

# CIS 4360 Introduction to Computer Security

## Home Assignment 1, Fall 2011 — SOLUTIONS

Due date: Sept 13, 2011

This concerns the basic requirements for Computer Security.

Examples taken from Matt Bishop's Introduction to Computer Security, Addison-Wesley.

1. Classify each of the following as a violation of Confidentiality (**C**), Integrity (**I**), *Availability* (**A**), or of some combination of these.
  - (a) John copies Mary's homework. (**C**)
  - (b) Paul crashes Linda's system. (**A**)
  - (c) Carol changes the amount of Angelo's check from \$100 to \$1,000. (**I**)
  - (d) Gina forges Rogers signature on a deed. (**I**)
  - (e) Rhonda registers the domain name "AddisonWesley.com" and refuses to let the publishing house buy or use that domain name. (**A**)
  - (f) Jonah obtains Peter's credit card number and has the credit card company cancel the card and replace it with another card bearing a different account number. (**A**), (**I**)
  - (g) Henry spoofs Julie's IP address to gain access to her computer. (**C**), (**I**)
2. Identify: (a) the policies, and (b) the mechanisms that support the following.
  - (a) A password-changing program will reject passwords that are less than five characters long or that are found in the dictionary.  
**Answer.** The policy is that easily guessed passwords are forbidden. The mechanism is a program that checks for, and rejects passwords less than five characters.
  - (b) Only students in a Computer Science class will be given accounts on the departments computer system.  
**Answer.** The policy is that only students in that class may use the CS Department's system. The mechanism is the procedure of not giving other students an account.
  - (c) The login program will disallow logins of any students who enter their passwords incorrectly three times.  
**Answer.** The policy is that only authorized students may login (so guessing is not allowed). The mechanism is that after three failed attempts the system disables the account.
  - (d) The permissions of the file containing Carol's homework will prevent Robert from cheating and copying it.  
**Answer.** The policy is that no student may read another student's homework. The mechanism is the file protection mechanism that restricts read access.

- (e) When World Wide Web traffic climbs to more than 80% of the network's capacity, systems will disallow any further communications to or from Web servers.

**Answer.** The policy is that World Wide Web traffic may not interfere with other network traffic (such interference being defined as using more than 80% of the network's capacity) The mechanism is to block any traffic to or from the World Wide Web servers when the traffic is more than 80% of the network's capacity.

- (f) Annie, a systems analyst, will be able to detect a student using a program to scan her system for vulnerabilities.

**Answer.** The policy is that systems may not be scanned for vulnerabilities by students. The mechanism is whatever Annie used to detect the scanning.

- (g) A program used to submit homework will turn itself off just after the due date.

**Answer.** The policy is that late homework is not accepted. The mechanism is the program disabling itself after the due date.

3. Give an example of a situation in which a compromise of confidentiality leads to a compromise in integrity.

**Answer.** An example of a situation in which a compromise of confidentiality will lead to a compromise in integrity, is the compromise of a cryptographic key protecting the integrity of the system.

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