



Faculty of Engineering & Technology
Department of Electrical & Computer Engineering
ENCS3390: Operating System Concepts
Second Semester, 2023/2024

Programming Task 2

Published: May 11, 2024. Due: June 8, 2024 by midnight.

Consider the following set of processes:

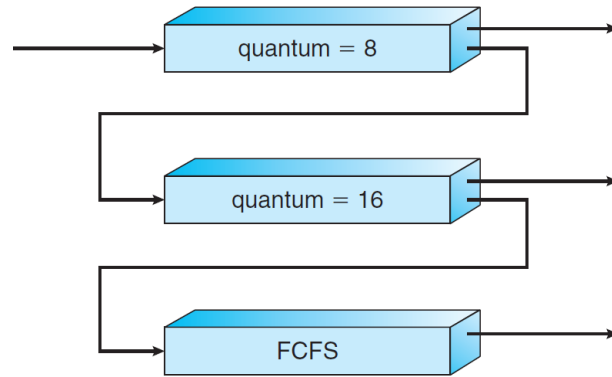
Process	Arrival Time	CPU Burst Time	I/O Burst Time	Priority
P1	0	15	5	3
P2	1	23	14	2
P3	3	14	6	3
P4	4	16	15	1
P5	6	10	13	0
P5	7	22	4	1
P7	8	28	10	2

Once each process is done processing its CPU Burst Time, it goes to the waiting queue, then comes back to the ready queue after the I/O Burst Time. This behavior repeats forever.

You are required to simulate the CPU schedule for a period of 300 time units.

For each of the following scheduling algorithms, your program must show the Gantt chart, average waiting time, and average turnaround time.

- 1- Non-preemptive Priority Scheduling. When processes have the same priority level, they are executed with Round Robin scheduling, $q = 2$.
- 2- Preemptive Priority Scheduling, with aging; where priority is decremented by 1 if the process remains in the ready queue for 5 time units. When processes have the same priority level, they are executed with Round Robin scheduling, $q = 2$.
- 3- Multilevel Feedback Queue Scheduling, as shown below:



For this assignment, you may use any programming language of your choosing. Hint: You should create a process that initially creates the 7 processes, and continuously updates the status of the processes, and another process that schedules those processes, and plots the results.