1. Which of the following best describes the Process Concept?
a) It refers to the execution of a program instance
b) It refers to the physical execution of a program
c) It refers to the storage of a program in the memory
d) It refers to the compilation of a program

Answer: a) It refers to the execution of a program instance
Explanation: The Process Concept pertains to the execution of an instance of a program, including its associated resources like memory, CPU time, and I/O resources.

2. What does a scheduler do in an operating system?
a) Allocates memory to processes
b) Allocates CPU to processes
c) Allocates disk space to processes
d) Allocates network bandwidth to processes

Answer: b) Allocates CPU to processes
Explanation: The scheduler in an operating system allocates CPU time to various processes, determining which process gets to execute and when.

3. Which of the following is not a type of scheduler in operating systems?
a) Long-term scheduler
b) Medium-term scheduler
c) Short-term scheduler
d) Parallel scheduler

Answer: d) Parallel scheduler

Explanation: Parallel scheduler is not a standard type of scheduler. The commonly known types are long-term, medium-term, and short-term schedulers.

4. What does the Process State Diagram depict?
a) The transitions between different process states
b) The resources allocated to each process
c) The physical layout of processes in memory
d) The hierarchy of processes in an operating system

Answer: a) The transitions between different process states
Explanation: Process State Diagram illustrates the various states a process goes through during its lifecycle and the transitions between these states.

5. Which scheduling algorithm provides guaranteed response time for interactive tasks?
a) Round Robin
b) First-Come, First-Served (FCFS)
c) Shortest Job Next (SJN)
d) Shortest Remaining Time (SRT)

Answer: a) Round Robin
Explanation: Round Robin scheduling ensures fairness by providing a guaranteed response time for interactive tasks, as it allocates a fixed time slice to each process in a cyclic manner.

6. What is the purpose of algorithm evaluation in scheduling?
a) To determine the popularity of an algorithm
b) To assess the efficiency and effectiveness of scheduling algorithms
c) To calculate the execution time of processes

d) To optimize memory allocation

Answer: b) To assess the efficiency and effectiveness of scheduling algorithms
Explanation: Algorithm evaluation in scheduling aims to analyze the performance metrics of different scheduling algorithms to determine their efficiency and effectiveness in various scenarios.

7. Which system call is used for creating a new process in Unix-like operating systems?
a) fork()
b) create()
c) spawn()
d) exec()

Answer: a) fork()
Explanation: The fork() system call in Unix-like operating systems is used to create a new process, which is a duplicate of the calling process.

8. In multiple processor scheduling, what is the objective of load balancing?
a) To overload processors for faster execution
b) To underutilize processors for better efficiency
c) To distribute the workload evenly across all processors
d) To prioritize certain processes over others

Answer: c) To distribute the workload evenly across all processors
Explanation: Load balancing in multiple processor scheduling aims to evenly distribute the workload across all available processors to optimize resource utilization and improve overall system performance.

9. What is the primary advantage of using threads in programming?
a) Threads reduce the complexity of the code
b) Threads allow parallel execution of tasks
c) Threads increase the size of the executable file
d) Threads decrease the responsiveness of the program

Answer: b) Threads allow parallel execution of tasks
Explanation: Threads enable parallelism within a program, allowing multiple tasks to be executed concurrently, which can enhance performance and responsiveness.

10. Which scheduling algorithm is prone to starvation?
a) Round Robin
b) First-Come, First-Served (FCFS)
c) Shortest Job Next (SJN)
d) Priority Scheduling

Answer: b) First-Come, First-Served (FCFS)
Explanation: FCFS scheduling algorithm is prone to starvation, especially for long-running processes as newer processes are continuously being added to the queue.

11. Which scheduling algorithm may suffer from convoy effect?
a) Round Robin
b) First-Come, First-Served (FCFS)
c) Shortest Job Next (SJN)
d) Priority Scheduling

Answer: b) First-Come, First-Served (FCFS)

Explanation: FCFS scheduling algorithm may suffer from the convoy effect, where shorter processes get blocked behind longer ones, leading to inefficient resource utilization.

12. Which type of scheduler is responsible for swapping processes in and out of memory?
a) Long-term scheduler
b) Medium-term scheduler
c) Short-term scheduler
d) Parallel scheduler

Answer: b) Medium-term scheduler
Explanation: The medium-term scheduler, also known as the swapping scheduler, is responsible for swapping processes in and out of memory to manage the system's memory resources efficiently.

13. Which scheduling algorithm is optimal in terms of average waiting time for a given set of processes?
a) First-Come, First-Served (FCFS)
b) Shortest Job Next (SJN)
c) Shortest Remaining Time (SRT)
d) Shortest Time-to-Completion (STC)

Answer: b) Shortest Job Next (SJN)
Explanation: Shortest Job Next (SJN) scheduling algorithm minimizes the average waiting time for a given set of processes by selecting the shortest job next for execution.

14. Which system call is used to terminate a process in Unix-like operating systems?
a) end()

b) terminate()
c) exit()
d) kill()

Answer: c) exit()
Explanation: The exit() system call in Unix-like operating systems is used to terminate a process and release its resources back to the system.

15. Which scheduling algorithm provides fairness in CPU allocation?
a) First-Come, First-Served (FCFS)
b) Shortest Job Next (SJN)
c) Shortest Remaining Time (SRT)
d) Lottery Scheduling

Answer: d) Lottery Scheduling
Explanation: Lottery Scheduling provides fairness in CPU allocation by assigning each process a proportional number of lottery tickets, ensuring a fair chance of CPU access.

16. What is the primary role of a short-term scheduler?
a) To allocate memory to processes
b) To swap processes in and out of memory
c) To manage the execution of processes on CPU
d) To schedule processes for disk operations

Answer: c) To manage the execution of processes on CPU
Explanation: The short-term scheduler, also known as the CPU scheduler, is responsible for selecting which process from the ready queue will execute next on the CPU.

17. Which scheduling algorithm is not preemptive?
a) Round Robin
b) First-Come, First-Served (FCFS)
c) Shortest Job Next (SJN)
d) Priority Scheduling

Answer: b) First-Come, First-Served (FCFS)
Explanation: First-Come, First-Served (FCFS) scheduling algorithm is non-preemptive, meaning once

a process starts execution, it cannot be interrupted until it completes or voluntarily yields the CPU.

18. What is the main advantage of preemptive scheduling over non-preemptive scheduling?
a) Preemptive scheduling reduces context switching overhead
b) Preemptive scheduling ensures fairness in CPU allocation
c) Preemptive scheduling improves system responsiveness
d) Preemptive scheduling simplifies process management

Answer: c) Preemptive scheduling improves system responsiveness
Explanation: Preemptive scheduling improves system responsiveness by allowing higher-priority tasks to interrupt lower-priority ones, thus reducing the chances of delays in critical operations.

19. Which system call is used to suspend execution of a thread in POSIX threads?
a) yield()
b) wait()

c) suspend()
d) pthread_suspend()

Answer: d) pthread_suspend()
Explanation: In POSIX threads, the pthread_suspend() function is used to suspend the execution of a thread until it is resumed by another thread.

20. Which scheduling algorithm provides the lowest average turnaround time for a given set of processes?
a) First-Come, First-Served (FCFS)
b) Shortest Job Next (SJN)
c) Shortest Remaining Time (SRT)
d) Round Robin

Answer: b) Shortest Job Next (SJN)
Explanation: Shortest Job Next (SJN) scheduling algorithm minimizes the average turnaround time by executing the shortest job first, thereby reducing the waiting time for all processes in the queue.

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