C - LANGUAGE

Introduction to C

- Evolution of C
- Data types
- Variables
- Constants
- Identifiers
- Keywords
- Escape Sequences
- Format Control Strings
- Compilers

Standard Input and Output Functions

- Single Character Input – The getchar Function
- Single Character Output – The putchar Function
- String Input – The gets Function
- String Output – The puts Function
- Entering input Data – The scanf Function
- More about the scanf Function
- Writing Output Data – The Printf Function
- More about the printf Function

Operators and type Conversions

- Operators

- Arithmetic Operators
- Logical Operators
- Relational Operators
- Bitwise Operators
- Increment and Decrement Operators
- Assignment Operators
- Compound Assignment Operators
- Conditional Operator/ternary
- Special operators
- Implicit type Conversion (coercion)
- Explicit type conversion(casting)
- Precedence and Order of Evaluation

Control Structures

- Control Statements or Decision making statements
- Selection statements or Branching Statements
- The if statement
- The if else statement
- If else ladder / Stair case if
- Nested Conditional Constructs
- The null if statement
- The null else statement
- Switch statement
- Repetition or Iterative or Loop control statements
- The while loop
- The for loop
- The do while loop
- Unconditional Statements
- The got statement
- The break statement
- The continue statement

Arrays

- Introduction
- Single Dimension Arrays
- Array Declaration
- Array initialization
- Two Dimensional Arrays
- 2D Array Declaration
- 2D Array initialization
- Transpose Matrix
- 2D Array ZigZag Printing
- 2D Array Spiral Printing
- Three Dimensional Arrays

Strings

- Introduction to Strings
- Initializing character Arrays
- Standard String Library Functions
- Two Dimensional Array of Characters
- Examples on Strings

Functions

- Introducing Functions
- Defining a Function
- Accessing a Function
- Function Prototype

- Passing Arguments to a Function
- Function calls
- Return statements
- Recursions
- Arrays as Function Arguments

Structures and Unions

- User Defined Data Types
- Declaring a Structure
- Processing a Structure
- Accessing structure members
- Memory Representation of structure
- Structure Variable
- Multiple Structure Variables
- Array of Structures
- Uses of Structures
- Operations on Unions
- Unions and Structures Differences
- Enumerations
- Typedef

Storage Classes

- Storage Classes
- Automatic Variables
- Static Variables
- Register variables
- External (Global) Variables

Pointers

- Fundamentals
- Introduction to Memory
- Pointer Declarations
- Address and Dereferencing (& and *) operators
- Pointer operations (++ and --)
- Pointer Assignment
- Pointer Initialization
- Pointer to Pointers
- Dynamic Memory Allocation
- Void * malloc(size)
- Void * calloc(nitems,size)
- Void * realloc(void *block, size)
- Free()
- Pointer Arithmetic
- Pointer Arrays
- Call by Value
- Call by References
- Structures and Pointers
- Self Referential Structure
- Character Pointer
- Void Pointers
- Dangling Pointers

File Handling

- Introduction
- Types of Functions
- File operations
- File Modes

- File handling functions
- File Formatted I/O Functions
- Opening File with fopen() function
- Closing File with fclose() function
- Fgetc() and fputc()
- fscanf() and fprintf()
- Random Access Files
- ftell(), rewind() and fseek()
- Command Line Arguments (using argc and argv parameters)