

Assignment 8 - Multilevel Queue Scheduling

Write a program to simulate a multilevel queue scheduling algorithm with 4 queues. Each queue must be assigned a priority, with q0 having the highest priority and q3 having the lowest priority. The following scheduling algorithms should be used for each queue:

- q0 - Round Robin (RR)
- q1 - Shortest Job First (SJF)
- q2 - Shortest Job First (SJF)
- q3 - First-In-First-Out (FIFO)

Each queue should be given a time quantum of 20 seconds, and the CPU should switch between queues after every 20 seconds. The user should be prompted to enter the number of processes along with their priority associated with each queue.

Task:

1. Implement the scheduling algorithm in a programming language of your choice.
2. Test the program with different numbers of processes and different priorities.
3. Analyze the results and compare the performance of each scheduling algorithm using following criteria.
 - a. Waiting time
 - b. Turnaround time

Submission Requirements:

1. The program source code.
2. A report explaining the implementation and the results of the program, including the pros and cons of each scheduling algorithm.
3. A brief conclusion, summarizing the findings of the analysis and discussing the limitations of the program.

Grading Criteria:

Note that your source code will be checked against plagiarism and AI based generation software. If your code happens to get similarity nearly 75% or above, you will get zero for the assignment.

1. Implementation of the scheduling algorithms
2. Accuracy of the results
3. Quality of the report, including clarity of explanation, organization, and presentation.