

Wave Techtronics

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Course Content: C-Language

Introduction to C:

- History and significance of C language.
- Structure of a C program.
- Compilers and Integrated Development Environments (IDEs).

Basic Concepts:

- Variables, Constants, and Data Types.
- Keywords and Identifiers.
- Operators and Expressions.
- Input and Output Functions.

Control Flow:

- Decision Making: if, if-else, nested if-else.
- Looping: while, do-while, for loops.
- Switch-case statement.
- Break and Continue statements.

Functions:

- Declaration and definition of functions.
- Function arguments and return values.
- Function prototypes.
- Recursion.

Arrays and Strings:

- Definition and concept of arrays
- Declaration and initialization
- Array indexing and accessing elements

Array Operations

- Reading and writing elements
- Traversing arrays using loops
- Sorting and searching techniques

Multidimensional Arrays

- Declaration and usage of 2D arrays
- Multidimensional arrays
- Sorting in multi-dimensional Array

String Basics

- Introduction to Strings
- Null-terminated vs. fixed-length strings
- Declaration and initialization

String Manipulation

- Input/output functions
- Standard library functions (strlen, strcpy, etc.)
- Iterating over strings

String Operations

- Concatenation and comparison
- Searching and replacing

Pointers:

- Understanding pointers and memory addresses.
- Pointer arithmetic.
- Dynamic memory allocation: malloc(), calloc(), realloc(), free().

Structures and Unions:

- Definition and declaration.
- Accessing structure members.
- Nested structures.
- Differences between structures and unions.

File Handling:

- Opening, closing, reading, and writing files.
- Sequential and random access files.
- Error handling in file operations.