

SCC.211 Operating Systems

Live Session 5

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Overview

- Topic 4: Input and Output (recap)
 - Device drivers
 - How can we create a device driver interface?
 - Disk storage
- Topic 5: Multi-process Systems (introduction)

4. Input and Output (I/O)

Recap

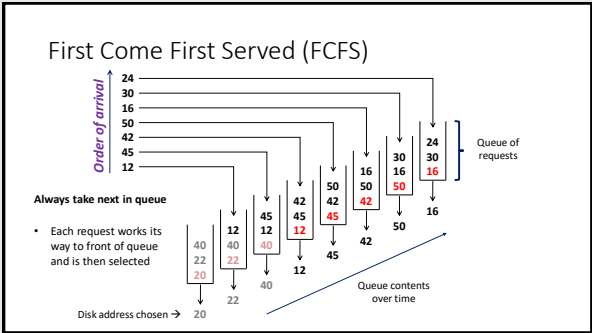
Videos

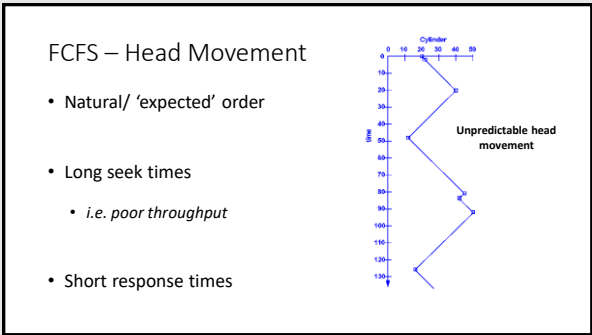
- Overview of I/O mechanisms
 - How we attach devices and communicate with them
- Interrupt systems
 - How we work around unknown, and often long, duration of I/O operations
- Device drivers
 - Framework for device manufacturers to provide control software for devices
- Also had a recap on disk structure and looked at RAID systems last time

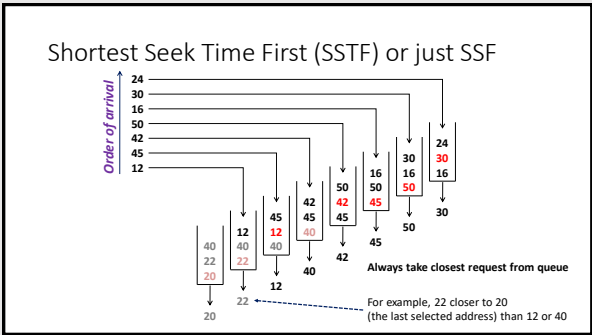
Disk Scheduling

Classic Disk Scheduling Methods

- Disk scheduling
 - Determines order requests for disk access serviced
 - Typically focused on head movement → the track/ cylinder
 - Requests for same track/ cylinder can be ordered by sector
- Aim to improve
 - Response time
 - Throughput
 - Fairness

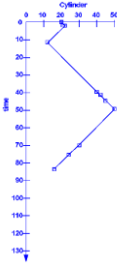






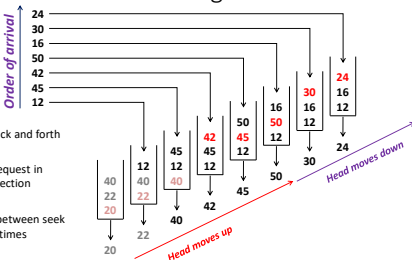
SSTF – Head Movement

- Smoother head movement
- Short seek times
 - i.e. high throughput
- Longer max. response time
 - May even lead to starvation
 - Head will tend to stay in middle of disk



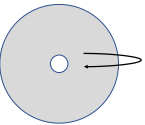
SCAN / Elevator scheduling

- Move head back and forth
- Service next request in movement direction
- Compromise between seek and response times

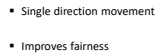


SCAN – Head Movement

- Could be seen as unfair
 - Two chances to access data at extremities
 - Yet likely most requests now at other edge

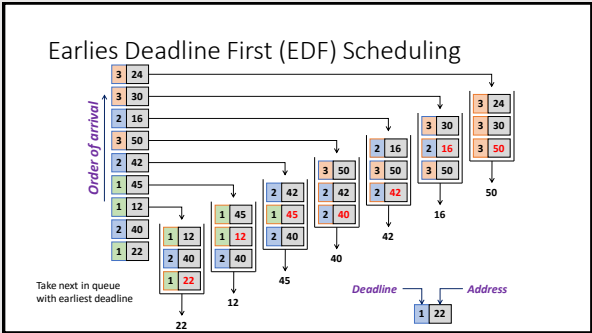


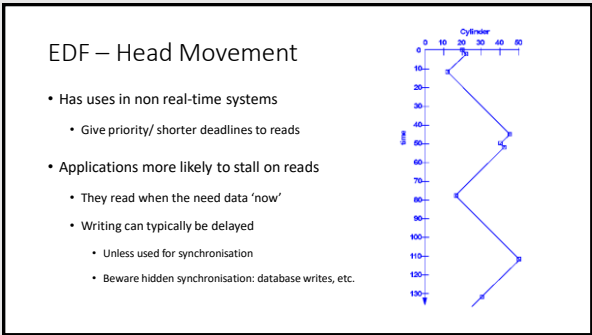
Order of arrival \uparrow

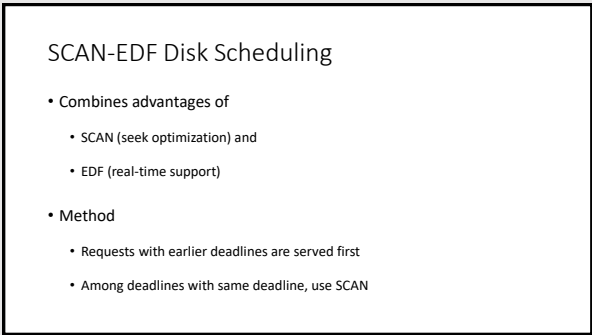
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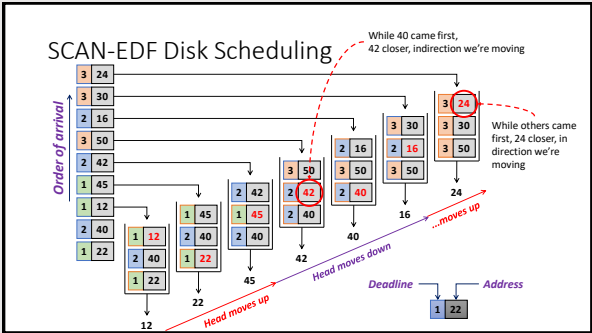
Time (min)	Cyclosporin (μg/ml)
0	0
10	0
20	20
30	40
40	40
50	40
60	40
70	20
80	20
90	20
100	20
110	20
120	20
130	20

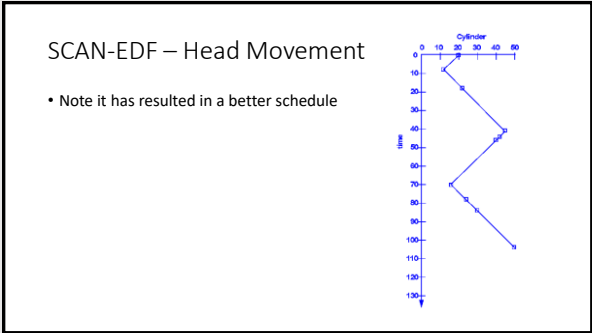
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5. Multi-process Systems

Introduction

Overview

- Types of multi-process system
- Schedulers – *switching processes*
 - Types
 - How they work
- Examples and comparison/ common metrics
 - First Come First Served
 - Round Robin
