**General Theory:**

***C programming language:***

C is structured programming based computer programming language developed by Dennis Ritchie at Bell laboratories in 1972. Structured programming refers to

Programming technique that produce programs with degree of modularity or hierarchical structure, and is a simple, contained, versatile, excellent, efficient, fast general-purpose language. It resembles other high level languages like Pascal and ForTran.

***Control Statement:***

Logical operation is carried out by several symmetrical or logical statements. There are two types of control statement based on their function.

Selective structure:

Selective structures are used when we have a number of situations where we need to change the order of execution of statements based on certain condition. The selective statements make a decision to take the right path before changing the order of execution. C provides the following statements for selective structure: if statements, switch statements

***if statements:***

The if statement is a powerful decision making statement and it is used to control the flow of execution of statements. It is a two way statement and is used in conjunction with an expression.

If statement allows the computer to evaluate the expression first and then on depending whether the value of the expression is true or false it transfer the control to the particular statement. At this point of the program has two paths to follow: one for true condition and other for false condition. The types of if statements are explained below:

***Simple if statement:***

The simple if statement is used to conditionally excite a block of code based on whether a test condition is true or false. If the condition is true the block of code is executed, otherwise it is skipped. The syntax of if statement is given below:

  if(test expression)

      {

          statement-block;

       }

         statement-x;

***if else statement:***

The if else statement extends the idea of the if statement by specifying another section of code that should be executed only if the condition is false i.e. conditional branching. True- block statements are to be executed only if the test expression is true and false block statements to be executed only if the condition is false. The syntax of if else statement is given below:

if(test expression)

 {    true block statement;

  }

   else

  {

     false block statement;

  }

***The switch statement:***

C has built in multi way decision statement known as switch. It successively test the value of an expression against a list of case values (integer or character consonants).when a match is found the statement associated with that case is executed. The syntax of switch expression is given below:

  switch(expression)

    {

        case constant-1:

        block-1;

        break;

        case constant-2:

         block-2;

         break;

       ………….

       case constant-2:

       block-n;

       break;

       default:

       default statement:

}

***Looping:***

Loop caused a section of code to be repeated for a specified number of times or until some condition holds true. When a condition becomes false, the loop terminates and control passes to statement below loop. Different types of loops are discussed below with their major characteristics and syntax used in C:

***While loop:***

The while loop specifies that a section of code should be executed while a certain condition holds true. The syntax of while loop is given below:

 while (test expression)

   {

     body of loop

     (statement block)

    }

***For loop:***

The for loop is used to execute a block of code for a fixed number of repetitions. Initialization is generally an assignment statement used to set loop control variable. Test expression is a relational expression that determines when loop exits. Update expression defines how the loop variable changes each time when the loop is repeated. The syntax of for loop is given below:

for(initialization expression; test expression; update expression)

  {

     body of loop;

  }

***break statement:***

 The break statement is used to jump out of loop. The break statement terminates the execution of the nearest enclosing loop. Control passes to the statement that follows the terminated statement. In a switch, break statement causes the program to execute the next statement after switch.

break;

***Function:***

A function is a self-contained program segment that carries out some specific well defined task. Every c program consists of one or more functions. Execution of program always begins by carrying out instruction in main. Function makes program significantly easier to understand and maintain. A well written function may be reused in multiple programs. Program that are easier to design, debug and maintain.

***Return statement:***

A function may or may not send back any value to the calling function. If it does, it is through return statement. The called function can only return only one value per call at most. The syntax of return statement is given below:

Return;

***Pointer:***

  A pointer is a variable that represents the location (rather than value) of a data item, such as a variable or an array element. Pointers can be used to pass information back and forth between a function and a reference point. Pointer provides a way to return multiple data items from a function via function argument. When a pointer variable is declared, the variable name must be preceded by an asterisk (\*). The syntax of a pointer declaration is: data type \*p;

***Structure:***

 It is a heterogeneous user defined data type. It is also called constructed data type. It may contain different data types. Structure can also store non homogenous data type into a single collection. Structure may contain pointer, arrays, or even other structures other than the common data types such as int, float, long int, etc. A structure provides a means of grouping variables under a single name for easier handling and identification. It can be defined as new named types. It is a convenient way of grouping several pieces of related information together. Complex hierarchies can be created by nesting structures. Structures may be copied to and assigned. They are also useful in passing groups of logically related data into structures. The declaration of structures is given below:

 struct tag

{

   member 1;

   member 2;

   member n;

};

***File:***

Many applications require that information be written to or read from an auxiliary memory device. Such information is stored on the memory device in the form of a data file. The data files allow us to store information permanently and to access and alter that information whenever necessary.

**Opening a file:**

  Before performing any input / output operation, file must be opened. While opening file, the following must be specified:-

1. The name of file.
2. The manner in which it should be opened (that for reading ,writing ,both reading and writing ,appending at the end of file, overwriting  the file)
3. when working with a stream oriented data file ,the first step is to establish a buffer area, where information is temporary stored while being transferred between the computer’s memory and data file .the buffer area is established by writing

     FILE \*ptvar;

where File is a special structure type  establishes the buffer area and ptvar is a pointer variable that indicates the beginning of the buffer area the library function fopen is used to open a file .This function is used to open a file .This function is typically written as

            ptvar=fopen(file name, file type );

where file name and file type are strings that represent the name of the data file and the manner in which the data file will be utilized.

Finally, a file can be closed at the end of the program. This can be accomplished with the library function fclose. The syntax is simply,

   fclose(ptvar);

***Beep command:***

The Beep function in C is used to make a Beep sound. It generates a tone on the speaker. The function is synchronous, i.e. it waits and doesn't return to its caller function until the sound is finished. It is included in <windows.h> header file.

***Sleep command:***

The sleep() method in the C programming language allows you to wait for just a current thread for a set amount of time. The sleep() function will sleep the present executable for the time specified by the thread. Presumably, the CPU and other operations will function normally.

***System:***

The system() function is a part of the C standard library. It is used to pass the commands that can be executed in the command processor or the terminal of the operating system, and finally returns the command after it has been completed.

***Curl:***

Client URL, or just curl, is a command-line tool for transferring data using various network protocols. It is commonly used by developers to test various applications build on top of HTTP. The header file used is <curl/curl.h>.