Assignment 6

Operating System Lab (CS341)

Department of CSE, IIT Patna

Date:- 11-Feb-2020 Time:- 3 hours

Instructions:

1. All the assignments should be completed and uploaded by 5.30 pm. Marks will be deducted for the submissions made after 5.30 pm.
2. Markings will be based on the correctness and soundness of the outputs. Marks will be deducted in case of plagiarism. All questions are of equal marks.
3. Proper indentation and appropriate comments (if necessary) are mandatory. [2+2 marks]
4. You should zip all the required files and name the zip file as roll_no.zip, eg. 1501cs11.zip.
5. Code for each question should be named as Q1.c, Q2.c, Q3.c, Q4.c etc..
6. Each question will be evaluated on 10 test cases and marks will be given accordingly.
7. Upload your assignment (the zip file) in the following link:

https://www.dropbox.com/request/JiLEo1Qfh2QU1Fb8NYE4

For each question input and output format will be like:

For question 1, the first line of input will contain a number specifying total processes (n) and time quantum. n line follows, ith line contains two space separated integers specifying arrival_time and burst_time of ith process.

Ex-	**Input**	**Output**
	6(n) 2(TQ) 0 4 1 5 2 2 3 1 4 6 6 3	Avg_WT = 7.33 Avg_TAT = 10.83 P3 P1 P4 P2 P6 P5

For question 2, the first line of input will contain a number specifying total processes (n). n line follows, ith line contains two space separated integers specifying arrival_time, burst_time and priority of ith process.

Ex-	**Input**	**Output**
	4(n) 0 10 5	Avg_WT = 7.75 Avg_TAT = 13.25 P1 P4 P3 P2

1 6 4
3 2 2
5 4 0

For question 3, the first line of input will contain a number specifying total processes (n) and number of queues i.e 2 here, one for system processes and other for user processes. n line follows, ith line contains two space separated integers specifying arrival time, burst_time and priority queue of ith process.

Ex-	**Input**	**Output**
	5(n) 2(Q)	Avg_WT = 10 Avg_TAT = 17.2
	0 10 2	P2 P4 P5 P1 P3
	3 7 1	
	4 6 2	
	12 5 1	
	18 8 1	

Your program should output two lines. First line contains two space separated values (rounded off to 2 decimal places) specifying average waiting time (WT) and the turn-around time (TAT).

Second line contains space separated process ids of n processes, specifying completion order of the processes.

Q1: Consider the n processes, P1, P2.. Pn. Write a program to find out the average waiting time (WT), turn-around time (TAT) and the completion order of the processes using **Round Robin** (RR) scheduling.

Q2: Consider the n processes, P1, P2.. Pn. Write a program to find out the average waiting time (WT), turn-around time (TAT) and the completion order of the processes using **Non-preemptive Priority** scheduling algorithm (the lower the priority number, the higher is the priority of the process).

Q3: Consider the n processes, P1, P2.. Pn. Write a program to find out the average waiting time (WT), turn-around time (TAT) and the completion order of the processes using **Multi-level queue** scheduling algorithm. All the processes in the system are divided into two categories – system processes and user processes. System processes are to be given higher priority than user processes. System processes are assigned to queue 1 whereas user processes are assigned to queue 2. Both queues use Round Robin scheduling, with Tq1 = 4(priority queue 1) and Tq2 = 3(priority queue2).