

# C & DATA STRUCTURE (COURSE CURRICULUM)

**DURATION : 2 Months**

1. **Language Introduction**
  - Types of language
  - Features
2. **Introduction to C**
  - Characteristics of C
  - Constants, Variables, and Keywords
  - Data Types
  - Operators
3. **Decision Control**
  - If Statements
  - if – else Statements
  - Nested if statements
  - Replacement of if-else using Ternary Operator
4. **Loop Controls**
  - while Loop
  - do – while
  - for Loop
  - Break statement
  - Continue statement
5. **Case Control (Jumping Statements)**
  - goto Statement
  - switch case
6. **Function in C**
  - Definition of function
  - Types of function
  - Function prototype
  - Calling function in C
  - Difference between call by value and call by reference
  - Recursion



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C

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## 7. Storage Classes in C

- Automatic Storage Class
- Register Storage Class
- Static Storage Class
- External Storage Class

## 8. C Preprocessor

- Features of C preprocessor
- Macro
- Macro with Arguments
- Macro versus function
- File inclusion

## 9. Arrays in C

- Definition of Array
- Advantage and Disadvantage of Array
- Declaration of Array
- Initialization of Array
- Manipulation of Array
- Sorting of Array
- Array and Pointer
- 1-D Array, 2-D Array, introduction of 3-D Array

## 10. Pointer in C

- Definition
- Advantage and Disadvantage of pointer
- Accessing variable value through pointer

## 11. String

- Introduction
- String Library Functions
- String Manipulation using Array and pointer

## 12. Structure

- Introduction
- Advantage and Disadvantage of Structure
- Structure Declaration
- Declaration of Structure variable
- Initializing Structure variable



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- Array of Structure
13. Union and Enum
- Introduction
  - Difference between Structure and Union
14. File Handling in C
- Introduction
  - Advantage and Disadvantage of Files
  - Declaring, Opening, Closing, Reading, Writing, Coping, and Updating Files
  - File manipulation (Text File, Binary File).

## DATA STRUCTURE

1. Introduction to Data Structure
- Pointer with Array
2. Memory Allocation
- Static Memory Allocation
    - a. Dynamic Memory Allocation
    - b. LinkedList
    - c. Stack
    - d. Queue
3. Searching
- a. Linear Search
  - b. Binary Search
  - c. Linear Search versus Binary Search
4. Sorting
- a. Bubble Sort
  - b. Insertion Sort
  - c. Selection Sort



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- d. Merge Sort
- e. Quick Sort
- f. Heap Sort

5. Tree

- a. Introduction
- b. Binary Tree
- c. AVL Tree
- d. Traversal of Tree
- e. BFS
- f. DFS (Depth First Search)

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