

**Experiment-2****Implementation and Analysis of CPU Scheduling Algorithms (FCFS, SJF, Priority and RR)****OBJECTIVE:**

To simulate and analyze various CPU scheduling algorithms like:

First-Come, First-Served (FCFS),

Shortest Job First (SJF – Non-Preemptive),

Round Robin (RR – with time quantum = 2 ms),

Priority Scheduling (Non-Preemptive)

and to calculate Average Waiting Time and Average Turnaround Time for each.

**Exercise**

1. Consider the following set of processes with their arrival times and burst times:

Process ID	Arrival Time	Burst Time
P0	0	5
P1	1	3
P2	2	8
P3	3	6

Draw the Gantt chart for the following CPU scheduling algorithms:

First-Come, First-Served (FCFS)

Shortest Job First (SJF) — Non-preemptive

Round Robin (RR) — assume time quantum = 2 ms

Calculate the following for each of the above scheduling algorithms.

Average Turnaround Time (TAT)

Average Waiting Time (WT)

2. Consider the following set of processes with their arrival times and burst times:

Process ID	Arrival Time	Burst Time
P0	3	5
P1	0	4
P2	4	2
P3	5	4

Draw the Gantt chart for the following CPU scheduling algorithms:

First-Come, First-Served (FCFS)

Shortest Job First (SJF) — Non-preemptive

Round Robin (RR) — assume time quantum = 2 ms

Calculate the following for each of the above scheduling algorithms.

Average Turnaround Time (TAT)

## Average Waiting Time (WT)

3. Consider the following set of processes, with the length of the CPU burst time given in milliseconds:

Process Id	Burst Time	Priority
P1	2	2
P2	1	1
P3	8	4
P4	4	2
P5	5	3

The processes are assumed to have arrived in the order *P1, P2, P3, P4, P5*, all at time 0.

Find the following.

- I. Draw four Gantt charts that illustrate the execution of these processes using the following scheduling algorithms: FCFS, SJF, non preemptive priority (a larger priority number implies a higher priority), and RR (quantum = 2).
- II. What is the turnaround time of each process for each of the scheduling algorithms in part a?
- III. What is the waiting time of each process for each of these scheduling algorithms?
- IV. Which of the algorithms results in the minimum average waiting time (over all processes)?

## Submission Guidelines

- Write all scheduling algorithm tasks by hand on paper.
- Show each calculation step, draw the Gantt chart, and write final results clearly.
- Do not submit any Word file or screenshots—only handwritten work will be accepted.