

**Name – Shreya Laddha**

Program No. – 01

Program Title – LED Blinking

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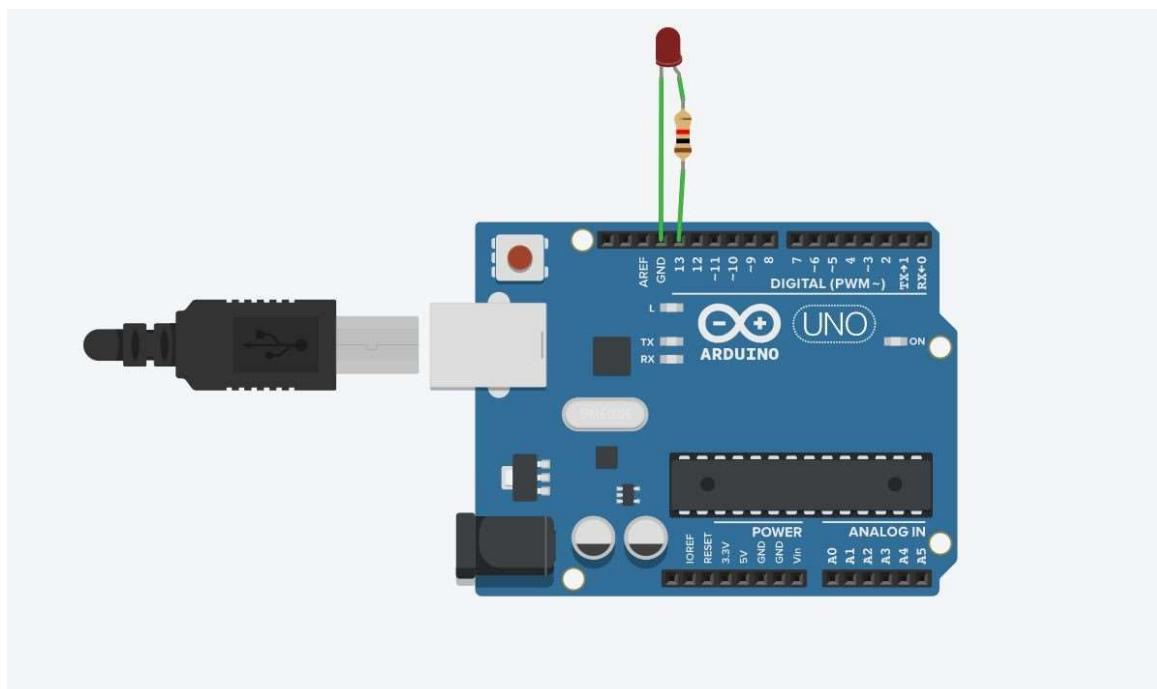
## **AIM**

Turn the LED on for a second, then off for a second, repeatedly.

## **HARDWARES REQUIRED**

- Arduino Board
- LEDs

## **CIRCUIT DIAGRAM**



## WRITE-UP

Name: Shreya Ladha  
USN: IBM18CS103  
Page No.: \_\_\_\_\_

Expt. No. \_\_\_\_\_

LAB - 1.

Program: 1      BLINKING LED

Items required : Arduino Board, Bread Board, LED, resistors.

Aim: Turns on an LED on for one second, then turns off for one seconds, repeatedly.

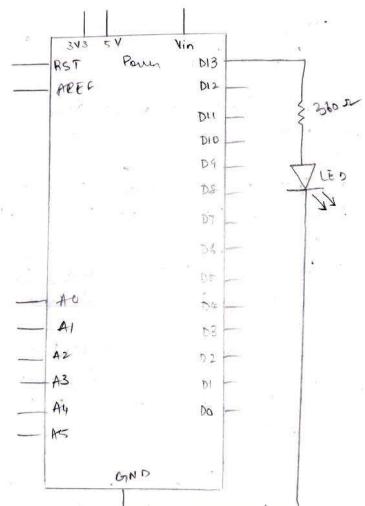
Code:

```
int led = 13;  
void setup()  
{  
    pinMode(led, OUTPUT);  
}  
void loop()  
{  
    digitalWrite(led, HIGH);  
    delay(1000);  
    digitalWrite(led, LOW);  
    delay(1000);  
}
```

① Teacher's Signature : \_\_\_\_\_

Name: Shreya Ladha  
USN: IBM18CS103

### CIRCUIT DIAGRAM



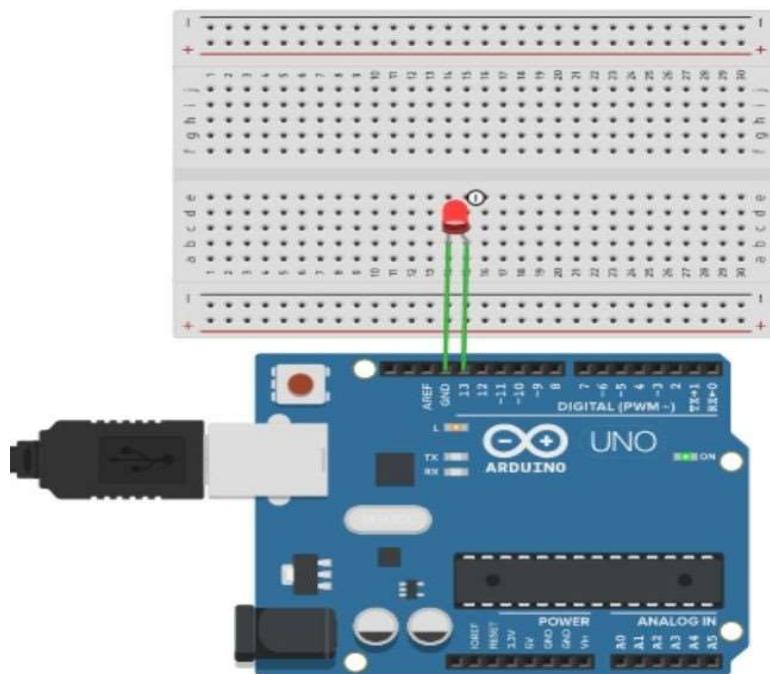
## CODE

```
void setup()
{
    pinMode(13, OUTPUT);
}

void loop()
{
    digitalWrite(13, HIGH);
    delay(1000); // Wait for 1000 millisecond(s)
    digitalWrite(13, LOW);
    delay(1000); // Wait for 1000 millisecond(s)
}
```

## OUTPUT

The LED was found to be blinking at an interval of 1000 ms.



**Name – Shreya Laddha**

Program No. – 02

Program Title – Traffic Controller

---

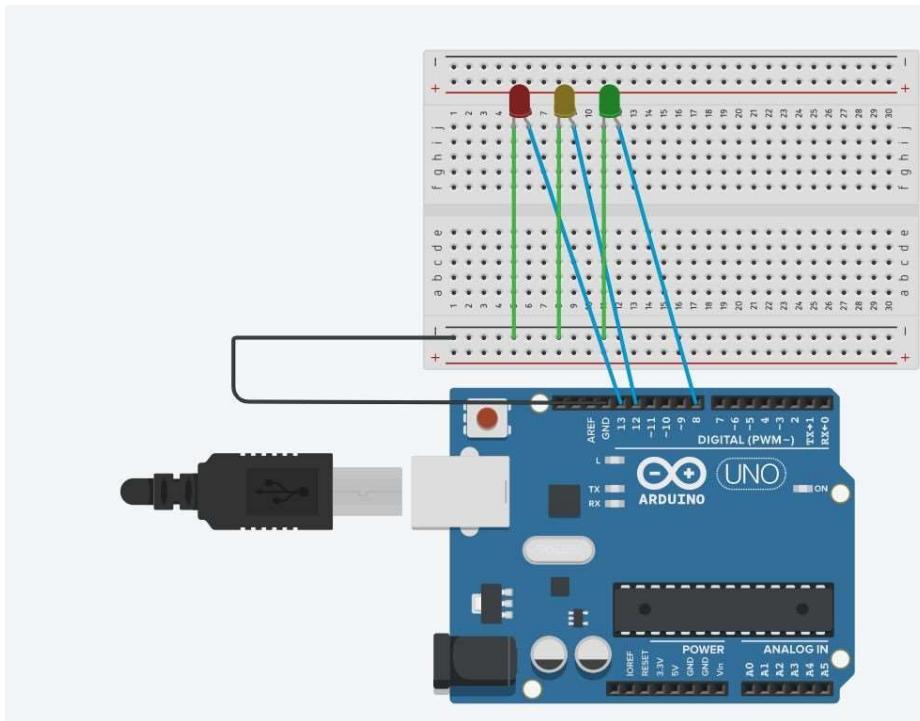
## **AIM**

Traffic Signal Simulator.

## **HARDWARES REQUIRED**

- Arduino Board
- LEDs
- Breadboard

## **CIRCUIT DIAGRAM**



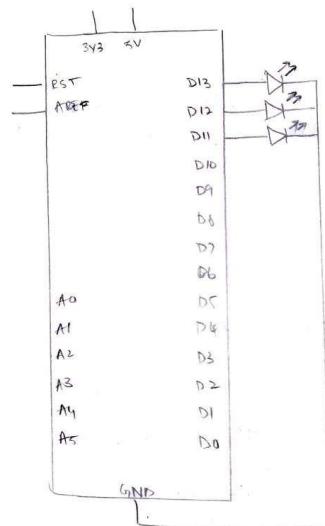
## WRITE-UP

Expt. No. ....	Date .....
Page No. ....	Name: Shreya Ladakhe USN: 1BMEFCS103
Program : 2 TRAFFIC CONTROLLER	
Aim: Traffic Signal Simulation	
<u>Hardware requirements :</u>	
<ul style="list-style-type: none"> <li>• Arduino Board</li> <li>• LED's</li> <li>• Resistors</li> <li>• BreadBoard.</li> </ul>	
Code :	
<pre>void setup() {     pinMode(13, OUTPUT);     pinMode(12, OUTPUT);     pinMode(11, OUTPUT); }  void red() {     digitalWrite(13, HIGH);     digitalWrite(12, LOW);     digitalWrite(11, LOW); }  void yellow() {     digitalWrite(13, LOW); }</pre>	
Teacher's Signature : 	

Expt. No. ....	Page No. ....
	Name: Shreya Ladakhe USN: 1BMEFCS103
<pre>digitalWrite(12, HIGH); digitalWrite(11, LOW);  void green() {     digitalWrite(13, LOW);     digitalWrite(12, LOW);     digitalWrite(11, HIGH); }  void loop() {     red();     delay(3000);     yellow();     delay(3000);     green();     delay(3000); }</pre>	
Teacher's Signature : 	

Name: Shweta Ladly  
USN: 1BM18CS103

CIRCUIT DIAGRAM



(2)

**CODE**

```
void setup()
{
    pinMode(13, OUTPUT);
    pinMode(12,OUTPUT);
    pinMode(8,OUTPUT);
}
```

```
void red()
{
    digitalWrite(13, HIGH);
    digitalWrite(12,LOW);
```

```
    digitalWrite(8,LOW);  
}  
  
void yellow()
```

```
{  
    digitalWrite(13, LOW);  
    digitalWrite(12,HIGH);  
    digitalWrite(8,LOW);  
}
```

```
void green()  
{  
    digitalWrite(13, LOW);  
    digitalWrite(12,LOW);  
    digitalWrite(8,HIGH);  
}
```

```
void loop()  
{  
    red();  
    delay(3000);  
    yellow();  
    delay(1500);  
    green();  
    delay(3000);
```

```
yellow();  
delay(1500);  
}
```

## OUTPUT

All the three LEDs blink one after the other at an interval of 1000ms.

**Name – Shreya Laddha**

Program No. – 03

Program Title – LED fading without potentiometer

---

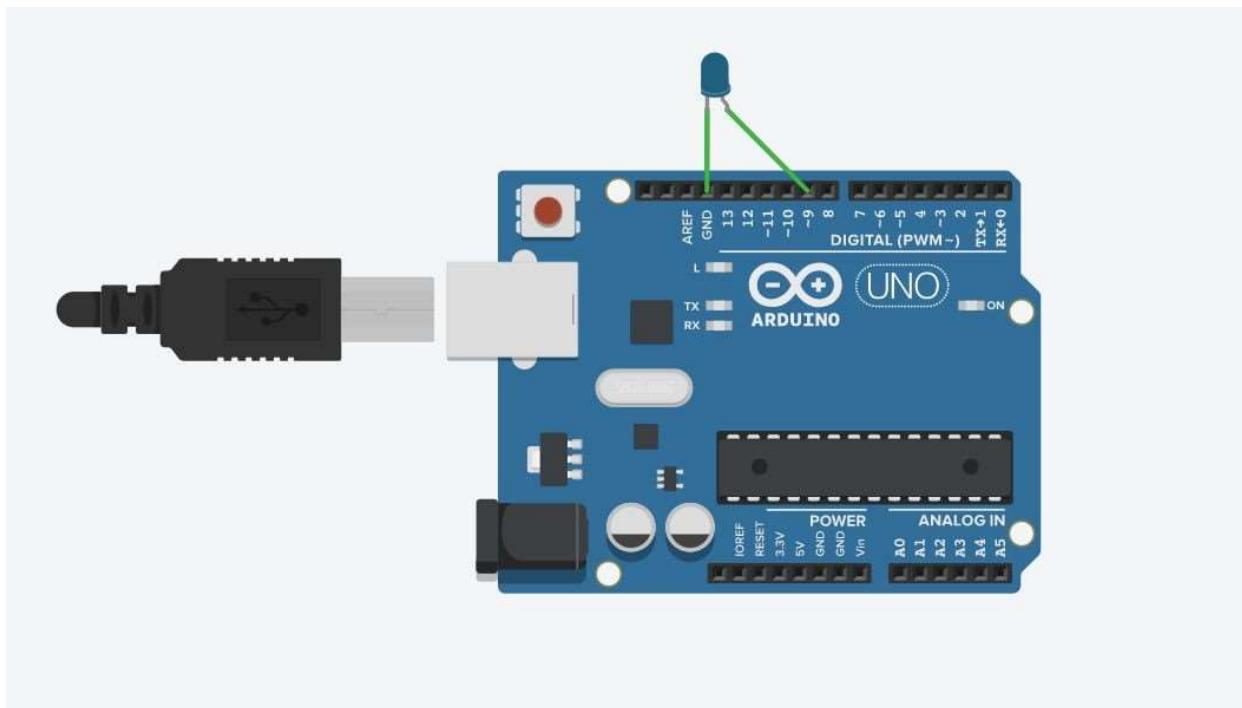
## **AIM**

Demonstrate to show LED fading.

## **HARDWARES REQUIRED**

- Arduino Board
- LED bulb

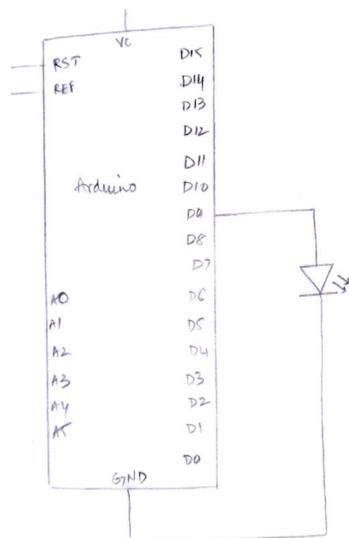
## **CIRCUIT DIAGRAM**



# WRITE-UP

Expt. No. ....	Date .....
Page No. ....	Name: Shreya Laddha USN: 18M18CS103
PROGRAM NO : 4	
PROGRAM TITLE : LED FADING	
Aim: Demonstrate to show LED fading	
Hardware Required:	
• Arduino Board	
• LED	
Code:	
<pre> void setup() {   // initialize the LED pin as an output:   pinMode (2, OUTPUT); }  void loop() {   for (int fade = 0 ; fade &lt;= 255 ; fade += 5)   {     analogWrite (9, fade);     delay (30);   }    for (int fade = 255 ; fade &gt;= 0 ; fade -= 5)   {     analogWrite (9, fade);     delay (30);   } } </pre>	
① Teacher's Signature: _____	

Name: Shreya Laddha  
USN: 18M18CS103



②

Shreya

## CODE

```
void setup()
{
    pinMode(2, OUTPUT);
}

void loop()
{
    for(int fade =0;fade <=255; fade+=5)
    {
        analogWrite(9,fade);
        delay(30);
    }
    for(int fade = 255; fade>=0;fade-=5)
    {
        analogWrite(9, fade);
        delay(30);
    }
}
```

}

## **OUTPUT**

Fading of LED.

**Name – Shreya Laddha**

Program No. – 04

Program Title – LED fading with potentiometer

---

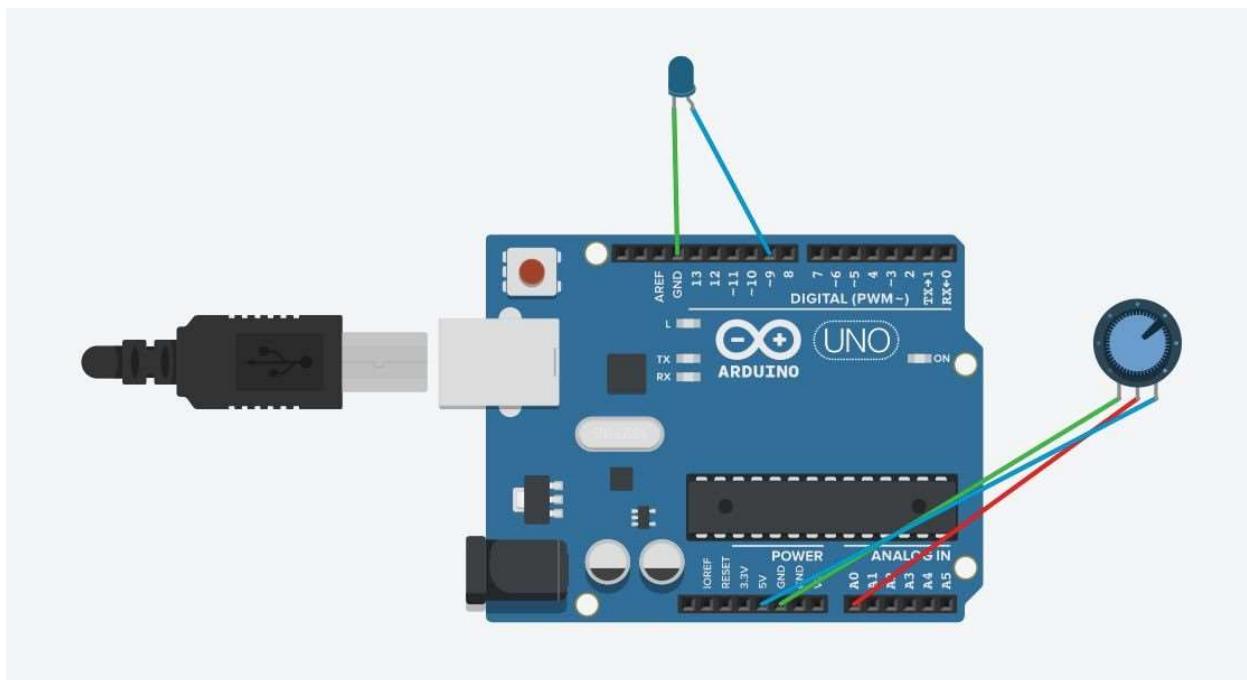
## **AIM**

Demonstrate to show LED fading(analog output).

## **HARDWARES REQUIRED**

- Arduino Board
- LED bulb
- Potentiometer

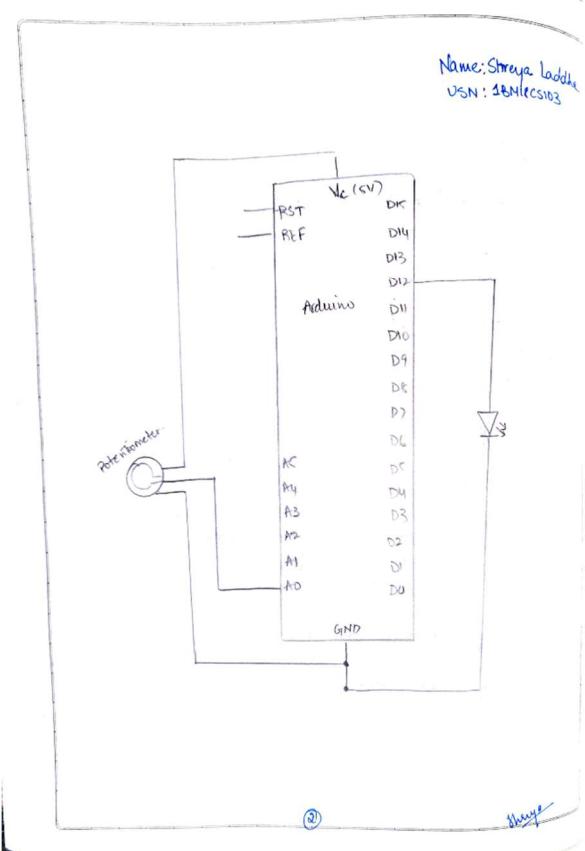
## **CIRCUIT DIAGRAM**



## WRITE-UP

Expt. No. ....	Date .....
Page No. ....	Name: Shreya Ladde USN: 18M1ECS103
PROGRAM NO.: 5	
PROGRAM TITLE: LED FADING WITH POTENTIOMETER	
Aim: Demonstrate to show LED fading (Analog Output)	
Hardware Required:	
<ul style="list-style-type: none"> <li>• Arduino Board</li> <li>• Potentiometer</li> <li>• LED</li> </ul>	
Code:	
<pre> int ledPin = 9; void setup() {     Serial.begin(9600);     pinMode(ledPin, OUTPUT); }  void loop() {     int analogValue = analogRead(A0);     int brightness = map(analogValue, 0, 1023, 0, 255);     analogWrite(ledPin, brightness);     Serial.print("Analog: ");     Serial.print(analogValue);     Serial.print(",");     Serial.print(" Brightness: ");     Serial.println(brightness);     delay(100); } </pre>	

① Teacher's Signature: *Shreya*



## CODE

```
int LED_PIN = 9;

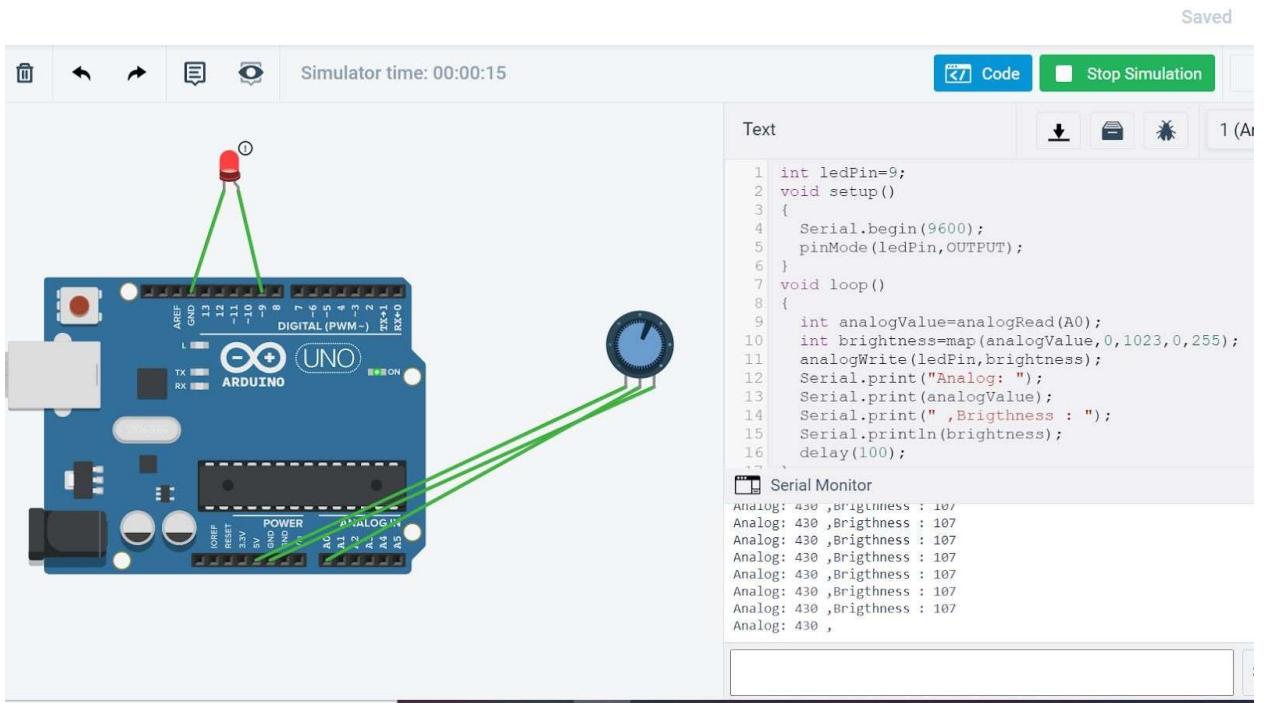
void setup()
{
    Serial.begin(9600);
    pinMode(LED_PIN, OUTPUT);
}

void loop()
{
    int analogValue = analogRead(A0);
    int brightness = map(analogValue, 0, 1023, 0, 255);
    analogWrite(LED_PIN, brightness);
    Serial.print("Analog: ");
    Serial.print(analogValue);
    Serial.print(", Brightness : ");
    Serial.println(brightness);
```

```
delay(100);  
}  
  
}
```

## OUTPUT

Fading of LED with potentiometer.



**Name – Shreya Laddha**

Program No. – 05

Program Title – ON/OFF LED using Push Button

---

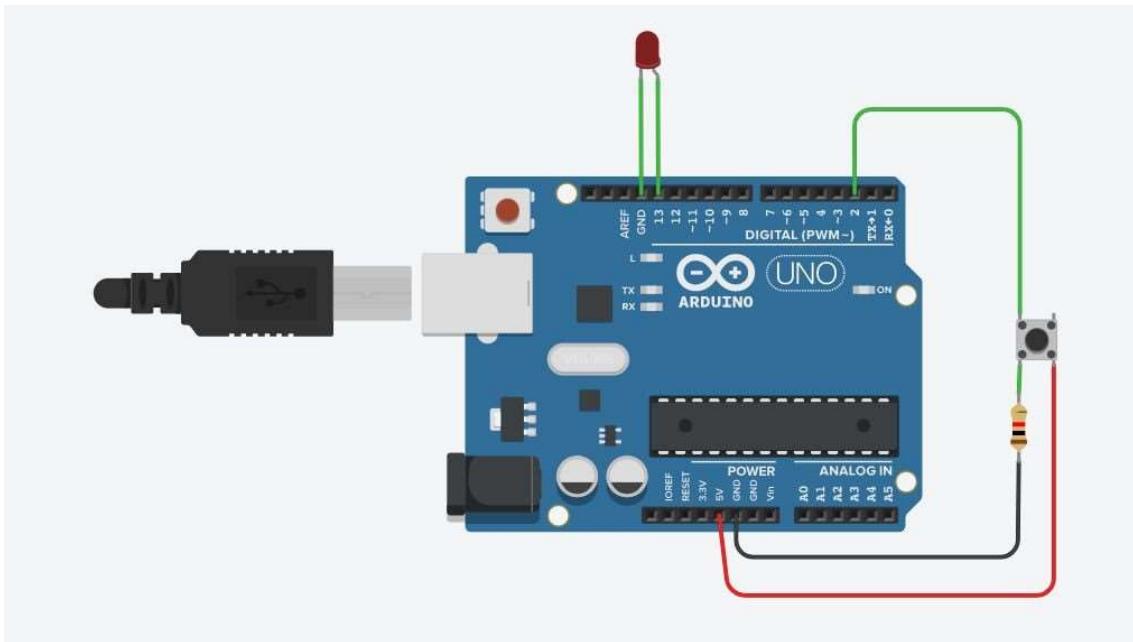
## **AIM**

Demonstrate to show ON/OFF of a LED using push button(Digital Output).

## **HARDWARES REQUIRED**

- Arduino Board
- LED bulb
- Push Button
- Resistor

## **CIRCUIT DIAGRAM**



# WRITE-UP

Expt. No. ....

Page No. ....

Name: Shreya Ladha  
VSN: IITMIECS103

PROGRAM No : 3

PROGRAM TITLE: LED using Pushbutton

Aim: Demonstrate to show on/off of a LED using push button(Digital output)

Hardware requirement :

- Arduino Board
- LED
- Push button
- Resistor

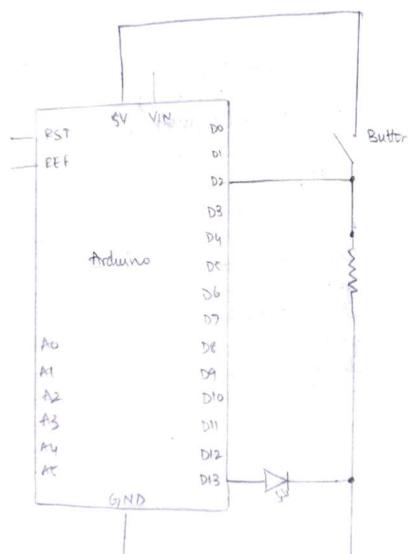
Code/Fcircuit Diagram/Code :

```
int buttonState = 0;  
const int buttonPin = 2;  
const int ledPin = 13;  
void setup()  
{  
    pinMode(13, OUTPUT);  
    pinMode(2, INPUT);  
}  
void loop()  
{  
    buttonState = digitalRead(buttonPin);  
    if (buttonState == HIGH)  
    {  
        digitalWrite(ledPin, HIGH);  
    }  
}
```

Teacher's Signature :

①

Name: Shreya Ladha  
VSN: IITMIECS103



②

Shreya

## **CODE**

```
int buttonstate=0;  
  
void setup()  
{  
    pinMode(13, OUTPUT);  
    pinMode(2, OUTPUT);  
  
}  
  
void loop()  
{  
    buttonstate=digitalRead(2);  
    if(buttonstate == HIGH)  
    {digitalWrite(13,HIGH);}  
    else  
    {digitalWrite(13,LOW);}  
}
```

## **OUTPUT**

ON/OFF of a LED using push button(Digital Output).

**Name –Shreya Laddha**

Program No. – 06

Program Title – LDR

---

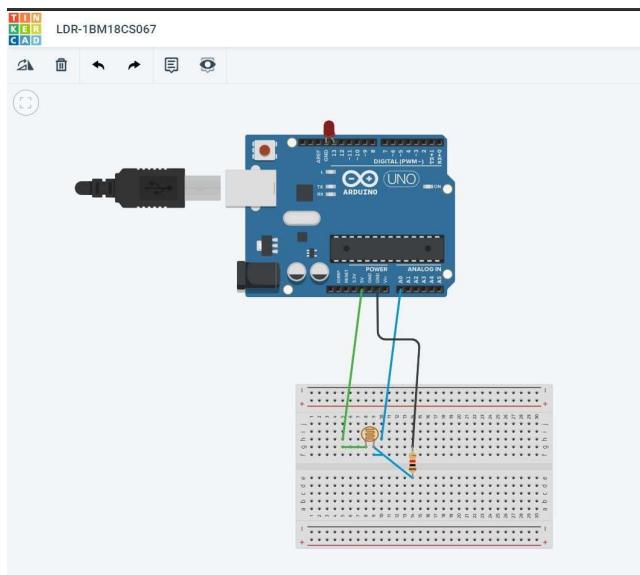
## **AIM**

Demonstrate to show on/off of a LED using LDR night light simulation.

## **HARDWARES REQUIRED**

- Arduino Board
- PhotoResistor
- Resistor
- LED
- Breadboard Small

## **CIRCUIT DIAGRAM**



## WRITE-UP

Expt. No. ....	Date .....
Page No. ....	Name: Shreya Ladha USN: 1BN18CS03
PROGRAM: 6	
PROGRAM TITLE: Night - light simulation.	
Aim: Demonstrate to show ON/OFF of a LED using LDR - Night light simulation.	
Hardware Required :	
* Arduino Board	
* Photodiode Photo Resistor	
* LED	
Code:	
<pre>const int ledPin = 13; const int ldrPin = A0; void setup() {     Serial.begin(9600);     pinMode(ledPin, OUTPUT);     pinMode(ldrPin, INPUT); } void loop() {     int ldrStatus = analogRead(ldrPin);     Serial.println(ldrStatus);     if (ldrStatus &lt;= 10)     {         digitalWrite(ledPin, HIGH);     } }</pre>	
Teacher's Signature : _____	

Expt. No. ....	Date .....
Page No. ....	Name: Shreya Ladha USN: 1BN18CS03
<pre>} Serial.println("LDR is Dark , LED is ON "); else {     digitalWrite(ledPin, LOW);     Serial.println ("LDR is BRIGHT , LED is OFF ");     Serial.println ("-----"); }</pre>	
Teacher's Signature : _____	

## CODE

```
const int ledPin = 13;

const int ldrPin = A0;

void setup()
{
    Serial.begin(9600);
    pinMode(ledPin, OUTPUT);
    pinMode(ldrPin, INPUT);
}

void loop()
{
    int ldrStatus = analogRead(ldrPin);
    Serial.println(ldrStatus);
    if(ldrStatus <=10)
    {
```

```

digitalWrite(ledPin, HIGH);

Serial.println("LDR is DARK, LED is ON");

}

else

{

    digitalWrite(ledPin, LOW);

    Serial.println(" -----");

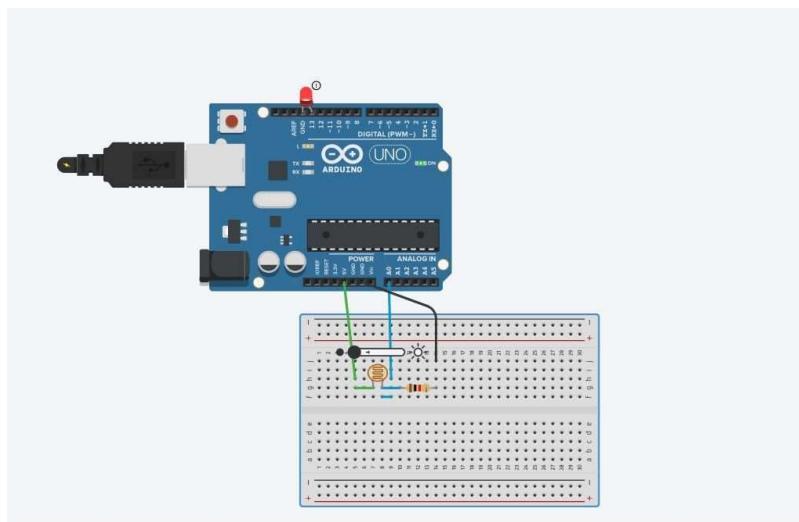
}

}

```

## OUTPUT

Design a system to show on/off of a LED using LDR night light simulation.



**Name – Shreya Laddha**

Program No. – 07

Program Title – PIR

---

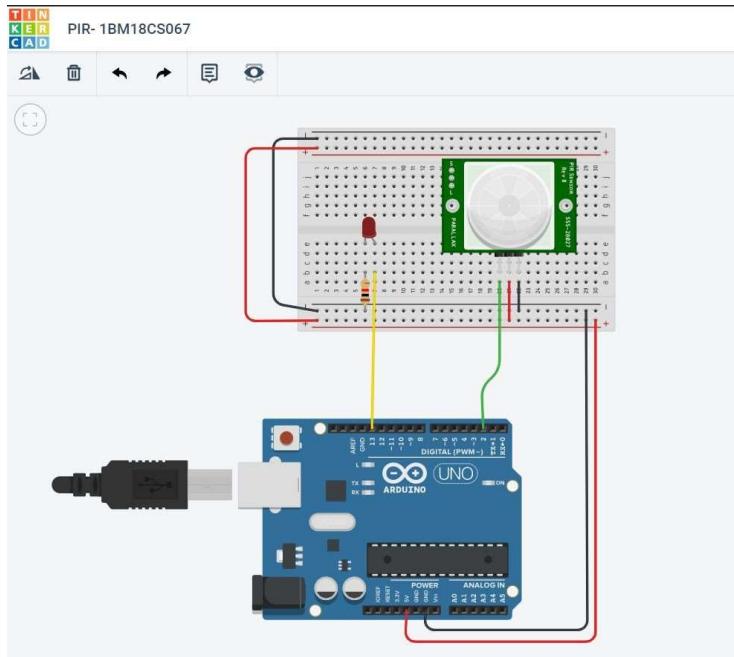
## **AIM**

Demonstrate to show working of PIR sensor.

## **HARDWARES REQUIRED**

- Arduino Board
- PIR sensor
- Resistor
- LED pin
- Breadboard Small

## **CIRCUIT DIAGRAM**



## WRITE-UP

Expt. No. ....	Date .....
Page No. ....	Name: Shreya Ladha USN: 2BM18CS103
PROGRAM : ] <u>PROGRAM TITLE:</u> Night - light - Human Detection.	
<u>AIM:</u> Demonstrate to show the working of PIR sensor	
<u>Hardware Required:</u> * Arduino * PIR Sensor * LED	
<u>Code:</u> int ledPin = 13; int inputPin = 2; int PIRstate = LOW; int val = 0; void setup() { pinMode(ledPin, OUTPUT); pinMode(inputPin, INPUT); Serial.begin(9600); } void loop() { val = digitalRead(inputPin); if (Val == HIGH) digitalWrite(ledPin, HIGH); if (PIRstate == LOW) }	
Teacher's Signature: _____	

Expt. No. ....	Date .....
Page No. ....	Name: Shreya Ladha USN: 2BM18CS103
dr Serial.println ("Sensor Activated"); PIRstate = HIGH; } } else { digitalWrite (ledPin, LOW); if (PIRstate == HIGH) } Serial.println ("Motion ended!"); PIRstate = LOW; } }	
Teacher's Signature: _____	

## CODE

```
int sensorState = 0;

void setup()

{

    pinMode(2, INPUT);

    pinMode(13, OUTPUT);

    Serial.begin(9600);

}

void loop()

{

    sensorState = digitalRead(2);

    if (sensorState == HIGH) {

        digitalWrite(13, HIGH);

        Serial.println("Sensor activated!");

    } else {

        digitalWrite(13, LOW);

        Serial.println("Sensor deactivated!");

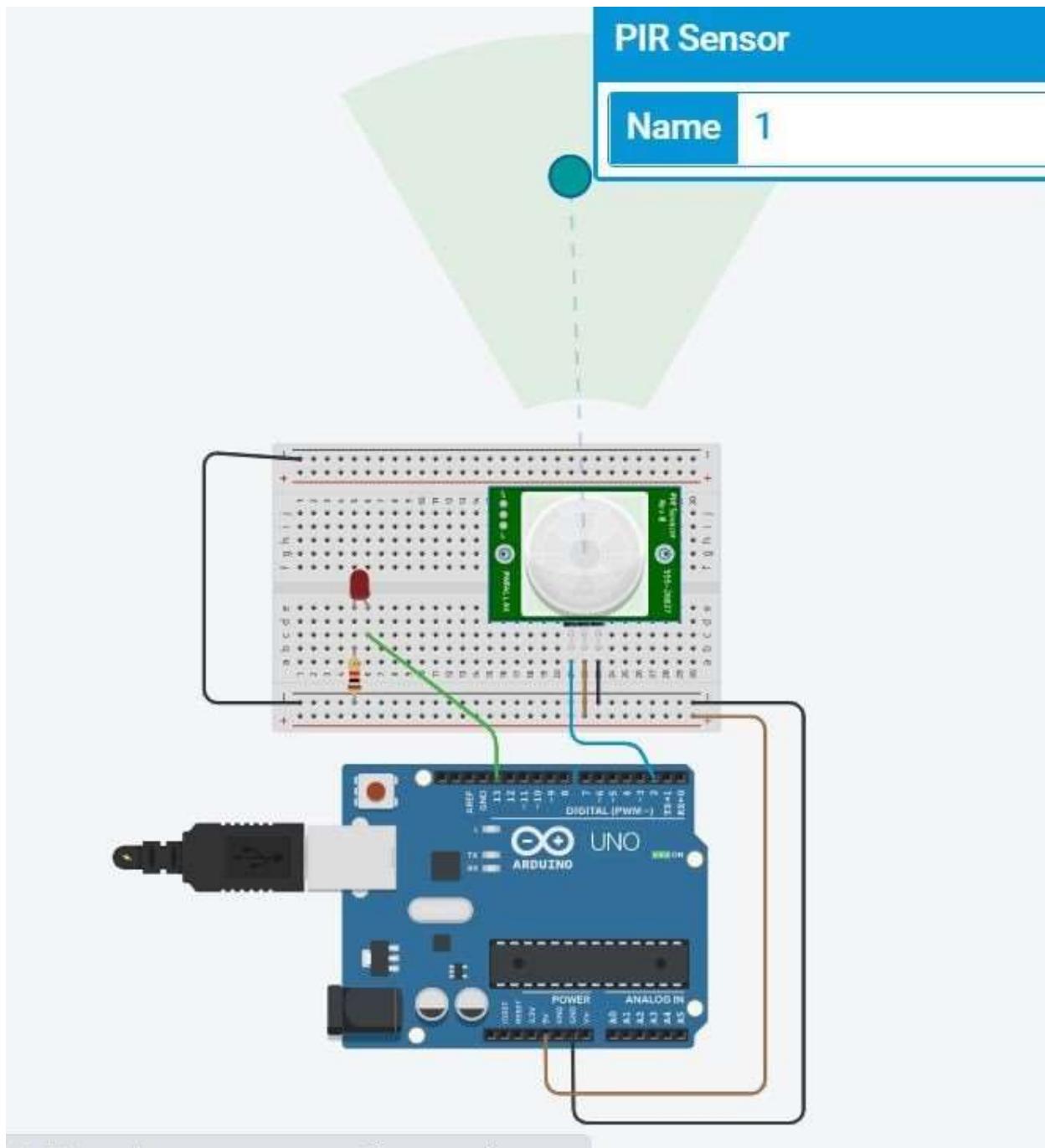
    }

}
```

```
delay(5); }
```

## OUTPUT

Designed a system to show working of PIR Sensor.



**Name – Shreya Laddha**

**Program No. – 08**

**Program Title – Distance Measurement using ultrasonic sensor**

---

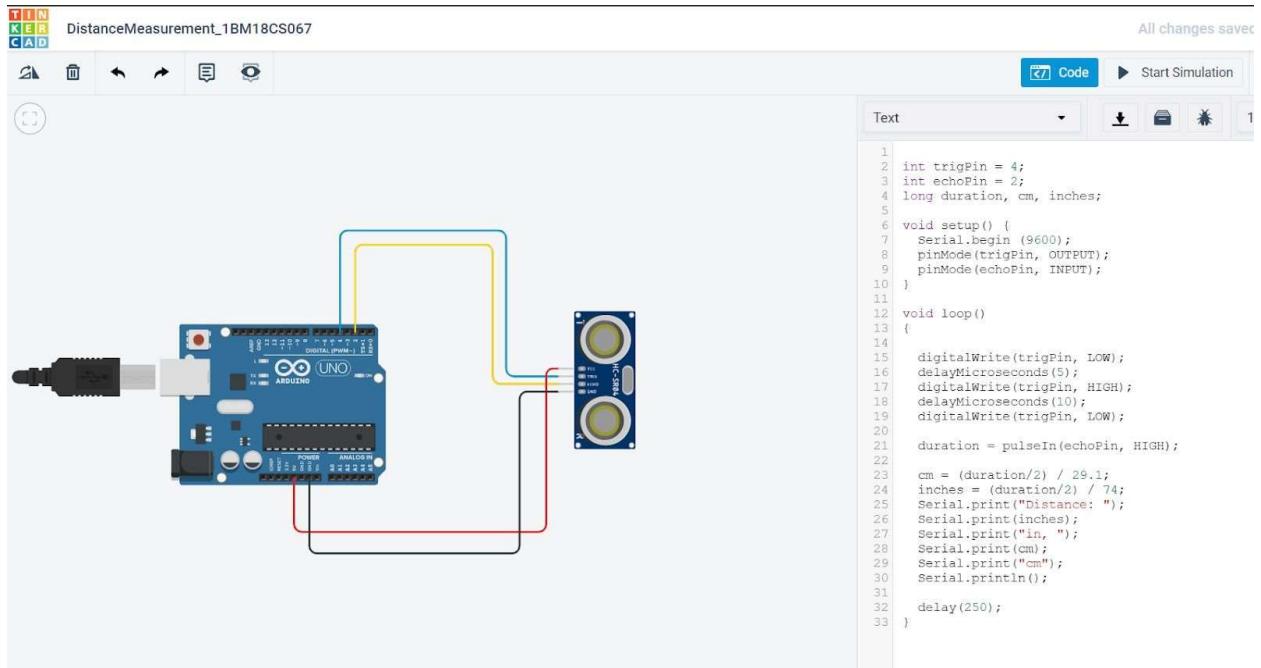
## **AIM**

Design a system to measure the distance between objects.

## **HARDWARES REQUIRED**

- Arduino Board
- Ultrasonic sensor HC-SR04

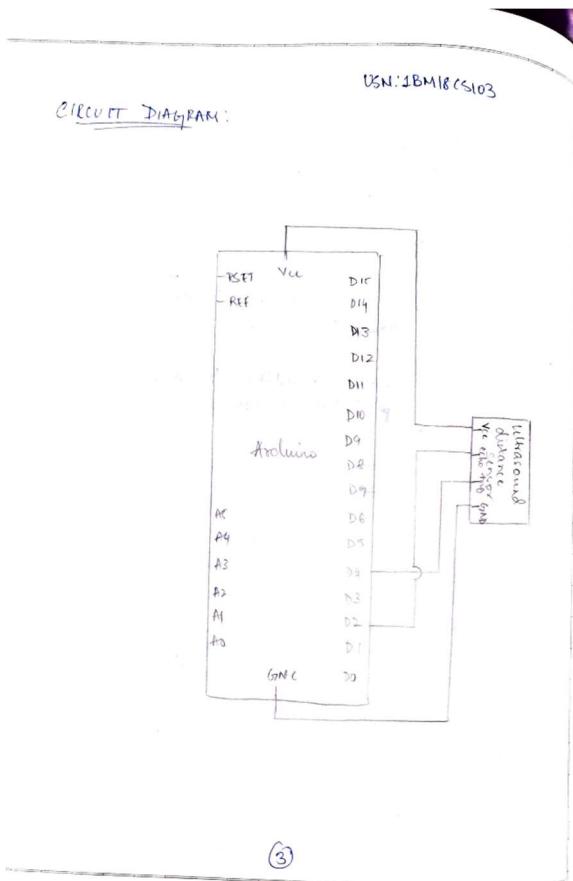
## **CIRCUIT DIAGRAM**



## WRITE-UP

Expt. No. ....	Date .....
Page No. ....	VSN: 1BM18CS103
PROGRAM: 8	
PROGRAM TITLE : OBJECT DISTANCE MEASUREMENT	
Aim: Design a system to measure the distance between objects	
Hardware Required:	
• Arduino	
• Ultrasonic Distance Sensor	
CODE:	
<pre>int trigPin = 4; int echoPin = 2; long distance, cm, inches; void setup() {     Serial.begin(9600);     pinMode(trigPin, OUTPUT);     pinMode(echoPin, INPUT); }  void loop() {     digitalWrite(trigPin, LOW);     delayMicroseconds(5);     digitalWrite(trigPin, HIGH);     delayMicroseconds(10);     digitalWrite(trigPin, LOW); }</pre>	
(1)	Teacher's Signature: _____

Expt. No. ....	Date .....
Page No. ....	VSN: 1BM18CS103
duration = pulseIn(echoPin, HIGH) cm = (duration / 2) / 29.1; inches = (duration / 2) / 74; Serial.print("Distance: "); Serial.print(cm); Serial.print(" inches, "); Serial.print(cm); Serial.print(" cm"); Serial.print(" : cms "); delay(250); }	
(2)	Teacher's Signature: _____



## CODE

```

int trigPin = 4;
int echoPin = 2;
long duration, cm, inches;
void setup() {
    Serial.begin (9600);
    pinMode(trigPin, OUTPUT);
    pinMode(echoPin, INPUT);
}
void loop()
{

```

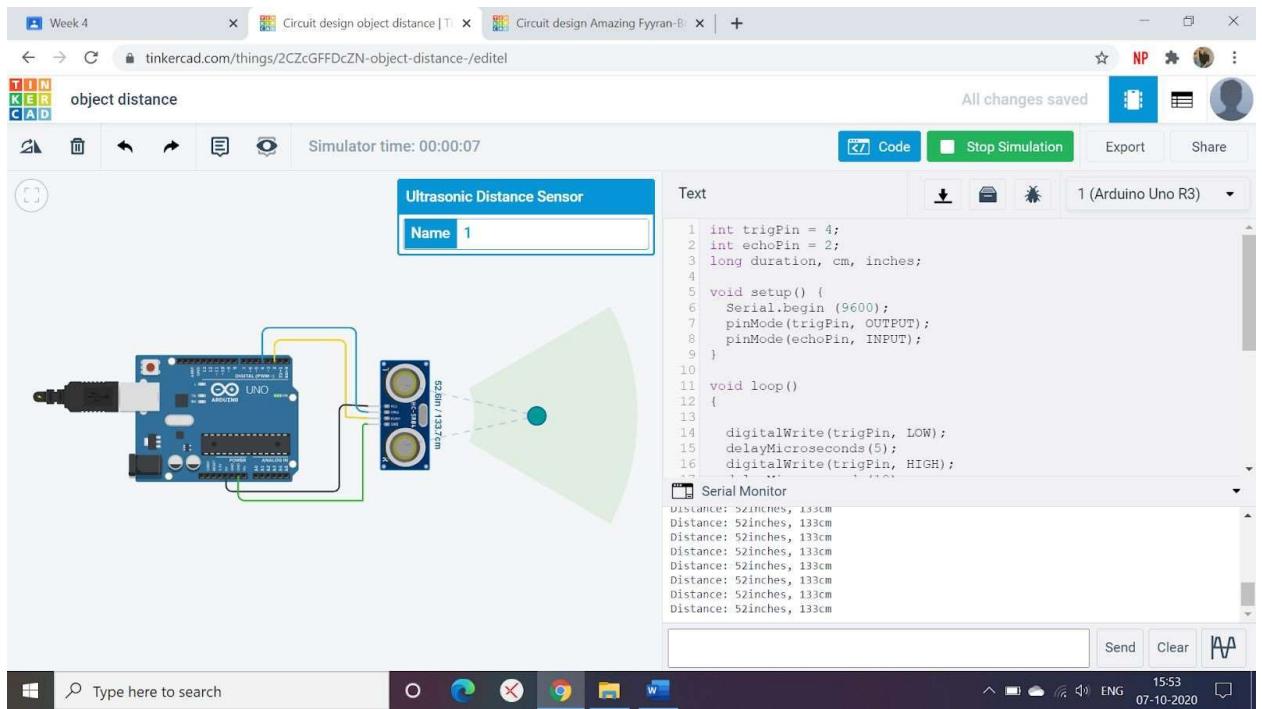
```
digitalWrite(trigPin, LOW);
delayMicroseconds(5);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);

duration = pulseIn(echoPin, HIGH);
cm = (duration/2) / 29.1;
inches = (duration/2) / 74;
Serial.print("Distance: ");
Serial.print(inches);
Serial.print("inch, ");
Serial.print(cm);
Serial.print("cm");
Serial.println();
delay(250);

}
```

## OUTPUT

Design a system to measure the distance between objects using ultrasonic device.



**Name –Shreya Laddha**

Program No. – 09

Program Title – Fire Alarm using flame Sensor

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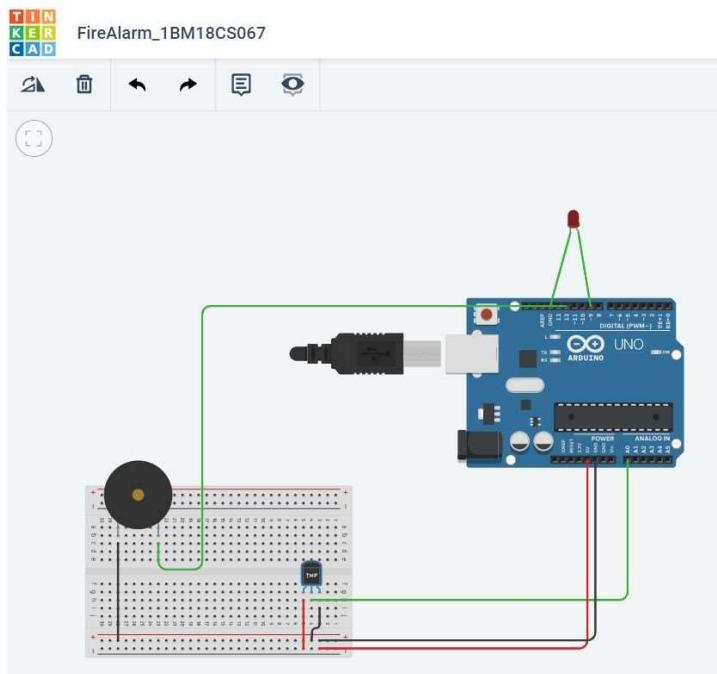
## **AIM**

Design an alert system using a flame sensor.

## **HARDWARES REQUIRED**

- Arduino Board
- Piezo
- Temperature Sensor
- Breadboard small

## **CIRCUIT DIAGRAM**



## WRITE-UP

Expt. No. ....	Date .....
Page No. ....	USN: 2BMECS103
<p><u>PROGRAM : 9</u></p> <p><u>PROGRAM TITLE : Alert System</u></p> <p><u>AIM : Design an alert system using flame sensor (use temp sensor for experiments in tinkercad).</u></p> <p><u>Hardware Required :</u></p> <ul style="list-style-type: none"> <li>• Arduino</li> <li>• Piezo</li> <li>• Temperature Sensor</li> <li>• LED</li> </ul> <p><u>CODE :</u></p> <pre> int temperaturePin = 0; int buzzer = 12; void setup() {     Serial.begin(9600);     pinMode(buzzer, OUTPUT);     pinMode(9, OUTPUT); } float getVoltage(int pin) {     return (analogRead(pin) + 0.004882814); } </pre> <p>(1) Teacher's Signature : _____</p>	

Expt. No. ....	Date .....
Page No. ....	USN: 2BMECS103
<pre> void loop() {     float voltage, degreesC;     voltage = getVoltage(temperaturePin);     degreesC = (voltage - 0.5) * 100.0;     digitalWrite(9, LOW);     if(degreesC &gt; 37)     {         Serial.print(degreesC);         Serial.println("ALERT!");         digitalWrite(buzzer, HIGH);         digitalWrite(9, HIGH);         tone(12, 10000, 100);         delay(200);     }     else     {         Serial.print(degreesC);         Serial.print(" SAFE!");         delay(200);     } } </pre> <p>(2) Teacher's Signature : _____</p>	

## CODE

```
const int temperaturePin = 0;  
int buzzer = 12;  
  
void setup()  
{  
    Serial.begin (9600);  
    pinMode(buzzer, OUTPUT);  
    pinMode(9, OUTPUT);  
}  
  
void loop()  
{  
    float voltage, degreesC;  
    voltage = getVoltage(temperaturePin);  
    degreesC = (voltage-0.5)*100.0;  
  
    if(degreesC < 37)
```

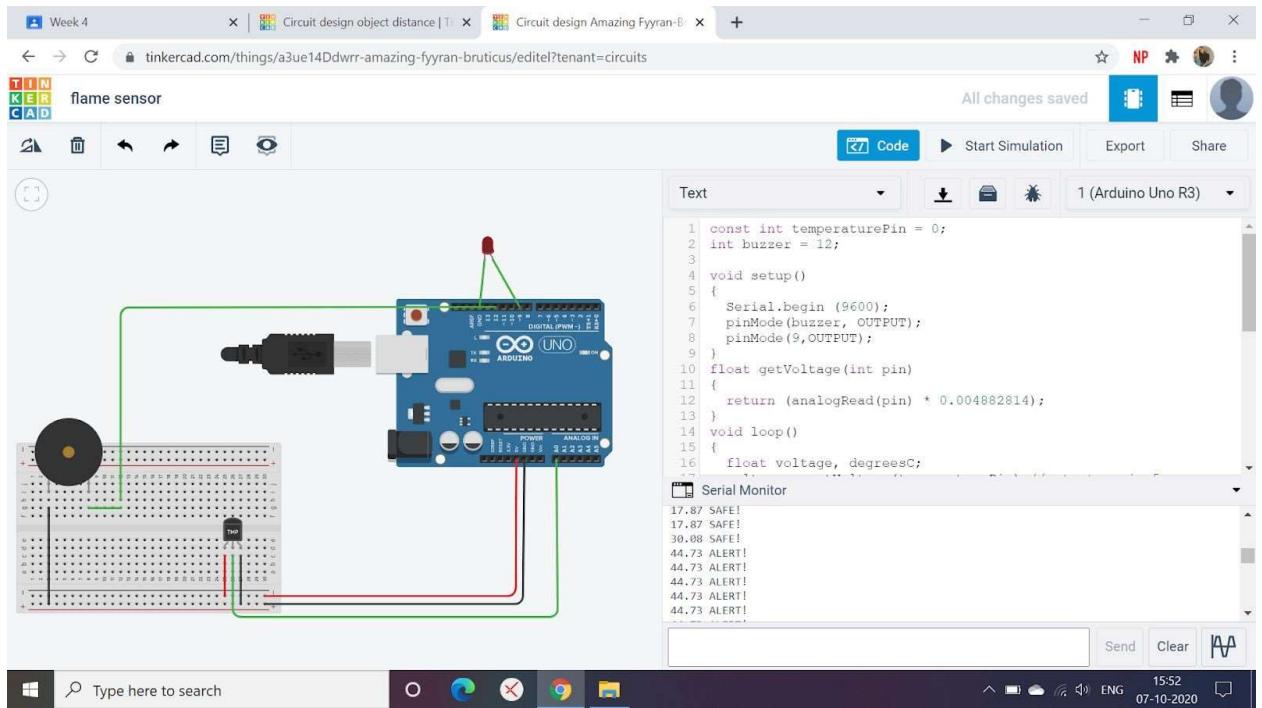
```
{  
    Serial.print(degreesC);  
    Serial.println(" SAFE!");  
}  
  
}
```

```
if(degreesC > 37)  
{  
    Serial.print(degreesC);  
    Serial.println("FIRE !!!");  
    digitalWrite(9, HIGH);  
    digitalWrite(buzzer, LOW);  
    tone(12, 10000,100);  
    delay(100);  
}  
  
}
```

```
float getVoltage(int pin)  
{  
    return (analogRead(pin) * 0.004882814);  
}  
  
}
```

## OUTPUT

Designed an alert system using flame sensor.



**Name – Shreya Laddha**

Program No. – 10

Program Title – Gas Sensor

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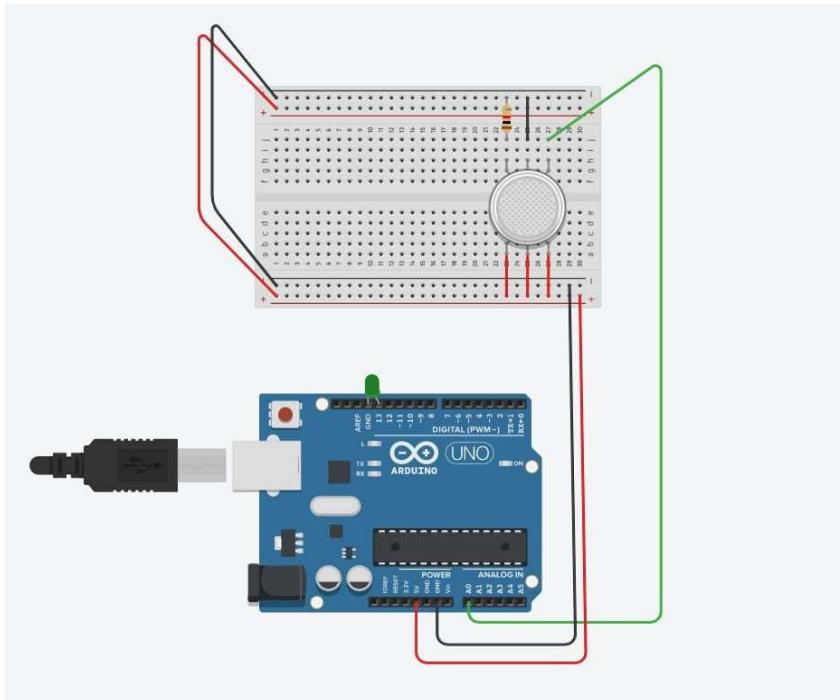
## **AIM**

To design a smart gas leakage indicator system.

## **HARDWARES REQUIRED**

- Arduino Board
- Gas sensor
- Resistor
- LED
- Breadboard Small

## **CIRCUIT DIAGRAM**



## WRITE-UP

Expt. No. ....	Date .....
Page No. ....	
VSN: 1BM18CS103	
<u>PROGRAM: 10</u>	
<u>PROGRAM TITLE: Smart gas leakage indicator</u>	
<u>Aim: Design a smart gas leakage indicator system (gas sensor and LED).</u>	
<u>Hardware requirement:</u>	
<ul style="list-style-type: none"><li>• Arduino</li><li>• Gas Sensor</li><li>• Bread board</li><li>• Resistor</li><li>• LED</li></ul>	
<u>CODE:</u>	
<pre>int led = 13; const int gas = 0; int gasPin = A0; void setup() {     Serial.begin(9600); } void loop() {     float sensorValue = analogRead(gasPin);     if (sensorValue &gt; 300)     {         digitalWrite(led, HIGH);         Serial.print(sensorValue);     } }</pre>	
① Teacher's Signature : _____	

Expt. No. ....	Date .....
Page No. ....	
VSN: 1BM18CS103	
<pre>Serial.println("*** SMOKE DETECTED ***"); delay(1000); else {     digitalWrite(led, LOW);     Serial.println("Serial Value: ");     Serial.println(sensorValue); } delay(1000); }</pre>	
② Teacher's Signature : _____	

## CODE

```
int LED = 13;  
  
const int gas = 0;  
  
int Gaspin = A0;  
  
  
void setup()  
{  
    Serial.begin(9600);  
}  
  
void loop()  
{  
    float sensorValue = analogRead(Gaspin);  
    if(sensorValue >= 300)  
    {  
        digitalWrite(LED, HIGH);  
        Serial.print(sensorValue);  
        Serial.println(" *** SMOKE DETECTED ***");  
        delay(sensorValue);  
    }  
}
```

```

}

else

{
    digitalWrite(LED, LOW);

    Serial.println("Serial Value : ");

    Serial.println(sensorValue);

}

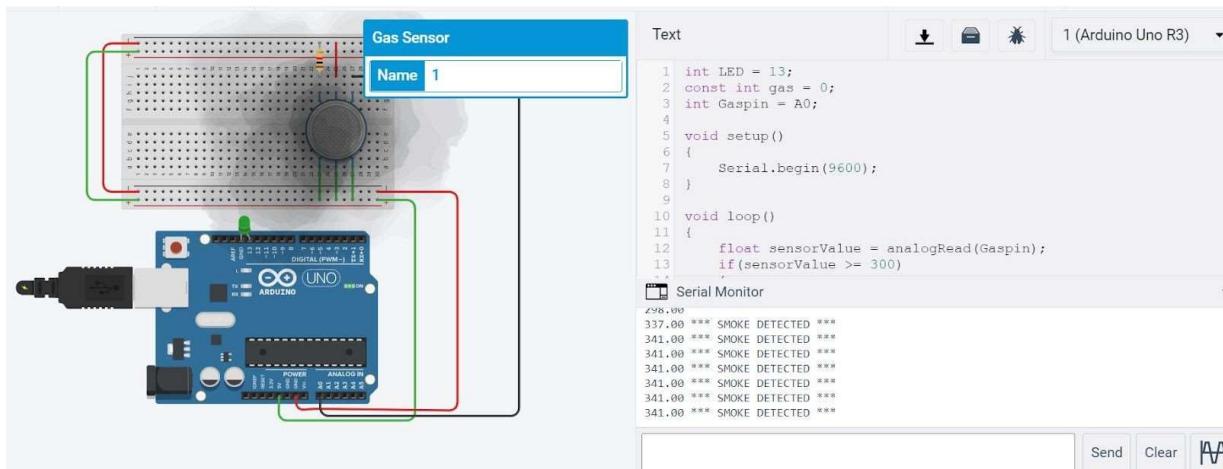
delay(1000);

}

```

## OUTPUT

Designed a smart gas leakage indicator system.



**Name – Shreya Laddha**

**Program No. – 11**

**Program Title – TEMPERATURE SENSOR (LM35)**

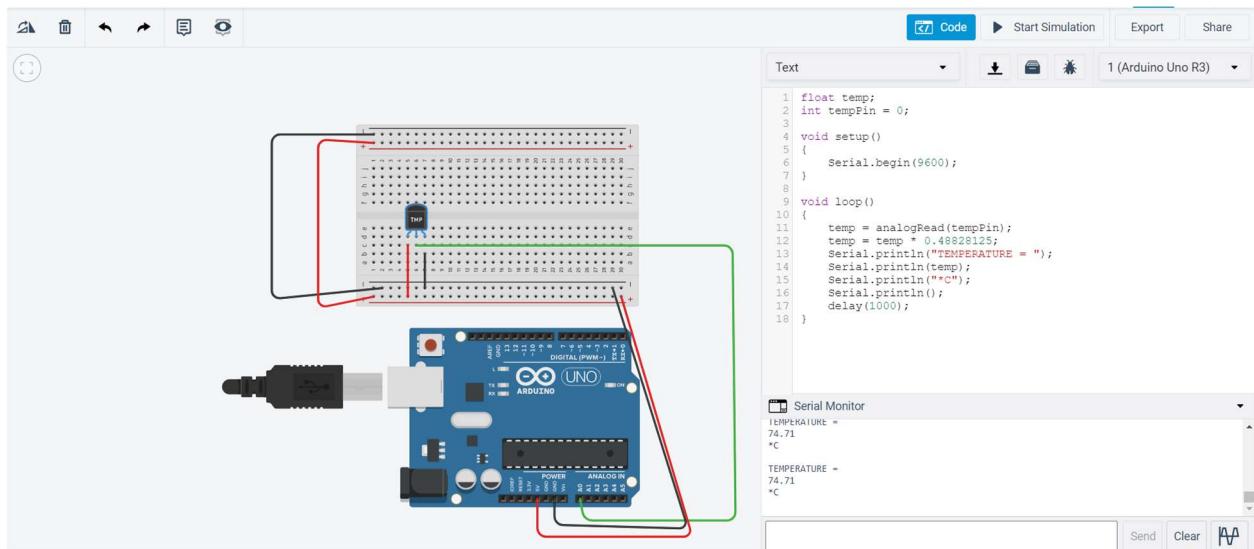
## **AIM**

Demonstrate and make your own temperature sensor by Arduino and LM35 sensor

## **HARDWARES REQUIRED**

- Arduino Board
- Breadboard
- LM35 Temperature Sensor

## **CIRCUIT DIAGRAM**



## **WRITE-UP**

### **PFA in GitHub**

## **CODE**

```
float temp;  
int tempPin = 0;  
void setup()  
{  
    Serial.begin(9600);  
}  
void loop()  
{  
    temp = analogRead(tempPin);  
    temp = temp * 0.48828125;  
    Serial.println("TEMPERATURE = ");  
    Serial.println(temp);  
    Serial.println("*C");  
    Serial.println();  
    delay(1000);  
}
```

## **OUTPUT**

Temperature is being measured.

**Name – Shreya Laddha**

Program No. – 12

Program Title – Vibration motor and LDR

---

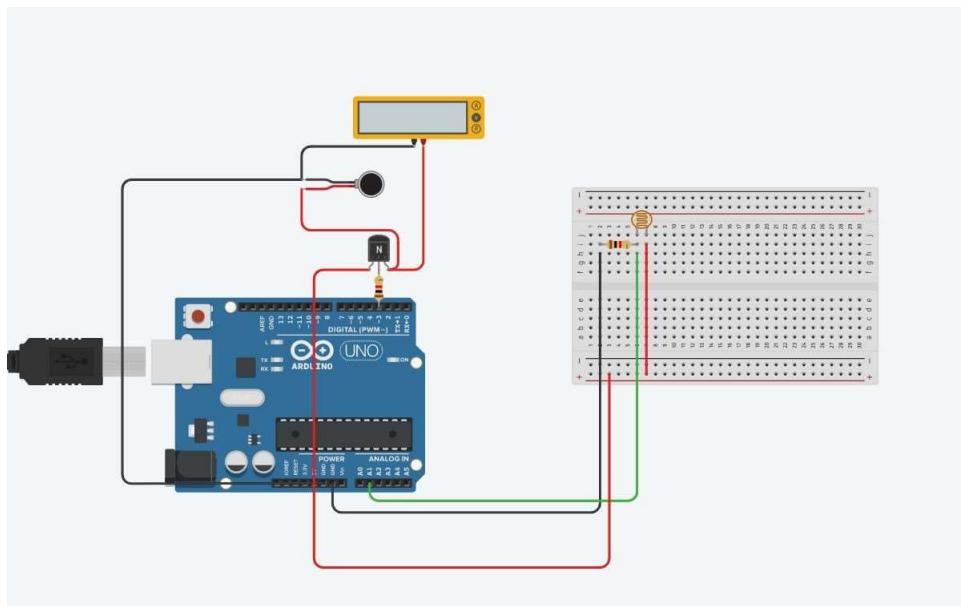
## **AIM**

To design an automated day indicator system.

## **HARDWARES REQUIRED**

- Arduino Board
- NPN Transistor
- Resistor
- Vibration motor
- Multimeter
- Photoresistor

## **CIRCUIT DIAGRAM**



## WRITE-UP

Expt. No. ....	Date .....
Page No. ....	
PROGRAM : Day indicator system.	
VSN: 1BM18CS103	
Aim : Design an automated day indicator (Vibration motor and LDR).	
<u>Hardware Required :</u>	
<ul style="list-style-type: none"><li>• Arduino</li><li>• BreadBoard</li><li>• LDR</li><li>• NPN transistor</li><li>• Multimeter</li><li>• Resistors.</li></ul>	
<u>Code :</u>	
<pre>int motorPin = 3; int sensorPin = A3; int threshold = 400; void setup() {     pinMode(motorPin, OUTPUT);     Serial.begin(9600); }  void loop() {     int sensorValue = analogRead(sensorPin);     Serial.println(sensorValue);     if (sensorValue &gt; threshold)         digitalWrite(motorPin, HIGH);     else         digitalWrite(motorPin, LOW); }</pre>	
Teacher's Signature : _____	

Expt. No. ....	Date .....
Page No. ....	
VSN: 1BM18CS103	
<pre>digitalWrite(motorPin, HIGH); else     digitalWrite(motorPin, LOW);</pre>	
Teacher's Signature : _____	

## CODE

```
int motorPin = 3;  
int sensorPin = A1;  
int threshold = 400;  
  
void setup()  
{  
    pinMode(motorPin, OUTPUT);  
    Serial.begin(9600);  
}  
  
void loop()  
{  
    int sensorValue = analogRead(sensorPin);  
    Serial.println(sensorValue);  
    if(sensorValue > threshold)  
    {  
        digitalWrite(motorPin, HIGH);  
    }  
}
```

```

    }

else

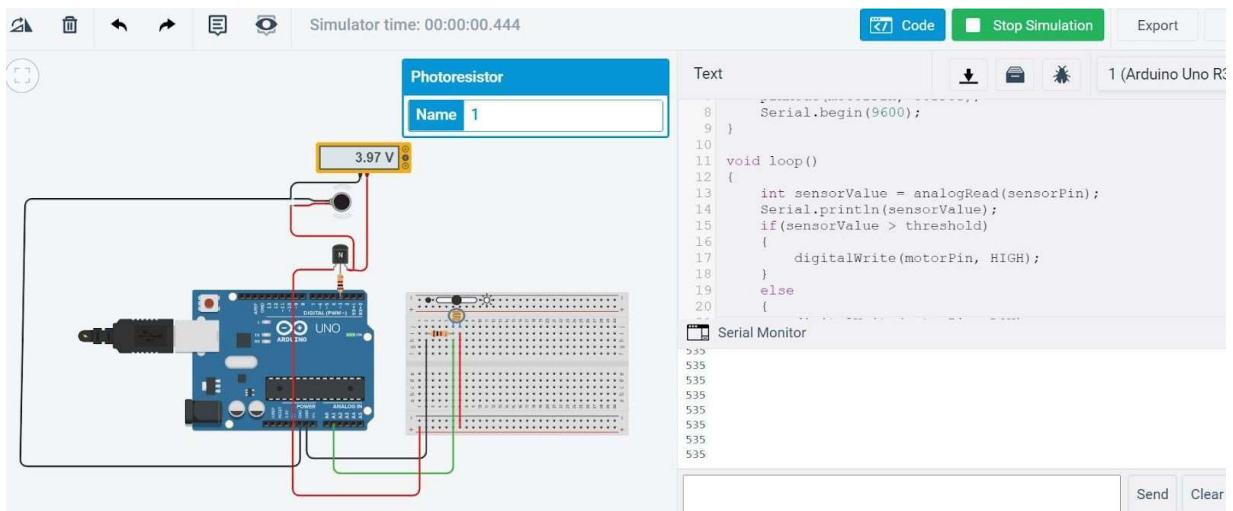
{
    digitalWrite(motorPin, LOW);

}

```

## OUTPUT

Designed an automated day indicator system.



**Name – Shreya Laddha**

Program No. – 13

Program Title – Tilt Sensor

---

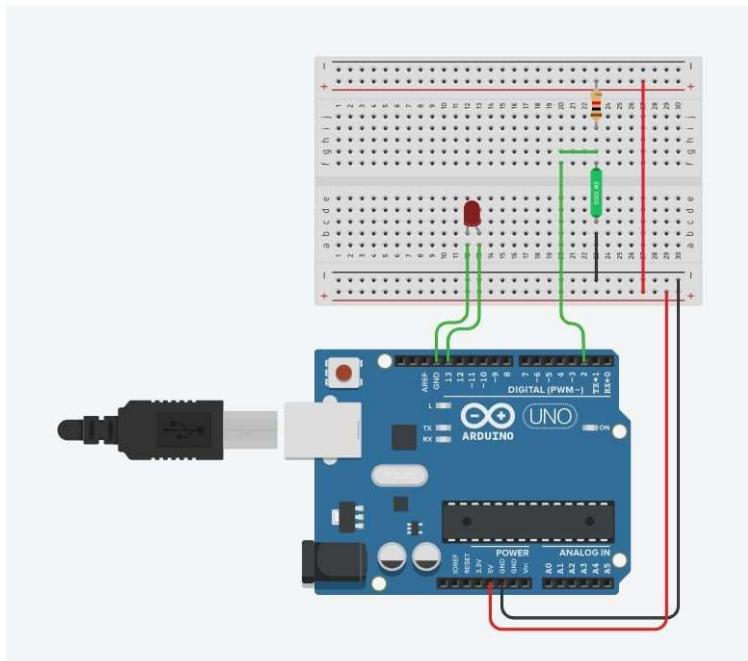
## **AIM**

Design a Smart Package handling system (Tilt sensor and LED)

## **HARDWARES REQUIRED**

- Arduino Board
- Breadboard Small
- LEDs
- Tilt Sensor
- Resistor

## **CIRCUIT DIAGRAM**



## WRITE-UP

Expt. No. ....	Page No. ....
Name: Shreya Ladha USN: 18M1EC03	
PROGRAM NO: 12	
PROGRAM TITLE: TILT SENSOR	
AIM: Design a smart Package handling system (Tilt sensor and LED).	
Hardware Required.	
<ul style="list-style-type: none"> <li>• Arduino Board</li> <li>• BreadBoard</li> <li>• LEDs</li> <li>• Tilt Sensor</li> <li>• Resistor.</li> </ul>	
<u>Code:</u>	
<pre> int tilt = 2; int led = 13; void setup() {     pinMode(tilt, INPUT);     pinMode(led, OUTPUT); } void loop() {     int reading;     reading = digitalRead(tilt);     if (reading)         digitalWrite(led, HIGH);     else         digitalWrite(led, HIGH); } </pre>	
Teacher's Signature: _____	
(1) _____	
Expt. No. ....	Page No. ....
Name: Shreya Ladha USN: 18M1EC03	
<pre> else     digitalWrite(led, HIGH); } </pre>	
Teacher's Signature: _____	
(2) _____	

## CODE

```

int tilt = 2;

int led = 13;

void setup()

{

    pinMode(tilt, INPUT);

    pinMode(led, OUTPUT);

```

```
}
```

```
void loop()
```

```
{
```

```
    int reading;
```

```
    reading = digitalRead(tilt);
```

```
    if(reading)
```

```
        digitalWrite(led, LOW);
```

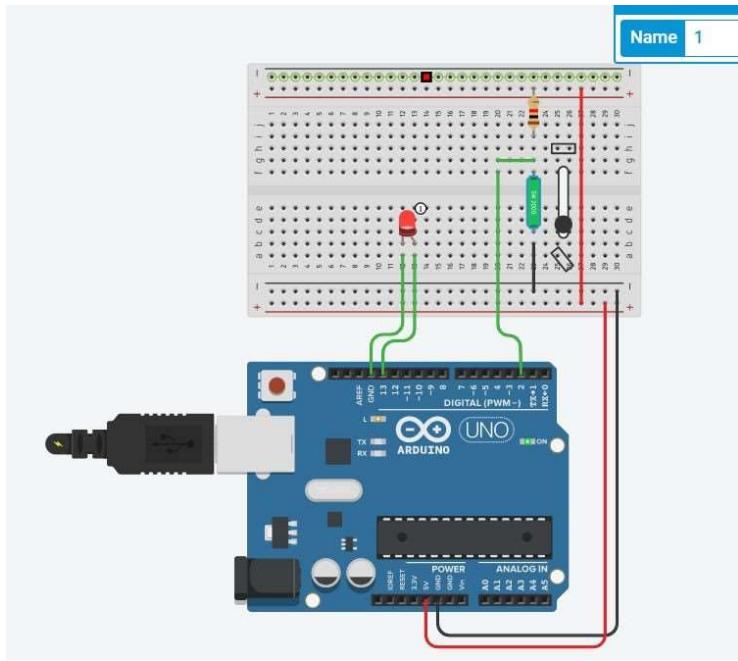
```
    else
```

```
        digitalWrite(led, HIGH);
```

```
}
```

## OUTPUT

Designed a Smart Package handling system using Tilt Sensor and LED.



**Name – Shreya Laddha**

Program No. – 14

Program Title – IR based SERVO Motor controller

---

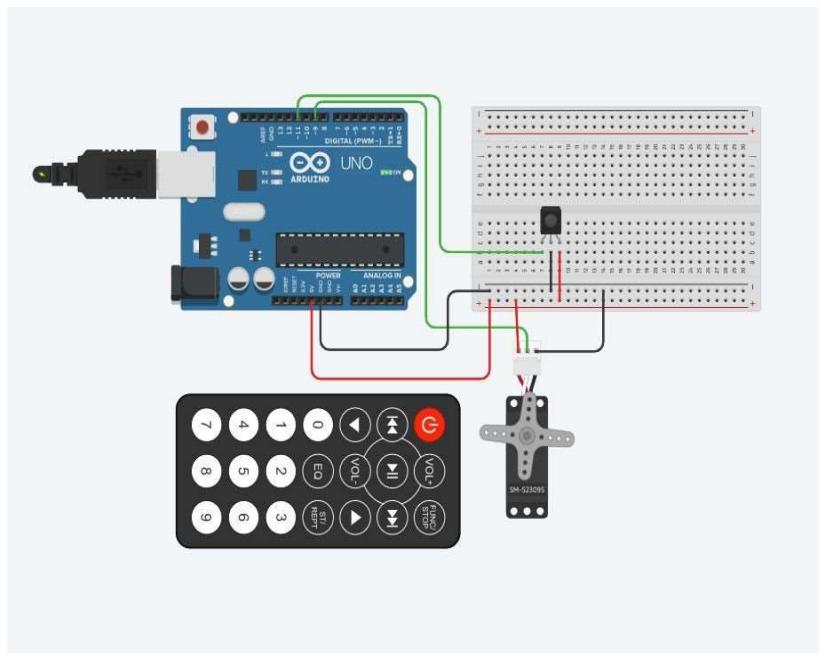
## **AIM**

Design IR based SERVO Motor controller. (Clockwise and CounterClockwise rotation of shaft).

## **HARDWARES REQUIRED**

- Arduino Board,
- Breadboard Small,
- IR Sensor,
- IR Remote,
- Micro Servo

## **CIRCUIT DIAGRAM**



## WRITE-UP

Expt. No. ....	Page No. ....	Expt. No. ....	Page No. ....
<p>PROGRAM No. = 13          PROGRAM TITLE = IR based Servo Motor controller .</p> <p>AIM: Design IR based servo Motor controller.(Clockwise and Counter Clockwise rotation of shaft).</p> <p>Hardware Required.</p> <ul style="list-style-type: none"> <li>• Arduino Board</li> <li>• Breadboard</li> <li>• IR Sensor</li> <li>• IR Remote</li> <li>• Micro Servo</li> </ul> <p>Code:</p> <pre>#include &lt;Servo.h&gt; #include &lt;IRremote.h&gt; int RECV_PIN = 11; IRrecv irrecv(RECV_PIN); decode_results results;  Servo myservo; void setup() {   Serial.begin(9600);   irrecv.enableIRIn(); }  void loop() {   if(irrecv.decode(&amp;results))     switch(results.value)     {       case 0XF000000:         myservo.attach(9);         Serial.println("start... ");         break;       case 0XF0200F:         myservo.write(-360);         Serial.println("Counter Clockwise");         break;       default:         Serial.print("Unrecognized code received : 0x ");         Serial.println(results.value, HEX);         break;     }   irrecv.resume(); }</pre> <p>Teacher's Signature : _____</p>	<p>Name: Shreya Ladha          USN: 2BMECS103</p>	<p>void loop()</p> <pre> if(irrecv.decode(&amp;results))   switch(results.value)   {     case 0XF000000:       myservo.attach(9);       Serial.println("start... ");       break;     case 0XF0200F:       myservo.write(-360);       Serial.println("Counter Clockwise");       break;     default:       Serial.print("Unrecognized code received : 0x ");       Serial.println(results.value, HEX);       break;   }   irrecv.resume(); }</pre> <p>Teacher's Signature : _____</p>	<p>Name: Shreya Ladha          USN: 2BMECS103</p>

## CODE

```
#include <Servo.h>

#include <IRremote.h>

int RECV_PIN = 11;

IRrecv irrecv(RECV_PIN);

decode_results results;

Servo myservo;
```

```
void setup(){
    Serial.begin(9600);
    irrecv.enableIRIn();
}

void loop(){
    if (irrecv.decode(&results))
    {
        switch (results.value)
        {
            case 0xFD00FF:
                myservo.attach(9);
                Serial.println("Start");
                break;
            case 0xFD609F:
                myservo.write(360);
                Serial.println("Clockwise");
                break;
            case 0xFD20DF:
                myservo.write(-360);
                Serial.println("Counter Clockwise");
                break;
            default:

```

```
    Serial.print("Unrecognized code received: 0x");
    Serial.println(results.value, HEX);
    break;
}

irrecv.resume();

}
}
```

## OUTPUT

Designed a Smart Package handling system using Tilt Sensor and LED.



The screenshot shows the Arduino Serial Monitor window. The title bar says "Serial Monitor". The main area displays the following text:

```
Starting..
Clockwise..
Clockwise..
Counter Clockwise..
Counter Clockwise..
Unrecognized code received: 0xFD48B7
```

**Name – Shreya Laddha**

**Program No. – 15**

**Program Title – RGB Led and LCD**

---

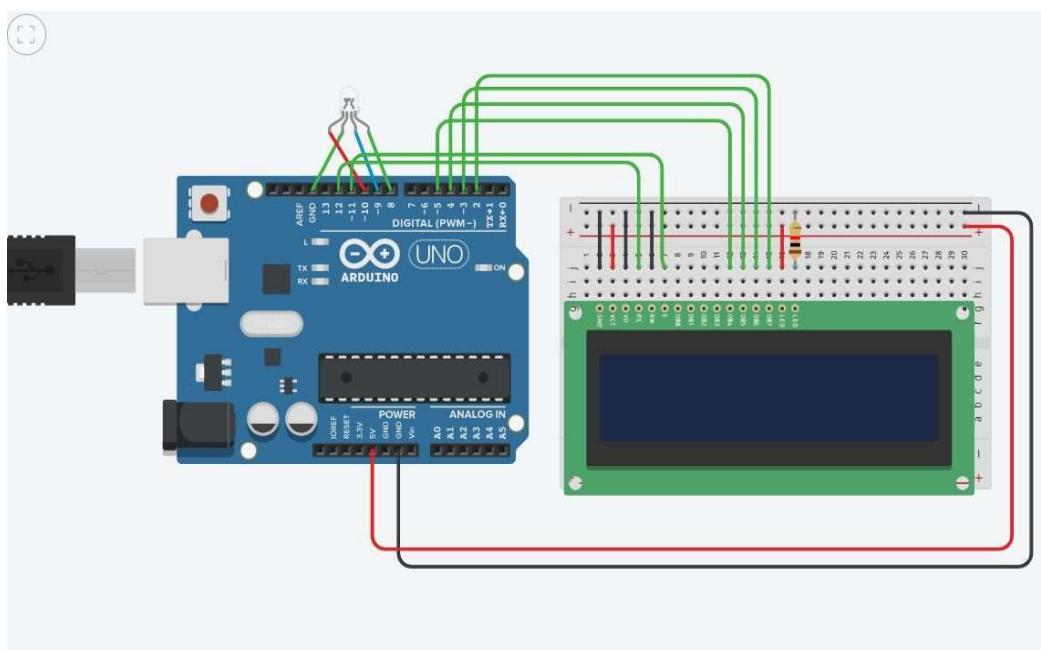
## **AIM**

Design a display system to print the RED,BLUE and Green colors (RGB Led and LCD).

## **HARDWARES REQUIRED**

- Arduino Board
- Breadboard Small
- LCD 16x2
- RGB LED
- Resistor

## **CIRCUIT DIAGRAM**



## WRITE-UP

Expt. No. ....	Date .....
Page No. ....	
<p><u>PROGRAM NO : 14</u>  <u>PROGRAM TITLE : RGB LED AND LCD</u></p> <p><u>AIM:</u> Design a display system to print the RED, BLUE and green colors (RGB led and LCD).</p> <p><u>Hardware Required</u></p> <ul style="list-style-type: none"> <li>• Arduino Board</li> <li>• BreadBoard Small</li> <li>• LCD 16x2</li> <li>• RGB LED</li> <li>• Resistor</li> </ul> <p><u>CODE:</u></p> <pre>#include &lt;LiquidCrystal.h&gt; LiquidCrystal lcd(12,11,5,4,3,2); int red=10; int green=8; int blue=9; void setup() {     pinMode(10,OUTPUT);     pinMode(9,OUTPUT);     pinMode(8,OUTPUT); } void loop() {     lcd.setCursor(0,0); }</pre> <p>Teacher's Signature: <u>Shreyas</u></p>	<p>Name: Shreyas Ladde USN: 1BM11865103</p>

Expt. No. ....	Date .....
Page No. ....	
<pre>lcd.print("RGB Color Print!"); delay(1000); lcd.clear();  RGB_color(255,0,0); lcd.print("RED"); delay(1000); lcd.clear();  RGB_color(0,255,0); lcd.print("GREEN"); delay(1000); lcd.clear();  RGB_color(0,0,255); lcd.print("BLUE"); delay(1000); lcd.clear();  void RGB_color(int red_value, green_value, int blue_value) {     analogWrite(red,red_value);     analogWrite(green,green_value);     analogWrite(blue,blue_value); }</pre>	<p>Name: Shreyas Ladde USN: 1BM11865103</p>

## CODE

```
#include <LiquidCrystal.h>
LiquidCrystal lcd(12,11,5,4,3,2);
```

```
int red=10;
```

```
int green=8;
```

```
int blue=9;
```

```
void setup()
```

```
{
```

```
pinMode(10, OUTPUT);
pinMode(9, OUTPUT);
pinMode(8, OUTPUT);
}
```

```
void loop()
```

```
{
    lcd.setCursor(0,0);
    lcd.print("RGB Color Print!");
    delay(1000);
    lcd.clear();
    RGB_color(255,0,0);//red
    lcd.print("RED");
    delay(1000);
    lcd.clear();
```

```
RGB_color(0,255,0);//Green
```

```
lcd.print("GREEN");
delay(1000);
lcd.clear();
```

```
RGB_color(0,0,255);//Blue
```

```
lcd.print("BLUE");
delay(1000);
lcd.clear();
```

```

RGB_color(0,0,0);//White

lcd.print("WHITE");

delay(1000);

lcd.clear();

}

void RGB_color(int red_value, int green_value, int blue_value)
{
analogWrite(red,red_value);

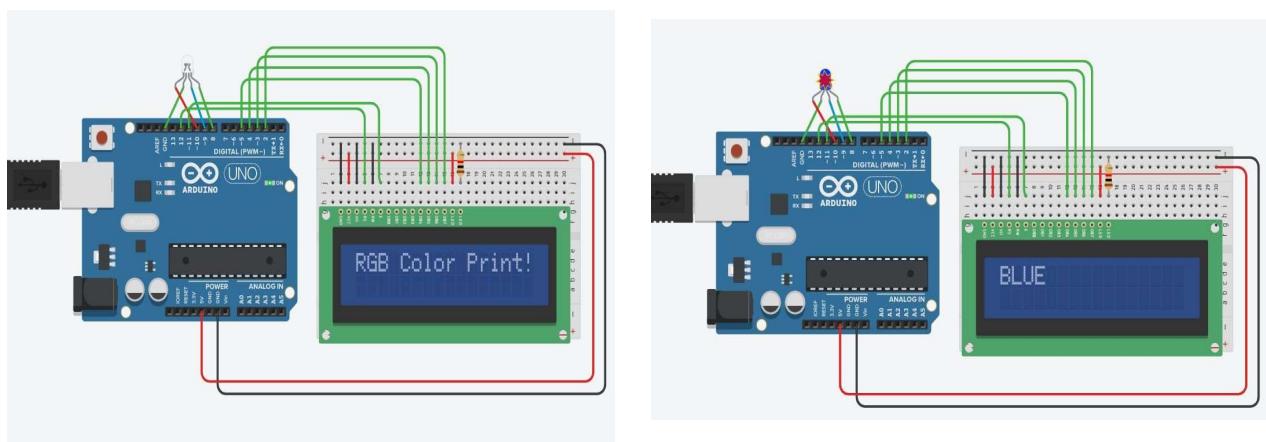
analogWrite(green,green_value);

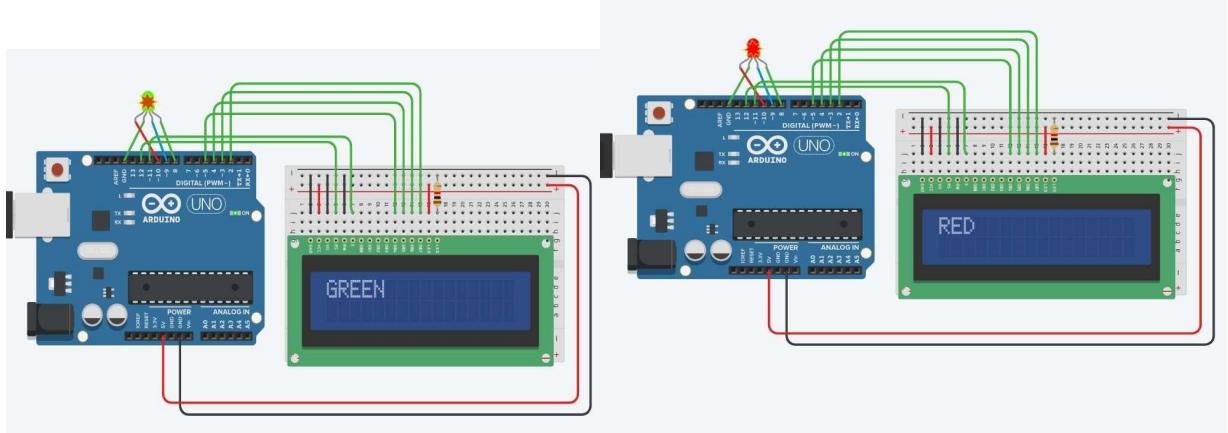
analogWrite(blue,blue_value);
}

```

## OUTPUT

Designed a display system to print the RED,BLUE and Green colors (RGB Led and LCD).





**Name – Shreya Laddha**

Program No. – 16

Program Title – **Smart irrigation system**

---

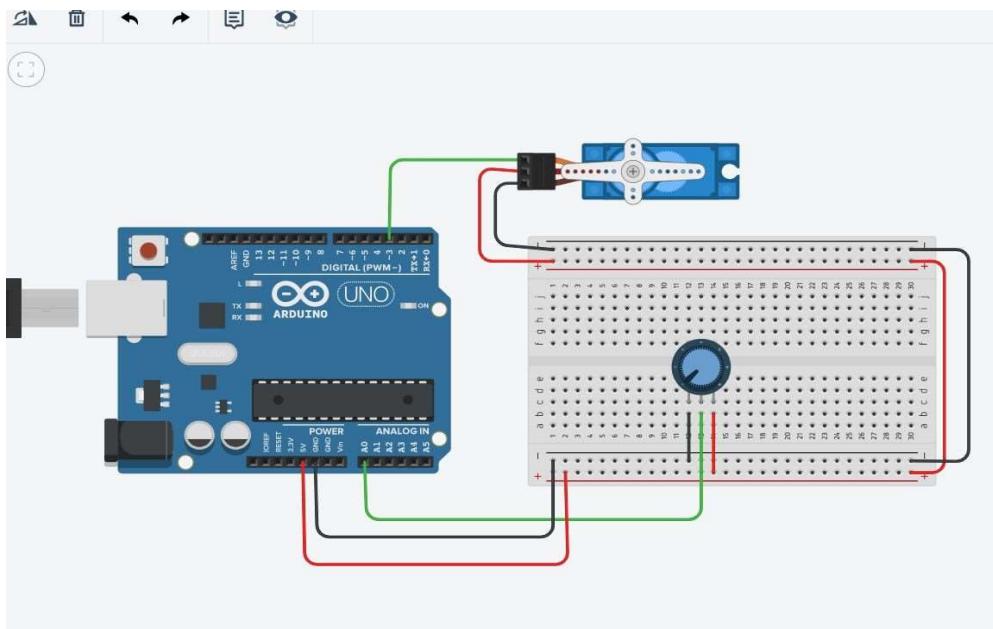
## **AIM**

Design a smart irrigation system (Potentiometer, Servo motor shaft).

## **HARDWARES REQUIRED**

- Arduino Board
- Breadboard Small
- Potentiometer
- Servo motor shaft

## **CIRCUIT DIAGRAM**



## WRITE-UP

Expt. No. ....	Date .....
Page No. ....	
<b>PROGRAM NO:</b> #15 <b>PROGRAM TITLE :</b> Smart irrigation system	
<b>AIM :</b> Design a smart irrigation system ( <b>Potentiometer, servo motor shaft</b> )	
<b>Hardware Required:</b> <ul style="list-style-type: none"> <li>• Arduino</li> <li>• Breadboard</li> <li>• Potentiometer</li> <li>• Servo motor shaft</li> </ul>	
<b>GRUNT DIAGRAM CODE :</b> <pre>#include &lt;Servo.h&gt; Servo myservo;  int pos = 0; int sensorPin = A0; int sensorValue = 0; void setup() {     myservo.attach(3);     Serial.begin(9600); } void loop() {     sensorValue = analogRead(sensorPin);     Serial.println(sensorValue); }</pre>	
Teacher's Signature : <i>[Signature]</i>	

Expt. No. ....	Date .....
Page No. ....	
Name: Shreya Ladha USN: 2BMECS103	
<pre>if (sensorValue &gt; 500) {     for (pos = 0 ; pos &lt;= 180 ; pos += 1)     {         myservo.write (pos);         delay(15);     }     for (pos = 180 ; pos &gt;= 0 ; pos -= 1)     {         myservo.write (pos);         delay(15);     }     delay(1000); }</pre>	
Teacher's Signature : <i>[Signature]</i>	

## CODE

```
#include <Servo.h>
```

```
Servo myservo; // create servo object to control a servo
```

```
// twelve servo objects can be created on most boards
```

```
int pos = 0; // variable to store the servo position
```

```
int sensorPin = A0; // select the input pin for the potentiometer
```

```
int sensorValue = 0; // variable to store the value coming from the sensor
```

```
void setup() {
```

```
myservo.attach(3); // attaches the servo on pin 9 to the servo object
```

```
Serial.begin(9600);
```

```
}

void loop() {
    // read the value from the sensor:
    sensorValue = analogRead(sensorPin);
    Serial.println (sensorValue);
    if(sensorValue>500)
    {
        for (pos = 0; pos <= 180; pos += 1) { // goes from 0 degrees to 180
            degrees
            // in steps of 1 degree
            myservo.write(pos);           // tell servo to go to position in variable 'pos'
            delay(15);                  // waits 15ms for the servo to reach the position
        }
        for (pos = 180; pos >= 0; pos -= 1) { // goes from 180 degrees to 0degrees
            myservo.write(pos);           // tell servo to go to position in variable 'pos'
            delay(15);                  // waits 15ms for the servo to reach the position
        }
    }
    delay (1000);
}
```

## OUTPUT

Designed a smart irrigation system (Potentiometer, Servo motor shaft).

