Become a Software Engineer

Semester-1
Introduction To Programming Language

Course 01. Introduction to Programming in C Language

1. Basic programming concepts
2. Input and Output Statements
3. Variables
4. Data types
5. Operators
6. Conditional Statements (if-else, nested if-else)
7. Loop (For, While), Nested Loop
8. Array, Array Operations
9. Dynamic Array
10. String, String Operations
11. Function, Pointer
12. Recursion

1.1Problem-solving Part – 01 with C language

1. Basic Problem solving
2. Math related problems
3. Loop related problems
4. Array related problems
5. String related problems
6. Function related problems
7. Introduction to various Online judge

Course 02. Introduction to C++ for Data Structure

1. I/O operations in C++
2. If-else & Loop in C++
3. String in C++
4. Class & Object
5. Dynamic Allocation, Array of classes
6. Project: Restaurant Bill Management System

Semester-2

Course 01. Basic Data Structure

1. Time Complexity & Space Complexity
2. Linear search, Binary search, Selection Sort
3. Two pointers & Prefix Sum
4. Singly Linked List
5. Double Linked List
6. Stack
7. Queue
8. Priority Queue
9. Binary Tree
10. BST & Heep
11. STL

1.1Problem-Solving Part – 02 with Data-structure

1. Problem-solving with Sorting
2. Problem-Solving with Two pointers & Prefix Sum
3. Problem-solving with Linked List
4. Stack Implementation
5. Queue Implementation
6. Problem-Solving using Binary Tree
7. Practice with BST
8. Practice Problem Solving using Map and Priority Queue

Course 02. Introduction to Algorithm

1. BFS
2. DFS
3. Dijkstra Algorithm
4. Bellman Ford Algorithm
5. Floyd Warshall Algorithm
6. 0-1 Knapsack
7. Dynamic Programming
8. LCS
9. Hashing
10. Backtracking & Greedy
11. Minimum Spanning Tree

2.1Problem-Solving Part – 03 with Algorithm

1. Problem-solving with BFS & DFS
2. Problem-Solving with Bellman-Ford and Floyd Warshall
3. Problem-Solving with 0-1 Knapsack & Unbound Knapsack
4. Problem-Solving with Variations & LCS
5. Practice with Hashing
6. Problem-Solving with Backtracking & Greedy Approach

Semester-3
Become a Software Engineer

Course 01: Object-Oriented Programming With Python

1. Basic Syntax & Data types
2. Control Flow & Loops
3. List and dictionary in python
4. File handling
5. Class & Object
6. Encapsulation
7. Abstraction
8. Polymorphism
9. Inheritance
10. Library Management System
11. Movie ticket booking system
12. Parking lot Design

Course 02: DataBase

1. Logical organization of databases
2. the entity-relationship model
3. network
4. and relational data models
5. Functional dependencies and normal forms
6. Query formulation and language
7. Database Administration
8. Methods used for the storage
9. selection
10. and presentation of Data
11. Database integrity and security
12. concurrency control
13. different levels of indices
14. Data organization
15. Indexing
16. and hashing
17. Directory systems
18. Query Language: PostgreSQL or MySQL

Course 03: Software Engineering Final Project