Microprocessor Lab

Laboratory Activity No. 2
Arduino and Tinkercad Interface
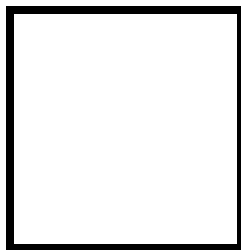
Score

Submitted by:
Alberto, Mark Allen R.
SAT 1 pm – 7 pm / CPE -412.1-2

Date Submitted
30-09-2023

Submitted to:

Engr. Maria Rizette H. Sayo

I.   Objectives

This laboratory activity aims to implement the principles and techniques of hardware programming using Arduino through:

- creating an Arduino programming and circuit diagram.

II.   Method/s

- Perform a task problem given in the presentation.
- Write a code and perform an Arduino circuit diagram of a ring counter that display eight (8) LEDs starting from left.

III.   Results
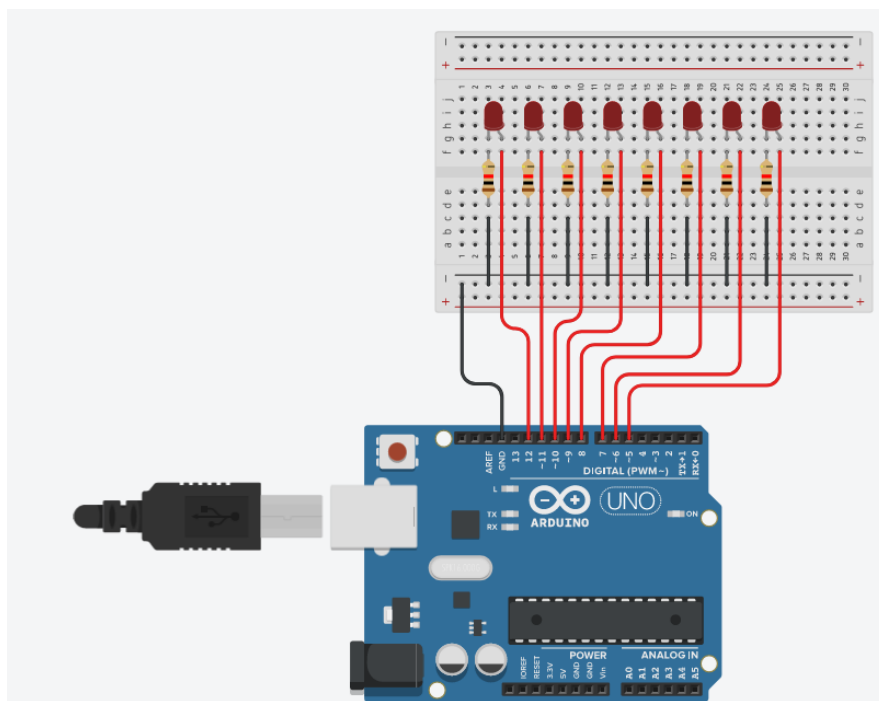
TinkerCad Simulation

Figure No.1 Ring Counter Display Circuit Diagram

Code:

```
1   //Alberto, Mark Allen R.
2   void setup()
3   {
4     pinMode(5, OUTPUT);
5     pinMode(6, OUTPUT);
6     pinMode(7, OUTPUT);
7     pinMode(8, OUTPUT);
8     pinMode(9, OUTPUT);
9     pinMode(10, OUTPUT);
10    pinMode(11, OUTPUT);
11    pinMode(12, OUTPUT);
12    Serial.begin(9600);
13
14  }
15
```

```
16  void loop()
17  {
18    // ALBERTO, Mark Allen R.
19    digitalWrite(12,HIGH);
20    delay(500);
21    Serial.println("The LED1 is HIGH");
22    digitalWrite(12,LOW);
23    delay(500);
24    Serial.println("The LED1 is LOW");
25
26    digitalWrite(11,HIGH);
27    delay(500);
28    Serial.println("The LED2 is HIGH");
29    digitalWrite(11,LOW);
30    delay(500);
31    Serial.println("The LED2 is LOW");
32
33    digitalWrite(10,HIGH);
34    delay(500);
35    Serial.println("The LED3 is HIGH");
36    digitalWrite(10,LOW);
37    delay(500);
38    Serial.println("The LED3 is LOW");
39
40    digitalWrite(9,HIGH);
41    delay(500);
42    Serial.println("The LED4 is HIGH");
43    digitalWrite(9,LOW);
44    delay(500);
45    Serial.println("The LED4 is LOW");
46
47    digitalWrite(8,HIGH);
48    delay(500);
49    Serial.println("The LED5 is HIGH");
50    digitalWrite(8,LOW);
51    delay(500);
52    Serial.println("The LED5 is LOW");
53
54    digitalWrite(7,HIGH);
55    delay(500);
56    Serial.println("The LED6 is HIGH");
57    digitalWrite(7,LOW);
58    delay(500);
59    Serial.println("The LED6 is LOW");
60
61    digitalWrite(6,HIGH);
62    delay(500);
63    Serial.println("The LED7 is HIGH");
64    digitalWrite(6,LOW);
65    delay(500);
66    Serial.println("The LED7 is LOW");
67
68    digitalWrite(5,HIGH);
69    delay(500);
70    Serial.println("The LED8 is HIGH");
71    digitalWrite(5,LOW);
72    delay(500);
73    Serial.println("The LED8 is LOW");
74  }
```

Simulation Link:

https://www.tinkercad.com/things/aMPV1M69dwf-arduino-lab-2alberto/editel?sharecode=3bD8OGI10Y1pokB4XJrCM09-HwBsLXu07RFs_oTEiXY

IV. Conclusion

In the provided code, the program is written to control a sequence of eight LEDs. It accomplishes this by systematically turning each LED on and off while introducing a delay between these transitions.

References

[1] D.J.D. Sayo. "University of the City of Manila Computer Engineering Department Honor Code," PLM-CpE Departmental Policies, 2020.

[2] Ed, "Arduino delay [tutorial] - the robotics back," End, https://roboticsbackend.com/arduino-delay/ (accessed Sep. 30, 2023).

[3] S. Campbell, "Getting started with the Arduino - controlling the LED (part 1)," Circuit Basics, https://www.circuitbasics.com/arduino-basics-controlling-led/ (accessed Sep. 30, 2023).