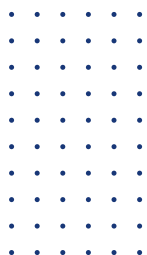


Certificate in Basics of Data Structures using C & C++



Certificate in Data Structures using C & C++ is designed to provide students with a foundational and practical understanding of data structures and their applications in programming. With a focus on C and C++, the course equips learners to design efficient algorithms, implement complex data structures, and solve computational problems effectively. Covering topics from basic building blocks to advanced data structures like trees and queues, the course emphasizes both theoretical concepts and hands-on programming skills.

Syllabus & Skills covered (60 hours)



- **Foundations of Programming and Algorithms :** Learn core concepts like variables, data types, control structures, and algorithm fundamentals including asymptotic notations and recursion.
- **Mathematical Thinking for Problem Solving :** Build problem-solving skills using mathematical tools such as induction, contradiction, and logical reasoning essential for algorithm design.
- **Mastery of Arrays and Strings :** Understand single and multi-dimensional arrays, string operations, pattern matching, and advanced pointer-based string handling.
- **Effective Use of Functions and Pointers :** Gain hands-on experience with modular programming through functions, and manage memory efficiently using pointers.
- **Advanced User-Defined Data Types :** Explore structures, unions, and organize complex data effectively with custom data types.
- **Working with Linked Lists and Their Variants :** Implement and manipulate singly, doubly, and circular linked lists, including recursive techniques and real-world problem-solving.
- **Implementation of Stacks and Queues :** Develop stack and queue operations using arrays and linked lists, with applications in expression evaluation and data management.

Career Opportunities



- **Junior Software Developer (C/C++)**
- **Systems Programmer (Entry-Level)**
- **Application Programmer (Entry-Level)**
- **Algorithm Developer**

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