Unit 6 - Deadlocks and Threads

Assignment 7

The deadline for submitting the assignment has passed. As per our norm, we have not submitted this assignment.

Consider a system with the做个 processes and resource graph. Answer the questions 1 and 2 based on this graph.

1. The safe sequence of execution for the processes in the above figure is 1, 2, 3, 4, 5. Based on the resource graph, is the sequence safe? (Yes/No)

2. Consider a situation with the above graph where a philosopher is thinking about a problem. What is the minimum number of forks required to prevent a deadlock?

3. A system has two processes and three resources (A, B, C). The maximum number of resources is 3. Which of the following sequences of resource allocation is safe? (Specify sequence)

4. Consider P1 has released a resource of type A, and P2 has released a resource of type B. What will be the safe order of execution? (Specify sequence)

5. A system has three processes and three resources (A, B, C). The maximum number of resources is 3. Which of the following sequences of resource allocation is safe? (Specify sequence)

6. Consider a system with five processes, where each process needs two resources of type A. The maximum number of resources available is 8. Does a deadlock occur?

7. A system has ten processes and ten resources. Each process needs exactly one resource. Is there a deadlock? (Yes/No)

8. A system has five processes and six resources. Each process needs exactly one resource. Does a deadlock occur? (Yes/No)

9. Which of the following is/are true about deadlock avoidance?

   a) All resources must be allocated in order
   b) Processes must be blocked and unblocked in a consistent manner
   c) All resources must be allocated in a consistent manner

10. Support is used to synchronize two concurrent processes P1 and P2 using binary semaphores X and Y. Which of the following statements is true? (Specify statements)