

Experiment No: 2

Interfacing External LED and Buzzer

Name of the Student: Bhavin Patil

Div.: D

Roll No.: 78

Aim: To interface external LED and Buzzer to Node MCU

Components Required:

- 1) Node MCU – 1
- 2) Micro USB Cable – 1
- 3) PC/Laptop – 1
- 4) Connecting Wires
- 5) Bread Board – 1
- 6) LED – 4
- 7) Buzzer -1
- 8) Resistor 200 Ohm – 1

Software Required:

Arduino IDE

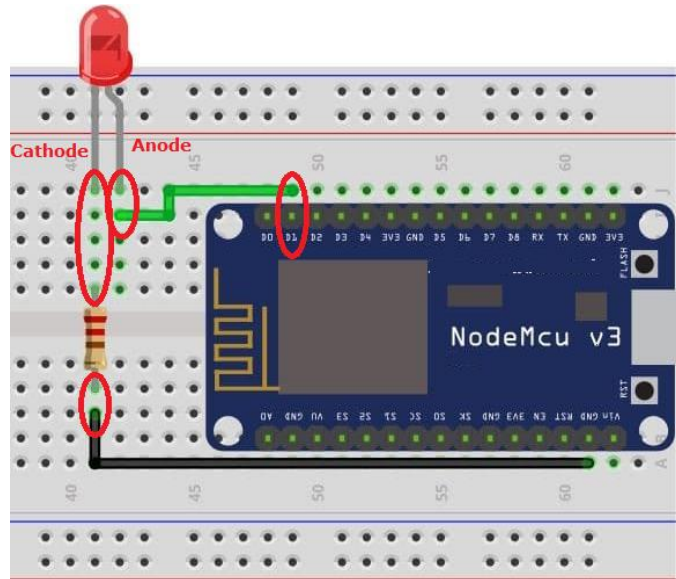
Theory:

We are familiar with blinking LED using Arduino boards as this is the fundamental step towards using a new development board. In this experiment, first we will see how to connect an external LED with **Node MCU** and how to **blink it using GPIO pins** of ESP8266 Node MCU. After that we will see how to connect buzzer with Node MCU.

Procedure:

1. Blinking External LED

Step 1: Make the circuit diagram on bread board according to connection diagram shown below. Anode of the LED [long leg of the LED] is connected to the D1 pin of the Node MCU, the cathode of the LED [short leg of the LED] is connected with the one terminal of the resistor [200 Ohm] and another terminal of the resistor is connected to the ground pin.



Step 2: Connect Node MCU to PC / Laptop with the help of micro USB cable

Step 3: Open new Sketch, Go to file ----> New

Step 4: Write following code in new sketch

```
#define ledPin D1
```

```
void setup() {
```

```
    pinMode(ledPin, OUTPUT);
```

```
    pinMode(LED_BUILTIN, OUTPUT);
```

```
}
```

```
void loop() {
```

```

digitalWrite(ledPin, LOW);

digitalWrite(LED_BUILTIN, HIGH);

delay(1000);

digitalWrite(ledPin, HIGH);

digitalWrite(LED_BUILTIN, LOW);

delay(2000);

}

```

Step 5: Save the new sketch by appropriate name in a folder on your PC / Laptop

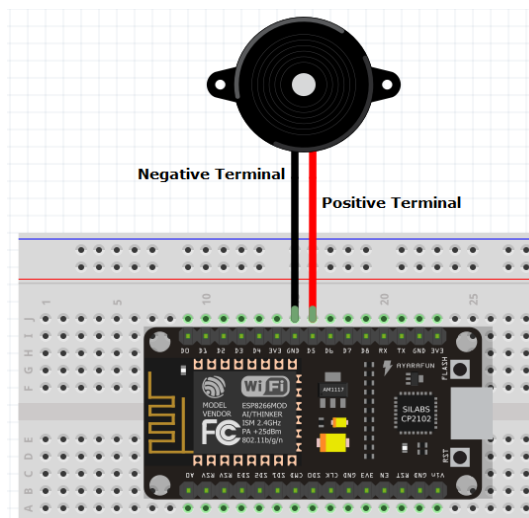
Step 6: Upload the sketch on Node MCU. Go to Sketch ----> Upload

Step 7: Observe the output [Blinking External LED]

2. Connecting Buzzer

Step 1: Make the circuit diagram on bread board according to connection diagram shown below.

Positive terminal of buzzer [long leg of the buzzer] is connected to the D5 pin of the Node MCU, negative terminal of buzzer [short leg of the buzzer] is connected to the ground pin.



Step 2: Connect Node MCU to PC / Laptop with the help of micro USB cable

Step 3: Open new Sketch, Go to file ----> New

Step 4: Write following code in new sketch

```
void setup()
{
}
void loop()
{
  tone(14, 494, 500);
  delay(1000);
}
```

The three numbers inside the tone() function represent: the pin we send the sound (D5 or 14 in our case), the frequency of the sound wave we send and the duration of the tone.

You can change the last two parameters and play with the speed of the beeps and the sound of them.

Step 5: Save the new sketch by appropriate name in a folder on your PC / Laptop

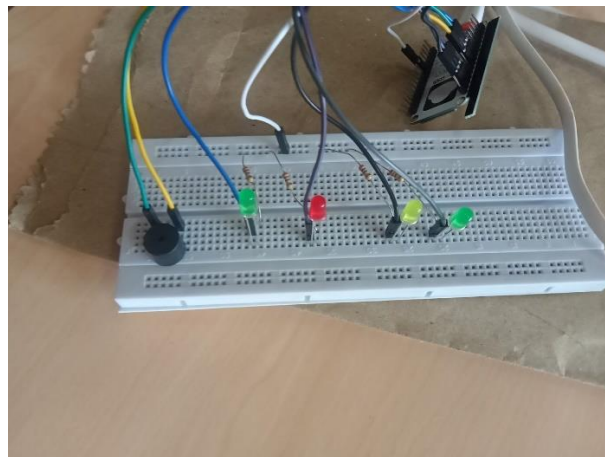
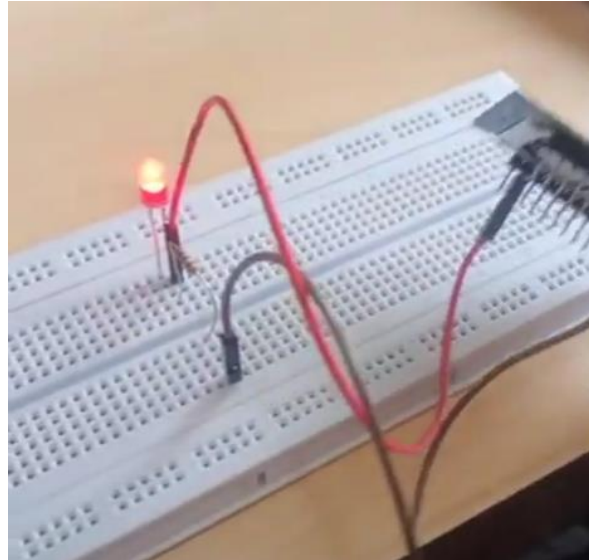
Step 6: Upload the sketch on Node MCU. Go to Sketch ----> Upload

Step 7: Observe the output

Practice:

1. Connect 2/3/4 External LEDs and try different patterns of dancing LEDs
2. In tone function, use different music notes with different time period and run the melody.

Photo:



Conclusion:

Using the Node MCU and Arduino IDE we have successfully implemented the code for connecting the external LED light with buzzer on Bread Board and using the tune and delay function played some tune on buzzer.