Lab 5

Robert Perrone

Robert.Perrone1@Marist.edu

October 13, 2020

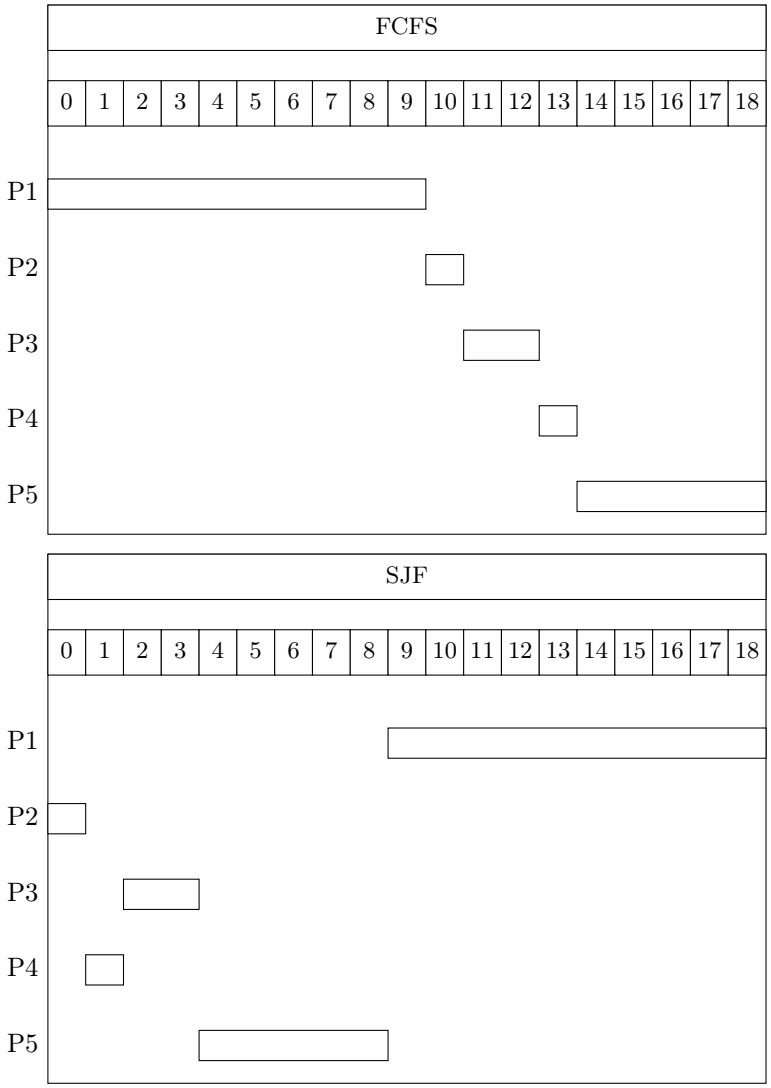
1 Scheduling

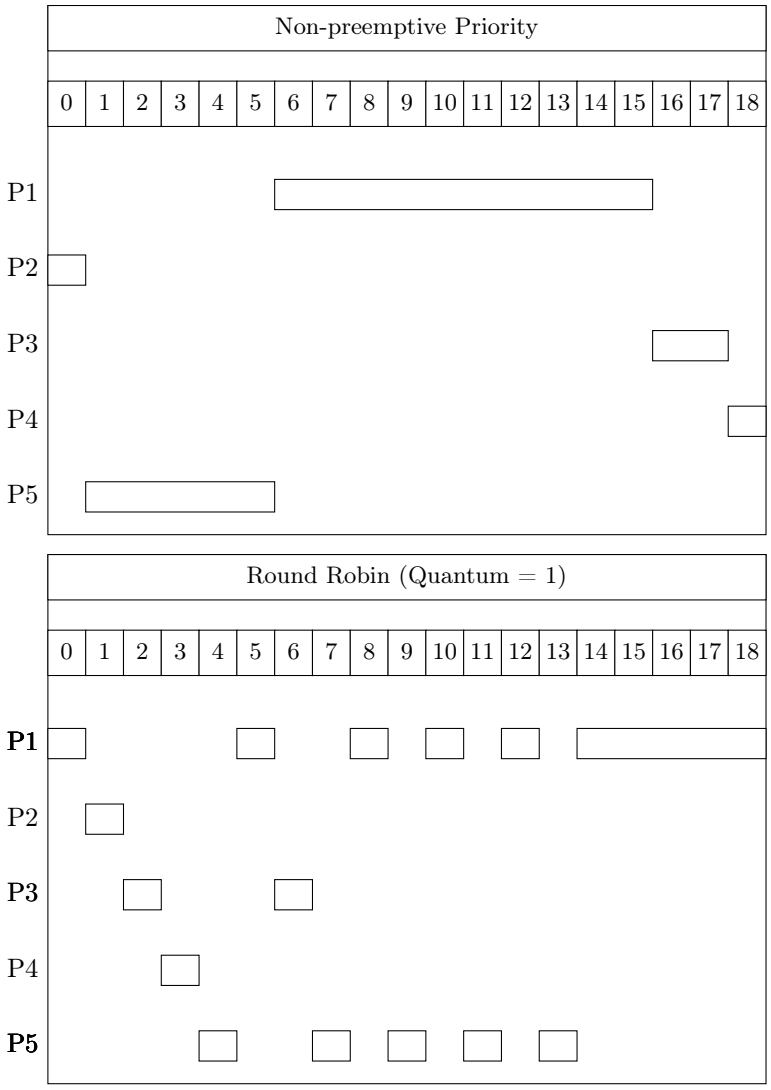
Consider the following set of processes, with the length of the CPU burst given in milliseconds:

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0.

a. Draw four Gantt charts that illustrate the execution of these process using the following scheduling algorithms: FCFS, SJF, non-preemptive priority (a smaller priority number implies a higher priority), and RR (quantum = 1)




Non-preemptive Priority
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
P1
P2
P3
P4
P5
Round Robin (Quantum = 1)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
P1
P2
P3
P4
P5

b. What is the turnaround time of each process for each of the scheduling algorithms in part a?

FCFS: $(10 + 11 + 13 + 14 + 19)/5 = 67/5$
JFS: $(19 + 1 + 4 + 2 + 9)/5 = 35/5$
Non-preemptive Priority: $(16 + 1 + 18 + 19 + 6)/5 = 60/5$
Round Robin (Quantum = 1): $(19 + 2 + 7 + 4 + 14)/5 = 46/5$

c. What is the waiting time of each process for each of these scheduling algorithms?

FCFS: $(0 + 10 + 11 + 13 + 14)/5 = 48/5$
JFS: $(9 + 0 + 2 + 1 + 4)/5 = 16/5$
Non-preemptive Priority: $(6 + 0 + 16 + 18 + 1)/5 = 41/5$
Round Robin (Quantum = 1): $(9 + 1 + 5 + 3 + 9)/5 = 27/5$

d. Which of the algorithms results in the minimum average waiting time (over all processes)?

Shortest Job First (SJF) results in the minimum average waiting time over all processes.