ENTRI

Deloitte NLA Curriculum Breakdown

Computer Science Fundamentals

(Core CS topics that form the basis of technical questions)

📌 Object-Oriented Programming (OOPs)

- Basic Concepts: Class, Object, Method, Constructor
- Principles: Encapsulation, Abstraction, Inheritance, Polymorphism
- Modifiers & Keywords: `public`, `private`, `protected`, `static`, `final`, `abstract`
- Interfaces vs Abstract Classes
- UML Basics

📌 Data Structures

- Arrays & Strings
- Linked Lists: Singly, Doubly, Circular
- Stacks and Queues
- Trees: Binary Trees, BST
- Hashing / Hash Tables
- Graphs: Representation (adjacency list/matrix)
- Heaps & Priority Queues

📌 Algorithms

- Searching: Linear, Binary Search
- Sorting: Bubble, Selection, Insertion, Merge, Quick
- Recursion Basics

- Time and Space Complexity (Big-O notation)

📌 DBMS (Database Management Systems)

- Basics: DBMS vs RDBMS
- SQL Fundamentals: SELECT, JOIN, GROUP BY, HAVING
- Normalization (1NF, 2NF, 3NF)
- Indexes, Keys (Primary, Foreign)

📌 Operating System Basics

- Processes and Threads
- Scheduling Algorithms
- Memory Management: Paging, Virtual Memory
- Concurrency & Synchronization (Semaphores, Mutex)
- Deadlocks

📌 Programming Concepts

- Variables, Loops, Conditional Statements
- Functions/Methods
- Exception Handling
- Input/Output Basics in C / Java / Python
- Basic Code Debugging

2. Networking

📌 Network Fundamentals

- OSI Model (7 layers)
- TCP/IP Model
- IP Addressing & Subnetting
- MAC Addresses
- Switch vs Router vs Hub
- DNS, DHCP

📌 Protocols

- HTTP / HTTPS
- TCP vs UDP
- FTP, SMTP
- ARP & ICMP
- Ports & Common Protocol Numbers

📌 Network Services & Configurations

- LAN vs WAN
- Routing Basics
- Firewalls
- Network Topologies
- Basic configuration commands (conceptual)

3. Cyber Security

📌 Security Fundamentals

- CIA Triad: Confidentiality, Integrity, Availability

- Authentication vs Authorization
- Non-repudiation

📌 Threats & Attacks

- Malware: Virus, Worm, Trojan
- Phishing & Social Engineering
- SQL Injection
- XSS (Cross-Site Scripting)
- Brute Force Attacks
- DDoS / DoS Attacks

📌 Encryption & Cryptography

- Symmetric vs Asymmetric Encryption
- Hashing Algorithms (SHA, MD5)
- Digital Signatures & Certificates

📌 Security Tools & Best Practices

- Firewalls & IDS/IPS
- VPN Basics
- Secure Coding Practices
- Password Policies
- Multi-Factor Authentication

4. Cloud Computing

📌 Cloud Fundamentals

- What is Cloud Computing
- Benefits of Cloud
- Types of Clouds: Public, Private, Hybrid

📌 Cloud Service Models

- IaaS (Infrastructure as a Service)
- PaaS (Platform as a Service)
- SaaS (Software as a Service)

📌 Major Cloud Providers

- AWS (Amazon Web Services)
- Microsoft Azure
- Google Cloud Platform (GCP)

📌 Key Cloud Concepts

- Virtualization
- Containers & Docker
- Serverless Computing
- CDN (Content Delivery Network)
- Cloud Storage vs On-Premises Storage
- IAM (Identity & Access Management)

5. Testing (Software Testing)

📌 Testing Basics

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- What is Software Testing
- Why Testing is Needed
- Errors, Faults, Failures

📌 Testing Types

- Manual vs Automated Testing
- Unit Testing
- Integration Testing
- System Testing
- Acceptance Testing
- Regression Testing
- Smoke & Sanity Testing

📌 Testing Techniques

- Black-Box Testing
- White-Box Testing
- Boundary Value Analysis
- Equivalence Partitioning

📌 Common Tools & Concepts

- Selenium Basics
- Junit / NUnit
- Bug Life Cycle
- Test Cases & Test Plans
- Test Metrics