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CURRICULUM OF C LANGUAGE

OVERVIEW OF C
- C History and Standardization
- Importance of C
- Preprocessor and Header Files
- Programming Style
- Basic Structure of C Program

CONSTANTS, VARIABLES & DATA TYPES
- Character Set, C Tokens
- Keywords & Identifiers
- Data types in C
- Constants
- Variable names
- Overflow & Underflow of Data

OPERATORS & EXPRESSIONS
- Arithmetic operators
- Relational Operators
- Logical operators
- Increment and decrement operators
- Bitwise Operators
- Assignment operators
- Conditional Operators
- Special Operators
- Operator Precedence
- Operator Associativity

CONTROL STRUCTURES: BRANCHING
- Decision making with 'if statement'
- If….else statement
- Nested if …..else statement
- Else ….if ladder
- Switch statement
- Goto statement
- The?: Operator

CONTROL STRUCTURES: LOOPING
- The While statement
- Do statement
- For statement
- Jumps in Loop

ARRAYS & STRINGS
- Declaration of an Array
- Initialization of Arrays
- Types of Arrays
- 1D, 2D, Multi D
- Compile Time Arrays and Runtime Arrays
- Limitations of an Array
- Declaration of Strings
- Initialization of Strings
- Operations performed on String
- String Handling Functions
- 2-D Strings

HANDLING POINTERS
- Understanding basics of Pointers
- Rules for Pointers
- Pointer Declaration
- Accessing a Variable through its Pointer
- Pointers and Arrays

FUNCTIONS
- Why Functions
- Types of Functions
- A Multi Functional Program
- Return Values & their types
- Call By Value and Call By Reference
- Arguments & Return Types
- Nesting of Functions
- Recursion

Scope / Visibility Of Variables
- Auto Storage Class
- Register Storage Class
- Static Storage Class
- Extern Storage Class

STRUCTURES & UNIONS
- Defining a Structure
- Why a Structure is used?
- Structure Initialization
- Arrays With in Structures
- Arrays Of Structures
- Structures within Structures
- Passing structures to Functions
- Unions & its properties
- Access Union Member

POINTERS
- Pointers and Addresses
- Initialization Of Pointers
- Pointer to Pointer
- Pointer Expressions
- Pointer Increments and Scale factors Pointers and Arrays
- Pointers and Strings
- Arrays of Pointers in Strings
- Pointers as Function Arguments
- Function returning Pointers
- Null Pointers in C

DYNAMIC MEMORY ALLOCATION
- malloc
- calloc
- realloc
- free

FILE HANDLING IN C
- What is a File?
- File Structure
- Defining & Opening a File
- Input/Output Operations on Files

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CURRICULUM OF C++ LANGUAGE

INTRODUCTION TO OOPS CONCEPTS
- Object Oriented Programming Style
- Difference between Modular Approaches & OOPS
- Concepts of Object Oriented Language

FUNCTIONS AND VARIABLES
- Functions: Declaration and Definition
- Variables: Definition, Declaration and Scope

CLASSES & OBJECTS
- History of C++
- Input Output Operators
- Cascading Of Operators
- Classes in C++
- Defining Classes in C++
- Ways Of creating Objects
- Nesting Of Member Functions
- Arrays within class
- Arrays of objects
- Static Data Member
- Static Member Functions
- Objects as Function Arguments
- Friend Functions
- Passing Objects by reference in Friend Functions

USING CONSTRUCTORS
- Constructors and its Types
- Creating & Accessing an Objects
- Multiple Constructors and Initialization Lists
- Defining Constructors outside the class
- Constructors with default arguments
- Dynamic Initializing of Objects
- Using Destructors to Destroy Instances

POLYMORPHISM
- Overview of Polymorphism
- Function Overloading
- Operator Overloading
- Working with Overloaded Operator
- Methods
- Overloading of Unary Operator
- Overloading Of Binary Operators
- Overloading Of Increment and Decrement Operators

TYPE CONVERSIONS
- Built in to User defined
- User Defined to Built In Type
- User Defined To User Defined Type

INHERITANCE
- Overview of Inheritance
- Defining Base and Derived Classes

- Types Of Inheritance
- Visibility Specifiers
- Virtual Base Class
- Constructors in Derived Class
- Containership

EXCEPTION HANDLING
- Exceptions
- Inheritance and Exceptions
- Exception Hierarchies
- Inside an Exception Handler

INPUT / OUTPUT FILE STREAMS
- Introduction of file streams
- Modes
- Opening a file
- Closing a file
- Writing to a file
- File Pointers

TEMPLATES
- Template Overview
- Customizing a Template Method
- Function Templates
- Multiple Template Types
- Class Templates
- Templates with Multiple Parameters