Basic C++ Plan

Duration: 4 hrs. per day

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| **Oops Concepts** |  |  |  |
| * Encapsulation, Data Abstraction, Polymorphism, Inheritance, Objects, Classes | Day 1 | Week 1 | 4th Nov to 8th Nov 2024 |
| * Overloading, Overriding, Friend classes,   friend functions, Operator overloading | Day 1 |
| * Arrays, Structure, Pointers | Day 2 |
| * Standard Template Libraries: Introduction   + Vector, Lists, Maps, Iterators   + Algorithms, Double Ended Queues   + Priority Queues, Stacks, Queues   + Sets, Multisets, Multimaps, Bitsets | Day 3 - 4 |
| Assignment | Day 5 |
| **Data Structures in C++ (Linear)** |  |  |  |
| * Introduction to Advanced Array   Structures | Day 6 | Week 2 | 11th Nov to 15th Nov 2024 |
| * Dynamic Arrays (Vectors) * Initializing dynamically allocated array * Resize dynamic array * Dynamically deleting arrays * Factors impacting performance of dynamic arrays | Day 7 |
| * Multi-dimensional Arrays * Overview * Initializing multi-dimensional array * Accessing multi-dimensional array * Change elements of a multi-dimensional array * Traverse a multi-dimensional array * Input and output multi-dimensional array | Day 8 |
| * Sparse Arrays * Linked list representation of Sparse array * Array representation of Sparse array | Day 9 |
| Assignment | Day 10 |
| * Array of Pointers | Day 11 | Week 3 | 18th Nov to 22nd Nov 2024 |
| * Introduction to Linked Lists | Day 12 |
| * Singly Linked Lists | Day 13 |
| * Doubly Linked Lists | Day 14 |
| Assignment | Day 15 |
| * Circular Linked Lists | Day 16 | Week 4 | 25th Nov to 29th Nov 2024 |
| * Stack & Queue | Day 17 |
| **Data Structures in C++ (Non-Linear)** |  |
| * Binary Trees | Day 18 |
| * Binary Search Trees (BST) | Day 19 |
| Assignment | Day 20 |
| * Pre-order, In-order, and Post-order Traversals | Day 21-22 | Week 5 | 2nd Dec to 6th Dec 2024 |
| * Level-order Traversal | Day 23 |
| * Insertion and Deletion Operations | Day 24 |
| Assignment | Day 25 |
| * AVL Trees | Day 26 | Week 6 | 9th Dec to 13th Dec 2024 |
| * Red-Black Trees | Day 27 |
| * Introduction to Graphs | Day 28 |
| Assignment | Day 29 |
| * Graph representation (Adjacency List, Adjacency Matrix) | Day 30-31 | Week 7 | 16th Dec to 20th Dec 2024 |
| * Graph Traversal Algorithms (DFS, BFS) | Day 32-33 |
| Assignment | Day 34 |
| * Minimum Spanning Tree (Kruskal’s, Prim’s) | Day 35 | Week 8 | 23rd Dec to 24th Dec 2024 |
| Capstone project | 2 Days |
| Total | 37 Days |