An integer between 0 and 1 less than the length of the string.

**Description**  Characters in a string are indexed from left to right. The index of the first character is 0, and the index of the last character in a string called `stringName` is `stringName.length - 1`. If the index you supply is out of range, JavaScript returns an empty string.

**Examples**  The following example displays characters at different locations in the string "Brave new world":

```javascript
var anyString = "Brave new world"

document.writeln("The character at index 0 is " + anyString.charAt(0))
document.writeln("The character at index 1 is " + anyString.charAt(1))
document.writeln("The character at index 2 is " + anyString.charAt(2))
document.writeln("The character at index 3 is " + anyString.charAt(3))
document.writeln("The character at index 4 is " + anyString.charAt(4))
```
These lines display the following:

The character at index 0 is B
The character at index 1 is r
The character at index 2 is a
The character at index 3 is v
The character at index 4 is e

See also String.indexOf, String.lastIndexOf, String.split

**charAt**

Returns a number indicating the Unicode value of the character at the given index.

**Method of** String

**Implemented in** JavaScript 1.2, NES 3.0

JavaScript 1.3: returns a Unicode value rather than an ISO-Latin-1 value

**ECMA version** ECMA-262

**Syntax**

```
charAt([index])
```

**Parameters**

<table>
<thead>
<tr>
<th>index</th>
</tr>
</thead>
<tbody>
<tr>
<td>An integer between 0 and 1 less than the length of the string. The default value is 0.</td>
</tr>
</tbody>
</table>

**Description**

Unicode values range from 0 to 65,535. The first 128 Unicode values are a direct match of the ASCII character set. For information on Unicode, see the Client-Side JavaScript Guide.

**Backward Compatibility**

JavaScript 1.2. The `charAt` method returns a number indicating the ISO-Latin-1 codeset value of the character at the given index. The ISO-Latin-1 codeset ranges from 0 to 255. The first 0 to 127 are a direct match of the ASCII character set.

**Example**

**Example 1.** The following example returns 65, the Unicode value for A.

```
"ABC".charAt(0) // returns 65
```
Example 2. The following example enables the creation of an event used to simulate a key press. A KeyPress event has a `which` property that represents the ASCII value of the pressed key. If you know the letter, number, or symbol, you can use `charCodeAt` to supply the ASCII value to `which`.

```javascript
//create an event object with appropriate property values
ev = new Event()
ev.type = 'KeyPress'
ev.layerX = 150
//assign values to layerY, pageX, pageY, screenX, and screenY...
//assign the ASCII value to the which property
ev.which = "v".charCodeAt(0)
//assign modifier property
ev.modifiers = '<FONT COLOR="#FF0080">How do I do this?</FONT>'
```

concat

Combines the text of two or more strings and returns a new string.

Method of String

Implemented in JavaScript 1.2, NES 3.0

**Syntax**

`concat(string2, string3[, ..., stringN])`

**Parameters**

- `string2...` Strings to concatenate to this string.
- `stringN`

**Description**

`concat` combines the text from two strings and returns a new string. Changes to the text in one string do not affect the other string.

**Example**

The following example combines two strings into a new string.

```javascript
s1="Oh 

s2="what a beautiful 

s3="mornin'."

s4=s1.concat(s2,s3) // returns "Oh what a beautiful mornin'."
```
**constructor**

Specifies the function that creates an object's prototype. Note that the value of this property is a reference to the function itself, not a string containing the function's name.

*Property of* String

*Implemented in* JavaScript 1.1, NES 2.0

*ECMA version* ECMA-262

**Description**

See Object.constructor.

**fixed**

Causes a string to be displayed in fixed-pitch font as if it were in a TT tag.

*Method of* String

*Implemented in* JavaScript 1.0, NES 2.0

**Syntax**

fixed()

**Parameters**

None

**Description**

Use the fixed method with the write or writeln methods to format and display a string in a document. In server-side JavaScript, use the write function to display the string.

**Examples**

The following example uses the fixed method to change the formatting of a string:

```javascript
var worldString="Hello, world"
document.write(worldString.fixed())
```

The previous example produces the same output as the following HTML:

```html
<TT>Hello, world</TT>
```
fontcolor

Causes a string to be displayed in the specified color as if it were in a `<FONT COLOR=color> tag.

*Method of* String

*Implemented in* JavaScript 1.0, NES 2.0

**Syntax**

fontcolor(color)

**Parameters**

color A string expressing the color as a hexadecimal RGB triplet or as a string literal. String literals for color names are listed in the *Client-Side JavaScript Guide*.

**Description**

Use the fontcolor method with the write or writeln methods to format and display a string in a document. In server-side JavaScript, use the write function to display the string.

If you express color as a hexadecimal RGB triplet, you must use the format `rrggbb`. For example, the hexadecimal RGB values for salmon are red=FA, green=80, and blue=72, so the RGB triplet for salmon is "FA8072".

The fontcolor method overrides a value set in the fgColor property.

**Examples**

The following example uses the fontcolor method to change the color of a string:

```javascript
var worldString="Hello, world"

document.write(worldString.fontcolor("maroon") +
" is maroon in this line")
document.write("<P>" + worldString.fontcolor("salmon") +
" is salmon in this line")
document.write("<P>" + worldString.fontcolor("red") +
" is red in this line")
document.write("<P>" + worldString.fontcolor("8000") +
" is maroon in hexadecimal in this line")
document.write("<P>" + worldString.fontcolor("FA8072") +
" is salmon in hexadecimal in this line")
document.write("<P>" + worldString.fontcolor("FF00") +
" is red in hexadecimal in this line")
```
String.fontsize

The previous example produces the same output as the following HTML:

```html
<FONT COLOR="maroon">Hello, world</FONT> is maroon in this line
<P><FONT COLOR="salmon">Hello, world</FONT> is salmon in this line
<P><FONT COLOR="red">Hello, world</FONT> is red in this line
<P><FONT COLOR="8000">Hello, world</FONT> is maroon in hexadecimal in this line
<P><FONT COLOR="FA8072">Hello, world</FONT> is salmon in hexadecimal in this line
<P><FONT COLOR="FF00">Hello, world</FONT> is red in hexadecimal in this line
```

### fontsize

Causes a string to be displayed in the specified font size as if it were in a `<FONT SIZE=size>` tag.

**Method of** String

**Implemented in** JavaScript 1.0, NES 2.0

**Syntax**

`fontsize(size)`

**Parameters**

- `size` An integer between 1 and 7, a string representing a signed integer between 1 and 7.

**Description**

Use the `fontsize` method with the `write` or `writeln` methods to format and display a string in a document. In server-side JavaScript, use the `write` function to display the string.

When you specify `size` as an integer, you set the size of `stringName` to one of the 7 defined sizes. When you specify `size` as a string such as "-2", you adjust the font size of `stringName` relative to the size set in the `BASEFONT` tag.

**Examples**

The following example uses string methods to change the size of a string:

```javascript
var worldString="Hello, world"

document.write(worldString.small())
document.write("<P>" + worldString.big())
document.write("<P>" + worldString.fontsize(7))
```
The previous example produces the same output as the following HTML:

```
<SMALL>Hello, world</SMALL>
<P><BIG>Hello, world</BIG>
<P><FONTSIZE=7>Hello, world</FONTSIZE>
```

See also String.big, String.small

### fromCharCode

Returns a string created by using the specified sequence of Unicode values.

**Method of** String

**Static**

**Implemented in** JavaScript 1.2, NES 3.0

JavaScript 1.3: uses a Unicode value rather than an ISO-Latin-1 value

**ECMA version** ECMA-262

**Syntax**

```
fromCharCode(num1, ..., numN)
```

**Parameters**

num1, ..., numN A sequence of numbers that are Unicode values.

**Description**

This method returns a string and not a String object.

Because `fromCharCode` is a static method of `String`, you always use it as `String.fromCharCode()`, rather than as a method of a `String` object you created.

**Backward Compatibility**

JavaScript 1.2. The `fromCharCode` method returns a string created by using the specified sequence of ISO-Latin-1 codeset values.

**Examples**

**Example 1.** The following example returns the string "ABC".

```
String.fromCharCode(65, 66, 67)
```

**Example 2.** The which property of the KeyDown, KeyPress, and KeyUp events contains the ASCII value of the key pressed at the time the event occurred. If you want to get the actual letter, number, or symbol of the key, you can use `fromCharCode`. The following example returns the letter, number, or symbol of the KeyPress event's which property.

```
String.fromCharCode(KeyPress.which)
```
indexOf

Returns the index within the calling String object of the first occurrence of the specified value, starting the search at fromIndex, or -1 if the value is not found.

**Method of** String

**Implemented in** JavaScript 1.0, NES 2.0

**ECMA version** ECMA-262

**Syntax** `indexOf(searchValue[, fromIndex])`

**Parameters**

- `searchValue` A string representing the value to search for.
- `fromIndex` The location within the calling string to start the search from. It can be any integer between 0 and the length of the string. The default value is 0.

**Description** Characters in a string are indexed from left to right. The index of the first character is 0, and the index of the last character of a string called `stringName` is `stringName.length - 1`.

```
"Blue Whale".indexOf("Blue") // returns 0
"Blue Whale".indexOf("Blute") // returns -1
"Blue Whale".indexOf("Whale",0) // returns 5
"Blue Whale".indexOf("Whale",5) // returns 5
"Blue Whale".indexOf("",9) // returns 9
"Blue Whale".indexOf("",10) // returns 10
"Blue Whale".indexOf("",11) // returns 10
```

The `indexOf` method is case sensitive. For example, the following expression returns -1:

```
"Blue Whale".indexOf("blue")
```
Examples

**Example 1.** The following example uses `indexOf` and `lastIndexOf` to locate values in the string "Brave new world."

```javascript
var anyString="Brave new world"

// Displays 8
document.write("<P>The index of the first w from the beginning is " +
   anyString.indexOf("w"))

// Displays 10
document.write("<P>The index of the first w from the end is " +
   anyString.lastIndexOf("w"))

// Displays 6
document.write("<P>The index of 'new' from the beginning is " +
   anyString.indexOf("new"))

// Displays 6
document.write("<P>The index of 'new' from the end is " +
   anyString.lastIndexOf("new"))
```

**Example 2.** The following example defines two string variables. The variables contain the same string except that the second string contains uppercase letters. The first `writeln` method displays 19. But because the `indexOf` method is case sensitive, the string "cheddar" is not found in `myCapString`, so the second `writeln` method displays -1.

```javascript
myString="brie, pepper jack, cheddar"
myCapString="Brie, Pepper Jack, Cheddar"

document.writeln('myString.indexOf("cheddar") is ' +
   myString.indexOf("cheddar"))

document.writeln('<P>myCapString.indexOf("cheddar") is ' +
   myCapString.indexOf("cheddar"))
```

**Example 3.** The following example sets `count` to the number of occurrences of the letter `x` in the string `str`:

```javascript
count = 0;
pos = str.indexOf("x");
while ( pos != -1 ) {
   count++;
   pos = str.indexOf("x",pos+1);
}
```

See also  `String.charAt`, `String.lastIndexOf`, `String.split`
**italics**

Causes a string to be italic, as if it were in an `<i>` tag.

*Method of* String

*Implemented in* JavaScript 1.0, NES 2.0

**Syntax**

`italics()`

**Parameters**

None

**Description**

Use the `italics` method with the `write` or `writeln` methods to format and display a string in a document. In server-side JavaScript, use the `write` function to display the string.

**Examples**

The following example uses `string` methods to change the formatting of a string:

```javascript
var worldString = "Hello, world"

document.write(worldString.blink())
document.write("<P>" + worldString.bold())
document.write("<P>" + worldString.italics())
document.write("<P>" + worldString.strike())
```

The previous example produces the same output as the following HTML:

```html
<BLINK>Hello, world</BLINK>
<P><B>Hello, world</B>
<P><I>Hello, world</I>
<P><STRIKE>Hello, world</STRIKE>
```

**See also**

`String.blink`, `String.bold`, `String.strike`

---

**lastIndexOf**

Returns the index within the calling String object of the last occurrence of the specified value, or -1 if not found. The calling string is searched backward, starting at `fromIndex`.

*Method of* String

* Implemented in * JavaScript 1.0, NES 2.0

*ECMA version* ECMA-262

**Syntax**

`lastIndexOf(searchValue[, fromIndex])`
String.lastIndexOf

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>searchValue</td>
<td>A string representing the value to search for.</td>
</tr>
<tr>
<td>fromIndex</td>
<td>The location within the calling string to start the search from. It can be any integer between 0 and the length of the string. The default value is the length of the string.</td>
</tr>
</tbody>
</table>

Description

Characters in a string are indexed from left to right. The index of the first character is 0, and the index of the last character is `stringName.length - 1`.

```
"canal".lastIndexOf("a")  // returns 3
"canal".lastIndexOf("a",2) // returns 1
"canal".lastIndexOf("a",0) // returns -1
"canal".lastIndexOf("x")  // returns -1
```

The `lastIndexOf` method is case sensitive. For example, the following expression returns -1:

```
"Blue Whale, Killer Whale".lastIndexOf("blue")
```

Examples

The following example uses `indexOf` and `lastIndexOf` to locate values in the string "Brave new world."

```javascript
var anyString="Brave new world"

// Displays 8
document.write("<P>The index of the first w from the beginning is " + anyString.indexOf("w"))
// Displays 10
document.write("<P>The index of the first w from the end is " + anyString.lastIndexOf("w"))
// Displays 6
document.write("<P>The index of 'new' from the beginning is " + anyString.indexOf("new"))
// Displays 6
document.write("<P>The index of 'new' from the end is " + anyString.lastIndexOf("new"))
```

See also

`String.charAt`, `String.indexOf`, `String.split`
**length**

The length of the string.

*Property of* String

*Read-only*

*Implemented in* JavaScript 1.0, NES 2.0

*ECMA version* ECMA-262

**Description**

For a null string, length is 0.

**Examples**

The following example displays 8 in an Alert dialog box:

```javascript
var x="Netscape"
alert("The string length is " + x.length)
```

**link**

Creates an HTML hypertext link that requests another URL.

*Method of* String

*Implemented in* JavaScript 1.0, NES 2.0

**Syntax**

`link(hrefAttribute)`

**Parameters**

- `hrefAttribute` Any string that specifies the HREF attribute of the A tag; it should be a valid URL (relative or absolute).

**Description**

Use the `link` method to programmatically create a hypertext link, and then call `write` or `writeln` to display the link in a document. In server-side JavaScript, use the `write` function to display the link.

Links created with the `link` method become elements in the `links` array of the `document` object. See `document.links`.
Examples

The following example displays the word “Netscape” as a hypertext link that returns the user to the Netscape home page:

```javascript
var hotText="Netscape"
var URL="http://home.netscape.com"

document.write("Click to return to " + hotText.link(URL))
```

The previous example produces the same output as the following HTML:

```
Click to return to <A HREF="http://home.netscape.com">Netscape</A>
```

See also
Anchor

**match**

Used to match a regular expression against a string.

*Method of* String

*Implemented in* JavaScript 1.2

**Syntax**

```javascript
match(regexp)
```

**Parameters**

- `regexp` Name of the regular expression. It can be a variable name or a literal.

**Description**

If you want to execute a global match, or a case insensitive match, include the `g` (for global) and `i` (for ignore case) flags in the regular expression. These can be included separately or together. The following two examples below show how to use these flags with `match`.

**Note**

If you execute a match simply to find true or false, use `String.search` or the regular expression `test` method.

**Examples**

**Example 1.** In the following example, `match` is used to find 'Chapter' followed by 1 or more numeric characters followed by a decimal point and numeric character 0 or more times. The regular expression includes the `i` flag so that case will be ignored.

```javascript
<SCRIPT>
str = "For more information, see Chapter 3.4.5.1";
re = /(chapter \d+(\.\d*)+)/i;
found = str.match(re);
document.write(found);
</SCRIPT>
```
This returns the array containing Chapter 3.4.5.1, Chapter 3.4.5.1.1

'Chapter 3.4.5.1' is the first match and the first value remembered from (Chapter \d+(\.\d*)).

'.1' is the second value remembered from (\.\d).

**Example 2.** The following example demonstrates the use of the global and ignore case flags with `match`.

```javascript
<SCRIPT>
str = "abcDdcba";
newArray = str.match(/d/gi);
document.write(newArray);
</SCRIPT>
```

The returned array contains D, d.

**prototype**

Represents the prototype for this class. You can use the prototype to add properties or methods to all instances of a class. For information on prototypes, see `Function.prototype`.

- **Property of** String
- **Implemented in** JavaScript 1.1, NES 3.0
- **ECMA version** ECMA-262
String.replace

**replace**

Finds a match between a regular expression and a string, and replaces the matched substring with a new substring.

*Method of* String

*Implemented in* JavaScript 1.2

JavaScript 1.3: supports the nesting of a function in place of the second argument

**Syntax**

replace(regexp, newSubStr)

replace(regexp, function)

*Versions prior to JavaScript 1.3:*

replace(regexp, newSubStr)

**Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>regexp</td>
<td>The name of the regular expression. It can be a variable name or a literal.</td>
</tr>
<tr>
<td>newSubStr</td>
<td>The string to put in place of the string found with regexp. This string can include the RegExp properties $1, ..., $9, lastMatch, lastParen, leftContext, and rightContext.</td>
</tr>
<tr>
<td>function</td>
<td>A function to be invoked after the match has been performed.</td>
</tr>
</tbody>
</table>

**Description**

This method does not change the String object it is called on; it simply returns a new string.

If you want to execute a global search and replace, or a case insensitive search, include the g (for global) and i (for ignore case) flags in the regular expression. These can be included separately or together. The following two examples below show how to use these flags with replace.

**Specifying a function as a parameter.** When you specify a function as the second parameter, the function is invoked after the match has been performed. (The use of a function in this manner is often called a lambda expression.)

In your function, you can dynamically generate the string that replaces the matched substring. The result of the function call is used as the replacement value.
The nested function can use the matched substrings to determine the new string (newSubStr) that replaces the found substring. You get the matched substrings through the parameters of your function. The first parameter of your function holds the complete matched substring. Other parameters can be used for parenthetical matches, remembered submatch strings. For example, the following replace method returns XX.zzzz - XX , zzzz.

```
"XXzzzz".replace(/(X*)(z*)/,
    function (str, p1, p2) {
        return str + "- " + p1 + ", " + p2;
    });
```

The array returned from the exec method of the RegExp object and the subsequent match is available to your function. You can use the content of the array plus the input and the index (index of match in the input string) properties of the array to perform additional tasks before the method replaces the substring.

### Examples

**Example 1.** In the following example, the regular expression includes the global and ignore case flags which permits replace to replace each occurrence of 'apples' in the string with 'oranges.'

```
<SCRIPT>
re = /apples/gi;
str = "Apples are round, and apples are juicy."
newstr=str.replace(re, "oranges");
document.write(newstr)
</SCRIPT>
```

This prints "oranges are round, and oranges are juicy."

**Example 2.** In the following example, the regular expression is defined in replace and includes the ignore case flag.

```
<SCRIPT>
str = "Twas the night before Xmas..."
newstr=str.replace(/xmas/i, "Christmas");
document.write(newstr)
</SCRIPT>
```

This prints "Twas the night before Christmas..."
Example 3. The following script switches the words in the string. For the replacement text, the script uses the values of the $1 and $2 properties.

```
<SCRIPT LANGUAGE="JavaScript1.2">
re = /\w+\s\w+/;
str = "John Smith";
newstr = str.replace(re, "$2, $1");
document.write(newstr)
</SCRIPT>
```

This prints "Smith, John".

Example 4. The following example replaces a Fahrenheit degree with its equivalent Celsius degree. The Fahrenheit degree should be a number ending with F. The function returns the Celsius number ending with C. For example, if the input number is 212F, the function returns 100C. If the number is 0F, the function returns -17.77777777777778C.

The regular expression `test` checks for any number that ends with F. The number of Fahrenheit degree is accessible to your function through the parameter $1. The function sets the Celsius number based on the Fahrenheit degree passed in a string to the `f2c` function. `f2c` then returns the Celsius number. This function approximates Perl's s///e flag.

```javascript
function f2c(x) {
    var s = String(x)
    var test = /\d+(\.\d*)?F\b/g
    return s.replace(test, myfunction ($0,$1,$2) {
        return (($1-32) * 5/9) + "C";
    })
}
```
**search**

Executes the search for a match between a regular expression and this `String` object.

*Method of* `String`

*Implemented in* JavaScript 1.2

**Syntax**

```javascript
search(regexp)
```

**Parameters**

- `regexp` Name of the regular expression. It can be a variable name or a literal.

**Description**

If successful, `search` returns the index of the regular expression inside the string. Otherwise, it returns -1.

When you want to know whether a pattern is found in a string use `search` (similar to the regular expression `test` method); for more information (but slower execution) use `match` (similar to the regular expression `exec` method).

**Example**

The following example prints a message which depends on the success of the test.

```javascript
function testinput(re, str)
    if (str.search(re) != -1)
        midstring = " contains ";
    else
        midstring = " does not contain ";
    document.write (str + midstring + re.source);
```
slice

Extracts a section of a string and returns a new string.

Method of String

Implemented in JavaScript 1.0, NES 2.0

Syntax `slice(beginslice[, endSlice])`

Parameters

- `beginslice`: The zero-based index at which to begin extraction.
- `endSlice`: The zero-based index at which to end extraction. If omitted, `slice` extracts to the end of the string.

Description

`slice` extracts the text from one string and returns a new string. Changes to the text in one string do not affect the other string.

`slice` extracts up to but not including `endSlice`. `string.slice(1,4)` extracts the second character through the fourth character (characters indexed 1, 2, and 3).

As a negative index, `endSlice` indicates an offset from the end of the string. `string.slice(2,-1)` extracts the third character through the second to last character in the string.

Example

The following example uses `slice` to create a new string.

```javascript
<SCRIPT>
str1="The morning is upon us. 
str2=str1.slice(3,-5)
document.write(str2)
</SCRIPT>

This writes:

morning is upon
**String.small**

---

**small**

Causes a string to be displayed in a small font, as if it were in a `<SMALL>` tag.

**Method of**  
String

**Implemented in**  
JavaScript 1.0, NES 2.0

**Syntax**

```
small()
```

**Parameters**

None

**Description**

Use the `small` method with the `write` or `writeln` methods to format and display a string in a document. In server-side JavaScript, use the `write` function to display the string.

**Examples**

The following example uses string methods to change the size of a string:

```javascript
var worldString="Hello, world"
document.write(worldString.small())
document.write("<P>" + worldString.big())
document.write("<P>" + worldString.fontsize(7))
```

The previous example produces the same output as the following HTML:

```
<SMALL>Hello, world</SMALL>
<P><BIG>Hello, world</BIG>
<P><FONTSIZE=7>Hello, world</FONTSIZE>
```

**See also**  
String.big, String.fontsize

---

**split**

Splits a String object into an array of strings by separating the string into substrings.

**Method of**  
String

**Implemented in**  
JavaScript 1.1, NES 2.0

**ECMA version**  
ECMA-262

**Syntax**

```
split([separator][, limit])
```
String.split

Parameters

- **separator**: Specifies the character to use for separating the string. The separator is treated as a string. If separator is omitted, the array returned contains one element consisting of the entire string.

- **limit**: Integer specifying a limit on the number of splits to be found.

Description

The `split` method returns the new array.

When found, separator is removed from the string and the substrings are returned in an array. If separator is omitted, the array contains one element consisting of the entire string.

In JavaScript 1.2, `split` has the following additions:

- It can take a regular expression argument, as well as a fixed string, by which to split the object string. If separator is a regular expression, any included parenthesis cause submatches to be included in the returned array.

- It can take a limit count so that the resulting array does not include trailing empty elements.

- If you specify `LANGUAGE="JavaScript1.2"` in the `<SCRIPT>` tag, `string.split(" ")` splits on any run of 1 or more white space characters including spaces, tabs, line feeds, and carriage returns. For this behavior, `LANGUAGE="JavaScript1.2"` must be specified in the `<SCRIPT>` tag.

Examples

**Example 1.** The following example defines a function that splits a string into an array of strings using the specified separator. After splitting the string, the function displays messages indicating the original string (before the split), the separator used, the number of elements in the array, and the individual array elements.

```javascript
function splitString (stringToSplit, separator) {
    arrayOfStrings = stringToSplit.split(separator)
    document.write ('<P>The original string is: "' + stringToSplit + '"')
    document.write ('<BR>The separator is: "' + separator + '"')
    document.write ('<BR>The array has ' + arrayOfStrings.length + ' elements: ')
    for (var i=0; i < arrayOfStrings.length; i++) {
        document.write (arrayOfStrings[i] + " / ")
    }
}
```
Example 2. Consider the following script:

<SCRIPT LANGUAGE="JavaScript1.2">
str="She sells seashells by the

\n
shore"
document.write(str + "<BR>")
a=str.split(" ")
document.write(a)
</SCRIPT>

Using LANGUAGE="JavaScript1.2", this script produces

"She", "sells", "seashells", "by", "the", "seashore"

Without LANGUAGE="JavaScript1.2", this script splits only on single space characters, producing

"She", "sells", "", "", "seashells", "by", "", "the", "seashore"
Example 3. In the following example, `split` looks for 0 or more spaces followed by a semicolon followed by 0 or more spaces and, when found, removes the spaces from the string. `nameList` is the array returned as a result of `split`.

```javascript
<SCRIPT>
names = "Harry Trump ;Fred Barney; Helen Rigby ; Bill Abel ;Chris Hand ";
document.write (names + "<BR"> + "<BR>");
re = /\s*;\s*/;
nameList = names.split (re);
document.write(nameList);
</SCRIPT>
```

This prints two lines; the first line prints the original string, and the second line prints the resulting array.

Harry Trump;Fred Barney; Helen Rigby ; Bill Abel ;Chris Hand
Harry Trump,Fred Barney,Helen Rigby,Bill Abel,Chris Hand

Example 4. In the following example, `split` looks for 0 or more spaces in a string and returns the first 3 splits that it finds.

```javascript
<SCRIPT LANGUAGE="JavaScript1.2">
myVar = " Hello World. How are you doing? ";
splits = myVar.split(" ", 3);
document.write(splits)
</SCRIPT>
```

This script displays the following:

["Hello", "World.", "How"]

See also String.charAt, String.indexOf, String.lastIndexOf

strike

Causes a string to be displayed as struck-out text, as if it were in a `<STRIKE>` tag.

*Method of* String

*Implemented in* JavaScript 1.0, NES 2.0

*Syntax* `strike()`

*Parameters* None
Description
Use the `strike` method with the `write` or `writeln` methods to format and display a string in a document. In server-side JavaScript, use the `write` function to display the string.

Examples
The following example uses `string` methods to change the formatting of a string:

```javascript
var worldString="Hello, world"

document.write(worldString.blink());
document.write("<P>" + worldString.bold());
document.write("<P>" + worldString.italics());
document.write("<P>" + worldString.strike());
```

The previous example produces the same output as the following HTML:

```html
<BgLINK>Hello, world</BLINK><B>world</B><I>Hello, world</I><STRIKE>Hello, world</STRIKE>
```

See also
`String.blink`, `String.bold`, `String.italics`

---

**sub**

Causes a string to be displayed as a subscript, as if it were in a `<SUB>` tag.

**Method of**

String

**Implemented in**

JavaScript 1.0, NES 2.0

**Syntax**

`sub()`

**Parameters**

None

**Description**

Use the `sub` method with the `write` or `writeln` methods to format and display a string in a document. In server-side JavaScript, use the `write` function to generate the HTML.
The following example uses the `sub` and `sup` methods to format a string:

```javascript
var superText = "superscript"
var subText = "subscript"

document.write("This is what a " + superText.sup() + " looks like.")
document.write("<P>This is what a " + subText.sub() + " looks like."")
```

The previous example produces the same output as the following HTML:

```
This is what a <SUP>superscript</SUP> looks like.
<P>This is what a <SUB>subscript</SUB> looks like.
```

See also  String.sup

---

### substr

Returns the characters in a string beginning at the specified location through the specified number of characters.

**Method of**  String

**Implemented in**  JavaScript 1.0, NES 2.0

**Syntax**  `substr(start[, length])`

**Parameters**

- `start`  Location at which to begin extracting characters.
- `length`  The number of characters to extract

**Description**

`start` is a character index. The index of the first character is 0, and the index of the last character is 1 less than the length of the string. `substr` begins extracting characters at `start` and collects `length` number of characters.

If `start` is positive and is the length of the string or longer, `substr` returns no characters.

If `start` is negative, `substr` uses it as a character index from the end of the string. If `start` is negative and `abs(start)` is larger than the length of the string, `substr` uses 0 as the start index.

If `length` is 0 or negative, `substr` returns no characters. If `length` is omitted, `start` extracts characters to the end of the string.
Example

Consider the following script:

```javascript
<SCRIPT LANGUAGE="JavaScript1.2">
str = "abcdefghij"
document.writeln("(1,2): ", str.substr(1,2))
document.writeln("(-2,2): ", str.substr(-2,2))
document.writeln("(1): ", str.substr(1))
document.writeln("(-20, 2): ", str.substr(-20, 2))
</SCRIPT>
```

This script displays:

(1,2): bc
(-2,2): ij
(1): bcdefghij
(-20, 2): bcdefghij
(20, 2):

See also substring

substring

Returns a subset of a String object.

Method of String

Implemented in JavaScript 1.0, NES 2.0

ECMA version ECMA-262

Syntax `substring(indexA, indexB)`

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>indexA</td>
<td>An integer between 0 and 1 less than the length of the string.</td>
</tr>
<tr>
<td>indexB</td>
<td>An integer between 0 and 1 less than the length of the string.</td>
</tr>
</tbody>
</table>
Description  substring extracts characters from indexA up to but not including indexB. In particular:

- If indexA is less than 0, indexA is treated as if it were 0.
- If indexB is greater than stringName.length, indexB is treated as if it were stringName.length.
- If indexA equals indexB, substring returns an empty string.
- If indexB is omitted, indexA extracts characters to the end of the string.

In JavaScript 1.2, using LANGUAGE="JavaScript1.2" in the SCRIPT tag,

- If indexA is greater than indexB, JavaScript produces a runtime error (out of memory).

In JavaScript 1.2, without LANGUAGE="JavaScript1.2" in the SCRIPT tag,

- If indexA is greater than indexB, JavaScript returns a substring beginning with indexB and ending with indexA - 1.

Examples  Example 1. The following example uses substring to display characters from the string "Netscape":

```javascript
var anyString="Netscape"

// Displays "Net"
document.write(anyString.substring(0,3))
document.write(anyString.substring(3,0))
// Displays "cap"
document.write(anyString.substring(4,7))
document.write(anyString.substring(7,4))
// Displays "Netscap"
document.write(anyString.substring(0,7))
// Displays "Netscape"
document.write(anyString.substring(0,8))
document.write(anyString.substring(0,10))
```
Example 2. The following example replaces a substring within a string. It will replace both individual characters and substrings. The function call at the end of the example changes the string "Brave New World" into "Brave New Web".

```
function replaceString(oldS, newS, fullS) {
    // Replaces oldS with newS in the string fullS
    for (var i=0; i<fullS.length; i++) {
        if (fullS.substring(i, i+oldS.length) == oldS) {
            fullS = fullS.substring(0, i) + newS + fullS.substring(i+oldS.length, fullS.length)
        }
    }
    return fullS
}
replaceString("World", "Web", "Brave New World")
```

Example 3. In JavaScript 1.2, using LANGUAGE="JavaScript1.2", the following script produces a runtime error (out of memory).

```
<SCRIPT LANGUAGE="JavaScript1.2">
str="Netscape"
document.write(str.substring(0,3);
document.write(str.substring(3,0);
</SCRIPT>
```

Without LANGUAGE="JavaScript1.2", the above script prints the following:

Net Net

In the second write, the index numbers are swapped.

See also substr

sup

Causes a string to be displayed as a superscript, as if it were in a <SUP> tag.

Method of String

Implemented in JavaScript 1.0, NES 2.0

Syntax sup()

Parameters None

Description Use the sup method with the write or writeln methods to format and display a string in a document. In server-side JavaScript, use the write function to generate the HTML.
Examples  The following example uses the `<sub>` and `<sup>` methods to format a string:

```javascript
var superText="superscript"
var subText="subscript"

document.write("This is what a " + superText.sup() + " looks like.")
document.write("<P>This is what a " + subText.sub() + " looks like.")
```

The previous example produces the same output as the following HTML:

```
This is what a <SUP>superscript</SUP> looks like.
<P>This is what a <SUB>subscript</SUB> looks like.
```

See also  String.<sub>sub</sub>

---

### toLowerCase

**Returns** the calling string value converted to lowercase.

**Method of**  String

**Implemented in**  JavaScript 1.0, NES 2.0

**ECMA version**  ECMA-262

**Syntax**  toLowerCase()  

**Parameters**  None

**Description**  The `toLowerCase` method returns the value of the string converted to lowercase. `toLowerCase` does not affect the value of the string itself.

**Examples**  The following example displays the lowercase string "alphabet":

```javascript
var upperText="ALPHABET"
document.write(upperText.toLowerCase())
```

See also  String.<upper>toUpperCase</upper>
**toSource**

Returns a string representing the source code of the object.

*Method of*  
String

*Implemented in*  
JavaScript 1.3

**Syntax**

toSource()

**Parameters**

None

**Description**

The `toSource` method returns the following values:

- For the built-in `String` object, `toSource` returns the following string indicating that the source code is not available:

  ```javascript
  function String() {
    [native code]
  }
  ```

- For instances of `String` or string literals, `toSource` returns a string representing the source code.

This method is usually called internally by JavaScript and not explicitly in code.

**toString**

Returns a string representing the specified object.

*Method of*  
String

*Implemented in*  
JavaScript 1.1, NES 2.0

*ECMA version*  
ECMA-262

**Syntax**

toString()

**Parameters**

None.

**Description**

The `String` object overrides the `toString` method of the `Object` object; it does not inherit `Object.toString`. For `String` objects, the `toString` method returns a string representation of the object.

**Examples**

The following example displays the string value of a `String` object:

```javascript
x = new String("Hello world");
alert(x.toString()) // Displays "Hello world"
```

**See also**

`Object.toString`
toUpperCase

Returns the calling string value converted to uppercase.

**Method of**  
String

**Implemented in**  
JavaScript 1.0, NES 2.0

**ECMA version**  
ECMA-262

**Syntax**  
toUpperCase()

**Parameters**  
None

**Description**  
The `toUpperCase` method returns the value of the string converted to uppercase. `toUpperCase` does not affect the value of the string itself.

**Examples**  
The following example displays the string "ALPHABET":

```javascript
var lowerText="alphabet"
document.write(lowerText.toUpperCase())
```

**See also**  
String.toLowerCase

valueOf

Returns the primitive value of a String object.

**Method of**  
String

**Implemented in**  
JavaScript 1.1

**ECMA version**  
ECMA-262

**Syntax**  
valueOf()

**Parameters**  
None

**Description**  
The `valueOf` method of String returns the primitive value of a String object as a string data type. This value is equivalent to `String.toString`.

This method is usually called internally by JavaScript and not explicitly in code.

**Examples**  
`x = new String("Hello world");
alert(x.valueOf()) // Displays "Hello world"
```

**See also**  
String.toString, Object.valueOf
Style

An object that specifies the style of HTML elements.

Client-side object

Implemented in JavaScript 1.2

Created by

Any of the following properties or methods of the document object:

- document.classes
- document.contextual
- document.ids
- document.tags

Description

The Style object lets you implement dynamic HTML style sheets in JavaScript. The methods and properties of the Style object implement the cascading style sheet style properties of HTML in JavaScript.

For a complete description of style sheets, see Dynamic HTML in Netscape Communicator.

Property Summary

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>align</td>
<td>Specifies the alignment of an HTML element within its parent.</td>
</tr>
<tr>
<td>backgroundColor</td>
<td>Specifies a solid background color for an element.</td>
</tr>
<tr>
<td>backgroundImage</td>
<td>Specifies a background image for an HTML element.</td>
</tr>
<tr>
<td>borderBottomWidth</td>
<td>Specifies the width of the bottom border of an HTML element.</td>
</tr>
<tr>
<td>borderColor</td>
<td>Specifies the color of the border of an HTML element.</td>
</tr>
<tr>
<td>borderLeftWidth</td>
<td>Specifies the width of the left border of an HTML element.</td>
</tr>
<tr>
<td>borderRightWidth</td>
<td>Specifies the width of the right border of an HTML element.</td>
</tr>
<tr>
<td>borderStyle</td>
<td>Specifies the style of border, such as solid or double, around a block-level HTML element.</td>
</tr>
<tr>
<td>borderTopWidth</td>
<td>Specifies the width of the top border of an HTML element.</td>
</tr>
<tr>
<td>clear</td>
<td>Specifies the sides of an HTML element that allow floating elements.</td>
</tr>
<tr>
<td>color</td>
<td>Specifies the color of the text in an HTML element.</td>
</tr>
</tbody>
</table>
### Style

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>display</code></td>
<td>Overrides the usual display of an element and specifies whether the element appears in line, as a block-level element, or as a block-level list item.</td>
</tr>
<tr>
<td><code>fontFamily</code></td>
<td>Specifies the font family, such as Helvetica or Arial, for an HTML text element.</td>
</tr>
<tr>
<td><code>fontSize</code></td>
<td>Specifies the font size for an HTML text element.</td>
</tr>
<tr>
<td><code>fontStyle</code></td>
<td>Specifies the style of the font of an HTML element.</td>
</tr>
<tr>
<td><code>fontWeight</code></td>
<td>Specifies the weight of the font of an HTML element.</td>
</tr>
<tr>
<td><code>lineHeight</code></td>
<td>Specifies the distance between the baselines of two adjacent lines of block-level type.</td>
</tr>
<tr>
<td><code>listStyleType</code></td>
<td>Specifies the style of bullet displayed for list items.</td>
</tr>
<tr>
<td><code>marginBottom</code></td>
<td>Specifies the minimal distance between the bottom of an HTML element and the top of an adjacent element.</td>
</tr>
<tr>
<td><code>marginLeft</code></td>
<td>Specifies the minimal distance between the left side of an HTML element and the right side of an adjacent element.</td>
</tr>
<tr>
<td><code>marginRight</code></td>
<td>Specifies the minimal distance between the right side of an HTML element and the left side of an adjacent element.</td>
</tr>
<tr>
<td><code>marginTop</code></td>
<td>Specifies the minimal distance between the top of an HTML element and the bottom of an adjacent element.</td>
</tr>
<tr>
<td><code>paddingBottom</code></td>
<td>Specifies how much space to insert between the bottom of an element and its content, such as text or an image.</td>
</tr>
<tr>
<td><code>paddingLeft</code></td>
<td>Specifies how much space to insert between the left side of an element and its content, such as text or an image.</td>
</tr>
<tr>
<td><code>paddingRight</code></td>
<td>Specifies how much space to insert between the right side of an element and its content, such as text or an image.</td>
</tr>
<tr>
<td><code>paddingTop</code></td>
<td>Specifies how much space to insert between the top of an element and its content, such as text or an image.</td>
</tr>
<tr>
<td><code>textAlign</code></td>
<td>Specifies the alignment of an HTML block-level text element.</td>
</tr>
<tr>
<td><code>textDecoration</code></td>
<td>Specifies special effects, such as blinking, strike-outs, and underlines, added to an HTML text element.</td>
</tr>
<tr>
<td><code>textIndent</code></td>
<td>Specifies the length of indentation appearing before the first formatted line of a block-level HTML text element.</td>
</tr>
</tbody>
</table>
Specifying the alignment of an HTML element within its parent.

**align**

Specifies the alignment of an HTML element within its parent.

Property of: Style

Implemented in: JavaScript 1.2

**Syntax**

```
styleObject.align = {left | right | none}
```

**Parameters**

- `styleObject`: A Style object.

Do not confuse `align` with `textAlign`, which specifies the alignment of the content of text elements.

The `align` property is a reflection of the cascading style sheet `float` property.
**backgroundColor**

Specifies a solid background color for an element.

*Property of* Style

*Implemented in* JavaScript 1.2

**Syntax**

```javascript
styleObject.backgroundColor = colorValue
```

**Parameters**

- `styleObject`: A Style object.
- `colorValue`: A string evaluating to a color value, as described in Appendix B, “Color Values.”

The `backgroundColor` property is a reflection of the cascading style sheet `background-color` property.

**backgroundImage**

Specifies a background image for an HTML element.

*Property of* Style

*Implemented in* JavaScript 1.2

**Syntax**

```javascript
styleObject.backgroundImage = url
```

**Parameters**

- `styleObject`: A Style object.
- `url`: A string evaluating to either a full URL or a partial URL relative to the source of the style sheet.

The `backgroundImage` property is a reflection of the cascading style sheet `background-image` property.
**borderBottomWidth**

Specifies the width of the bottom border of an HTML element.

*Property of* Style

*Implemented in* JavaScript 1.2

**Syntax**

```
styleObject.borderBottomWidth = length
```

**Parameters**

- `styleObject` A Style object.
- `length` A string evaluating to a size followed by a unit of measurement; for example, 10pt.

The `borderBottomWidth` property is a reflection of the cascading style sheet `border-bottom-width` property.

**See also** Style.borderLeftWidth, Style.borderRightWidth, Style.borderTopWidth, Style.borderWidths

---

**borderColor**

Specifies the color of the border of an HTML element.

*Property of* Style

*Implemented in* JavaScript 1.2

**Syntax**

```
styleObject.borderColor = {none | colorValue}
```

**Parameters**

- `styleObject` A Style object.
- `colorValue` A string evaluating to a color value, as described in Appendix B, “Color Values.”

The `borderColor` property is a reflection of the cascading style sheet `border-color` property.
**borderLeftWidth**

Specifies the width of the left border of an HTML element.

*Property of* Style

*Implemented in* JavaScript 1.2

**Syntax**

```
styleObject.borderLeftWidth = length
```

**Parameters**

- `styleObject` A Style object.
- `length` A string evaluating to a size followed by a unit of measurement; for example, `10pt`.

The `borderLeftWidth` property is a reflection of the cascading style sheet `border-left-width` property.

**See also** Style.borderBottomWidth, Style.borderRightWidth, Style.borderTopWidth, Style.borderWidths

**borderRightWidth**

Specifies the width of the right border of an HTML element.

*Property of* Style

*Implemented in* JavaScript 1.2

**Syntax**

```
styleObject.borderRightWidth = length
```

**Parameters**

- `styleObject` A Style object.
- `length` A string evaluating to a size followed by a unit of measurement; for example, `10pt`.

The `borderRightWidth` property is a reflection of the cascading style sheet `border-right-width` property.

**See also** Style.borderBottomWidth, Style.borderLeftWidth, Style.borderTopWidth, Style.borderWidths
**borderStyle**

Specifies the style of border, such as solid or double, around a block-level HTML element.

*Property of* Style

*Implemented in* JavaScript 1.2

**Syntax**

```javascript
styleObject.borderStyle = styleType
```

**Parameters**

- **styleObject**: A Style object.
- **styleType**: A string evaluating to any of the following keywords:
  - none
  - solid
  - double
  - inset
  - outset
  - groove
  - ridge

You must also specify a border width for the border to be visible.

The `borderStyle` property is a reflection of the cascading style sheet `border-style` property.

**borderTopWidth**

Specifies the width of the top border of an HTML element.

*Property of* Style

*Implemented in* JavaScript 1.2

**Syntax**

```javascript
styleObject.borderTopWidth = length
```

**Parameters**

- **styleObject**: A Style object.
- **length**: A string evaluating to a size followed by a unit of measurement; for example, 10pt.
The borderTopWidth property is a reflection of the cascading style sheet border-top-width property.

**See also** Style.borderBottomWidth, Style.borderLeftWidth, Style.borderRightWidth, Style.borderWidths

---

**borderWidths**

Specifies the width of the borders of an HTML element.

*Method of* Style

*Implemented in* JavaScript 1.2

**Syntax**

`borderWidths(top, right, bottom, left)`

**Parameters**

- **top**
  A string specifying the value of the Style.borderTopWidth property.

- **right**
  A string specifying the value of the Style.borderRightWidth property.

- **bottom**
  A string specifying the value of the Style.borderBottomWidth property.

- **left**
  A string specifying the value of the Style.borderLeftWidth property.

**Description**

The borderWidths method is a convenience shortcut for setting all the border width properties.

**See also** Style.borderBottomWidth, Style.borderLeftWidth, Style.borderRightWidth, Style.borderTopWidth
clear

Specifies the sides of an HTML element that allow floating elements.

Property of: Style

Implemented in: JavaScript 1.2

**Syntax**

```
styleObject.clear = {left | right | both | none}
```

**Parameters**

- **styleObject**: A Style object.

The `clear` property is a reflection of the cascading style sheet `clear` property.

color

Specifies the color of the text in an HTML element.

Property of: Style

Implemented in: JavaScript 1.2

**Syntax**

```
styleObject.color = colorValue
```

**Parameters**

- **styleObject**: A Style object.
- **colorValue**: A string evaluating to a color value, as described in Appendix B, “Color Values.”

The `color` property is a reflection of the cascading style `color` property.
**display**

Overrides the usual display of an element and specifies whether the element appears in line, as a block-level element, or as a block-level list item.

*Property of* Style  
*Implemented in* JavaScript 1.2

**Syntax**  
```
styleObject.display = styleType
```

**Parameters**

- `styleObject` A Style object.
- `styleType` A string evaluating to any of the following keywords:
  - `none`
  - `block`
  - `inline`
  - `list-item`

The `display` property is a reflection of the cascading style `display` property.

**fontFamily**

Specifies the font family, such as Helvetica or Arial, for an HTML text element.

*Property of* Style  
*Implemented in* JavaScript 1.2

**Syntax**  
```
styleObject.fontFamily = {specificFamily | genericFamily}
```
The `fontFamily` property is a reflection of the cascading style sheet `font-family` property. The `genericFamily` keywords are available for all platforms, but the specific font displayed varies on each platform.

You can mix the `specificFamily` and `genericFamily` keywords in the same value. For example, the following code displays text in Helvetica if that font is available; otherwise, the text displays in a sans-serif font determined by the operating system:

```javascript
document.tags.H1.fontFamily = "Helvetica, sans-serif"
```

You can also link to a font definition file and download it when a browser loads the web page, guaranteeing that all the fonts are available on a user’s system. See Dynamic HTML in Netscape Communicator.

### fontSize

Specifies the font size for an HTML text element.

*Property of* `Style`

*Implemented in* JavaScript 1.2

**Syntax**

```javascript
styleObject.fontSize = {absoluteSize | relativeSize | length | percentage}
```
Parameters

styleObject  A Style object.

absoluteSize  A string evaluating to any of the following keywords:
• xx-small
• x-small
• small
• medium
• large
• x-large
• xx-large

relativeSize  A string evaluating to a size relative to the size of the parent element, indicated by either of the following keywords:
• smaller
• larger

length  A string evaluating to a size followed by a unit of measurement; for example, 18pt.

percentage  A string evaluating to a percent of the size of the parent element; for example, 50%.

The fontSize property is a reflection of the cascading style sheet font-size property. By default, the initial value is medium.

**fontStyle**

Specifies the style of the font of an HTML element.

*Property of*  Style

*Implemented in*  JavaScript 1.2

Syntax  

```javascript
styleObject.fontStyle = styleType
```

Parameters

styleObject  A Style object.

styleType  A string evaluating to either of the following keywords:
• normal
• italic
The `fontStyle` property is a reflection of the cascading style sheet `font-style` property.

**fontWeight**

Specifies the weight of the font of an HTML element.

*Property of*  
Style

*Implemented in*  
JavaScript 1.2

**Syntax**  
`styleObject.fontWeight = {absolute | relative | numeric}`

**Parameters**

- `styleObject`  
A Style object.
- `absolute`  
A string evaluating to either of the following keywords:
  - normal
  - bold
- `relative`  
A string evaluating to a weight relative to the weight of the parent element, indicated by either of the following keywords:
  - bolder
  - lighter
- `numeric`  
A string evaluating to a numeric value between 100 and 900, where 100 indicates the lightest weight and 900 indicates the heaviest weight.

The `fontWeight` property is a reflection of the cascading style sheet `font-weight` property.

**lineHeight**

Specifies the distance between the baselines of two adjacent lines of block-level type.

*Property of*  
Style

*Implemented in*  
JavaScript 1.2

**Syntax**  
`styleObject.lineHeight = {number | length | percentage | normal}`
The `lineHeight` property is a reflection of the cascading style sheet `line-height` property.

When you set the `lineHeight` property by specifying `number`, Navigator calculates the line height by multiplying the font size of the current element by `number`. For example, if `lineHeight` is set to 1.2 in a paragraph using a 10-point font, the line height is 12 points.

When you set `lineHeight` with `number`, children of the current paragraph inherit the line height `factor`; when you set `lineHeight` with `length` or `percentage`, children inherit the resulting value.
listStyleType

Specifies the style of bullet displayed for list items.

Property of Style
 Implemented in JavaScript 1.2

Syntax

```
styleObject.listStyleType = styleType
```

Parameters

- `styleObject`: A Style object.
- `styleType`: A string evaluating to any of the following keywords:
  - disc
  - circle
  - square
  - decimal
  - lower-roman
  - upper-roman
  - lower-alpha
  - upper-alpha
  - none

The listStyleType property is a reflection of the cascading style sheet list-style-type property.
**marginBottom**

Specifies the minimal distance between the bottom of an HTML element and the top of an adjacent element.

**Property of** Style

**Implemented in** JavaScript 1.2

**Syntax**

```
styleObject.marginBottom = {length | percentage | auto}
```

**Parameters**

- **styleObject** A Style object.
- **length** A string evaluating to a size followed by a unit of measurement; for example, `10pt`.
- **percentage** A string evaluating to a percentage of the parent element’s width; for example, `20%`.
- **auto** The string `auto`, indicating that the margin is determined automatically by Navigator.

The `marginBottom` property is a reflection of the cascading style sheet `margin-bottom` property.

**See also** Style.marginLeft, Style.marginRight, Style.marginTop, Style.margins

**marginLeft**

Specifies the minimal distance between the left side of an HTML element and the right side of an adjacent element.

**Property of** Style

**Implemented in** JavaScript 1.2

**Syntax**

```
styleObject.marginLeft = {length | percentage | auto}
```
Style.marginRight

**Parameters**

- `styleObject` A Style object.
- `length` A string evaluating to a size followed by a unit of measurement; for example, 10pt.
- `percentage` A string evaluating to a percentage of the parent element’s width; for example, 20%.
- `auto` The string auto, indicating that the margin is determined automatically by Navigator.

The `marginLeft` property is a reflection of the cascading style sheet `margin-left` property.

**See also** Style.marginBottom, Style.marginRight, Style.marginTop, Style.margins

**marginRight**

Specifies the minimal distance between the right side of an HTML element and the left side of an adjacent element.

**Property of** Style

**Implemented in** JavaScript 1.2

**Syntax**

`styleObject.style.marginRight = (length | percentage | auto)`

**Parameters**

- `styleObject` A Style object.
- `length` A string evaluating to a size followed by a unit of measurement; for example, 10pt.
- `percentage` A string evaluating to a percentage of the parent element’s width; for example, 20%.
- `auto` The string auto, indicating that the margin is determined automatically by Navigator.

The `marginRight` property is a reflection of the cascading style sheet `margin-right` property.

**See also** Style.marginBottom, Style.marginLeft, Style.marginTop, Style.margins
margins

Specifies the minimal distance between the sides of an HTML element and the sides of adjacent elements.

*Method of* Style

*Implemented in* JavaScript 1.2

**Syntax**

```
margins(top, right, bottom, left)
```

**Parameters**

- **top**
  - A string specifying the value of the Style.marginTop property.

- **right**
  - A string specifying the value of the Style.marginRight property.

- **bottom**
  - A string specifying the value of the Style.marginBottom property.

- **left**
  - A string specifying the value of the Style.marginLeft property.

**Description**

The margins method is a convenience shortcut for setting all the margin properties.

**See also**

Style.marginBottom, Style.marginLeft, Style.marginRight, Style.marginTop
**marginTop**

Specifies the minimal distance between the top of an HTML element and the bottom of an adjacent element.

*Property of Style*

*Implemented in JavaScript 1.2*

**Syntax**

```javascript
styleObject.marginTop = {length | percentage | auto}
```

**Parameters**

- `styleObject`: A Style object.
- `length`: A string evaluating to a size followed by a unit of measurement; for example, 10pt.
- `percentage`: A string evaluating to a percentage of the parent element's width; for example, 20%.
- `auto`: The string auto, indicating that the margin is determined automatically by Navigator.

The `marginTop` property is a reflection of the cascading style sheet `margin-top` property.

**See also**

Style.marginBottom, Style.marginLeft, Style.marginRight, Style.margins

**paddingBottom**

Specifies how much space to insert between the bottom of an element and its content, such as text or an image.

*Property of Style*

*Implemented in JavaScript 1.2*

**Syntax**

```javascript
styleObject.paddingBottom = {length | percentage}
```
Parameters

- styleObject: A Style object.
- length: A string evaluating to a size followed by a unit of measurement; for example, 10pt.
- percentage: A string evaluating to a percentage of the parent element’s width; for example, 20%.

The paddingBottom property is a reflection of the cascading style sheet padding-bottom property.

See also Style.paddingLeft, Style.paddingRight, Style.paddingTop, Style.paddings

**paddingLeft**

Specifies how much space to insert between the left side of an element and its content, such as text or an image.

Property of Style

Implemented in JavaScript 1.2

Syntax

```javascript
styleObject.paddingLeft = {length | percentage}
```

Parameters

- styleObject: A Style object.
- length: A string evaluating to a size followed by a unit of measurement; for example, 10pt.
- percentage: A string evaluating to a percentage of the parent element’s width; for example, 20%.

The paddingLeft property is a reflection of the cascading style sheet padding-left property.

See also Style.paddingBottom, Style.paddingRight, Style.paddingTop, Style.paddings
paddingRight

Specifies how much space to insert between the right side of an element and its content, such as text or an image.

Property of Style
Implemented in JavaScript 1.2

Syntax

```
styleObject.paddingRight = (length | percentage)
```

Parameters

```
styleObject  A Style object.
length       A string evaluating to a size followed by a unit of measurement; for example, 10pt.
percentage   A string evaluating to a percentage of the parent element's width; for example, 20%.
```

The paddingRight property is a reflection of the cascading style sheet padding-right property.

See also

Style.paddingBottom, Style.paddingLeft, Style.paddingTop, Style.paddings

paddings

Specifies how much space to insert between the sides of an element and its content, such as text or an image.

Method of Style
Implemented in JavaScript 1.2

Syntax

```
paddings(top, right, bottom, left)
```

Parameters

```
top       A string specifying the value of the Style.paddingTop property.
right     A string specifying the value of the Style.paddingRight property.
bottom    A string specifying the value of the Style.paddingBottom property.
left      A string specifying the value of the Style.paddingLeft property.
```
Style.paddingTop

**Description**  The `paddings` method is a convenience shortcut for setting all the padding properties.

**See also**  `Style.paddingBottom`, `Style.paddingLeft`, `Style.paddingRight`, `Style.paddingTop`

### paddingTop

Specifies how much space to insert between the top of an element and its content, such as text or an image.

**Property of**  `Style`

**Implemented in**  JavaScript 1.2

**Syntax**  `styleObject.paddingTop = {length | percentage}`

**Parameters**  
- `styleObject`  A `Style` object.
- `length`  A string evaluating to a size followed by a unit of measurement; for example, `10pt`.
- `percentage`  A string evaluating to a percentage of the parent element’s width; for example, `20%`.

The `paddingTop` property is a reflection of the cascading style sheet `padding-top` property.

**See also**  `Style.paddingBottom`, `Style.paddingLeft`, `Style.paddingRight`, `Style.paddings`
**textAlign**

Specifies the alignment of an HTML block-level text element.

*Property of* Style  
*Implemented in* JavaScript 1.2

**Syntax**

```javascript
styleObject textAlign = alignment
```

**Parameters**

- `styleObject` A Style object.
- `alignment` A string evaluating to any of the following keywords:
  - `left`
  - `right`
  - `center`
  - `justify`

Do not confuse `textAlign` with `align`, which specifies the alignment of an HTML element within its parent.

The `textAlign` property is a reflection of the cascading style sheet `text-align` property.
textDecoration

Specifies special effects, such as blinking, strike-outs, and underlines, added to an HTML text element.

Property of  Style

Implemented in  JavaScript 1.2

Syntax  

```
styleObject.textDecoration = decoration
```

Parameters

- **styleObject**  A Style object.
- **decoration**  A string evaluating to any of the following keywords:
  - none
  - underline
  - line-through
  - blink

The textDecoration property is a reflection of the cascading style sheet text-decoration property.

textIndent

Specifies the length of indentation appearing before the first formatted line of a block-level HTML text element.

Property of  Style

Implemented in  JavaScript 1.2

Syntax  

```
styleObject.textIndent = { length | percentage }
```

Parameters

- **styleObject**  A Style object.
- **length**  A string evaluating to a size followed by a unit of measurement; for example, 18pt.
- **percentage**  A string evaluating to a percentage of the parent element’s width; for example, 20%. 
The `textIndent` property is a reflection of the cascading style sheet `text-indent` property.

### textTransform

Specifies the case of an HTML text element.

**Property of**  
Style

**Implemented in**  
JavaScript 1.2

**Syntax**  
`styleObject.textTransform = transformation`

**Parameters**

- `styleObject`  
A Style object.

- `transformation`  
A string evaluating to any of the following keywords:
  - none
  - capitalize
  - uppercase
  - lowercase

The `textTransform` property is a reflection of the cascading style sheet `text-transform` property.

### whiteSpace

Specifies whether or not white space within an HTML element should be collapsed.

**Property of**  
Style

**Implemented in**  
JavaScript 1.2

**Syntax**  
`styleObject.whiteSpace = {normal | pre}`

**Parameters**

- `styleObject`  
A Style object.

The `whiteSpace` property is a reflection of the cascading style sheet `white-space` property.
**width**

Specifies the width of a block-level HTML element.

*Property of* Style

*Implemented in* JavaScript 1.2

**Syntax**  
```javascript
styleObject.width = {length | percentage | auto}
```  

**Parameters**

- **styleObject** A Style object.
- **length** A string evaluating to a size followed by a unit of measurement; for example, 10pt.
- **percentage** A string evaluating to a percentage of the parent element’s width; for example, 20%.
- **auto** The string auto, indicating that the width is determined automatically by Navigator.

The `width` property is a reflection of the cascading style sheet `width` property.

The `Style.marginLeft` and `Style.marginRight` properties take precedence over the `Style.width` property. For example, if `marginLeft` is set to 25%, `marginRight` is set to 10%, and `width` is set to 100%, Navigator ignores the `width` value and uses 65% for the `width` setting.
Submit

A submit button on an HTML form. A submit button causes a form to be submitted.

Client-side object

Implemented in JavaScript 1.0

JavaScript 1.1: added type property; added onBlur and onFocus event handlers; added blur and focus methods

JavaScript 1.2: added handleEvent method

Created by

The HTML INPUT tag, with "submit" as the value of the TYPE attribute. For a given form, the JavaScript runtime engine creates an appropriate Submit object and puts it in the elements array of the corresponding Form object. You access a Submit object by indexing this array. You can index the array either by number or, if supplied, by using the value of the NAME attribute.

Event handlers

• onBlur
• onClick
• onFocus

Security

Submitting a form to a mailto: or news: URL requires the UniversalSendMail privilege. For information on security, see the Client-Side JavaScript Guide.

Description

A Submit object on a form looks as follows:

A Submit object is a form element and must be defined within a FORM tag.
Clicking a submit button submits a form to the URL specified by the form's `action` property. This action always loads a new page into the client; it may be the same as the current page, if the action so specifies or is not specified.

The submit button's `onClick` event handler cannot prevent a form from being submitted; instead, use the form's `onSubmit` event handler or use the submit method instead of a Submit object. See the examples for the Form object.

### Property Summary

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>form</td>
<td>Specifies the form containing the Submit object.</td>
</tr>
<tr>
<td>name</td>
<td>Reflects the <code>NAME</code> attribute.</td>
</tr>
<tr>
<td>type</td>
<td>Reflects the <code>TYPE</code> attribute.</td>
</tr>
<tr>
<td>value</td>
<td>Reflects the <code>VALUE</code> attribute.</td>
</tr>
</tbody>
</table>

### Method Summary

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>blur</td>
<td>Removes focus from the submit button.</td>
</tr>
<tr>
<td>click</td>
<td>Simulates a mouse-click on the submit button.</td>
</tr>
<tr>
<td>focus</td>
<td>Gives focus to the submit button.</td>
</tr>
<tr>
<td>handleEvent</td>
<td>Invokes the handler for the specified event.</td>
</tr>
</tbody>
</table>

In addition, this object inherits the `watch` and `unwatch` methods from `Object`.

### Examples

The following example creates a `Submit` object called `submitButton`. The text "Done" is displayed on the face of the button.

```html
<INPUT TYPE="submit" NAME="submitButton" VALUE="Done">
```

See also the examples for the `Form`.

### See also

`Button`, `Form`, `Reset`, `Form.submit`, `onSubmit`
**blur**

Removes focus from the submit button.

*Method of* Submit  
*Implemented in* JavaScript 1.0

**Syntax**

blur()

**Parameters**

None

**See also**

Submit.focus

---

**click**

Simulates a mouse-click on the submit button, but does *not* trigger an object’s onClick event handler.

*Method of* Submit  
*Implemented in* JavaScript 1.0

**Syntax**

click()

**Parameters**

None

---

**focus**

Navigates to the submit button and gives it focus.

*Method of* Submit  
*Implemented in* JavaScript 1.0

**Syntax**

focus()

**Parameters**

None

**See also**

Submit.blur
Submit.form

---

**form**

An object reference specifying the form containing the submit button.

*Property of* Submit

*Read-only*

*Implemented in* JavaScript 1.0

**Description**

Each form element has a `form` property that is a reference to the element’s parent form. This property is especially useful in event handlers, where you might need to refer to another element on the current form.

**Examples**

The following example shows a form with several elements. When the user clicks `button2`, the function `showElements` displays an alert dialog box containing the names of each element on the form `myForm`.

```javascript
<SCRIPT>
function showElements(theForm) {
  str = "Form Elements of form " + theForm.name + ":\n"
  for (i = 0; i < theForm.length; i++)
    str += theForm.elements[i].name + "\n"
  alert(str)
}
</SCRIPT>

<FORM NAME="myForm">
  Form name:<INPUT TYPE="text" NAME="text1" VALUE="Beluga">
  <P>
  <INPUT NAME="button1" TYPE="button" VALUE="Show Form Name"
    onClick="this.form.text1.value=this.form.name">
  <INPUT NAME="button2" TYPE="submit" VALUE="Show Form Elements"
    onClick="showElements(this.form)">
</FORM>

The alert dialog box displays the following text:

Form Elements of form myForm:
  text1
  button1
  button2

**See also** Form
**handleEvent**

Invokes the handler for the specified event.

*Method of*  
Submit

*Implemented in*  
JavaScript 1.2

**Syntax**

```
handleEvent(event)
```

**Parameters**

- `event`  
The name of an event for which the specified object has an event handler.

**Description**

For information on handling events, see the *Client-Side JavaScript Guide*.

---

**name**

A string specifying the submit button’s name.

*Property of*  
Submit

*Implemented in*  
JavaScript 1.0

**Security**  
JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**

The `name` property initially reflects the value of the `NAME` attribute. Changing the `name` property overrides this setting.

Do not confuse the `name` property with the label displayed on the Submit button. The `value` property specifies the label for this button. The `name` property is not displayed on the screen; it is used to refer programmatically to the button.

If multiple objects on the same form have the same `NAME` attribute, an array of the given name is created automatically. Each element in the array represents an individual `Form` object. Elements are indexed in source order starting at 0. For example, if two `Text` elements and a `Submit` element on the same form have their `NAME` attribute set to "myField", an array with the elements `myField[0], myField[1], and myField[2]` is created. You need to be aware of this situation in your code and know whether `myField` refers to a single element or to an array of elements.
Examples

In the following example, the `valueGetter` function uses a `for` loop to iterate over the array of elements on the `valueTest` form. The `msgWindow` window displays the names of all the elements on the form:

```javascript
newWindow=window.open("http://home.netscape.com")
function valueGetter() {
    var msgWindow=window.open(""")
    for (var i = 0; i < newWindow.document.valueTest.elements.length; i++) {
        msgWindow.document.write(newWindow.document.valueTest.elements[i].name + "<BR>")
    }
}
```

See also Submit.value

type

For all Submit objects, the value of the `type` property is "submit". This property specifies the form element's type.

Property of Submit
Read-only
Implemented in JavaScript 1.1

Examples

The following example writes the value of the `type` property for every element on a form.

```javascript
for (var i = 0; i < document.form1.elements.length; i++) {
    document.writeln("<BR>type is "+document.form1.elements[i].type)
}
```

value

A string that reflects the submit button's VALUE attribute.

Property of Submit
Read-only
Implemented in JavaScript 1.0

Security JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.
Submit.value

**Description** When a `VALUE` attribute is specified in HTML, the `value` property is that string and is displayed on the face of the button. When a `VALUE` attribute is not specified in HTML, the `value` property for the button is the string "Submit Query."

Do not confuse the `value` property with the `name` property. The `name` property is not displayed on the screen; it is used to refer programmatically to the button.

**Examples** The following function evaluates the `value` property of a group of buttons and displays it in the `msgWindow` window:

```javascript
function valueGetter() {
    var msgWindow=window.open(""
    msgWindow.document.write("submitButton.value is " +
        document.valueTest.submitButton.value + "<BR>")
    msgWindow.document.write("resetButton.value is " +
        document.valueTest.resetButton.value + "<BR>")
    msgWindow.document.write("helpButton.value is " +
        document.valueTest.helpButton.value + "<BR>")
    msgWindow.document.close()
}
```

This example displays the following values:

Query Submit
Reset
Help

The previous example assumes the buttons have been defined as follows:

```html
<INPUT TYPE="submit" NAME="submitButton">
<INPUT TYPE="reset" NAME="resetButton">
<INPUT TYPE="button" NAME="helpButton" VALUE="Help">
```

**See also** Submit.name
sun

A top-level object used to access any Java class in the package sun.*.

Core object

Implemented in JavaScript 1.1, NES 2.0

Created by The sun object is a top-level, predefined JavaScript object. You can automatically access it without using a constructor or calling a method.

Description The sun object is a convenience synonym for the property Packages.sun.

See also Packages, Packages.sun
A text input field on an HTML form. The user can enter a word, phrase, or series of numbers in a text field.

**Client-side object**

* Implemented in JavaScript 1.0
  * JavaScript 1.1: added type property
  * JavaScript 1.2: added handleEvent method

**Created by** The HTML `INPUT` tag, with "text" as the value of the `TYPE` attribute. For a given form, the JavaScript runtime engine creates appropriate `Text` objects and puts these objects in the `elements` array of the corresponding `Form` object. You access a `Text` object by indexing this array. You can index the array either by number or, if supplied, by using the value of the `NAME` attribute.

To define a `Text` object, use standard HTML syntax with the addition of JavaScript event handlers.

**Event handlers**

- `onBlur`
- `onChange`
- `onFocus`
- `onSelect`

**Description** A `Text` object on a form looks as follows:

A `Text` object is a form element and must be defined within a `FORM` tag.

`Text` objects can be updated (redrawn) dynamically by setting the value property (`this.value`).
In addition, this object inherits the `watch` and `unwatch` methods from `Object`.

**Examples**

**Example 1.** The following example creates a `Text` object that is 25 characters long. The text field appears immediately to the right of the words “Last name:”. The text field is blank when the form loads.

```
<B>Last name:</B> <INPUT TYPE="text" NAME="last_name" VALUE="" SIZE=25>
```

**Example 2.** The following example creates two `Text` objects on a form. Each object has a default value. The `city` object has an `onFocus` event handler that selects all the text in the field when the user tabs to that field. The `state` object has an `onChange` event handler that forces the value to uppercase.

```
<FORM NAME="form1">
<BR><B>City: </B><INPUT TYPE="text" NAME="city" VALUE="Anchorage" SIZE="20" onFocus="this.select()">
<B>State: </B><INPUT TYPE="text" NAME="state" VALUE="AK" SIZE="2" onChange="this.value=this.value.toUpperCase()">
</FORM>
```

See also the examples for the `onBlur`, `onChange`, `onFocus`, and `onSelect`.

**See also** Text, Form, Password, String, Textarea
blur

Removes focus from the text field.

Method of       Text
Implemented in  JavaScript 1.0

Syntax          blur()

Parameters      None

Examples        The following example removes focus from the text element userText:

userText.blur()

This example assumes that the text element is defined as

<INPUT TYPE="text" NAME="userText">

See also        Text.focus, Text.select

defaultValue

A string indicating the default value of a Text object.

Property of     Text
Implemented in  JavaScript 1.0

Security        JavaScript 1.1. This property is tainted by default. For information on data
tainting, see the Client-Side JavaScript Guide.

Description     The initial value of defaultValue reflects the value of the VALUE attribute.
Setting defaultValue programmatically overrides the initial setting.

You can set the defaultValue property at any time. The display of the related
object does not update when you set the defaultValue property, only when
you set the value property.
Examples  The following function evaluates the defaultValue property of objects on the surfCity form and displays the values in the msgWindow window:

```javascript
function defaultGetter() {
  msgWindow=window.open(""
  msgWindow.document.write("hidden.defaultValue is " +
    document.surfCity.hiddenObj.defaultValue + ",<BR>"
  msgWindow.document.write("password.defaultValue is " +
    document.surfCity.passwordObj.defaultValue + ",<BR>"
  msgWindow.document.write("text.defaultValue is " +
    document.surfCity.textObj.defaultValue + ",<BR>"
  msgWindow.document.write("textarea.defaultValue is " +
    document.surfCity.textareaObj.defaultValue + ",<BR>"
  msgWindow.document.close()
}
```

See also  Text.value

**focus**

Navigates to the text field and gives it focus.

*Method of*  Text

*Implemented in*  JavaScript 1.0

**Syntax**  `focus()`

**Parameters**  None

**Description**  Use the `focus` method to navigate to a text field and give it focus. You can then either programmatically enter a value in the field or let the user enter a value. If you use this method without the `select` method, the cursor is positioned at the beginning of the field.

**Examples**  See example for `select`.

See also  Text.blur, Text.select
**form**

An object reference specifying the form containing this object.

*Property of*  
Text

*Read-only*  

*Implemented in*  
JavaScript 1.0

**Description**

Each form element has a `form` property that is a reference to the element's parent form. This property is especially useful in event handlers, where you might need to refer to another element on the current form.

**Examples**

**Example 1.** In the following example, the form `myForm` contains a `Text` object and a button. When the user clicks the button, the value of the `Text` object is set to the form's name. The button's `onClick` event handler uses `this.form` to refer to the parent form, `myForm`.

```
<FORM NAME="myForm">
Form name:<INPUT TYPE="text" NAME="text1" VALUE="Beluga">

<form name="myForm">

</FORM>
```

**Example 2.** The following example shows a form with several elements. When the user clicks button2, the function `showElements` displays an alert dialog box containing the names of each element on the form `myForm`.

```
function showElements(theForm) {
    str = "Form Elements of form " + theForm.name + ": 
    for (i = 0; i < theForm.length; i++)
        str += theForm.elements[i].name + "\n"
    alert(str)
}
```

```html
<FORM NAME="myForm">
Form name:<INPUT TYPE="text" NAME="text1" VALUE="Beluga">

</FORM>
```
The alert dialog box displays the following text:

JavaScript Alert:
Form Elements of form myForm:
text1
button1
button2

**Example 3.** The following example uses an object reference, rather than the `this` keyword, to refer to a form. The code returns a reference to `myForm`, which is a form containing `myTextObject`.

`document.myForm.myTextObject.form`

**See also** Form

---

**handleEvent**

Invokes the handler for the specified event.

**Method of** Text

**Implemented in** JavaScript 1.2

**Syntax**

`handleEvent(event)`

**Parameters**

- `event` The name of an event for which the specified object has an event handler.

---

**name**

A string specifying the name of this object.

**Property of** Text

**Implemented in** JavaScript 1.0

**Security** JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description** The `name` property initially reflects the value of the `NAME` attribute. Changing the `name` property overrides this setting. The `name` property is not displayed on-screen; it is used to refer to the objects programmatically.
If multiple objects on the same form have the same NAME attribute, an array of the given name is created automatically. Each element in the array represents an individual Form object. Elements are indexed in source order starting at 0. For example, if two Text elements and a Textarea element on the same form have their NAME attribute set to "myField", an array with the elements myField[0], myField[1], and myField[2] is created. You need to be aware of this situation in your code and know whether myField refers to a single element or to an array of elements.

**Examples**

In the following example, the valueGetter function uses a for loop to iterate over the array of elements on the valueTest form. The msgWindow window displays the names of all the elements on the form:

```javascript
newWindow=window.open("http://home.netscape.com")

function valueGetter() {
    var msgWindow=window.open(""
    for (var i = 0; i < newWindow.document.valueTest.elements.length; i++) {
        msgWindow.document.write(newWindow.document.valueTest.elements[i].name + "<BR>"
    }
}
```

### select

Selects the input area of the text field.

*Method of* Text

*Implemented in* JavaScript 1.0

**Syntax**

`select()`

**Parameters**

None

**Description**

Use the select method to highlight the input area of a text field. You can use the select method with the focus method to highlight a field and position the cursor for a user response. This makes it easy for the user to replace all the text in the field.
Text.type

Examples  The following example uses an onClick event handler to move the focus to a
text field and select that field for changing:

```html
<FORM NAME="myForm">
  <B>Last name: </B><INPUT TYPE="text" NAME="lastName" SIZE=20 VALUE="Pigman">
  <BR><B>First name: </B><INPUT TYPE="text" NAME="firstName" SIZE=20 VALUE="Victoria">
  <BR><BR>
  <INPUT TYPE="button" VALUE="Change last name"
          onClick="this.form.lastName.select();this.form.lastName.focus();">
</FORM>
```

See also  Text.blur, Text.focus

type

For all Text objects, the value of the type property is "text". This property specifies the form element's type.

Property of  Text
Read-only
Implemented in  JavaScript 1.1

Examples  The following example writes the value of the type property for every element
on a form.

```javascript
for (var i = 0; i < document.form1.elements.length; i++) {
  document.writeln("<BR>type is "+ document.form1.elements[i].type)
}
```

value

A string that reflects the VALUE attribute of the object.

Property of  Text
Implemented in  JavaScript 1.0

Security  JavaScript 1.1. This property is tainted by default. For information on data
tainting, see the Client-Side JavaScript Guide.
Description

The `value` property is a string that initially reflects the `VALUE` attribute. This string is displayed in the text field. The value of this property changes when a user or a program modifies the field.

You can set the `value` property at any time. The display of the `Text` object updates immediately when you set the `value` property.

Examples

The following function evaluates the `value` property of a group of buttons and displays it in the `msgWindow` window:

```javascript
function valueGetter() {
    var msgWindow=window.open(""
    msgWindow.document.write("submitButton.value is " +
        document.valueTest.submitButton.value + "<BR>")
    msgWindow.document.write("resetButton.value is " +
        document.valueTest.resetButton.value + "<BR>")
    msgWindow.document.write("myText.value is " +
        document.valueTest.myText.value + "<BR>")
    msgWindow.document.close()
}
```

This example displays the following:

submitButton.value is Query Submit
resetButton.value is Reset
myText.value is Stonefish are dangerous.

The previous example assumes the buttons have been defined as follows:

```html
<input type="submit" name="submitButton">
<input type="reset" name="resetButton">
<input type="text" name="myText" value="Stonefish are dangerous.">
```

See also

`Text.defaultValue`
Textarea

A multiline input field on an HTML form. The user can use a textarea field to enter words, phrases, or numbers.

**Client-side object**

*Implemented in* JavaScript 1.0

JavaScript 1.1: added `type` property

JavaScript 1.2: added `handleEvent` method

**Created by**
The HTML `TEXTAREA` tag. For a given form, the JavaScript runtime engine creates appropriate `Textarea` objects and puts these objects in the `elements` array of the corresponding `Form` object. You access a `Textarea` object by indexing this array. You can index the array either by number or, if supplied, by using the value of the `NAME` attribute.

To define a text area, use standard HTML syntax with the addition of JavaScript event handlers.

**Event handlers**
- `onBlur`
- `onChange`
- `onFocus`
- `onKeyDown`
- `onKeyPress`
- `onKeyUp`
- `onSelect`
**Description**  A **textarea** object on a form looks as follows:

![Netscape - (Update Product Information)](image)

**Product number:** 8250  **Name:** Ottoman

**Category:**  
- Living
- Bath
- Dining
- Garden
- Bedroom
- Shop

**Description:**  
Our storage ottoman provides an attractive way to store lots of CDs and videos—and it's versatile enough to store other things as well.

It can hold up to 72 CDs under the lid and 20 vide in the drawer below.

A **textarea** object is a form element and must be defined within a **FORM** tag.

**textarea** objects can be updated (redrawn) dynamically by setting the **value** property (**this.value**).

To begin a new line in a **textarea** object, you can use a newline character. Although this character varies from platform to platform (Unix is \n, Windows is \r, and Macintosh is \n), JavaScript checks for all newline characters before setting a string-valued property and translates them as needed for the user's platform. You could also enter a newline character programmatically—one way is to test the **navigator.appVersion** property to determine the current platform, then set the newline character accordingly. See **navigator.appVersion** for an example.
In addition, this object inherits the `watch` and `unwatch` methods from `Object`.

**Examples**

**Example 1.** The following example creates a `Textarea` object that is six rows long and 55 columns wide. The textarea field appears immediately below the word “Description:”. When the form loads, the `Textarea` object contains several lines of data, including one blank line.

```html
<B>Description:</B> 
<TEXTAREA NAME="item_description" ROWS=6 COLS=55>
Our storage ottoman provides an attractive way to store lots of CDs and videos--and it's versatile enough to store other things as well.

It can hold up to 72 CDs under the lid and 20 videos in the drawer below.
</TEXTAREA>
```
Example 2. The following example creates a string variable containing newline characters for different platforms. When the user clicks the button, the Textarea object is populated with the value from the string variable. The result is three lines of text in the Textarea object.

```html
<SCRIPT>
myString="This is line one.\nThis is line two.\rThis is line three."
</SCRIPT>

<FORM NAME="form1">
  <INPUT TYPE="button" Value="Populate the textarea"
          onClick="document.form1.textarea1.value=myString">
</FORM>
TEXTAREA NAME="textarea1" ROWS=6 COLS=55/>
```

See also  Form, Password, String, Text

blur

Removes focus from the object.

*Method of*  Textarea

*Implemented in*  JavaScript 1.0

**Syntax**  blur()

**Parameters**  None

**Examples**  The following example removes focus from the text area element `userText`:

```javascript
userText.blur()
```

This example assumes that the text area is defined as

```html
<TEXTAREA NAME="userText">
Initial text for the text area.
</TEXTAREA>
```

See also  Textarea.focus, Textarea.select
defaultValue

A string indicating the default value of a Textarea object.

Property of Textarea

Implemented in JavaScript 1.0

Security JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description The initial value of defaultValue reflects the value specified between the TEXTAREA start and end tags. Setting defaultValue programmatically overrides the initial setting.

You can set the defaultValue property at any time. The display of the related object does not update when you set the defaultValue property, only when you set the value property.

Examples The following function evaluates the defaultValue property of objects on the surfCity form and displays the values in the msgWindow window:

```javascript
function defaultGetter() {
    msgWindow=window.open('"
    msgWindow.document.write("hidden.defaultValue is " +
        document.surfCity.hiddenObj.defaultValue + "<BR>"
    msgWindow.document.write("password.defaultValue is " +
        document.surfCity.passwordObj.defaultValue + "<BR>"
    msgWindow.document.write("text.defaultValue is " +
        document.surfCity.textObj.defaultValue + "<BR>"
    msgWindow.document.write("textarea.defaultValue is " +
        document.surfCity.textareaObj.defaultValue + "<BR>"
    msgWindow.document.close()
}

See also Textarea.value
Textarea.focus

---

**focus**

Navigates to the textarea field and gives it focus.

*Method of* Textarea

*Implemented in* JavaScript 1.0

**Syntax**

```javascript
focus()
```

**Parameters**

None

**Description**

Use the `focus` method to navigate to the textarea field and give it focus. You can then either programmatically enter a value in the field or let the user enter a value. If you use this method without the `select` method, the cursor is positioned at the beginning of the field.

**See also**

Textarea.blur, Textarea.select

**Examples**

See example for `Textarea.select`.

---

**form**

An object reference specifying the form containing this object.

*Property of* Textarea

*Read-only*

*Implemented in* JavaScript 1.0

**Description**

Each form element has a `form` property that is a reference to the element’s parent form. This property is especially useful in event handlers, where you might need to refer to another element on the current form.

**Examples**

**Example 1.** The following example shows a form with several elements. When the user clicks `button2`, the function `showElements` displays an alert dialog box containing the names of each element on the form `myForm`.

```javascript
function showElements(theForm) {
    str = "Form Elements of form " + theForm.name + ": 
    for (i = 0; i < theForm.length; i++)
        str += theForm.elements[i].name + "\n"
    alert(str)
}
```
Example 2. The following example uses an object reference, rather than the this keyword, to refer to a form. The code returns a reference to myForm, which is a form containing myTextareaObject.

document.myForm.myTextareaObject.form

See also Form

**handleEvent**

Invokes the handler for the specified event.

*Method of* Textarea  
*Implemented in* JavaScript 1.2

**Syntax**  
handleEvent(event)

**Parameters**  
- **event** The name of an event for which the object has an event handler.

**Description**  
For information on handling events, see the *Client-Side JavaScript Guide*. 
name

A string specifying the name of this object.

Property of Textarea

Implemented in JavaScript 1.0

Security JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

Description The name property initially reflects the value of the NAME attribute. Changing the name property overrides this setting. The name property is not displayed on-screen; it is used to refer to the objects programmatically.

If multiple objects on the same form have the same NAME attribute, an array of the given name is created automatically. Each element in the array represents an individual Form object. Elements are indexed in source order starting at 0.

For example, if two Text elements and a Textarea element on the same form have their NAME attribute set to "myField", an array with the elements myField[0], myField[1], and myField[2] is created. You need to be aware of this situation in your code and know whether myField refers to a single element or to an array of elements.

Examples In the following example, the valueGetter function uses a for loop to iterate over the array of elements on the valueTest form. The msgWindow window displays the names of all the elements on the form:

```javascript
function valueGetter() {
    var msgWindow=window.open(
    for (var i = 0; i < newWindow.document.valueTest.elements.length; i++) {
        msgWindow.document.write(newWindow.document.valueTest.elements[i].name + "<BR>"
    }
}
```
select

Selects the input area of the object.

Method of Textarea

Implemented in JavaScript 1.0

Syntax select()

Parameters None

Description Use the `select` method to highlight the input area of a textarea field. You can use the `select` method with the `focus` method to highlight the field and position the cursor for a user response. This makes it easy for the user to replace all the text in the field.

Examples The following example uses an `onClick` event handler to move the focus to a textarea field and select that field for changing:

```html
<FORM NAME="myForm">
  <B>Last name: </B><INPUT TYPE="text" NAME="lastName" SIZE=20 VALUE="Pigman">
  <BR><B>First name: </B><INPUT TYPE="text" NAME="firstName" SIZE=20 VALUE="Victoria">
  <BR><B>Description:</B>
  <BR><TEXTAREA NAME="desc" ROWS=3 COLS=40>An avid scuba diver.</TEXTAREA>
  <BR>
  <INPUT TYPE="button" VALUE="Change description"
    onClick="this.form.desc.select();this.form.desc.focus();">
</FORM>
```

See also Textarea.blur, Textarea.focus

type

For all Textarea objects, the value of the `type` property is "textarea". This property specifies the form element's type.

Property of Textarea

Read-only

Implemented in JavaScript 1.1
Examples

The following example writes the value of the `type` property for every element on a form.

```javascript
for (var i = 0; i < document.form1.elements.length; i++) {
    document.writeln("<br>type is " + document.form1.elements[i].type)
}
```

---

**value**

A string that initially reflects the `VALUE` attribute.

*Property of* Textarea

*Implemented in* JavaScript 1.0

**Security**

**JavaScript 1.1.** This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide.*

**Description**

This string is displayed in the textarea field. The value of this property changes when a user or a program modifies the field.

You can set the `value` property at any time. The display of the Textarea object updates immediately when you set the `value` property.

**Examples**

The following function evaluates the `value` property of a group of buttons and displays it in the `msgWindow` window:

```javascript
function valueGetter() {
    var msgWindow=window.open(""
    msgWindow.document.write("submitButton.value is " +
        document.valueTest.submitButton.value + "<br>")
    msgWindow.document.write("resetButton.value is " +
        document.valueTest.resetButton.value + "<br>")
    msgWindow.document.write("blurb.value is " +
        document.valueTest.blurb.value + "<br>")
    msgWindow.document.close()
}
```

This example displays the following:

submitButton.value is Query Submit
resetButton.value is Reset
blurb.value is Tropical waters contain all sorts of cool fish, such as the harlequin ghost pipefish, dragonet, and cuttlefish. A cuttlefish looks much like a football wearing a tutu and a mop.
The previous example assumes the buttons have been defined as follows:

```html
<INPUT TYPE="submit" NAME="submitButton">
<INPUT TYPE="reset" NAME="resetButton">
<TEXTAREA NAME="blurb" rows=3 cols=60>
Tropical waters contain all sorts of cool fish, such as the harlequin ghost pipefish, dragonet, and cuttlefish. A cuttlefish looks much like a football wearing a tutu and a mop.
</TEXTAREA>
```

**See also**  
Textarea.defaultValue
window

Represents a browser window or frame. This is the top-level object for each document, Location, and History object group.

Client-side object.

Implemented in JavaScript 1.0

- JavaScript 1.1: added closed, history, and opener properties; added blur, focus, and scroll methods; added onBlur, onError, and onFocus event handlers
- JavaScript 1.2: added crypto, innerHeight, innerWidth, locationbar, menubar, offscreenBuffering, outerHeight, outerWidth, pageXOffset, pageYOffset, personalbar, screenX, screenY, scrollbars, statusbar, and toolbar properties; added atob, back, btoa, captureEvents, clearInterval, crypto.random, crypto.signText, disableExternalCapture, enableExternalCapture, find, forward, handleEvent, home, moveBy, moveTo, releaseEvents, resizeBy, resizeTo, routeEvent, scrollBy, scrollTo, setHotKeys, setInterval, setResizable, setZOptions, and stop methods; deprecated scroll method

Created by The JavaScript runtime engine creates a window object for each BODY or FRAMESET tag. It also creates a window object to represent each frame defined in a FRAME tag. In addition, you can create other windows by calling the window.open method. For details on defining a window, see open.

Event handlers

- onBlur
- onDragDrop
- onError
- onFocus
- onLoad
- onMove
- onResize
- onUnload

In JavaScript 1.1, on some platforms, placing an onBlur or onFocus event handler in a FRAMESET tag has no effect.
**Description**

The `window` object is the top-level object in the JavaScript client hierarchy. A `window` object can represent either a top-level window or a frame inside a frameset. As a matter of convenience, you can think about a `Frame` object as a `window` object that isn't a top-level window. However, there is not really a separate `Frame` class; these objects really are `window` objects, with a very few minor differences:

- For a top-level window, the `parent` and `top` properties are references to the window itself. For a frame, the `top` refers to the topmost browser window, and `parent` refers to the parent window of the current window.

- For a top-level window, setting the `defaultStatus` or `status` property sets the text appearing in the browser status line. For a frame, setting these properties only sets the status line text when the cursor is over the frame.

- The `close` method is not useful for windows that are frames.

- To create an `onBlur` or `onFocus` event handler for a frame, you must set the `onblur` or `onfocus` property and specify it in all lowercase (you cannot specify it in HTML).

- If a `FRAME` tag contains `SRC` and `NAME` attributes, you can refer to that frame from a sibling frame by using `parent.frameName` or `parent.frames[index]`. For example, if the fourth frame in a set has `NAME="homeFrame"`, sibling frames can refer to that frame using `parent.homeFrame` or `parent.frames[3].`

For all windows, the `self` and `window` properties of a `window` object are synonyms for the current window, and you can optionally use them to refer to the current window. For example, you can close the current window by calling the `close` method of either `window` or `self`. You can use these properties to make your code more readable or to disambiguate the property reference `self.status` from a form called `status`. See the properties and methods listed below for more examples.

Because the existence of the current window is assumed, you do not have to refer to the name of the window when you call its methods and assign its properties. For example, `status="Jump to a new location"` is a valid property assignment, and `close()` is a valid method call.
However, when you open or close a window within an event handler, you must specify `window.open()` or `window.close()` instead of simply using `open()` or `close()`. Due to the scoping of static objects in JavaScript, a call to `close()` without specifying an object name is equivalent to `document.close()`.

For the same reason, when you refer to the `location` object within an event handler, you must specify `window.location` instead of simply using `location`. A call to `location` without specifying an object name is equivalent to `document.location`, which is a synonym for `document.URL`.

You can refer to a window's Frame objects in your code by using the `frames` array. In a window with a FRAMESET tag, the `frames` array contains an entry for each frame.

A window lacks event handlers until HTML that contains a BODY or FRAMESET tag is loaded into it.

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<tr>
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## Method Summary

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<td>setResizable</td>
<td>Specifies whether a user is permitted to resize a window.</td>
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<tr>
<td>setTimeout</td>
<td>Evaluates an expression or calls a function once after a specified number of milliseconds has elapsed.</td>
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<tr>
<td>setZOptions</td>
<td>Specifies the z-order stacking behavior of a window.</td>
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<tr>
<td>stop</td>
<td>Stops the current download.</td>
</tr>
</tbody>
</table>
In addition, this object inherits the `watch` and `unwatch` methods from `Object`.

**Examples**  
**Example 1. Windows opening other windows.** In the following example, the document in the top window opens a second window, `window2`, and defines push buttons that open a message window, write to the message window, close the message window, and close `window2`. The `onLoad` and `onUnload` event handlers of the document loaded into `window2` display alerts when the window opens and closes.

`win1.html`, which defines the frames for the first window, contains the following code:

```html
<HTML>
<HEAD>
<TITLE>window object example: Window 1</TITLE>
</HEAD>
<BODY BGCOLOR="antiquewhite">
<SCRIPT>
window2=open("win2.html","secondWindow",
"scrollbars=yes,width=250, height=400")
document.writeln("<B>The first window has no name: "+window.name + "</B>")
document.writeln("<BR><B>The second window is named: "+window2.name + "</B>")
</SCRIPT>
<FORM NAME="form1">
<P><INPUT TYPE="button" VALUE="Open a message window"
onClick = "window3=window.open('','messageWindow',
'scrollbars=yes,width=175, height=300')">
<P><INPUT TYPE="button" VALUE="Write to the message window"
onClick="window3.document.writeln('Hey there');
window3.document.close()">
<P><INPUT TYPE="button" VALUE="Close the message window"
onClick="window3.close()">
<P><INPUT TYPE="button" VALUE="Close window2"
onClick="window2.close()">
</FORM>
</BODY>
</HTML>
```
window

win2.html, which defines the content for window2, contains the following code:

```html
<HTML>
<HEAD>
<TITLE>window object example: Window 2</TITLE>
</HEAD>
<BODY BGCOLOR="oldlace"
    onLoad="alert('Message from ' + window.name + ': Hello, World.')"
    onUnload="alert('Message from ' + window.name + ': I'm closing')">
     <B>Some numbers</B>
     <UL><LI>one
     <LI>two
     <LI>three
     <LI>four</UL>
</BODY>
</HTML>
```

Example 2. Creating frames. The following example creates two windows, each with four frames. In the first window, the first frame contains push buttons that change the background colors of the frames in both windows.

framset1.html, which defines the frames for the first window, contains the following code:

```html
<HTML>
<HEAD>
<TITLE>Frames and Framesets: Window 1</TITLE>
</HEAD>
<FRAMESET ROWS="50%,50%" COLS="40%,60%"
        onLoad="alert('Hello, World.')">
        <FRAME SRC=framcon1.html NAME="frame1"
        <FRAME SRC=framcon2.html NAME="frame2"
        <FRAME SRC=framcon2.html NAME="frame3"
        <FRAME SRC=framcon2.html NAME="frame4"
    </FRAMESET>
</HTML>
```
framset2.html, which defines the frames for the second window, contains the following code:

```html
<HTML>
<HEAD>
<TITLE>Frames and Framesets: Window 2</TITLE>
</HEAD>
<FRAMESET ROWS="50%,50%" COLS="40%,60%">
<FRAME SRC=framcon2.html NAME="frame1">
<FRAME SRC=framcon2.html NAME="frame2">
<FRAME SRC=framcon2.html NAME="frame3">
<FRAME SRC=framcon2.html NAME="frame4">
</FRAMESET>
</HTML>
```

framcon1.html, which defines the content for the first frame in the first window, contains the following code:

```html
<HTML>
<BODY>
<A NAME="frame1"><H1>Frame1</H1></A>
<P><A HREF="framcon3.htm" target=frame2>Click here</A>
to load a different file into frame 2.
<SCRIPT>
window2=open("framset2.htm","secondFrameset")
</SCRIPT>
<FORM>
<P><INPUT TYPE="button" VALUE="Change frame2 to teal"
onClick="parent.frame2.document.bgColor='teal'">
<P><INPUT TYPE="button" VALUE="Change frame3 to slateblue"
onClick="parent.frames[2].document.bgColor='slateblue'">
<P><INPUT TYPE="button" VALUE="Change frame4 to darkturquoise"
onClick="top.frames[3].document.bgColor='darkturquoise'">
<P><INPUT TYPE="button" VALUE="window2.frame2 to violet"
onClick="window2.frame2.document.bgColor='violet'">
<P><INPUT TYPE="button" VALUE="window2.frame3 to fuchsia"
onClick="window2.frames[2].document.bgColor='fuchsia'">
<P><INPUT TYPE="button" VALUE="window2.frame4 to deeppink"
onClick="window2.frames[3].document.bgColor='deeppink'">
</FORM>
</BODY>
</HTML>
```
framcon2.html, which defines the content for the remaining frames, contains the following code:

```html
<HTML>
<BODY>
<P>This is a frame.
</BODY>
</HTML>
```

framcon3.html, which is referenced in a Link object in framcon1.html, contains the following code:

```html
<HTML>
<BODY>
<P>This is a frame. What do you think?
</BODY>
</HTML>
```

See also document, Frame

#### alert

Displays an Alert dialog box with a message and an OK button.

**Method of** window

**Implemented in** JavaScript 1.0

**Syntax** alert(message)

**Parameters**

- **message** A string.

**Description** An alert dialog box looks as follows:

![JavaScript Alert](image)

Use the alert method to display a message that does not require a user decision. The message argument specifies a message that the dialog box contains.
You cannot specify a title for an alert dialog box, but you can use the `open` method to create your own alert dialog box. See `open`.

**Examples**

In the following example, the `testValue` function checks the name entered by a user in the `Text` object of a form to make sure that it is no more than eight characters in length. This example uses the `alert` method to prompt the user to enter a valid value.

```javascript
function testValue(textElement) {
    if (textElement.length > 8) {
        alert("Please enter a name that is 8 characters or less")
    }
}
```

You can call the `testValue` function in the `onBlur` event handler of a form's `Text` object, as shown in the following example:

```
Name: <INPUT TYPE="text" NAME="userName"
    onBlur="testValue(userName.value)"
>
```

**See also**  `window.confirm`, `window.prompt`

---

**atob**

Decodes a string of data which has been encoded using base-64 encoding.

**Syntax**

```javascript
atob(encodedData)
```

**Parameters**

- `encodedData`  A string of data which has been created using base-64 encoding.

**Description**

This method decodes a string of data which has been encoded using base-64 encoding. For example, the `window.btoa` method takes a binary string as a parameter and returns a base-64 encoded string.

You can use the `window.btoa` method to encode and transmit data which may otherwise cause communication problems, then transmit it and use the `window.atob` method to decode the data again. For example, you can encode, transmit, and decode characters such as ASCII values 0 through 31.
Examples  The following example encodes and decodes the string “Hello, world”.

```javascript
// encode a string
encodedData = btoa("Hello, world");

// decode the string
decodedData = atob(encodedData);
```

See also  window.btoa

back

Undoes the last history step in any frame within the top-level window; equivalent to the user pressing the browser’s Back button.

Method of  window

Implemented in  JavaScript 1.2

Syntax  back()

Parameters  None

Description  Calling the `back` method is equivalent to the user pressing the browser’s Back button. That is, `back` undoes the last step anywhere within the top-level window, whether it occurred in the same frame or in another frame in the tree of frames loaded from the top-level window. In contrast, the `history` object’s `back` method backs up the current window or frame history one step.

For example, consider the following scenario. While in Frame A, you click the Forward button to change Frame A’s content. You then move to Frame B and click the Forward button to change Frame B’s content. If you move back to Frame A and call `FrameA.back()`, the content of Frame B changes (clicking the Back button behaves the same).

If you want to navigate Frame A separately, use `FrameA.history.back()`.

Examples  The following custom buttons perform the same operation as the browser’s Back button:

```html
<P><INPUT TYPE="button" VALUE="< Go Back" onClick="history.back()">
<P><INPUT TYPE="button" VALUE="> Go Back" onClick="myWindow.back()">
```

See also  window.forward, History.back
**blur**

Removes focus from the specified object.

*Method of* window

*Implemented in* JavaScript 1.0

**Syntax**

```javascript
blur()
```

**Parameters**

None

**Description**

Use the `blur` method to remove focus from a specific window or frame. Removing focus from a window sends the window to the background in most windowing systems.

*See also* `window.focus`

---

**btoa**

Creates a base-64 encoded ASCII string from a string of binary data.

*Method of* window

*Implemented in* JavaScript 1.2

**Syntax**

```javascript
btoa(stringToEncode)
```

**Parameters**

- `stringToEncode` An arbitrary binary string to be encoded.

**Description**

This method takes a binary ASCII string as a parameter and returns another ASCII string which has been encoded using base-64 encoding.

You can use this method to encode data which may otherwise cause communication problems, transmit it, then use the `window.atob` method to decode the data again. For example, you can encode characters such as ASCII values 0 through 31.

*Examples* See `window.atob`.

*See also* `window.atob`
**captureEvents**

Sets the window to capture all events of the specified type.

*Method of* window

*Implemented in* JavaScript 1.2

**Syntax**
captureEvents(eventType1 [ | eventTypeN...])

**Parameters**
- eventType1...
- eventTypeN

The type of event to be captured. The available event types are discussed in Chapter 3, “Event Handlers.”

**Security**

When a window with frames wants to capture events in pages loaded from different locations (servers), you need to use `captureEvents` in a signed script and precede it with `enableExternalCapture`. You must have the UniversalBrowserWrite privilege. For more information and an example, see `enableExternalCapture`. For information on security, see the *Client-Side JavaScript Guide*.

**See also**
captureEvents works in tandem with `releaseEvents`, `routeEvent`, and `handleEvent`. For more information, see the *Client-Side JavaScript Guide*.

**clearInterval**

Cancels a timeout that was set with the `setInterval` method.

*Method of* window

*Implemented in* JavaScript 1.2

**Syntax**
clearInterval(intervalID)

**Parameters**
- intervalID

Timeout setting that was returned by a previous call to the `setInterval` method.

**Description**
See `setInterval`.

**Examples**
See `setInterval`.

**See also**
`window.setInterval`
**clearTimeout**

Cancels a timeout that was set with the `setTimeout` method.

*Method of*  
window

*Implemented in*  
JavaScript 1.0

**Syntax**

```javascript
clearTimeout(timeoutID)
```

**Parameters**

- `timeoutID` 
  A timeout setting that was returned by a previous call to the `setTimeout` method.

**Description**

See `setTimeout`.

**Examples**

See `setTimeout`.

**See also**

`window.clearInterval`, `window.setTimeout`

---

**close**

Closes the specified window.

*Method of*  
window

*Implemented in*  
JavaScript 1.0: closes any window

JavaScript 1.1: closes only windows opened by JavaScript

JavaScript 1.2: must use signed scripts to unconditionally close a window

**Syntax**

```javascript
close()
```

**Parameters**

None

**Security**

To unconditionally close a window, you need the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**Description**

The `close` method closes the specified window. If you call `close` without specifying a `windowReference`, JavaScript closes the current window.

The `close` method closes only windows opened by JavaScript using the `open` method. If you attempt to close any other window, a confirm is generated, which lets the user choose whether the window closes. This is a security concern.
feature to prevent “mail bombs” containing self.close(). However, if the window has only one document (the current one) in its session history, the close is allowed without any confirm. This is a special case for one-off windows that need to open other windows and then dispose of themselves.

In event handlers, you must specify window.close() instead of simply using close(). Due to the scoping of static objects in JavaScript, a call to close() without specifying an object name is equivalent to document.close().

**Examples**

**Example 1.** Any of the following examples closes the current window:

```javascript
window.close()
self.close()
close()
```

**Example 2: Close the main browser window.** The following code closes the main browser window.

```javascript
top.opener.close()
```

**Example 3.** The following example closes the `messageWin` window:

```javascript
messageWin.close()
```

This example assumes that the window was opened in a manner similar to the following:

```javascript
messageWin=window.open(""")
```

**See also** window.closed, window.open

---

**closed**

Specifies whether a window is closed.

**Property of** window

**Read-only**

**Implemented in** JavaScript 1.1

**Description** The closed property is a boolean value that specifies whether a window has been closed. When a window closes, the window object that represents it continues to exist, and its closed property is set to true.

Use closed to determine whether a window that you opened, and to which you still hold a reference (from the return value of window.open), is still open. Once a window is closed, you should not attempt to manipulate it.
Examples

Example 1. The following code opens a window, `win1`, then later checks to see if that window has been closed. A function is called depending on whether `win1` is closed.

```javascript
win1 = window.open('opener1.html', 'window1', 'width=300,height=300')
...
if (win1.closed)
    function1()
else
    function2()
```

Example 2. The following code determines if the current window's opener window is still closed, and calls the appropriate function.

```javascript
if (window.opener.closed)
    function1()
else
    function2()
```

See also `window.close`, `window.open`

---

### confirm

Displays a Confirm dialog box with the specified message and OK and Cancel buttons.

**Method of** `window`

**Implemented in** JavaScript 1.0

**Syntax**

```javascript
confirm(message)
```

**Parameters**

- `message` A string.

**Description**

A confirm dialog box looks as follows:
Use the confirm method to ask the user to make a decision that requires either an OK or a Cancel. The message argument specifies a message that prompts the user for the decision. The confirm method returns true if the user chooses OK and false if the user chooses Cancel.

You cannot specify a title for a confirm dialog box, but you can use the open method to create your own confirm dialog. See open.

**Examples**

This example uses the confirm method in the confirmCleanUp function to confirm that the user of an application really wants to quit. If the user chooses OK, the custom cleanUp function closes the application.

```javascript
function confirmCleanUp() {
    if (confirm("Are you sure you want to quit this application?")) {
        cleanUp()
    }
}
```

You can call the confirmCleanUp function in the onClick event handler of a form's push button, as shown in the following example:

```html
<INPUT TYPE="button" VALUE="Quit" onClick="confirmCleanUp()"/>
```

**See also** window.alert, window.prompt

---

**crypto**

An object which allows access Navigator's encryption features.

*Property of* window

*Read-only*

*Implemented in* JavaScript 1.2

**Description**

The crypto object is only available as a property of window; it provides access to methods which support Navigator's encryption features.

**See also** window.crypto.random, window.crypto.signText
window.crypto.random

---

**crypto.random**

Returns a pseudo-random string whose length is the specified number of bytes.

*Method of* window

*Static*

*Implemented in* JavaScript 1.2

**Syntax**

```javascript
crypto.random(numberOfBytes)
```

**Parameters**

- `numberOfBytes` The number of bytes of pseudo-random data the method will return.

**Description**

This method generates a random string of data whose length is specified by the `numberOfBytes` parameter.

**Examples**

The following function returns a string whose length is 16 bytes.

```javascript
function getRandom() {
  return crypto.random(16)
}
```

**See also** Math.random

---

**crypto.signText**

Returns a string of encoded data which represents a signed object.

*Method of* window

*Static*

*Implemented in* JavaScript 1.2

**Syntax**

```javascript
crypto.signText(text, selectionStyle [, authority1 [, ... authorityN]])
```

---

---
Parameters

text A string evaluating to the text you want a user to sign.

selectionStyle A string evaluating to either of the following:

- ask specifies that a dialog box will present a user with a list of possible certificates.
- auto specifies that Navigator automatically selects a certificate from authority1 through authorityN.

authority1...authorityN Optional strings evaluating to Certificate Authorities accepted by the server using the signed text.

Description

The `signText` method asks a user to validate a `text` string by attaching a digital signature to it. If the `selectionStyle` parameter is set to `ask`, `signText` displays a dialog box, and a user must interactively select a certificate to validate the text. If `selectionStyle` is set to `auto`, Navigator attempts to automatically select a certificate.

Use the `signText` method to submit an encoded signature to a server; the server decodes the signature and verifies it. If `signText` fails, it returns one of the following error codes:

- `error:noMatchingCert` specifies that the user’s certificate does not match one of the certificates required by `authority1` through `authorityN`.

- `error:userCancel` specifies that the user cancelled the signature dialog box without submitting a certificate.

- `error:internalError` specifies that an internal error occurred.

**defaultStatus**

The default message displayed in the status bar at the bottom of the window.

*Property of* window

*Implemented in* JavaScript 1.0

**Security**

*JavaScript 1.1.* This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide.*
**Description**
The `defaultStatus` message appears when nothing else is in the status bar. Do not confuse the `defaultStatus` property with the `status` property. The `status` property reflects a priority or transient message in the status bar, such as the message that appears when a `mouseOver` event occurs over an anchor.

You can set the `defaultStatus` property at any time. You must return true if you want to set the `defaultStatus` property in the `onMouseOut` or `onMouseOver` event handlers.

**Examples**
In the following example, the `statusSetter` function sets both the `status` and `defaultStatus` properties in an `onMouseOver` event handler:

```javascript
function statusSetter() {
    window.defaultStatus = "Click the link for the Netscape home page"
    window.status = "Netscape home page"
}

<A HREF="http://home.netscape.com"
onMouseOver = "statusSetter(); return true">Netscape</A>
```

In the previous example, notice that the `onMouseOver` event handler returns a value of true. You must return true to set `status` or `defaultStatus` in an event handler.

**See also**
`window.status`
**document**

Contains information on the current document, and provides methods for displaying HTML output to the user.

*Property of* window  
*Implemented in* JavaScript 1.0

**Description**  
The value of this property is the window’s associated document object.

**enableExternalCapture**

Allows a window with frames to capture events in pages loaded from different locations (servers).

*Method of* window  
*Implemented in* JavaScript 1.2

**Syntax**  
enableExternalCapture()

**Parameters**  
None

**Description**  
Use this method in a signed script requesting UniversalBrowserWrite privileges, and use it before calling the captureEvents method.

If Communicator sees additional scripts that cause the set of principals in effect for the container to be downgraded, it disables external capture of events. Additional calls to enableExternalCapture (after acquiring the UniversalBrowserWrite privilege under the reduced set of principals) can be made to enable external capture again.

**Examples**  
In the following example, the window is able to capture all Click events that occur across its frames.

```html
<SCRIPT ARCHIVE="myArchive.jar" ID="2">
function captureClicks() {
    netscape.security.PrivilegeManager.enablePrivilege("UniversalBrowserWrite");
    enableExternalCapture();
    captureEvents(Event.CLICK);
    ...
}
</SCRIPT>
```

**See also** window.disableExternalCapture, window.captureEvents
find

Finds the specified text string in the contents of the specified window.
Method of window
Implemented in JavaScript 1.2

Syntax  find([string[, caseSensitive, backward]])

Parameters
  string  The text string for which to search.
  caseSensitive  Boolean value. If true, specifies a case-sensitive search. If you
                 supply this parameter, you must also supply backward.
  backward  Boolean. If true, specifies a backward search. If you supply this
            parameter, you must also supply caseSensitive.

Returns  true if the string is found; otherwise, false.

Description  When a string is specified, the browser performs a case-insensitive, forward
             search. If a string is not specified, the method displays the Find dialog box,
             allowing the user to enter a search string.

focus

Gives focus to the specified object.
Method of window
Implemented in JavaScript 1.1

Syntax  focus()

Parameters  None

Description  Use the focus method to navigate to a specific window or frame, and give it
             focus. Giving focus to a window brings the window forward in most
             windowing systems.

In JavaScript 1.1, on some platforms, the focus method gives focus to a frame
but the focus is not visually apparent (for example, the frame’s border is not
darkened).
Examples  In the following example, the checkPassword function confirms that a user has entered a valid password. If the password is not valid, the focus method returns focus to the Password object and the select method highlights it so the user can reenter the password.

```javascript
function checkPassword(userPass) {
    if (badPassword) {
        alert("Please enter your password again.")
        userPass.focus()
        userPass.select()
    }
}
```

This example assumes that the Password object is defined as

```html
<INPUT TYPE="password" NAME="userPass">
```

See also  window.blur

---

forward

Points the browser to the next URL in the current history list; equivalent to the user pressing the browser’s Forward button

*Method of*  window

*Implemented in*  JavaScript 1.2

**Syntax**  

```javascript
history.forward()
```

```javascript
forward()
```

**Parameters**  None

**Description**  This method performs the same action as a user choosing the Forward button in the browser. The forward method is the same as history.go(1).

When used with the Frame object, forward behaves as follows: While in Frame A, you click the Back button to change Frame A’s content. You then move to Frame B and click the Back button to change Frame B’s content. If you move back to Frame A and call FrameA.forward(), the content of Frame B changes (clicking the Forward button behaves the same). If you want to navigate Frame A separately, use FrameA.history.forward().
Examples  The following custom buttons perform the same operation as the browser's Forward button:

```html
<P><INPUT TYPE="button" VALUE="&lt; Go Forth"
onClick="history.forward()">
<P><INPUT TYPE="button" VALUE="&gt; Go Forth"
onClick="myWindow.forward()">
```

See also  window.back

frames

An array of objects corresponding to child frames (created with the FRAME tag) in source order.

Property of  window

Read-only

Implemented in  JavaScript 1.0

You can refer to the child frames of a window by using the frames array. This array contains an entry for each child frame (created with the FRAME tag) in a window containing a FRAMESET tag; the entries are in source order. For example, if a window contains three child frames whose NAME attributes are fr1, fr2, and fr3, you can refer to the objects in the images array either as:

```javascript
parent.frames["fr1"]
parent.frames["fr2"]
parent.frames["fr3"]
```

or as:

```javascript
parent.frames[0]
parent.frames[1]
parent.frames[2]
```

You can find out how many child frames the window has by using the length property of the window itself or of the frames array.

The value of each element in the frames array is `<object nameAttribute>`, where nameAttribute is the NAME attribute of the frame.
handleEvent

Invokes the handler for the specified event.

**Method of** window  
**Implemented in** JavaScript 1.2

**Syntax** 
`handleEvent(event)`

**Parameters**
- `event` - The name of an event for which the specified object has an event handler.

**Description**  
`handleEvent` works in tandem with `captureEvents`, `releaseEvents`, and `routeEvent`. For more information, see the *Client-Side JavaScript Guide*.

history

Contains information on the URLs that the client has visited within a window.

**Property of** window  
**Implemented in** JavaScript 1.1

**Description**  
The value of this property is the window’s associated `History` object.

home

Points the browser to the URL specified in preferences as the user’s home page; equivalent to the user pressing the browser’s Home button.

**Method of** window  
**Implemented in** JavaScript 1.2

**Syntax** 
`home()`

**Parameters**  
None

**Description**  
This method performs the same action as a user choosing the Home button in the browser.
innerHeight

Specifies the vertical dimension, in pixels, of the window's content area.

**Property of**  
window

**Implemented in**  
JavaScript 1.2

**Description**  
To create a window smaller than 100 x 100 pixels, set this property in a signed script.

**Security**  
To set the inner height of a window to a size smaller than 100 x 100 or larger than the screen can accommodate, you need the UniversalBrowserWrite privilege. For information on security, see the *Client-Side JavaScript Guide*.

**See also**  
window.innerWidth, window.outerHeight, window.outerWidth

innerWidth

Specifies the horizontal dimension, in pixels, of the window's content area.

**Property of**  
window

**Implemented in**  
JavaScript 1.2

**Description**  
To create a window smaller than 100 x 100 pixels, set this property in a signed script.

**Security**  
To set the inner width of a window to a size smaller than 100 x 100 or larger than the screen can accommodate, you need the UniversalBrowserWrite privilege. For information on security, see the *Client-Side JavaScript Guide*.

**See also**  
window.innerHeight, window.outerHeight, window.outerWidth

length

The number of child frames in the window.

**Property of**  
window

**Read-only**

**Implemented in**  
JavaScript 1.0

**Description**  
This property gives you the same result as using the `length` property of the `frames` array.
window.location

location

Contains information on the current URL.

Property of window

Implemented in JavaScript 1.0

Description The value of this property is the window’s associated Location object.

locationbar

Represents the browser window’s location bar (the region containing the bookmark and URL areas).

Property of window

Implemented in JavaScript 1.2

Description The value of the locationbar property itself has one property, visible. If true, the location bar is visible; if false, it is hidden.

Security Setting the value of the location bar’s visible property requires the UniversalBrowserWrite privilege. For information on security, see the Client-Side JavaScript Guide.

Examples The following example would make the referenced window “chromeless” (chromeless windows lack toolbars, scrollbars, status areas, and so on, much like a dialog box) by hiding most of the user interface toolbars:

```javascript
self.menubar.visible=false;
self.toolbar.visible=false;
self.locationbar.visible=false;
self.personalbar.visible=false;
self.scrollbars.visible=false;
self.statusbar.visible=false;
```
**menubar**

Represents the browser window’s menu bar. This region contains the browser’s drop-down menus such as File, Edit, View, Go, Communicator, and so on.

*Property of* window  
*Implemented in* JavaScript 1.2

**Description**
The value of the `menubar` property itself has one property, `visible`. If true, the menu bar is visible; if false, it is hidden.

**Security**
Setting the value of the menu bar's `visible` property requires the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**Examples**
The following example would make the referenced window “chromeless” (chromeless windows lack toolbars, scrollbars, status areas, and so on, much like a dialog box) by hiding most of the user interface toolbars:

```javascript
self.menubar.visible=false;
self.toolbar.visible=false;
self.locationbar.visible=false;
self.personalbar.visible=false;
self.scrollbars.visible=false;
self.statusbar.visible=false;
```

---

**moveBy**

Moves the window relative to its current position, moving the specified number of pixels.

*Method of* window  
*Implemented in* JavaScript 1.2

**Syntax**
`moveBy(horizontal, vertical)`

**Parameters**
- `horizontal` The number of pixels by which to move the window horizontally.
- `vertical` The number of pixels by which to move the window vertically.

**Description**
This method moves the window by adding or subtracting the specified number of pixels to the current location.
Security
Exceeding any of the boundaries of the screen (to hide some or all of a window) requires signed JavaScript, so a window won’t move past the screen boundaries. You need the UniversalBrowserWrite privilege for this. For information on security, see the Client-Side JavaScript Guide.

Examples:
To move the current window 5 pixels up towards the top of the screen (x-axis), and 10 pixels towards the right (y-axis) of the current window position, use this statement:

```
self.moveBy(-5,10); // relative positioning
```

See also window.moveTo

moveTo

Moves the top-left corner of the window to the specified screen coordinates.

Method of window

Implemented in JavaScript 1.2

Syntax

```
moveTo(x-coordinate, y-coordinate)
```

Parameters

- **x-coordinate**: The left edge of the window in screen coordinates.
- **y-coordinate**: The top edge of the window in screen coordinates.

Description
This method moves the window to the absolute pixel location indicated by its parameters. The origin of the axes is at absolute position (0,0); this is the upper left-hand corner of the display.

Security
Exceeding any of the boundaries of the screen (to hide some or all of a window) requires signed JavaScript, so a window won’t move past the screen boundaries. You need the UniversalBrowserWrite privilege for this. For information on security, see the Client-Side JavaScript Guide.

Examples:
To move the current window to 25 pixels from the top boundary of the screen (x-axis), and 10 pixels from the left boundary of the screen (y-axis), use this statement:

```
self.moveTo(25,10); // absolute positioning
```

See also window.moveBy
window.name

---

**name**

A string specifying the window's name.

*Property of* window

*Read-only (2.0); Modifiable (later versions)*

*Implemented in* JavaScript 1.0

**Security**  
JavaScript 1.1. This property is tainted by default. For information on data tainting, see the *Client-Side JavaScript Guide*.

**Description**  
In JavaScript 1.0, NAME was a read-only property. In later versions, this property is modifiable by your code. This allows you to assign a name to a top-level window.

**Examples**  
In the following example, the first statement creates a window called netscapeWin. The second statement displays the value "netscapeHomePage" in the Alert dialog box, because "netscapeHomePage" is the value of the windowName argument of netscapeWin.

```javascript
netscapeWin = window.open("http://home.netscape.com","netscapeHomePage")
alert(netscapeWin.name)
```

---

**offscreenBuffering**

Specifies whether window updates are performed in an offscreen buffer.

*Property of* window

*Implemented in* JavaScript 1.2

**Description**  
By default, Navigator automatically determines whether updates to a window are performed in an offscreen buffer and then displayed in a window. You can either prevent buffering completely or require Navigator to buffer updates by setting `offscreenBuffering` to either `false` or `true`, respectively.

Buffering can reduce the flicker that occurs during window updates, but it requires additional system resources.
**open**

Opens a new web browser window.

*Method of* window

*Implemented in* JavaScript 1.0

JavaScript 1.2: added several new windowFeatures

**Syntax**

```javascript
open(URL, windowName[, windowFeatures])
```

**Parameters**

- **URL**
  A string specifying the URL to open in the new window. See the Location object for a description of the URL components.

- **windowName**
  A string specifying the window name to use in the TARGET attribute of a FORM or A tag. windowName can contain only alphanumeric or underscore (_) characters.

- **windowFeatures**
  A string containing a comma-separated list determining whether or not to create various standard window features. These options are described in the following section.

**Description**

In event handlers, you must specify `window.open()` instead of simply using `open()`. Due to the scoping of static objects in JavaScript, a call to `open()` without specifying an object name is equivalent to `document.open()`.

The `open` method opens a new Web browser window on the client, similar to choosing New, then Navigator Window from the Navigator File menu. The URL argument specifies the URL contained by the new window. If `URL` is an empty string, a new, empty window is created.

You can use `open` on an existing window, and if you pass the empty string for the URL, you will get a reference to the existing window, but not load anything into it. You can, for example, then look for properties in the window.

`windowFeatures` is an optional string containing a comma-separated list of options for the new window (do not include any spaces in this list). After a window is open, you cannot use JavaScript to change the `windowFeatures`. You can specify the following features:
#### Table 1.4Optional features to specify for a new window.

<table>
<thead>
<tr>
<th>windowFeatures</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>alwaysLowered</td>
<td>(JavaScript 1.2) If yes, creates a new window that floats below other windows, whether it is active or not. This is a secure feature and must be set in signed scripts.</td>
</tr>
<tr>
<td>alwaysRaised</td>
<td>(JavaScript 1.2) If yes, creates a new window that floats on top of other windows, whether it is active or not. This is a secure feature and must be set in signed scripts.</td>
</tr>
<tr>
<td>dependent</td>
<td>(JavaScript 1.2) If yes, creates a new window as a child of the current window. A dependent window closes when its parent window closes. On Windows platforms, a dependent window does not show on the task bar.</td>
</tr>
<tr>
<td>directories</td>
<td>If yes, creates the standard browser directory buttons, such as What's New and What's Cool.</td>
</tr>
<tr>
<td>height</td>
<td>(JavaScript 1.0 and 1.1) Specifies the height of the window in pixels.</td>
</tr>
<tr>
<td>hotkeys</td>
<td>(JavaScript 1.2) If no (or 0), disables most hotkeys in a new window that has no menu bar. The security and quit hotkeys remain enabled.</td>
</tr>
<tr>
<td>innerHeight</td>
<td>(JavaScript 1.2) Specifies the height, in pixels, of the window's content area. To create a window smaller than 100 x 100 pixels, set this feature in a signed script. This feature replaces height, which remains for backwards compatibility.</td>
</tr>
<tr>
<td>innerWidth</td>
<td>(JavaScript 1.2) Specifies the width, in pixels, of the window's content area. To create a window smaller than 100 x 100 pixels, set this feature in a signed script. This feature replaces width, which remains for backwards compatibility.</td>
</tr>
<tr>
<td>location</td>
<td>If yes, creates a Location entry field.</td>
</tr>
<tr>
<td>menubar</td>
<td>If yes, creates the menu at the top of the window.</td>
</tr>
<tr>
<td>outerHeight</td>
<td>(JavaScript 1.2) Specifies the vertical dimension, in pixels, of the outside boundary of the window. To create a window smaller than 100 x 100 pixels, set this feature in a signed script.</td>
</tr>
<tr>
<td>personalbar</td>
<td>(JavaScript 1.2) If yes, creates the Personal Toolbar, which displays buttons from the user's Personal Toolbar bookmark folder.</td>
</tr>
<tr>
<td>resizable</td>
<td>If yes, allows a user to resize the window.</td>
</tr>
</tbody>
</table>
Many of these features (as noted above) can either be yes or no. For these features, you can use 1 instead of yes and 0 instead of no. If you want to turn a feature on, you can also simply list the feature name in the `windowFeatures` string.

If `windowName` does not specify an existing window and you do not supply the `windowFeatures` parameter, all of the features which have a yes/no choice are yes by default. However, if you do supply the `windowFeatures` parameter, then the `titlebar` and `hotkeys` are still yes by default, but the other features which have a yes/no choice are no by default.

For example, all of the following statements turn on the toolbar option and turn off all other Boolean options:

```javascript
open("", "messageWindow", "toolbar")
open("", "messageWindow", "toolbar=yes")
open("", "messageWindow", "toolbar=1")
```

### Table 1.4 Optional features to specify for a new window.

<table>
<thead>
<tr>
<th>windowFeatures</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>screenX</code></td>
<td>(JavaScript 1.2) Specifies the distance the new window is placed from the left side of the screen. To place a window offscreen, set this feature in a signed script.</td>
</tr>
<tr>
<td><code>screenY</code></td>
<td>(JavaScript 1.2) Specifies the distance the new window is placed from the top of the screen. To place a window offscreen, set this feature in a signed script.</td>
</tr>
<tr>
<td><code>scrollbars</code></td>
<td>If yes, creates horizontal and vertical scrollbars when the Document grows larger than the window dimensions.</td>
</tr>
<tr>
<td><code>status</code></td>
<td>If yes, creates the status bar at the bottom of the window.</td>
</tr>
<tr>
<td><code>titlebar</code></td>
<td>(JavaScript 1.2) If yes, creates a window with a title bar. To set the titlebar to no, set this feature in a signed script.</td>
</tr>
<tr>
<td><code>toolbar</code></td>
<td>If yes, creates the standard browser toolbar, with buttons such as Back and Forward.</td>
</tr>
<tr>
<td><code>width</code></td>
<td>(JavaScript 1.0 and 1.1) Specifies the width of the window in pixels.</td>
</tr>
<tr>
<td><code>z-lock</code></td>
<td>(JavaScript 1.2) If yes, creates a new window that does not rise above other windows when activated. This is a secure feature and must be set in signed scripts.</td>
</tr>
</tbody>
</table>
window.open

The following statement turn on the location and directories options and turns off all other Boolean options:

```
open("", "messageWindow", "toolbar,directories=yes")
```

How the alwaysLowered, alwaysRaised, and z-lock features behave depends on the windowing hierarchy of the platform. For example, on Windows, an alwaysLowered or z-locked browser window is below all windows in all open applications. On Macintosh, an alwaysLowered browser window is below all browser windows, but not necessarily below windows in other open applications. Similarly for an alwaysRaised window.

You may use `open` to open a new window and then use `open` on that window to open another window, and so on. In this way, you can end up with a chain of opened windows, each of which has an `opener` property pointing to the window that opened it.

Communicator allows a maximum of 100 windows to be around at once. If you open `window2` from `window1` and then are done with `window1`, be sure to set the `opener` property of `window2` to `null`. This allows JavaScript to garbage collect `window1`. If you do not set the `opener` property to `null`, the `window1` object remains, even though it’s no longer really needed.

**Security**

To perform the following operations, you need the `UniversalBrowserWrite` privilege:

- To create a window smaller than 100 x 100 pixels or larger than the screen can accommodate by using `innerWidth`, `innerHeight`, `outerWidth`, and `outerHeight`.
- To place a window off screen by using `screenX` and `screenY`.
- To create a window without a titlebar by using `titlebar`.
- To use `alwaysRaised`, `alwaysLowered`, or z-lock for any setting.

For information on security, see the *Client-Side JavaScript Guide*. 
**Examples**

**Example 1.** In the following example, the `windowOpener` function opens a window and uses `write` methods to display a message:

```javascript
function windowOpener() {
    msgWindow = window.open("","displayWindow","menubar=yes")
    msgWindow.document.write
        ("<HEAD><TITLE>Message window</TITLE></HEAD>"
    msgWindow.document.write
        ("<CENTER><BIG><B>Hello, world!</B></BIG></CENTER>"
}
```

**Example 2.** The following is an `onClick` event handler that opens a new client window displaying the content specified in the file `sesame.html`. The window opens with the specified option settings; all other options are false because they are not specified.

```html
<Form NAME="myform">
    <Input TYPE="button" NAME="Button1" VALUE="Open Sesame!"
        onClick="window.open ('sesame.html', 'newWin',
            'scrollbars=yes,status=yes,width=300,height=300')">
    </Form>
```

See also: `window.close`

---

**opener**

Specifies the window of the calling document when a window is opened using the `open` method.

*Property of* window

*Implemented in* JavaScript 1.1

**Description**

When a source document opens a destination window by calling the `open` method, the `opener` property specifies the window of the source document. Evaluate the `opener` property from the destination window.

This property persists across document unload in the opened window.

You can change the `opener` property at any time.

You may use `window.open` to open a new window and then use `window.open` on that window to open another window, and so on. In this way, you can end up with a chain of opened windows, each of which has an `opener` property pointing to the window that opened it.
Communicator allows a maximum of 100 windows to be around at once. If you open window2 from window1 and then are done with window1, be sure to set the opener property of window2 to null. This allows JavaScript to garbage collect window1. If you do not set the opener property to null, the window1 object remains, even though it's no longer really needed.

**Examples**

**Example 1: Close the opener.** The following code closes the window that opened the current window. When the opener window closes, opener is unchanged. However, window.opener.name then evaluates to undefined.

```javascript
window.opener.close()
```

**Example 2: Close the main browser window.**

```javascript
top.opener.close()
```

**Example 3: Evaluate the name of the opener.** A window can determine the name of its opener as follows:

```javascript
document.write("<BR>opener property is " + window.opener.name)
```

**Example 4: Change the value of opener.** The following code changes the value of the opener property to null. After this code executes, you cannot close the opener window as shown in Example 1.

```javascript
window.opener=null
```

**Example 5: Change a property of the opener.** The following code changes the background color of the window specified by the opener property.

```javascript
window.opener.document.bgColor='bisque'
```

**See also** window.close, window.open

---

**outerHeight**

Specifies the vertical dimension, in pixels, of the window's outside boundary.

*Property of* window

*Implemented in* JavaScript 1.2

**Description**

The outer boundary includes the scroll bars, the status bar, the toolbars, and other "chrome" (window border user interface elements). To create a window smaller than 100 x 100 pixels, set this property in a signed script.

**See also** window.innerWidth, window.innerHeight, window.outerWidth
**outerWidth**

Specifies the horizontal dimension, in pixels, of the window's outside boundary.

*Property of:* window  
*Implemented in:* JavaScript 1.2  

**Description**  
The outer boundary includes the scroll bars, the status bar, the toolbars, and other “chrome” (window border user interface elements). To create a window smaller than 100 x 100 pixels, set this property in a signed script.

**See also**  
window.innerWidth, window.innerHeight, window.outerHeight

---

**pageXOffset**

Provides the current x-position, in pixels, of a window's viewed page.

*Property of:* window  
*Read-only:*  
* Implemented in:* JavaScript 1.2  

**Description**  
The pageXOffset property provides the current x-position of a page as it relates to the upper-left corner of the window's content area. This property is useful when you need to find the current location of the scrolled page before using scrollTo or scrollBy.

**Examples**  
The following example returns the x-position of the viewed page.

```javascript
x = myWindow.pageXOffset
```

**See Also**  
window.pageYOffset
**pageYOffset**

Provides the current y-position, in pixels, of a window's viewed page.

*Property of* `window`  
*Read-only*  
*Implemented in* JavaScript 1.2

**Description**  
The `pageYoffset` property provides the current y-position of a page as it relates to the upper-left corner of the window's content area. This property is useful when you need to find the current location of the scrolled page before using `scrollTo` or `scrollBy`.

**Examples**  
The following example returns the y-position of the viewed page.

```javascript
x = myWindow.pageYOffset
```

**See also** `window.pageXOffset`

---

**parent**

The `parent` property is the window or frame whose frameset contains the current frame.

*Property of* `window`  
*Read-only*  
*Implemented in* JavaScript 1.0

**Description**  
This property is only meaningful for frames; that is, windows that are not top-level windows.

The `parent` property refers to the FRAMESET window of a frame. Child frames within a frameset refer to sibling frames by using `parent` in place of the window name in one of the following ways:

- `parent.frameName`
- `parent.frames[index]`

For example, if the fourth frame in a set has `NAME="homeFrame"`, sibling frames can refer to that frame using `parent.homeFrame` or `parent.frames[3]`.

You can use `parent.parent` to refer to the “grandparent” frame or window when a FRAMESET tag is nested within a child frame.
window.personalbar

The value of the parent property is

<object nameAttribute>

where nameAttribute is the NAME attribute if the parent is a frame, or an
internal reference if the parent is a window.

Examples  See examples for Frame.

personalbar

Represents the browser window’s personal bar (also called the directories bar).
This is the region the user can use for easy access to certain bookmarks.

Property of  window

Implemented in  JavaScript 1.2

Description  The value of the personalbar property itself has one property, visible. If
ture, the personal bar is visible; if false, it is hidden.

Security  Setting the value of the personal bar’s visible property requires the
UniversalBrowserWrite privilege. For information on security, see the Client-
Side JavaScript Guide.

Examples  The following example would make the referenced window “chromeless”
(chromeless windows lack toolbars, scrollbars, status areas, and so on, much
like a dialog box) by hiding most of the user interface toolbars:

    self.menubar.visible=false;
    self.toolbar.visible=false;
    self.locationbar.visible=false;
    self.personalbar.visible=false;
    self.scrollbars.visible=false;
    self.statusbar.visible=false;

print

Prints the contents of the window.

Method of  window

Implemented in  JavaScript 1.2

Syntax  print ()

Parameters  None
window.prompt

prompt

Displays a Prompt dialog box with a message and an input field.

Method of window

Implemented in JavaScript 1.0

Syntax

prompt(message[, inputDefault])

Parameters

message

A string to be displayed as the message.

inputDefault

A string or integer representing the default value of the input field.

Description

A prompt dialog box looks as follows:

![Netscape User Prompt]

Use the `prompt` method to display a dialog box that receives user input. If you do not specify an initial value for `inputDefault`, the dialog box displays `<undefined>`.

You cannot specify a title for a prompt dialog box, but you can use the `open` method to create your own prompt dialog. See `open`.

Examples

`prompt("Enter the number of cookies you want to order:", 12)`

See also window.alert, window.confirm

releaseEvents

Sets the window or document to release captured events of the specified type, sending the event to objects further along the event hierarchy.

Method of window

Implemented in JavaScript 1.2

Note

If the original target of the event is a window, the window receives the event even if it is set to release that type of event.
window.resizeBy

Syntax  
releaseEvents(eventType1 [ | eventTypeN...])

Parameters  
eventType1...  
eventTypeN  
The type of event to be captured. The available event types are discussed in Chapter 3, “Event Handlers.”

Description  
releaseEvents works in tandem with captureEvents, routeEvent, and handleEvent. For more information, see the Client-Side JavaScript Guide.

---

**resizeBy**

Resizes an entire window by moving the window’s bottom-right corner by the specified amount.

*Method of*  
window

*Implemented in*  
JavaScript 1.2

Syntax  
resizeBy(horizontal, vertical)

Parameters  
horizontal  
The number of pixels by which to resize the window horizontally.

vertical  
The number of pixels by which to resize the window vertically.

Description  
This method changes the window’s dimensions by setting its outerWidth and outerHeight properties. The upper left-hand corner remains anchored and the lower right-hand corner moves. resizeBy moves the window by adding or subtracting the specified number of pixels to that corner’s current location.

Security  
Exceeding any of the boundaries of the screen (to hide some or all of a window) requires signed JavaScript, so a window won’t move past the screen boundaries. In addition, windows have an enforced minimum size of 100 x 100 pixels; resizing a window to be smaller than this minimum requires signed JavaScript. You need the UniversalBrowserWrite privilege for this. For information on security, see the Client-Side JavaScript Guide.

Examples  
To make the current window 5 pixels narrower and 10 pixels taller than its current dimensions, use this statement:

`self.resizeBy(-5,10); // relative positioning`

See also  
window.resizeTo
**resizeTo**

Resizes an entire window to the specified pixel dimensions.

*Method of*: `window`  
*Implemented in*: JavaScript 1.2

**Syntax**

```
resizeTo(outerWidth, outerHeight)
```

**Parameters**

- `outerWidth`: An integer representing the window's width in pixels.
- `outerHeight`: An integer representing the window's height in pixels.

**Description**

This method changes the window's dimensions by setting its `outerWidth` and `outerHeight` properties. The upper left-hand corner remains anchored and the lower right-hand corner moves. `resizeBy` moves to the specified position. The origin of the axes is at absolute position (0,0); this is the upper left-hand corner of the display.

**Security**

Exceeding any of the boundaries of the screen (to hide some or all of a window) requires signed JavaScript, so a window won't move past the screen boundaries. In addition, windows have an enforced minimum size of 100 x 100 pixels; resizing a window to be smaller than this minimum requires signed JavaScript. You need the `UniversalBrowserWrite` privilege for this. For information on security, see the *Client-Side JavaScript Guide*.

**Examples**

To make the window 225 pixels wide and 200 pixels tall, use this statement:

```
self.resizeTo(225,200); // absolute positioning
```

**See also**

`window.resizeBy`

---

**routeEvent**

Passes a captured event along the normal event hierarchy.

*Method of*: `window`  
*Implemented in*: JavaScript 1.2

**Syntax**

```
routeEvent(event)
```

**Parameters**

- `event`: Name of the event to be routed.
**Description**  
If a sub-object (document or layer) is also capturing the event, the event is sent to that object. Otherwise, it is sent to its original target.

`routeEvent` works in tandem with `captureEvents`, `releaseEvents`, and `handleEvent`. For more information, see the *Client-Side JavaScript Guide*.

---

**screenX**

Specifies the x-coordinate of the left edge of a window.

*Property of* window  
*Implemented in* JavaScript 1.2

**Security**  
Setting the value of the `screenX` property requires the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**See also**  
`window.screenY`

---

**screenY**

Specifies the y-coordinate of the top edge of a window.

*Property of* window  
*Implemented in* JavaScript 1.2

**Security**  
Setting the value of the `screenY` property requires the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**See also**  
`window.screenX`
window.scroll

**scroll**

Scrolls a window to a specified coordinate.

*Method of*  
window

*Implemented in*  
JavaScript 1.1
JavaScript 1.2: deprecated

**Description**

In JavaScript 1.2, `scroll` is no longer used and has been replaced by `scrollTo`. `scrollTo` extends the capabilities of `scroll`. `scroll` remains for backward compatibility.

**scrollbars**

Represents the browser window’s vertical and horizontal scroll bars for the document area.

*Property of*  
window

*Implemented in*  
JavaScript 1.2

**Description**

The value of the `scrollbars` property itself has one property, `visible`. If true, both scrollbars are visible; if false, they are hidden.

**Security**

Setting the value of the scrollbars’ `visible` property requires the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**Examples**

The following example would make the referenced window “chromeless” (chromeless windows lack toolbars, scrollbars, status areas, and so on, much like a dialog box) by hiding most of the user interface toolbars:

```javascript
self.menubar.visible=false;
self.toolbar.visible=false;
self.locationbar.visible=false;
self.personalbar.visible=false;
self.scrollbars.visible=false;
self.statusbar.visible=false;
```
scrollBy

Scrolls the viewing area of a window by the specified amount.

Method of  window

Implemented in  JavaScript 1.2

Syntax  scrollBy(horizontal, vertical)

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>horizontal</td>
<td>The number of pixels by which to scroll the viewing area horizontally.</td>
</tr>
<tr>
<td>vertical</td>
<td>The number of pixels by which to scroll the viewing area vertically.</td>
</tr>
</tbody>
</table>

Description

This method scrolls the content in the window if portions that can’t be seen exist outside of the window. scrollBy scrolls the window by adding or subtracting the specified number of pixels to the current scrolled location.

For this method to have an effect the visible property of window.scrollbars must be true.

Examples

To scroll the current window 5 pixels towards the left and 30 pixels down from the current position, use this statement:

```
self.scrollBy(-5,30); // relative positioning
```

See also  window.scrollTo

scrollTo

Scrolls the viewing area of the window so that the specified point becomes the top-left corner.

Method of  window

Implemented in  JavaScript 1.2

Syntax  scrollTo(x-coordinate, y-coordinate)

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>x-coordinate</td>
<td>An integer representing the x-coordinate of the viewing area in pixels.</td>
</tr>
<tr>
<td>y-coordinate</td>
<td>An integer representing the y-coordinate of the viewing area in pixels.</td>
</tr>
</tbody>
</table>
Description

scrollTo replaces scroll. scroll remains for backward compatibility.

The scrollTo method scrolls the content in the window if portions that can’t be seen exist outside of the window. For this method to have an effect the visible property of window.scrollbars must be true.

Examples

Example 1: Scroll the current viewing area. To scroll the current window to the leftmost boundary and 20 pixels down from the top of the window, use this statement:

self.scrollTo(0,20); // absolute positioning

Example 2: Scroll a different viewing area. The following code, which exists in one frame, scrolls the viewing area of a second frame. Two Text objects let the user specify the x and y coordinates. When the user clicks the Go button, the document in frame2 scrolls to the specified coordinates.

<SCRIPT>
function scrollIt(form) {
    var x = parseInt(form.x.value)
    var y = parseInt(form.y.value)
    parent.frame2.scrollTo(x, y)
}
</SCRIPT>

<FORM NAME="myForm">
<P><B>Specify the coordinates to scroll to:</B></P>
<BR>Horizontal:
<INPUT TYPE="text" NAME=x VALUE="0" SIZE=4>
<BR>Vertical:
<INPUT TYPE="text" NAME=y VALUE="0" SIZE=4>
<BR><INPUT TYPE="button" VALUE="Go" onClick="scrollIt(document.myForm)"
</FORM>

See also

window.scrollBy
The `self` property is a synonym for the current window.

**Property of**  
`window`

**Read-only**

**Implemented in**  
JavaScript 1.0

**Description**

The `self` property refers to the current window. That is, the value of this property is a synonym for the object itself.

Use the `self` property to disambiguate a window property from a form or form element of the same name. You can also use the `self` property to make your code more readable.

The value of the `self` property is

```
<object nameAttribute>
```

where `nameAttribute` is the `NAME` attribute if `self` refers to a frame, or an internal reference if `self` refers to a window.

**Examples**

In the following example, `self.status` is used to set the `status` property of the current window. This usage disambiguates the `status` property of the current window from a form or form element called `status` within the current window.

```
<A HREF=""
   onClick="this.href=pickRandomURL()"
   onMouseOver="self.status='Pick a random URL' ; return true">Go!</A>
```
**setHotKeys**

Enables or disables hot keys in a window which does not have menus.

**Method of** window

**Implemented in** JavaScript 1.2

**Syntax**

```
setHotKeys(trueOrFalse)
```

**Parameters**

- **trueOrFalse**
  - A Boolean value specifying whether hot keys are enabled:
    - true enables hot keys
    - false disables hot keys

**Security**
To enable or disable hot keys, you need the UniversalBrowserWrite privilege. For information on security, see the *Client-Side JavaScript Guide*.

**Description**
By default, hot keys are disabled in a window which does not display a menu. With the `setHotKeys` method, you can explicitly enable or disable all hot keys except security and quit, which are always enabled.

You can also specify whether to enable hot keys at the time you create a window when you use the `window.open` method.

**See also**
`window.open`
**setInterval**

Evaluates an expression or calls a function every time a specified number of milliseconds elapses, until canceled by a call to `clearInterval`.

*Method of*  
`window`

*Implemented in*  
JavaScript 1.2

**Syntax**

```javascript
setInterval(expression, msec)
setInterval(function, msec[, arg1[, ..., argN]])
```

**Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>function</code></td>
<td>Any function.</td>
</tr>
<tr>
<td><code>expression</code></td>
<td>A string containing a JavaScript expression. The expression must be quoted; otherwise, <code>setInterval</code> calls it immediately. For example, <code>setInterval(&quot;calcnum(3, 2)&quot;, 25)</code>.</td>
</tr>
<tr>
<td><code>msec</code></td>
<td>A numeric value or numeric string, in millisecond units.</td>
</tr>
<tr>
<td><code>arg1, ..., argN</code></td>
<td>The arguments, if any, passed to <code>function</code>.</td>
</tr>
</tbody>
</table>

**Description**

The timeouts continue to fire until the associated window or frame is destroyed or the interval is canceled using the `clearInterval` method.

`setInterval` does not stall the script. The script continues immediately (not waiting for the interval to elapse). The call simply schedules a future event.

**Examples**

The following code displays the current time in a `Text` object. In the `startclock` function, the call to the `setInterval` method causes the `showtime` function to be called every second to update the clock. Notice that the `startclock` function and `setInterval` method are each called only one time.

```javascript
<SCRIPT LANGUAGE="JavaScript">
var timerID = null
var timerRunning = false

function startclock()
{
  if(timerRunning)
    clearInterval(timerID)
  timerID = setInterval("showtime()", 1000)
  timerRunning = true

function stopclock()
{
  if(timerRunning)
    clearInterval(timerID)
  timerRunning = false
}
</SCRIPT>
```
window.setResizable

function startclock(){
    // Make sure the clock is stopped
    stopclock()
    timerID = setInterval("showtime()",1000)
    timerRunning = true
}

function showtime(){
    var now = new Date()
    var hours = now.getHours()
    var minutes = now.getMinutes()
    var seconds = now.getSeconds()
    var timeValue = "" + ((hours > 12) ? hours - 12 : hours)
    timeValue += ((minutes < 10) ? ":0" : ":") + minutes
    timeValue += ((seconds < 10) ? ":0" : ":") + seconds
    timeValue += (hours >= 12) ? " P.M." : " A.M."
    document.clock.face.value = timeValue
}
</SCRIPT>
</BODY onLoad="startclock()">
<FORM NAME="clock" onSubmit="0">
    <INPUT TYPE="text" NAME="face" SIZE=12 VALUE="">
</FORM>
</BODY>

See also window.clearInterval, window.setTimeout

setResizable

Specifies whether a user is permitted to resize a window.

Method of window

Implemented in JavaScript 1.2

Syntax setResizable(trueOrFalse)

Parameters

trueOrFalse A Boolean value specifying whether a user can resize a window:
    • true lets a user resize the window
    • false prevents a user from resizing the window
Description
By default, a new Navigator window is resizable. With the `setResizable` method, you can explicitly enable or disable the ability of a user to resize a window. Not all operating systems support this method.

You can also specify whether a window is resizable at the time you create it when you use the `window.open` method.

See also `window.open`

setTimeout

Evaluates an expression or calls a function once after a specified number of milliseconds elapses.

Method of `window`

Implemented in
- JavaScript 1.0: evaluating an expression
- JavaScript 1.2: calling a function

Syntax
```
setTimeout(expression, msec)
setTimeout(function, msec[, arg1[, ..., argN]])
```

Parameters
- **expression**
  A string containing a JavaScript expression. The expression must be quoted; otherwise, `setTimeout` calls it immediately. For example, `setTimeout("calcnum(3, 2)", 25)`.
- **msec**
  A numeric value or numeric string, in millisecond units.
- **function**
  Any function.
- **arg1, ..., argN**
  The arguments, if any, passed to `function`.

Description
The `setTimeout` method evaluates an expression or calls a function after a specified amount of time. It does not act repeatedly. For example, if a `setTimeout` method specifies five seconds, the expression is evaluated or the function is called after five seconds, not every five seconds. For repetitive timeouts, use the `setInterval` method.

`setTimeout` does not stall the script. The script continues immediately (not waiting for the timeout to expire). The call simply schedules a future event.
**Examples**

**Example 1.** The following example displays an alert message five seconds (5,000 milliseconds) after the user clicks a button. If the user clicks the second button before the alert message is displayed, the timeout is canceled and the alert does not display.

```javascript
<SCRIPT LANGUAGE="JavaScript">
  function displayAlert() {
    alert("5 seconds have elapsed since the button was clicked.")
  }
</SCRIPT>
<BODY>
  <FORM>
    Click the button on the left for a reminder in 5 seconds; click the button on the right to cancel the reminder before it is displayed.
  </FORM>
</BODY>
```

**Example 2.** The following example displays the current time in a `Text` object. The `showtime` function, which is called recursively, uses the `setTimeout` method to update the time every second.

```javascript
<HEAD>
<SCRIPT LANGUAGE="JavaScript">
<!--
  var timerID = null
  var timerRunning = false
  function stopclock(){
    if(timerRunning)
      clearTimeout(timerID)
    timerRunning = false
  }
  function startclock(){
    // Make sure the clock is stopped
    stopclock()
    showtime()
  }
</SCRIPT>
</HEAD>
```
function showtime()
{
    var now = new Date();
    var hours = now.getHours();
    var minutes = now.getMinutes();
    var seconds = now.getSeconds();
    var timeValue = "" + ((hours > 12) ? hours - 12 : hours);
    timeValue += ((minutes < 10) ? "0" : "") + minutes;
    timeValue += ((seconds < 10) ? "0" : ") + seconds;
    timeValue += (hours >= 12) ? " P.M." : " A.M."
    document.clock.face.value = timeValue;
    timerID = setTimeout("showtime()", 1000);
    timerRunning = true;
}
//-->
</SCRIPT>
</HEAD>
<BODY onLoad="startclock()">
<FORM NAME="clock" onSubmit="0">
    <INPUT TYPE="text" NAME="face" SIZE=12 VALUE="">
</FORM>
</BODY>

See also  window.clearTimeout, window.setInterval

setZOptions

Specifies the z-order stacking behavior of a window.

Method of window

Implemented in JavaScript 1.2

Syntax  setZOptions(windowPosition)

Parameters

windowPosition A string evaluating to any of the following values:

- alwaysRaised creates a new window that floats on top of other windows, whether it is active or not.
- alwaysLowered creates a new window that floats below other windows, whether it is active or not.
- z-lock creates a new window that does not rise above other windows when activated.

Security To set this property, you need the UniversalBrowserWrite privilege. For information on security, see the Client-Side JavaScript Guide.
window.status

**Description**  By default, a Navigator window rises to the top of the z-order when it is activated and moves down in the z-order as other windows are activated. With the `setZOptions` method, you can explicitly specify a window’s position in the z-order.

If you do not specify an argument for `setZOptions`, this method restores the default z-order stacking behavior of a Navigator window.

You can also specify the order stacking behavior of a window at the time you create it when you use the `window.open` method.

**See also**  `window.open`

---

**status**

Specifies a priority or transient message in the status bar at the bottom of the window, such as the message that appears when a `mouseOver` event occurs over an anchor.

*Property of*  window

*Implemented in*  JavaScript 1.0

**Security**  JavaScript 1.1. This property is tainted by default. For information on data tainting, see the Client-Side JavaScript Guide.

**Description**  Do not confuse the `status` property with the `defaultStatus` property. The `defaultStatus` property reflects the default message displayed in the status bar.

You can set the `status` property at any time. You must return true if you want to set the `status` property in the `onMouseOver` event handler.

**Examples**  Suppose you have created a JavaScript function called `pickRandomURL` that lets you select a URL at random. You can use the `onClick` event handler of an anchor to specify a value for the `HREF` attribute of the anchor dynamically, and the `onMouseOver` event handler to specify a custom message for the window in the `status` property:

```html
<A HREF="" onClick="this.href=pickRandomURL()"
    onMouseOver="self.status='Pick a random URL'; return true">Go!</A>
```
In the preceding example, the `status` property of the window is assigned to the window’s `self` property, as `self.status`.

**See also** `window.defaultStatus`

---

### `statusbar`

Represents the browser window’s status bar. This is the region containing the security indicator, browser status, and so on.

*Property of* `window`

*Implemented in* JavaScript 1.2

**Description**
The value of the `statusbar` property itself one property, `visible`. If true, the status bar is visible; if false, it is hidden.

**Security**
Setting the value of the status bar’s `visible` property requires the `UniversalBrowserWrite` privilege. For information on security, see the Client-Side JavaScript Guide.

**Examples**
The following example would make the referenced window “chromeless” (chromeless windows lack toolbars, scrollbars, status areas, and so on, much like a dialog box) by hiding most of the user interface toolbars:

```javascript
self.menubar.visible=false;
self.toolbar.visible=false;
self.locationbar.visible=false;
self.personalbar.visible=false;
self.scrollbars.visible=false;
self.statusbar.visible=false;
```

### `stop`

Stops the current download.

*Method of* `window`

*Implemented in* JavaScript 1.2

**Syntax** `stop()`

**Parameters** None

**Definition**
This method performs the same action as a user choosing the Stop button in the browser.
window.toolbar

**toolbar**

Represents the browser window’s toolbar, containing the navigation buttons, such as Back, Forward, Reload, Home, and so on.

*Property of* `window`

*Implemented in* JavaScript 1.2

**Description**

The value of the `toolbar` property itself has one property, `visible`. If true, the toolbar is visible; if false, it is hidden.

**Security**

Setting the value of the toolbar’s `visible` property requires the `UniversalBrowserWrite` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**Examples**

The following example would make the referenced window “chromeless” (chromeless windows lack toolbars, scrollbars, status areas, and so on, much like a dialog box) by hiding most of the user interface toolbars:

```javascript
self.menubar.visible=false;
self.toolbar.visible=false;
self.locationbar.visible=false;
self.personalbar.visible=false;
self.scrollbars.visible=false;
self.statusbar.visible=false;
```

**top**

The `top` property is a synonym for the topmost browser window, which is a document window or web browser window.

*Property of* `window`

*Read-only*

*Implemented in* JavaScript 1.0

**Description**

The `top` property refers to the topmost window that contains frames or nested framesets. Use the `top` property to refer to this ancestor window.

The value of the `top` property is

```javascript
<object objectReference>
```

where `objectReference` is an internal reference.
Examples

The statement `top.close()` closes the topmost ancestor window.

The statement `top.length` specifies the number of frames contained within the topmost ancestor window. When the topmost ancestor is defined as follows, `top.length` returns three:

```html
<FRAMESET COLS="30%,40%,30%">
 <FRAME SRC=child1.htm NAME="childFrame1">
 <FRAME SRC=child2.htm NAME="childFrame2">
 <FRAME SRC=child3.htm NAME="childFrame3">
 </FRAMESET>
```

The following example sets the background color of a frame called `myFrame` to red. `myFrame` is a child of the topmost ancestor window.

```javascript
top.myFrame.document.bgColor="red"
```

**window**

The `window` property is a synonym for the current window or frame.

- **Property of** `window`
- **Read-only**
- **Implemented in** JavaScript 1.0

**Description**

The `window` property refers to the current window or frame. That is, the value of this property is a synonym for the object itself.

Although you can use the `window` property as a synonym for the current frame, your code may be more readable if you use the `self` property. For example, `window.name` and `self.name` both specify the name of the current frame, but `self.name` may be easier to understand (because a frame is not displayed as a separate window).

Use the `window` property to disambiguate a property of the `window` object from a form or form element of the same name. You can also use the `window` property to make your code more readable.

The value of the `window` property is

```javascript
<object nameAttribute>
```

where `nameAttribute` is the `NAME` attribute if `window` refers to a frame, or an internal reference if `window` refers to a window.
Examples

In the following example, `window.status` is used to set the `status` property of the current window. This usage disambiguates the `status` property of the current window from a form called “status” within the current window.

```html
<A HREF=""
   onClick="this.href=pickRandomURL()"
   onMouseOver="window.status='Pick a random URL' ; return true">
   Go!</A>
```

See also `window.self`
This chapter contains all JavaScript properties and functions not associated with any object. In the ECMA specification, these properties and functions are referred to as properties and methods of the global object.

The following table summarizes the top-level properties.

**Table 2.1 Top-level properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infinity</td>
<td>A numeric value representing infinity.</td>
</tr>
<tr>
<td>NaN</td>
<td>A value representing Not-A-Number.</td>
</tr>
<tr>
<td>undefined</td>
<td>The value undefined.</td>
</tr>
</tbody>
</table>

The following table summarizes the top-level functions.

**Table 2.2 Top-level functions**

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>escape</td>
<td>Returns the hexadecimal encoding of an argument in the ISO Latin-1 character set; used to create strings to add to a URL.</td>
</tr>
<tr>
<td>eval</td>
<td>Evaluates a string of JavaScript code without reference to a particular object.</td>
</tr>
</tbody>
</table>
Table 2.2 Top-level functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>isFinite</td>
<td>Evaluates an argument to determine whether it is a finite number.</td>
</tr>
<tr>
<td>isNaN</td>
<td>Evaluates an argument to determine if it is not a number.</td>
</tr>
<tr>
<td>Number</td>
<td>Converts an object to a number.</td>
</tr>
<tr>
<td>parseFloat</td>
<td>Parses a string argument and returns a floating-point number.</td>
</tr>
<tr>
<td>parseInt</td>
<td>Parses a string argument and returns an integer.</td>
</tr>
<tr>
<td>String</td>
<td>Converts an object to a string.</td>
</tr>
<tr>
<td>taint</td>
<td>Adds tainting to a data element or script.</td>
</tr>
<tr>
<td>unescape</td>
<td>Returns the ASCII string for the specified hexadecimal encoding value.</td>
</tr>
<tr>
<td>untaint</td>
<td>Removes tainting from a data element or script.</td>
</tr>
</tbody>
</table>

**escape**

Returns the hexadecimal encoding of an argument in the ISO-Latin-1 character set.

*Core function*

*Implemented in* JavaScript 1.0, NES 2.0

*ECMA version* ECMA-262 compatible, except for Unicode characters.

**Syntax**

```javascript
escape("string")
```

**Parameters**

<table>
<thead>
<tr>
<th>parameter</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>string</td>
<td>A string in the ISO-Latin-1 character set.</td>
</tr>
</tbody>
</table>

**Description**

escape is a top-level function and is not associated with any object.

Use the escape and unescape functions to encode and decode (add property values manually) a Uniform Resource Locator (URL), a Uniform Resource Identifier (URI), or a URI-type string.
The `escape` function encodes special characters in the specified string and returns the new string. It encodes spaces, punctuation, and any other character that is not an ASCII alphanumeric character, with the exception of these characters:

* \( @ - _ + . / \)

**Unicode.** The `escape` and `unescape` functions do not use Unicode as specified by the ECMA specification. Instead, they use the Internet Engineering Task Force (IETF) guidelines for escaping characters. Within a URI, characters use US-ASCII characters (ISO-Latin-1 character set). A URI is a sequence of characters from the basic Latin alphabet, digits, and a few special characters (for example, `/` and `@`). The escape sequences do not support `\uXXXX` as in Unicode or `%uXXXX` as specified by ECMA, but `%XX`, where `XX` is a 2-digit hexadecimal number (for example, `%7E`). In URI, characters are represented in octets, as 8-bit bytes.

To allow the `escape` and `unescape` functions to work with Web server-supported URLs and URIs, JavaScript does not use Unicode for these functions.

- `escape` returns the hexadecimal encoding of the specified string in the ISO-Latin-1 character set.
- `unescape` returns the ASCII string, an ISO-Latin-1 character set sequence.

Unicode-specific escape sequences, `%uXXXX`, are not supported.

**Examples**

**Example 1.** The following example returns "%26":

```javascript
escape("&") // returns "%26"
```

**Example 2.** The following statement returns a string with encoded characters for spaces, commas, and apostrophes.

```javascript
// returns "The_rain.%20In%20Spain%2C%20Ma%92am"
escape("The_rain. In Spain, Ma'am")
```

**See also** `unescape`
**eval**

Evaluates a string of JavaScript code without reference to a particular object.

*Core function*

*Implemented in* JavaScript 1.0

*ECMA version* ECMA-262

**Syntax**

```javascript
eval(string)
```

**Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>string</td>
<td>A string representing a JavaScript expression, statement, or sequence of statements. The expression can include variables and properties of existing objects.</td>
</tr>
</tbody>
</table>

**Description**

`eval` is a top-level function and is not associated with any object.

The argument of the `eval` function is a string. If the string represents an expression, `eval` evaluates the expression. If the argument represents one or more JavaScript statements, `eval` performs the statements. Do not call `eval` to evaluate an arithmetic expression; JavaScript evaluates arithmetic expressions automatically.

If you construct an arithmetic expression as a string, you can use `eval` to evaluate it at a later time. For example, suppose you have a variable `x`. You can postpone evaluation of an expression involving `x` by assigning the string value of the expression, say "3 * x + 2", to a variable, and then calling `eval` at a later point in your script.

If the argument of `eval` is not a string, `eval` returns the argument unchanged.

In the following example, the `String` constructor is specified, and `eval` returns a `String` object rather than evaluating the string.

```javascript
eval(new String("2+2")) // returns a String object containing "2+2"
eval("2+2") // returns 4
```

You should not indirectly use the `eval` function by invoking it via a name other than `eval`. For example, you should not use the following code:

```javascript
var x = 2
var y = 4
var myEval = eval
myEval("x + y")
```
Backward Compatibility

JavaScript 1.1. `eval` is also a method of all objects. This method is described for the `Object` class.

Examples

The following examples display output using `document.write`. In server-side JavaScript, you can display the same output by calling the `write` function instead of using `document.write`.

Example 1. In the following code, both of the statements containing `eval` return `42`. The first evaluates the string "x + y + 1"; the second evaluates the string "42".

```javascript
var x = 2
var y = 39
var z = "42"

eval("x+y+1") // returns 42
eval(z) // returns 42
```

Example 2. In the following example, the `getFieldName(n)` function returns the name of the specified form element as a string. The first statement assigns the string value of the third form element to the variable `field`. The second statement uses `eval` to display the value of the form element.

```javascript
var field = getFieldName(3)
document.write("The field named ", field, " has value of ", eval(field + ".value"))
```

Example 3. The following example uses `eval` to evaluate the string `str`. This string consists of JavaScript statements that open an Alert dialog box and assign `z` a value of `42` if `x` is five, and assigns `0` to `z` otherwise. When the second statement is executed, `eval` will cause these statements to be performed, and it will also evaluate the set of statements and return the value that is assigned to `z`.

```javascript
var str = "if (x == 5) {alert('z is 42'); z = 42;} else z = 0; "
document.write("<P>z is ", eval(str))
```

Example 4. In the following example, the `setValue` function uses `eval` to assign the value of the variable `newValue` to the text field `textObject`:

```javascript
function setValue (textObject, newValue) {
    eval ("document.forms[0]." + textObject + ".value") = newValue
}
```
Example 5. The following example creates `breed` as a property of the object `myDog`, and also as a variable. The first write statement uses `eval('breed')` without specifying an object; the string "breed" is evaluated without regard to any object, and the write method displays "Shepherd", which is the value of the `breed` variable. The second write statement uses `myDog.eval('breed')` which specifies the object `myDog`; the string "breed" is evaluated with regard to the `myDog` object, and the write method displays "Lab", which is the value of the `breed` property of the `myDog` object.

```javascript
function Dog(name,breed,color) {
  this.name=name
  this.breed=breed
  this.color=color
}
myDog = new Dog("Gabby")
myDog.breed="Lab"
var breed='Shepherd'
document.write("<P>" + eval('breed'))
document.write("<BR>" + myDog.eval('breed'))
```

See also Object.eval method

Infinity

A numeric value representing infinity.

Core property

Implemented in JavaScript 1.3 (In previous versions, Infinity was defined only as a property of the Number object)

ECMA version ECMA-262

Syntax Infinity

Description Infinity is a top-level property and is not associated with any object.

The initial value of Infinity is Number.POSITIVE_INFINITY. The value Infinity (positive infinity) is greater than any other number including itself. This value behaves mathematically like infinity; for example, anything multiplied by Infinity is Infinity, and anything divided by Infinity is 0.

See also Number.NEGATIVE_INFINITY, Number.POSITIVE_INFINITY
isFinite

Evaluates an argument to determine whether it is a finite number.

**Core function**

*Implemented in* JavaScript 1.3  
*ECMA version* ECMA-262

**Syntax**

`isFinite(number)`

**Parameters**

`number`  
The number to evaluate.

**Description**

`isFinite` is a top-level function and is not associated with any object.

You can use this method to determine whether a number is a finite number. The `isFinite` method examines the number in its argument. If the argument is NaN, positive infinity or negative infinity, this method returns `false`, otherwise it returns `true`.

**Examples**

You can check a client input to determine whether it is a finite number.

```javascript
if(isFinite(ClientInput) == true)
{
  /* take specific steps */
}
```

**See also**

`Number.NEGATIVE_INFINITY, Number.POSITIVE_INFINITY`

isNaN

Evaluates an argument to determine if it is not a number.

**Core function**

*Implemented in* JavaScript 1.0: Unix only  
JavaScript 1.1, NES 2.0: all platforms  
*ECMA version* ECMA-262

**Syntax**

`isNaN(testValue)`
**isNaN**

isnan is a top-level function and is not associated with any object.

On platforms that support NaN, the parseFloat and parseInt functions return NaN when they evaluate a value that is not a number. isnan returns true if passed NaN, and false otherwise.

**Examples**
The following example evaluates floatValue to determine if it is a number and then calls a procedure accordingly:

```javascript
floatValue=parseFloat(toFloat)
if (isNaN(floatValue)) {
    notFloat()
} else {
    isFloat()
}
```

**See also** Number.NaN, parseFloat, parseInt

---

**NaN**

A value representing Not-A-Number.

**Core property**

**Implemented in** JavaScript 1.3 (In previous versions, NaN was defined only as a property of the Number object)

**ECMA version** ECMA-262

**Syntax** NaN

**Description** NaN is a top-level property and is not associated with any object.

The initial value of NaN is NaN.

NaN is always unequal to any other number, including NaN itself; you cannot check for the not-a-number value by comparing to Number.NaN. Use the isNaN function instead.
Several JavaScript methods (such as the `Number` constructor, `parseFloat`, and `parseInt`) return `NaN` if the value specified in the parameter is not a number.

You might use the `NaN` property to indicate an error condition for a function that should return a valid number.

**See also** `isNaN`, `Number.NaN`

---

**Number**

Converts the specified object to a number.

**Core function**

**Implemented in** JavaScript 1.2, NES 3.0

**ECMA version** ECMA-262

**Syntax**

```javascript
Number(obj)
```

**Parameter**

- `obj`: An object

**Description**

`Number` is a top-level function and is not associated with any object.

When the object is a `Date` object, `Number` returns a value in milliseconds measured from 01 January, 1970 UTC (GMT), positive after this date, negative before.

If `obj` is a string that does not contain a well-formed numeric literal, `Number` returns `NaN`.

**Example**

The following example converts the `Date` object to a numerical value:

```javascript
d = new Date("December 17, 1995 03:24:00")
alert(Number(d))
```

This displays a dialog box containing "819199440000."

**See also** `Number`
parseFloat

Parses a string argument and returns a floating point number.

Core function

Implemented in  
JavaScript 1.0: If the first character of the string specified in `parseFloat(string)` cannot be converted to a number, returns NaN on Solaris and Irix and 0 on all other platforms.

JavaScript 1.1, NES 2.0: Returns NaN on all platforms if the first character of the string specified in `parseFloat(string)` cannot be converted to a number.

ECMA version  
ECMA-262

Syntax  
`parseFloat(string)`

Parameters  

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>string</td>
<td>A string that represents the value you want to parse.</td>
</tr>
</tbody>
</table>

Description  

`parseFloat` is a top-level function and is not associated with any object.

`parseFloat` parses its argument, a string, and returns a floating point number. If it encounters a character other than a sign (+ or -), numeral (0-9), a decimal point, or an exponent, it returns the value up to that point and ignores that character and all succeeding characters. Leading and trailing spaces are allowed.

If the first character cannot be converted to a number, `parseFloat` returns NaN.

For arithmetic purposes, the NaN value is not a number in any radix. You can call the `isNaN` function to determine if the result of `parseFloat` is NaN. If NaN is passed on to arithmetic operations, the operation results will also be NaN.

Examples  
The following examples all return 3.14:

```javascript
parseFloat("3.14")
parseFloat("314e-2")
parseFloat("0.0314E+2")
var x = "3.14"
parseFloat(x)
```

The following example returns NaN:

```javascript
parseFloat("FF2")
```
parseInt

Parses a string argument and returns an integer of the specified radix or base.

Core function

See also `isNaN`, `parseInt`

parseInt

A string that represents the value you want to parse.

radix

A string that represents a radix of the return value.

parsedInt is a top-level function and is not associated with any object.

The parsedInt function parses its first argument, a string, and attempts to return an integer of the specified radix (base). For example, a radix of 10 indicates to convert to a decimal number, 8 octal, 16 hexadecimal, and so on. For radices above 10, the letters of the alphabet indicate numerals greater than 9. For example, for hexadecimal numbers (base 16), A through F are used.

If parsedInt encounters a character that is not a numeral in the specified radix, it ignores it and all succeeding characters and returns the integer value parsed up to that point. parsedInt truncates numbers to integer values. Leading and trailing spaces are allowed.
If the radix is not specified or is specified as 0, JavaScript assumes the following:

- If the input string begins with "0x", the radix is 16 (hexadecimal).
- If the input string begins with "0", the radix is eight (octal).
- If the input string begins with any other value, the radix is 10 (decimal).

If the first character cannot be converted to a number, `parseInt` returns `NaN`.

For arithmetic purposes, the `NaN` value is not a number in any radix. You can call the `isNaN` function to determine if the result of `parseInt` is `NaN`. If `NaN` is passed on to arithmetic operations, the operation results will also be `NaN`.

### Examples

The following examples all return 15:

```
parseInt("F", 16)
parseInt("17", 8)
parseInt("15", 10)
parseInt(15.99, 10)
parseInt("FXX123", 16)
parseInt("1111", 2)
parseInt("15*3", 10)
```

The following examples all return `NaN`:

```
parseInt("Hello", 8)
parseInt("0x7", 10)
parseInt("FFF", 10)
```

Even though the radix is specified differently, the following examples all return 17 because the input string begins with "0x".

```
parseInt("0x11", 16)
parseInt("0x11", 0)
parseInt("0x11")
```

### See also

`isNaN`, `parseFloat`, `Object.valueOf`
String

Converts the specified object to a string.

Core function

Implemented in JavaScript 1.2, NES 3.0

ECMA version ECMA-262

Syntax String(obj)

Parameter

obj An object.

Description String is a top-level function and is not associated with any object.

The String method converts the value of any object into a string; it returns the same value as the toString method of an individual object.

When the object is a Date object, String returns a more readable string representation of the date. Its format is: Thu Aug 18 04:37:43 Pacific Daylight Time 1983.

Example The following example converts the Date object to a readable string.

```
D = new Date (430054663215)
alert (String(D))
```

This displays a dialog box containing "Thu Aug 18 04:37:43 GMT-0700 (Pacific Daylight Time) 1983."

See also String
taint

Adds tainting to a data element or script.

Syntax

taint([dataElementName])

Parameters

dataElementName The property, variable, function, or object to taint. If omitted, taint is added to the script itself.

Description
taint is a top-level function and is not associated with any object.

Tainting prevents other scripts from passing information that should be secure and private, such as directory structures or user session history. JavaScript cannot pass tainted values on to any server without the end user’s permission.

Use taint to mark data that otherwise is not tainted.

In some cases, control flow rather than data flow carries tainted information. In these cases, taint is added to the script’s window. You can add taint to the script’s window by calling taint with no arguments.

taint does not modify its argument; instead, it returns a marked copy of the value, or, for objects, an unmarked reference to the value.

Examples

The following statement adds taint to a property so that a script cannot send it to another server without the end user’s permission:

taintedStatus=taint(window.defaultStatus)
// taintedStatus now cannot be sent in a URL or form post without
// the end user's permission

See also navigator.taintEnabled, untaint
undefined

The value undefined.

Core property

Implemented in JavaScript 1.3

ECMA version ECMA-262

Syntax undefined

Description undefined is a top-level property and is not associated with any object.

A variable that has not been assigned a value is of type undefined. A method or statement also returns undefined if the variable that is being evaluated does not have an assigned value.

You can use undefined to determine whether a variable has a value. In the following code, the variable x is not defined, and the if statement evaluates to true.

```javascript
var x
if(x == undefined) {
   // these statements execute
}
```

undefined is also a primitive value.

unescape

Returns the ASCII string for the specified hexadecimal encoding value.

Core function

Implemented in JavaScript 1.0, NES 1.0

ECMA version ECMA-262 compatible, except for Unicode characters.

Syntax unescape(string)

Parameters

string A string containing characters in the form "%xx", where xx is a 2-digit hexadecimal number.
**Description**
unescape is a top-level function and is not associated with any object.

The string returned by the unescape function is a series of characters in the ISO-Latin-1 character set.

The escape and unescape methods do not use Unicode as specified by the ECMA specification. For information, see the description of “Unicode” on page 557.

**Examples**
The following example returns "&":
unescape("%26")

The following example returns "!#":
unescape("%21%23")

**See also** escape

---

**untaint**

Removes tainting from a data element or script.

*Client-side function*

*Implemented in* JavaScript 1.1

JavaScript 1.2: removed

**Syntax**
untaint([dataElementName])

**Parameters**

dataElementName The property, variable, function, or object to remove tainting from.
If omitted, taint is removed from the script itself.

**Description**
untaint is a top-level function and is not associated with any object.

Tainting prevents other scripts from passing information that should be secure and private, such as directory structures or user session history. JavaScript cannot pass tainted values on to any server without the end user's permission.

Use untaint to clear tainting that marks data that should not to be sent by other scripts to different servers.
A script can untaint only data that originated in that script (that is, only data that has the script's taint code or has the identity (null) taint code). If you use untaint with a data element from another server's script (or any data that you cannot untaint), untaint returns the data without change or error.

In some cases, control flow rather than data flow carries tainted information. In these cases, taint is added to the script's window. You can remove taint from the script's window by calling untaint with no arguments, if the window contains taint only from the current window.

untaint does not modify its argument; instead, it returns an unmarked copy of the value, or, for objects, an unmarked reference to the value.

**Examples**

The following statement removes taint from a property so that a script can send it to another server:

```javascript
untaintedStatus = untaint(window.defaultStatus)
// untaintedStatus can now be sent in a URL or form post by other scripts
```

**See also** navigator.taintEnabled, taint
untaint
This chapter contains the event handlers that are used with client-side objects in JavaScript to evoke particular actions.

For general information on event handlers, see the *Client-Side JavaScript Guide*.

The following table summarizes the event handlers. The name of an event handler is the name of the event, preceded by "on." For example, the event handler for the *focus* event is *onFocus*.

<table>
<thead>
<tr>
<th>Event</th>
<th>Event handler</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abort</td>
<td>onAbort</td>
<td>Executes JavaScript code when the user aborts the loading of an image.</td>
</tr>
<tr>
<td>Blur</td>
<td>onBlur</td>
<td>Executes JavaScript code when a form element loses focus or when a window or frame loses focus.</td>
</tr>
<tr>
<td>Change</td>
<td>onChange</td>
<td>Executes JavaScript code when a Select, Text, or Textarea field loses focus and its value has been modified</td>
</tr>
<tr>
<td>Click</td>
<td>onClick</td>
<td>Executes JavaScript code when an object on a form is clicked.</td>
</tr>
<tr>
<td>DblClick</td>
<td>onDblClick</td>
<td>Executes JavaScript code when the user double-clicks a form element or a link.</td>
</tr>
<tr>
<td>Event</td>
<td>Event handler</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DragDrop</td>
<td>onDragDrop</td>
<td>Executes JavaScript code when the user drops an object onto the browser window, such as dropping a file.</td>
</tr>
<tr>
<td>Error</td>
<td>onError</td>
<td>Executes JavaScript code when the loading of a document or image causes an error.</td>
</tr>
<tr>
<td>Focus</td>
<td>onFocus</td>
<td>Executes JavaScript code when a window, frame, or frameset receives focus or when a form element receives input focus.</td>
</tr>
<tr>
<td>KeyDown</td>
<td>onKeyDown</td>
<td>Executes JavaScript code when the user depresses a key.</td>
</tr>
<tr>
<td>KeyPress</td>
<td>onKeyPress</td>
<td>Executes JavaScript code when the user presses or holds down a key.</td>
</tr>
<tr>
<td>KeyUp</td>
<td>onKeyUp</td>
<td>Executes JavaScript code when the user releases a key.</td>
</tr>
<tr>
<td>Load</td>
<td>onLoad</td>
<td>Executes JavaScript code when the browser finishes loading a window or all frames within a FRAMESET tag.</td>
</tr>
<tr>
<td>MouseDown</td>
<td>onMouseDown</td>
<td>Executes JavaScript code when the user depresses a mouse button.</td>
</tr>
<tr>
<td>MouseMove</td>
<td>onMouseMove</td>
<td>Executes JavaScript code when the user moves the cursor.</td>
</tr>
<tr>
<td>MouseOut</td>
<td>onMouseOut</td>
<td>Executes JavaScript code each time the mouse pointer leaves an area (client-side image map) or link from inside that area or link.</td>
</tr>
<tr>
<td>MouseOver</td>
<td>onMouseOver</td>
<td>Executes JavaScript code once each time the mouse pointer moves over an object or area from outside that object or area.</td>
</tr>
<tr>
<td>MouseUp</td>
<td>onMouseUp</td>
<td>Executes JavaScript code when the user releases a mouse button.</td>
</tr>
<tr>
<td>Move</td>
<td>onMove</td>
<td>Executes JavaScript code when the user or script moves a window or frame.</td>
</tr>
<tr>
<td>Reset</td>
<td>onReset</td>
<td>Executes JavaScript code when a user resets a form (clicks a Reset button).</td>
</tr>
<tr>
<td>Resize</td>
<td>onResize</td>
<td>Executes JavaScript code when a user or script resizes a window or frame.</td>
</tr>
<tr>
<td>Select</td>
<td>onSelect</td>
<td>Executes JavaScript code when a user selects some of the text within a text or textarea field.</td>
</tr>
<tr>
<td>Submit</td>
<td>onSubmit</td>
<td>Executes JavaScript code when a user submits a form.</td>
</tr>
<tr>
<td>Unload</td>
<td>onUnload</td>
<td>Executes JavaScript code when the user exits a document.</td>
</tr>
</tbody>
</table>
onAbort

Executes JavaScript code when an abort event occurs; that is, when the user aborts the loading of an image (for example by clicking a link or clicking the Stop button).

**Event handler for** Image

**Implemented in** JavaScript 1.1

**Syntax**

```plaintext
onAbort="handlerText"
```

**Parameters**

- `handlerText`: JavaScript code or a call to a JavaScript function.

**Event properties used**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
</tbody>
</table>

**Examples**

In the following example, an `onAbort` handler in an `Image` object displays a message when the user aborts the image load:

```html
<IMG NAME="aircraft" SRC="f15e.gif"
  onAbort="alert('You didn't get to see the image!')">
```

**See also** `event`, `onError`, `onLoad`
**onBlur**

Executes JavaScript code when a blur event occurs; that is, when a form element loses focus or when a window or frame loses focus.

*Event handler for* Button, Checkbox, FileUpload, Layer, Password, Radio, Reset, Select, Submit, Text, Textarea, window

*Implemented in* JavaScript 1.0

JavaScript 1.1: event handler of Button, Checkbox, FileUpload, Frame, Password, Radio, Reset, Submit, and window

**Syntax**

`onBlur="handlerText"`

**Parameters**

- `handlerText`: JavaScript code or a call to a JavaScript function.

**Description**

The blur event can result from a call to the `window.blur` method or from the user clicking the mouse on another object or window or tabbing with the keyboard.

For windows, frames, and framesets, `onBlur` specifies JavaScript code to execute when a window loses focus.

A frame's `onBlur` event handler overrides an `onBlur` event handler in the `BODY` tag of the document loaded into frame.

**Note**

In JavaScript 1.1, on some platforms placing an `onBlur` event handler in a `FRAMESET` tag has no effect.

**Event properties used**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>type</code></td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td><code>target</code></td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
</tbody>
</table>
Examples  

**Example 1: Validate form input.** In the following example, `userName` is a required text field. When a user attempts to leave the field, the `onBlur` event handler calls the `required` function to confirm that `userName` has a legal value.

```html
<INPUT TYPE="text" VALUE="" NAME="userName"
    onBlur="required(this.value)">
```

**Example 2: Change the background color of a window.** In the following example, a window's `onBlur` and `onFocus` event handlers change the window's background color depending on whether the window has focus.

```html
<BODY BGCOLOR="lightgrey"
    onBlur="document.bgColor='lightgrey'
    onFocus="document.bgColor='antiquewhite'">
```

**Example 3: Change the background color of a frame.** The following example creates four frames. The source for each frame, `onblur2.html` has the `BODY` tag with the `onBlur` and `onFocus` event handlers shown in Example 1. When the document loads, all frames are light grey. When the user clicks a frame, the `onFocus` event handler changes the frame's background color to antique white. The frame that loses focus is changed to light grey. Note that the `onBlur` and `onFocus` event handlers are within the `BODY` tag, not the `FRAME` tag.

```html
<FRAMESET ROWS="50%,50%" COLS="40%,60%">
    <FRAME SRC=onblur2.html NAME="frame1">
    <FRAME SRC=onblur2.html NAME="frame2">
    <FRAME SRC=onblur2.html NAME="frame3">
    <FRAME SRC=onblur2.html NAME="frame4">
</FRAMESET>
```

The following code has the same effect as the previous code, but is implemented differently. The `onFocus` and `onBlur` event handlers are associated with the frame, not the document. The `onBlur` and `onFocus` event handlers for the frame are specified by setting the `onblur` and `onfocus` properties.

```javascript
<SCRIPT>
function setUpHandlers() {
    for (var i = 0; i < frames.length; i++) {
        frames[i].onfocus=new Function("document.bgColor='antiquewhite'")
        frames[i].onblur=new Function("document.bgColor='lightgrey'")
    }
}
</SCRIPT>
```
onChange

Example 4: Close a window. In the following example, a window's onBlur event handler closes the window when the window loses focus.

```html
<BODY onBlur="window.close()">
This is some text
</BODY>
```

See also event, onChange, onFocus

onChange

Executes JavaScript code when a change event occurs; that is, when a Select, Text, or Textarea field loses focus and its value has been modified.

**Event handler for** FileUpload, Select, Text, Textarea

**Implemented in** JavaScript 1.0 event handler for Select, Text, and Textarea

JavaScript 1.1: added as event handler of FileUpload

**Syntax** `onChange="handlerText"`

**Parameters**

- `handlerText` JavaScript code or a call to a JavaScript function.

**Description** Use `onChange` to validate data after it is modified by a user.

<table>
<thead>
<tr>
<th>Event properties used</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>type</code></td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td><code>target</code></td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
</tbody>
</table>
Examples

In the following example, `userName` is a text field. When a user changes the text and leaves the field, the `onChange` event handler calls the `checkValue` function to confirm that `userName` has a legal value.

```html
<INPUT TYPE="text" VALUE="" NAME="userName"
   onChange="checkValue(this.value)">
```

See also event, onBlur, onFocus

**onClick**

Executes JavaScript code when a click event occurs; that is, when an object on a form is clicked. (A click event is a combination of the MouseDown and MouseUp events).

*Event handler for* Button, document, Checkbox, Link, Radio, Reset, Submit

*Implemented in* JavaScript 1.0

*JavaScript 1.1: added the ability to return false to cancel the action associated with a click event*

**Syntax** onClick="handlerText"

**Parameters**

`handlerText` JavaScript code or a call to a JavaScript function.
**Event properties used**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
<tr>
<td>layerX, layerY, pageX, pageY, screenX, screenY</td>
<td>Represent the cursor location at the time the event occurred.</td>
</tr>
<tr>
<td>which</td>
<td>Represents 1 for a left-mouse click and 3 for a right-mouse click.</td>
</tr>
<tr>
<td>modifiers</td>
<td>Contains the list of modifier keys held down when the event occurred.</td>
</tr>
</tbody>
</table>

**Description**

For checkboxes, links, radio buttons, reset buttons, and submit buttons, `onClick` can return false to cancel the action normally associated with a click event.

For example, the following code creates a link that, when clicked, displays a confirm dialog box. If the user clicks the link and then chooses cancel, the page specified by the link is not loaded.

```html
<A HREF = "http://home.netscape.com/"
   onClick="return confirm('Load Netscape home page?')">Netscape</A>
```

If the event handler returns false, the default action of the object is canceled as follows:

- Buttons—no default action; nothing is canceled
- Radio buttons and checkboxes—nothing is set
- Submit buttons—form is not submitted
- Reset buttons—form is not reset

**Note** In JavaScript 1.1, on some platforms, returning false in an `onClick` event handler for a reset button has no effect.
Examples

Example 1: Call a function when a user clicks a button. Suppose you have created a JavaScript function called compute. You can execute the compute function when the user clicks a button by calling the function in the onClick event handler, as follows:

```html
<INPUT TYPE="button" VALUE="Calculate" onClick="compute(this.form)"
>
```

In the preceding example, the keyword `this` refers to the current object; in this case, the Calculate button. The construct `this.form` refers to the form containing the button.

For another example, suppose you have created a JavaScript function called `pickRandomURL` that lets you select a URL at random. You can use `onClick` to specify a value for the `HREF` attribute of the `A` tag dynamically, as shown in the following example:

```html
<A HREF=""
   onClick="this.href=pickRandomURL()"
   onMouseOver="window.status='Pick a random URL'; return true">
   Go!
</A>
```

In the above example, `onMouseOver` specifies a custom message for the browser's status bar when the user places the mouse pointer over the Go! anchor. As this example shows, you must return true to set the `window.status` property in the `onMouseOver` event handler.

Example 2: Cancel the checking of a checkbox. The following example creates a checkbox with `onClick`. The event handler displays a confirm that warns the user that checking the checkbox purges all files. If the user chooses Cancel, `onClick` returns false and the checkbox is not checked.

```html
<INPUT TYPE="checkbox" NAME="check1" VALUE="check1"
   onClick="return confirm('This purges all your files. Are you sure?')"
   > Remove files
```

See also event
onDblClick

onDblClick

Executes JavaScript code when a DblClick event occurs; that is, when the user double-clicks a form element or a link.

*Event handler for*: document, Link

*Implemented in*: JavaScript 1.2

**Syntax**

`onDblClick="handlerText"`

**Parameters**

- `handlerText`: JavaScript code or a call to a JavaScript function.

**Note**

DblClick is not implemented on the Macintosh.

**Event properties used**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
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<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
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<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
<tr>
<td>layerX, layerY, pageX, pageY, screenX, screenY</td>
<td>Represent the cursor location at the time the event occurred.</td>
</tr>
<tr>
<td>which</td>
<td>Represents 1 for a left-mouse double-click and 3 for a right-mouse double-click.</td>
</tr>
<tr>
<td>modifiers</td>
<td>Contains the list of modifier keys held down when the event occurred.</td>
</tr>
</tbody>
</table>

**Examples**

The following example opens an alert dialog box when a user double-clicks a button:

```html
<form>
  <INPUT Type="button" Value="Double Click Me!"
    onDblClick="alert('You just double clicked me!')">
</form>
```

**See also**

event
onDragDrop

Executes JavaScript code when a DragDrop event occurs; that is, when the user drops an object onto the browser window, such as dropping a file.

**Event handler for** window

**Implemented in** JavaScript 1.2

**Syntax**

```
onDragDrop="handlerText"
```

**Parameters**

- **handlerText**: JavaScript code or a call to a JavaScript function.

**Event properties used**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
<tr>
<td>data</td>
<td>Returns an Array of Strings containing the URLs of the dropped objects.</td>
</tr>
<tr>
<td>modifiers</td>
<td>Contains the list of modifier keys held down when the event occurred.</td>
</tr>
<tr>
<td>screenX, screenY</td>
<td>Represent the cursor location at the time the event occurred.</td>
</tr>
</tbody>
</table>

**Security**

Getting the `data` property of the DragDrop event requires the `UniversalBrowserRead` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**Description**

The `DragDrop` event is fired whenever a system item (file, shortcut, and so on) is dropped onto the browser window using the native system's drag and drop mechanism. The normal response for the browser is to attempt to load the item into the browser window. If the event handler for the `DragDrop` event returns true, the browser loads the item normally. If the event handler returns false, the drag and drop is canceled.

**See also**

- `event`
onError

Executes JavaScript code when an error event occurs; that is, when the loading of a document or image causes an error.

Event handler for Image, window

Implemented in JavaScript 1.1

Syntax  onError="handlerText"

Parameters

handlerText  JavaScript code or a call to a JavaScript function.

Description  An error event occurs only when a JavaScript syntax or runtime error occurs, not when a browser error occurs. For example, if you try set window.location.href='notThere.html' and notThere.html does not exist, the resulting error message is a browser error message; therefore, onError would not intercept that message. However, an error event is triggered by a bad URL within an IMG tag or by corrupted image data.

window.onerror applies only to errors that occur in the window containing window.onerror, not in other windows.

onError can be any of the following:

- null to suppress all JavaScript error dialogs. Setting window.onerror to null means your users won't see JavaScript errors caused by your own code.

- The name of a function that handles errors (arguments are message text, URL, and line number of the offending line). To suppress the standard JavaScript error dialog, the function must return true. See Example 3 below.

- A variable or property that contains null or a valid function reference.

If you write an error-handling function, you have three options for reporting errors:

- Trace errors but let the standard JavaScript dialog report them (use an error handling function that returns false or does not return a value)

- Report errors yourself and disable the standard error dialog (use an error handling function that returns true)

- Turn off all error reporting (set the onError event handler to null)
### Event properties used

<table>
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</tbody>
</table>

### Examples

**Example 1: Null event handler.** In the following `IMG` tag, the code `onError="null"` suppresses error messages if errors occur when the image loads.

```html
<IMG NAME="imageBad1" SRC="corrupt.gif" ALIGN="left" BORDER="2"
onError="null">
```

**Example 2: Null event handler for a window.** The `onError` event handler for windows cannot be expressed in HTML. Therefore, you must spell it all lowercase and set it in a `SCRIPT` tag. The following code assigns null to the `onError` handler for the entire window, not just the `Image` object. This suppresses all JavaScript error messages, including those for the `Image` object.

```html
<SCRIPT>
window.onerror=null
</SCRIPT>
<IMG NAME="imageBad1" SRC="corrupt.gif" ALIGN="left" BORDER="2">
```

However, if the `Image` object has a custom `onError` event handler, the handler would execute if the image had an error. This is because `window.onerror=null` suppresses JavaScript error messages, not `onError` event handlers.

```html
<SCRIPT>
window.onerror=null
function myErrorFunc() {
    alert("The image had a nasty error.")
}
</SCRIPT>
<IMG NAME="imageBad1" SRC="corrupt.gif" ALIGN="left" BORDER="2"
onError="myErrorFunc()">
```

In the following example, `window.onerror=null` suppresses all error reporting. Without `onerror=null`, the code would cause a stack overflow error because of infinite recursion.

```html
<SCRIPT>
window.onerror = null;
function testErrorFunction() {
    testErrorFunction();
}
```
Example 3: Error handling function. The following example defines a function, `myOnError`, that intercepts JavaScript errors. The function uses three arrays to store the message, URL, and line number for each error. When the user clicks the Display Error Report button, the `displayErrors` function opens a window and creates an error report in that window. Note that the function returns true to suppress the standard JavaScript error dialog.

```html
<SCRIPT>
window.onerror = myOnError
msgArray = new Array()
urlArray = new Array()
lnoArray = new Array()

function myOnError(msg, url, lno) {
    msgArray[msgArray.length] = msg
    urlArray[urlArray.length] = url
    lnoArray[lnoArray.length] = lno
    return true
}

function displayErrors() {
    win2=window.open('', 'window2', 'scrollbars=yes')
    win2.document.writeln('<B>Error Report</B><P>')
    for (var i=0; i < msgArray.length; i++) {
        win2.document.writeln('<B>Error in file:</B> ' + urlArray[i] + '<BR>' + urlArray[i] + '<BR>')
        win2.document.writeln('<B>Line number:</B> ' + lnoArray[i] + '<BR>' + lnoArray[i] + '<BR>')
        win2.document.writeln('<B>Message:</B> ' + msgArray[i] + '<P>')
    }
    win2.document.close()
}
</SCRIPT>

<BODY onload="noSuchFunction()">
<FORMLIST>
<BR><INPUT TYPE="button" VALUE="This button has a syntax error"
    onClick="alert('unterminated string')">
<P><INPUT TYPE="button" VALUE="Display Error Report"
    onClick="displayErrors()">
</FORMLIST>
```
This example produces the following output:

**Error Report**

Error in file: file:///c%7C/temp/onerror.html  
Line number: 34  
Message: unterminated string literal

Error in file: file:///c%7C/temp/onerror.html  
Line number: 34  
Message: missing ) after argument list

Error in file: file:///c%7C/temp/onerror.html  
Line number: 30  
Message: noSuchFunction is not defined

**Example 4: Event handler calls a function.** In the following IMG tag, onError calls the function badImage if errors occur when the image loads.

```html
<SCRIPT>
function badImage(theImage) {
    alert('Error: ' + theImage.name + ' did not load properly.')
}
</SCRIPT>

<FORM>
    <IMG NAME="imageBad2" SRC="orca.gif" ALIGN="left" BORDER="2" 
    onError="badImage(this)"
</FORM>
```

**See also** event, onAbort, onLoad

---

**onFocus**

Executes JavaScript code when a focus event occurs; that is, when a window, frame, or frameset receives focus or when a form element receives input focus.

**Event handler for** Button, Checkbox, FileUpload, Layer, Password, Radio, Reset, Select, Submit, Text, Textarea, window

**Implemented in**  
JavaScript 1.0

JavaScript 1.1: event handler of Button, Checkbox, FileUpload, Frame, Password, Radio, Reset, Submit, and window

JavaScript 1.2: event handler of Layer

**Syntax** onFocus="handlerText"
**Parameters**

- **handlerText**
  
  JavaScript code or a call to a JavaScript function.

**Description**

The focus event can result from a `focus` method or from the user clicking the mouse on an object or window or tabbing with the keyboard. Selecting within a field results in a select event, not a focus event. `onFocus` executes JavaScript code when a focus event occurs.

A frame’s `onFocus` event handler overrides an `onFocus` event handler in the `BODY` tag of the document loaded into frame.

Note that placing an alert in an `onFocus` event handler results in recurrent alerts: when you press OK to dismiss the alert, the underlying window gains focus again and produces another focus event.

**Note**

In JavaScript 1.1, on some platforms, placing an `onFocus` event handler in a `FRAMESET` tag has no effect.

**Event properties used**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
</tbody>
</table>

**Examples**

The following example uses an `onFocus` handler in the `valueField` `Textarea` object to call the `valueCheck` function.

```html
<INPUT TYPE="textarea" VALUE="" NAME="valueField"
    onFocus="valueCheck()"/>
```

See also the examples for `onBlur`.

**See also**

`event`, `onBlur`, `onChange`
onKeyDown

Executes JavaScript code when a KeyDown event occurs; that is, when the user depresses a key.

Event handler for: document, Image, Link, Textarea

Implemented in: JavaScript 1.2

Syntax: `onKeyDown="handlerText"`

Parameters:
- `handlerText`: JavaScript code or a call to a JavaScript function.

Event properties used:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
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<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
<tr>
<td>layerX, layerY, pageX, pageY, screenX, screenY</td>
<td>For an event over a window, these represent the cursor location at the time the event occurred. For an event over a form, they represent the position of the form element.</td>
</tr>
<tr>
<td>which</td>
<td>Represents the ASCII value of the key pressed. To get the actual letter, number, or symbol of the pressed key, use the <code>String.fromCharCode</code> method. To set this property when the ASCII value is unknown, use the <code>String.charCodeAt</code> method.</td>
</tr>
<tr>
<td>modifiers</td>
<td>Contains the list of modifier keys held down when the event occurred.</td>
</tr>
</tbody>
</table>

Description: A KeyDown event always occurs before a KeyPress event. If `onKeyDown` returns false, no KeyPress events occur. This prevents KeyPress events occurring due to the user holding down a key.
onKeyPress

**Examples**  The following example uses the `blockA` function to evaluate characters entered from the keyboard in the `textentry` text box. If a user enters either “a” or “A”, the function returns false and the text box does not display the value.

```html
<form name="main">
  <input name="textentry" type=text size=10 maxlength=10>
</form>

<script>
  function blockA(e) {
    var keyChar = String.fromCharCode(e.which);
    if (keyChar == 'A' || keyChar == 'a')
      return false;
  }

document.main.textentry.onkeydown = blockA;
</script>
```

In the function, the `which` property of the event assigns the ASCII value of the key the user presses to the `keyChar` variable. The if statement evaluates `keyChar` and returns false for the specified characters.

**See also**  `event`, `onKeyPress`, `onKeyUp`

**onKeyPress**

Executes JavaScript code when a KeyPress event occurs; that is, when the user presses or holds down a key.

*Event handler for*  `document`, `Image`, `Link`, `Textarea`  

*Implemented in*  JavaScript 1.2

**Syntax**  `onKeyPress="handlerText"`

**Parameters**  

- `handlerText`  JavaScript code or a call to a JavaScript function.
### Event properties used

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
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</tr>
<tr>
<td>modifiers</td>
<td>Contains the list of modifier keys held down when the event occurred.</td>
</tr>
</tbody>
</table>

### Description

A `KeyPress` event occurs immediately after a `KeyDown` event only if `onKeyDown` returns something other than false. A `KeyPress` event repeatedly occurs until the user releases the key. You can cancel individual `KeyPress` events.

### Examples

In this example, the `captureEvents` method catches keyboard input and the `onKeyPress` handler calls the `blockA` function to examine the keystrokes. If the keystrokes are “a” or “z”, the function scrolls the Navigator window.

```javascript
function blockA(e) {
  var keyChar = String.fromCharCode(e.which);
  if (keyChar == 'A' || keyChar == 'a')
    self.scrollBy(10,10);
  else if(keyChar == 'Z' || keyChar == 'z')
    self.scrollBy(-10,-10);
  else
    return false;
}
document.captureEvents(Event.KEYPRESS);
document.onkeypress = blockA;
```

### See also

`event`, `onKeyDown`, `onKeyUp`
onKeyUp

**onKeyUp**

Executes JavaScript code when a KeyUp event occurs; that is, when the user releases a key.

*Event handler for* document, Image, Link, Textarea

*Implemented in* JavaScript 1.2

**Syntax**

onKeyUp="handlerText"

**Parameters**

handlerText JavaScript code or a call to a JavaScript function.

**Event properties used**

<table>
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<tr>
<th>Property</th>
<th>Description</th>
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<tr>
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<tr>
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<tr>
<td>which</td>
<td>Represents the ASCII value of the key pressed. To get the actual letter, number, or symbol of the pressed key, use the String.fromCharCode method. To set this property when the ASCII value is unknown, use the String.fromCharCode method.</td>
</tr>
<tr>
<td>modifiers</td>
<td>Contains the list of modifier keys held down when the event occurred.</td>
</tr>
</tbody>
</table>
Examples In this example, the captureEvents method catches keyboard input and the onKeyUp handler calls the Key_Up function. An alert method within the function opens a dialog box to display the value of the keystroke.

```javascript
function Key_Up(e) {
    var keyChar = String.fromCharCode(e.which);
    alert("Hold " + keyChar +" again for me, okay?");
}
document.onkeyup=Key_Up;
document.captureEvents(Event.KEYUP);
```

See also event

onLoad

Executes JavaScript code when a load event occurs; that is, when the browser finishes loading a window or all frames within a FRAMESET tag.

**Event handler for** Image, Layer, window

**Implemented in** JavaScript 1.0

JavaScript 1.1: event handler of Image

**Syntax** `onLoad="handlerText"`

**Parameters**

- **handlerText** JavaScript code or a call to a JavaScript function.

**Description** Use the `onLoad` event handler within either the BODY or the FRAMESET tag, for example, `<BODY onLoad="...">`.

In a FRAMESET and FRAME relationship, an `onLoad` event within a frame (placed in the BODY tag) occurs before an `onLoad` event within the FRAMESET (placed in the FRAMESET tag).

For images, the `onLoad` event handler indicates the script to execute when an image is displayed. Do not confuse displaying an image with loading an image. You can load several images, then display them one by one in the same Image object by setting the object's `src` property. If you change the image displayed in this way, `onLoad` executes every time an image is displayed, not just when the image is loaded into memory.
If you specify an `onLoad` event handler for an `Image` object that displays a looping GIF animation (multi-image GIF), each loop of the animation triggers the `onLoad` event, and the event handler executes once for each loop.

You can use the `onLoad` event handler to create a JavaScript animation by repeatedly setting the `src` property of an `Image` object. See `Image` for information.

### Event properties used

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
<tr>
<td>width, height</td>
<td>For an event over a window, but not over a layer, these represent the width and height of the window.</td>
</tr>
</tbody>
</table>

### Examples

**Example 1: Display message when page loads.** In the following example, the `onLoad` event handler displays a greeting message after a Web page is loaded.

```html
<BODY onLoad="window.alert("Welcome to the Brave New World home page!")">
</BODY>
```

**Example 2: Display alert when image loads.** The following example creates two `Image` objects, one with the `Image` constructor and one with the `IMG` tag. Each `Image` object has an `onLoad` event handler that calls the `displayAlert` function, which displays an alert. For the image created with the `IMG` tag, the alert displays the image name. For the image created with the `Image` constructor, the alert displays a message without the image name. This is because the `onLoad` handler for an object created with the `Image` constructor must be the name of a function, and it cannot specify parameters for the `displayAlert` function.

```javascript
<SCRIPT>
imageA = new Image(50,50)
imageA.onload=displayAlert
imageA.src="cyanball.gif"

function displayAlert(theImage) {
    if (theImage==null) {
        alert('An image loaded')
    } else alert(theImage.name + ' has been loaded.')
}
</SCRIPT>
```
Example 3: Looping GIF animation. The following example displays an image, birdie.gif, that is a looping GIF animation. The onLoad event handler for the image increments the variable cycles, which keeps track of the number of times the animation has looped. To see the value of cycles, the user clicks the button labeled Count Loops.

```
<SCRIPT>
var cycles=0
</SCRIPT>

Example 4: Change GIF animation displayed. The following example uses an onLoad event handler to rotate the display of six GIF animations. Each animation is displayed in sequence in one Image object. When the document loads, !anim0.html is displayed. When that animation completes, the onLoad event handler causes the next file, !anim1.html, to load in place of the first file. After the last animation, !anim5.html, completes, the first file is again displayed. Notice that the changeAnimation function does not call itself after changing the src property of the Image object. This is because when the src property changes, the image’s onLoad event handler is triggered and the changeAnimation function is called.

```
<SCRIPT>
var whichImage=0
var maxImages=5

function changeAnimation(theImage)
{
  ++whichImage
  if (whichImage <= maxImages) {
    var imageName='!anim' + whichImage + '.gif'
    theImage.src=imageName
  } else {
    whichImage=-1
    return
  }
}
</SCRIPT>
```

See also the examples for Image.
onMouseDown

See also  event, onAbort, onError, onUnload

onMouseDown

Executes JavaScript code when a MouseDown event occurs; that is, when the user depresses a mouse button.

*Event handler for*  Button, document, Link

*Implemented in*  JavaScript 1.2

Syntax  onMouseDown="handlerText"

Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>handlerText</td>
<td>JavaScript code or a call to a JavaScript function.</td>
</tr>
</tbody>
</table>

Event properties used

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
<tr>
<td>layerX, layerY, pageX, pageY, screenX, screenY</td>
<td>Represent the cursor location at the time the MouseDown event occurred.</td>
</tr>
<tr>
<td>which</td>
<td>Represents 1 for a left-mouse-button down and 3 for a right-mouse-button down.</td>
</tr>
<tr>
<td>modifiers</td>
<td>Contains the list of modifier keys held down when the MouseDown event occurred.</td>
</tr>
</tbody>
</table>

Description

If onMouseDown returns false, the default action (entering drag mode, entering selection mode, or arming a link) is canceled.

Arming is caused by a MouseDown over a link. When a link is armed it changes color to represent its new state.
Examples

This example lets users move an image on an HTML page by dragging it with the mouse. Your HTML code defines the image and positions it in a layer called container1. In your JavaScript code, event handlers set the position properties of container1 as users drag the image, creating the animation.

Using style sheets, the image is initially defined and positioned as follows:

```html
<HEAD>
  <STYLE type="text/css">
    #container1 { position:absolute; left:200; top:200}
  </STYLE>
</HEAD>

<BODY>
  <P ID="container1">
    <img src="backgrnd.gif" name="myImage" width=96 height=96>
  </P>
</BODY>
```

In the previous HTML code, the ID attribute for the P element which contains the image is set to container1, making container1 a unique identifier for the paragraph and the image. The STYLE tag creates a layer for container1 and positions it.

The following JavaScript code defines `onMouseDown`, `onMouseUp`, and `onMouseMove` event handlers:
onMouseDown

<SCRIPT>
container1.captureEvents(Event.MOUSEUP|Event.MOUSEDOWN);
container1.onmousedown=DRAG_begindrag;
container1.onmouseup=DRAG_enddrag;
var DRAG_lastX, DRAG_lastY, DRAG_dragging;
function DRAG_begindrag(e) {
  if (e.which == 1) {
    window.captureEvents(Event.MOUSEMOVE);
    window.onmousemove=DRAG_drag;
    DRAG_lastX=e.pageX;
    DRAG_lastY=e.pageY;
    DRAG_dragging=true;
    return false;
  }
  else {
    /*Do any right mouse button processing here*/
    return true;
  }
}
function DRAG_enddrag(e) {
  if (e.which == 1) {
    window.releaseEvents(Event.MOUSEMOVE);
    window.onmousemove=null
    DRAG_dragging=false;
    return false;
  }
  else {
    /*Do any right mouse button processing here*/
    return true;
  }
}
function DRAG_drag(e) {
  if (DRAG_dragging) {
    /*This function called only if MOUSEMOVEs are captured*/
    moveBy(e.pageX-DRAG_lastX, e.pageY-DRAG_lastY);
    DRAG_lastX = e.pageX;
    DRAG_lastY = e.pageY;
    return false;
  }
  else {
    return true;
  }
}
</SCRIPT>

In the previous code, the captureEvents method captures MouseUp and MouseDown events. The DRAG_begindrag and DRAG_enddrag functions are respectively called to handle these events.
When a user presses the left mouse button, the DRAG_begindrag function starts capturing MouseMove events and tells the DRAG_drag function to handle them. It then assigns the value of the MouseDown event's pageX property to DRAG_lastX, the value of the pageY property to DRAG_lastY, and true to DRAGDragging.

The DRAG_drag function evaluates DRAGDragging to make sure the MouseMove event was captured by DRAG_begindrag, then it uses the moveBy method to position the object, and reassigns values to DRAG_lastX and DRAG_lastY.

When the user releases the left mouse button, the DRAG_enddrag function stops capturing MouseMove events. DRAG_enddrag then makes sure no other functions are called by setting onmousemove to Null and DRAGDragging to false.

See also  event

**onMouseMove**

Executes JavaScript code when a MouseMove event occurs; that is, when the user moves the cursor.

*Event handler for*  None

*Implemented in*  JavaScript 1.2

**Syntax**  onMouseMove="handlerText"

**Parameters**

- **handlerText**: JavaScript code or a call to a JavaScript function.

**Event of**  Because mouse movement happens so frequently, by default, onMouseMove is not an event of any object. You must explicitly set it to be associated with a particular object.
Event properties used

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
<tr>
<td>layerX, layerY, pageX, pageY, screenX, screenY</td>
<td>Represent the cursor location at the time the MouseMove event occurred.</td>
</tr>
</tbody>
</table>

**Description**
The `MouseMove` event is sent only when a capture of the event is requested by an object. For information on events, see the *Client-Side JavaScript Guide*.

**Examples**
See the examples for `onMouseDown`.

**See also**
event, `document.captureEvents`

---

**onMouseOut**

Executes JavaScript code when a MouseOut event occurs; that is, each time the mouse pointer leaves an area (client-side image map) or link from inside that area or link.

*Event handler for* Layer, Link

*Implemented in* JavaScript 1.1

**Syntax**

```
onMouseOut="handlerText"
```

**Parameters**

- **handlerText**: JavaScript code or a call to a JavaScript function.

**Description**

If the mouse moves from one area into another in a client-side image map, you’ll get `onMouseOut` for the first area, then `onMouseOver` for the second.

Area tags that use `onMouseOut` must include the `href` attribute within the `AREA` tag.

You must return true within the event handler if you want to set the `status` or `defaultStatus` properties with `onMouseOver`.

---
### Event properties used

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
<tr>
<td>layerX, layerY, pageX, pageY, screenX, screenY</td>
<td>Represent the cursor location at the time the MouseOut event occurred.</td>
</tr>
</tbody>
</table>

#### Examples

See the examples for Link.

#### See also

event, onMouseOver

## onMouseOver

Executes JavaScript code when a MouseOver event occurs; that is, once each time the mouse pointer moves over an object or area from outside that object or area.

**Event handler for** Layer, Link

**Implemented in** JavaScript 1.0

JavaScript 1.1: event handler of Area

### Syntax

`onMouseOver="handlerText"`

### Parameters

**handlerText**

JavaScript code or a call to a JavaScript function.

### Description

If the mouse moves from one area into another in a client-side image map, you’ll get `onMouseOut` for the first area, then `onMouseOver` for the second.

Area tags that use `onMouseOver` must include the `HREF` attribute within the `AREA` tag.

You must return true within the event handler if you want to set the `status` or `defaultStatus` properties with `onMouseOver`.

onMouseUp

### Event properties used

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
<tr>
<td>layerX, layerY, pageX, pageY, screenX, screenY</td>
<td>Represent the cursor location at the time the MouseOver event occurred.</td>
</tr>
</tbody>
</table>

### Examples

By default, the HREF value of an anchor displays in the status bar at the bottom of the browser when a user places the mouse pointer over the anchor. In the following example, onMouseOver provides the custom message “Click this if you dare.”

```html
<A HREF="http://home.netscape.com/
    onMouseOver="window.status='Click this if you dare!'; return true">
  Click me</A>
```

See onClick for an example of using onMouseOver when the A tag’s HREF attribute is set dynamically.

See also the examples for Link.

See also  event, onMouseOut

## onMouseUp

Executes JavaScript code when a MouseUp event occurs; that is, when the user releases a mouse button.

**Event handler for** Button, document, Link

**Implemented in** JavaScript 1.2

**Syntax**  onMouseUp="handlerText"

**Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>handlerText</td>
<td>JavaScript code or a call to a JavaScript function.</td>
</tr>
</tbody>
</table>
**Event properties used**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
<tr>
<td>layerX, layerY, pageX, pageY, screenX, screenY</td>
<td>Represent the cursor location at the time the MouseUp event occurred.</td>
</tr>
<tr>
<td>which</td>
<td>Represents 1 for a left-mouse-button up and 3 for a right-mouse-button up.</td>
</tr>
<tr>
<td>modifiers</td>
<td>Contains the list of modifier keys held down when the MouseUp event occurred.</td>
</tr>
</tbody>
</table>

**Description**

If `onMouseUp` returns false, the default action is canceled. For example, if `onMouseUp` returns false over an armed link, the link is not triggered. Also, if `MouseUp` occurs over an unarmed link (possibly due to `onMouseDown` returning false), the link is not triggered.

**Note**

Arming is caused by a `MouseDown` over a link. When a link is armed it changes color to represent its new state.

**Examples**

See the examples for `onMouseDown`.

**See also**

`event`

---

**onMove**

Executes JavaScript code when a move event occurs; that is, when the user or script moves a window or frame.

*Event handler for* window

*Implemented in* JavaScript 1.2

**Syntax**

`onMove="handlerText"`

**Parameters**

- `handlerText`: JavaScript code or a call to a JavaScript function.
onMove

### Event properties used

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
<tr>
<td>screenX, screenY</td>
<td>Represent the position of the top-left corner of the window or frame.</td>
</tr>
</tbody>
</table>

### Examples

In this example, the open_now function creates the myWin window and captures Move events. The onMove handler calls another function which displays a message when a user moves myWin.

```javascript
function open_now() {
    var myWin;

    myWin = window.open("","displayWindow","width=400,height=400,menubar=no,
                         location=no,alwaysRaised=yes");
    var text="<html><head><title>Test</title></head>
             <body bgcolor=white><h1>Please move this window</h1></body>
             </html>";
    myWin.document.write(text);
    myWin.captureEvents(Event.MOVE);
    myWin.onmove = fun2;
}

function fun2() {
    alert("Hey you moved me!");
    this.focus(); // 'this' points to the current object
}
```

### See also

`event`
onReset

Executes JavaScript code when a reset event occurs; that is, when a user resets a form (clicks a Reset button).

*Event handler for* Form

*Implemented in* JavaScript 1.1

**Syntax**

onReset="handlerText"

**Parameters**

handlerText JavaScript code or a call to a JavaScript function.

**Examples**

The following example displays a Text object with the default value “CA” and a reset button. If the user types a state abbreviation in the Text object and then clicks the reset button, the original value of “CA” is restored. The form’s onReset event handler displays a message indicating that defaults have been restored.

```html
<FORM NAME="form1" onReset="alert('Defaults have been restored.' )">
  State:
  <INPUT TYPE="text" NAME="state" VALUE="CA" SIZE="2">
  <P>
  <INPUT TYPE="reset" VALUE="Clear Form" NAME="reset1">
</FORM>
```

**Event properties used**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
</tbody>
</table>

**See also** event, Form.reset, Reset
onResize

Executes JavaScript code when a resize event occurs; that is, when a user or script resizes a window or frame.

**Event handler for** window

**Implemented in** JavaScript 1.2

**Syntax**

```
onResize="handlerText"
```

**Parameters**

- **handlerText**  
  JavaScript code or a call to a JavaScript function.

**Event properties used**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
<tr>
<td>width, height</td>
<td>Represent the width and height of the window or frame.</td>
</tr>
</tbody>
</table>

**Description**

This event is sent after HTML layout completes within the new window inner dimensions. This allows positioned elements and named anchors to have their final sizes and locations queried, image SRC properties can be restored dynamically, and so on.

**Examples**

In this example, the `open_now` function creates the `myWin` window and captures Resize events. The `onResize` handler calls the `alert_me` function which displays a message when a user resizes `myWin`.

```javascript
function open_now(){
   var myWin;
   myWin=window.open("", "displayWin", "width=400, height=300, resizable=yes,
   menubar=no, location=no, alwaysRaised=yes");
   var text="<html><head><title>Test</title></head>
   +"<body bgcolor=white><h1>Please resize me</h1></body>
   +"</html>";
   myWin.document.write(text);
   myWin.captureEvents(Event.RESIZE);
   myWin.onresize=alert_me;
}
```
function alert_me()
{
    alert("You resized me! \nNow my outer width: " + this.offsetWidth + 
    "\nand my outer height: " +this.offsetHeight);
    this.focus();
}

See also event

**onSelect**

Executes JavaScript code when a select event occurs; that is, when a user selects some of the text within a text or textarea field.

*Event handler for* Text, Textarea  
*Implemented in* JavaScript 1.0

**Syntax**  
`onSelect="handlerText"`

**Parameters**  
handlerText JavaScript code or a call to a JavaScript function.

**Event properties used**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
</tbody>
</table>

**Examples**  
The following example uses `onSelect` in the `valueField` Text object to call the `selectState` function.

```html
<INPUT TYPE="text" VALUE="" NAME="valueField" onSelect="selectState()">
```

**See also** event
onSubmit

Executes JavaScript code when a submit event occurs; that is, when a user submits a form.

*Event handler for* Form

*Implemented in* JavaScript 1.0

**Syntax**

```
onSubmit="handlerText"
```

**Parameters**

- **handlerText**: JavaScript code or a call to a JavaScript function.

**Security**

Submitting a form to a `mailto:` or `news:` URL requires the `UniversalSendMail` privilege. For information on security, see the *Client-Side JavaScript Guide*.

**Description**

You can use `onSubmit` to prevent a form from being submitted; to do so, put a `return` statement that returns false in the event handler. Any other returned value lets the form submit. If you omit the `return` statement, the form is submitted.

**Event properties used**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td>target</td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
</tbody>
</table>

**Examples**

In the following example, `onSubmit` calls the `validate` function to evaluate the data being submitted. If the data is valid, the form is submitted; otherwise, the form is not submitted.

```
<form onSubmit="return validate(this)">
  ...
</form>
```

See also the examples for Form.

**See also** event, Submit, Form.submit
onUnload

Executes JavaScript code when an unload event occurs; that is, when the user exits a document.

*Event handler for* window

*Implemented in* JavaScript 1.0

**Syntax**

```
onUnload="handlerText"
```

**Parameters**

- `handlerText`: JavaScript code or a call to a JavaScript function.

**Description**

Use `onUnload` within either the `BODY` or the `FRAMESET` tag, for example, `<BODY onUnload="...">`.

In a frameset and frame relationship, an `onUnload` event within a frame (placed in the `BODY` tag) occurs before an `onUnload` event within the frameset (placed in the `FRAMESET` tag).

**Event properties used**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>type</code></td>
<td>Indicates the type of event.</td>
</tr>
<tr>
<td><code>target</code></td>
<td>Indicates the object to which the event was originally sent.</td>
</tr>
</tbody>
</table>

**Examples**

In the following example, `onUnload` calls the `cleanUp` function to perform some shutdown processing when the user exits a Web page:

```
<BODY onUnload="cleanUp()">
```

**See also**

- `onLoad`

  For general information on event handlers, see the *Client-Side JavaScript Guide*.

  For information about the `event` object, see `event`. 
onUnload
Language Elements

- Statements
- Operators
This chapter describes all JavaScript statements. JavaScript statements consist of keywords used with the appropriate syntax. A single statement may span multiple lines. Multiple statements may occur on a single line if each statement is separated by a semicolon.

Syntax conventions: All keywords in syntax statements are in bold. Words in italics represent user-defined names or statements. Any portions enclosed in square brackets, [], are optional. [statements] indicates a block of statements, which can consist of a single statement or multiple statements delimited by a curly braces { }. 
The following table lists statements available in JavaScript.

**Table 4.1 JavaScript statements.**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>break</td>
<td>Terminates the current while or for loop and transfers program control to the statement following the terminated loop.</td>
</tr>
<tr>
<td>comment</td>
<td>Notations by the author to explain what a script does. Comments are ignored by the interpreter.</td>
</tr>
<tr>
<td>continue</td>
<td>Terminates execution of the block of statements in a while or for loop, and continues execution of the loop with the next iteration.</td>
</tr>
<tr>
<td>do...while</td>
<td>Executes the specified statements until the test condition evaluates to false. Statements execute at least once.</td>
</tr>
<tr>
<td>export</td>
<td>Allows a signed script to provide properties, functions, and objects to other signed or unsigned scripts.</td>
</tr>
<tr>
<td>for</td>
<td>Creates a loop that consists of three optional expressions, enclosed in parentheses and separated by semicolons, followed by a block of statements executed in the loop.</td>
</tr>
<tr>
<td>for...in</td>
<td>Iterates a specified variable over all the properties of an object. For each distinct property, JavaScript executes the specified statements.</td>
</tr>
<tr>
<td>function</td>
<td>Declares a function with the specified parameters. Acceptable parameters include strings, numbers, and objects.</td>
</tr>
<tr>
<td>if...else</td>
<td>Executes a set of statements if a specified condition is true. If the condition is false, another set of statements can be executed.</td>
</tr>
<tr>
<td>import</td>
<td>Allows a script to import properties, functions, and objects from a signed script that has exported the information.</td>
</tr>
<tr>
<td>label</td>
<td>Provides an identifier that can be used with break or continue to indicate where the program should continue execution.</td>
</tr>
<tr>
<td>return</td>
<td>Specifies the value to be returned by a function.</td>
</tr>
<tr>
<td>switch</td>
<td>Allows a program to evaluate an expression and attempt to match the expression's value to a case label.</td>
</tr>
<tr>
<td>var</td>
<td>Declares a variable, optionally initializing it to a value.</td>
</tr>
<tr>
<td>while</td>
<td>Creates a loop that evaluates an expression, and if it is true, executes a block of statements. The loop then repeats, as long as the specified condition is true.</td>
</tr>
<tr>
<td>with</td>
<td>Establishes the default object for a set of statements.</td>
</tr>
</tbody>
</table>
break

Use the break statement to terminate a loop, switch, or label statement.

Terminates the current loop, switch, or label statement and transfers program control to the statement following the terminated loop.

**Syntax**

```
break [label]
```

**Parameter**

- **label**: Identifier associated with the label of the statement.

**Description**

The break statement includes an optional label that allows the program to break out of a labeled statement. The statements in a labeled statement can be of any type.

**Examples**

**Example 1.** The following function has a break statement that terminates the while loop when \( e \) is 3, and then returns the value \( 3 \times x \).

```
function testBreak(x) {
    var i = 0
    while (i < 6) {
        if (i == 3) {
            break
        }
        i++
    }
    return i*x
}
```

**Example 2.** In the following example, a statement labeled `checkiandj` contains a statement labeled `checkj`. If break is encountered, the program breaks out of the `checkj` statement and continues with the remainder of the `checkiandj` statement. If break had a label of `checkiandj`, the program would break out of the `checkiandj` statement and continue at the statement following `checkiandj`.

**Implemented in**

- JavaScript 1.0, NES 2.0
- ECMA version ECMA-262
checki and j :
    if (4==i) {
        document.write("You've entered " + i + ".<BR>" );
    
    check j :
        if (2==j) {
            document.write("You've entered " + j + ".<BR>" );
            break check j;
            document.write("The sum is " + (i+j) + ".<BR>" );
        }
        document.write(i + "-" + j + "=" + (i-j) + ".<BR>" );
    }

See also continue, label, switch

comment

Notations by the author to explain what a script does. Comments are ignored by the interpreter.

Implemented in JavaScript 1.0, NES 2.0

ECMA version ECMA-262

Syntax // comment text
/* multiple line comment text */

Description JavaScript supports Java-style comments:

- Comments on a single line are preceded by a double-slash (//).
- Comments that span multiple lines are preceded by a /* and followed by a */.

Examples // This is a single-line comment.
/* This is a multiple-line comment. It can be of any length, and you can put whatever you want here. */
**continue**

Restarts a `while`, `do-while`, `for`, or `label` statement.

*Implemented in* JavaScript 1.0, NES 2.0

*ECMA version* ECMA-262

**Syntax**

```
continue [label]
```

**Parameter**

`label` Identifier associated with the label of the statement.

**Description**

In contrast to the `break` statement, `continue` does not terminate the execution of the loop entirely: instead,

- In a `while` loop, it jumps back to the condition.
- In a `for` loop, it jumps to the update expression.

The `continue` statement can now include an optional label that allows the program to terminate execution of a labeled statement and continue to the specified labeled statement. This type of continue must be in a looping statement identified by the label used by `continue`.

**Examples**

**Example 1.** The following example shows a `while` loop that has a `continue` statement that executes when the value of `i` is 3. Thus, `n` takes on the values 1, 3, 7, and 12.

```java
int i = 0;
int n = 0;
while (i < 5) {
    i++
    if (i == 3)
        continue
    n += i
}
```

**Example 2.** In the following example, a statement labeled `checkiandj` contains a statement labeled `checkj`. If `continue` is encountered, the program continues at the top of the `checkj` statement. Each time `continue` is encountered, `checkj` reiterates until its condition returns false. When false is returned, the remainder of the `checkiandj` statement is completed.

`checkiandj` reiterates until its condition returns false. When false is returned, the program continues at the statement following `checkiandj`.

`checkiandj` reiterates until its condition returns false. When false is returned, the program continues at the statement following `checkiandj`.
do...while

If continue had a label of checkiandj, the program would continue at the top of the checkiandj statement.

checkiandj :
    while (i<4) {
        document.write(i + "<BR>");
        i+=1;
    }

checkj :
    while (j>4) {
        document.write(j + "<BR>");
        j-=1;
        if ((j%2)==0)
            continue checkj;
        document.write(j + " is odd.<BR>");
    }
    document.write("i = " + i + "<br>");
    document.write("j = " + j + "<br>");

See also  break, label

do...while

Executes the specified statements until the test condition evaluates to false. Statements execute at least once.

Implemented in  JavaScript 1.2, NES 3.0

Syntax  

    do  
    statements  
    while (condition);

Parameters  

    statements  Block of statements that is executed at least once and is re-executed each time the condition evaluates to true.  
    condition  Evaluated after each pass through the loop. If condition evaluates to true, the statements in the preceding block are re-executed. When condition evaluates to false, control passes to the statement following do while.
export

Examples  In the following example, the do loop iterates at least once and reiterates until i is no longer less than 5.

do {
    i+=1
    document.write(i);
} while (i<5);

export

Allows a signed script to provide properties, functions, and objects to other signed or unsigned scripts.

Implemented in  JavaScript 1.2, NES 3.0

Syntax  export name1, name2, ..., nameN
       export *

Parameters

nameN  List of properties, functions, and objects to be exported.

*  Exports all properties, functions, and objects from the script.

Description  Typically, information in a signed script is available only to scripts signed by the same principals. By exporting properties, functions, or objects, a signed script makes this information available to any script (signed or unsigned). The receiving script uses the companion import statement to access the information.

See also  import
for

Creates a loop that consists of three optional expressions, enclosed in parentheses and separated by semicolons, followed by a block of statements executed in the loop.

**Implemented in**
JavaScript 1.0, NES 2.0

**ECMA version**
ECMA-262

**Syntax**
```
for ([initial-expression]; [condition]; [increment-expression])
{
  statements
}
```

**Parameters**
- **initial-expression**: Statement or variable declaration. Typically used to initialize a counter variable. This expression may optionally declare new variables with the `var` keyword. These variables are local to the function, not to the loop.
- **condition**: Evaluated on each pass through the loop. If this condition evaluates to true, the statements in `statements` are performed. This conditional test is optional. If omitted, the condition always evaluates to true.
- **increment-expression**: Generally used to update or increment the counter variable.
- **statements**: Block of statements that are executed as long as condition evaluates to true. This can be a single statement or multiple statements. Although not required, it is good practice to indent these statements from the beginning of the `for` statement.

**Examples**
The following `for` statement starts by declaring the variable `i` and initializing it to 0. It checks that `i` is less than nine, performs the two succeeding statements, and increments `i` by 1 after each pass through the loop.

```
for (var i = 0; i < 9; i++) {
  n += i
  myfunc(n)
}
```
for...in

Iterates a specified variable over all the properties of an object. For each distinct property, JavaScript executes the specified statements.

**Implemented in**  
JavaScript 1.0, NES 2.0

**ECMA version**  
ECMA-262

**Syntax**
```
for (variable in object) {
  statements
}
```

**Parameters**
- **variable**: Variable to iterate over every property, declared with the `var` keyword. This variable is local to the function, not to the loop.
- **object**: Object for which the properties are iterated.
- **statements**: Specifies the statements to execute for each property.

**Examples**
The following function takes as its argument an object and the object’s name. It then iterates over all the object’s properties and returns a string that lists the property names and their values.

```javascript
function show_props(obj, objName) {
  var result = ""
  for (var i in obj) {
    result += objName + "." + i + " = " + obj[i] + "\n"
  }
  return result
}
```
function

Declares a function with the specified parameters. Acceptable parameters include strings, numbers, and objects.

**Implemented in** JavaScript 1.0, NES 2.0

**ECMA version** ECMA-262

**Syntax**

```javascript
function name([param] [, param] [..., param]) {
    statements
}
```

You can also define functions using the `Function` constructor; see “Function” on page 169.

**Parameters**

- `name` The function name.
- `param` The name of an argument to be passed to the function. A function can have up to 255 arguments.
- `statements` The statements which comprise the body of the function.

**Description**

To return a value, the function must have a `return` statement that specifies the value to return.

A function created with the `function` statement is a `Function` object and has all the properties, methods, and behavior of `Function` objects. See “Function” on page 169 for detailed information on functions.

**Examples**

The following code declares a function that returns the total dollar amount of sales, when given the number of units sold of products a, b, and c.

```javascript
function calc_sales(units_a, units_b, units_c) {
    return units_a*79 + units_b*129 + units_c*699
}
```

**See also** “Function” on page 169
if...else

Executes a set of statements if a specified condition is true. If the condition is false, another set of statements can be executed.

**Implemented in**
JavaScript 1.0, NES 2.0

**ECMA version**
ECMA-262

**Syntax**

```javascript
if (condition) {
    statements1
} [else {
    statements2
}]
```

**Parameters**

- **condition**
  Can be any JavaScript expression that evaluates to true or false. Parentheses are required around the condition. If condition evaluates to true, the statements in `statements1` are executed.

- **statements1, statements2**
  Can be any JavaScript statements, including further nested `if` statements. Multiple statements must be enclosed in braces.

**Description**

You should not use simple assignments in a conditional statement. For example, do not use the following code:

```javascript
if(x = y)
{
    /* do the right thing */
}
```

If you need to use an assignment in a conditional statement, put additional parentheses around the assignment. For example, use `if(x == y)`.

**Backward Compatibility**

**JavaScript 1.2 and earlier versions.** You can use simple assignments in a conditional statement. An assignment operator in a conditional statement is converted to an equality operator. For example, `if(x = y)` is converted to `if(x == y)`. In Navigator, this expression also displays a dialog box with the message “Test for equality (==) mistyped as assignment (=)? Assuming equality test.”

**Examples**

```javascript
if (cipher_char == from_char) {
    result = result + to_char
    x++
}
else
    result = result + clear_char
```
import

Allows a script to import properties, functions, and objects from a signed script that has exported the information.

Implemented in JavaScript 1.2, NES 3.0

Syntax

```javascript
import objectName.name1, objectName.name2, ..., objectName.nameN
import objectName.*
```

Parameters

- `objectName` Name of the object that will receive the imported names.
- `name1, name2, nameN` List of properties, functions, and objects to import from the export file.
- `*` Imports all properties, functions, and objects from the export script.

Description

The `objectName` parameter is the name of the object that will receive the imported names. For example, if `f` and `p` have been exported, and if `obj` is an object from the importing script, the following code makes `f` and `p` accessible in the importing script as properties of `obj`.

```javascript
import obj.f, obj.p
```

Typically, information in a signed script is available only to scripts signed by the same principals. By exporting (using the `export` statement) properties, functions, or objects, a signed script makes this information available to any script (signed or unsigned). The receiving script uses the `import` statement to access the information.

The script must load the export script into a window, frame, or layer before it can import and use any exported properties, functions, and objects.

See also

- `export`
**label**

Provides a statement with an identifier that lets you refer to it elsewhere in your program.

*Implemented in* JavaScript 1.2, NES 3.0

For example, you can use a label to identify a loop, and then use the `break` or `continue` statements to indicate whether a program should interrupt the loop or continue its execution.

**Syntax**

```
label : statements
```

**Parameter**

- `label`: Any JavaScript identifier that is not a reserved word.
- `statements`: Block of statements. `break` can be used with any labeled statement, and `continue` can be used with looping labeled statements.

**Examples**

For an example of a label statement using `break`, see `break`. For an example of a label statement using `continue`, see `continue`.

**See also** `break`, `continue`

**return**

Specifies the value to be returned by a function.

*Implemented in* JavaScript 1.0, NES 2.0

*ECMA version* ECMA-262

**Syntax**

```
return expression
```

**Parameters**

- `expression`: The expression to return.
**Examples**  The following function returns the square of its argument, \( x \), where \( x \) is a number.

```javascript
function square(x) {
    return x * x
}
```

**switch**

Allows a program to evaluate an expression and attempt to match the expression's value to a case label.

*Implemented in* JavaScript 1.2, NES 3.0

**Syntax**

```javascript
switch (expression) {
    case label :
        statements;
        break;
    case label :
        statements;
        break;
    ...
    default : statements;
}
```

**Parameters**

- **expression**  Value matched against label.
- **label**  Identifier used to match against expression.
- **statements**  Block of statements that is executed once if `expression` matches `label`.

**Description**

If a match is found, the program executes the associated statement. If multiple cases match the provided value, the first case that matches is selected, even if the cases are not equal to each other.

The program first looks for a label matching the value of `expression` and then executes the associated statement. If no matching label is found, the program looks for the optional default statement, and if found, executes the associated statement. If no default statement is found, the program continues execution at the statement following the end of `switch`.
The optional `break` statement associated with each case label ensures that the program breaks out of `switch` once the matched statement is executed and continues execution at the statement following `switch`. If `break` is omitted, the program continues execution at the next statement in the `switch` statement.

**Examples**

In the following example, if `expression` evaluates to “Bananas”, the program matches the value with case “Bananas” and executes the associated statement. When `break` is encountered, the program breaks out of `switch` and executes the statement following `switch`. If `break` were omitted, the statement for case “Cherries” would also be executed.

```javascript
switch (i) {
  case "Oranges":
    document.write("Oranges are $0.59 a pound.<BR>");
    break;
  case "Apples":
    document.write("Apples are $0.32 a pound.<BR>");
    break;
  case "Bananas":
    document.write("Bananas are $0.48 a pound.<BR>");
    break;
  case "Cherries":
    document.write("Cherries are $3.00 a pound.<BR>");
    break;
  default :
    document.write("Sorry, we are out of " + i + ".<BR>");
}
document.write("Is there anything else you'd like?<BR>");
```

---

**`var`**

Declares a variable, optionally initializing it to a value.

*Implemented in* JavaScript 1.0, NES 2.0

*ECMA version* ECMA-262

**Syntax**

```
var varname [= value] [..., varname [= value] ]
```

**Parameters**

- `varname` Variable name. It can be any legal identifier.
- `value` Initial value of the variable and can be any legal expression.
**Description**  The scope of a variable is the current function or, for variables declared outside a function, the current application.

Using `var` outside a function is optional; you can declare a variable by simply assigning it a value. However, it is good style to use `var`, and it is necessary in functions in the following situations:
- If a global variable of the same name exists.
- If recursive or multiple functions use variables with the same name.

**Examples**  var num_hits = 0, cust_no = 0

---

**while**

Creates a loop that evaluates an expression, and if it is true, executes a block of statements. The loop then repeats, as long as the specified condition is true.

*Implemented in*  JavaScript 1.0, NES 2.0

*ECMA version*  ECMA-262

**Syntax**  

```
while (condition) {
    statements
}
```

**Parameters**

- **condition**  Evaluated before each pass through the loop. If this condition evaluates to true, the statements in the succeeding block are performed. When condition evaluates to false, execution continues with the statement following `statements`.
- **statements**  Block of statements that are executed as long as the condition evaluates to true. Although not required, it is good practice to indent these statements from the beginning of the statement.

**Examples**  The following `while` loop iterates as long as `n` is less than three.

```javascript
n = 0
x = 0
while(n < 3) {
    n ++
    x += n
}
```
Each iteration, the loop increments \( n \) and adds it to \( x \). Therefore, \( x \) and \( n \) take on the following values:

- After the first pass: \( n = 1 \) and \( x = 1 \)
- After the second pass: \( n = 2 \) and \( x = 3 \)
- After the third pass: \( n = 3 \) and \( x = 6 \)

After completing the third pass, the condition \( n < 3 \) is no longer true, so the loop terminates.

**with**

Establishes the default object for a set of statements.

*Implemented in* JavaScript 1.0, NES 2.0

*ECMA version* ECMA-262

**Syntax**

```
with (object){
    statements
}
```

**Parameters**

- **object** Specifies the default object to use for the statements. The parentheses around `object` are required.
- **statements** Any block of statements.

**Description** JavaScript looks up any unqualified names within the set of statements to determine if the names are properties of the default object. If an unqualified name matches a property, then the property is used in the statement; otherwise, a local or global variable is used.
The following `with` statement specifies that the `Math` object is the default object. The statements following the `with` statement refer to the `PI` property and the `cos` and `sin` methods, without specifying an object. JavaScript assumes the `Math` object for these references.

```javascript
var a, x, y
var r=10
with (Math) {
    a = PI * r * r
    x = r * cos(PI)
    y = r * sin(PI/2)
}
```
JavaScript has assignment, comparison, arithmetic, bitwise, logical, string, and special operators. This chapter describes the operators and contains information about operator precedence.

The following table summarizes the JavaScript operators.

### Table 5.1 JavaScript operators.

<table>
<thead>
<tr>
<th>Operator category</th>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arithmetic Operators</td>
<td>+</td>
<td>(Addition) Adds 2 numbers.</td>
</tr>
<tr>
<td></td>
<td>++</td>
<td>(Increment) Adds one to a variable representing a number (returning either the new or old value of the variable)</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>(Unary negation, subtraction) As a unary operator, negates the value of its argument. As a binary operator, subtracts 2 numbers.</td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>(Decrement) Subtracts one from a variable representing a number (returning either the new or old value of the variable)</td>
</tr>
<tr>
<td></td>
<td>*</td>
<td>(Multiplication) Multiplies 2 numbers.</td>
</tr>
<tr>
<td></td>
<td>/</td>
<td>(Division) Divides 2 numbers.</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>(Modulus) Computes the integer remainder of dividing 2 numbers.</td>
</tr>
<tr>
<td>String Operators</td>
<td>+</td>
<td>(String addition) Concatenates 2 strings.</td>
</tr>
<tr>
<td></td>
<td>+=</td>
<td>Concatenates 2 strings and assigns the result to the first operand.</td>
</tr>
</tbody>
</table>
Logical Operators

- **&& (Logical AND)** Returns the first operand if it can be converted to false; otherwise, returns the second operand. Thus, when used with Boolean values, && returns true if both operands are true; otherwise, returns false.

- **|| (Logical OR)** Returns the first operand if it can be converted to true; otherwise, returns the second operand. Thus, when used with Boolean values, || returns true if either operand is true; if both are false, returns false.

- **! (Logical NOT)** Returns false if its single operand can be converted to true; otherwise, returns true.

Bitwise Operators

- **& (Bitwise AND)** Returns a one in each bit position if bits of both operands are ones.

- **^ (Bitwise XOR)** Returns a one in a bit position if bits of one but not both operands are one.

- **| (Bitwise OR)** Returns a one in a bit if bits of either operand is one.

- **~ (Bitwise NOT)** Flips the bits of its operand.

- **<< (Left shift)** Shifts its first operand in binary representation the number of bits to the left specified in the second operand, shifting in zeros from the right.

- **>> (Sign-propagating right shift)** Shifts the first operand in binary representation the number of bits to the right specified in the second operand, discarding bits shifted off.

- **>>> (Zero-fill right shift)** Shifts the first operand in binary representation the number of bits to the right specified in the second operand, discarding bits shifted off, and shifting in zeros from the left.

---

Table 5.1 JavaScript operators. (Continued)
**Table 5.1** JavaScript operators. (Continued)

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>-</code></td>
<td>Assigns the value of the second operand to the first operand.</td>
</tr>
<tr>
<td><code>+=</code></td>
<td>Adds 2 numbers and assigns the result to the first.</td>
</tr>
<tr>
<td><code>-=</code></td>
<td>Subtracts 2 numbers and assigns the result to the first.</td>
</tr>
<tr>
<td><code>*=</code></td>
<td>Multiplies 2 numbers and assigns the result to the first.</td>
</tr>
<tr>
<td><code>/=</code></td>
<td>Divides 2 numbers and assigns the result to the first.</td>
</tr>
<tr>
<td><code>%=</code></td>
<td>Computes the modulus of 2 numbers and assigns the result to the first.</td>
</tr>
<tr>
<td><code>&amp;=</code></td>
<td>Performs a bitwise AND and assigns the result to the first operand.</td>
</tr>
<tr>
<td><code>^=</code></td>
<td>Performs a bitwise XOR and assigns the result to the first operand.</td>
</tr>
<tr>
<td>`</td>
<td>=`</td>
</tr>
<tr>
<td><code>&lt;&lt;=</code></td>
<td>Performs a left shift and assigns the result to the first operand.</td>
</tr>
<tr>
<td><code>&gt;&gt;=</code></td>
<td>Performs a sign-propagating right shift and assigns the result to the first operand.</td>
</tr>
<tr>
<td><code>&gt;&gt;&gt;=</code></td>
<td>Performs a zero-fill right shift and assigns the result to the first operand.</td>
</tr>
<tr>
<td><code>==</code></td>
<td>Returns true if the operands are equal.</td>
</tr>
<tr>
<td><code>!=</code></td>
<td>Returns true if the operands are not equal.</td>
</tr>
<tr>
<td><code>===</code></td>
<td>Returns true if the operands are equal and of the same type.</td>
</tr>
<tr>
<td><code>!==</code></td>
<td>Returns true if the operands are not equal and/or not of the same type.</td>
</tr>
<tr>
<td><code>&gt;</code></td>
<td>Returns true if the left operand is greater than the right operand.</td>
</tr>
<tr>
<td><code>&gt;=</code></td>
<td>Returns true if the left operand is greater than or equal to the right operand.</td>
</tr>
<tr>
<td><code>&lt;</code></td>
<td>Returns true if the left operand is less than the right operand.</td>
</tr>
<tr>
<td><code>&lt;=</code></td>
<td>Returns true if the left operand is less than or equal to the right operand.</td>
</tr>
</tbody>
</table>
Assignment Operators

Table 5.1 JavaScript operators. (Continued)

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>?:</td>
<td>Performs a simple &quot;if...then...else&quot;</td>
</tr>
<tr>
<td>,</td>
<td>Evaluates two expressions and returns the result of the second expression.</td>
</tr>
<tr>
<td>delete</td>
<td>Deletes an object, an object’s property, or an element at a specified index in an array.</td>
</tr>
<tr>
<td>new</td>
<td>Creates an instance of a user-defined object type or of one of the built-in object types.</td>
</tr>
<tr>
<td>this</td>
<td>Keyword that you can use to refer to the current object.</td>
</tr>
<tr>
<td>typeof</td>
<td>Returns a string indicating the type of the unevaluated operand.</td>
</tr>
<tr>
<td>void</td>
<td>Specifies an expression to be evaluated without returning a value.</td>
</tr>
</tbody>
</table>

Table 5.2 Assignment operators

<table>
<thead>
<tr>
<th>Shorthand operator</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>x += y</td>
<td>x = x + y</td>
</tr>
<tr>
<td>x -= y</td>
<td>x = x - y</td>
</tr>
<tr>
<td>x *= y</td>
<td>x = x * y</td>
</tr>
<tr>
<td>x /= y</td>
<td>x = x / y</td>
</tr>
<tr>
<td>x %= y</td>
<td>x = x % y</td>
</tr>
</tbody>
</table>
Comparison Operators

Comparison Operators

A comparison operator compares its operands and returns a logical value based on whether the comparison is true.

Implemented in JavaScript 1.0

JavaScript 1.3: Added the === and !== operators.

ECMA version ECMA-262 includes all comparison operators except === and !==.

The operands can be numerical or string values. Strings are compared based on standard lexicographical ordering, using Unicode values.

A Boolean value is returned as the result of the comparison.

- Two strings are equal when they have the same sequence of characters, same length, and same characters in corresponding positions.
- Two numbers are equal when they are numerically equal (have the same number value). NaN is not equal to anything, including NaN. Positive and negative zeros are equal.

Table 5.2 Assignment operators

<table>
<thead>
<tr>
<th>Shorthand operator</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>x &lt;&lt;= y</td>
<td>x = x &lt;&lt; y</td>
</tr>
<tr>
<td>x &gt;&gt;= y</td>
<td>x = x &gt;&gt; y</td>
</tr>
<tr>
<td>x &gt;&gt;&gt;= y</td>
<td>x = x &gt;&gt;&gt; y</td>
</tr>
<tr>
<td>x &amp;= y</td>
<td>x = x &amp; y</td>
</tr>
<tr>
<td>x ^= y</td>
<td>x = x ^ y</td>
</tr>
<tr>
<td>x</td>
<td>= y</td>
</tr>
</tbody>
</table>

In unusual situations, the assignment operator is not identical to the Meaning expression in Table 5.2. When the left operand of an assignment operator itself contains an assignment operator, the left operand is evaluated only once. For example:

a[i++] += 5 // i is evaluated only once
a[i++] = a[i++] + 5 // i is evaluated twice
Comparison Operators

- Two objects are equal if they refer to the same Object.
- Two Boolean operands are equal if they are both true or false.
- Null and Undefined types are equal.

The following table describes the comparison operators.

Table 5.3 Comparison operators

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
<th>Examples returning true</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal (==)</td>
<td>Returns true if the operands are equal. If the two operands are not of the same type, JavaScript attempts to convert the operands to an appropriate type for the comparison.</td>
<td>3 == var1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;3&quot; == var1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 == '3'</td>
</tr>
<tr>
<td>Not equal (!=)</td>
<td>Returns true if the operands are not equal. If the two operands are not of the same type, JavaScript attempts to convert the operands to an appropriate type for the comparison.</td>
<td>var1 != 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>var1 != &quot;3&quot;</td>
</tr>
<tr>
<td>Strict equal (===)</td>
<td>Returns true if the operands are equal and of the same type.</td>
<td>3 === var1</td>
</tr>
<tr>
<td>Strict not equal (!==)</td>
<td>Returns true if the operands are not equal and/or not of the same type.</td>
<td>var1 !== &quot;3&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 !== '3'</td>
</tr>
<tr>
<td>Greater than (&gt;)</td>
<td>Returns true if the left operand is greater than the right operand.</td>
<td>var2 &gt; var1</td>
</tr>
<tr>
<td>Greater than or equal (&gt;=)</td>
<td>Returns true if the left operand is greater than or equal to the right operand.</td>
<td>var2 &gt;= var1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>var1 &gt;= 3</td>
</tr>
<tr>
<td>Less than (&lt;)</td>
<td>Returns true if the left operand is less than the right operand.</td>
<td>var1 &lt; var2</td>
</tr>
<tr>
<td>Less than or equal (&lt;=)</td>
<td>Returns true if the left operand is less than or equal to the right operand.</td>
<td>var1 &lt;= var2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>var2 &lt;= 5</td>
</tr>
</tbody>
</table>

a. These examples assume that var1 has been assigned the value 3 and var2 has been assigned the value 4.
Using the Equality Operators

The standard equality operators (== and !=) compare two operands without regard to their type. The strict equality operators (=== and !==) perform equality comparisons on operands of the same type. Use strict equality operators if the operands must be of a specific type as well as value or if the exact type of the operands is important. Otherwise, use the standard equality operators, which allow you to compare the identity of two operands even if they are not of the same type.

When type conversion is needed, JavaScript converts String, Number, Boolean, or Object operands as follows.

- When comparing a number and a string, the string is converted to a number value. JavaScript attempts to convert the string numeric literal to a Number type value. First, a mathematical value is derived from the string numeric literal. Next, this value is rounded to nearest Number type value.

- If one of the operands is Boolean, the Boolean operand is converted to 1 if it is true and +0 if it is false.

- If an object is compared with a number or string, JavaScript attempts to return the default value for the object. Operators attempt to convert the object to a primitive value, a String or Number value, using the valueOf and toString methods of the objects. If this attempt to convert the object fails, a runtime error is generated.

**Backward Compatibility**

The behavior of the standard equality operators (== and !=) depends on the JavaScript version.

**JavaScript 1.2.** The standard equality operators (== and !=) do not perform a type conversion before the comparison is made. The strict equality operators (=== and !==) are unavailable.

**JavaScript 1.1 and earlier versions.** The standard equality operators (== and !=) perform a type conversion before the comparison is made. The strict equality operators (=== and !==) are unavailable.
Arithmetic Operators

Arithmetic operators take numerical values (either literals or variables) as their operands and return a single numerical value. The standard arithmetic operators are addition (+), subtraction (-), multiplication (*), and division (/).

These operators work as they do in most other programming languages, except the / operator returns a floating-point division in JavaScript, not a truncated division as it does in languages such as C or Java. For example:

1/2 //returns 0.5 in JavaScript
1/2 //returns 0 in Java

% (Modulus)

The modulus operator is used as follows:

var1 % var2

The modulus operator returns the first operand modulo the second operand, that is, var1 modulo var2, in the preceding statement, where var1 and var2 are variables. The modulo function is the integer remainder of dividing var1 by var2. For example, 12 % 5 returns 2.
++ (Increment)

The increment operator is used as follows:

```
var++ or ++var
```

This operator increments (adds one to) its operand and returns a value. If used postfix, with operator after operand (for example, x++), then it returns the value before incrementing. If used prefix with operator before operand (for example, ++x), then it returns the value after incrementing.

For example, if x is three, then the statement

```
y = x++
```

sets y to 3 and increments x to 4. If x is 3, then the statement

```
y = ++x
```

increments x to 4 and sets y to 4.

-- (Decrement)

The decrement operator is used as follows:

```
var-- or --var
```

This operator decrements (subtracts one from) its operand and returns a value. If used postfix (for example, x--), then it returns the value before decrementing. If used prefix (for example, --x), then it returns the value after decrementing.

For example, if x is three, then the statement

```
y = x--
```

sets y to 3 and decrements x to 2. If x is 3, then the statement

```
y = --x
```

decrements x to 2 and sets y to 2.

- (Unary Negation)

The unary negation operator precedes its operand and negates it. For example,

```
y = -x
```

negates the value of x and assigns that to y; that is, if x were 3, y would get the value -3 and x would retain the value 3.
Bitwise Operators

Bitwise operators treat their operands as a set of 32 bits (zeros and ones), rather than as decimal, hexadecimal, or octal numbers. For example, the decimal number nine has a binary representation of 1001. Bitwise operators perform their operations on such binary representations, but they return standard JavaScript numerical values.

The following table summarizes JavaScript's bitwise operators:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Usage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bitwise AND</td>
<td>a &amp; b</td>
<td>Returns a one in each bit position for which the corresponding bits of both operands are ones.</td>
</tr>
<tr>
<td>Bitwise OR</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>Bitwise XOR</td>
<td>a ^ b</td>
<td>Returns a one in each bit position for which the corresponding bits of either but not both operands are ones.</td>
</tr>
<tr>
<td>Bitwise NOT</td>
<td>~ a</td>
<td>Inverts the bits of its operand.</td>
</tr>
<tr>
<td>Left shift</td>
<td>a &lt;&lt; b</td>
<td>Shifts a in binary representation b bits to left, shifting in zeros from the right.</td>
</tr>
<tr>
<td>Sign-propagating right shift</td>
<td>a &gt;&gt; b</td>
<td>Shifts a in binary representation b bits to right, discarding bits shifted off.</td>
</tr>
<tr>
<td>Zero-fill right shift</td>
<td>a &gt;&gt;&gt; b</td>
<td>Shifts a in binary representation b bits to the right, discarding bits shifted off, and shifting in zeros from the left.</td>
</tr>
</tbody>
</table>
Bitwise Logical Operators

*Implemented in* JavaScript 1.0

*ECMA version* ECMA-262

Conceptually, the bitwise logical operators work as follows:

- The operands are converted to thirty-two-bit integers and expressed by a series of bits (zeros and ones).
- Each bit in the first operand is paired with the corresponding bit in the second operand: first bit to first bit, second bit to second bit, and so on.
- The operator is applied to each pair of bits, and the result is constructed bitwise.

For example, the binary representation of nine is 1001, and the binary representation of fifteen is 1111. So, when the bitwise operators are applied to these values, the results are as follows:

- 15 & 9 yields 9 (1111 & 1001 = 1001)
- 15 | 9 yields 15 (1111 | 1001 = 1111)
- 15 ^ 9 yields 6 (1111 ^ 1001 = 0110)

Bitwise Shift Operators

*Implemented in* JavaScript 1.0

*ECMA version* ECMA-262

The bitwise shift operators take two operands: the first is a quantity to be shifted, and the second specifies the number of bit positions by which the first operand is to be shifted. The direction of the shift operation is controlled by the operator used.

Shift operators convert their operands to thirty-two-bit integers and return a result of the same type as the left operator.
Bitwise Operators

<< (Left Shift)
This operator shifts the first operand the specified number of bits to the left. Excess bits shifted off to the left are discarded. Zero bits are shifted in from the right.

For example, 9<<2 yields thirty-six, because 1001 shifted two bits to the left becomes 100100, which is thirty-six.

>> (Sign-Propagating Right Shift)
This operator shifts the first operand the specified number of bits to the right. Excess bits shifted off to the right are discarded. Copies of the leftmost bit are shifted in from the left.

For example, 9>>2 yields two, because 1001 shifted two bits to the right becomes 10, which is two. Likewise, -9>>2 yields -3, because the sign is preserved.

>>> (Zero-Fill Right Shift)
This operator shifts the first operand the specified number of bits to the right. Excess bits shifted off to the right are discarded. Zero bits are shifted in from the left.

For example, 19>>>2 yields four, because 10011 shifted two bits to the right becomes 100, which is four. For non-negative numbers, zero-fill right shift and sign-propagating right shift yield the same result.
Logical Operators

Logical operators are typically used with Boolean (logical) values; when they are, they return a Boolean value. However, the && and || operators actually return the value of one of the specified operands, so if these operators are used with non-Boolean values, they may return a non-Boolean value.

Implemented in JavaScript 1.0
ECMA version ECMA-262

The logical operators are described in the following table.

Table 5.5 Logical operators

<table>
<thead>
<tr>
<th>Operator</th>
<th>Usage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;&amp;</td>
<td>expr1 &amp;&amp; expr2</td>
<td>(Logical AND) Returns expr1 if it can be converted to false; otherwise, returns expr2. Thus, when used with Boolean values, &amp;&amp; returns true if both operands are true; otherwise, returns false.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>!</td>
<td>!expr</td>
<td>(Logical NOT) Returns false if its single operand can be converted to true; otherwise, returns true.</td>
</tr>
</tbody>
</table>

Examples of expressions that can be converted to false are those that evaluate to null, 0, the empty string (""), or undefined.

Even though the && and || operators can be used with operands that are not Boolean values, they can still be considered Boolean operators since their return values can always be converted to Boolean values.
Short-Circuit Evaluation. As logical expressions are evaluated left to right, they are tested for possible “short-circuit” evaluation using the following rules:

- `false && anything` is short-circuit evaluated to false.
- `true || anything` is short-circuit evaluated to true.

The rules of logic guarantee that these evaluations are always correct. Note that the `anything` part of the above expressions is not evaluated, so any side effects of doing so do not take effect.

**Backward Compatibility**

JavaScript 1.0 and 1.1. The `&&` and `||` operators behave as follows:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&amp;&amp;</code></td>
<td>If the first operand (<code>expr1</code>) can be converted to false, the <code>&amp;&amp;</code> operator returns false rather than the value of <code>expr1</code>.</td>
</tr>
<tr>
<td>`</td>
<td></td>
</tr>
</tbody>
</table>

**Examples**

The following code shows examples of the `&&` (logical AND) operator.

```javascript
a1=true && true       // t && t returns true
a2=true && false      // t && f returns false
a3=false && true      // f && t returns false
a4=false && (3 == 4)  // f && f returns false
a5="Cat" && "Dog"    // t && t returns Dog
a6=false && "Cat"     // f && t returns false
a7="Cat" && false     // t && f returns false
```

The following code shows examples of the `||` (logical OR) operator.

```javascript
o1=true || true       // t || t returns true
o2=false || true      // f || t returns true
o3=true || false      // t || f returns true
o4=false || (3 == 4)  // f || f returns false
o5="Cat" || "Dog"    // t || t returns Cat
o6=false || "Cat"     // f || t returns Cat
o7="Cat" || false     // t || f returns Cat
```

The following code shows examples of the `!` (logical NOT) operator.

```javascript
n1=!true             // !t returns false
n2=!false            // !f returns true
n3=!"Cat"            // !t returns false
```
String Operators

In addition to the comparison operators, which can be used on string values, the concatenation operator (+) concatenates two string values together, returning another string that is the union of the two operand strings. For example, "my " + "string" returns the string "my string".

The shorthand assignment operator += can also be used to concatenate strings. For example, if the variable mystring has the value "alpha," then the expression mystring += "bet" evaluates to "alphabet" and assigns this value to mystring.

Special Operators

?: (Conditional operator)

The conditional operator is the only JavaScript operator that takes three operands. This operator is frequently used as a shortcut for the if statement.

Syntax
condition ? expr1 : expr2

Parameters
- condition: An expression that evaluates to true or false
- expr1, expr2: Expressions with values of any type.

Description
If condition is true, the operator returns the value of expr1; otherwise, it returns the value of expr2. For example, to display a different message based on the value of the isMember variable, you could use this statement:

document.write("The fee is " + (isMember ? "$2.00" : "$10.00"))
, (Comma operator)

The comma operator evaluates both of its operands and returns the value of the second operand.

**Syntax**

```
expr1, expr2
```

**Parameters**

- `expr1, expr2`: Any expressions

**Description**

You can use the comma operator when you want to include multiple expressions in a location that requires a single expression. The most common usage of this operator is to supply multiple parameters in a `for` loop.

For example, if `a` is a 2-dimensional array with 10 elements on a side, the following code uses the comma operator to increment two variables at once. The code prints the values of the diagonal elements in the array:

```javascript
for (var i=0, j=9; i <= 9; i++, j--)
    document.writeln("a[" + i + "," + j + "] = " + a[i,j])
```

delete

The delete operator deletes an object, an object's property, or an element at a specified index in an array.

**Syntax**

```
delete objectName
delete objectName.property
delete objectName[index]
```

**Parameters**

- `objectName`: The name of an object.
- `property`: The property to delete.
- `index`: An integer representing the array index to delete.
**Description**

The fourth form is legal only within a `with` statement, to delete a property from an object.

You can use the `delete` operator to delete variables declared implicitly but not those declared with the `var` statement.

If the `delete` operator succeeds, it sets the property or element to `undefined`. The `delete` operator returns true if the operation is possible; it returns false if the operation is not possible.

```javascript
x=42
var y= 43
myobj=new Number()
myobj.h=4 // create property h
delete x // returns true (can delete if declared implicitly)
delete y // returns false (cannot delete if declared with var)
delete Math.PI // returns false (cannot delete predefined properties)
delete myobj.h // returns true (can delete user-defined properties)
delete myobj // returns true (can delete objects)
```

**Deleting array elements.** When you delete an array element, the array length is not affected. For example, if you delete `a[3]`, `a[4]` is still `a[4]` and `a[3]` is undefined.

When the `delete` operator removes an array element, that element is no longer in the array. In the following example, `trees[3]` is removed with `delete`.

```javascript
trees=new Array("redwood","bay","cedar","oak","maple")
delete trees[3]
if (3 in trees) {
    // this does not get executed
}
```

If you want an array element to exist but have an undefined value, use the `undefined` keyword instead of the `delete` operator. In the following example, `trees[3]` is assigned the value `undefined`, but the array element still exists:

```javascript
trees=new Array("redwood","bay","cedar","oak","maple")
trees[3]=undefined
if (3 in trees) {
    // this gets executed
}
new

The new operator creates an instance of a user-defined object type or of one of the built-in object types that has a constructor function.

*Implemented in* JavaScript 1.0

*ECMA version* ECMA-262

**Syntax**

```
objectName = new objectType (param1 [,param2] ...[,paramN])
```

**Parameters**

- `objectName` Name of the new object instance.
- `objectType` Object type. It must be a function that defines an object type.
- `param1...paramN` Property values for the object. These properties are parameters defined for the `objectType` function.

**Description**

Creating a user-defined object type requires two steps:

1. Define the object type by writing a function.
2. Create an instance of the object with `new`.

To define an object type, create a function for the object type that specifies its name, properties, and methods. An object can have a property that is itself another object. See the examples below.

You can always add a property to a previously defined object. For example, the statement `car1.color = "black"` adds a property `color` to `car1`, and assigns it a value of "black". However, this does not affect any other objects. To add the new property to all objects of the same type, you must add the property to the definition of the `car` object type.

You can add a property to a previously defined object type by using the `Function.prototype` property. This defines a property that is shared by all objects created with that function, rather than by just one instance of the object type. The following code adds a `color` property to all objects of type `car`, and then assigns a value to the `color` property of the object `car1`. For more information, see `prototype`.

```
Car.prototype.color=null
car1.color="black"
birthday.description="The day you were born"
```
**Examples**

**Example 1: Object type and object instance.** Suppose you want to create an object type for cars. You want this type of object to be called `car`, and you want it to have properties for `make`, `model`, and `year`. To do this, you would write the following function:

```javascript
function car(make, model, year) {
  this.make = make
  this.model = model
  this.year = year
}
```

Now you can create an object called `mycar` as follows:

```javascript
mycar = new car("Eagle", "Talon TSi", 1993)
```

This statement creates `mycar` and assigns it the specified values for its properties. Then the value of `mycar.make` is the string "Eagle", `mycar.year` is the integer 1993, and so on.

You can create any number of `car` objects by calls to `new`. For example,

```javascript
kenscar = new car("Nissan", "300ZX", 1992)
```

**Example 2: Object property that is itself another object.** Suppose you define an object called `person` as follows:

```javascript
function person(name, age, sex) {
  this.name = name
  this.age = age
  this.sex = sex
}
```

And then instantiate two new `person` objects as follows:

```
rand = new person("Rand McNally", 33, "M")
ken = new person("Ken Jones", 39, "M")
```

Then you can rewrite the definition of `car` to include an owner property that takes a `person` object, as follows:

```javascript
function car(make, model, year, owner) {
  this.make = make;
  this.model = model;
  this.year = year;
  this.owner = owner;
}
```

To instantiate the new objects, you then use the following:

```javascript
car1 = new car("Eagle", "Talon TSi", 1993, rand);
car2 = new car("Nissan", "300ZX", 1992, ken)
```
Instead of passing a literal string or integer value when creating the new objects, the above statements pass the objects rand and ken as the parameters for the owners. To find out the name of the owner of car2, you can access the following property:

car2.owner.name

**this**

The this keyword refers to the current object. In general, in a method **this** refers to the calling object.

*Implemented in*  JavaScript 1.0

*ECMA version*  ECMA-262

**Syntax**  

```
this[.propertyName]
```

**Examples**  
Suppose a function called validate validates an object's value property, given the object and the high and low values:

```
function validate(obj, lowval, hival) {
  if ((obj.value < lowval) || (obj.value > hival))
    alert("Invalid Value!")
}
```

You could call validate in each form element's **onChange** event handler, using **this** to pass it the form element, as in the following example:

```
<B>Enter a number between 18 and 99:</B>  
<INPUT TYPE = "text" NAME = "age" SIZE = 3  
onChange="validate(this, 18, 99)"
```
**typeof**

The `typeof` operator is used in either of the following ways:

1. `typeof operand`
2. `typeof (operand)`

The `typeof` operator returns a string indicating the type of the unevaluated operand. `operand` is the string, variable, keyword, or object for which the type is to be returned. The parentheses are optional.

*Implemented in* JavaScript 1.1  
*ECMA version* ECMA-262

Suppose you define the following variables:

```javascript
var myFun = new Function("5+2")
var shape="round"
var size=1
var today=new Date()
```

The `typeof` operator returns the following results for these variables:

- `typeof myFun` is `object`
- `typeof shape` is `string`
- `typeof size` is `number`
- `typeof today` is `object`
- `typeof dontExist` is `undefined`

For the keywords `true` and `null`, the `typeof` operator returns the following results:

- `typeof true` is `boolean`
- `typeof null` is `object`

For a number or string, the `typeof` operator returns the following results:

- `typeof 62` is `number`
- `typeof 'Hello world'` is `string`

For property values, the `typeof` operator returns the type of value the property contains:

- `typeof document.lastModified` is `string`
- `typeof window.length` is `number`
- `typeof Math.LN2` is `number`
For methods and functions, the `typeof` operator returns results as follows:

- `typeof blur` is `function`
- `typeof eval` is `function`
- `typeof parseInt` is `function`
- `typeof shape.split` is `function`

For predefined objects, the `typeof` operator returns results as follows:

- `typeof Date` is `function`
- `typeof Function` is `function`
- `typeof Math` is `function`
- `typeof Option` is `function`
- `typeof String` is `function`

### `void`

The `void` operator is used in either of the following ways:

1. `void (expression)`
2. `void expression`

The `void` operator specifies an expression to be evaluated without returning a value. `expression` is a JavaScript expression to evaluate. The parentheses surrounding the expression are optional, but it is good style to use them.

**Implemented in JavaScript 1.1**
**ECMA version** ECMA-262

You can use the `void` operator to specify an expression as a hypertext link. The expression is evaluated but is not loaded in place of the current document.

The following code creates a hypertext link that does nothing when the user clicks it. When the user clicks the link, `void(0)` evaluates to 0, but that has no effect in JavaScript.

```html
<A HREF="javascript:void(0)">Click here to do nothing</A>
```

The following code creates a hypertext link that submits a form when the user clicks it.

```html
<A HREF="javascript:void(document.form.submit())">Click here to submit</A>
```
LiveConnect Class Reference

• Java Classes, Constructors, and Methods
Java Classes, Constructors, and Methods

This chapter documents the Java classes used for LiveConnect, along with their constructors and methods. It is an alphabetical reference for the classes that allow a Java object to access JavaScript code.

This reference is organized as follows:

• Full entries for each class appear in alphabetical order.

  Tables included in the description of each class summarize the constructors and methods of the class.

• Full entries for the constructors and methods of a class appear in alphabetical order after the entry for the class.
**JSEException**

The public class JSEException extends Exception.

\[
\text{java.lang.Object} \\
\downarrow \\
\text{java.lang.Throwable} \\
\downarrow \\
\text{java.lang.Exception} \\
\downarrow \\
\text{netscape.javascript.JSEException}
\]

**Description**

JSEException is an exception which is thrown when JavaScript code returns an error.

**Constructor Summary**

The netstcape.javascript.JSEException class has the following constructors:

<table>
<thead>
<tr>
<th>Constructor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSEException</td>
<td>Constructs a JSEException. You specify whether the JSEException has a detail message and other information.</td>
</tr>
</tbody>
</table>

The following sections show the declaration and usage of the constructors.

**JSEException**

Constructor. Constructs a JSEException. You specify whether the JSEException has a detail message and other information.

**Declaration**

1. public JSEException()
2. public JSEException(String s)
3. public JSEException(String s, String filename, int lineno, String source, int tokenIndex)
Arguments

s
filename
lineno
source
tokenIndex

The detail message.
The URL of the file where the error occurred, if possible.
The line number if the file, if possible.
The string containing the JavaScript code being evaluated.
The index into the source string where the error occurred.

Description

A detail message is a string that describes this particular exception.

Each form constructs a JSException with different information:

- Form 1 of the declaration constructs a JSException without a detail message.
- Form 2 of the declaration constructs a JSException with a detail message.
- Form 3 of the declaration constructs a JSException with a detail message and all the other information that usually comes with a JavaScript error.
The public final class `netscape.javascript.JSObject` extends `Object`.

```java
java.lang.Object
| +----netscape.javascript.JSObject
```

**Description**

JavaScript objects are wrapped in an instance of the class `netscape.javascript.JSObject` and passed to Java. `JSObject` allows Java to manipulate JavaScript objects.

When a JavaScript object is sent to Java, the runtime engine creates a Java wrapper of type `JSObject`; when a `JSObject` is sent from Java to JavaScript, the runtime engine unwraps it to its original JavaScript object type. The `JSObject` class provides a way to invoke JavaScript methods and examine JavaScript properties.

Any JavaScript data brought into Java is converted to Java data types. When the `JSObject` is passed back to JavaScript, the object is unwrapped and can be used by JavaScript code. See the *Client-Side JavaScript Guide* for more information about data type conversions.

**Method Summary**

The `netscape.javascript.JSObject` class has the following methods:

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>call</td>
<td>Calls a JavaScript method.</td>
</tr>
<tr>
<td>equals</td>
<td>Determines if two <code>JSObject</code> objects refer to the same instance.</td>
</tr>
<tr>
<td>eval</td>
<td>Evaluates a JavaScript expression.</td>
</tr>
<tr>
<td>getMember</td>
<td>Retrieves the value of a property of a JavaScript object.</td>
</tr>
<tr>
<td>getSlot</td>
<td>Retrieves the value of an array element of a JavaScript object.</td>
</tr>
<tr>
<td>removeMember</td>
<td>Removes a property of a JavaScript object.</td>
</tr>
<tr>
<td>setMember</td>
<td>Sets the value of a property of a JavaScript object.</td>
</tr>
<tr>
<td>setSlot</td>
<td>Sets the value of an array element of a JavaScript object.</td>
</tr>
<tr>
<td>toString</td>
<td>Converts a <code>JSObject</code> to a string.</td>
</tr>
</tbody>
</table>
The `netscape.javascript.JSObject` class has the following static methods:

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>getWindow</code></td>
<td>Gets a JSObject for the window containing the given applet.</td>
</tr>
</tbody>
</table>

The following sections show the declaration and usage of these methods.

**call**

Method. Calls a JavaScript method. Equivalent to “this.methodName(args[0], args[1], ...)” in JavaScript.

```java
public Object call(String methodName, Object args[])
```

**equals**

Method. Determines if two JSObject objects refer to the same instance.

Overrides: `equals` in class `java.lang.Object`

```java
public boolean equals(Object obj)
```

**eval**

Method. Evaluates a JavaScript expression. The expression is a string of JavaScript source code which will be evaluated in the context given by “this”.

```java
public Object eval(String s)
```

**getMember**

Method. Retrieves the value of a property of a JavaScript object. Equivalent to “this.name” in JavaScript.

```java
public Object getMember(String name)
```
**getSlot**

Method. Retrieves the value of an array element of a JavaScript object. Equivalent to “this[index]” in JavaScript.

**Declaration**

```java
public Object getSlot(int index)
```

**getWindow**

Static method. Returns a JSObject for the window containing the given applet. This method is useful in client-side JavaScript only.

**Declaration**

```java
public static JSObject getWindow(Applet applet)
```

**removeMember**

Method. Removes a property of a JavaScript object.

**Declaration**

```java
public void removeMember(String name)
```

**setMember**

Method. Sets the value of a property of a JavaScript object. Equivalent to “this.name = value” in JavaScript.

**Declaration**

```java
public void setMember(String name, Object value)
```

**setSlot**


**Declaration**

```java
public void setSlot(int index, Object value)
```
**toString**

Method. Converts a JSObject to a String.

Overrides: toString in class java.lang.Object

**Declaration**

public String toString()
**Plugin**

The public class `Plugin` extends `Object`.

```
java.lang.Object
    +----netscape.plugin.Plugin
```

**Description**

This class represents the Java reflection of a plug-in. Plug-ins that need to have Java methods associated with them should subclass this class and add new (possibly native) methods to it. This allows other Java entities (such as applets and JavaScript code) to manipulate the plug-in.

**Constructor and Method Summary**

The `netscape.plugin.Plugin` class has the following constructors:

<table>
<thead>
<tr>
<th>Constructor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plugin</td>
<td>Constructs a Plugin.</td>
</tr>
</tbody>
</table>

The `netscape.plugin.Plugin` class has the following methods:

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>destroy</td>
<td>Called when the plug-in is destroyed</td>
</tr>
<tr>
<td>getPeer</td>
<td>Returns the native NPP object—the plug-in instance that is the native part of a Java Plugin object</td>
</tr>
<tr>
<td>getWindow</td>
<td>Returns the JavaScript window on which the plug-in is embedded</td>
</tr>
<tr>
<td>init</td>
<td>Called when the plug-in is initialized</td>
</tr>
<tr>
<td>isActive</td>
<td>Determines whether the Java reflection of a plug-in still refers to an active plug-in</td>
</tr>
</tbody>
</table>

The following sections show the declaration and usage of these constructors and methods.
**destroy**

Method. Called when the plug-in is destroyed. You never need to call this method directly, it is called when the plug-in is destroyed. At the point this method is called, the plug-in will still be active.

**Declaration**
public void destroy()

**See also**
init

**getPeer**

Method. Returns the native NPP object—the plug-in instance that is the native part of a Java Plugin object. This field is set by the system, but can be read from plug-in native methods by calling:

NPP npp = (NPP)netscape_plugin_Plugin_getPeer(env, thisPlugin);

**Declaration**
public int getPeer()

**getWindow**

Method. Returns the JavaScript window on which the plug-in is embedded.

**Declaration**
public JSObject getWindow()

**init**

Method. Called when the plug-in is initialized. You never need to call this method directly, it is called when the plug-in is created.

**Declaration**
public void init()

**See also**
destroy
isActive

Method. Determines whether the Java reflection of a plug-in still refers to an active plug-in. Plug-in instances are destroyed whenever the page containing the plug-in is left, thereby causing the plug-in to no longer be active.

**Declaration**
```
public boolean isActive()
```

Plugin

Constructor. Constructs a Plugin.

**Declaration**
```
public Plugin()
```
Appendixes

- Reserved Words
- Color Values
- Netscape Cookies
This appendix lists the reserved words in JavaScript.

The reserved words in this list cannot be used as JavaScript variables, functions, methods, or object names. Some of these words are keywords used in JavaScript; others are reserved for future use.

<table>
<thead>
<tr>
<th>abstract</th>
<th>else</th>
<th>instanceof</th>
<th>switch</th>
<th>synchronized</th>
</tr>
</thead>
<tbody>
<tr>
<td>boolean</td>
<td>enum</td>
<td>int</td>
<td>throw</td>
<td></td>
</tr>
<tr>
<td>break</td>
<td>export</td>
<td>interface</td>
<td>try</td>
<td></td>
</tr>
<tr>
<td>byte</td>
<td>extends</td>
<td>long</td>
<td>this</td>
<td></td>
</tr>
<tr>
<td>case</td>
<td>false</td>
<td>native</td>
<td>throws</td>
<td></td>
</tr>
<tr>
<td>catch</td>
<td>final</td>
<td>new</td>
<td>transient</td>
<td></td>
</tr>
<tr>
<td>char</td>
<td>finally</td>
<td>null</td>
<td>true</td>
<td></td>
</tr>
<tr>
<td>class</td>
<td>float</td>
<td>package</td>
<td></td>
<td></td>
</tr>
<tr>
<td>const</td>
<td>for</td>
<td>private</td>
<td></td>
<td></td>
</tr>
<tr>
<td>continue</td>
<td>function</td>
<td>protected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>debugger</td>
<td>goto</td>
<td>public</td>
<td></td>
<td></td>
</tr>
<tr>
<td>default</td>
<td>if</td>
<td>return</td>
<td>volatile</td>
<td></td>
</tr>
<tr>
<td>delete</td>
<td>implements</td>
<td>short</td>
<td></td>
<td></td>
</tr>
<tr>
<td>do</td>
<td>import</td>
<td>static</td>
<td></td>
<td></td>
</tr>
<tr>
<td>double</td>
<td>in</td>
<td>super</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The string literals in this appendix can be used to specify colors in the JavaScript alinkColor, bgColor, fgColor, linkColor, and vLinkColor properties and the fontcolor method.

You can also use these string literals to set the colors in HTML tags, for example

```html
<BODY BGCOLOR="bisque">
```

or

```html
<FONT COLOR="blue">color me blue</FONT>
```

Instead of using the string to specify a color, you can use the red, green, and blue hexadecimal values shown in the following table.

<table>
<thead>
<tr>
<th>Color</th>
<th>Red</th>
<th>Green</th>
<th>Blue</th>
</tr>
</thead>
<tbody>
<tr>
<td>aliceblue</td>
<td>F0</td>
<td>F8</td>
<td>FF</td>
</tr>
<tr>
<td>antiquewhite</td>
<td>FA</td>
<td>EB</td>
<td>D7</td>
</tr>
<tr>
<td>aqua</td>
<td>00</td>
<td>FF</td>
<td>FF</td>
</tr>
<tr>
<td>aquamarine</td>
<td>7F</td>
<td>FF</td>
<td>D4</td>
</tr>
<tr>
<td>azure</td>
<td>F0</td>
<td>FF</td>
<td>FF</td>
</tr>
<tr>
<td>beige</td>
<td>F5</td>
<td>F5</td>
<td>DC</td>
</tr>
<tr>
<td>bisque</td>
<td>FF</td>
<td>E4</td>
<td>C4</td>
</tr>
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<td>Color</td>
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<td>Blue</td>
</tr>
<tr>
<td>------------------</td>
<td>-----</td>
<td>-------</td>
<td>------</td>
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<td>00</td>
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<td>00</td>
<td>FF</td>
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<td>E2</td>
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<td>A0</td>
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<td>FF</td>
<td>00</td>
</tr>
<tr>
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<td>69</td>
<td>1E</td>
</tr>
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<td>ED</td>
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<td>Red</td>
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<tr>
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<td>Color</td>
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</tr>
<tr>
<td>------------------------------</td>
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<td>FA</td>
<td>FA</td>
<td>D2</td>
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<td>D3</td>
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<td>E6</td>
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<td>AA</td>
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<td>CD</td>
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<td>9A</td>
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<td>CC</td>
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<td>mediumvioletred</td>
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</tr>
<tr>
<td>Color</td>
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<td>Green</td>
<td>Blue</td>
</tr>
<tr>
<td>----------------</td>
<td>------</td>
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<td>------</td>
</tr>
<tr>
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<td>FF</td>
<td>FA</td>
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<td>E1</td>
</tr>
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A cookie is a small piece of information stored on the client machine in the cookies.txt file. This appendix discusses the implementation of cookies in the Navigator client; it is not a formal specification or standard.

You can manipulate cookies

- Explicitly, with a CGI program.
- Programmatically, with client-side JavaScript using the cookie property of the document object.
- Transparently, with the server-side JavaScript using the client object, when using client-cookie maintenance.

For information about using cookies in server-side JavaScript, see the Server-Side JavaScript Guide.

This appendix describes the format of cookie information in the HTTP header, and discusses using CGI programs and JavaScript to manipulate cookies.
A CGI program uses the following syntax to add cookie information to the HTTP header:

```
Set-Cookie: name=value
       [;EXPIRES=dateValue]
       [;DOMAIN=domainName]
       [;PATH=pathName]
       [;SECURE]
```

**Parameters**

- `name=value` is a sequence of characters excluding semicolon, comma and white space. To place restricted characters in the `name` or `value`, use an encoding method such as URL-style `%XX` encoding.

- `EXPIRES=dateValue` specifies a date string that defines the valid life time of that cookie. Once the expiration date has been reached, the cookie will no longer be stored or given out. If you do not specify `dateValue`, the cookie expires when the user’s session ends.

  The date string is formatted as:

  `Wdy, DD-Mon-YY HH:MM:SS GMT`

  where `Wdy` is the day of the week (for example, Mon or Tues); `DD` is a two-digit representation of the day of the month; `Mon` is a three-letter abbreviation for the month (for example, Jan or Feb); `YY` is the last two digits of the year; `HH:MM:SS` are hours, minutes, and seconds, respectively.

- `DOMAIN=domainName` specifies the domain attributes for a valid cookie. See “Determining a Valid Cookie” on page 677. If you do not specify a value for `domainName`, Navigator uses the host name of the server which generated the cookie response.

- `PATH=pathName` specifies the path attributes for a valid cookie. See “Determining a Valid Cookie” on page 677. If you do not specify a value for `pathName`, Navigator uses the path of the document that created the cookie property (or the path of the document described by the HTTP header, for CGI programming).

- `SECURE` specifies that the cookie is transmitted only if the communications channel with the host is a secure. Only HTTPS (HTTP over SSL) servers are currently secure. If `SECURE` is not specified, the cookie is considered sent over any channel.
Description
A server sends cookie information to the client in the HTTP header when the server responds to a request. Included in that information is a description of the range of URLs for which it is valid. Any future HTTP requests made by the client which fall in that range will include a transmittal of the current value of the state object from the client back to the server.

Many different application types can take advantage of cookies. For example, a shopping application can store information about the currently selected items for use in the current session or a future session, and other applications can store individual user preferences on the client machine.

Determining a Valid Cookie. When searching the cookie list for valid cookies, a comparison of the domain attributes of the cookie is made with the domain name of the host from which the URL is retrieved.

If the domain attribute matches the end of the fully qualified domain name of the host, then path matching is performed to determine if the cookie should be sent. For example, a domain attribute of royalairways.com matches hostnames anvil.royalairways.com and ship.crate.royalairways.com.

Only hosts within the specified domain can set a cookie for a domain. In addition, domain names must use at least two or three periods. Any domain in the COM, EDU, NET, ORG, GOV, MIL, and INT categories requires only two periods; all other domains require at least three periods.

PATH=pathName specifies the URLs in a domain for which the cookie is valid. If a cookie has already passed domain matching, then the pathname component of the URL is compared with the path attribute, and if there is a match, the cookie is considered valid and is sent along with the URL request. For example, PATH=/foo matches /foobar and /foo/bar.html. The path "/" is the most general path.

Syntax of the Cookie HTTP Request Header. When requesting a URL from an HTTP server, the browser matches the URL against all existing cookies. When a cookie matches the URL request, a line containing the name/value pairs of all matching cookies is included in the HTTP request in the following format:

Cookie: NAME1=OPAQUE_STRING1; NAME2=OPAQUE_STRING2 ...

Saving Cookies. A single server response can issue multiple Set-Cookie headers. Saving a cookie with the same PATH and NAME values as an existing cookie overwrites the existing cookie. Saving a cookie with the same PATH value but a different NAME value adds an additional cookie.
The `EXPIRES` value indicates when to purge the mapping. Navigator will also delete a cookie before its expiration date arrives if the number of cookies exceeds its internal limits.

A cookie with a higher-level `PATH` value does not override a more specific `PATH` value. If there are multiple matches with separate paths, all the matching cookies are sent, as shown in the examples below.

A CGI script can delete a cookie by returning a cookie with the same `PATH` and `NAME` values, and an `EXPIRES` value which is in the past. Because the `PATH` and `NAME` must match exactly, it is difficult for scripts other than the originator of a cookie to delete a cookie.

**Specifications for the Client.** When sending cookies to a server, all cookies with a more specific path mapping are sent before cookies with less specific path mappings. For example, a cookie “name1=foo” with a path mapping of “/” should be sent after a cookie “name1=foo2” with a path mapping of “/bar” if they are both to be sent.

The Navigator can receive and store the following:

- 300 total cookies
- 4 kilobytes per cookie, where the name and the `OPAQUE_STRING` combine to form the 4 kilobyte limit.
- 20 cookies per server or domain. Completely specified hosts and domains are considered separate entities, and each has a 20 cookie limitation.

When the 300 cookie limit or the 20 cookie per server limit is exceeded, Navigator deletes the least recently used cookie. When a cookie larger than 4 kilobytes is encountered the cookie should be trimmed to fit, but the name should remain intact as long as it is less than 4 kilobytes.

**Examples**

The following examples illustrate the transaction sequence in typical CGI programs.

**Example 1.** Client requests a document, and receives in the response:

```
Set-Cookie: CUSTOMER=WILE_E_COYOTE; path=/; expires=Wednesday, 09-Nov-99 23:12:40 GMT
```

When client requests a URL in path "/" on this server, it sends:

```
Cookie: CUSTOMER=WILE_E_COYOTE
```
Client requests a document, and receives in the response:

Set-Cookie: PART_NUMBER=ROCKET_LAUNCHER_0001; path=/

When client requests a URL in path "/" on this server, it sends:

Cookie: CUSTOMER=WILE_E_COYOTE; PART_NUMBER=ROCKET_LAUNCHER_0001

Client receives:

Set-Cookie: SHIPPING=FEDEX; path=/foo

When client requests a URL in path "/foo" on this server, it sends:

Cookie: CUSTOMER=WILE_E_COYOTE; PART_NUMBER=ROCKET_LAUNCHER_0001

When client requests a URL in path "/" on this server, it sends:

Cookie: CUSTOMER=WILE_E_COYOTE; PART_NUMBER=ROCKET_LAUNCHER_0001

   SHIPPING=FEDEX

**Example 2.** This example assumes all mappings from Example 1 have been cleared.

Client receives:

Set-Cookie: PART_NUMBER=ROCKET_LAUNCHER_0001; path=/

When client requests a URL in path "/" on this server, it sends:

Cookie: PART_NUMBER=ROCKET_LAUNCHER_0001

Client receives:

Set-Cookie: PART_NUMBER=RIDING_ROCKET_0023; path=/ammo

When client requests a URL in path "/ammo" on this server, it sends:

Cookie: PART_NUMBER=RIDING_ROCKET_0023;
      PART_NUMBER=ROCKET_LAUNCHER_0001

There are two name/value pairs named "PART_NUMBER" due to the inheritance of the "/" mapping in addition to the "/ammo" mapping.
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