National University
Of Computer and Emerging Sciences

Assignment # 2

Due Date: 30 March 2022 11:59 PM

Important Instructions:

1. The students who are involved in plagiarism will get zero marks.
2. Start early so you can finish on time. No extra time will be given.
3. All the submissions must be on google classroom.
4. You have to submit .c/.cpp files.
5. Follow the naming convention of files strictly. Each question will be named q1.cpp/q1.c.
6. You have to submit one zipped file containing the solution code files. (i20-XXXX_Assignment2.zip)
7. Be prepared for demos after the submission of the assignment within two weeks.

Question No. 1:

Your task is to simulate the working of different scheduling algorithms. Your program must implement a **multi-level feedback queue** for implementing these algorithms.

Steps:

1. Your simulation program must ask the user; how many algorithms you want to implement.
2. After that, creates that number of queues.
3. Each queue implements a different scheduling algorithm.
4. For consistency, you should follow the following given sequence for implementing queues arranged in high-to-low priority:
    i. Priority Scheduling
    ii. Round Robin (Quantum=8)
    iii. Round Robin (Quantum=10)
    iv. First Come First Serve (FCFS)
5. For Simplicity, you should implement the swapping between queues only from high-to-low priority queues not from low priority to high priority.
6. Your program must take/read processes from the input file for scheduling.
7. The file format is as; PID | Arrival Time | CPU Burst Time | Priority. All these are separated by " " space. Each process entry is in a new line.
8. The priority value, higher value high priority, is useful for priority-based algorithms and optional for others.
9. Upon successful scheduling of processes on all queues, your program must print the following for each implemented queue/scheduling algorithm:
    i. All processes with their PID, arrival time, CPU burst time, waiting time, and turnaround time.
    ii. Plus, the average waiting time and average turnaround time of each scheduling algorithm.