

Department of Computer Science & Engineering

OPERATING SYSTEMS

QUESTION BANK

UNIT-I

1. What is an Operating System from the Perspective of User View and System View?
2. Explain briefly the concept of Operating System.
3. Explain Operating System generations.
4. Explain in brief about Dual-Mode Operation of Operating System.
5. Explain Operating System Services.
6. Explain about Special Purpose and Time Sharing Operating Systems.
7. What is system call? Explain with examples.
8. What are the different types of System Calls?
9. What are the different types of Operating System Structures?
10. What are Micro Kernels? Explain.
11. Explain layered approach of Operating Systems.
12. Explain briefly functions provided by the Operating System.
13. Explain the process of booting the System.
14. Discuss the Components of Operating System.
15. Explain the process of transitioning from user mode to kernel mode using mode bit.

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UNIT – II

1. Explain a) Process b) Process Control Block c) Process States.
2. Explain Process Scheduling with Queuing Diagram.
3. Discuss in detail about Schedulers.
4. What is a) Long-term Scheduler b) Short-term Scheduler c) Medium-term Scheduler?
5. Describe various operations on threads.
6. Write about Kernel level Threads.
7. Explain about Context Switching.
8. Explain about Process creation and termination.
9. What are various IPC techniques and explain them in brief.
10. Explain shared memory concept.
11. Explain about message-Passing Systems.
12. Explain a) CPU Scheduler b) Scheduling Decisions c) Dispatcher d) Scheduling criteria
13. What are preemptive and non-preemptive scheduling policies?
14. Explain FCFS with example and discuss advantages and disadvantages.
15. Explain SJF with example and discuss advantages and disadvantages.
16. Explain Priority scheduling with an example and discuss advantages and disadvantages.
17. Explain Round Robin with example and discuss advantages and disadvantages.
18. Explain Multi Level Queue Scheduling with example and discuss advantages and disadvantages.
19. What are multi-threaded models? Explain various types of multi-threaded models.

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20. Write briefly about Multi-Processor Scheduling.

UNIT – III

1. What is Process Synchronization (or) Coordination?
2. Describe Critical Section Problem and write the requirements that are to be satisfied for this solution?
3. Describe briefly about Peterson's solution for Critical Section Problem and does it satisfy all the requirements of CSP?
4. Explain Semaphores in detail.
5. Explain briefly about Deadlock and Starvation techniques.
6. Produce a solution for a) Bounded –Buffer Problem b) First Readers-Writers c) Dining Philosophers Using Semaphores.
7. What are Monitors? Explain.
8. Differentiate between Semaphores and Monitors.
9. Produce a solution for Dining-philosophers using Monitors.
10. How to implement Monitors using Semaphores?
11. Explain briefly about a) Test and Set b) Swap methods.
12. What is the need of Process synchronization? Explain hardware- based solution for process synchronization.
13. Write about Counting Semaphore and Binary Semaphore. Also discuss mutual exclusion implementation using Semaphore.

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UNIT – IV

1. Discuss the following: a) Virtual Memory b) Cache Memory c) Auxiliary Memory
2. Explain a) Paging b) Page table structure c) Translation look-aside buffer d) Segmentation
3. Explain why the “principle of locality” is crucial to the use of virtual memory? What is accomplished by page buffering?
4. Discuss briefly swapping concept with example.
5. Describe contiguous memory allocation concept with advantages and disadvantages.
6. Differentiate between internal and external fragmentation and which one occurs in paging scheme?
7. Explain briefly about paging with neat diagram.
8. Draw and explain the working procedure of paging hardware in detail.
9. Explain the basic concept of segmentation with neat diagram.
10. Write briefly about Virtual Memory.
11. What is Demand Paging? Explain the steps in handling page faults.
12. What is Page Replacement Policy?
13. Explain the following Page Replacements with an example a) FIFO b) Optimal c) LRU d) LFU e) MFU
14. Explain about Allocation of Frames.
15. What is Thrashing? What are the causes for Thrashing?
16. Consider the following page reference: 7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1

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Indicate page faults and calculate the total number of page faults for FIFO, OPTIMAL & LRU if the total numbers of available frames are 3.

UNIT – V

1. What is Deadlock? What are the four conditions necessary for a deadlock situation to arise?
2. Explain briefly resource allocation graph with examples?
3. Explain how deadlocks can be prevented?
4. Explain the System Model of Resources.
5. What is Safe State and Unsafe State?
6. Describe resource-allocation graph? Explain how resource graph can be used for detecting deadlocks?
7. Differentiate the deadlock handling methods?
8. Explain Banker's Algorithm for Deadlock Avoidance with example.
9. Discuss deadlock detection method in detail.
10. Explain about Wait-for graph in detail.
11. Explain how to recover from Deadlocks.

UNIT – VI

1. Explain the concept of files.
2. What are the attributes of files?
3. What are the operations that can be performed on files?
4. Explain various methods to access information in files.
5. Explain Directory Structure in Detail.
6. Explain File System Mounting.
7. Explain various ways for File Sharing.
8. Explain Protection Mechanism in Files.
9. Write about File System Implementation and Directory Implementation.
10. Explain different types of allocation methods for disk space.
11. Discuss briefly about Mass Storage Structure.
12. Give an overview of Disk Structure.
13. What is Disk Scheduling?
14. Explain Disk Scheduling Algorithms.
15. Discuss the techniques to improve the efficiency and performance of Secondary Storage.
16. Explain Swap Space Management.

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