ceedcv
CENTRE ESPECÍFIC
D´EDUCACIÓ A DISTÀNCIA DE
LA COMUNITAT VALENCIANA

UD03. Hard disk. Scheduling

Computer Systems

Desarrollo de Aplicaciones Web
1er Curso
Curso 2020-2021

- What is scheduling
- FIFO
- SSF
- SCAN
- CSCAN
- LOOK
- CLOOK

What is scheduling?

It is the method to decide which request (either read or write) has to be processed in first place

Perhaps you are thinking that the hard drive processes the requests in order of arrival, but this solution is not very efficient

Objective: To minimize the search time, which is directly proportional to the distance search

Scheduling

Several possiblities: FIFO, SSF, SCAN, CSCAN, CLOOK….

We are going to show several examples using the following request queue:

98, 183, 37, 122, 14, 124, 65, 67

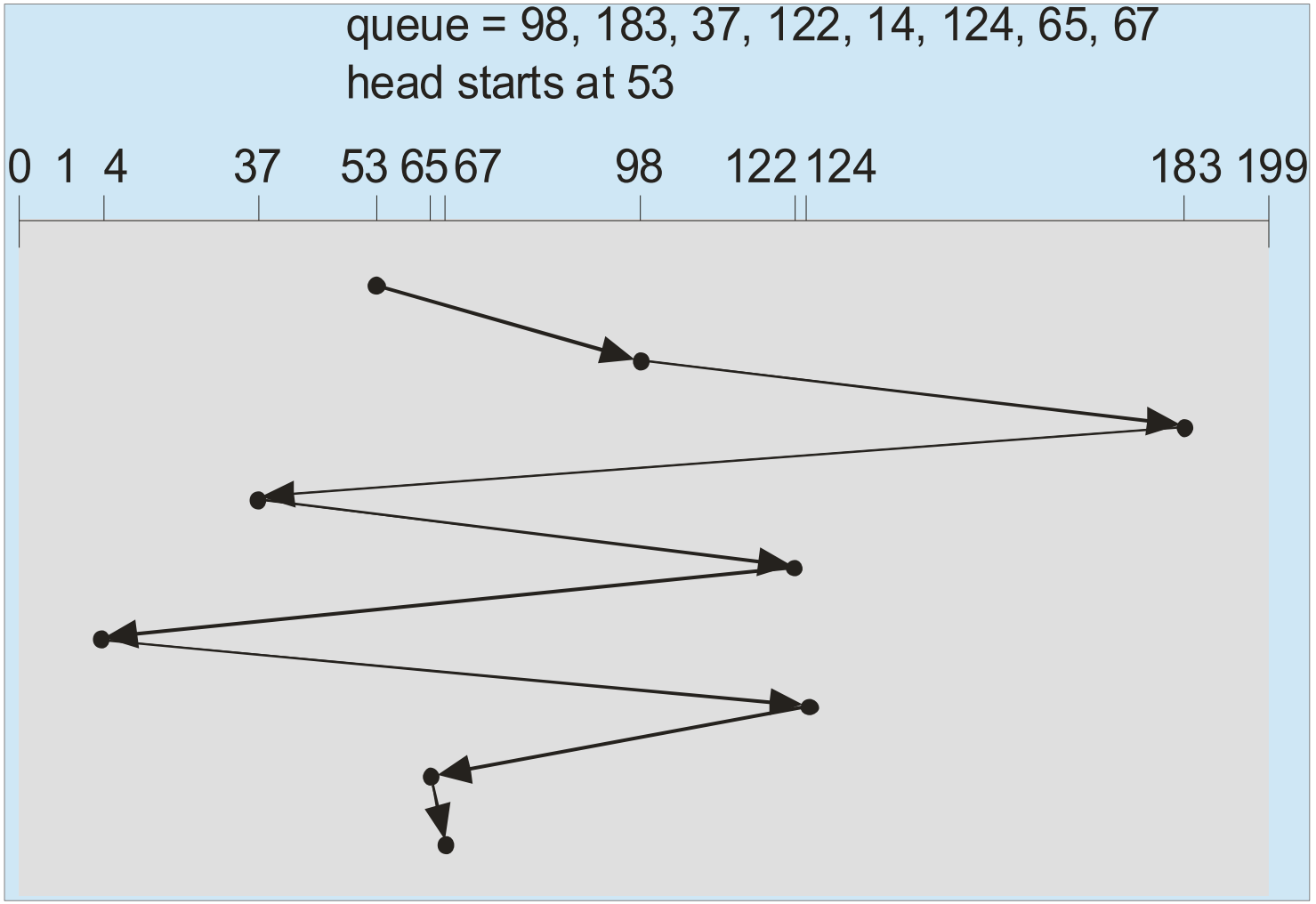
It is assumed that, at the beginning, the heads are in the track 53

FIFO (FCFS)

First In First Out or First Come First Serve

The request are processed in order to arrival.
It is the easier to understand and to implement but, probably, the least efficient.

FIFO (FCFS)


queue = 98, 183, 37, 122, 14, 124, 65, 67
head starts at 53
0 1 4 37 53 65 67 98 122 124 183 199

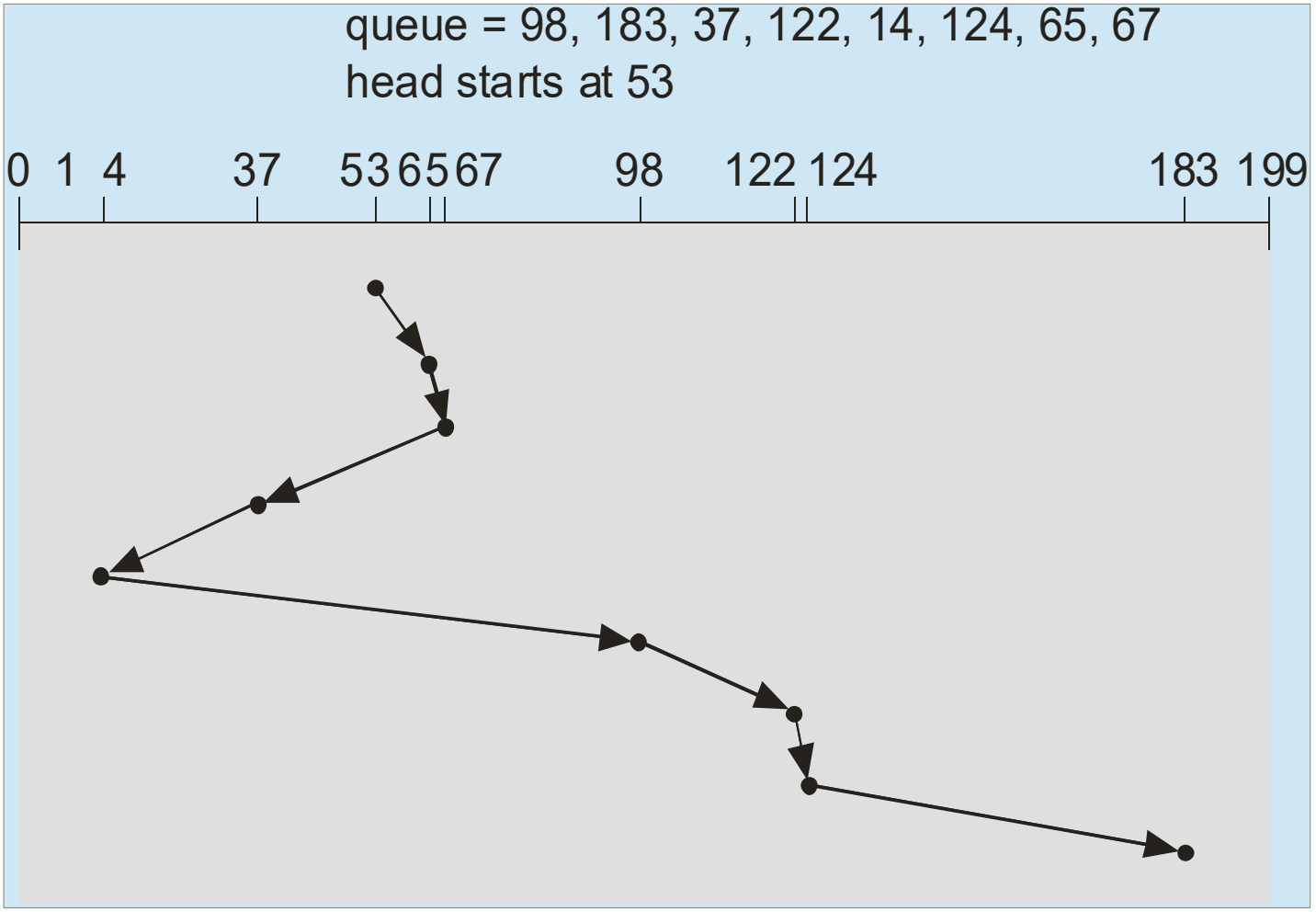
Shortest Seek Task First (SSTF)

Requests that minimize head movement from the current position are processed first

It can cause *starvation* of some requests

Starvation occurs when a request is never cared because they always appear closer vain requests

Shortest Seek Task First (SSTF)



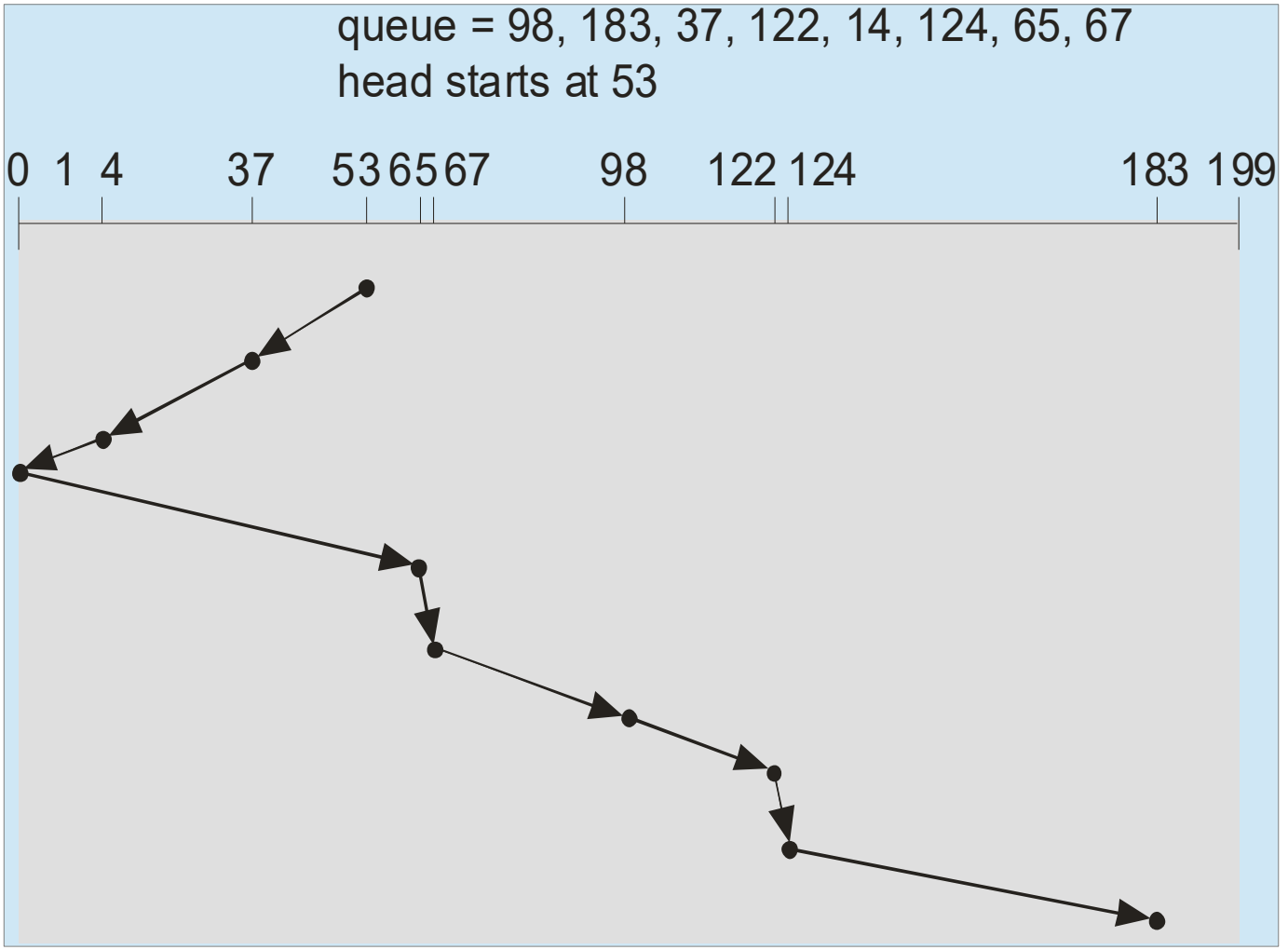
SCAN

Arm movement always starts at one end of the disc and continues to the other. There, the direction is changed and becomes the other end.

It avoid backward and forward movements.

In terms of time, changing the direction of the movement is a expensive operation because of the inertia.

SCAN


queue = 98, 183, 37, 122, 14, 124, 65, 67
head starts at 53
0 1 4 37 53 65 67 98 122 124 183 199

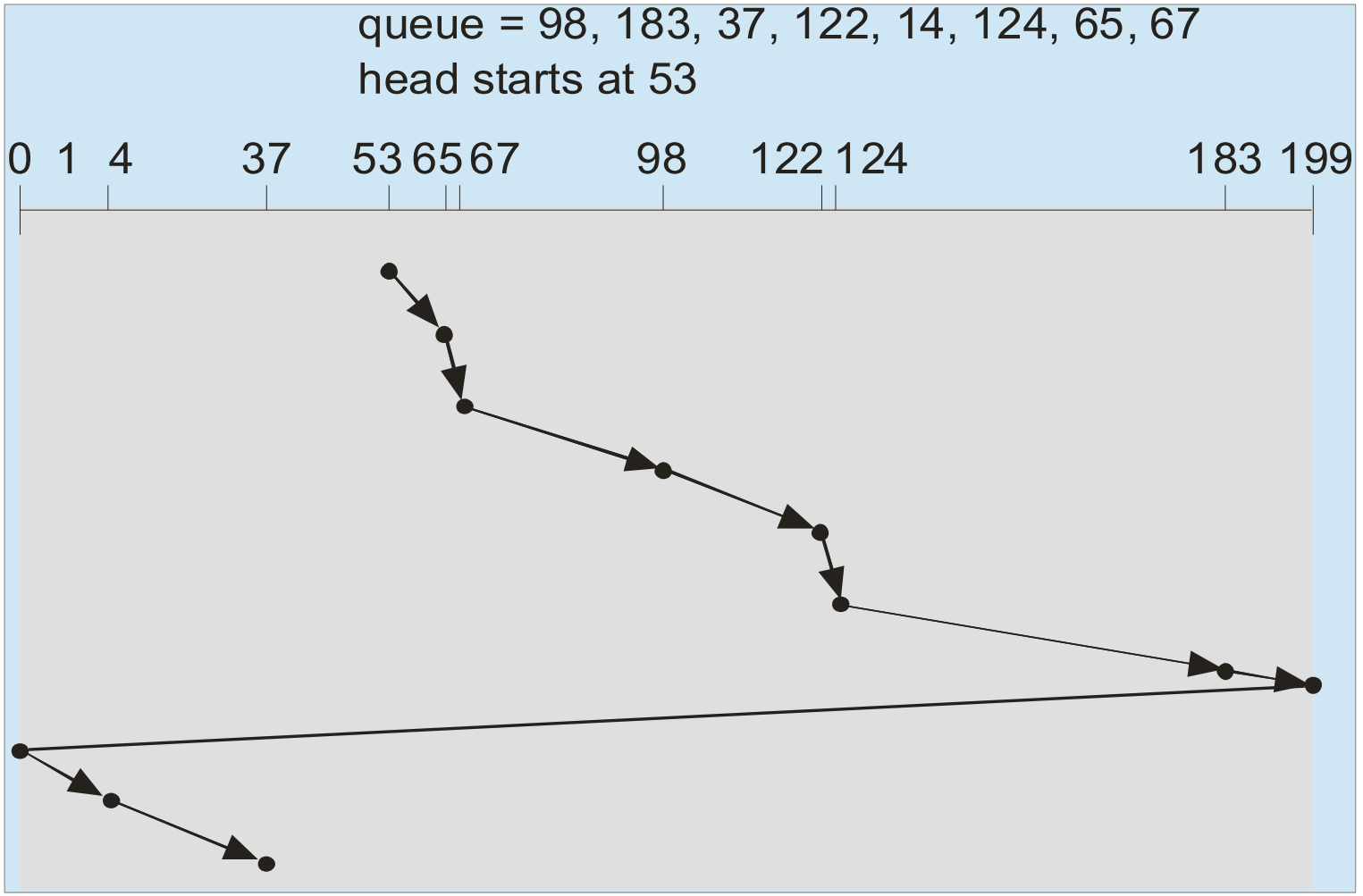
C-SCAN

Similar to SCAN but only in one direction

No requests are served while the heads return to the initial position

Going from last to first is done in a single movement and it is very fast

C-SCAN

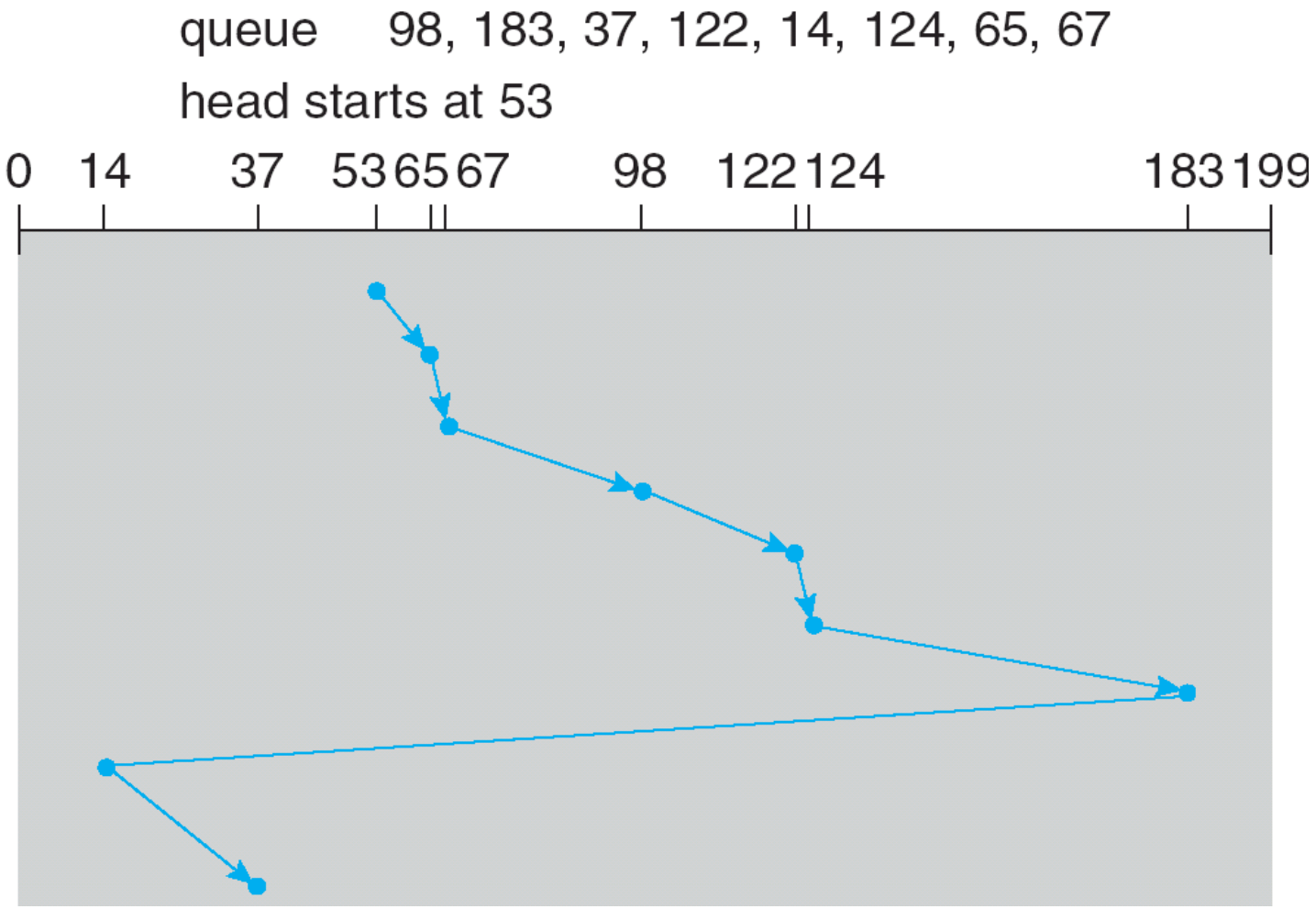

queue = 98, 183, 37, 122, 14, 124, 65, 67
head starts at 53
0 1 4 37 53 65 67 98 122 124 183 199

LOOK

Similar to SCAN but it does not need to arrive to the end of the disc.

It changes its direction in the smaller and in the bigger request

LOOK


queue 98, 183, 37, 122, 14, 124, 65, 67
head starts at 53
0 14 37 53 65 67 98 122 124 183 199

LOOK

Similar to C-SCAN but using the idea of LOOK