Programming Language:

Week 1:

- **Day-1, 2, 3 :**
  - **CPP**- Introduction, Variables and Operators: Introduction, Variables, Data types, Input/Output, Arithmetic, Logical, Bitwise.
  - **Java**- Introduction, Variables and Operators: Introduction, Variables, Data types, Wrapper class, Input/Output, Operators in Java, Bitwise.
- **Day- 4, 5, 6 :**
  - **CPP**- Flow Control, Function & Loops: If-else, for loop, while loop, jump statements, Patterns, Functions & its Applications.
  - **Java**- Flow Control, Loops & Function: If-else, for loop, while loop, jump statements, Patterns, Functions & its Applications.

Week 2:

- **Day- 1, 2, 3:**
  - **CPP**- Arrays, String, Pointers & Reference: 1D & Multidimensional Arrays, References & Pointers, C style Strings.
  - **Java**- Arrays & String : 1D & Multidimensional Arrays, String in Java, StringBuilder & StringBuffer.
- **Day- 4:**
  - **CPP**- Struct and Union, Quiz
  - **Java**- Quiz
- **Day- 5, 6:**
  - **CPP**- C++ OOPs: Constructors & Destructors, Inheritance, Multiple Inheritance, Operator Overloading, Friend Function in C++.
  - **Java**- Java OOPs: Encapsulation, Inheritance, Interface, Polymorphism, Abstraction, Constructors.

Week 3:

- **Day- 1, 2, 3:**
  CPP- Advanced: Exceptions, Function pointers, Lambda Expressions, Smart pointer, Errors, Dynamic Memory allocation.
  Java- Advanced: BigInteger, File Handling, Multithreading, Exceptions.

Data Structures(Basics):

- **Day- 4 :** Introduction : Asymptotic Analysis (Finding time and space complexities)
- **Day- 5 :** Arrays: Types, Operations on Arrays
- **Day - 6 :** Basic Recursion

Week 4:

- **Day-1 :** Hashing: Different Types of Hashing Techniques, Collision resolution Techniques.
- **Day- 2 :** Searching: Binary Search(Iterative and Recursive).
- **Day- 3, 4, 5 :** Sorting: Insertion Sort, Merge Sort, Quick Sort, Cycle Sort, Counting Sort, Radix Sort, Bucket Sort, Custom Sort using STL
- **Day- 6 :** Linked Lists: Singly Linked List, Search,

Week 5:

- **Day-1, 2 :** Linked Lists: Insert, Delete, Reverse Operations.
- **Day- 3 :** Circular Linked Lists: Insert & Delete Operations
- **Day- 4 :** Doubly Linked Lists: Insert & Delete Operations
- **Day- 5 :** Stack: Stack Operations, Implementation.
- **Day- 6 :** Queue: Queue Operations, Implementation.

Week 6:

- **Day-1 :** Deque Operations, Implementation.

- **Day- 2, 3 :** Tree: Binary Tree, Tree Traversals, Questions
- **Day- 4, 5 :** Binary Search Tree: Search, Insert, Delete, Floor & Ceil.
- **Day- 6 :** Heaps: Binary Heap(Min and Max Heap).

Libraries:

____Week 7:

- **Day- 1, 2:**
  CPP- STL Overview: Introduction, Iterators & templates.
  Java- Collections Overview: Introduction, Generics, Collection, Iterators

- **Day- 3:**
  CPP- Pairs
  Java- Lambda Expressions

- **Day- 4:**
  CPP- Vectors: Vectors & its Questions
  Java- Streams

- **Day- 5:**
  CPP- Forward list & List: Introduction and Questions
  Java- ArrayList: Introduction and Questions

- **Day- 6:**
  CPP- Deque
  Java- Linked List

Week 8:

- **Day- 1, 2:**
  CPP- Stack & Queue: Different Questions
  Java- Stack & Queue: Different Questions

- **Day- 3:**
  CPP- Priority Queue
  Java- Deque & Priority Queue

- **Day- 4:**

CPP- Set & MultiSet
Java- HashSet and LinkedHashSet, TreeSet

- **Day- 5:**
  CPP- Map & Multimap
  Java- HashMap and LinkedHashMap, TreeMap

- **Day- 6:**
  CPP- Unordered_set
  Java- String:

Week 9:

- **Day- 1:**
  CPP- Unordered_map
  Java- String: Continued..

- **Day- 2:**
  CPP- Non-Mutating STL Algorithms
  Java- Comparator & Comparable

- **Day- 3:**
  CPP- Set & MultiSet
  Java- Array Class

- **Day- 4, 5:**
  CPP- Mutating STL Algorithms
  Java- Sorting: Methods & Questions

- **Day- 6:**
  CPP- String and More
  Java- Collections Class

Data Structures(Advanced):

Week 10:

- **Day-1 :** Mathematics : GCD, Prime, Factorial, Sieve of Eratosthenes, Computing Power
- **Day- 2, 3 :** Bit Magic : Bit Operators,Tricks to use bit

manipulation.

- **Day - 4 :** Recursion: Questions
- **Day- 5, 6 :** Arrays: Questions, Prefix Sum, Sliding Window

Week 11:

- **Day-1, 2 :** Searching: Two pointer approach & Questions
- **Day- 3, 4 :** Sorting: Questions
- **Day- 5, 6 :** Matrix :Operations on Matrix(Search Rotate,Transpose).

Week 12:

- **Day-1, 2 :** Hashing: Hashing Questions
- **Day- 3, 4, 5, 6 :** Strings: Basic Operations, Naive Pattern Search, Other searching algorithms(KMP, Rabin-Karp).

Week 13:

- **Day-1, 2, 3 :** Linked Lists:Linked List & its Questions
- **Day - 4, 5 :** Stacks: Infix, Prefix & Postfix, Questions
- **Day- 6 :** Queue & Deque: Different Questions.

Week 14:

- **Day-1, 2, 3 :** Tree: Binary Tree, Tree Traversals, Different Questions
- **Day- 4, 5, 6 :** Binary Search Tree: AVL (Basic Introduction),Self Balancing Trees and their use in sets and maps STL.

Week 15:

- **Day-1, 2 :** Heaps: Heap Sort & Heap Questions
- **Day - 3, 4, 5, 6 :** Graphs: Graph Implementation,Traversals,

Cycle Detection, Bipartite Graph, Minimum Spanning Tree, Topological Sorting.

Week 16:

- **Day-1, 2, 3 :** Graph Algorithms: Shortest Path Algorithms, Connected Components, Bridges, etc.
- **Day- 4, 5 ,6 :** Greedy : Fractional Knapsack, Activity Selection, Job Sequencing, Backtracking: Concept & Questions.

Week 17:

- **Day-1, 2, 3, 4, 5, 6 :** Dynamic Programming: Properties (Top Down, Bottom Up, Optimal Substructures, Overlapping Subproblems) and Standard Problems (LIS, LCS, etc), Dynamic Programming Problems (Variations of Standard Problems)

Week 18:

- **Day 1, 2:** Tries
- **Day 3, 4:** Segment Tree
- **Day 5, 6:** Disjoint Set Union: Operations(Union, Find), Path Compression

Week 19:

- **Day-1, 2, 3 :** Linked Lists:Linked List & its Questions
- **Day - 4, 5 :** Stacks: Infix, Prefix & Postfix, Questions
- **Day- 6 :** Queue & Deque: Different Questions.

Object Oriented Design:

Week 20:

- **Day-1 :** Introduction to Classes and Objects
- **Day - 2 :** Software Development Process
- **Day- 3 :** Introduction to UML.
- **Day - 4, 5 :** Class Diagrams and Object Diagrams
- **Day- 6 :** Use Case Diagrams.

Week 21:

- **Day-1, 2 :** OOAD Case Study: Design Online Movie Ticket Booking
- **Day - 3, 4 :** OOAD Case Study: Design Ecommerce Platform
- **Day- 5 :** OOAD Case Study: Design Parking Lot
- **Day - 6 :** OOAD Case Study: Design BlackJack Card Game

Computer Subjects:

Week 22:

- **Day-1, 2, 3, 4, 5, 6 :** Operating Systems: Introduction, Multithreading, Process Management, Process Synchronization, Deadlocks, Memory management, Virtual Memory

Week 23:

- **Day-1, 2, 3, 4, 5, 6 :** Computer Networks: Introduction, Data Link Layer, Network Layer, Transport Layer, Application Layer, IP addressing.

Week 24:

- **Day-1, 2, 3, 4, 5, 6 :** DBMS: Introduction, ER and relation Models, Database Design(Normal Forms), File Structures, Transactions and Concurrency Control.

Week 25:

- **Day-1, 2, 3 :** SQL: SQL Queries
- **Day- 4, 5, 6 :** Computer Networking Interview Questions

Week 26:

- **Day-1, 2, 3 :** Operating Systems Interview Questions
- **Day- 4, 5, 6 :** DBMS Interview Questions

Aptitude and Reasoning:

Week 27:

- **Day-1, 2, 3 :** Quantitative Analysis: Area, Average, DecimalsFractions, DivisibilityTest, HCFandLCM, HeightDistance, NumberSystem, Percentage, ProfitLossDiscount, RatioAndProportion, SeriesAndSequence, SquaresCubes, Volume, Age, Boats and Streams, Calendars, Clocks, Log, Partnership, Race, RatioAndProportion, TimeAndWork, Trains.

- **Day- 4, 5, 6 :** Logical and Verbal Reasoning: Logical Reasoning, Basics of Grammar, Articles, Solution to the Coleman Exercise of Articles, Active Voice and Passive Voice, Closet Test, Passage Formation, Sentence Formation, Sentence Completion, Subject Verb and Agreement, Determiners, Modifiers, Parallel Structure, Grammar Exercise, Error Spotting, Parajumbles, Verbal Analogies.