

# PROGRAMMING IN 'C'

## Introduction to C:

- What is programming language?
- Background of C.
- Purpose of C.
- Why to choose C?

## Chapter 0:

- Familiarizing with C.
- First program. "Hello world".
- Comments.
- Fundamental data-types (int, float, double, char, string, bool, double).
- Variables.
  - Understanding of variables.
  - Declaration of a variable.
  - Variables with different data-types.
  - Naming variable rules.
  - Memory size of a variable.
  - Indexing of a variable.
  - Constant variable (const)
- Printing the output.
- Format specifier.
- Output alignment. ("%8.2d")

- Escape sequence.
- Arithmetic operators (+,-,\*,/,%,++,--) [PEMDAS]
- Type casting and integer and float division. (float y = (float) x;)
- Augmented assignment operator (x += 2)
- Getting the input. (scanf("%d", &name) , fgets(name, len, stdin))
  - For 'fgets' >> name[strlen(name)-1] = "\0";
- Key words.
- String handling (strcat(), strlen(), strcpy())

## Chapter 1:

- Flow control with statements (if, else, else if).
- Nested 'if' conditions.
- Complex logic of 'if – else'.
- Switch statement.
- Use of switch statement.
- Introduction to loops.
- While loop.
- Do while loop.
- For loop.
- Complex logics and patterns with combining 'if – else' and loops.
- Break and continue statement.

## Chapter 2:

- Functions.
  - Introduction to functions.
  - Use of functions.
  - Declaration of user define functions.
  - Parameters and arguments.

- Arrays.
  - Introduction to arrays.
  - Use of arrays.
  - Declaration of arrays.
  - Indexing in arrays.
  - Iteration through arrays.
  - Complex logics and patterns with arrays.
- Memory address.
- Reference to a memory address.
- Pointers.
  - Introduction to pointers.
  - Use of pointers.
  - Declaration of pointers.
- Introduction to objects.
- Structures and unions.

## Chapter 3:

- Dynamic memory allocation (malloc(), free()).
- File handling.
- Preprocessor directives or libraries and modules.
- Recursion.
- Problem solving.

## Projects:

- Factorial.
- Calculator.
- Number guessing game
- Rock paper scissor.

- Tic tac toe.
- Unit converter.
- Morse code translator.
- Binary to decimal.
- Hang man.
- Word puzzle.
- GUI games and application.
- Leetcode.

**Note :** “This file is still in editing mode and not in final form.”