**Advantages and Disadvantages of various CPU scheduling algorithms**

CPU Scheduling involves many different scheduling algorithms which have their Advantages and Disadvantages.

**1.**[**First Come First Serve (FCFS)**](https://www.geeksforgeeks.org/first-come-first-serve-cpu-scheduling-non-preemptive/)**:**

Advantages:

1. It is simple and easy to understand.

Disadvantages:

1. The process with less execution time suffers i.e. waiting time is often quite long.
2. Favors CPU Bound process then I/O bound process.
3. Here, the first process will get the CPU first, other processes can get the CPU only after the current process has finished its execution. Now, suppose the first process has a large burst time, and other processes have less burst time, then the processes will have to wait more unnecessarily, this will result in more average waiting time, i.e., [Convoy effect](https://www.geeksforgeeks.org/convoy-effect-operating-systems/).
4. This effect results in lower CPU and device utilization.
5. FCFS algorithm is particularly troublesome for multiprogramming systems, where it is important that each user get a share of the CPU at regular intervals.

**2.**[**Shortest Job First (SJF) [Preemptive and Non- Preemptive]**](https://www.geeksforgeeks.org/program-for-shortest-job-first-or-sjf-cpu-scheduling-set-1-non-preemptive/)**:**

Advantages:

1. Shortest jobs are favored.
2. It is probably optimal, in that it gives the minimum average waiting time for a given set of processes.

Disadvantages:

1. SJF may cause starvation if shorter processes keep coming. This problem is solved by aging.
2. It cannot be implemented at the level of short-term CPU scheduling.

**3.**[**Round Robin (RR)**](https://www.geeksforgeeks.org/round-robin-scheduling-with-different-arrival-times/)**:**

Advantages:

1. Every process gets an equal share of the CPU.
2. RR is cyclic in nature, so there is no starvation.

Disadvantages:

1. Setting the quantum too short increases the overhead and lowers the CPU efficiency, but setting it too long may cause a poor response to short processes.
2. The average waiting time under the RR policy is often long.
3. If time quantum is very high then RR degrades to FCFS.

**4.**[**Priority Based (PB)**](https://www.geeksforgeeks.org/program-for-priority-cpu-scheduling-set-1/?ref=rp)**:**

Advantages:

* This provides a good mechanism where the relative importance of each process may be precisely defined.

Disadvantages:

1. If high-priority processes use up a lot of CPU time, lower-priority processes may starve and be postponed indefinitely. The situation where a process never gets scheduled to run is called starvation.
2. Another problem is deciding which process gets which priority level assigned to it.

**5.**[**Multilevel Queue Scheduling (MQS)**](https://www.geeksforgeeks.org/multilevel-queue-mlq-cpu-scheduling/)**:**

Advantages:

Application of separate scheduling for various kinds of processes is possible.

* System Process – FCFS
* Interactive Process – SJF
* Batch Process – RR
* Student Process – PB

Disadvantages:

* The lowest level process faces the starvation problem.

**6.**[**Multilevel Feedback Queue Scheduling (MFQS)**](https://www.geeksforgeeks.org/multilevel-feedback-queue-scheduling-mlfq-cpu-scheduling/)**:**

Advantages:

1. Low scheduling overhead.
2. Allows aging, thus no starvation.

Disadvantages:

1. It’s not flexible.
2. It also requires some means of selecting values for all the parameters to define the best scheduler, thus it is also the most complex.