

CS 4323
Operating Systems
Project

Due: Apr 29, 2019

Points: 100

This programming assignment is a team project with 3-4 team members. Everyone **must** work as part of a team. All team members are expected to contribute in implementation of the project.

In this project, you will implement the following scheduling algorithms which were included in HW2 and HW3

Submit source code with instructions on how to compile it, and make it run.

Submit screenshots for output.

1. The following processes are being scheduled using a preemptive, round robin scheduling algorithm. Each process is assigned a numerical priority, with a higher number indicating a higher relative priority. In addition to the processes listed below, the system also has an *idle task* (which consumes no CPU resources and is identified as P_{idle}). This task has priority 0 and is scheduled whenever the system has no other available processes to run. The length of a time quantum is 10 units. If a process is preempted by a higher-priority process, the preempted process is placed at the end of the queue.

Thread	Priority	Burst	Arrival
P_1	40	15	0
P_2	30	25	25
P_3	30	20	30
P_4	35	15	50
P_5	5	15	100
P_6	10	10	105

- a. Show the scheduling order of the processes using a Gantt chart.
 - b. What is the turnaround time for each process?
 - c. What is the waiting time for each process?
 - d. What is the CPU utilization rate?
2. Consider a Multilevel Queue scheduler with two queues, numbered 1 and 2. Queue 1 has higher priority over queue 2. Both queues use RR scheduling.
Time Quantum: $TQ_1 = 3$, $TQ_2 = 4$

Process	Burst Time	Arrival	Priority Queue
P_1	12	0	1
P_2	8	4	2
P_3	6	5	1
P_4	5	12	2
P_5	10	18	2

- a. Draw Gantt chart.
 - b. Find average turnaround time, average waiting time.