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***Computer Science Dept****.*

**Comp 431 Project-F23 Due :midnight 14/01/2024**

The project is a **simulation** for some of the CPU scheduling algorithms and making a comparison between them. The project will:

1. Simulates the CPU scheduling algorithms FCFS, SRTF (SJF with preemption), RR, Multilevel Feedback Queues.
2. Creates 8 processes in the **ready queue** with a **random** CPU-burst for each process between 5 & 100 time units. You should use a suitable data structure for each process representing in a way the **PCB** which may contain the data you think you need it in your program.
3. When creating the processes, assign some kind of order **(arrival time)** for their arrival.
4. For RR, use a slice time (quantum, Q = 20 units).
5. In multilevel feedback Queue, consider 3 queues,

Q1: RR with 10 units

Q2: RR with 50 units.

Q3: FCFS

1. For each of the scheduling algorithms above, you should compute the average turnaround time (ATT) and average waiting time (AWT).
2. Repeat steps (2) to (6) for 100 times, 1000 times, 10000 times, and 10000 times.
3. Create a table summarizing your results showing ATT & AWT for all cases:

For example, in case FCFS:

**No. of iterations**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 100 | 1000 | 10000 | 100000 |
| ATT |  |  |  |  |
| AWT |  |  |  |  |

**FCFS**

(\*) Same thing for SJF, RR, Multilevel Feedback Queues.

* Your program will be graded according to correctness, style, and documentation.
* No programs will be accepted after the due date.
* You can work **individually** only. Your project will be examined and any signs of cheating will be penalized severely.
* Submit only the source code by replying to the message “**431-Project-F23**” on Ritaj web page.