

Spring 2022
CSE 321 Operating Systems
Lab Assignment 4
Total Marks: 30
Deadline: 14th April, 11:59 PM

Given the list of processes, their CPU burst times, arrival times and priorities implement SJF, Priority and Round Robin scheduling algorithms on the processes with preemption. For each of the scheduling policies, compute and print the completion Time(CT), Turnaround Time(TAT), and Waiting Time(WT) for each process using **C Programming**.

Waiting time: Processes need to wait in the process queue before execution starts and in execution while they get preempted.

Turnaround time: Time elapsed by each process to get completely served. (Difference between submission time and completion time).

Task 1: SJF Scheduling with preemption

You can use the following input as sample:

| Process | Arrival Time | Burst Time |
|---------|--------------|------------|
| P1 | 0 | 5 |
| P2 | 2 | 2 |
| P3 | 3 | 7 |
| P4 | 4 | 4 |
| P5 | 5 | 5 |

Solution in a Gantt chart:

| | | | | | | | |
|----|----|----|----|----|----|----|----|
| P1 | P2 | P2 | P1 | P4 | P5 | P3 | |
| 0 | 2 | 3 | 4 | 7 | 11 | 16 | 23 |

Task 2: Round Robin

You can use the following input as sample:

Time Quantum = 20 ms

| Process | Burst Time |
|---------|------------|
| P1 | 53 |
| P2 | 17 |
| P3 | 68 |
| P4 | 24 |

Solution in a Gantt chart:

| | | | | | | | | | | |
|----|----|----|----|----|----|-----|-----|-----|-----|-----|
| P1 | P2 | P3 | P4 | P1 | P3 | P4 | P1 | P3 | P3 | |
| 0 | 20 | 37 | 57 | 77 | 97 | 117 | 121 | 134 | 154 | 162 |

Task 3: Priority Scheduling

You can use the following input as sample:

| Process | Arrival Time | Burst Time | Priority |
|---------|--------------|------------|----------|
| P1 | 0 | 15 | 2 |

| | | | |
|----|----|----|---|
| P2 | 14 | 5 | 4 |
| P3 | 3 | 10 | 0 |
| P4 | 9 | 22 | 3 |
| P5 | 7 | 16 | 1 |

Solution in a Gantt chart:

| | | | | | | |
|----|----|----|----|----|----|----|
| P1 | P3 | P5 | P1 | P4 | P2 | |
| 0 | 3 | 13 | 29 | 41 | 63 | 68 |