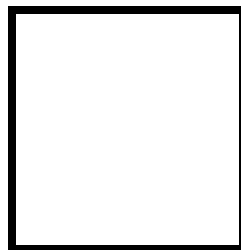




PAMANTASAN NG LUNGSOD NG MAYNILA
(University of the City of Manila)
Intramuros, Manila

Microprocessor Lab

Laboratory Activity No. 2
Arduino and Tinkercad Interface



Score

Submitted by:
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S 10:00AM – 1:00PM / CPE 0412.1-1

Date Submitted
30-09-2023

Submitted to:
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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

Exercise 1: Write a code that does a ring counter display for eight (8) LEDs starting from left.

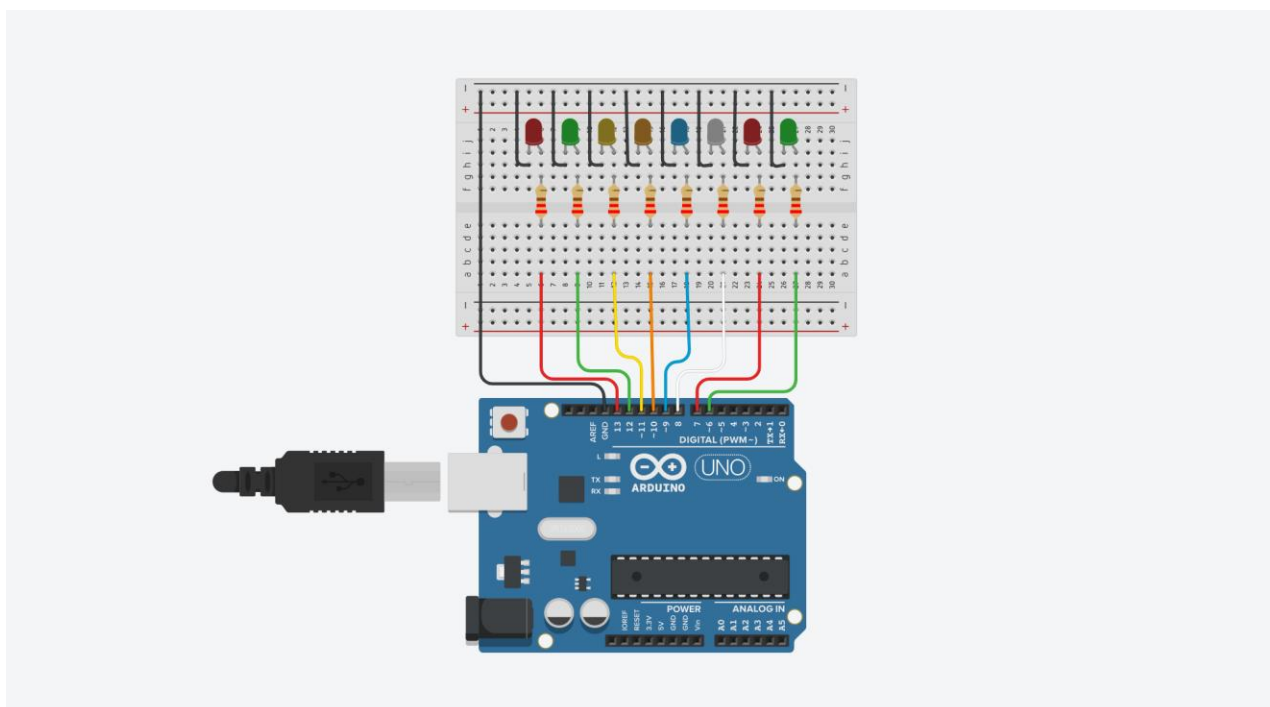


Figure No.1 Ring Counter Display Circuit Diagram

Components Used

1. 8 LEDs
2. Resistor
3. Breadboard

CODE:

```
1 // C++ code
2 //
3 /*
4 Ring counter display for eight (8) LEDs starting from left.*/
5 void setup()
6 {
7     Serial.begin(9600);
8     pinMode(6, OUTPUT);
9     pinMode(7, OUTPUT);
10    pinMode(8, OUTPUT);
11    pinMode(9, OUTPUT);
12    pinMode(10, OUTPUT);
13    pinMode(11, OUTPUT);
14    pinMode(12, OUTPUT);
15    pinMode(13, OUTPUT);
16 }
17 void loop()
18 {
19     digitalWrite(13, HIGH);
20     delay(500);
21     Serial.println("The LED1 is HIGH");
22     digitalWrite(13, LOW);
23     delay(500);
24
25     Serial.println("The LED1 is LOW");
26     digitalWrite(12, HIGH);
27     delay(500);
28     Serial.println("The LED2 is HIGH");
29     digitalWrite(12, LOW);
30     delay(500);
31
32     Serial.println("The LED2 is LOW");
33     digitalWrite(11, HIGH);
34     delay(500);
35     Serial.println("The LED3 is HIGH");
36     digitalWrite(11, LOW);
37     delay(500);
38
39     Serial.println("The LED3 is LOW");
40     digitalWrite(10, HIGH);
41     delay(500);
42     Serial.println("The LED4 is HIGH");
43     digitalWrite(10, LOW);
44     delay(500);
45
46     Serial.println("The LED4 is LOW");
47     digitalWrite(9, HIGH);
48
49     delay(500);
50     Serial.println("The LED5 is HIGH");
51     digitalWrite(9, LOW);
52     delay(500);
53
54     Serial.println("The LED5 is LOW");
55     digitalWrite(8, HIGH);
56     delay(500);
57     Serial.println("The LED6 is HIGH");
58     digitalWrite(8, LOW);
59     delay(500);
60
61     Serial.println("The LED6 is LOW");
62     digitalWrite(7, HIGH);
63     delay(500);
64     Serial.println("The LED7 is HIGH");
65     digitalWrite(7, LOW);
66     delay(500);
67     Serial.println("The LED7 is LOW");
68     digitalWrite(6, HIGH);
69     delay(500);
70     Serial.println("The LED8 is HIGH");
71     digitalWrite(6, LOW);
72     delay(500);
73     Serial.println("The LED8 is LOW");
74 }
```

IV. Conclusion

In this code, we've created a ring counter display using an Arduino board and eight LEDs. The purpose of this project is to showcase a simple example of how combining different components like LEDs, resistors, and an Arduino can result in a useful and visually appealing display.

The ring counter sequentially lights up each LED one at a time, creating a visually appealing ring-like pattern. Each LED is illuminated for a short duration and then turned off before the next one lights up, producing a looping effect. This kind of display can be used for various purposes, such as decorative lighting, visual indicators, or even as part of a larger project.

By understanding and manipulating the code, you can customize the timing, pattern, and behavior of the LED ring counter to suit your specific needs. This project serves as a foundation for more complex applications that involve LED displays and Arduino programming, showcasing the versatility and creative possibilities of combining different electronic components.

V. TinkerCAD Simulation Link

<https://www.tinkercad.com/things/eei9Z5LjjKt-surprising-tumeloinari/editel?sharecode=SgZ5igS57SBQpTitbiLaf2rkgTRqCSG7rqM0piP35cs>

References

- [1] Electroschematics. "Arduino LED Ring." Electroschematics, <https://www.electroschematics.com/arduino-led-ring/>. Accessed September 29, 2023.
- [2] Instructables. "Build a Simple Binary Counter using your Arduino." Instructables, <https://www.instructables.com/Build-a-Simple-Binary-Counter-using-your-Arduino/>. Accessed September 29, 2023.