Unit II

Short Questions

1. Define race condition.
2. What is critical section problem?What are the requirements that a solution to the critical section problem must satisfy?
3. Define entry section and exit section.
4. Give two hardware instructions and their definitions which can be used for implementing mutual exclusion.
5. What is semaphores?Define busy waiting and spinlock.
6. Define CPU scheduling.
7. What is preemptive and non preemptive scheduling?
8. What is a Dispatcher?What is dispatch latency?
9. What are the various scheduling criteria for CPU scheduling? Brief it.
10. What is a Gantt chart? Explain how it is used?
11. Define deadlock. What are the methods for handling deadlocks? What are the necessary conditions for a deadlock to occur?
12. What is a resource-allocation graph Define request edge and assignment edge
13. Write short notes on deadlock prevention.
14. What is banker's algorithm?
15. How can a system recover from deadlock?

Detail Questions

1. Explain in detail about any two CPU scheduling algorithms with suitable examples.
2. What is synchronization? Explain how semaphores can be used to deal with n-process critical section problem.
3. Explain how to solve reder writer problem and bounded buffer problem with semaphores.
4.
5. Explain Banker's deadlock-avoidance algorithm with an illustration.
6. Consider the following set of processes, with the length of the CPU-burst time given in milliseconds: Process Burst Time Priority P1 10 3 , P2 1 1 ,P3 2 3 ,P4 1 4 P5 5 2. The processes are arrived in the order P1, P2, P3, P4, P5, ALL AT TIME 0.
   (1) Draw four Gantt charts illustrating the execution of these processes using FCFS, SJF, a non preemptive priority (a smaller priority number implies a higher priority), and RR (quantum=1) scheduling.
   (2) What is the turnaround time of each process for each of the scheduling algorithms in part a?
   (3) What is the waiting time of each process for each of the scheduling algorithms in part a?
   (4) Which of the schedules in part a results in the minimal average waiting time (overall processes)?
7. Consider the following snapshot of a system:

   Allocation Max Available
   ABCD ABCD ABCD
   P0 0012 0012 1520
   P1 1000 1750
   P2 1354 2356

P3 0632 0652
P4 0014 0656

Answer the following questions based on the banker's algorithm:

(1) Define safety algorithm.
(2) What is the content of the matrix need?
(3) Is the system in a safe state?
(4) If a request from process P1 arrives for (0, 4, 2, 0), can the request be granted immediately?

8. Explain the Banker's algorithm for deadlck avoidance.
9. Consider the following set of processes, with the length of the CPU-burst time given in milliseconds:

Process	Burst-Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0.

a. Draw four Gantt charts illustrating the execution of these processes using FCFS, SJF, A non preemptive priority (a smaller priority number implies a higher priority), and RR (quantum = 1) scheduling.
b. What is the turnaround time of each process for each of the scheduling algorithms in part a?
c. What is the waiting time of each process for each of the scheduling algorithms in Part a?
d. Which of the schedules in part a results in the minimal average waiting time (over all processes)?

UNIT III

Short Questions

1. Define logical address and physical address.
2. What is the main function of the memory-management unit?
3. What are the common strategies to select a free hole from a set of available holes?
4. What do you mean by best fit, first fit?
5. What is internal & external fragmentation?
6. What do you mean by compaction?
7. What do you mean by overlays?
8. Brief how protection is achieved in memory.

Detail Questions

1 Explain about contiguous memory allocation with neat diagram
2 What do you mean by swapping? How it is achieved.
3 Given memory partition of 100 KB, 500 KB, 200 KB and 600 KB (in order). Show with neat Sketch how would each of the first-fit, best-fit and worst-fit algorithms place processes of 412 KB,317 KB, 112 KB and 326 KB(in order). Which algorithm is most efficient in memory allocation?