Unit-1Introduction of Operating System

1. What is the primary function of an operating system? A) Managing hardware resources B) Running application software C) Providing user interfaces D) All of the above **Answer: D) All of the above**
2. Which component of an operating system manages the allocation of memory resources? A) Kernel B) Shell C) File system D) Memory manager **Answer: D) Memory manager**
3. What is the role of the kernel in an operating system? A) Providing a graphical user interface B) Managing hardware resources C) Running application software D) Providing system utilities **Answer: B) Managing hardware resources**
4. Which operating system provides a command-line interface? A) Windows B) macOS C) Linux D) Android **Answer: C) Linux**
5. Which operating system is commonly used in smartphones and tablets? A) Windows B) macOS C) Linux D) Android **Answer: D) Android**
6. What is the purpose of device drivers in an operating system? A) To provide security features B) To manage hardware devices C) To facilitate communication between processes D) To provide user interfaces **Answer: B) To manage hardware devices**
7. Which type of operating system allows multiple users to access the system simultaneously? A) Single-user B) Multi-user C) Batch processing D) Real-time **Answer: B) Multi-user**
8. Which operating system is commonly used for server environments? A) Windows B) macOS C) Linux D) Android **Answer: C) Linux**
9. Which component of an operating system manages files and directories? A) Kernel B) Shell C) File system D) Memory manager **Answer: C) File system**
10. Which operating system is developed by Apple Inc.? A) Windows B) macOS C) Linux D) Android **Answer: B) macOS**
11. What is the purpose of the shell in an operating system? A) Managing hardware resources B) Running application software C) Providing user interfaces D) Providing system utilities **Answer: C) Providing user interfaces**
12. Which type of operating system is designed to perform real-time tasks with strict timing requirements? A) Single-user B) Multi-user C) Batch processing D) Real-time **Answer: D) Real-time**
13. What is the purpose of the graphical user interface (GUI) in an operating system? A) To provide a text-based interface B) To improve system security C) To enhance user experience D) To optimize system performance **Answer: C) To enhance user experience**
14. Which operating system is developed by Microsoft Corporation? A) Windows B) macOS C) Linux D) Android **Answer: A) Windows**

15. Which type of operating system processes tasks in batches without user interaction? A) Single-user B) Multi-user C) Batch processing D) Real-time **Answer: C) Batch processing**
16. What is the purpose of system calls in an operating system? A) To manage hardware resources B) To provide user interfaces C) To facilitate communication between processes D) To provide system utilities **Answer: C) To facilitate communication between processes**
17. Which operating system is commonly used in personal computers and laptops? A) Windows B) macOS C) Linux D) Android **Answer: A) Windows**
18. Which operating system is based on the Linux kernel and is open-source? A) Windows B) macOS C) Ubuntu D) Android **Answer: C) Ubuntu**
19. What is the primary purpose of a bootloader in an operating system? A) To load the operating system into memory B) To manage hardware devices C) To provide user interfaces D) To manage file systems **Answer: A) To load the operating system into memory**
20. What is the purpose of the interrupt handler in an operating system? A) To provide security features B) To manage hardware devices C) To facilitate communication between processes D) To provide system utilities **Answer: B) To manage hardware devices**
21. What is the primary function of the scheduler in an operating system? A) To manage hardware resources B) To manage memory resources C) To manage file systems D) To manage CPU resources **Answer: D) To manage CPU resources**
22. Which operating system is commonly used in gaming consoles such as PlayStation and Xbox? A) Windows B) macOS C) Linux D) Android **Answer: C) Linux**
23. What is the purpose of the process manager in an operating system? A) To manage hardware resources B) To manage memory resources C) To manage file systems D) To manage processes and scheduling **Answer: D) To manage processes and scheduling**

Unit-2 Process Scheduling

1. Which of the following is not a scheduling criterion? A) Response time B) Throughput C) Priority D) Deadlock prevention **Answer: D) Deadlock prevention**
2. What does CPU scheduling do in an operating system? A) Allocates memory to processes B) Manages input/output operations C) Allocates CPU to processes D) Manages file systems **Answer: C) Allocates CPU to processes**
3. Which scheduling algorithm does not involve preemptive scheduling? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: C) First Come First Serve (FCFS)**

4. Which scheduling algorithm not may suffer from starvation? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: A) Round Robin**
5. What is the purpose of a context switch in process scheduling? A) To save and restore the context of a process B) To switch the process to the waiting state C) To switch the process to the ready state D) To allocate memory to the process **Answer: A) To save and restore the context of a process**
6. Which scheduling algorithm ensures fairness? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: A) Round Robin**
7. Which scheduling algorithm is based on the process burst time? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: B) Shortest Job First (SJF)**
8. Which scheduling algorithm is based on the priority of processes? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: D) Priority Scheduling**
9. Which scheduling algorithm uses time quantum? A) Shortest Job First (SJF) B) Round Robin C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: B) Round Robin**
10. What does CPU-bound process mean? A) A process that waits for I/O operations B) A process that uses CPU extensively C) A process with low priority D) A process that is terminated **Answer: B) A process that uses CPU extensively**
11. Which scheduling algorithm is not suitable for interactive systems? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: C) First Come First Serve (FCFS)**
12. Which scheduling algorithm can result in convoy effect? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: C) First Come First Serve (FCFS)**
13. What does the term "starvation" mean in the context of scheduling? A) The process is terminated abnormally B) The process gets stuck in a waiting state indefinitely C) The process gets allocated more CPU time than required D) The process is given a low priority **Answer: B) The process gets stuck in a waiting state indefinitely**
14. Which scheduling algorithm aims to reduce the average waiting time? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: B) Shortest Job First (SJF)**
15. In Round Robin scheduling, what happens when a time quantum expires? A) The process is terminated B) The process is put back to the ready queue C) The process is put to the waiting queue D) The process is put to the suspended state **Answer: B) The process is put back to the ready queue**

16. Which scheduling algorithm is prone to the "convoy effect"? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: C) First Come First Serve (FCFS)**
17. Which scheduling algorithm gives priority to the waiting time of a process? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: D) Priority Scheduling**
18. Which scheduling algorithm has the disadvantage of being affected by process burst time prediction? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: B) Shortest Job First (SJF)**
19. What is the primary disadvantage of First Come First Serve (FCFS) scheduling? A) Low throughput B) High context switch overhead C) High waiting time for long processes D) High priority inversion **Answer: C) High waiting time for long processes**
20. Which scheduling algorithm is commonly used in time-sharing systems? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: A) Round Robin**
21. Which scheduling algorithm may result in indefinite postponement of some processes? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: D) Priority Scheduling**
22. Which scheduling algorithm provides the best response time? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: B) Shortest Job First (SJF)**
23. Which scheduling algorithm uses aging to prevent starvation? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: D) Priority Scheduling**
24. Which scheduling algorithm is considered the fairest? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: A) Round Robin**
25. In preemptive scheduling, when does a context switch occur? A) When a process voluntarily gives up the CPU B) When a process completes execution C) When a higher priority process becomes ready to run D) When a process goes into a waiting state **Answer: C) When a higher priority process becomes ready to run**
26. Which scheduling algorithm is not preemptive? A) Round Robin B) Shortest Job First (SJF) C) First Come First Serve (FCFS) D) Priority Scheduling **Answer: C) First Come First Serve (FCFS)**
27. Which scheduler is responsible for selecting processes from the ready queue and allocating the CPU to them? A) Long-term scheduler B) Short-term scheduler C) Medium-term scheduler D) Real-time scheduler **Answer: B) Short-term scheduler**

28. Which scheduler determines which processes are admitted to the system for processing? A) Long-term scheduler B) Short-term scheduler C) Medium-term scheduler D) Real-time scheduler **Answer: A) Long-term scheduler**
29. Which scheduler deals with swapping processes in and out of memory to enhance system performance? A) Long-term scheduler B) Short-term scheduler C) Medium-term scheduler D) Real-time scheduler **Answer: C) Medium-term scheduler**
30. Which scheduler ensures that real-time tasks meet their deadlines? A) Long-term scheduler B) Short-term scheduler C) Medium-term scheduler D) Real-time scheduler **Answer: D) Real-time scheduler**
31. The primary goal of the short-term scheduler is to: A) Maximize CPU utilization B) Minimize response time C) Ensure fairness D) Maximize throughput **Answer: A) Maximize CPU utilization**
32. The long-term scheduler is also known as the: A) CPU scheduler B) Process scheduler C) Admission scheduler D) I/O scheduler **Answer: C) Admission scheduler**
33. Medium-term scheduling is particularly useful in systems where: A) The ready queue is small B) The memory is limited C) The CPU is the bottleneck D) The system supports real-time tasks **Answer: B) The memory is limited**
34. Real-time scheduling is mainly concerned with: A) Maximizing CPU utilization B) Minimizing response time C) Ensuring tasks meet deadlines D) Balancing system resources **Answer: C) Ensuring tasks meet deadlines**
35. Which scheduler is swappers? A) Long-term scheduler B) Short-term scheduler C) Medium-term scheduler D) I/O scheduler **Answer: C) Medium-term scheduler**
36. Which scheduler primarily focuses on improving system performance by deciding which processes to keep in memory and which to swap out? A) Long-term scheduler B) Short-term scheduler C) Medium-term scheduler D) Real-time scheduler **Answer: C) Medium-term scheduler**

Unit-3 Process Scynchronization

1. What is the purpose of synchronization mechanisms in operating systems? A) To ensure efficient memory allocation B) To prevent resource starvation C) To coordinate access to shared resources D) To optimize CPU scheduling **Answer: C) To coordinate access to shared resources**
2. Which synchronization primitive can have a count greater than one and is often used for counting resources? A) Mutex B) Semaphore C) Barrier D) Monitor **Answer: B) Semaphore**
3. The critical section problem involves: A) Ensuring mutual exclusion, progress, and bounded waiting B) Ensuring fair scheduling of processes C) Ensuring real-time constraints are met D) Ensuring deadlock prevention **Answer: A) Ensuring mutual exclusion, progress, and bounded waiting**

4. Which synchronization problem involves two or more processes waiting indefinitely for an event that can be caused by only one of the waiting processes? A) Deadlock B) Starvation C) Race Condition D) Livelock **Answer: A) Deadlock**
5. Which synchronization problem occurs when two or more processes are reading or writing shared data and the final result depends on the order of execution of instructions? A) Deadlock B) Starvation C) Race Condition D) Livelock **Answer: C) Race Condition**
6. Which synchronization primitive provides a higher-level abstraction for managing concurrent access to shared resources? A) Mutex B) Semaphore C) Barrier D) Monitor **Answer: D) Monitor**
7. In the dining philosophers problem, what does each philosopher represent? A) A process B) A thread C) A resource D) A semaphore **Answer: B) A thread**
8. Which synchronization problem occurs when two or more processes are unable to continue execution because each is waiting for the other to release a resource? A) Deadlock B) Starvation C) Race Condition D) Livelock **Answer: A) Deadlock**
9. What is the purpose of using synchronization primitives such as mutexes and semaphores? A) To eliminate concurrency B) To allow simultaneous access to critical sections C) To ensure mutual exclusion D) To increase system performance **Answer: C) To ensure mutual exclusion**
10. The producer-consumer problem involves: A) Multiple producers and a single consumer B) Multiple consumers and a single producer C) Multiple producers and multiple consumers D) A single producer and a single consumer **Answer: C) Multiple producers and multiple consumers**
11. What is the primary purpose of using locks in process synchronization? A) To prevent deadlock B) To prevent race conditions C) To implement priority inversion D) To ensure fair access to resources **Answer: B) To prevent race conditions**
12. What is the purpose of a semaphore's count? A) To prevent deadlock B) To signal availability of resources C) To enforce mutual exclusion D) To prevent priority inversion **Answer: B) To signal availability of resources**
13. In the readers-writers problem, which type of access is exclusive? A) Reader B) Writer C) Both reader and writer D) Neither reader nor writer **Answer: B) Writer**
14. Which synchronization problem occurs when a process is perpetually denied access to resources or unable to proceed? A) Deadlock B) Starvation C) Race Condition D) Livelock **Answer: B) Starvation**
15. In the dining philosophers problem, what does each fork represent? A) A process B) A resource C) A mutex D) A semaphore **Answer: B) A resource**