Department of Computer Science and Engineering

FACULTY OF ENGINEERING AND TECHNOLOGY
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CS-501

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DISK SCHEDULING

SCAN DISK SCHEDULING

SCAN Disk Scheduling

- In the *SCAN algorithm*, the disk arm starts at one end of the disk and moves toward the other end, servicing requests as it reaches each cylinder, until it gets to the other end of the disk.

- At the other end, the direction of head movement is *reversed*, and servicing continues.

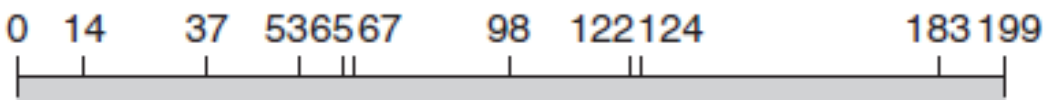
- *The head continuously scans back and forth across the disk*.

- The SCAN algorithm is sometimes called the *elevator algorithm.*

SCAN Disk Scheduling

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

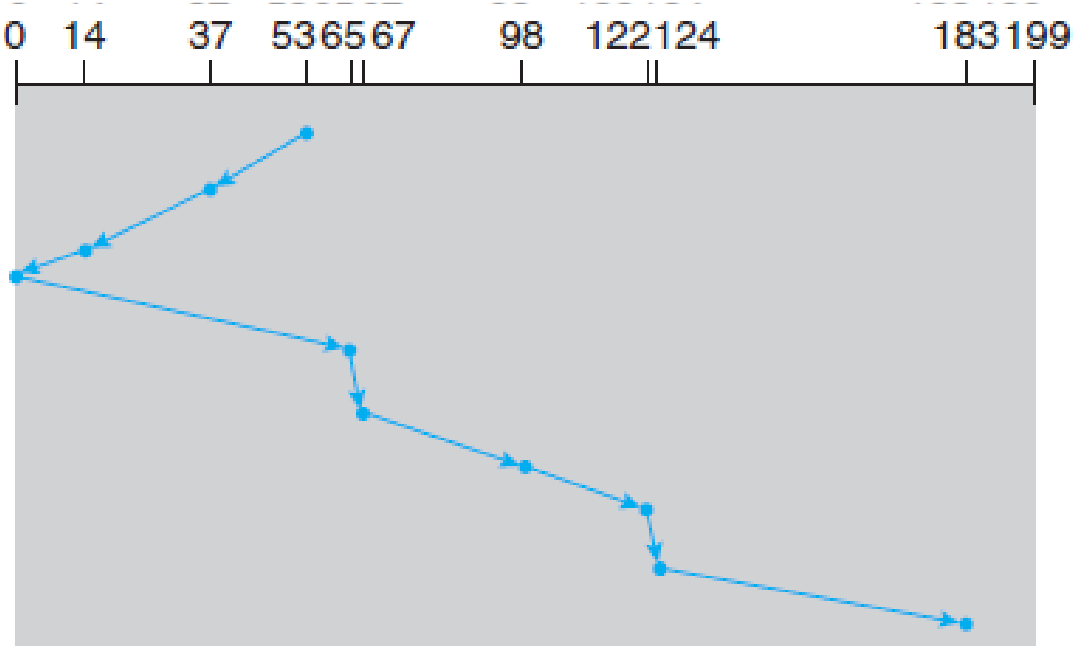
previous request was at cylinder 62



SCAN Disk Scheduling

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

previous request was at cylinder 62



- **Total head movement** = ?

CIRCULAR SCAN
(C-SCAN)
DISK SCHEDULING

C-SCAN Disk Scheduling

- Like SCAN, *C-SCAN moves* the head from one end of the disk to the other, servicing requests along the way.

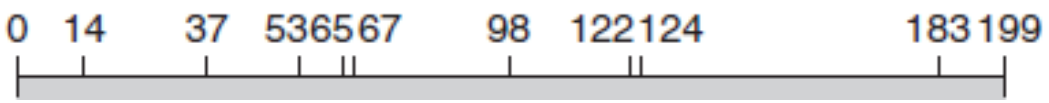
- When the head reaches the other end, however, it immediately returns to the beginning of the disk without servicing any requests on the *return trip*.

- The C-SCAN scheduling algorithm essentially treats the cylinders as a *circular list* that wraps around from the final cylinder to the first one.

C-SCAN Disk Scheduling

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

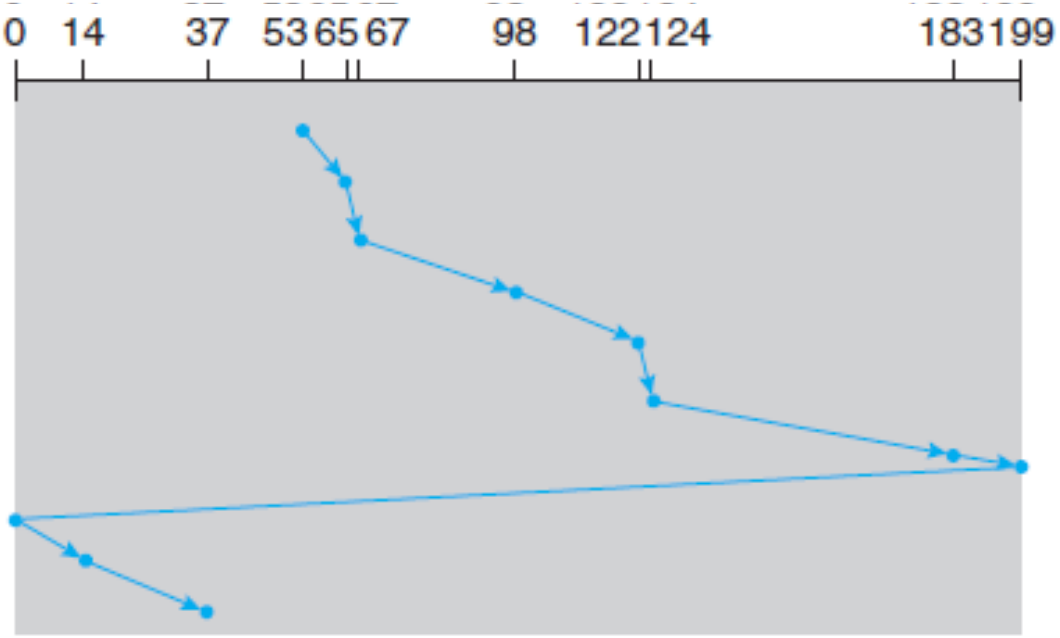
previous request was at cylinder 49



C-SCAN Disk Scheduling

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

previous request was at cylinder 49



- **Total head movement** = ?

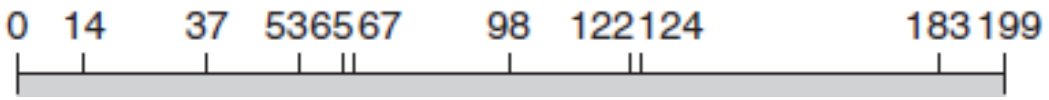
LOOK DISK SCHEDULING

LOOK Disk Scheduling

- The arm goes only as far as the *final request* in each direction. Then, it reverses direction immediately, without going all the way to *the end of the disk*.
- LOOK Example:

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

previous request was at cylinder 49

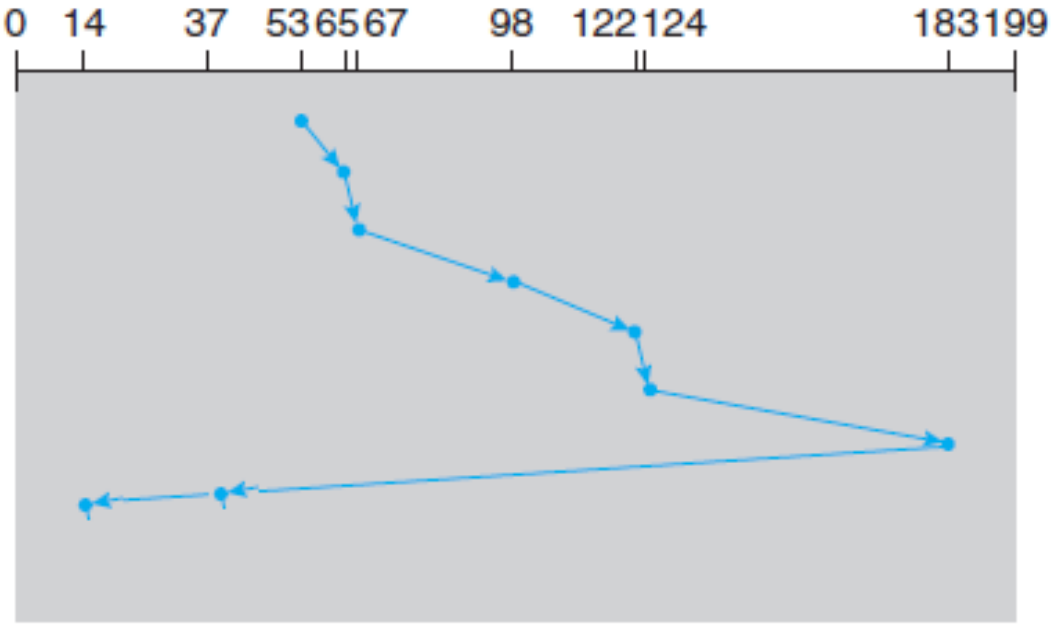


LOOK Disk Scheduling

- The arm goes only as far as the *final request* in each direction. Then, it reverses direction immediately, without going all the way to *the end of the disk*.
- LOOK Example:

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

previous request was at cylinder 49



- **Total head movement** = ?

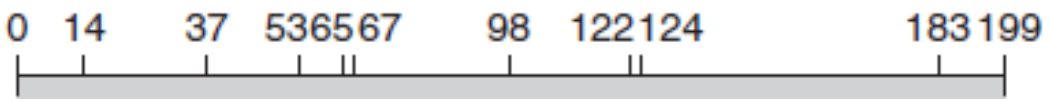
C-LOOK DISK SCHEDULING

C-LOOK Disk Scheduling

- C-LOOK Example:

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

previous request was at cylinder 49

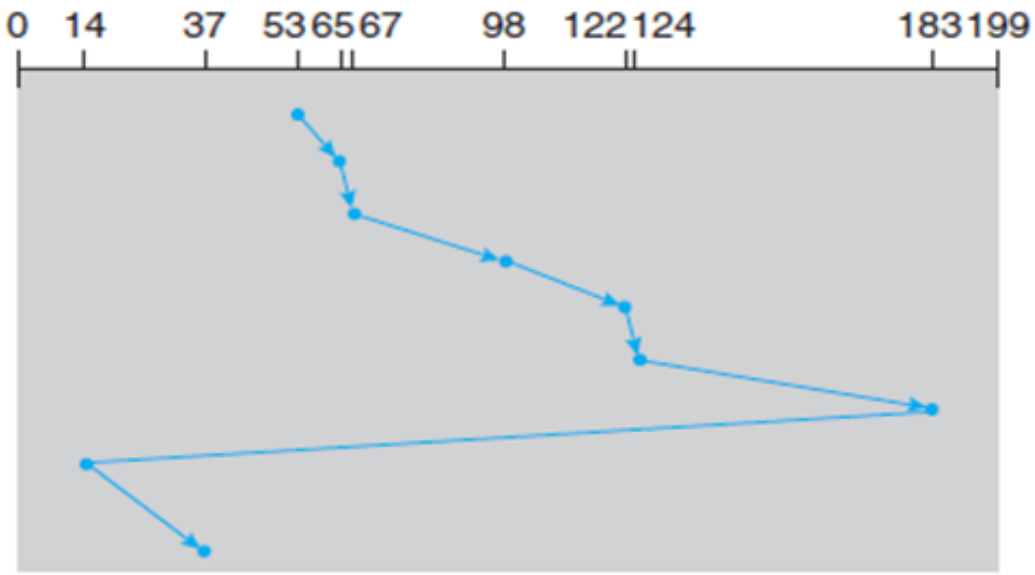


C-LOOK Disk Scheduling

- C-LOOK Example:

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

previous request was at cylinder 49



- **Total head movement** = ?

References

1. Silberschatz, Galvin and Gagne, “Operating Systems Concepts”, Wiley.

2. William Stallings, “Operating Systems: Internals and Design Principles”, 6th Edition, Pearson Education.

3. D M Dhamdhere, “Operating Systems: A Concept based Approach”, 2nd Edition, TMH.

Thank You.