DAY -2 IOT BOOTCAMP

Experiment – 8:(ANALOG )

**Aim**: write a program to detect light intensity level in a room?

**Description**: light sensor can also be called as light dependent resistor(LDR)

**Color coding** : BBROYGBVGW(bb Roy of Great Britain has a very good wife)

**B**-black-0

**B**-brown-1, R-red-2, O-orange-3,B-blue

**->Code according to the color on the resistor is**

**Code = 1 0^2**

**->We use 10 ohms for resistors for the sensors.**

**->No positive and negative for the LDR sensor.**

**-> it contains Teminal 1 and** terminal **2.**

**STEPS:**

**i)connect terminal 1 to the other end of the** resistor.

**ii) connect the other end of the resistor to the 5V analog.**

**iii)connect the terminal 2 to the ground in digital.**

**iV)connect A5 to terminal 1.(because used to read the data from the LDR)**

**NOTE:** the resolution of analog to digital converter is 10 bits in Arduino uno .

**Source code:**

void setup()

{

pinMode(A5,INPUT);

Serial.begin(9600);//we want plot the data on serial monitor

}

void loop(){

int m = analogRead(A5);//minimum value is 0v-> 5V

/\*Serial.println(m);

delay(100);\*/

if(m>800)

Serial.println("ROOM IS DARK");

else if(m<100)

Serial.println("ROOM IS BRIGHT");

}

Graphical user interface, application

Description automatically generated

Experiment 9:

AIM : write a program to read data from haptic sensor

->connect A4 to the terminal 1

-> this circuit is same as the insertion of LDR sensor

SOURCE CODE:

void setup()

{

pinMode(A4,INPUT);

Serial.begin(9600);//we want plot the data on serial monitor

}

void loop(){

int m = analogRead(A4);//minimum value is 0v-> 5V

if(m>890 && m<905)//here 890-905 is the range

Serial.println("90 degrees");

else if(m>930 && m<945)

Serial.println("140 degrees");

}

Graphical user interface

Description automatically generated

**Experiment 10:**

**Aim : write a program to switch on the vibration motor when password given?**

* **Red wire** is **the positive and connect it to the**

**NOTE:**

**=>Serial.available() will return the number of characters received by serial code.**

**Source code:**

int vib = 2;

char s[20];

int i=0;

void setup(){

pinMode(vib,OUTPUT);

Serial.begin(9600);

}

void loop(){

Serial.println("Enter password");

i=0;

while(!Serial.available());//blocking statement

while(Serial.available()){

s[i]=Serial.read();

i++;

delay(10);

}

s[i]='\0';

while(!Serial.available());//blocking statement

if(!strcmp(s,"abcd"))//returns 0 when strings are equal

{

Serial.println("Password Equal");

digitalWrite(vib,1);

}

else

{

Serial.println("Not Equal");

digitalWrite(vib,0);

}

}

Graphical user interface, application

Description automatically generated

Experiment 11:

Aim : Write a program to print the obstacle distance to alert a blind person?

Description : speed = distance/time.

t1 is a duration of signal to travel to reach an obstacle.

t2 is a time for which the ultra sonic sensor receives after hiiting an obstacle.

Generaly t1 and t2 will be same.so total time = 2\*t.so t=T/2.

Code:

int trig=3;

int echo=4;

int vib=2;

void setup()

{

pinMode(trig,OUTPUT);

pinMode(echo,INPUT);

pinMode(vib,OUTPUT);

Serial.begin(9600);

}

void loop()

{

digitalWrite(trig,0);// trigger will be cleaned.

delayMicroseconds(2);

digitalWrite(trig,1);

delayMicroseconds(10);

digitalWrite(trig,0);

int duration=pulseIn(echo,1); //stops the timmer

float distance=duration\*0.034/2;

Serial.print("Distance: ");

Serial.print(distance);

Serial.println(" cm");

delay(500);

if(distance<10)

digitalWrite(vib,1);

else

digitalWrite(vib,0);

}

Graphical user interface

Description automatically generated

Experiment 12:

Aim : write a program to rotate an electrical motor in clockwise and anti clockwise direction.

Description:

Note: electric motor consumes high current but Arduino generates current up to 100 micro ampere. A motor driver is connected in between Arduino and motor.

Code:

int en1 = 2;

int in1 = 3;

int in2 = 4;

#define pM(a,b) pinMode(a,b)

#define dW(a,b) digitalWrite(a,b)

#define out OUTPUT

void setup()

{

pM(en1,out);

pM(in1,out);

pM(in2,out);

}

void loop()

{

dW(en1,1);

dW(in1,1);

dW(in2,0);

delay(2000);

dW(en1,1);

dW(in1,0);

dW(in2,1);

delay(2000);

}

