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C and C++ Training Program Proposal

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This program includes C and C++ [50H]*# and will follow through direct implementation of concepts from 'Contents' with few of related theoretical points.

At the end of program participants will get notes and practical examples in soft form covered during the same.

Contents

C Language:-

1. Introduction to 'C' language
2. Variables
 - a. Rules for variables
 - b. Declaring a variable
 - c. Accessing a variable
3. Data Types
 - a. Primitive data types
 - i. Character type
 - ii. Numeric type
 1. Integer
 2. Floating Point
 - b. Non primitive data types
 - c. Size and range of data types
4. Operators
 - a. Category 1
 - i. Unary Operators
 - ii. Binary Operators
 - iii. Ternary Operators
 - b. Category 2
 - i. Arithmetic Operators
 - ii. Relational Operators
 - iii. Logical Operators
 - iv. Bitwise Operators
 - v. Assignment Operators
5. Control Statements
 - a. Decision Control

- i. Simple 'if'
 - ii. 'if – else'
 - iii. 'if – else Ladder'
 - b. Loop Control
 - i. 'for' loop
 - ii. 'while' loop
 - iii. 'do – while' loop
 - iv. Nested loops
 - c. Case Control
 - i. 'Switch cases'
- 6. Arrays
 - a. Declaration of array
 - b. Accessing data from array
 - c. Size of array
 - d. Arrays in memory
 - e. Multidimensional arrays
- 7. String Manipulation (Using Library Functions)
 - a. What is string
 - b. Operations on string
 - c. Functions to manipulate string
- 8. Functions
 - a. Defining a function
 - b. Declaring a function
 - c. Calling a function
 - d. Returning values from a function
 - e. Passing parameters to function
 - f. Function call by value
 - g. Function call by reference
 - h. Recursive call
- 9. Pointers
 - a. Declaring a pointer variable
 - b. Accessing a pointer variable
 - c. Size of a pointer variable
- 10. Dynamic Memory Allocation
 - a. Dynamic memories
 - b. Arrays V/S dynamic memories
 - c. Allocating, deallocating and reallocating memories to pointers
 - d. Array of pointers
- 11. Structures, unions, enum
 - a. Structures
 - i. Structure Declaration
 - ii. Creating object of structure
 - iii. Size of structure

- iv. Array of structure
 - v. Pointer to structure
 - b. Union
 - i. Union Declaration
 - ii. Creating object of union
 - iii. Size of union
 - iv. Use of union
 - v. Structure v/s Union
 - c. Enum
 - i. Enumerated data type
 - ii. Enum Declaration
 - iii. Accessing enum
- 12. Keywords
- 13. Preprocessor Directives
 - a. What are preprocessors
 - b. What are preprocessor directives
 - c. Types of preprocessor directives
 - i. Macros
 - ii. File inclusion
 - iii. Conditional compilation
 - iv. Other directives
- 14. Input and output functions
 - a. printf()
 - b. scanf()
 - c. getchar()
 - d. putchar()
 - e. getch()
 - f. getche()
 - g. gets()
 - h. puts()
- 15. Command line arguments
 - a. What are command line arguments
 - b. Passing command line arguments
 - c. Handling command line arguments
 - d. Finding output directory
 - e. Switching to output directory
 - f. Executing command line argument program
- 16. Files
 - a. Operations on file
 - b. File opening modes
 - c. Reading data from file
 - d. Writing data to file
 - e. EOF

17. Graphics

- a. Introduction to graphics mode
- b. Graphics Drivers, Graphics Mode
- c. Initializing graphics mode
- d. Closing graphics mode
- e. Getting maximum coordinates
- f. Drawing basic shapes
- g. Setting background and foreground colors
- h. Setting style of text
- i. Changing fonts of text

C++:-

1. Functions

- a. Defining a function
- b. Declaring a function
- c. Calling a function
- d. Returning values from a function
- e. Passing parameters to function
- f. Function call by value
- g. Function call by reference
- h. Function prototyping
- i. Default parameters
- j. Inline functions

2. OOP concepts

- a. Introduction
- b. Features

3. Classes and Objects

- a. Declaring class
- b. Access specifier
- c. Declaring data members
- d. Declaring member functions
- e. Function definition inside the class
- f. Function definition outside the class
- g. Nesting Member functions
- h. Creating Objects

4. Constructors and Destructors

- a. What is constructor
- b. Types of constructors
- c. Destructors

5. Inheritance

- a. Introduction
- b. Defining a derived class

- c. Single inheritance
 - d. Multilevel inheritance
 - e. Multiple inheritance
 - f. Hierarchical inheritance
 - g. Hybrid inheritance
 - h. Virtual Base class
 - i. Constructors in derived classes
6. Polymorphism
- a. Function overloading
 - b. Operator overloading
 - i. Overloading unary operator
 - ii. Overloading binary operator
 - c. Function overriding
 - d. Friend Function
7. Files
- a. Operations on file
 - b. Class for file
 - c. File opening modes
 - d. Binary files
 - e. Read, Write functions
 - f. File pointer functions
 - g. Reading, Writing and Updating Files
8. Templates
- a. Function Template
 - b. Class Template
9. Exception handling
10. Mini Project[#]

** Duration of program in approximate hours excluding implementation mini project from C++.*
Code and explanation ONLY. Duration may increase for implementation.