

# Assignment 6

## Operating System Lab (CS341)

Department of CSE, IIT Patna

**Date:-** 12-Feb-2018

**Time:-** 3 hours

### Instructions:

1. All the assignments of part-I should be completed and uploaded by **6 pm**.
  2. Markings will be based on the correctness and soundness of the outputs. Marks will be deducted in case of plagiarism.
  3. **Proper indentation and appropriate comments are mandatory.**
  4. You should zip all the required files and name the zip file as **roll\_no.zip**, eg. **1501cs11.zip**.
  5. Upload your assignment (**the zip file**) in the following link:  
<https://www.dropbox.com/request/MtDOyS5IYIiSNLh5k1j1>
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1. It may happen that processes in the ready queue can be divided into different classes where each class has its own scheduling needs. For example, a common division is a **foreground (interactive)** process and **background (batch)** processes. These two classes have different scheduling needs. For this kind of situation Multilevel Queue Scheduling is used. Now, let us see how it works. **Ready Queue** is divided into separate queues for each class of processes. For example, let us take three different types of process System processes, Interactive processes and Batch Processes. All three process have there own queue. Now, look at the below figure. All three different type of processes have there own queue. Each queue have its own Scheduling algorithm. For example, queue 1 uses **SJF** while queue 2 uses **Round Robin** to schedule there processes.
    - a. **Fixed priority preemptive scheduling method** – Each queue has absolute priority over lower priority queue. Let us consider following priority order **queue 1 > queue 2 > queue 3**. According to this algorithm no process in the batch queue(queue 3) can run unless queue 1 and 2 are empty. If any batch process (queue 3) is running and any system (queue 1) or Interactive process(queue 2) entered the ready queue the batch process is preempted.
    - b. **Time slicing** – In this method each queue gets certain portion of CPU time and can use it to schedule its own processes. For instance, queue 1 takes 50 percent of CPU time queue 2 takes 30 percent and queue 3 gets 20 percent of CPU time.

Read the scheduler.txt file through program and use the details according to the requirements. The process column will be represented by the process id. The queue number denotes the id of each queue. Here, 1: SJF, 2: Round Robin. Implement a **Multilevel Queue Scheduling**, find the average waiting time and average turnaround time. Display the Gantt chart.