

1. Write short note on CPU scheduling algorithms

CPU Scheduling is a process of determining which process will own CPU for execution while another process is on hold. The main task of CPU scheduling is to make sure that whenever the CPU remains idle, the OS at least select one of the processes available in the ready queue for execution.

Types of CPU Scheduling

| CPU Scheduling | |
|---|---|
| Preemptive In Preemptive Scheduling, the tasks are mostly assigned with their priorities. | Non-Preemptive In the Non-preemptive scheduling method, the CPU has been allocated to a specific process. |

Types of CPU scheduling Algorithm

- First Come First Serve (FCFS)
 - In the First Come First Serve method, the process which requests the CPU gets the CPU allocation first.
- Shortest-Job-First (SJF) Scheduling
 - In Shortest job first the shortest execution time should be selected for execution next
- Shortest Remaining Time
 - In the Shortest Remaining time, the process will be allocated to the task, which is closest to its completion.
- Priority Scheduling
 - In, Priority Scheduling the scheduler selects the tasks to work as per the priority.
- Round Robin Scheduling
 - In, this Round robin scheduling works on principle, where each person gets an equal share of something in turn
- Multilevel Queue Scheduling
 - In Multilevel scheduling, method separates the ready queue into various separate queues. In this method, processes are assigned to a queue based on a specific property
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2. What is preemptive vs non preemptive scheduling algos?

Preemptive Scheduling:

In Preemptive Scheduling, the tasks are mostly assigned with their priorities. Sometimes it is important to run a task with a higher priority before another lower priority task, even if the lower priority task is still running. The lower priority task holds for some time and resumes when the higher priority task finishes its execution.

Non-Preemptive Scheduling:

In this type of scheduling method, the CPU has been allocated to a specific process. The process that keeps the CPU busy will release the CPU either by switching context or terminating. It is the only method that can be used for various hardware platforms. That's because it doesn't need special hardware (for example, a timer) like preemptive scheduling.

To determine if scheduling is preemptive or non-preemptive we consider these four parameters:

1. A process switches from the running to the waiting state.
2. Specific process switches from the running state to the ready state.
3. Specific process switches from the waiting state to the ready state.
4. Process finished its execution and terminated.

Only conditions 1 and 4 apply, the scheduling is called non- preemptive.

All other scheduling are preemptive.

3. Write the best and/or practical scheduling algo, with reason ?