

Technical Flashcards

Use Obsidian search or spaced repetition plugin if available.

Data Structures

Q: Stack follows which principle?

A: LIFO.

Q: Queue follows which principle?

A: FIFO.

Q: BFS uses which data structure?

A: Queue.

Q: DFS uses which data structure?

A: Stack or recursion.

Q: Array index access time?

A: $O(1)$.

Q: Linked list search time?

A: $O(n)$.

Q: Binary search needs what condition?

A: Sorted data.

Q: Binary search time complexity?

A: $O(\log n)$.

Q: Hash table average search complexity?

A: $O(1)$.

Q: Heap is commonly used for what?

A: Priority queue.

OS

Q: What is a process?

A: Program in execution.

Q: What is a thread?

A: Lightweight execution unit inside process.

Q: What does Round Robin use?

A: Time quantum.

Q: What is starvation?

A: Indefinite waiting.

Q: Name four deadlock conditions.

A: Mutual exclusion, hold and wait, no preemption, circular wait.

Q: Paging uses fixed or variable blocks?

A: Fixed-size blocks.

Q: Segmentation uses fixed or variable blocks?

A: Variable-size logical blocks.

Q: What is page fault?

A: Required page is not in RAM.

Q: What is thrashing?

A: Excessive page faults causing performance collapse.

DAA

Q: Merge sort worst-case complexity?

A: $O(n \log n)$.

Q: Quick sort worst-case complexity?

A: $O(n^2)$.

Q: Dijkstra fails with what type of weights?

A: Negative weights.

Q: DP needs what properties?

A: Overlapping subproblems and optimal substructure.

Q: Greedy makes what kind of choice?

A: Locally best choice.

Networking

Q: TCP is reliable or unreliable?

A: Reliable.

Q: UDP is connectionless or connection-oriented?

A: Connectionless.

Q: DNS port?

A: 53.

Q: HTTP port?

A: 80.

Q: HTTPS port?

A: 443.

Q: SSH port?

A: 22.

Q: Switch uses what address?

A: MAC address.

Q: Router uses what address?

A: IP address.

Q: ARP maps what?

A: IP to MAC.

Q: DHCP does what?

A: Assigns IP addresses automatically.

Embedded

Q: Microcontroller includes what?

A: CPU, memory, and I/O peripherals.

Q: Microprocessor includes what mainly?

A: CPU.

Q: ADC converts what?

A: Analog to digital.

Q: DAC converts what?

A: Digital to analog.

Q: Interrupt means what?

A: Event that pauses normal flow and runs ISR.

Q: Polling means what?

A: CPU repeatedly checks device status.

Q: I2C lines?

A: SDA and SCL.

Q: SPI lines?

A: MOSI, MISO, SCLK, SS.

Q: Watchdog timer does what?

A: Resets system if software hangs.

QA

Q: Verification asks what?

A: Are we building the product right?

Q: Validation asks what?

A: Are we building the right product?

Q: Smoke testing means?

A: Basic build verification.

Q: Regression testing means?

A: Testing old functionality after changes.

Q: Severity means?

A: Impact of defect.

Q: Priority means?

A: Urgency to fix.

Q: Selenium is used for?

A: Web UI automation.

Q: Postman is used for?

A: API testing.

Q: JMeter is used for?

A: Performance/load testing.