# EMBEDDED SYSTEM JOURNAL

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CLASS :         TyBsc

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PAPER :         Embedded System
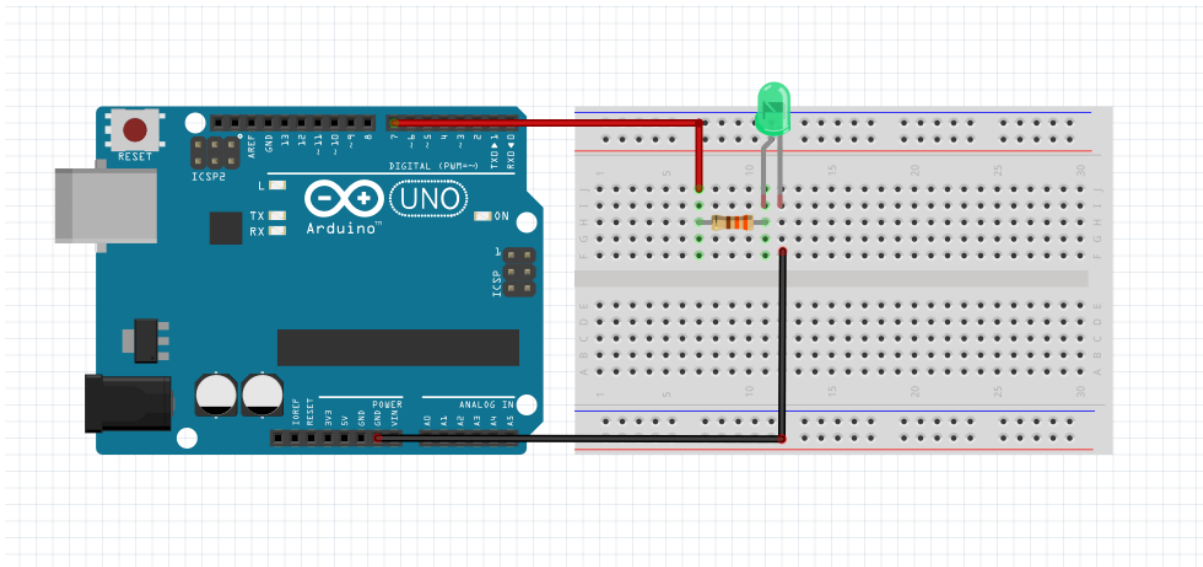
PAPER CODE :    CSD104

# INDEX

# PRACTICAL 1

**DATE:** 29-08-2022

**Aim:** To study the Blinking of LED using Arduino.

**Apparatus:** Arduino uno, Arduino USB 2.0 data Cable, Breadboard, LED, Jumper Wires, resistor 220 ohm.

**Circuit Diagram:**



**Code:**

```
int led1=7;

void setup()
{
    // put your setup code here, to run once:
    // pinMode(pin,Mode);
    pinMode(7,OUTPUT);
}

void loop()
{
    // put your main code here, to run repeatedly:
    digitalWrite(led1,HIGH);
    delay(1000);
    digitalWrite(led1,LOW);
    delay(1000);
}
```

**Conclusion:**

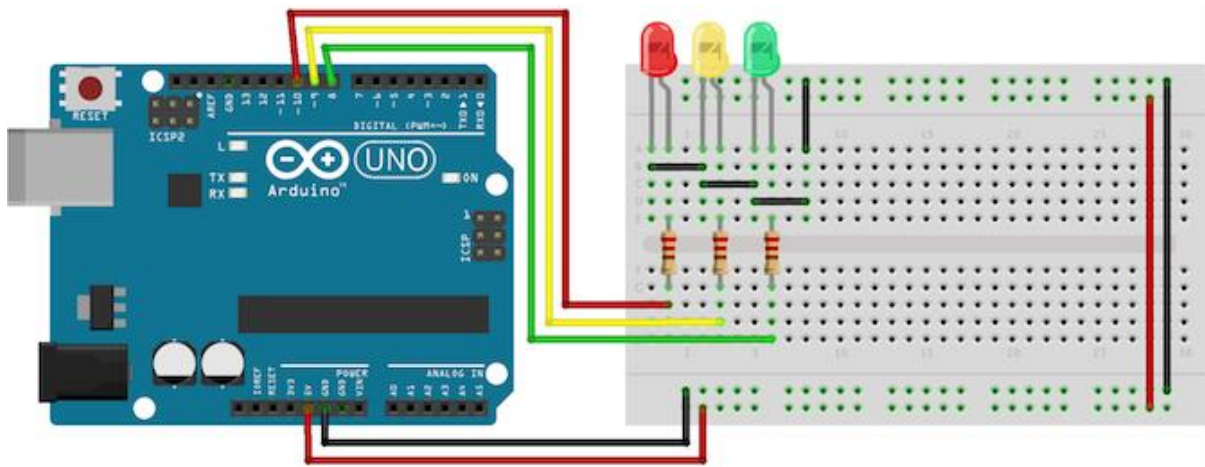The Blinking of LED using Arduino was studied successfully.

# PRACTICAL 2

**Aim:** To study the Simulating Traffic Signal Lights using Arduino.

**Apparatus**: Arduino uno, Arduino USB 2.0 data Cable, Breadboard, LED (Green, Red and Yellow), Jumper Wires, resistor 110 ohm.

**Circuit Diagram:**



**Code:**

```
int ledred = 10;
int ledyellow = 9;
int ledgreen = 8;

void setup() {
  // put your setup code here, to run once:
  pinMode(10, OUTPUT);   //red LED output
  pinMode(9, OUTPUT);    //yellow LED output
  pinMode(8, OUTPUT);   //green LED output
}

void loop() {
  // put your main code here, to run repeatedly:
  digitalWrite(ledred, HIGH);  //blink red for 4 sec
  delay(4000);

  digitalWrite(ledyellow, HIGH);  //blink yellow for 1.5 sec
  delay(1500);
```

```
  //red and yellow off
  digitalWrite(ledred, LOW);
  digitalWrite(ledyellow, LOW);

  //green on for 5 sec
  digitalWrite(ledgreen, HIGH);
  delay(5000);
  digitalWrite(ledgreen, LOW);
  delay(500);

  //green blink 0.5 sec and delay for 0.5 sec
  digitalWrite(ledgreen, HIGH);
  delay(500);
  digitalWrite(ledgreen, LOW);
  delay(500);

  digitalWrite(ledgreen, HIGH);
  delay(500);
  digitalWrite(ledgreen, LOW);
  delay(500);

  digitalWrite(ledgreen, HIGH);
  delay(500);
  digitalWrite(ledgreen, LOW);
  delay(500);
}
```

**Conclusion:**

The Simulating Traffic Signal Lights using Arduino was studied successfully.
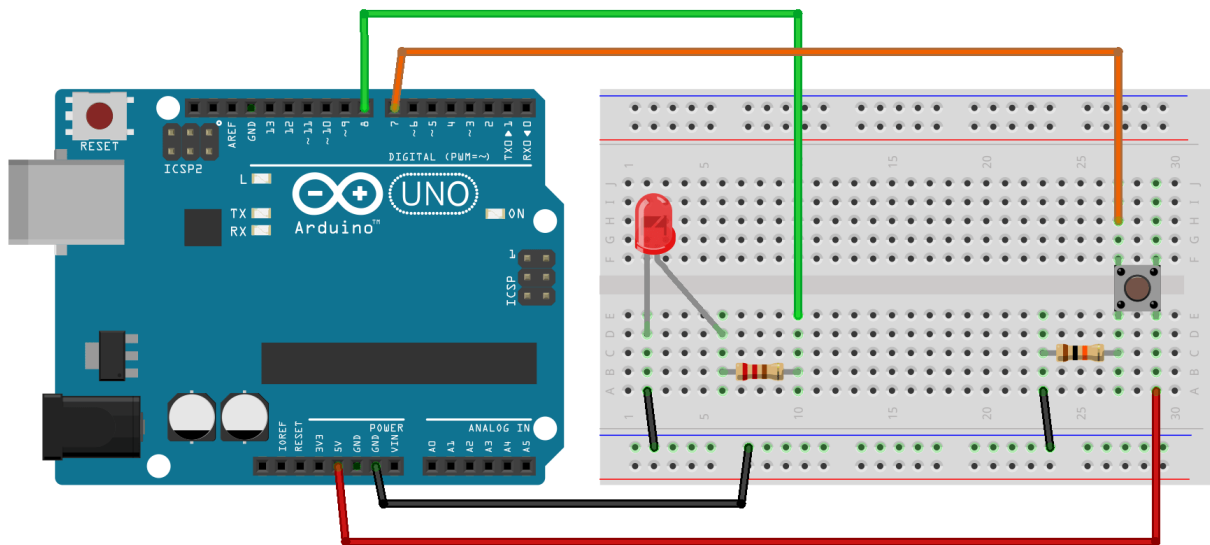
# PRACTICAL 3

**Aim**: To study the Switching LED ON/OFF using a push button using Arduino.

**Apparatus:** Arduino uno, Arduino USB 2.0 data Cable, Breadboard, LED, Push Button, Jumper Wires, resistor (10K and 100 ohm).

**Circuit Diagram:**



**Code:**

```
int b = 7;
int x;
int led = 8;

void setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);
  pinMode(7, INPUT);
  pinMode(8, OUTPUT);
}

void loop() {
  // put your main code here, to run repeatedly:
  x = digitalRead(b);
  Serial.println(x);
  if (x == 0) {
    digitalWrite(8, LOW);
```

```
  } else {
    digitalWrite(8, HIGH);
  }
}
```

**Conclusion:**

The Switching LED ON/OFF using a push button using Arduino was studied successfully.
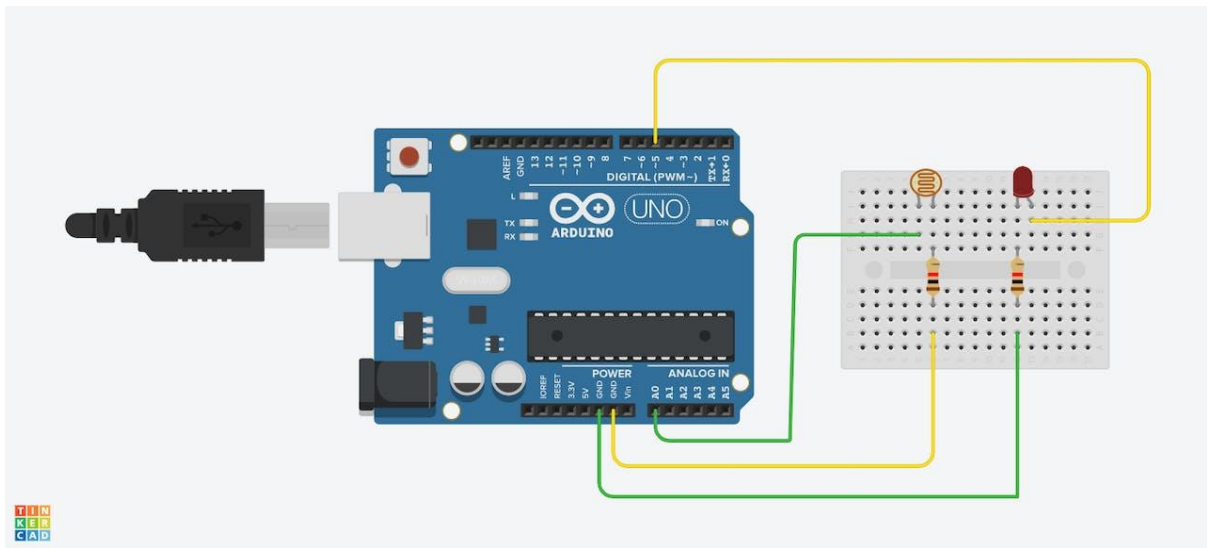
# PRACTICAL 4

**Aim:** To study the Turning LED ON/OFF using LDR using Arduino.

**Apparatus:** Arduino uno, Arduino USB 2.0 data Cable, Breadboard, LED, Jumper Wires, resistor (10K and 220 ohms), photo resistor (LRD).

**Circuit Diagram:**



**Code:**

```
int ldr = A0;   //Set A0(Analog Input) for LDR
int value = 0;

void setup() {
  // put your setup code here, to run once:

  Serial.begin(9600);
  pinMode(5,OUTPUT);

}

void loop() {
  // put your main code here, to run repeatedly:

  value = analogRead(ldr);   //Read the value of LDR(light)
  Serial.println("LDR value is : ");   //Prints the value of LDR to Serial
Monitor
```

```
  Serial.println(value);

  if(value < 200)
  {
    digitalWrite(5,HIGH);   //makes the LED glow in Dark
  }
  else
  {
    digitalWrite(5,LOW);   //Turns the LED OFF in Light
  }
}
```

**Conclusion:**

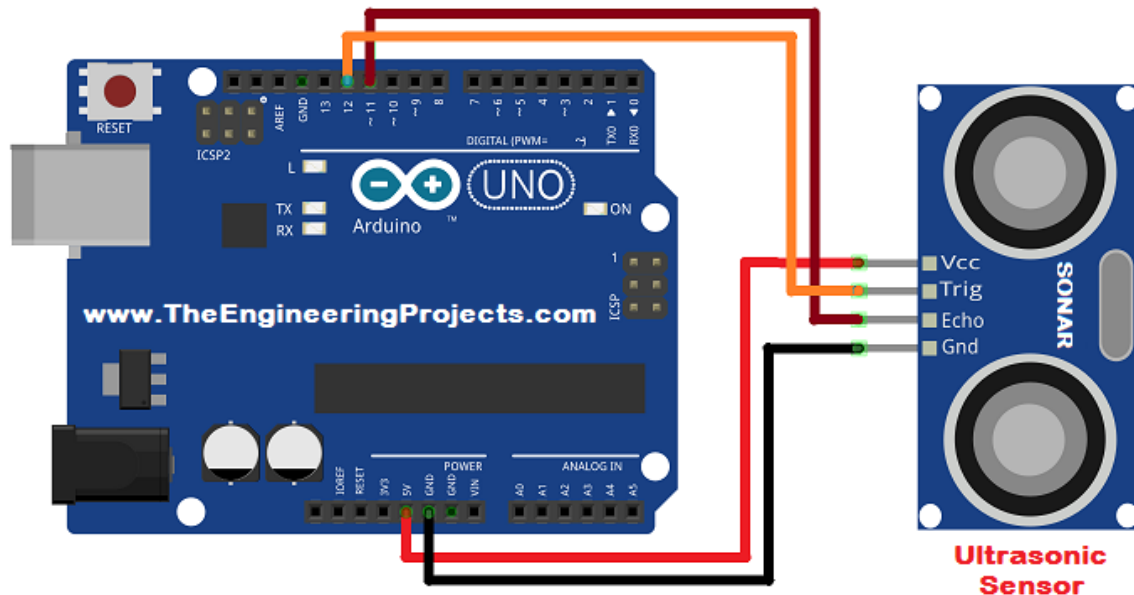The Turning LED ON/OFF using LDR using Arduino was studied successfully.

# PRACTICAL 5

**Aim:** To study the Calculating of distance from obstacle using Ultrasonic sensor.

**Apparatus:** Arduino uno, Arduino USB 2.0 data Cable, Breadboard, Jumper Wires, Ultrasonic Sensor.

**Circuit Diagram:**



Ultrasonic Sensor Arduino Interfacing

**Code:**

```
const int trigPin = 12;
const int echoPin = 11;
long duration;
long distance;

void setup() {
  // put your setup code here, to run once:

  pinMode(triPin,OUTPUT);
  pinMode(echoPin,INPUT);
```

```
  Serial.begin(9600);
}

void loop() {
  // put your main code here, to run repeatedly:

  digitalWrite(trigPin,LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin,HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin,LOW);

  duration = pulseIn(echoPin,HIGH);
  distance = (duration * 0.034/2);
  Serial.println(distance);
}
```

**Conclusion:**

The Calculating of distance from obstacle using Ultrasonic sensor was studied
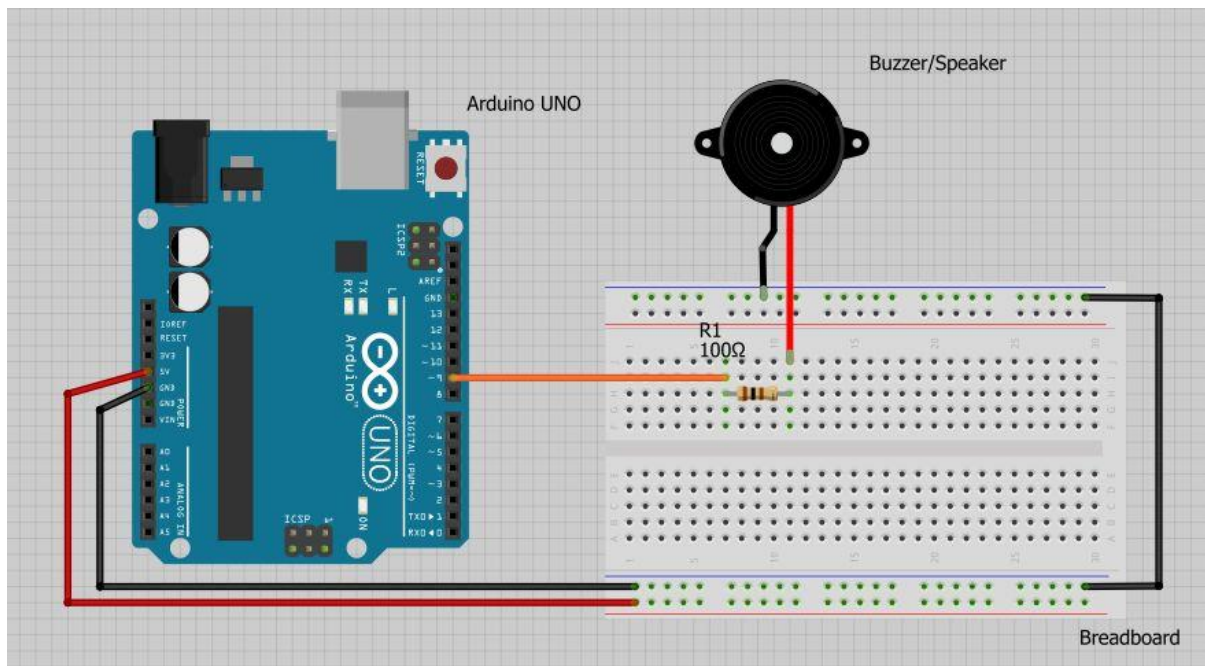successfully.

# PRACTICAL 6

**Aim:** To study the Buzzer using Arduino.

**Apparatus:** Arduino uno, Arduino USB 2.0 data Cable, Breadboard, Buzzer, Jumper Wires.

**Circuit Diagram:**



**Code:**

```
int Buzzer = 9;

void setup() {
  pinMode(Buzzer,OUTPUT);
}

void loop() {
  digitalWrite(Buzzer,HIGH);
  delay(1000);
  digitalWrite(Buzzer,LOW);
  delay(1000);
}
```

**Conclusion:**

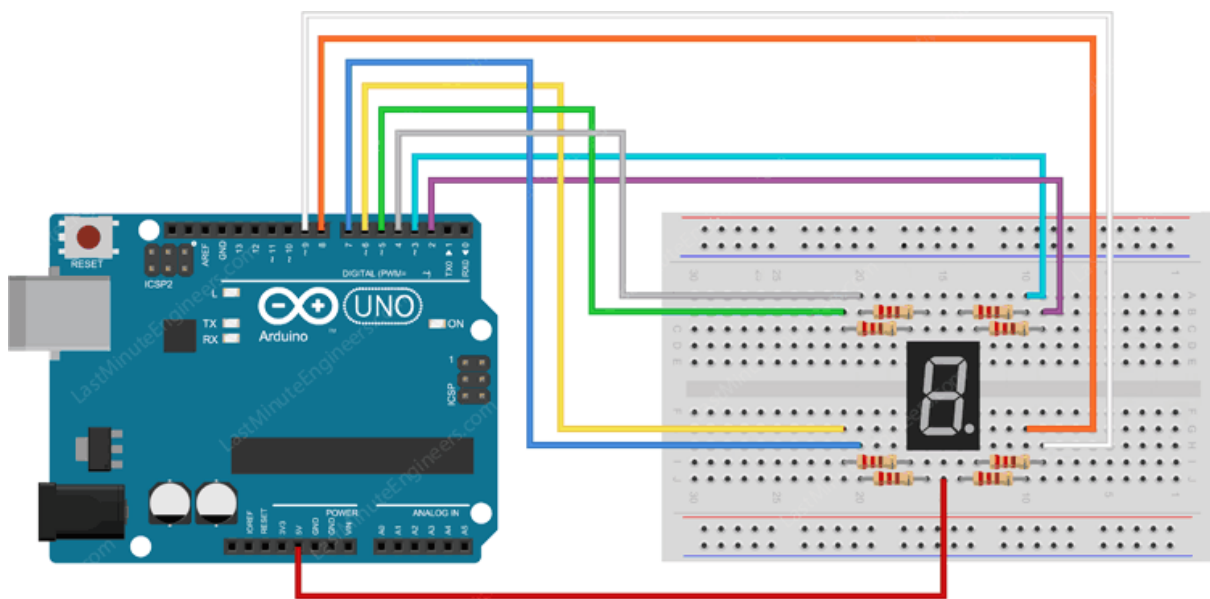The Buzzer using Arduino was studied successfully.

# PRACTICAL 7

**DATE:** 24-10-2022

**Aim:** To study the 7-segment display using Arduino.

**Apparatus:** Arduino uno, Arduino USB 2.0 data Cable, Breadboard, Jumper Wires, resistor 220 ohm, 7-segment display.

**Circuit Diagram:**



**Code:**

```
int num,pin;
int num_arr[10][7] ={
  {0,0,0,0,0,0,1},  //0
  {1,0,0,1,1,1,1},  //1
  {0,0,1,0,0,1,0},  //2
  {0,0,0,0,1,1,0},  //3
  {1,0,0,1,1,0,0},  //4
  {0,1,0,0,1,0,0},  //5
  {0,1,0,0,0,0,0},  //6
  {0,0,0,1,1,1,1},  //7
  {0,0,0,0,0,0,0},  //8
  {0,0,0,0,1,0,0}   //9
};
```

```
void setup() {
  // put your setup code here, to run once:

  //define PinModes
  pinMode(2,OUTPUT);
  pinMode(3,OUTPUT);
  pinMode(4,OUTPUT);
  pinMode(5,OUTPUT);
  pinMode(6,OUTPUT);
  pinMode(7,OUTPUT);
  pinMode(8,OUTPUT);
}

void loop() {
  // put your main code here, to run repeatedly:

  for(num=0;num<10;num++)
  {
    for(pin=2;pin<=8;pin++)
    {
      digitalWrite(pin,num_arr[num][pin-2]);
    }
    delay(1000);
  }
}
```

**Conclusion:**

The study of 7-segment display using Arduino was done successfully.