

L4 Deadlocks

1. Which condition is NOT a necessary condition for deadlock?

- A) Mutual exclusion
- B) Hold-and-wait
- C) Starvation
- D) Circular wait

Answer: C

Explanation: Starvation is a separate concept, not one of the four deadlock conditions.

2. In a Resource-Allocation Graph (RAG), a deadlock is certain if:

- A) There is a cycle and each resource has multiple instances
- B) There is no cycle
- C) There is a cycle and all resources have single instances
- D) A thread requests two resources simultaneously

Answer: C

3. In a Resource Allocation Graph (RAG) with a cycle and multi-instance resources:

- A) Deadlock is certain
- B) Deadlock is impossible
- C) Deadlock is possible but not certain
- D) Starvation must occur

Answer: C

4. Spooling helps prevent deadlocks by addressing which condition?

- A) Hold-and-wait
- B) Mutual exclusion
- C) Circular wait
- D) No preemption

Answer: B

Explanation: Spooling uses a daemon to manage resources like printers, eliminating direct mutual exclusion between processes.

5. In the Dining Philosophers problem, deadlock can be prevented by:

- A) Allowing philosophers to take forks in any order
- B) Using the Ostrich algorithm
- C) Ensuring one philosopher picks up forks in reverse order
- D) Adding more philosophers

Answer: C

6. A system is in a safe state if:

- A) All resources are fully allocated
- B) There exists a safe sequence where all processes can complete execution
- C) No circular wait exists
- D) Resources are preemptible

Answer: B

7. Starvation differs from deadlock because:

- A) Starvation involves circular waiting
- B) Deadlock involves circular waiting
- C) Starvation cannot occur in priority-based systems

Answer: B

8. A communication deadlock occurs when:

- A) Threads wait for shared resources
- B) Messages are lost in a network
- C) Resources are non-preemptible
- D) Circular waits form

Answer: B

9. Which is true about the Banker's algorithm?

- A) It requires processes to declare maximum resource needs
- B) It does not require processes to declare maximum resource needs
- C) It prioritizes low-resource threads
- D) It uses spooling for printers

Answer: A

10. In Banker's algorithm, an unsafe state indicates:

- A) The current system state is deadlocked
- B) Potential for future deadlock if resources are allocated
- C) All processes have exceeded their maximum claims
- D) System must preempt resources immediately

Answer: B