

Problem Set 9

CS 411

Due at the beginning of class on the first class day of the following week.
Sections 5.1–3

1. When do context switches occur with non-preemptive scheduling? With preemptive scheduling? Be specific.
2. Why is it important for the scheduler to distinguish I/O-bound programs from CPU-bound programs?
3. Consider the following set of processes, with the length of the CPU burst given in milliseconds:

<u>Process</u>	<u>Burst Time</u>	<u>Priority</u>
P_1	2	2
P_2	1	1
P_3	8	4
P_4	4	2
P_5	5	3

The processes are assumed to have arrived in the order $P_0, P_1, P_2, P_3, P_4, P_5$, all at time 0.

- (a) Draw four Gantt charts that illustrate the execution of these processes using the following scheduling algorithms: FCFS, SJF, non-preemptive priority (a larger priority implies a higher priority), and RR with a quantum of 2.
- (b) Compute the average waiting time for each of the algorithms.