CS342 Operating System Lab - Assignment 12

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Answer 1:

Simulation of FCFS, SCAN, C-SCAN and SSTF disk scheduling algorithms

Prerequisite: **gnuplot** library must be installed before running this program. gnuplot is used to plot graphs. On Linux, executing *sudo apt install -y gnuplot* command in Terminal, will install gnuplot library.

Filename	Q1.cpp
Compile	g++ Q1.cpp -o Q1
Execute	./Q1

Test Run

```
┌─[maheeth@maheeth-PC:~/D/W/C/lab12]─[09:56:27  IST]
└─>$ g++ Q1.cpp -o Q1                                    ← Compilation
┌─[maheeth@maheeth-PC:~/D/W/C/lab12]─[10:00:15  IST]
└─>$ ./Q1                                                ← Execution
Number of Cylinders: 200
Head position: 100
Disk request: 23 89 132 42 187                          ← Inputs

FCFS Algorithm
23 -> 89 -> 132 -> 42 -> 187
Total Head Movement: 421
Seek Time: 2105 ms
See the plot for FCFS Scheduling...

SCAN Algorithm
89 -> 42 -> 23 -> 0 -> 132 -> 187
Total Head Movement: 287
Seek Time: 1435 ms
See the plot for SCAN Scheduling...

C-SCAN Algorithm
89 -> 42 -> 23 -> 0 -> 199 -> 187 -> 132               ← Output
Total Head Movement: 366
Seek Time: 1830 ms
See the plot for C-SCAN Scheduling...

SSTF Algorithm
89 -> 132 -> 187 -> 42 -> 23
Total Head Movement: 273
Seek Time: 1365 ms
See the plot for SSTF Scheduling...

Sorted order of algorithms: FCFS, C-SCAN, SCAN, SSTF
```
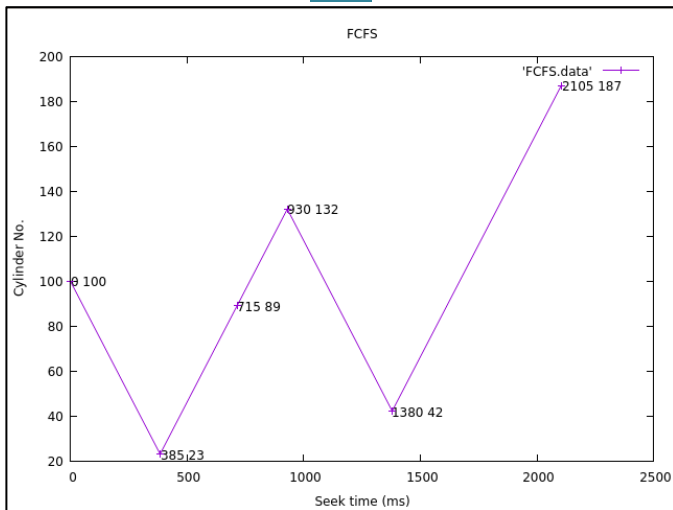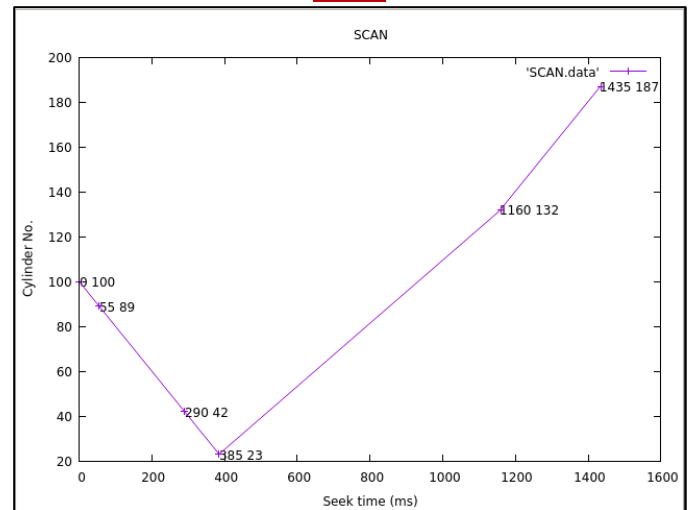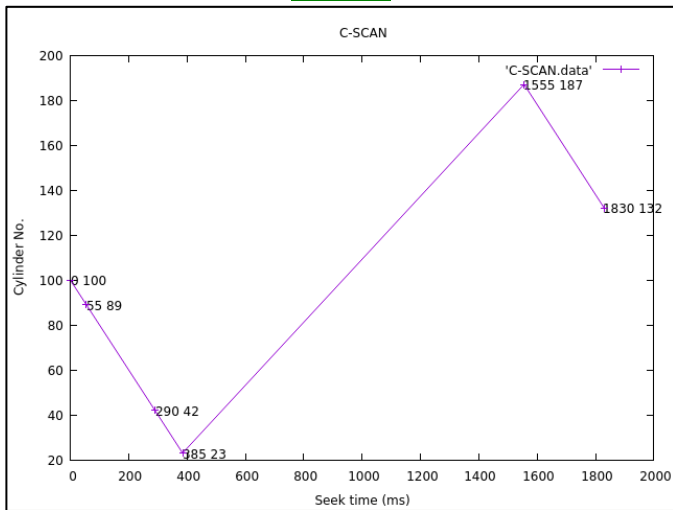
Graphs of head movements:

FCFS

SCAN

C-SCAN

SSTF
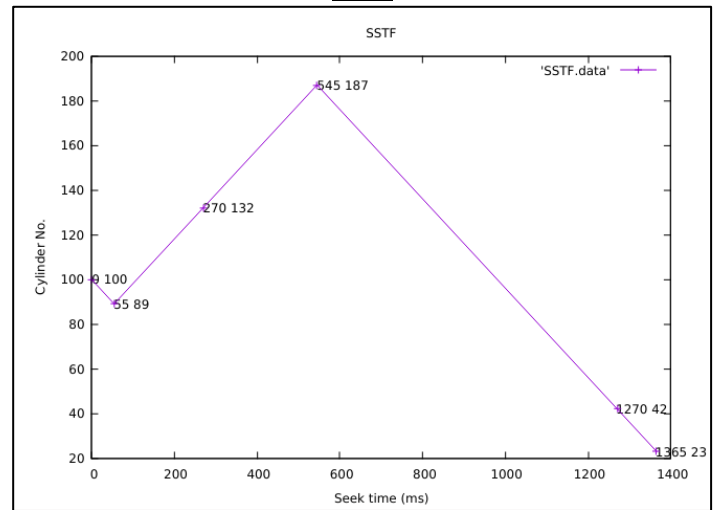
(P.T.O)

Answer 2:

Simulation of S-LOOK disk scheduling algorithm

Filename	Q2.cpp
Compile	g++ Q2.cpp -o Q2
Execute	./Q2

Test Case 1:

```
┌[maheeth@maheeth-PC:~/D/W/C/lab12]─[10:09:08  IST]
└>$ g++ Q2.cpp -o Q2
┌[maheeth@maheeth-PC:~/D/W/C/lab12]─[10:09:25  IST]
└>$ ./Q2
Number of Cylinders: 200
Head position: 100
Disk request: 98 183 37 122 14 124 65 67

S-LOOK Algorithm
THM (Total head movement): 252
Seek Time: 1260 ms
```

Test Case 2:

```
┌[maheeth@maheeth-PC:~/D/W/C/lab12]─[10:09:40  IST]
└>$ ./Q2
Number of Cylinders: 200
Head position: 100
Disk request: 23 89 132 42 187

S-LOOK Algorithm
THM (Total head movement): 241
Seek Time: 1205 ms
```

Test Case 3:

```
┌[maheeth@maheeth-PC:~/D/W/C/lab12]─[10:12:33  IST]
└>$ ./Q2
Number of Cylinders: 1001
Head position: 460
Disk request: 660 740 350 700 800 443 880 761

S-LOOK Algorithm
THM (Total head movement): 640
Seek Time: 3200 ms
```

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