

Fundamental Concepts of Data Security

ISEC2001

Security Systems II

Question 1

Explain why it is important that development of a security system is done in a top-down manner rather than bottom-up.

Question 2

Explain the primary difference between standards and procedures.

Question 3

Give an example of a user-based vulnerability and related threat that could compromise confidentiality.

Question 4

A financial institution is planning to develop an information system in order to provide online banking services to its customers via desktop computers and mobile devices. Describe your interpretation of the security goal Integrity in this specific context by listing three (3) requirements of the information system to be developed.

Question 5

Explain what a security model is. How is a security model different from a security policy?

Question 6

Describe a security model designed to provide integrity protection.

Question 7

Explain how the Bell-LaPadula model determines if a particular subject can access a requested object.

Question 8

Consider the case in which you have been hired as a security expert by a large accounting corporation to advise on the most appropriate security model to be used in the corporation's software. The options are the Bell-LaPadula model or the Biba model. Specify which model you would select and explain your reasoning.

Question 9

Both the Clark-Wilson and Biba models address the issue of integrity. Given that integrity models have three major goals, specify the integrity goals and indicate the goals addressed by each model.

Question 10

Suppose that the Clark-Wilson security model is used by a bank to implement an Internet banking system so that customers can access their accounts and perform transactions online using an Internet browser on a computer. From the customer's perspective, give an example of the relevant part of the Internet banking system best describes.

- Constrained data items (CDIs)
- Unconstrained data items (UDIs)
- Transformation procedures (TPs)

For each example, briefly describe your reasoning.