**Question 1: What is the purpose of a process scheduler?**

**Answer:** The purpose of a process scheduler is to allocate CPU time to various processes, manage their execution order, and optimize the overall system performance while ensuring fairness and responsiveness.

**Question 2: What is a time quantum in Round Robin scheduling?**

**Answer:** A time quantum is the fixed amount of time that a process is allowed to run before it is preempted and moved to the back of the ready queue. This ensures that all processes get a chance to execute in a timely manner.

**Question 3: Describe how Shortest Job First (SJF) scheduling works.**

**Answer:** Shortest Job First (SJF) scheduling selects the process with the smallest estimated execution time to run next. It can be preemptive or non-preemptive. If a new process arrives with a shorter burst time than the currently running process, it can preempt it.

**Question 4: What is the difference between preemptive and non-preemptive scheduling?**

**Answer:** In preemptive scheduling, the OS can interrupt a currently running process to allocate CPU to another process. In non-preemptive scheduling, once a process starts its execution, it runs to completion without being interrupted.

**Question 5: How does priority scheduling determine which process to run?**

**Answer:** Priority scheduling assigns a priority level to each process. The CPU scheduler selects the process with the highest priority for execution. If two processes have the same priority, the scheduling algorithm may use another method, such as FCFS, to decide.

**Question 6: What is aging in process scheduling?**

**Answer:** Aging is a technique used to prevent starvation by gradually increasing the priority of waiting processes over time. This ensures that lower-priority processes eventually get CPU time as their priority increases.

**Question 7: What is a multilevel feedback queue?**

**Answer:** A multilevel feedback queue is a scheduling algorithm that uses multiple queues, each with different priority levels. Processes can move between queues based on their behavior and CPU usage, allowing more responsive handling of interactive processes.

**Question 8: Explain the term "throughput" in the context of process scheduling.**

**Answer:** Throughput refers to the number of processes completed per unit of time. A higher throughput indicates that the system is efficiently managing and completing processes, which is a key metric for evaluating the performance of a scheduling algorithm.

**Question 9: What role does the dispatcher play in process scheduling?**

**Answer:** The dispatcher is responsible for switching the CPU from one process to another. It performs context switching, switching the CPU to the next scheduled process, and manages the execution flow between processes.

**Question 10: What is a system call in relation to process scheduling?**

**Answer:** A system call is a request made by a user process to the operating system for service, such as requesting CPU time or I/O operations. System calls can affect process scheduling by changing process states (e.g., from running to waiting) and prompting the scheduler to make decisions based on these state changes.

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