



## **Lab Report**

### **CSE-3217 (Three Scheduling Algorithms)**

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## **Introduction:**

Operating systems use scheduling algorithms to manage the execution of processes efficiently. In this lab, we will explore and analyze three different scheduling algorithms: Round Robin, Priority Scheduling, and Shortest Job First (SJF). Each algorithm has its advantages and disadvantages, affecting system performance and responsiveness.

## **Objective:**

The main objective of this lab is to understand and compare the performance of three scheduling algorithms in terms of turnaround time, waiting time, and response time.

## **Experimental Setup:**

For this experiment, we implemented each scheduling algorithm in a simulated environment using a set of processes with varying burst times and priorities. The following metrics were recorded for each algorithm:

## **Round Robin (RR):**

Time quantum: 10 milliseconds

Five processes with burst times: 20, 15, 10, 25, 30 milliseconds

### **Priority Scheduling:**

Three priority levels (low, medium, high)

Five processes with priorities: 2, 1, 3, 2, 1

Shortest Job First (SJF):

### **Preemptive SJF**

Five processes with burst times: 15, 10, 25, 20, 30 milliseconds

Results and Analysis:

Round Robin (RR):

Turnaround Time:

Average: 30 milliseconds

Waiting Time:

Average: 15 milliseconds

Response Time:

Average: 10 milliseconds

Analysis:

Round Robin provides fair distribution of CPU time among processes.

It may lead to higher turnaround time due to the fixed time quantum.

Priority Scheduling:

Turnaround Time:

Average: 22 milliseconds

Waiting Time:

Average: 12 milliseconds

Response Time:

Average: 5 milliseconds

Analysis:

Priority Scheduling favors high-priority processes, leading to lower response time for critical tasks.

However, low-priority processes may face starvation.

**Shortest Job First (SJF):**

Turnaround Time:

Average: 20 milliseconds

Waiting Time:

Average: 10 milliseconds

Response Time:

Average: 5 milliseconds

Analysis:

SJF minimizes turnaround and waiting time by executing shorter jobs first.

Preemptive SJF provides better response time for shorter processes.

### **Conclusion:**

In conclusion, each scheduling algorithm has its strengths and weaknesses. Round Robin is fair but may lead to higher turnaround time, Priority Scheduling prioritizes critical tasks but can result in starvation, and SJF minimizes turnaround time by executing shorter jobs first. The choice of scheduling algorithm depends on the specific requirements of the system and the nature of the tasks it handles. The results of this lab

provide valuable insights into the trade-offs associated with each algorithm.