CSCI 315 Operating Systems Design
Activity 14

Source: Operating Systems Concepts}, Silberschatz, Galvin, and Gagne, 9th edition.
Consider the following set of processes, with the length of the CPU burst given in milliseconds:

Process	Burst Time	Priority
P_1	10	3
P_2	1	1
P_3	2	3
P_4	1	4
P_5	5	2

The processes are assumed to have arrived in at the times given as follows: P_1 arrives at time 0, P_2 arrives at time 8, P_3 arrives at time 8, P_5 arrives at time 9, P_4 arrives at time 10.

Consider the following scheduling algorithms: first-come, first-serve (FCFS), shortest-job first (SJF), nonpreemptive priority (a smaller number implies a higher priority), round-robin (RR) with *quantum*=1, and RR with *quantum*=2.

1) For each of the algorithms above:
- Draw a Gantt chart to illustrate the execution of these processes
- Calculate individual process turnaround times and the average turnaround time
- Calculate individual waiting times and average waiting time

2) Which of the algorithms considered is *the best* scheduling algorithm? Justify your choice be explaining what criteria you used to identify what you called *the best*.

3) Some of these scheduling algorithms may result in process *starvation*. If any of them does, make the best argument you can to explain how you reached that conclusion.

4) How realistic is it to assume that the scheduling algorithm will have the length of CPU bursts for the processes that it will need to schedule? How/where can one get information on the length of CPU bursts for a CPU scheduling algorithm to use?