#### **Basics**

C Language Introduction

Features of C Programming Language

C Programming Language Standard

Setting Up C Development Environment

C Hello World Program

Compiling a C Program: Behind the Scenes

**C** Comments

Tokens in C

**C** Identifiers

Keywords in C

#### **Variables and Constants**

**C** Variables

Constants in C

Const Qualifier in C

Different Ways to Declare Variable as Constant in C

Scope Rules in C

Internal Linkage and External Linkage in C

Global Variables in C

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Literals in C

Escape Sequence in C

bool in C

Integer Promotions in C

Character Arithmetic in C

Type Conversion in C

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Basic Input and Output in C

Format Specifiers in C

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scanf in C

Scansets in C

Formatted and Unformatted Input and Output Functions

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Operators in C

Arithmetic Operators in C

Unary Operators in C

Relational Operators in C

Bitwise Operators in C

Logical Operators in C

Assignment Operators in C

Increment and Decrement Operators in C

Conditional or Ternary Operator (?:) in C

size of Operator in C

Operator Precedence and Associativity in C

## **Control Statements Decision-Making**

Decision-Making in C C if Statement C if...else Statement C if-else-if Ladder Switch Statement in C Using Range in switch case in C Loops in C C for Loop while looping in C do...while Loop in C for versus while Loop continue Statement in C break Statement in C goto Statement in C **Functions C** Functions User-Defined Function in C Parameter Passing Techniques in C Importance of Function Prototype in C Return Multiple Values From a Function main Function in C Implicit Return Type int in C Callbacks in C Nested Functions in C Variadic functions in C

\_Noreturn Function Specifier in C

Predefined Identifier \_\_func\_\_ in C

Maths Functions in C

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C Arrays

Properties of Array in C

Multidimensional Arrays in C

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An Array of Strings in C

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String Functions in C

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**C** Pointers

Pointer Arithmetics in C

Pointer to Pointer (Double Pointer) in C

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Declare Function Pointer in C

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Pointer vs Array in C

Dangling, Void, Null and Wild Pointers

Near, Far and Huge Pointers in C

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C Structures

dot (.) Operator in C

C typedef

Structure Member Alignment, Padding and Data Packing

Flexible Array Members in a Structure in C

**C** Unions

Bit Fields in C

Difference Between Structure and Union in C

Anonymous Union and Structure in C

Enumeration (or enum) in C

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Storage Classes in C

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Understanding "volatile" Qualifier in C

Understanding the "register" Keyword in C

### **Memory Management**

Memory Layout of C Programs

Dynamic Memory Allocation in C

Difference Between malloc() and calloc()

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Dynamically Allocate a 2D Array in C

Dynamically Growing Array in C

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C Preprocessors

**C Preprocessor Directives** 

How a Preprocessor Works in C?

Header Files in C

Difference Between Header Files "stdio.h" and "stdlib.h"

Write Your Own Header File in C

Macros and their Types in C

Interesting Facts About Macros and Preprocessors in C

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Print a Variable Name in C

Multiline Macros in C

Variable Length Arguments for Macros

Branch Prediction Macros in GCC

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Basics of File Handling in C

C fopen() Function

EOF, getc() and feof() in C

fgets() and gets() in C

fseek() vs rewind() in C

Return Type of getchar(), fgetc() and getc()

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C Program to Print Contents of File

C Program to Delete a File

C Program to Merge Contents of Two Files into a Third File

Difference Between printf, sprintf and fprintf

Difference Between getc(), getchar(), getch() and getche()

# **Error Handling**

Error Handling in C

Using goto for Exception Handling in C

Error Handling During File Operations in C

C Program to Handle Divide By Zero and Multiple Exceptions