

## Practical No-3

★ Aim : ~~to~~

Simulate the following CPU scheduling algorithms for following processes calculate turn around time and waiting time using a) FCFS OR RoundRobin b) SJF OR Priority

Process	CPU Burst Time	Arrival Time
P <sub>1</sub>	3	0
P <sub>2</sub>	5	1
P <sub>3</sub>	2	2
P <sub>4</sub>	5	3
P <sub>5</sub>	5	4

★ Learning Objective :

To learn and understand the concept of CPU scheduling algorithm.

★ Theory :

(i) 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. The selection process will be carried out by the CPU scheduler. It selects one of the processes in memory that are ready for execution.



(ii) Waiting Time :

Waiting time is an amount that a specific process needs to wait in the ready queue.

(iii) Turnaround Time :

Turnaround time is an amount of time to execute a specific process. It is the calculation of the total time spent waiting to get into the memory, waiting in the queue and, executing on the CPU. The period between the time of process submission to the completion time is the ~~turn~~ turnaround time.

(iv) Types of CPU Scheduling :

Here, are two kinds of scheduling methods :

(a) 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.

(b) 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.



(v) First come First Serve (FCFS):

First come First Serve is the full form of FCFS. It is the easiest and most simple CPU scheduling algorithm. In this type of algorithm, the process which requests the CPU gets the CPU allocation first. This scheduling method can be managed with a FIFO queue. As the process enters the ready queue, its PCB (Process Control Block) is linked with the tail of the queue. So, when CPU becomes free, it should be assigned to the process at the beginning of the queue.

(vi) Round-Robin Scheduling:

Round robin is the oldest, simplest scheduling algorithm. The name of this algorithm comes from the round-robin principle, where each person gets an equal share of something in turn. It is mostly used for scheduling algorithms in multitasking. This algorithm method helps for starvation free execution of processes.

(vii) Shortest Job First:

SJF is a full form of (Shortest Job First) is a scheduling algorithm in which the process with the shortest execution time should be selected for execution next. This scheduling method can be preemptive or non-preemptive. It significantly reduces the average waiting time for other processes awaiting execution.

Priority Based Scheduling:  
Priority scheduling is a method of scheduling



processes based on priority. In this method, the scheduler selects the tasks to work as per the priority. Priority scheduling also helps OS to involve priority assignments. The processes with higher priority should be carried out first, whereas jobs with equal priorities are carried out on a round-robin or FCFS basis. Priority can be decided based on memory requirements, time requirements, etc.

#### \* Conclusion:

We successfully learned and understood the concept of CPU scheduling algorithm.