

## Fundamentals in C

- History of 'C'
- A Simple C Program
- Program execution phases
- Backslash character constants
- Character set
- Constants
- Number systems
- Format specifiers
- Identifiers
- Keywords
- Variables
- Data Types
- Declaration of Variable
- Assigning Values to Variables
- Initialization
- Comments
- Const Qualifier
- Basic Structure of a 'C' program
- Programming Examples

## **Operators and Expressions**

- Arithmetic operators
- Increment and decrement operators
- Relational operators
- Logical operators
- The bitwise operators
- The assignment operators
- The conditional operator
- Type casting operator
- Precedence and order of evaluation

## Data types

- Modifiers
- Format specifiers
- Dealing with each data types
- Memory representation of each type

# **Input-Output Library Functions**

- Unformatted I-O Functions
- Single Character Input-Output
- String Input-Output
- Formatted I-O Functions
- Printf() Width Specifier
- Scanf() Width Specifier

## **Control statements**

- Conditional Control Statements
- If
- If-else
- Nested If-else
- Else-if Ladder
- Multiple Branching Control Statement
- Switch-case
- Loop Control Statements
- While
- Do-while
- For Loop
- Nested Loops
- Jump Control Statements
- Break, Continue Statements
- Goto, Exit(), Return Statements

### **Function**

- What is function?
- Advantages of using functions
- Function Prototype
- Defining a function
- Calling a function
- Return statement
- Types of functions
- Recursion
- Nested functions
- Main() function
- Local and global variables

### **Arrays**

- Arrays Declaration and Initialization
- Sample Programs using Arrays
- Arrays as Function Parameters
- 2-Dimensional Array

#### **Pointers**

- Introduction to Pointers
- Pointers as Function Parameter
- Pointer Arithmetic
- Pointers and Arrays
- Function Pointers
- Dynamic Memory Allocation using malloc calloc and comparision with malloc

## **String Handling**

- Introduction to Strings
- Sample Program
- More Sample Programs
- Standard String Library Functions
- Array of String

## Structures and Unions

- Declaring and Instantiating Structures
- Structure as Parameter and
- Pointer to Structure
- Enumerated Data Type
- Union
- Bit Fields

## File Handling

- What is a Stream.
- File Handling-Writing and Reading
- Characters.
- Writing and Reading Structure in
- Text Format.
- Writing and Reading in Binary Format

#### **Pre-Processor Directives**

- Understanding Pre-Processor directives
- Header Files and Project

# Command Line Arguments and Variable Arguments

- Command Line Argument
- Variable Number of Arguments

## **Searching and Sorting**

- Linear Search
- Iterative Binary Search
- Recursive Binary Search
- Bubble Sort
- Selection Sort
- Insertion Sort
- Quick Sort
- Merge Sort

#### Stack

- Introduction to Data Structures
- Stack Using Arrays
- Stack Using Linked List
- Infix to Postfix Expressions

#### Queue

- Queue Using Arrays
- Queue Using Linked List

#### **Linked List**

- Introduction to Linked List
- Single Linked List
- Double Linked List
- Circular Linked List

#### Trees

- Introduction to Trees
- Programming Tree 1
- Programming Tree 2



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