BIRZEIT UNIVERSITY
Electrical and Computer Engineering Department
ENCS339 Operating Systems, Second Semester, 2018-2019
HW1 Instructor: Dr. Adnan H. Yahya, Due: Wednesday, March 20, 2019

1. **Question 1**. Given the following set of processes and that priority 5 is highest:

Process	Arrival	Burst	Priority
A	0	4	5
B	2	3	3
D	3	2	4

a. The order of execution under Preemtive priority is: 1- A 2- B 3- D 4- A 5-

b. The order of execution under SRTF is: 1- A 2- B 3- D 4- 5-

c. The execution order under **last come first served** (LCFS) is: 1- A 2- B 3- D 4- B 5- A

d. The order of execution under RR with time quantum 1: 1- A(2) 2- B 3- D 4- A 5- B 6- D 7- A 8- B

Question 2. For the following table of processes do the needed calculations and averages assuming multiprogramming with a very small quantum and unlimited degree of multiprogramming and ignoring overhead resulting from context switch. Jobs are served as soon as they arrive. All jobs have the same wait time percentage when mono-programmed. Do the calculations again using FCFS batch processing and compare the results.

a. Only Jobs A and B and C are working between t=4 and t= 14: and each has 90% wait: how much CPU time each job gets? **Answer:** (0.271/3)*(14-4)=0.903 hours

b. How much of that time is the CPU is busy (working on jobs) in the above case. **Answer:** 2.71H

c. Assume that the wait is 80%: What is the earliest time when a job finishes? **Answer:** 8/(0.5904/4)=54.2 hours.

Process Name	Arrival Time	NT= CPU+IO	Start Time	End Time	TA Time
A	0	16			
B	0	24			
C	0	8			
D	0	32			

# P	20%wait	50%wait	80%wait	90%wait
1	0.8	0.5	0.2	0.1
2	0.96	0.75	0.36	0.19
3	0.992	0.875	0.488	0.271
4	0.9984	0.9375	0.5904	0.3439
5	0.99968	0.96875	0.67232	0.40951
6	0.999936	0.984375	0.737856	0.468559

Good luck