

OS Assignment Questions

Write all the theory questions before the Mid-Sem exams.

Unit 1:

1. What is Operating system? Explain in brief the objectives and functions of the Operating System.
2. Explain any three types of Operating system in detail with an example.
3. Compare and contrast multitasking and multiprogramming operating systems.

Unit 2:

4. What is process? Describe the elements of Process Control Block in detail.
5. Explain Two state Model in detail with diagram.
6. Explain the conditions for creating new processes? Explain the conditions when process Switching is required? What are the conditions when the process exists?
7. Explain five state process model with suitable diagrams.
8. What do you mean by suspended process? Explain process state transition diagram with suspended states. (7state)
9. Explain nine process states recognized by the UNIXSVR4 operating system with Suitable diagram.
10. Define the term multithreading? Differentiate between single threaded and multi-Threaded process model using suitable diagram
11. Explain KLT and ULT with their advantages and disadvantages.
12. What is scheduling? Explain various short term scheduling criteria.
13. Explain FCFS scheduling algorithm with example.
14. Briefly define the shortest-process next scheduling algorithm with example.
15. Briefly define round-robin scheduling algorithm with example.
16. Briefly define shortest remaining time scheduling algorithm with example.
17. Briefly define highest response scheduling algorithm with example.

Unit 3:

18. What requirement is memory management intended to satisfy?
19. Give the difference between Fixed and dynamic partitioning.
20. What is Partitioning? Explain Memory Partitioning Techniques.
21. What is dynamic partitioning? Explain first-fit, best-fit, next-fit placement policies.
22. Explain the 2 Fetching policies? Explain various replacement algorithms with examples? Optimal, Least Recently Used (LRU), First-in-first-out (FIFO), Clock.
23. Explain Clock Policy - replacement algorithm in detail.
24. What is Buddy System, Explain in detail.
25. What is Virtual Memory, Explain different addressing techniques.
26. What is Paging? Explain Address Translation for Paging?
27. What is Translation lookaside buffer? Explain its working with clear diagram.
28. What is Segmentation? Explain Address Translation for Segmentation?
29. What is Protection and Sharing in Memory Management?

Solve:

1. Consider the set of 6 processes whose Arrival Time and Burst Time/Service Time are given below, calculate the average waiting time and average turnaround time, if the CPU scheduling policy is FCFS, HRRN, SPN, SRN, Round Robin with time quantum = 1, Round Robin with time quantum = 2.

Process Id	Arrival time	Burst time
P1	0	4
P2	5	5
P3	1	2
P4	4	1
P5	7	3
P6	12	3

2. Consider the page reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 3 with 4-page frames. Find number of page faults using Optimal, FIFO, LRU and Clock Page Replacement Algorithm.
3. Consider the following Memory Allocation and to fit a **15K** Process(P1) in the memory as per contiguous Memory Allocation, Mention where will P1 be placed as per first-fit, best-fit, next-fit algorithm, considering P23 was the last process to be allocated memory.

P10	10K	P21	18K	P13	16K	P3	50K	P23	12K	P4	30K
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