**ASSIGNMENT 4**

**Q) Explain Basic Structure of an Arduino Program**

**Ans:** Arduino is a prototype platform (open-source) based on an easy-to-use hardware and software. It consists of a circuit board, which can be programmed (referred to as a microcontroller) and a ready-made software called Arduino IDE (Integrated Development Environment), which is used to write and upload the computer code to the physical board. Arduino programs can be divided in three main parts: Structure, Values (variables and constants), and Functions.

**Structure consists of two main functions:**

1. Setup ( ) function
2. Loop ( ) function

void setup() {

// put your setup code here, to run once:

}

void loop() {

// put your main code here, to run repeatedly:

}

This code contains two functions in it.

The first one is setup(). Anything you put in this function will be executed by the Arduino just once when the program starts.

The second one is loop(). Once the Arduino finishes with the code in the setup() function, it will move into a loop(), and it will continue running it in a loop, again and again, until you reset it or cut off the power. The setup and loop functions don’t have any parameters passed to them. If you remove one of them, the compiler again will produce an error message.

**Functions:**

A function is merely a group of instructions with a name.

To create a function, you need a definition and the code that goes inside the curly brackets.

The definition is made up of at least:

1. a return type
2. a name
3. a list of parameters
4. functionality of code or leave notes to other programmers (or to self).

**Constants:**

If there is a value that will not be changing in your sketch, you can mark it as a constant.

Constants have benefits regarding memory and processing speed, and it is a good habit to use these.

**Operators:**

Operators are special functions that operate one or more pieces of data.

**Variable:**

A variable is a programming construct that associates a memory location with a name (an identifier). Variables can hold different kinds of data other than integers

**Comments:**

1. Any line that starts with // or multiple lines that start with /\* and finish with \*/ contain comments.
2. Comments are ignored by the compiler. They are meant to be read by the programmer.
3. Comments are used to explain the functionality of code or leave notes to other programmers (or to self).

**Example:**

void setup() {

pinMode(8, OUTPUT);

}

void loop() {

digitalWrite(8, HIGH);

delay(1000);

digitalWrite(8, LOW);

delay(1000);

}