

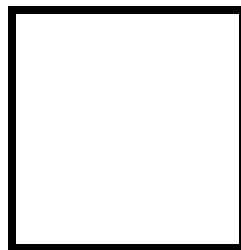


**PAMANTASAN NG LUNGSOD NG MAYNILA**  
(University of the City of Manila)  
Intramuros, Manila

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**Microprocessor Lab**

Laboratory Activity No. 2  
**Arduino and Tinkercad Interface**



Score

*Submitted by:*  
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<Saturday 10:00am-1:00pm> / <CPE 0412.1-1>

*Date Submitted*  
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*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.**

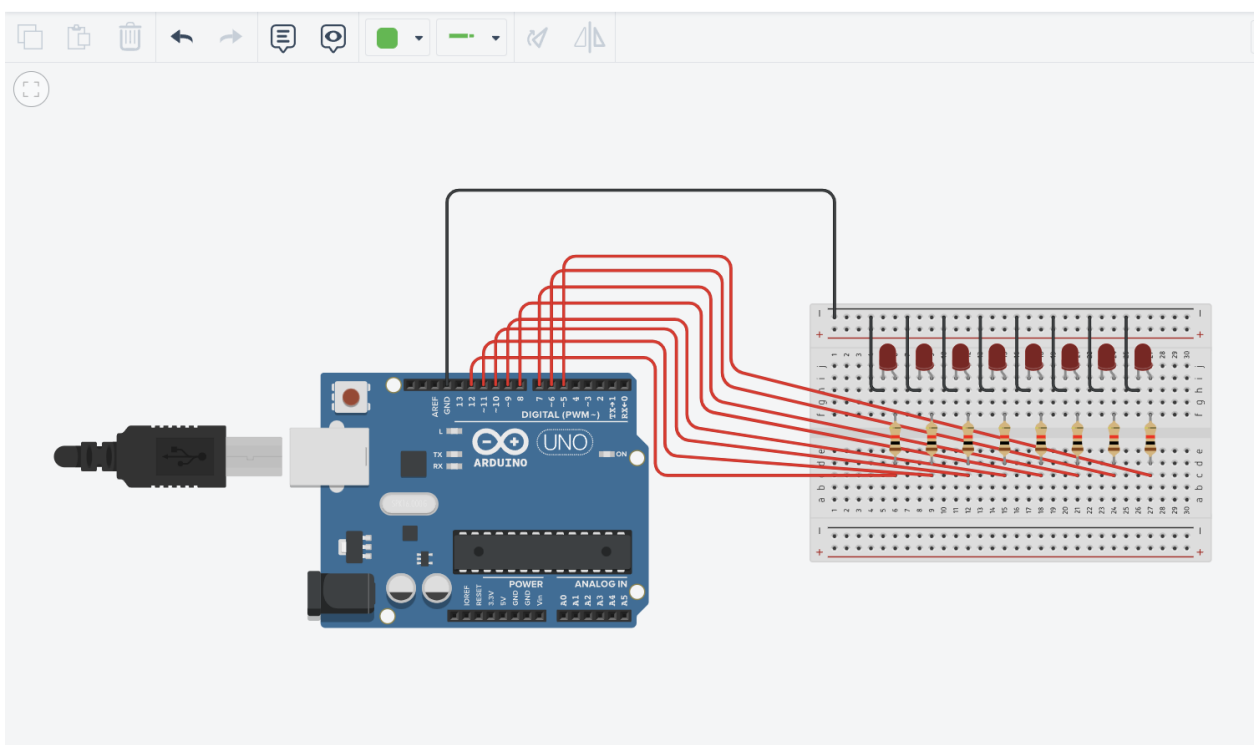


Figure No.1 Ring Counter Display Circuit Diagram

### 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 */
6
7 void setup()
8 {
9     Serial.begin(9600);
10    pinMode(5, OUTPUT);
11    pinMode(6, OUTPUT);
12    pinMode(7, OUTPUT);
13    pinMode(8, OUTPUT);
14    pinMode(9, OUTPUT);
15    pinMode(10, OUTPUT);
16    pinMode(11, OUTPUT);
17    pinMode(12, OUTPUT);
18 }
19
20 void loop()
21 {
22     digitalWrite(12, HIGH);
23     delay(500);
24     Serial.println("The LED1 is HIGH");
25     digitalWrite(12, LOW);
26     delay(500);
27     Serial.println("The LED1 is LOW");
28
29     digitalWrite(11, HIGH);
30     delay(500);
31     Serial.println("The LED2 is HIGH");
32     digitalWrite(11, LOW);
33     delay(500);
```

```
34     Serial.println("The LED2 is LOW");
35
36     digitalWrite(10, HIGH);
37     delay(500);
38     Serial.println("The LED3 is HIGH");
39     digitalWrite(10, LOW);
40     delay(500);
41     Serial.println("The LED3 is LOW");
42
43     digitalWrite(9, HIGH);
44     delay(500);
45     Serial.println("The LED4 is HIGH");
46     digitalWrite(9, LOW);
47     delay(500);
48     Serial.println("The LED4 is LOW");
49
50     digitalWrite(8, HIGH);
51     delay(500);
52     Serial.println("The LED5 is HIGH");
53     digitalWrite(8, LOW);
54     delay(500);
55     Serial.println("The LED5 is LOW");
56
57     digitalWrite(7, HIGH);
58     delay(500);
59     Serial.println("The LED6 is HIGH");
60     digitalWrite(7, LOW);
61     delay(500);
62     Serial.println("The LED6 is LOW");
63
64     digitalWrite(6, HIGH);
65     delay(500);
66     Serial.println("The LED7 is HIGH");
```

#### IV. Conclusion

The ring counter LED blinking circuit implemented with an Arduino Uno provides an engaging and dynamic display of lights. This circuit takes advantage of the Arduino's digital output pins and a ring counter configuration to sequentially illuminate a series of LEDs in a circular pattern. As each LED turns on and off in sequence, it creates a visually pleasing and attention-grabbing visual effect. The ring counter LED blinking circuit can serve as an excellent educational tool for individuals learning about digital electronics and microcontroller programming. It introduces fundamental concepts such as digital output control, sequencing, and timing, making it a valuable project for students and hobbyists alike.

#### References

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

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