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(), strcopy())

# **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.”