

C Fundamentals

- * Introduction to C

Data types, operators and expressions (the basics)

- * Base data types and their sizes
- * Constants and declarations
- * Variable names
- * Arithmetic operators
- * Relational and logical operators
- * Increment and decrement operators
- * Increment and decrement operators
- * Assignment operators
- * Expressions
- * Operator precedence
- * Casting and type conversion

Program flow control

- * if - else
- * switch
- * while, do-while and for-loops
- * Statements and blocks

Functions

- * Functions and function prototypes
- * Returning values from functions
- * External variables and scope rules
- * Static variables
- * call by value and recursion

Pointers and arrays

- * Pointers and addresses
- * Pointers as arguments to functions
- * Arrays
- * The relationship of pointers and arrays
- * Pointer arithmetic
- * How C deals with multi-dimensional arrays
- * Arrays of pointers - their uses and initialisation
- * Strings and string functions

Structures

- * Fundamentals of structures
- * Passing structures as arguments to functions
- * Returning structures as return values from functions
- * Arrays of structures
- * Pointers to structures
- * Using pointers to structures to pass values to a function and return values from a function
- * Typedef and its uses in developing well structured and maintainable code

Advanced C

An introduction to data structures and algorithms

- * Sorting arrays of records
- * Allocating and freeing memory (malloc and free)
- * Linked lists and queues
- * Indexing (table lookup, binary trees, hashing)

Input-output

- * Standard input and standard output
- * Formatted output - printf
- * Formatted input - scanf
- * The dangers of scanf
- * File access and file I/O