CS 2200 Homework 6

Fall 2018

Instructions:

- Please print a copy of the assignment and hand write your answers. No electronic submissions are allowed. **Please print as one double-sided page. Do NOT staple multiple sheets together. There will be a 60 point penalty if you do not.**
- This is an individual assignment. You may discuss concepts but not the answers.
- Due Date: **10/17/18 – 6:00 PM** in recitation. Bring your BuzzCard. Show up on time.

Name:_____ **GT Username:**_____ **Section:**_____

1. Recall that ***Shortest Remaining Time First (SRTF)*** is a variant of Shortest Job First (SJF) with preemption added in. Consider the following three processes vying for the CPU. The scheduler uses SRTF. The scheduler re-evaluates which process to run only upon the arrival of a new process into the scheduling queue, or the completion of a process. The table shows the arrival time of each process.

Process	**Arrival Time**	**Execution Time**
P1	T_0	5ms
P2	T_0+2ms	4ms
P3	T_0+3ms	1ms

The scheduling starts at time T_0.

Fill in the table below with the process that is executing on the processor during each time slot.

Interval T_0+	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Running													

Use the following tables to show your work as to how you arrived at the above schedule.

Time T_0:

Process	Remaining time
P1	5ms
P2	Not arrived yet
P3	Not arrived yet

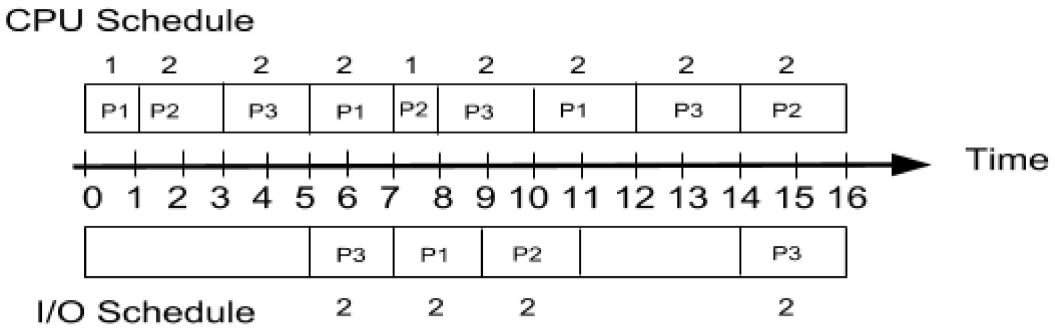
Time T_0+2: (Process P2 arrives)

Process	Remaining time
P1	
P2	
P3	Not arrived yet

Time T_0+3: (Process P3 arrives)

Process	Remaining time
P1	
P2	
P3	

2. Given the following schedule for three processes (starts at time = 0):
   Note: P1 completes at t = 12, P2 completes at t = 16, and P3 completes at t = 16. Numbers above and below the boxes are the lengths of the schedules.



What is the average waiting time experienced by the processes in the above schedule?

What is the average throughput of the system?

3. Given the following processes, use the blanks provided above the diagrams to **identify the algorithm used to generate the CPU timeline**, as well as **if it is preemptive or not**. The I/O timeline will always be First Come First Served. Assume all processes arrive at the same time.

Process	CPU Burst 1	I/O Burst 1	CPU Burst 2	Priority
P1	3	5	1	7
P2	5	1	1	3
P3	2	5	2	5

Algorithm A _____ **Preemptive?** _____

Time	0	1	2	3	4	5	6	7	8	9	10	11	12	13
CPU	P3	P3	P1	P1	P1	P2	P2	P3	P3	P2	P2	P2	P1	P2
I/O	-	-	P3	P3	P3	P3	P3	P1	P1	P1	P1	P1	P2	-

Algorithm B_____ **Preemptive?** _____

Time	0	1	2	3	4	5	6	7	8	9	10	11	12	13
CPU	P1	P1	P1	P3	P3	P2	P2	P2	P1	P2	P2	-	-	P3
I/O	-	-	-	P1	P1	P1	P1	P1	P3	P3	P3	P3	P3	P2

4. Please describe/explain one issue with the FCFS (First Come First Serve) algorithm?