

Q. what is Process Scheduling? Define its objectives.

Ans.: The assignment of physical processors to processes allows processors to accomplish work. The problem of determining when processors should be assigned and to which processes is called processor scheduling or CPU scheduling.

When more than one process is run able, the operating system must decide which one first. The part of the operating system concerned with this decision is called the scheduler, and algorithm it uses is called the scheduling algorithm.

Goals of Scheduling (Objectives) : In this section we try to answer following question: What the scheduler try to achieve?

Many objectives must be considered in the design of a scheduling discipline. In particular, a scheduler should consider fairness, efficiency, response time, turnaround time, throughput, etc., Some of these goals depends on the system one is using for example batch system, interactive system or real-time system, etc. but there are also some goals that are desirable in all systems.

General Goals :

Fairness : Fairness is important under all circumstances. A scheduler makes sure that each process gets its fair share of the CPU and no process can suffer indefinite postponement. Note that giving equivalent or equal time is not fair. Think of *safety control* and *payroll* at a nuclear plant.

Policy Enforcement : The scheduler has to make sure that system's policy is enforced. For example, if the local policy is safety then the *safety control processes* must be able to run whenever they want to, even if it means delay in *payroll processes*.

Efficiency : Scheduler should keep the system (or in particular CPU) busy cent percent of the time when possible. If the CPU and all the Input/Output devices can be kept running all the time, more work gets done per second than if some components are idle.

Response Time : A scheduler should minimize the response time for interactive user.

Turnaround : A scheduler should minimize the time batch users must wait for an output.

Throughput : A scheduler should maximize the number of jobs processed per unit time.

A little thought will show that some of these goals are contradictory. It can be shown that any scheduling algorithm that favors some class of jobs hurts another class of jobs. The amount of CPU time available is finite, after all.