Homework 1 - Solutions

1. Please classify each of the following as a violation of confidentiality, of integrity, of availability, of authenticity, or of some combination of those.

    1. John copies Mary's homework.

    Confidentiality, authenticity

    2. Paul crashes Linda's system.

    Availability

    3. Carol changes the amount of Angelo's check from $100 to $1000.

    Integrity, availability

    4. Gina forges Roger's signature on a deed.

    Authenticity, integrity.

    5. Rhonda registers the domain name "AddisonWesley.com" and refuses to let the publishing house buy or use that domain name.

    Authenticity, Availability

    6. Jonah obtains Peter's credit card number, and has the credit card company cancel the card and replace it with another bearing a different account.

    Authenticity, integrity, availability

    7. Henry spoofs Julie's IP address to gain access to her computer.

    Confidentiality, authenticity, availability

2. Please identify mechanisms to implement the following. Please state what policy or policies they might be enforcing.

    1. A password changing program will reject passwords shorter than 5 characters long or that are found in the dictionary.

    Authentication.

2. Only students in a Computer Science class will be given accounts on the department's computer system.

Access control.

3. The login program will disallow logins of any students who enter their passwords incorrectly 3 times.

Authentication.

4. The permissions of the file containing Carol's homework will prevent Robert from cheating and copying it.

Confidentiality, authentication

5. When World Wide Web traffic climbs to over 80% of the network's capacity, systems will disallow any further communications to or from Web servers.

Monitor and response.

6. Annie, a system analyst, will be able to detect a student using a program to scan her system for vulnerabilities.

Monitor and response.

7. A program used to submit homework will turn itself off just after the due date.

3. Please give an example of a situation in which each of the following is true:
    1. Prevention is more important than detection and recovery.

    Losing data.

    In general, prevention is better than detection and recovery.

    2. Detection is more important than prevention and recovery.

    If prevention fails, unless there is detection cannot be recovery.

    For example detecting illegitimate changes in a bank account bank.

3. Recovery is more important than prevention and detection.

    Finally if prevention has failed, after detection, recovery should bring

    back the initial situation. For example fixing a fiber cut.

4. A respected computer scientist has said that no computer can ever be made perfectly secure. Why might she say this?

There are no perfect security mechanisms.