

Exercise # 2a – Interfacing LED With Arduino UNO

Aim: To interface LED with Arduino UNO.

Apparatus Required:

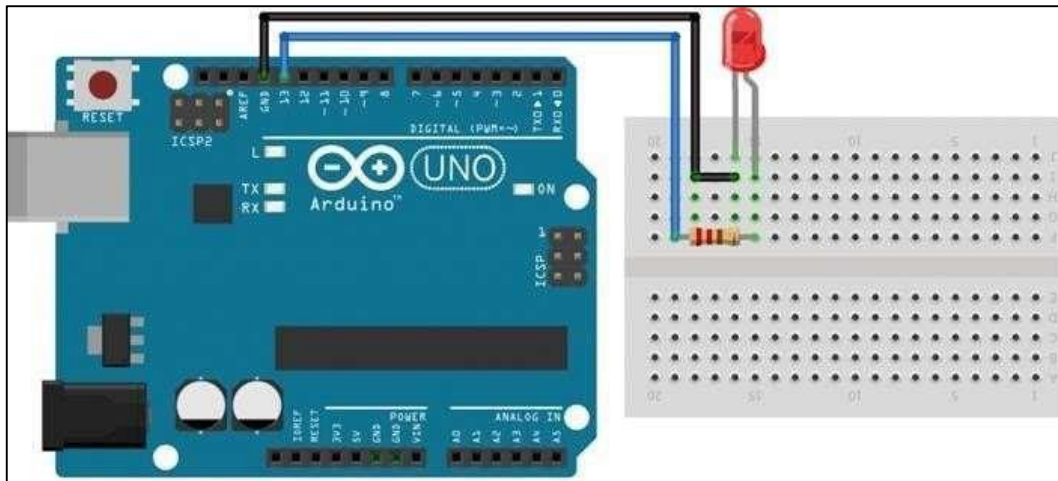
Sign Number	Name of the Equipment	Quantity
1	Arduino UNO	1
2	Computer with Arduino IDE	1
3	USB Cable	1
4	LED	1
5	330Ω Resistor	1
6	Breadboard	1
7	Jumper Wires	As Required

Theory:

Light Emitting Diode (LED) is a widely used standard source of light in electrical equipment. It has a widerange of applications ranging from your mobile phone to large advertising billboards.

Here, an LED is connected to one of Arduino's digital pins via 330Ω resistor. Whenever the respective pin is set HIGH,current flows via LED and hence it glows.

Circuit Diagram:



Code:

```
#define LED 13

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

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

Result:

Hence, a LED is interfaced with Arduino UNO and is made to blink successfully.

Exercise #2b – Interfacing Buzzer with Arduino UNO

Aim:

To interface a buzzer with Arduino UNO and write program to turn ON the buzzer at different frequencies.

Apparatus Required:

Sign Number	Name of the Equipment	Quantity
1	Arduino UNO	1
2	Computer with Arduino IDE	1
3	USB Cable	1
4	Buzzer	1
5	Breadboard	1
6	Jumper Wires	As Required

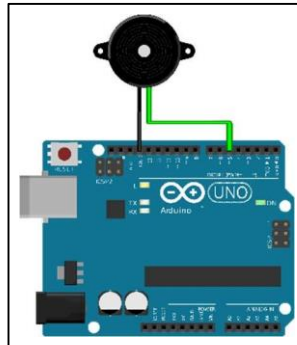
Theory:

A piezo electric buzzer is a simple device which can generate beeps and tones. Working principle of the device is piezoelectric effect. The main component of this device is a piezo crystal, a special material that change shape when a voltage applied to it.

Piezo buzzers are used for making beeps alarms and tones. They can be used in alarm systems, for keypad feedback, or some games. Light weight, simple construction and low price make it usable in various applications like car/truck reversing indicator, computers, call bells etc.

Simply change the frequency of the voltage sent to the piezo and it will start generating sounds by changing shape very quickly.

Circuit Diagram:



Code:

```
#define BUZZER 5
#define FREQUENCY 200

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

void loop()
{
  tone(BUZZER,FREQUENCY);
  delay(500);
  noTone(BUZZER);
  delay(500);
}
```

Result:

Hence, buzzer is successfully interfaced with Arduino UNO and is turned ON with different frequencies