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School of Computing
Third Year B.Tech CSBS
FIRST CIA Test – February 2025

Course Code: INT313
Course Name: Computer System Security
Duration: 90 minutes Max Marks: 50

Answer All Questions

PART A **10 x2 = 20 Marks**

1. Identify the following as violation of Confidentiality, Integrity or Availability
   (a) Escalation the User privilege in a Linux system.
   (b) Denial of Service attack on Database server
   (c) Unauthorized login to computer systems.
   (d) Changing Permission of files owned by other users.
2. What are the threats to Computer system security?
3. What are the different stages in the Secure system Development Lifecycle.
4. Distinguish between Trust and assurance in Computer Systems Security.
5. What is an Access Control List? How do we obtain access Control List from the Access Control Matrix?
6. When is an Information I said to have Confidentiality property with respect to users X?
7. Define Security Levels and Categories. How is the dominance relation used in the definition of the Bell Lapadula model?
8. What are the various types of Security Policies used in Computer Systems?
9. When is system defined by using states and transitions said to be secure?
10. How is read access provided in the Bell Lapadula Model?

Answer all the Questions

PART-B **3 x 10=30 Marks**

11. Provide a sequence of Commands to create an access control matrix with the following users and resources and the associated permissions:

    Users: UserA,UserB, and User C Resources:file1,program1 and process 1. UserA has read and write permission to file1 and read and execute permission to program1. UserB and UserC have read permission only to all resources. Show the access control matrix after adding these privileges.
12. When resources are classified as Top Secret, Secret, Confidential and Unclassified. Describe the Simple Security Policy and *-Property of the Bell Lapadula Model assuming security Levels and clearances. How does this model change when categories are added?
13. Assume that the Security Labels are classified with a range having a lower value and higher value. Discuss how reads and writes are to be performed in the Bell Lapadula model with an example.

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School of Computing
Third Year B.Tech CSBS
Second CIA Test – March 2025

Course Code: INT313
Course Name: Computer System Security
Duration: 90 minutes Max Marks: 50

Answer All Questions

PART A **10 x2 = 20 Marks**

1. Classify the following as either confidentiality Policy or Integrity Policy or both.
Bell Lapadula Model (b) Biba Model (c) Chinese Wall Model (d) Clark-Wilson Model
2. What are the requirements for read and write in the Low Water Mark Integrity Model?
3. Define the following in the Chinese Wall Model: (a) Company /dataset (b) Conflict of Interest class
4. What are the main components of the Clark-Wilson Model?
5. Discuss the security Certification provided by the Common Criteria.
6. Discuss the Principle of separation of privilege with an example.
7. What are the different forms of identity on the web?
8. How does information flow takes place in the following Programming Language statements?
y=x+z (b) if x=1 then y=0 else y=1
9. What are the methods to acihieve isolation of processes in Computer Systems?
10. What is meant by a non-interference secure system? Give an example.

Answer all the Questions

PART-B **3 x 10=30 Marks**

11. Compare the following models on the basis of key objectives, information flow, access control and whether conflicts of interest is addressed: Bell Lapadula, Biba, Lipner, Clark-Wilson and Chinese Wall model.
12. Explain the following Design Principles with examples: (a) Least Privilkege (ii) Least common mechanism (iii) Fail-Safe Defaults (iv) Least common mechanism (v) Complete Mediation
13. Discuss the following forms of identity in Computer Systems" (a) User, Group, and Role (b) Host and Domains (c) Naming and Certificates
14. Discuss deterministic non-interference with an example. Discuss whether composition non-interference secure systems will be secure or not.

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School of Computing
Third Year B.Tech CSE(CSBS)
Third CIA Test – May 2025

Course Code: INT313
Course Name: Computer System Security
Duration: 90 minutes Max Marks: 50

Answer All Questions

PART A **10 x2 = 20 Marks**

1. Briefly explain the threats to Computer System Security.
2. What is multilevel security? Explain with an example
3. Distiniguish between Discretionary, Mandatory and Role Based Access Control methids
4. Compare Bell Lapadula and Biba Models based on how privileges are assigned for read and write operations.
5. Brielfy explain the significance of the Lipner's Integrity Matrix model?
6. What are the international standards pertaining to Computer system Security?
7. What are the different types of malicious program that afftect computer systems?
8. What is auditing? What are the components of the Audit system Structure?
9. What are the vulnerabilities present UNIX and Windows operating System?
10. What are the security goals for Data Base systems?

Answer any two Questions

PART-B **2 x 10=30 Marks**

11. Explain the concepts of states and transitions by taking the access control matric as an example. How can we secure the computer systems this concept?
12. Explain the concepts of Deterministic Noninterference and Nondeducibility by considering a two-bit machine as an example.
13. What is Computer Forensics. Descrive the steps in performing Computer Forensics after an incident.

Answer the following Questions

PART-C **1 x10=10 Marks**

14. What is isolation in Computer Systems? What are the techniques for achieving isolation in computer Systems. Describe each technique in detail.