Assignment 10

Operating System Lab (**CS342**)

Department of CSE, IIT Patna

Date:- 26-Mar-2019 **Time:-** 3 hours

Instructions:

1. All the assignments should be completed and uploaded by **26-Mar-2019, 5pm.**
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/THgF5Qs0KFrVBaAIwArK

Q1) DESCRIPTION : One of the responsibilities of the operating system is to use the hardware efficiently. For the disk drives, meeting this responsibility entails having fast access time and large disk bandwidth. Both the access time and the bandwidth can be improved by managing the order in which disk I/O requests are serviced which is called as disk scheduling. The simplest form of disk scheduling is, of course, the first-come first-served (FCFS) algorithm. This algorithm is intrinsically fair, but it generally does not provide the fastest service. In SSTF (Shortest Seek Time First), after a request, go to the closest request in the work queue, regardless of direction reduces total seek time compared to FCFS. In the SCAN algorithm, the disk arm starts at one end, and moves towards the other end, servicing requests as it reaches each cylinder, until it gets to the other end of the disk. At the other end, the direction of head movement is reversed, and servicing continues. The head continuously scans back and forth across the disk. C-SCAN is a variant of SCAN designed to provide a more uniform wait time. Like SCAN, C-SCAN moves the head from one end of the disk to the other,servicing requests along the way. When the head reaches the other end, however, it immediately returns to the beginning of the disk without servicing any requests on the return trip.

Work Queue: 95, 180, 34, 119, 11, 123, 62, 64

There are 200 cylinders numbered from 0 - 199

The disk head stars at number 50

Write a C program to simulate disk scheduling algorithms

a) FCFS **b)** SCAN **c)** C-SCAN **d)** SSTF

Calculate **total head movement** (THM) of the disk for each algorithm.

Assuming a seek rate of 5 milliseconds , compute the seek time using the formula:

Seek time = THM * 5 ms