

IOT PROJECT

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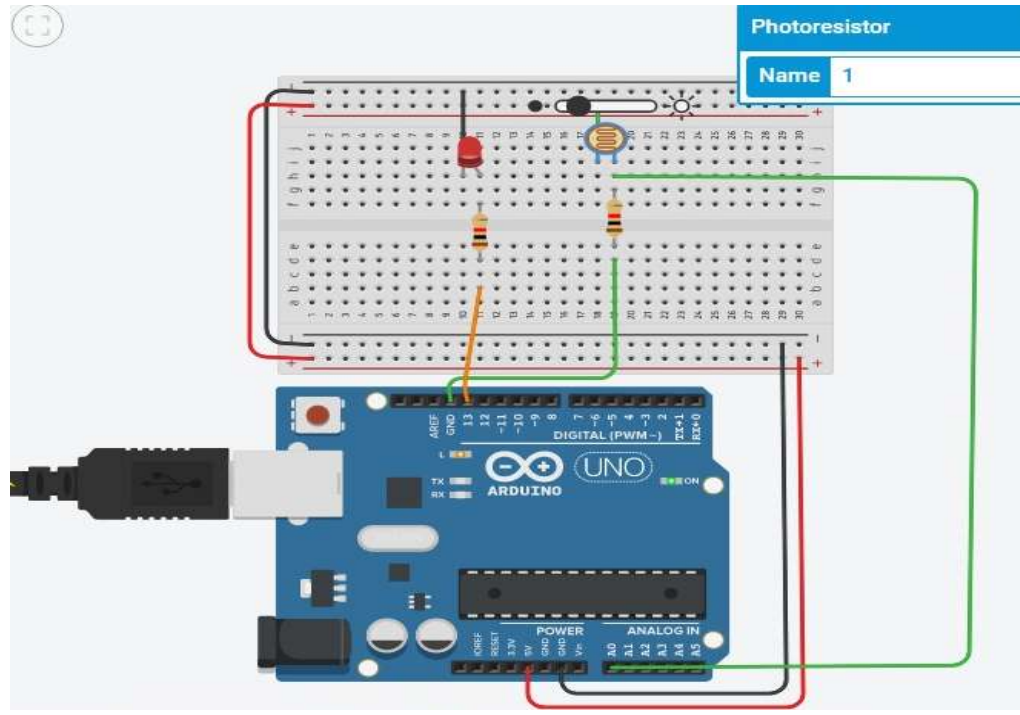
HOOCHLY ENGINEERING AND TECHNOLOGY COLLEGE

HOOCHLY-712103

INDEX

-  Automatic street lighting(using LDR)
-  Automatic street lighting(using PIR)
-  Smart dustbin using HCSR04 and servo motor
-  Rainbow using RGB LED
-  Radar using HCS04 and servo motor
-  Glow LED on pressing pushbutton
-  Knight rider LED circuit
-  Fire alarm
-  Automatic temperature control for chiller
-  Storing data in server from HTML

Automatic street lighting(using LDR)



Components required:

- Arduino Uno
- Red LED
- LDR
- Breadboard
- 5v Power supply
- Wires
- Two resistors
- USB cable

Connection description:

The LED is connected with pin no.13 of digital pin of arduino through a resistor.The input of LDR is connected with A0 pin of arduino.

Code:

```
int x=0;
```

```
int led=13;
```

```
int ldr=A0;
```

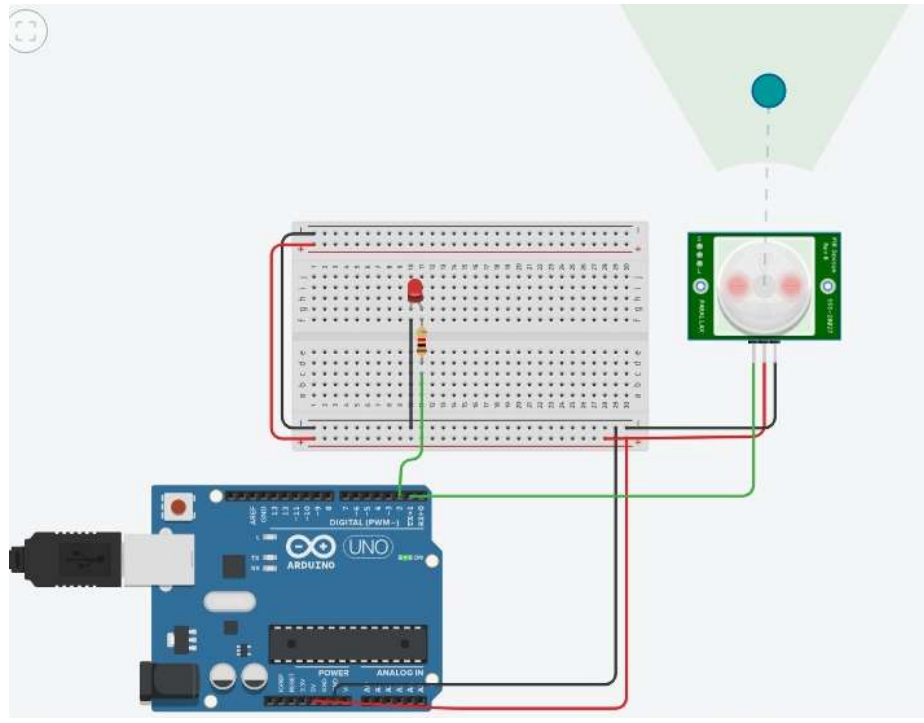
```
void setup()
{
  pinMode(ldr,INPUT);
  pinMode(led,OUTPUT);
  Serial.begin(9600);
}

void loop()
{
  x=analogRead(ldr);
  Serial.println(x);
  if(x<400)
  {
    digitalWrite(led,HIGH);
  }
  else{
    digitalWrite(led,LOW);
  }
}
```

Conclusion:

After successfully compilation of code the LED will turn on when the amount of light falling on LDR is less than 400 lux otherwise it will remain off.

Automatic street lighting(using PIR)



Components required:

- Arduino Uno
- Red LED
- PIR
- Breadboard
- 5v Power supply
- Wires
- resistor
- USB cable

Connection description:

The ground pin of PIR sensor is connected with GND pin of arduino and the VCC pin is connected with 5v of arduino .The LED is connected with pin no.2 of digital pin of arduino through a resistor.The input of PIR is connected with pin no.1 of digital pin of arduino.

Code:

```
int x=0;

int led=2;

int pir=1;

void setup()

{

  pinMode(led,OUTPUT);

  pinMode(pir,INPUT);

}

void loop()

{

  x=digitalRead(pir);

  Serial.println(x);

  if(x==HIGH)

  {

    digitalWrite(led,HIGH);

  }

  else{

    digitalWrite(led,LOW);

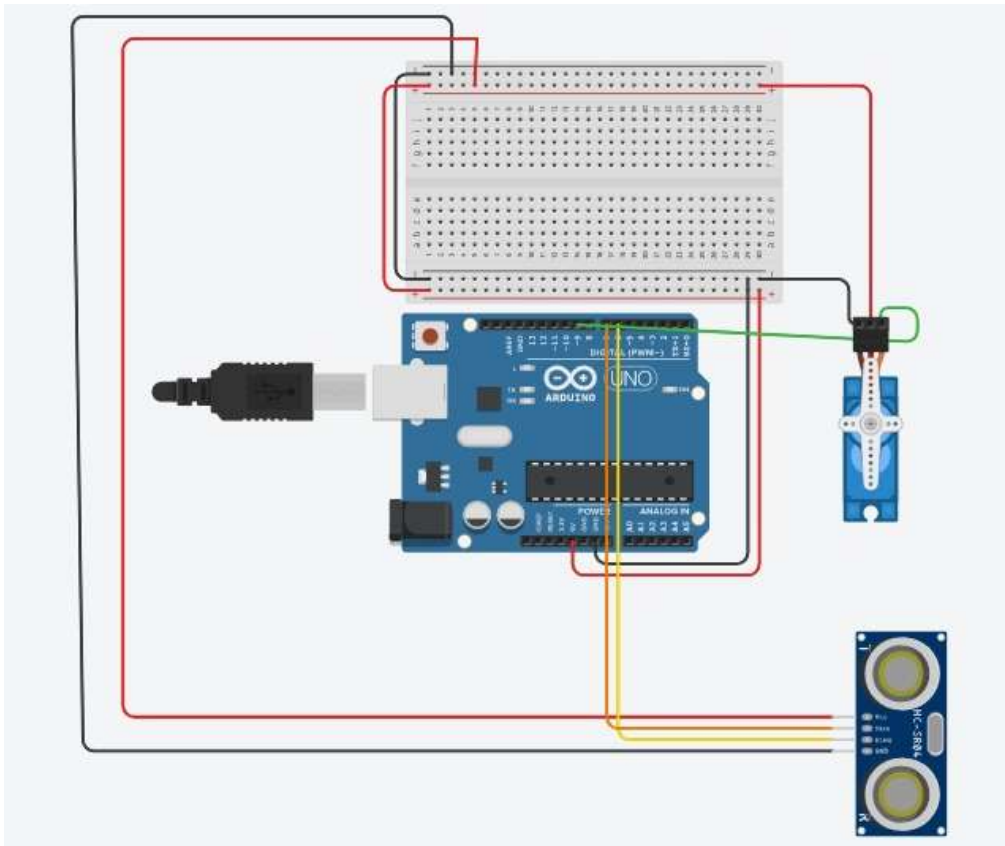
  }

}
```

Observations:

After successfully compilation of code the red LED will glow only when the PIR sensor is activated by any motion otherwise it will remain off.

SMART DUSTBIN



Components required:

- Arduino Uno
- Servo motor
- Breadboard
- 5v Power supply
- Wires
- HCSR04 ultrasonic sensor
- USB cable

Connection description:

The ground pin of servo motor and HCSR04 is connected with GND pin of arduino and the VCC pin is connected with 5v of arduino. The echo pin and trigger pin of HCSR04 is connected with pin no.6 and 7 of arduino. The servo motor is attached with digital pin no.9 of arduino.

Code:

```
#include<Servo.h>

Servo test;

int i=0;

int t,distance;

void setup()

{

Serial.begin(9600);

test.attach(9);

pinMode(7,OUTPUT);

pinMode(6,INPUT);

test.write(0); //close cap on power on

}

void loop()

{

digitalWrite(7,LOW);

digitalWrite(7,HIGH);

digitalWrite(7,LOW);

t=pulseIn(6,HIGH);

distance=t*0.017;
```



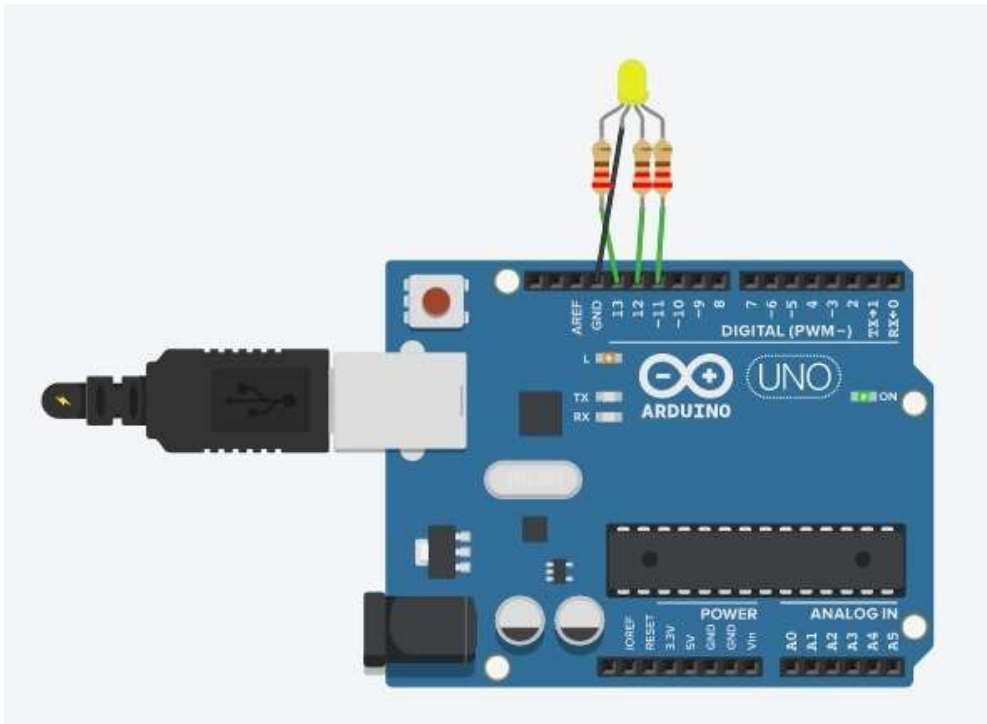
```
Serial.print(distance);  
  
    Serial.println("cm");  
  
    if(distance>20)  
    {  
        test.write(0);  
    }  
  
    else  
    {  
        for(i=0;i<360;i++)  
        {  
            test.write(i);  
        }  
    }  
}
```

Conclusion:

After successfully compilation of code,the ultrasonic sensor will calculate the distance.

When the distance is less than 20cm,servo motor will rotate 360° ,else servo motor will not rotate.

RAINBOW USING RGB LED



Components required:

- Arduino Uno
- 5v Power supply
- Wires
- USB cable
- RGB Led
- 3 resistors

Connection description:

The ground pin LED is connected with GND pin of arduino and the red, green and blue pin of LED is connected with pin no. 13, 12 and 11 of arduino.

Code:

```
int r=13;
```

```
int g=12;
```

```
int b=11;
```

```
void setup()
{
  pinMode(r, OUTPUT);
  pinMode(g, OUTPUT);
  pinMode(b, OUTPUT);
}
```

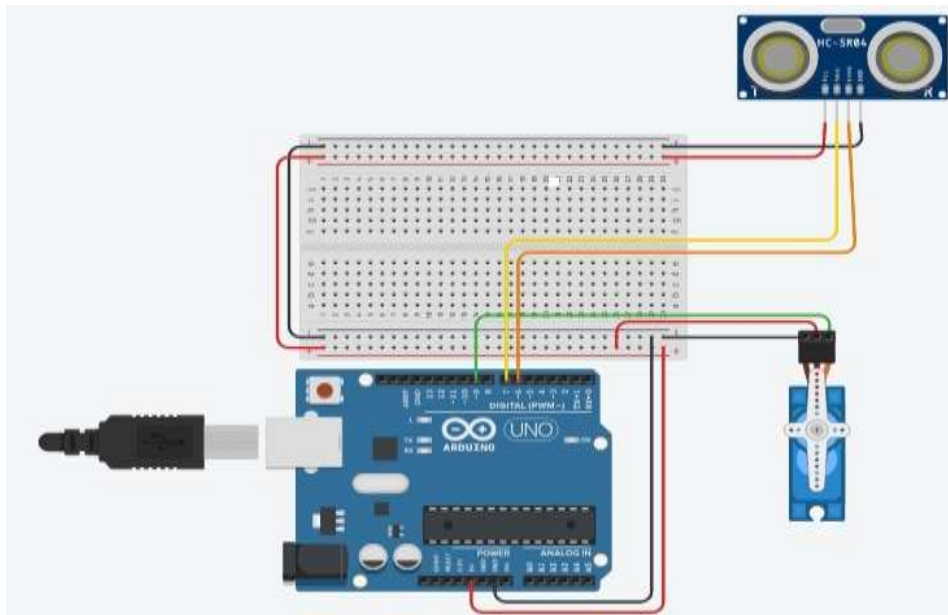
```
void loop()
{
  RGB_Color(170,0,255);
  delay(1000);
  RGB_Color(255,0,255);
  delay(1000);
  RGB_Color(0,0,255);
  delay(1000);
  RGB_Color(0,255,0);
  delay(1000);
  RGB_Color(255,255,0);
  delay(1000);
  RGB_Color(255,127,0);
  delay(1000);
  RGB_Color(255,0,0);
  delay(1000);
}
```

```
void RGB_Color(int red_value,int green_value,int blue_value)
{
    analogWrite(r,red_value);
    analogWrite(g,green_value);
    analogWrite(b,blue_value);
}
```

Conclusion:

After successful compilation of program,the LED color will change within 1 second depending on the RGB value written for a particular colour in the code.

Radar using HCS04 and servo motor



Components required:

- Arduino Uno
- 5v Power supply
- Wires

- USB cable
- HCS04 ultrasonic sensor
- Servo motor

Connection description:

The ground pin of HCS04 and servo motor is connected with GND pin of arduino, VCC pins of both sensors are connected to the 5v of arduino. The ECHO and TRIGGER pin of HCS04 is connected with digital pin no. 6 and 7 of arduino. The servo motor is attached with digital pin no. 9 of arduino.

Code:

```
#include<Servo.h>

Servo test;

int t=0,distance=0;

int trig=7;

int echo=6;

int i,j;

void setup()

{

    test.attach(9);

    pinMode(7, OUTPUT);

    pinMode(6,INPUT);

    test.write(0);

    Serial.begin(9600);

}
```

```
void loop()
{
for(i=0;i<180;i++)
{
    test.write(i);
    digitalWrite(7,LOW);
    delay(2);
    digitalWrite(7,HIGH);
    delay(10);
    digitalWrite(7,LOW);
    t=pulseIn(6,HIGH);
    distance=t*0.017;
    Serial.print(distance);
    Serial.println("cm");
}
```

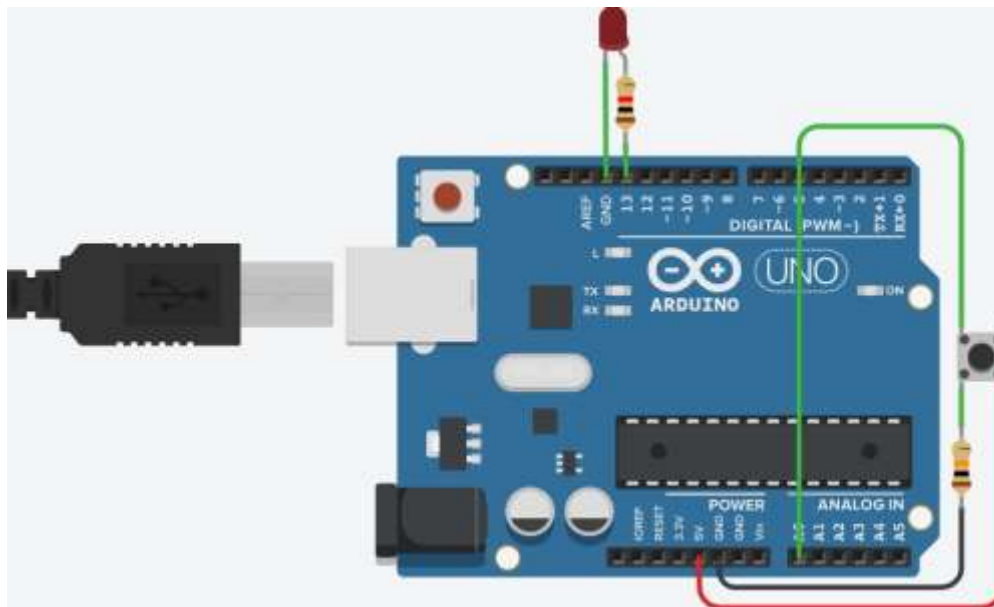
```
for(i=179;i>=0;i--)
{
    test.write(i);
    digitalWrite(7,LOW);
    delay(2);
    digitalWrite(7,HIGH);
    delay(10);
    digitalWrite(7,LOW);
```

```
t=pulseIn(6,HIGH);  
distance=t*0.017;  
Serial.print(distance);  
Serial.println("cm");  
}  
}
```

Conclusion:

The servo motor rotates for 180° and HCS04 ultrasonic sensor take the corresponding reading within that range, then the motor returns to its original position with the ultrasonic sensor taking full reading within the range. This process repeats again and again.

Glow LED on pressing pushbutton



Components required:

- Arduino Uno
- 5v Power supply
- Wires
- USB cable

- 2 resistors
- Red LED
- Pushbutton

Connection description:

The ground pin of pushbutton and LED is connected with GND pin of arduino, VCC pin of pushbutton is connected to the 5v of arduino. The LED is connected with digital pin no. 13 of arduino.

CODE:

```
int sw1=0;

int sw1_ls=0;

int i=0;

void setup()

{

  pinMode(A0,INPUT);

  pinMode(13, OUTPUT);

  Serial.begin(9600);

}

void loop()

{

  int a=analogRead(A0);

  Serial.println(a);

  if(a>500)

    sw1=0;

  else

    sw1=1;
```

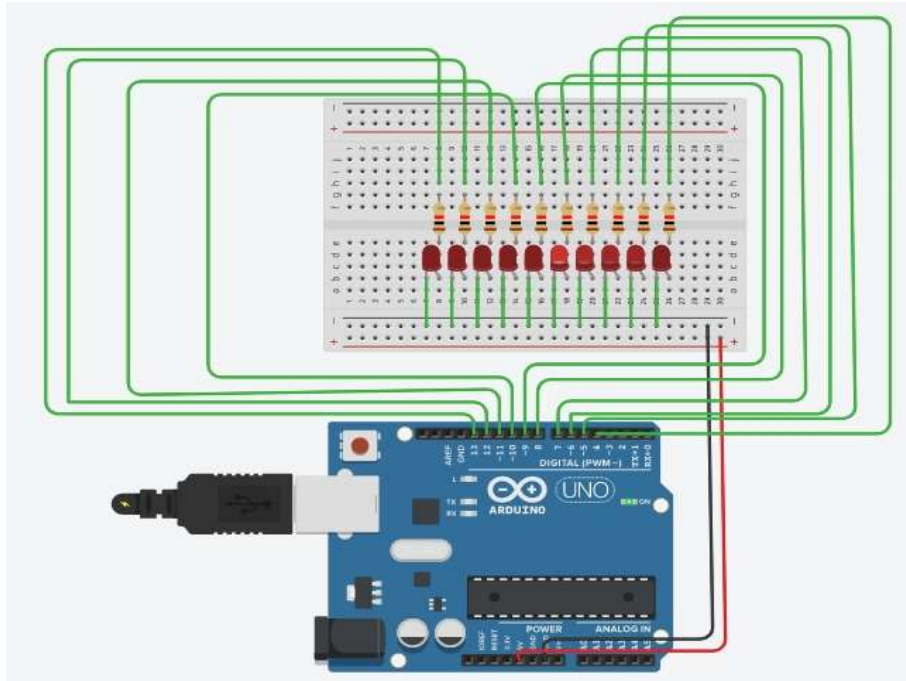


```
if(sw1!=sw1_ls)
{
    if(sw1==0)
    {
        delay(300);
        i++;
        if(i>2)
            i=1;
        if(i==1)
            digitalWrite(13,HIGH);
        else
            digitalWrite(13,LOW);
    }
}
sw1_ls=sw1;
}
```

Conclusion:

After successful compilation of program when the pushbutton is pressed two times within 500ms time gap between each press ,the LED will glow and it will turn off when it is pressed 1 time.

Knight rider LED circuit



Components required:

- Arduino Uno
- 5v Power supply
- Wires
- USB cable
- 10 resistors
- 10 Red LED

Connection description:

The ground pin of 10 LED are connected with GND pin of arduino, The LEDs are connected with digital pin no. 4,5,6,7,8,9,10,11,12,13 of arduino.

Code:

```
int arr[]={4,5,6,7,8,9,10,11,12,13};
```

```
int c=0;
```

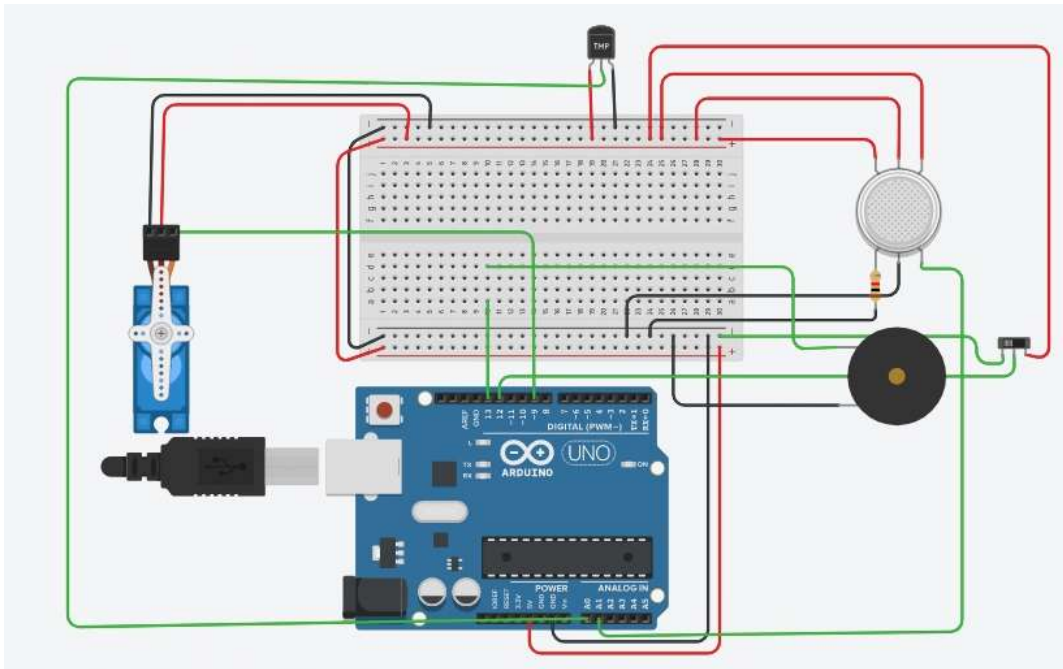
```
void setup()
{
  for(c=0;c<9;c++)
  {
    pinMode(arr[c], OUTPUT);
  }
}
```

```
void loop()
{
  for(c=0;c<10;c++)
  {
    digitalWrite(arr[c], HIGH);
    delay(50);
    digitalWrite(arr[c], LOW);
    delay(50);
  }
  for(c=9;c>=0;c--)
  {
    digitalWrite(arr[c], HIGH);
    delay(50);
    digitalWrite(arr[c],LOW);
    delay(50);} }
```

Conclusion:

After successful compilation of the code, the LEDs start glowing sequentially from pin no. 4 to 13 and vice versa.

Fire alarm



Components required:

- Arduino Uno
- 5v Power supply
- Wires
- USB cable
- Temperature sensor TMP36
- MQ2 Gas sensor
- Buzzer
- Resistor
- Servo motor
- Switch
- Breadboard

Connection description:

The ground pin of servo motor, buzzer, gas sensor, temperature sensor and switch is attached to the GND pin of arduino and their Vcc pin is attached to the 5v supply of arduino.

The input pin of temperature sensor is attached to the A0 pin of arduino and the input pin of gas sensor is attached to the A1 pin of arduino. The switch is attached to the digital pin no.13 of arduino and the buzzer is attached to the pin no.12 of arduino and the servo motor is attached to pin no.9.

Code:

```
#include<Servo.h>

int t1,s;

float temp,gas;

Servo test;

void setup()

{

  Serial.begin(9600);

  test.attach(9);

  pinMode(A0,INPUT);

  pinMode(A1,INPUT);

  pinMode(12,INPUT);

  pinMode(13, OUTPUT);

  test.write(0);

}
```

```
void loop()
{
  int switch1=digitalRead(12);
  gas=analogRead(A1);
  temp=analogRead(A0);
  float temperature=(temp*0.48828125)+(-50);
  if(temperature>60|| gas>200)
  {
    if(switch1!=LOW)
    {
      digitalWrite(13,HIGH);
      delay(500);
      digitalWrite(13,LOW);
      delay(500);
    }
    if(s>=t1)
    {
      s=s+1;
      Serial.println(s);
      delay(1000);
    }
    if(s>=10)
    test.write(180);
  }
}
```

```
else
{
digitalWrite(13,LOW);

test.write(0);

s=0;

t1=0;

}

}

else

{

digitalWrite(13,LOW);

test.write(0);

s=0;

t1=0;

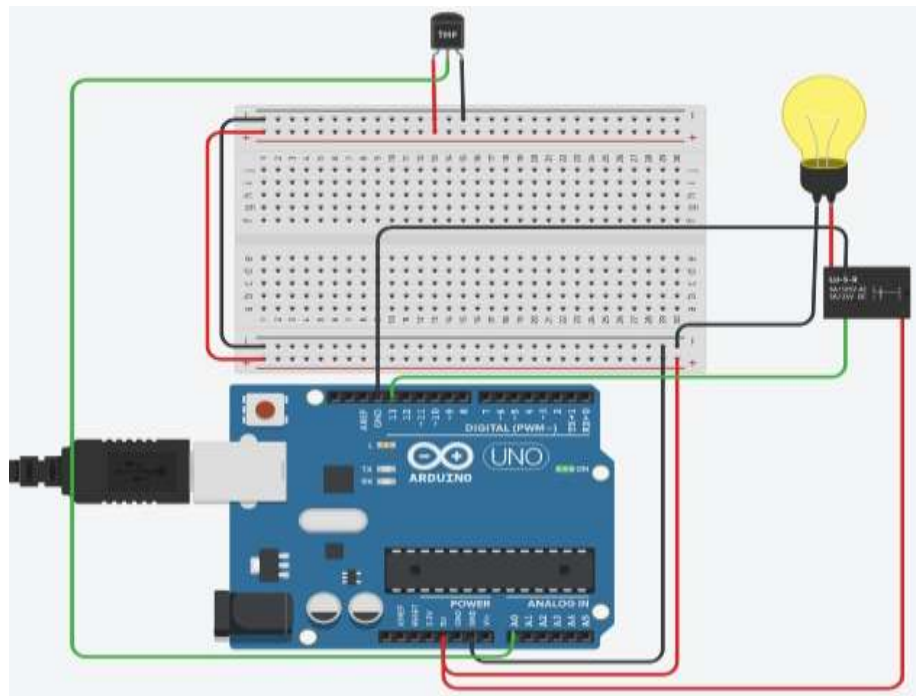
}

}
```

Conclusion:

After successfully compilation of the program and running the code,when the temperatue is above 60°C or the gas density is greater than 200 ppm and the switch is kept high,the buzzer will ring and after 10 second if the buzzer is not switched off then the servo motor will rotate 180°,turning on the water supply.

Automatic temperature control for chiller



Components required:

- Arduino Uno
- 5v Power supply
- Wires
- USB cable
- Temperature sensor TMP36
- Relay SPDT circuit
- Bulb
- Breadboard

Connection description:

The ground pin of temperature sensor ,bulb and relay circuit is attached to the GND pin of arduino.The Vcc pins of relay circuit and temperature sensor is attached to the 5v of arduino,the relay circuit is attached to pin no.13 of arduino and the bulb is attached to terminal 6 of relay circuit.

Code:

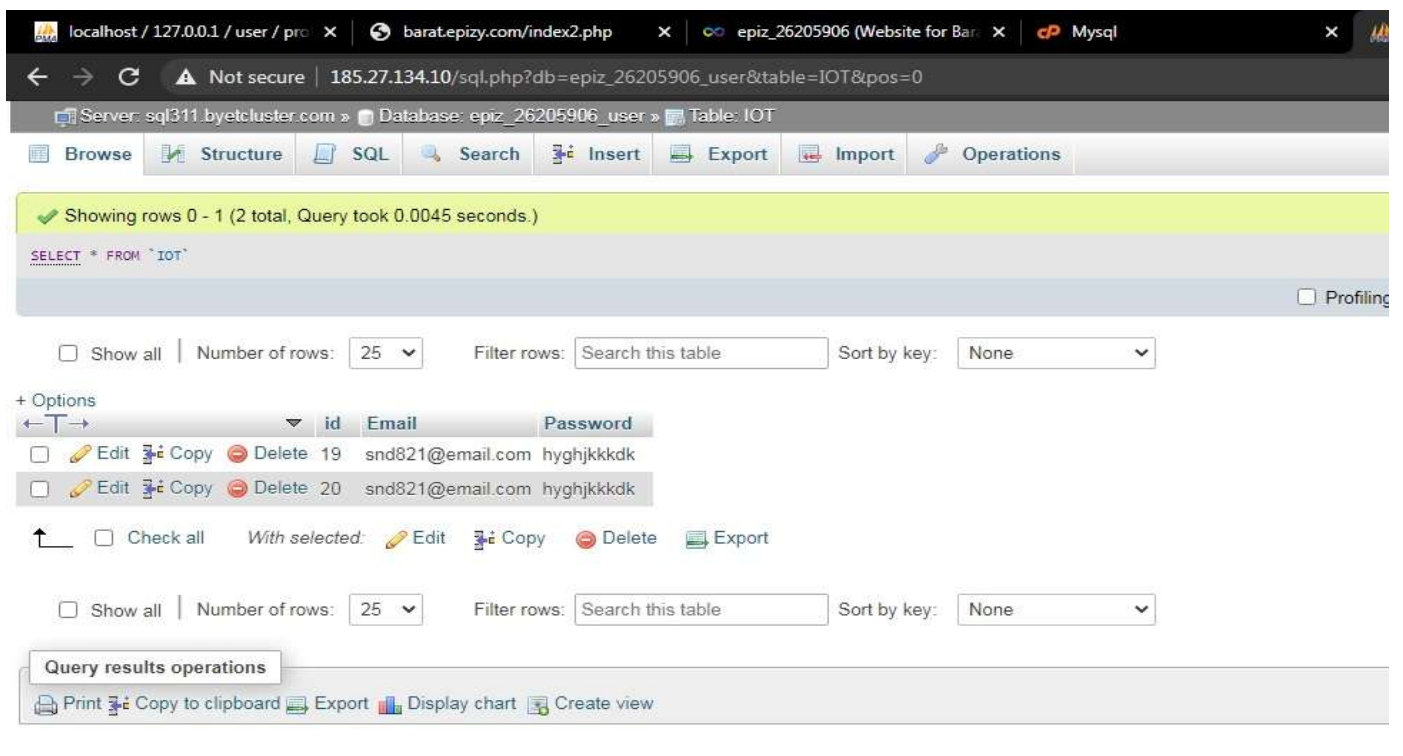
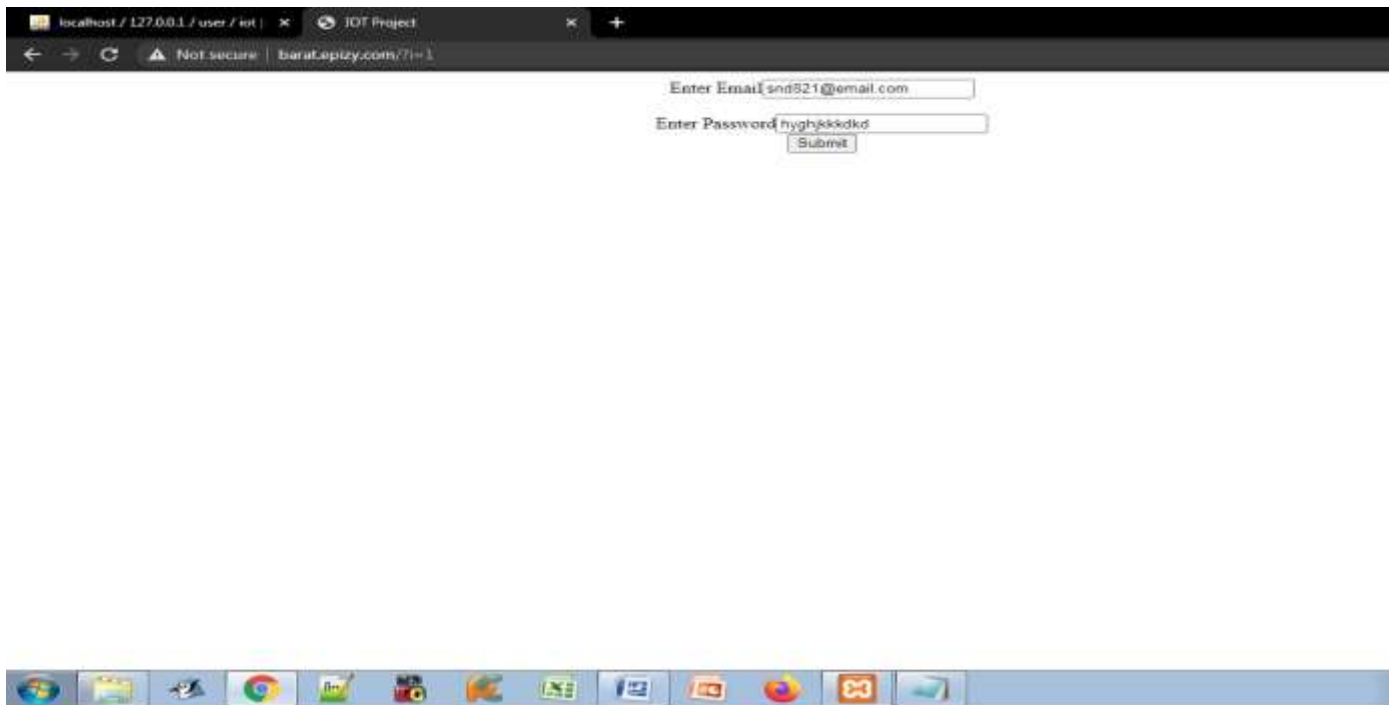
```
int temp;
int temperature;
void setup()
{
  pinMode(13,OUTPUT);
  pinMode(A0,INPUT);
  Serial.begin(9600);
}

void loop()
{
  temp=analogRead(A0);
  Serial.println(temp);
  if(temp>279){
    digitalWrite(13,HIGH);
  }
  else if if(temp<277){
    digitalWrite(13,LOW);
  }
}
```

Conclusion:

When the temperature is greater than 279K,input of relay circuit will go high and consequently the bulb will glow and if temperature is below 277K,bulb will turn off.

Storing data in server from HTML



Html code:

<html>

<head>

<title>

IOT Project

</title>

</head>

<body>

<center>

<div class="container">

<form action="index2.php" method="POST">

<div class="row-content">

<label>Enter Email</label><input type="text" name="Email"
placeholder="Email">

</div>

<div class="row-content">

<label>Enter Password</label><input type="text"
name="Password" placeholder="Password">

</div>

<input type="submit

</form>

</div>

</body>

</html>

PHP code:

<?php

\$Email=\$_POST["Email"];

\$Password=\$_POST["Password"];

mysqli_connect("sql311.epizy.com","epiz_26205906","xiCkpwJewKLL
1V2","epiz_26205906_user")->query("INSERT INTO IOT SET
Email='\$Email',Password='\$Password');");

echo(" The email is ".\$Email."password is ".\$Password);

?>