Mini Project

1. Create a simulator for scheduling a given set of processes in user space only. The simulator should read fr6m a configuration file a set of parameters for each process: Length of time for which process will execute, priority of the process and the preferred scheduling policy - FIFO or Round Robin, the time at which the process executes and if it is a CPU intensive process _or an I/O intensive process. Apart from this read the quantum of time given to each process and the number of priority levels for scheduling the process. Now simulate a scheduling algorithm which uses FIFO/Round Robin with priority based scheduling. At the end of the run print the following quantities for each process:

   a. Number of times the process was scheduled.
   b. A timeline for the process containing the state transitions - Ready, waiting, Running and Terminated and the timestamp for each transition.
   c. Time taken to complete the process.
   d. Number of times the process waited for I/O.
   e. The priority of the process and preferred scheduling algorithm.

   After printing the above values print the average time of completion for each process.

2. From the calculated parameters determine which scheduling algorithm was better for CPU intensive and I/O intensive processes. Suggest ways in which the scheduling algorithm can be improved and why?

3. We have two classes of systems for which we want to create an operating system - the first class is a server meant to be used as a database and another is a desktop system meant to be used by a home user. Suggest the different approaches you would take to schedule the processes on types of system and why? Change the simulator above to calculate of your scheduling policies and comment on the results obtained.