

Important Questions

Operating Systems

UNIT-I

1. Explain various types of Operating Systems. Explain the services offered by Operating System
2. What do you mean by threads? Discuss threads models in detail.
3. What is process? Explain process control block with the help of example. Describe the various states of a process during its lifecycle

UNIT-II

5. Explain the critical section? Write three requirements which should be present in its solution. Explain any critical section problem giving its solution.
6. Consider 5 philosophers who spend their lives thinking and eating on a circular table surrounded by 5 chairs each belonging to 1 philosopher. There is a bowl of rice and five single chopsticks in front of them. When a philosopher thinks, they do not interact with each other and when they get hungry they tries to pick up two chopsticks that are closest to them (right and left). When they finished eating they put down both their chopstick and starts thinking again. Explain how they should synchronize to eat in deadlock and starvation free manner.
7. Explain in detail Inter - process communication.
8. What is a semaphore? What are the different types of semaphores?
9. Explain Multilevel Queue Scheduling and Multilevel Feed-back Queue Scheduling
10. Consider the following four processes:

Process	Arrival Time	Burst Time
P1	0	5
P2	1	7
P3	2	3
P4	3	9

Using preemptive SJF scheduling obtain Gantt chart. Also, Calculate Average waiting Time and Turnaround Time of each Process.

11. Consider the following set of processes with length of CPU burst time given in (m sec) and arrival time.

Process	Burst Time	Arrival Time
P1	22	0
P2	4	1
P3	6	2
P4	7	3
P5	9	4

- i) Draw 2 Gantt chart illustrating the execution of these process using FCFS, round robin (time slice = 3) scheduling.
- ii) What is turnaround time and waiting time of each process for each of scheduling algorithm?
- iii) What is average waiting time & turnaround time for each process?
- iv) Which of the algorithm gives best result & why?

UNIT-III

12. Define deadlock. What is starvation? How do they differ from each other? Explain necessary conditions for deadlock?
13. What are the methods to prevent deadlock. How this is different from Deadlock Avoidance.
14. What is Deadlock Recovery? Explain the problems faced in Deadlock Recovery.
15. Consider snapshot of a system with 5 processes {P0, P1, P2, P3, P4 } and 4 resources {A, B, C, D}:

Process	Allocation				Max. Need				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

- i) Is the system in safe state? If yes, determine the safe sequence.
 - ii) If a request from process P1 arrives for (0, 4, 2, 0), can the request be immediately granted?
16. Explain the how demand paging is done in operating System.

UNIT-IV

17. Consider a swapping system in which memory consist of following holes size in memory order: 10 KB, 4 KB, 20 KB, 18 KB, 7 KB, 9 KB, 12 KB and 15 KB, which hole is taken for successive segment request of 12 KB, 10 KB, 98 KB For First fit, Best fit, and Worst fit allocations.
18. Explain segmentation with paging.
19. Explain fragmentation with example
20. What are the steps taken by OS to overcome the situation of Page Fault? Why does Belady's anomaly occur?
21. Consider the following page reference

1, 2, 3, 2, 5, 6, 3, 4, 6, 3, 7, 3, 1, 5, 3, 6, 3, 4, 2, 4, 3, 4, 5, 1

Calculate total no of page fault for

- (i) LRU (ii) Optimal (iii) FIFO Specify best technique assuming total no of frame as 4.

UNIT-V

22. What are files? Write the operations performed on files. Describe the methods to access these files in operating systems.
23. Explain directory structure with the help of diagram.
24. What permissions are assigning to protect files and directories in Linux and Windows? Explain each with example.
25. On a disk with 1000 cylinders, number 0 to 999, compute the number of tracks the disk arm must move to satisfy all the request in the disk queue, Assume the last request received was at track 345 and the head moving towards track 0. The queue in FIFO order contains request for tracks 123, 874, 692, 475, 105, 376. Perform the computations for the following scheduling algorithm: FIFO, SSTF, SCAN, LOOK, and C-LOOK.
26. Short Notes:
 - i) Context switching ii) Scheduler iii) Dispatcher iv) CPU utilization v) Turnaround time vi) Throughput
 - vii) Waiting time viii) Response time ix) BIOS x) BOOT Strap Loader