

Set Number - 1

1. How does the Banker's Algorithm handle resource allocation and deallocation in a system? Explain with an example?
2. deadlock detection? Explain the difference between deadlock prevention and deadlock avoidance.
3. Describe the differences between deadlock prevention, avoidance, and recovery. Explain each approach with an example?
4. What are the possible methods to handle deadlocks in a distributed system? Explain each method briefly?
5. How does a resource allocation graph help in detecting deadlocks in a system? Explain with an example?
6. Consider a system with 3 processes (P1-P3) and 2 resource types (A, B). The available resources are $A = 4$, $B = 2$. Given the maximum need and allocated resources, determine whether a deadlock exists using the Banker's Algorithm?
7. How does the Banker's Algorithm prevent deadlocks in a system? Explain with a simple example?
8. Consider a system with 4 processes (P1-P4) and 3 resource types (A, B, C). The available resources are $A = 8$, $B = 4$, $C = 6$. Given the maximum need and allocated resources, determine whether a deadlock exists using the Banker's Algorithm?
9. What is a resource allocation graph (RAG)? How does it help in
10. Consider a system with 2 processes (P1-P2) and 2 resource types (A, B). The available resources are $A = 3$, $B = 2$. Given the maximum need and allocated resources, determine whether a

deadlock exists using the Banker's Algorithm?

11. Explain the concept of a Wait-For Graph and its use in deadlock detection. Provide a detailed example and explain its advantages?

12. Explain the concept of a Wait-For Graph and its role in deadlock detection. Provide a simple example?

13. Explain the concept of deadlock prevention and its techniques (e.g., resource ordering, avoidance). Describe each technique with an example?

14. What are the necessary conditions for a deadlock to occur, as stated by Coffman? Explain each condition with an example?

15. How does the Banker's Algorithm handle multiple instances of the same resource type? Explain with an example?

16. What are the possible methods to recover from a deadlock? Section C: Long Answer Questions (5 marks each) Consider a system with 5 processes (P1-P5) and 3 resource types (A, B, C). The available resources are $A = 10$, $B = 5$, $C = 7$. Given the maximum need and allocated resources, determine whether a deadlock exists using the Banker's Algorithm. Discuss a real-world example where deadlock occurs (e.g., database transactions, operating systems, traffic systems) and suggest possible solutions to avoid it.

17. Describe the concept of deadlock prevention and its difference from deadlock avoidance. Provide an example of each?

18. Explain the concept of deadlock avoidance and its techniques (e.g., safe sequences, avoidance algorithms). Describe each technique with an example?

19. Explain the concept of deadlock recovery and its methods (e.g., process termination, resource

preemption). Describe each method?

20. What are the advantages and disadvantages of using the Banker's Algorithm for deadlock prevention? Explain each point?

