Assignment 8

Georgiy Krylov

November 26, 2024

ASSIGNMENT IS TO BE COMPLETED INDIVIDUALLY BY ALL STUDENTS!

1 Description

This assignment is to develop a simulation of FCFS and C-SCAN disk scheduling algorithms. **The assignment is Due by 11:59 p.m. on Sunday, 1st of December 2024 (one minute before Monday).**

2 Task

You are to simulate two disk scheduling algorithms servicing requests to HDD. The algorithms to implement:

- FCFS (F)
- C-SCAN (C)

Your simulated disk is of size 10000, numbered from 0 to 9999. A series of sector requests are read from stdin and service them in accordance with the algorithm specified from command line parameter ("C" for CSCAN, and "F" for FCFS)

3 Input format

```
123 15
```

The first number is the sector to service, the second number is the time that the request arrives. The input times are sorted by arrival time in increasing order.

The program always begins with the head fixed at sector zero, head moving in ascending order.

The requests can only be serviced after they arrive. The simulation begins at time 0. The time (represented by a `double` value) required to process a request is computed by distance the head travels divided by 5, plus additional 10 milliseconds penalty if the direction has to change.

The decision for which sector(s) to service next is made after the current sector is serviced to completion. In summary, report the distance traveled and the time the simulation is complete.

Sample program execution

```
./a.out C < sample_test.txt
```

For the exact input and output format please refer to the asssign8.zip archive.

4 Submission instructions

Please submit just your C and H files (if any) to D2L Assignment box. Passing all the tests within the Makefile (in a solution that is not hard-coded) will grant you a full grade. Make sure your code compiles and runs. Make sure your code follows the specified input/output format. You must use C programming language to solve this assignment.

NOTE: THE INPUT AND OUTPUT OF YOUR PROGRAM IS SPECIFIED SUCH THAT THE MARKER CAN AUTO TEST YOUR SUBMISSIONS.