CPU Scheduling Algorithms – I

Objective

To schedule the processes using FCFS – First Come First Serve scheduling algorithm.

Description

When a computer is multi programmed, it has multiple processes competing for the CPU at the same time frequently. This situation occurs whenever two or more processes are simultaneously in the ready queue. If only one CPU is available, a choice has to be made which process has to be in CPU. The part of the operating system that makes the choice is called scheduler and the algorithm is called scheduling algorithm.

FCFS

In this scheduling policy, the processes are assigned the CPU according to the order they arrive.

Arrival Time (AT)

The time at which a process arrives in the ready queue.

Burst Time (BT)

The time a process takes in its completion.

Completion Time (CT)

The time at which a process completes its execution.

Turn Around Time (TAT)

The time for which a process enters the ready queue till it leaves the system after its execution.

$$\mathbf{TAT = CT - AT}$$

Waiting Time (WT)

The time for which a process has to wait in the ready queue before the CPU is allocated to it and it starts its execution.

$$\mathbf{WT = TAT – BT}$$

Lab Tasks

1. Suppose there are five processes in the ready queue with arrival time = 0.

Process ID	Burst Time
pid_0	4
pid_1	3
pid_2	2
pid_3	1
pid_4	3

Calculate the waiting time and turn around time of each process. Also calculate the average waiting time and average turn around time which the processes have to face in the ready queue.

2. Suppose now that there are five processes in the ready queue with different arrival times and burst times.

Process ID	Arrival Time	Burst Time
pid_0	3	4
pid_1	5	3
pid_2	0	2
pid_3	5	1
pid_4	4	3

Calculate the waiting time, turn around time, average waiting time and average turn around time for the above set of processes in the ready queue.