Data Structure and Algorithms with C++

CLS | Learning Solutions

Why Learn Data Structure and Algorithms with C++?

- Build efficient programs by learning how to implement data structures using algorithmic techniques and solve various computational problems using the C++ programming language.

Audience Profile :

- After completing this course, you will be equipped for the job roles like Programmer, Web/App Developer, Analyst and Software Engineer thus, you can build an outstanding career.

Prerequisites:

- C++ and OOP Fundamentals..

Course Overview:

- Learn C++ programming language, pointers and arrays, classes, recursion, stacks, queues, lists, tables, trees, binary trees, search trees, heaps and priority queues; sorting, hashing, garbage collection, storage management; and the rudiments of the analysis of algorithms.
- Learn How to implement linear and non-linear data structures. How to implement stack and queue abstract data types using arrays and linked lists. How to analyze the efficiency of various algorithms – time and space complexity. How to implement linear and binary search algorithms and their efficiency analysis. Different sorting algorithms and their implementations.
- Learn Problem solving using iterative, recursive algorithms, their efficiency analysis and understand various algorithm design strategies.

Data Structure and Algorithms with C++ Outline:

- Lecture 1: Complexity Analysis & Recursion
- Introduction to Data Structures
- Execution Time Cases
- Complexity Analysis Examples
- Recursion
- Lecture 2: Arrays
- Introduction to Arrays
- Insertion Operation
- Deletion Operation
- Search Operation
- Traverse Operation
- Time Complexity & Space Complexity
- Lecture 3: Linked List
- Introduction to Linked Lists
- Insertion Operation
- Deletion Operation
- Search Operation
- Traverse Operation
- Time Complexity & Space Complexity
- Lecture 4: Stack
- Introduction to Stack
- Insertion Operation
- Deletion Operation
- Front & Back Operation
- Time Complexity & Space Complexity
- Lecture 5: Queue
- Introduction to Queue
- Insertion Operation
- Deletion Operation
- Top Operation
- Time Complexity & Space Complexity
- Lecture 6: Deque
- Lecture 7: STL in C++ (Linear Data Structures)
- Lecture 8: Binary Tree
- Lecture 9: Binary Search Tree
- Lecture 10: Self Balancing Binary Search Tree
- Lecture 11: Heap Tree
- Lecture 12: Graphs
- Lecture 13: Hash Tables
- Lecture 14: STL in C++ (Non-Linear Data Structures)
- Lecture 15: Analysis of Algorithms
- Lecture 16: Sorting Algorithms
- Lecture 17: Searching Algorithms
- Lecture 18: Divide and Conquer Algorithms
- Binary Search
- Merge Sort & Quick Sort
- Closest Pair of Points
- Count Inversions
- Multiply Two Polynomials

CLS | Learning Solutions

Training businesses and people Since 1995