C211 – Operating Systems
Tutorial: Scheduling

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1. State which of the following are true and which false. Justify your answers.
   (a) Interactive systems generally use nonpreemptive processor scheduling.
   (b) Turnaround times are more predictable in preemptive than in nonpreemptive systems.
   (c) One weakness of priority scheduling is that the system will faithfully honor the priorities, but the priorities themselves may not be meaningful.
2. (a) Give an example showing why FCFS is not an appropriate scheduling scheme for interactive users.
   (b) Using the example from (a), show why round-robin is a better scheme for interactive users.
3. Five jobs are waiting to be run. Their expected run times are 9, 6, 3, 5, and X. In what order should they be run to minimize average turnaround time? (Your answer will depend on X.)
4. Five batch jobs, A through E, arrive at a computer centre at essentially the same time. Their estimated running time are as follows: A = 15min, B = 9min, C = 3 min, D = 6 min and E = 12 min. Their (externally defined) priorities are: A = 6, B = 3, C = 7, D = 9 and E = 4, with a lower value corresponding to a higher priority. For each of the following scheduling algorithms, determine the turnaround time for each job, and the average turnaround time for all jobs. Ignore process switching overhead and assume all jobs are completely CPU bound.
   (a) Non-preemptive priority scheduling.
   (b) FCFS (run in order A, B, C, D, E).
   (c) Shortest job first (SJF).
   (d) Round robin with a time quantum of 1 minute.