San José State University
Department of Computer Engineering

CMPE 142
Operating Systems
Section 1

Spring 2021
Instructor: Ron Mak

Assignment #7

Assigned: Friday, April 9
Due: Friday, April 16 at 11:59 PM
Team assignment, 120 points

Disk scheduling algorithms
In this assignment, your team will simulate disk scheduling algorithms.

Suppose that a disk drive has 5,000 cylinders, numbered 0 to 4999. The drive head starts at cylinder 2255. The queue of pending requests, in FIFO order, is:

2055, 1175, 2304, 2700, 513, 1680, 256, 1401, 4922, 3692

For each of the following disk-scheduling algorithms, starting from the current head position, what is the order of cylinders visited by the head?

   a. FCFS
   b. SSTF
   c. SCAN
   d. LOOK
   e. C-SCAN
   f. C-LOOK

What is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the disk-scheduling algorithms?

Write a program (or programs) that prints a graphical representation of the disk arm travel, similar to the diagrams in the lecture slides.

Example: For

queue = 98, 183, 37, 122, 14, 124, 65, 67
head starts at 53

Print something like:

```
                                                        1                                                   2
0....1....2....3....4....5....6....7....8....9....0....1....2....3....4....5....6....7....8....9....0
                  *53
                                                        *98
                                                                                            *183
            *37
                                                              *122
    *14
                                                              *124
                        *65
                         *67
Total head movement: 640 cylinders
```
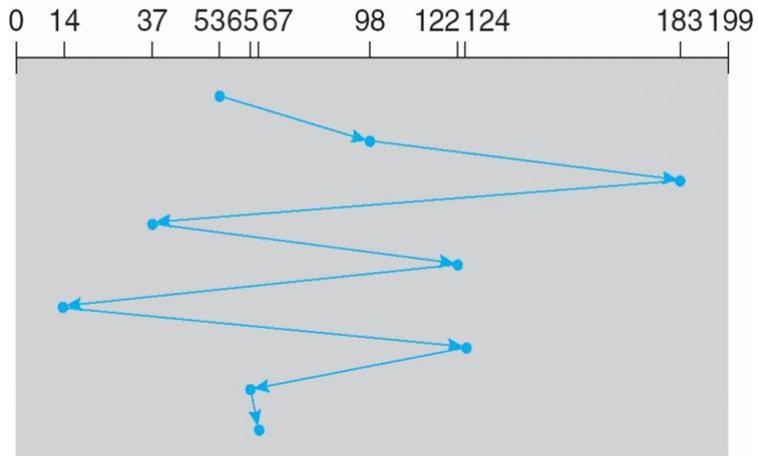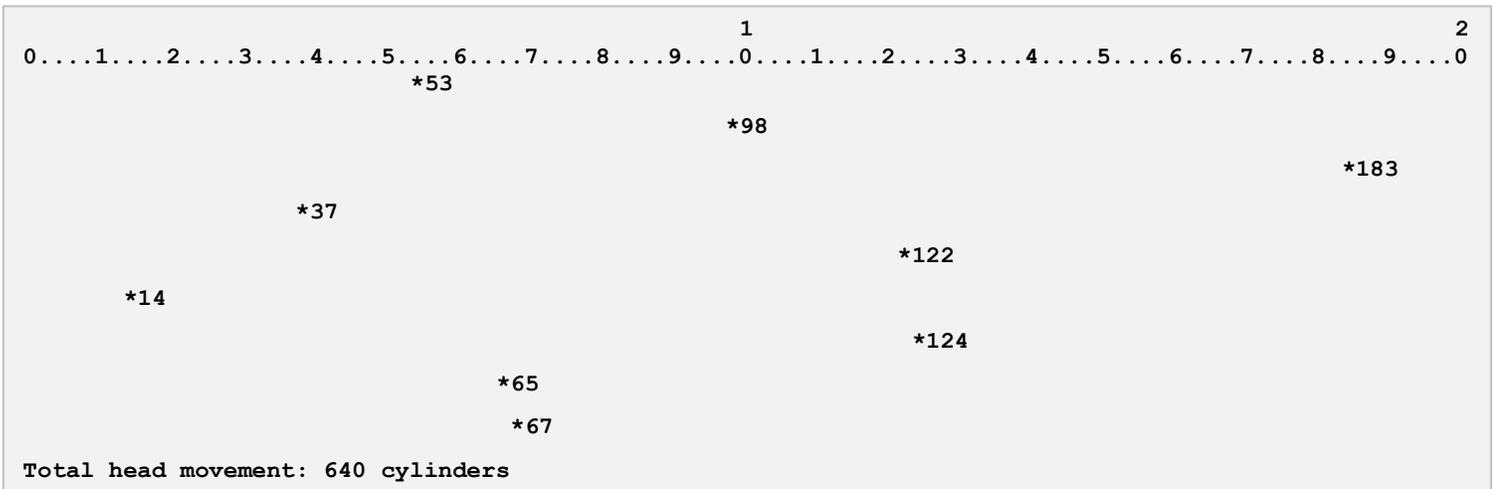
What to submit
Submit the following to Canvas, **Assignment #7: Disk Scheduling Algorithms**.

- Source files (either C or C++) of your program.
- A text file of your program's output.

Rubric
Your submission will be graded according to these criteria:

Criteria	Max points
FCFS	20
SSTF	20
SCAN	20
LOOK	20
C-SCAN	20
C-LOOK	20