

# [ INTERNET OF THINGS ]

## Practical-5

**-:AIM:-**

**Arduino programming with IR and Ultrasonic Sensor**

Submitted By: Dharmay Sureja

Enrollment No:17012011056

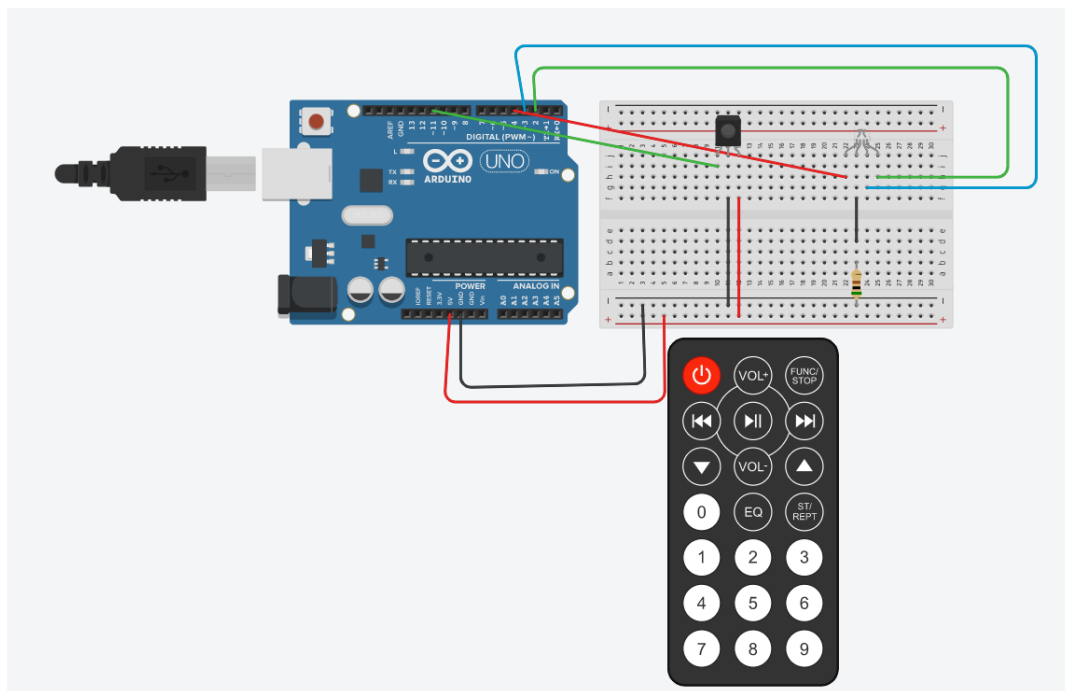
## AIM:- Arduino programming with IR and Ultrasonic Sensor.

### Experiment

#### 1. Control the RGB LED using IR Sensor and IR Remote Control.

Components used : Arduino Uno R3, RGB LED, IR Sensor, IR Remote

Circuit:



Code:

```
#include <IRremote.h>
int RECV_PIN=11;
int red = 4;
int green = 2;
int blue = 3;
IRrecv irrecv(RECV_PIN);
decode_results results;
void setup()
```

```
{

  Serial.begin(9600);
  irrecv.enableIRIn();
  pinMode(red,OUTPUT);
  pinMode(green,OUTPUT);
  pinMode(blue,OUTPUT);

}

void loop()
{

  if (irrecv.decode(&results))
  {
    Serial.println(results.value, HEX);
    irrecv.resume();

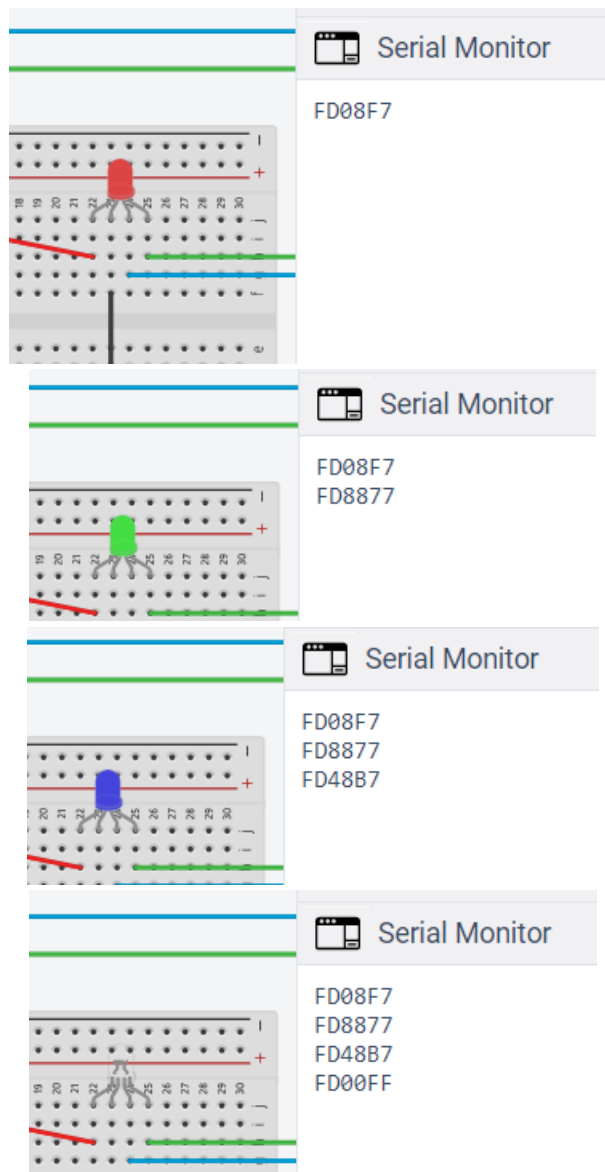
    if(results.value==0xFD08F7)
    {
      digitalWrite(red,HIGH);
      digitalWrite(green,LOW);
      digitalWrite(blue,LOW);
    }

    if(results.value==0xFD48B7)
    {
      digitalWrite(red,LOW);
      digitalWrite(green,LOW);
      digitalWrite(blue,HIGH);
    }
    if(results.value==0xFD8877)
    {
      digitalWrite(red,LOW);
      digitalWrite(green,HIGH);
      digitalWrite(blue,LOW);
    }
    if(results.value==0xFD00FF)
    {
      digitalWrite(red,LOW);
```

## Practical-5

```
digitalWrite(green,LOW);  
digitalWrite(blue,LOW);  
}  
}  
delay(100);  
}
```

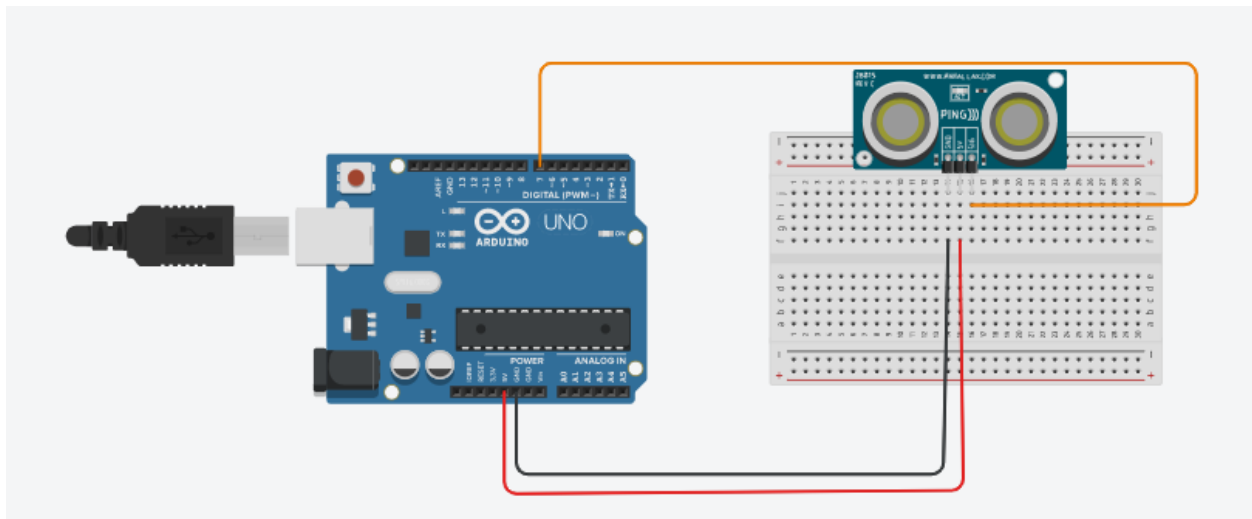
Output :



### 2. Measure the distance of obstacle using ultrasonic sensor and display it on serial monitor.

Components used : Arduino Uno R3, Ultrasonic Distance Sensor

Circuit:



Code:

```
int cm = 0;

long readUltrasonicDistance(int triggerPin, int echoPin)
{
    pinMode(triggerPin, OUTPUT);
    digitalWrite(triggerPin, LOW);
    delayMicroseconds(2);

    digitalWrite(triggerPin, HIGH);
    delayMicroseconds(10);
    digitalWrite(triggerPin, LOW);
    pinMode(echoPin, INPUT);

    return pulseIn(echoPin, HIGH);
}

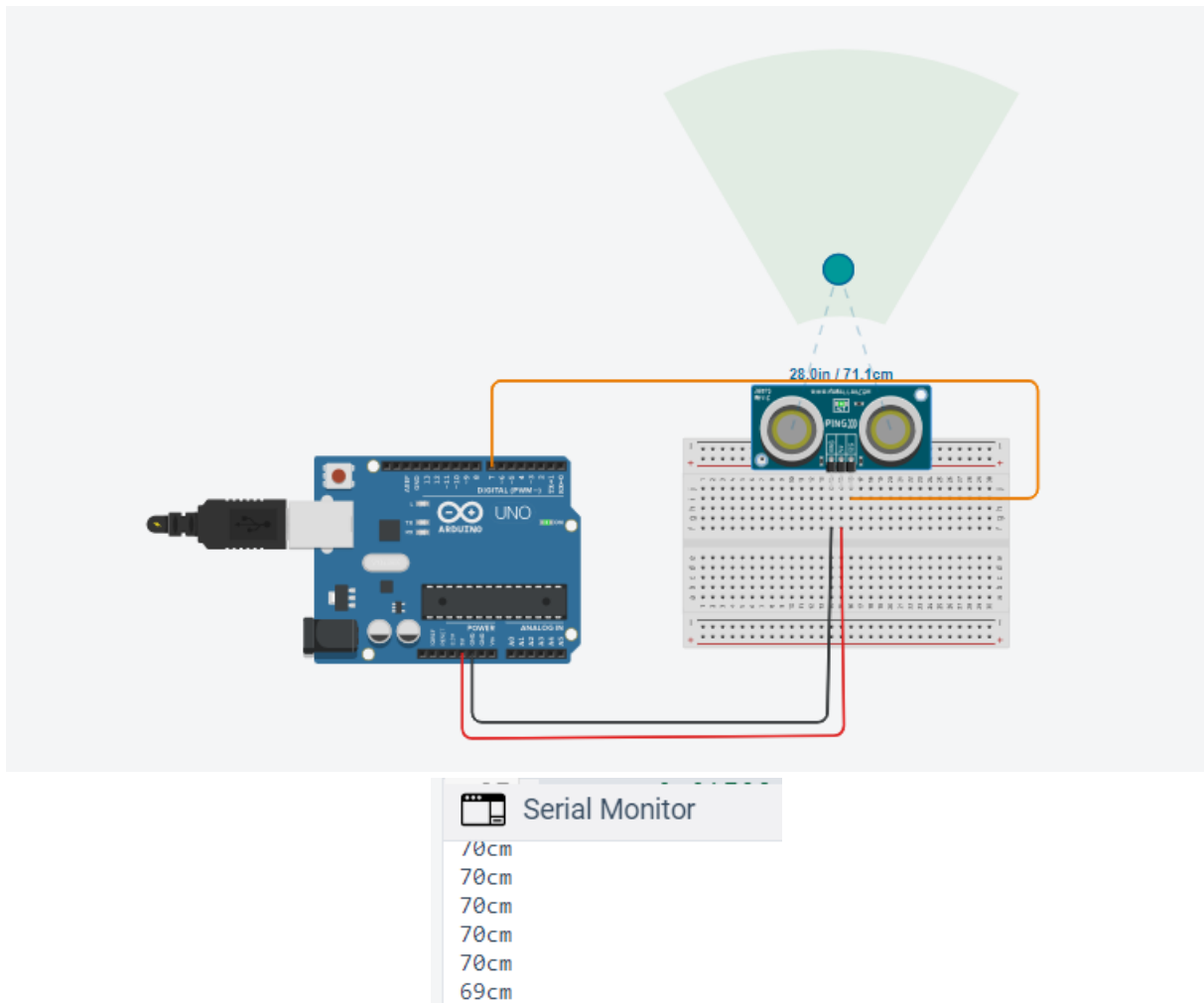
void setup()
{

```

## Practical-5

```
Serial.begin(9600);  
  
}  
  
void loop()  
{  
  
    cm = 0.01723 * readUltrasonicDistance(7, 7);  
    Serial.print(cm);  
    Serial.println("cm");  
  
}
```

Output :

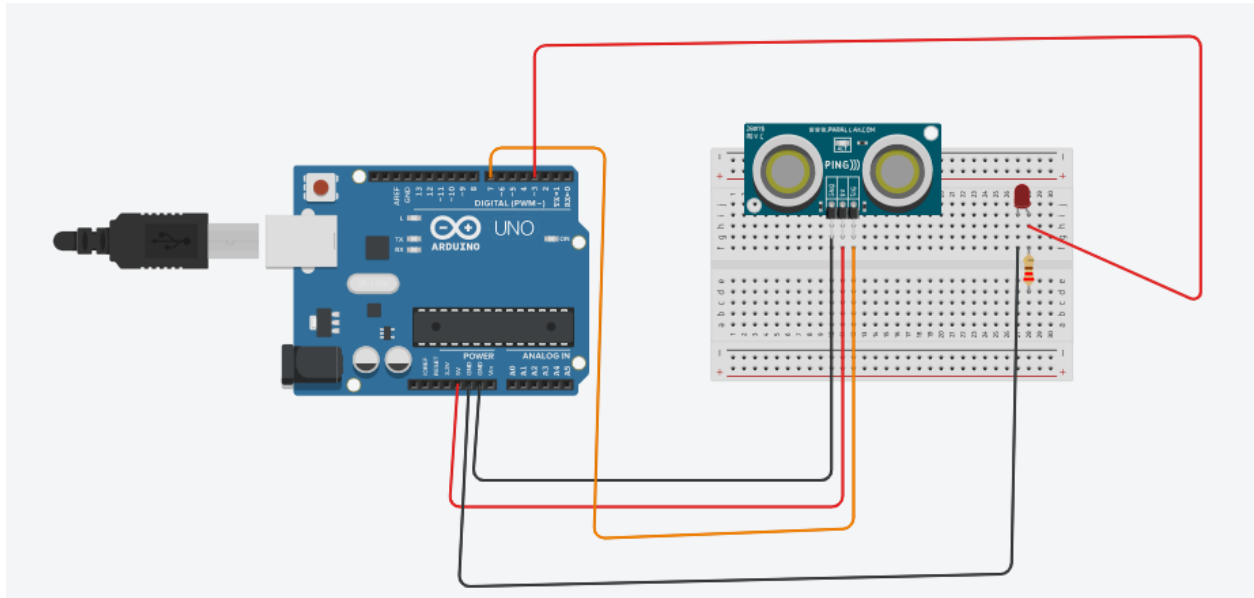


## Practical-5

### 3. Measure the distance of obstacle using ultrasonic sensor and if distance is less than 100 cm then on the LED.

Components used : Arduino Uno R3, LED, Ultrasonic Distance Sensor, Resistor

Circuit:



Code:

```
int cm = 0;

long readUltrasonicDistance(int triggerPin, int echoPin)
{
  pinMode(triggerPin, OUTPUT);
  digitalWrite(triggerPin, LOW);
  delayMicroseconds(2);

  digitalWrite(triggerPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(triggerPin, LOW);
  pinMode(echoPin, INPUT);

  return pulseIn(echoPin, HIGH);
}
```

## Practical-5

---

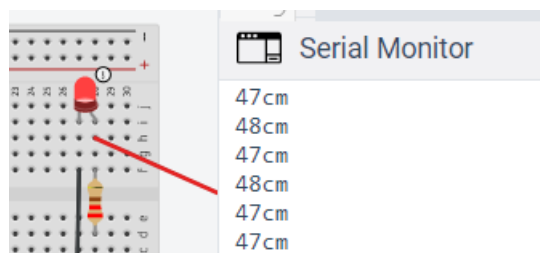
```
}

void setup()
{
  Serial.begin(9600);
  pinMode(3, OUTPUT);
}

void loop()
{
  cm = 0.01723 * readUltrasonicDistance(7, 7);

  Serial.print(cm);
  Serial.println("cm");
  delay(100);
  if (cm<100)
  {
    analogWrite(3 , 255);
  }
  else
  {
    analogWrite(3 , 0);
  }
}
```

Output :





## Practical-5

---

