

# INFSCI 0020 Program Design and Software Tools

## Homework 2

Due: Before Midnight, Jan 28, 2005

### 1. *Palindromes* (Exercise 4.32) [Points: 30]

Write a recursive function `testPalindrome` that returns **true** if the *string* stored in the array is a palindrome, and **false** otherwise. The function should ignore spaces and punctuations in the *string*.

### 2. *Bubble Sort* [Points: Iterative: 20; recursive: 40; array of function pointers: 10]

Write two functions `IterSort` and `RecSort` that implement the bubble sort algorithm. Function `IterSort` implements it using iterative approach whereas function `RecSort` implements it using recursion. In the main program, you should create an array of pointers to the two functions to these functions. For swapping elements after comparisons, use pass-by-reference using reference parameter, as we discussed in class. For user interface, your program should print the menus as follows:

#### Menu

- [1] Iterative Sort (Generate 10 numbers randomly between 1 and 100)
- [2] Recursive Sort (Generate 10 numbers randomly between 1 and 100)
- [3] Iterative Sort (User inputs 10 numbers between 1 and 100)
- [4] Recursive Sort (User inputs 10 numbers between 1 and 100)
- [5] Exit

Enter Choice: <*user will enter a number between 1 and 5*>

If the user chooses a 1 or 2, your program should generate 10 random numbers between 1 and 100. Use `srand()` function to generate the random numbers - refer to example given in pages 186-189.

If the user inputs choices 3 or 4, the program should ask the user to input 10 numbers that are less than 100 - make sure you catch wrong inputs.