

PROGRAMMING THROUGH “C” LANGUAGE

➤ **Basics of ‘C’ Language**

- History and Features of C, Importance of C, About Procedural Language
- Role of **Compiler**, Role of Interpreter, The Structure of a C Program
- Writing C Programs, Building an **Executable** Version of a C Program
- **Types of Errors** , Debugging a C Program

➤ **An Overview of ‘C’ And Buzzwords**

- Data Types, Variable, Constants , Key words
- Input and Output Operators, Reading/Writing Character
- Formatted input/output Function

➤ **Various Types of Operators**

- ‘C’ Arithmetic Operators (Remainder Operator ‘%’ etc.)
- Unary, Binary, Ternary Operator (Conditional Operator)
- Logical Operators (AND, OR, NOT)
- Relational Operators (<, >, <=, >= etc.)
- Bitwise Operators

➤ **Condition Checking**

- The IF.....ELSE Statement, Nesting of IF.....ELSE Statements
- Implementation of Logical operators with IF-Else.
- USE of **SWITCH-CASE** Statements

➤ **Loops (Iterative Statements)**

- While
- For
- Do – While
- Implementation of Conditions (*If-Else*) within Loop
- Use of GOTO, **Break** and **Continue**
- Nesting of **Loops** (Pyramids , Pascal Triangle etc.)

➤ **Functions in ‘C’**

- Function Basics, Advantage of Function
- Function Returning Values
- **Recursion**
- Function Calling (Call by Value, Call by Reference, Call by Pointer)
- Designing Your Own **Header File**
- Function Overloading, Passing Default Arguments to Function

➤ **Storage Classes in ‘C’**

- Automatic, Register, Static, Global (Extern)
- Application of storage Classes

➤ **Preprocessor (Macro)**

- Macro Expansion
- Macros with arguments
- Macros vs Functions

➤ **Pointers in ‘C’**

- Declaring and Initializing Pointers
- Pointer to pointer
- Pointers with Functions (Call By Pointer)
- Pointer Arithmetic

➤ **Array in ‘C’**

- One Dimension Arrays, Two Dimension Arrays, Multi Dimensions Array
- **Pointer and Arrays**
- Passing Array to Function
- **Sorting** Techniques (Bubble Sort, Selection Sort etc.)
- **Array Multiplication**, Addition Subtraction etc.

➤ **String in ‘C’**

- Initializing String
- String handling functions (strcpy, strlen, strcmp, strcat, strlen,strupr etc.)
- Passing string to function
- Manipulating String
- Unformatted Functions to work with strings and characters

➤ **Structures and Unions**

- Defining a Structure, Size (Memory) of Structure, Initialization of Structure
- Array of Structure objects, Structure Pointer, Array in Structure
- Nested Structure (Structure within Structure)
- Passing Structure to Function, Function returning Structure
- **Unions**
- Structure Vs Unions

➤ **ENUM, Typedef, Type Casting**

➤ **Escape Sequences in ‘C’**

➤ **Introduction to Link List (Dynamic Memory allocation)**

- Dynamic Memory Allocation(Malloc, Calloc, Realloc, Free etc.)
- Concepts of Linked Lists
- Creating a Linked Lists, Inserting/Deleting an item in Linked List
- Applications of Linked Lists

➤ **File Handling in ‘C’**

- File Management, File Pointers
- Opening/Closing a File , Operations on File (Read, Write, Append etc.)
- Text File and Binary File
- Input/Output operations on Files
- Error Handling During I/O Operations
- Command Line Arguments

<p>DURATION : (2 Months X Alternate Days X 1.5- 2 Hrs) # Approx. 20-25 Classes X 1.5-2 Hr.</p>

✓ **MINOR PROJECT BASED ON FILE HANDLING**

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