Disk Scheduling

Introduction

Disk scheduling is is done by operating systems to schedule I/O requests arriving for disk. Disk scheduling is also known as I/O scheduling.

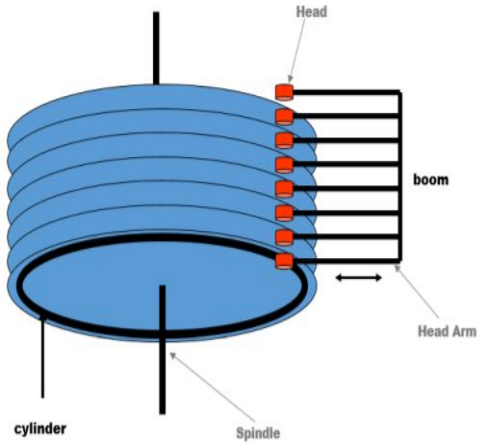
File systems must be accessed in an efficient manner, especially with hard drives, which are the slowest part of a computer.

In a movable-head disk, access may take the form of a write or a read operation performed by the access arm, which holds the read/write head.

Since the invention of movable head disk, the Input and Output (I/O) performance has been improved by implementing proper and intelligent scheduling of disk accesses.

Disk structure

- A disk is a platter, made of metal or plastic with a magnet coating on it, and in circular shape.
- A conducting coil, called head, which is a relatively small device, facilitates the data recording on and retrieval from the disk
- In a disk system, head rotates just above both surfaces of each platter. All heads, being attached to a disk arm, move collectively as a unit. To enable a read and write operation, the platter rotates beneath the stationary head.
- Data are organized on the platter in tracks, which are in the form of concentric set of rings.



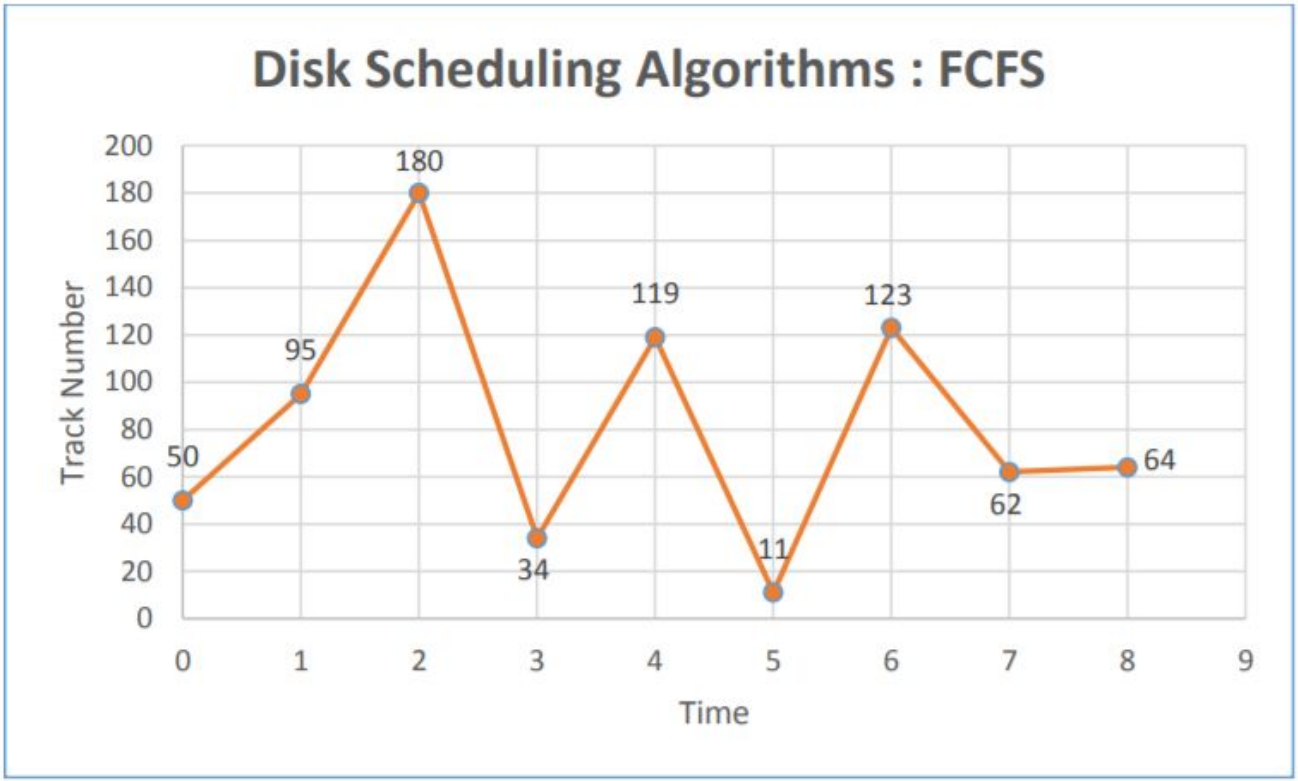
Disk Scheduling Algorithm

In a movable-head disk, where there is only one access arm to service all the disk tracks, the time spent by the Read and Write (R/W) head to move from one track to another is called ***Seek Time*** .

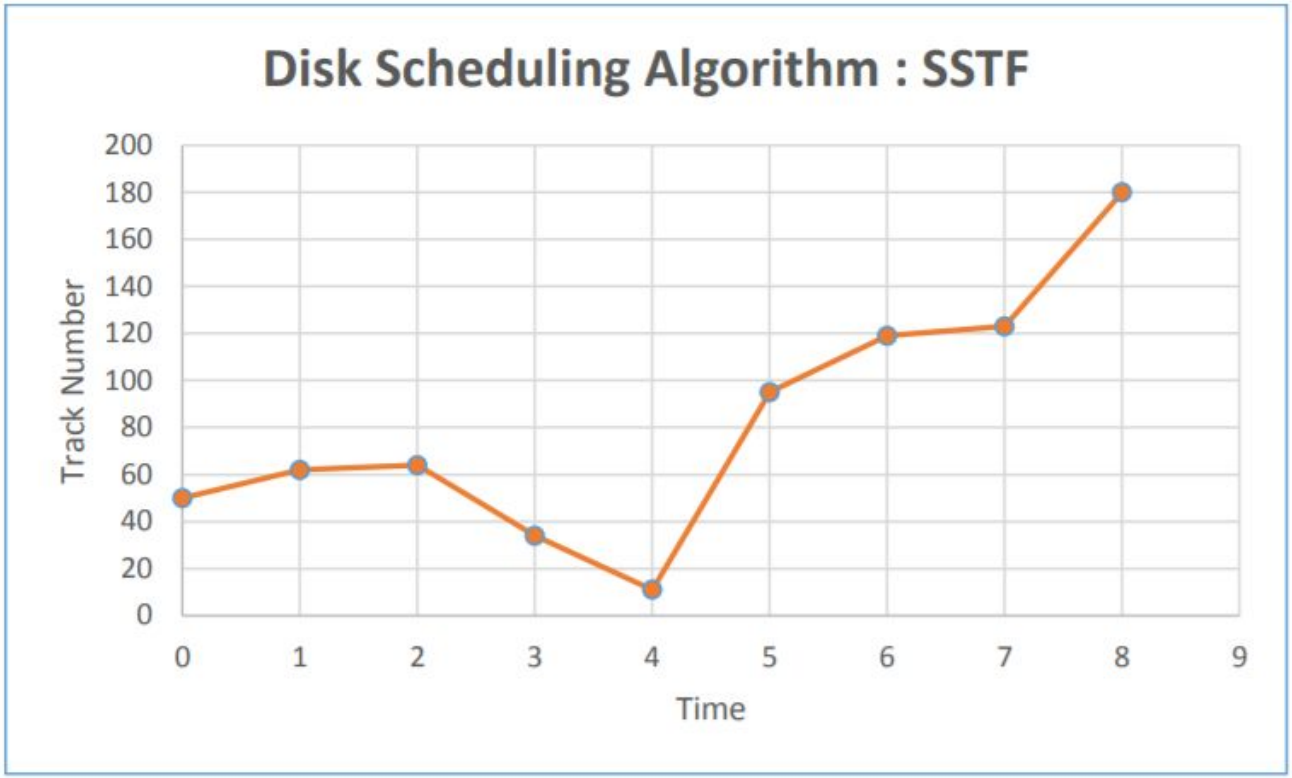
Disk scheduling algorithms are used to allocate the services to the I/O requests on the disk. Since seeking disk requests is time consuming, disk scheduling algorithms try to minimize this latency.

There are different disk scheduling algorithm are present. We are describing some of the important algorithms:-

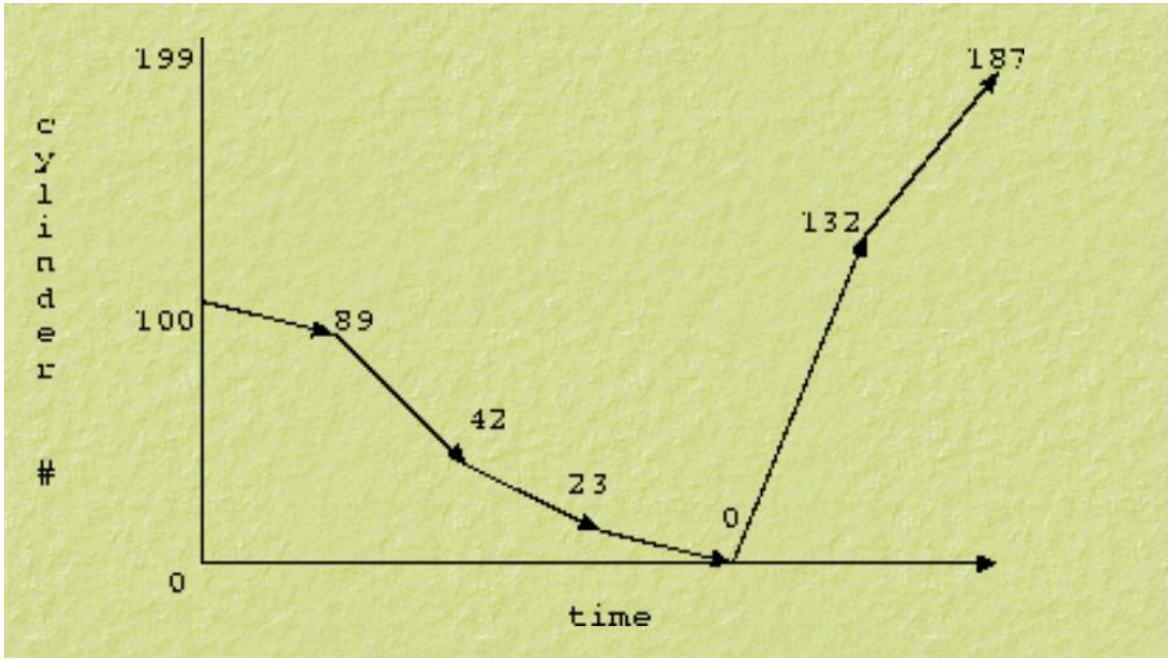
First Come First Serve (FCFS)



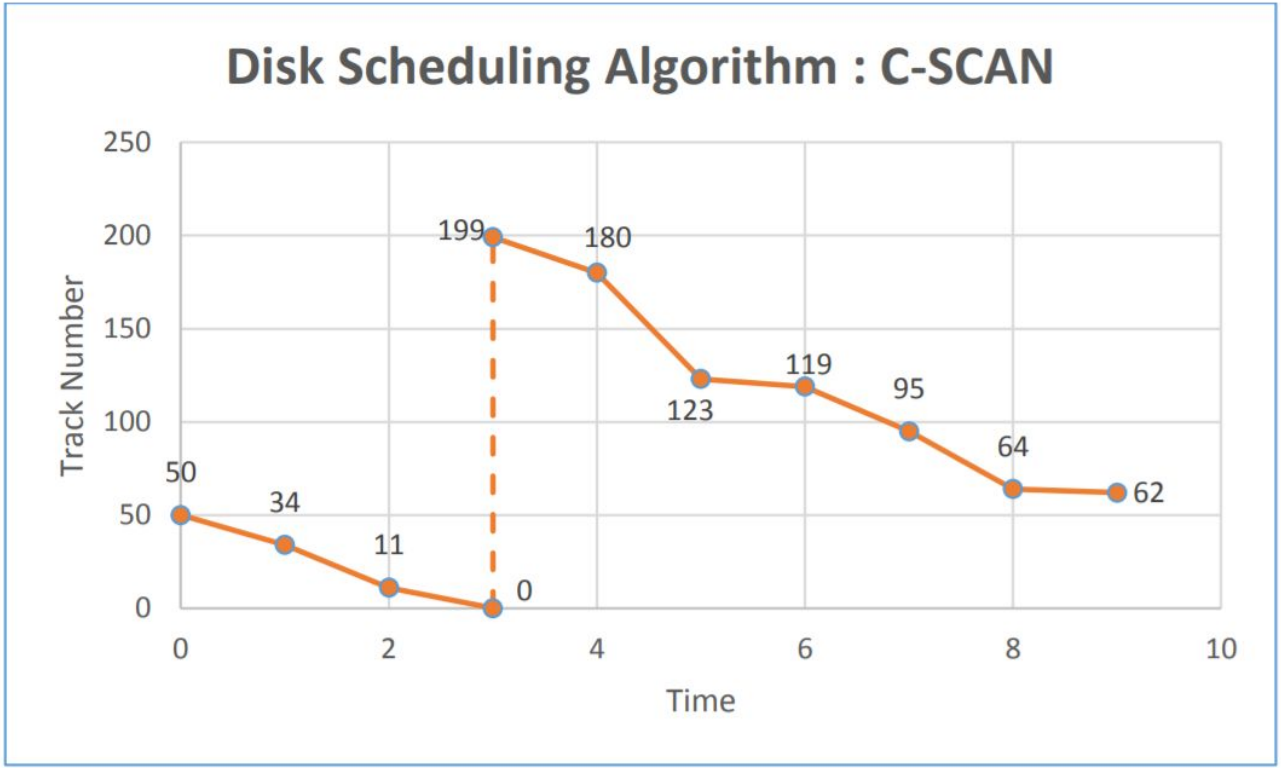
Shortest Seek Time First (SSTF)



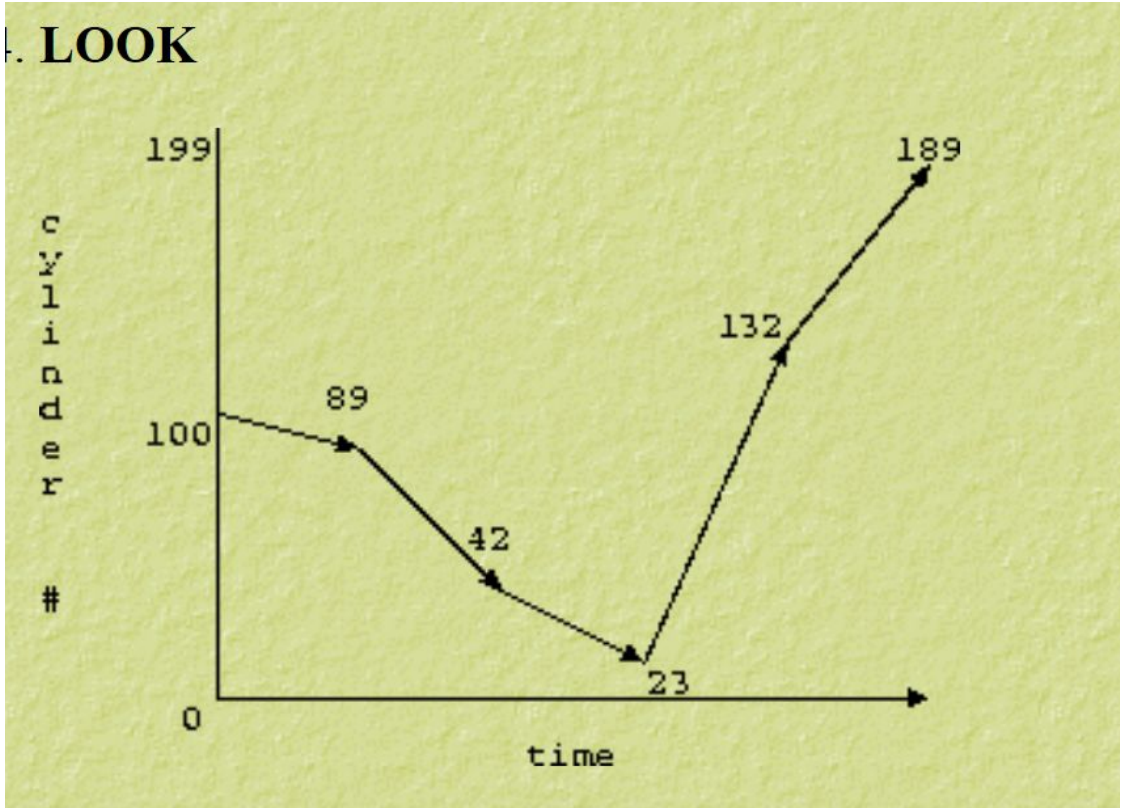
SCAN Scheduling Algorithm



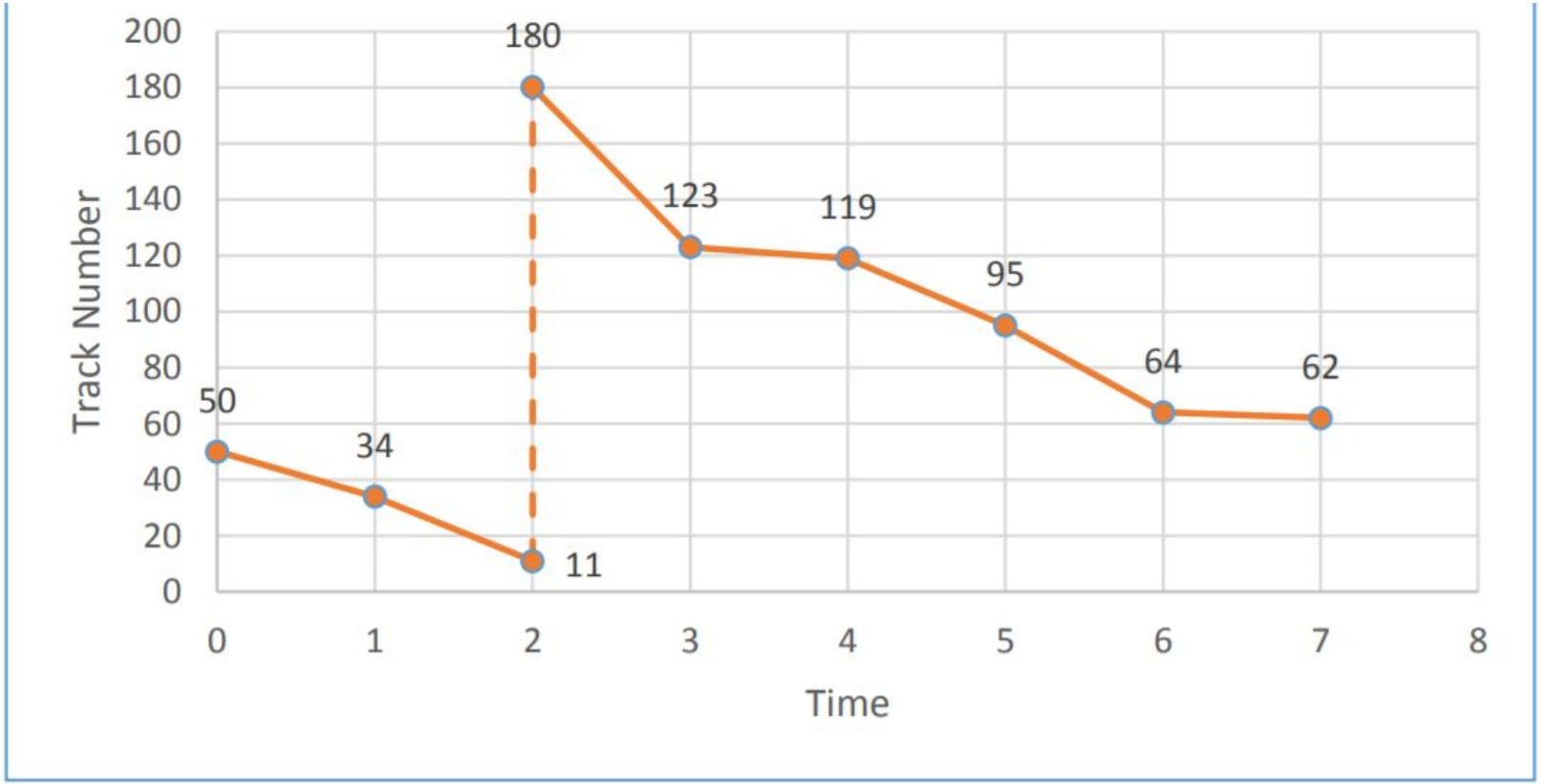
CSCAN Scheduling Algorithm



LOOK Scheduling



CLOOK


Track Number
Time
200
180
160
140
120
100
80
60
40
20
0
0
1
2
3
4
5
6
7
8
50
34
11
180
123
119
95
64
62