PLACEMENT 100
SYLLABUS
Programming Basics

- **C++**: Variables, Operators, Loops, Arrays, String, Functions, Pointers and Dynamic Memory Allocation
- **Java**: Variables, Operators, Loops, Arrays, String, Immutable Strings, ArrayList, BigInteger

Note: Due to time constraints, you may choose any one programming language of your choice for the course.

OOP's

- Classes and Objects
- Inheritance and Polymorphism: Overloading and Overriding
- Abstraction and Encapsulation
- Access Modifiers
- Friend and Virtual functions in C++
- Static, final, this and super keywords and Interfaces in Java

Data Structures and Algorithms

- Mathematics
- Basic Recursion
- Arrays: Searching, Sorting, Deleting, Shift, Rotation, Prefix Sum...
- **Bit Magic**
- **Matrix:** Search, Delete, Insert, Rotate...
- **Searching:** Linear Search, Binary Search, Two pointer approach...
- **Sorting:** QuickSort and its variation, Mergesort, Counting sort, Insertion Sort, Heap Sort, Comparator
- **Hashing:** Different Types of Hashing Techniques, Collision resolution Techniques, Hashing Questions
- **Strings:** Basic Operations, Naive Pattern Search, Other searching algorithms.
- **Linked Lists:** Singly Linked List, Doubly Linked Lists, Circular Linked List, Skip List, Doubly Circular
- **Stacks:** Stack Operations, Implementation, Different Questions
- **Queues:** Queue Operations, Implementation, Different Questions, Deque Operations, Implementation, Different Questions.
- **Tree:** Binary Tree, Tree Traversal
- **Binary Search Tree:** Search, Insert, Delete and other important questions, AVL (Basic Introduction)
- **Heaps:** Binary Heap, Questions based on heaps.
- **Graphs:** Types of Graphs, BFS, DFS, Cycle Detection, Connected Components, Bipartite Graph
- **Recursion and Backtracking:** Backtracking questions, n queen, rat, knight etc.
- **Dynamic Programming:** Properties (Top Down, Bottom Up, Optimal Substructures, Overlapping Subproblems).
- **Graph Algorithms:** Shortest Path Algorithms, Connected Components, Bridges
- **Advanced DS** - Trie, Segment Tree, Disjoint Set

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**Object Oriented Analysis and Design**

- Elevator Design
- Parking Lot Design
- Tiny URL Design
Operating System
- Basics Concepts Relevant to Placements

Database Management System
- Basics Concepts Relevant to Placements

Computer Networks
- Basics Concepts Relevant to Placements

Practice Test
- Two Practice Tests from Above Topics
Aptitude and Reasoning

- Quantitative
- Logical Reasoning
- Verbal

Personality Development

- Soft Skills Tips
- HR Round Questions
- Resume Building Guide

Mock Test

- Three Mock Tests based on the Complete Course

Assessment Test and Referral

- Final Assessment Test
- Mock interviews of selected students from assessment test.
- Referral to the Hiring Partners.