

INFSCI 2935 Introduction to Computer Security
Homework 2

Due Date: September 26 (by 5pm), 2003

1. *Schematic protection model (20)*

Let us modify the owner-based policy in examples in section 3.4.1 as follows:

- Instead of one subject type, now there are two different types of subjects, say $user_1$ and $user_2$
- An owner can only pass rights to another subject of the same type.

Formulate this owner-based policy using SPM.

2. *Do the following problems from the book (6 × 10)*

Chapter 4:

Problems: [5, 6, 10]

Chapter 5:

Problem: [2]

Chapter 6:

Problems: [5, 6]

3. *Reading Assignment: (20 + 10 extra credit)*

Based on the following papers and various models that we have covered in class, discuss the strengths and weaknesses of DAC, MAC, and RBAC approaches to security (atleast 2 pages).

Ravi S. Sandhu, Pierangela Samarati, "Access Control: Principles and Practice", *IEEE Communications Magazine*, September 1994.

James B. D. Joshi, Walid G. Aref, Arif Ghafoor and Eugene H. Spafford, "Security Models for Web-based Applications", *Communications of the ACM*, 44, 2 (Feb. 2001), Page 38-44.

Extra credit of 10 points will be awarded if your write-up contains

- ideas that are not expressed in the paper, or
- criticisms and corrections of ideas in the paper