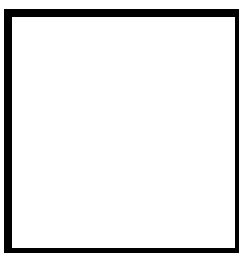




PAMANTASAN NG LUNGSOD NG MAYNILA
(University of the City of Manila)
Intramuros, Manila

Microprocessor Lab

Laboratory Activity No. 2
Arduino and Tinkercad Interface



Score

Submitted by:
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Saturday 1-7pm / CPE 0412.1-2

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.

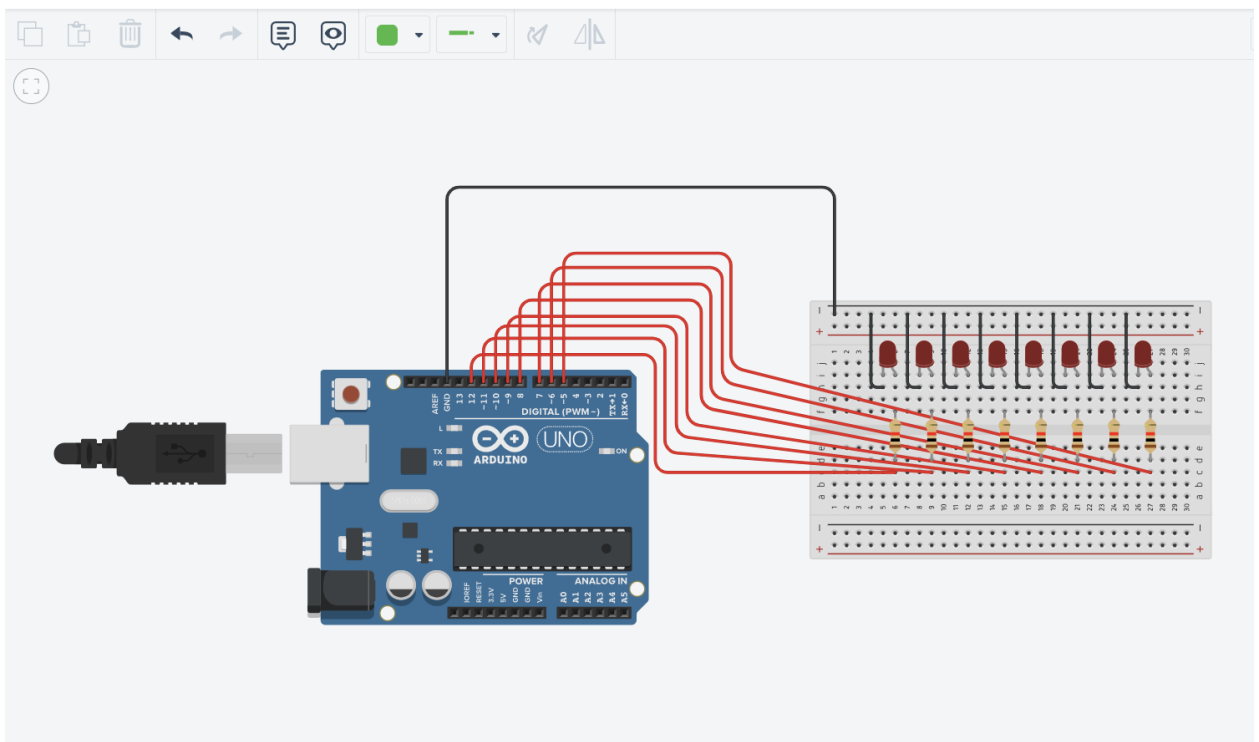


Figure No.1 Ring Counter Display Circuit Diagram

Components Used

1. 8 LEDs
2. Resistor
3. Breadboard

CODE:

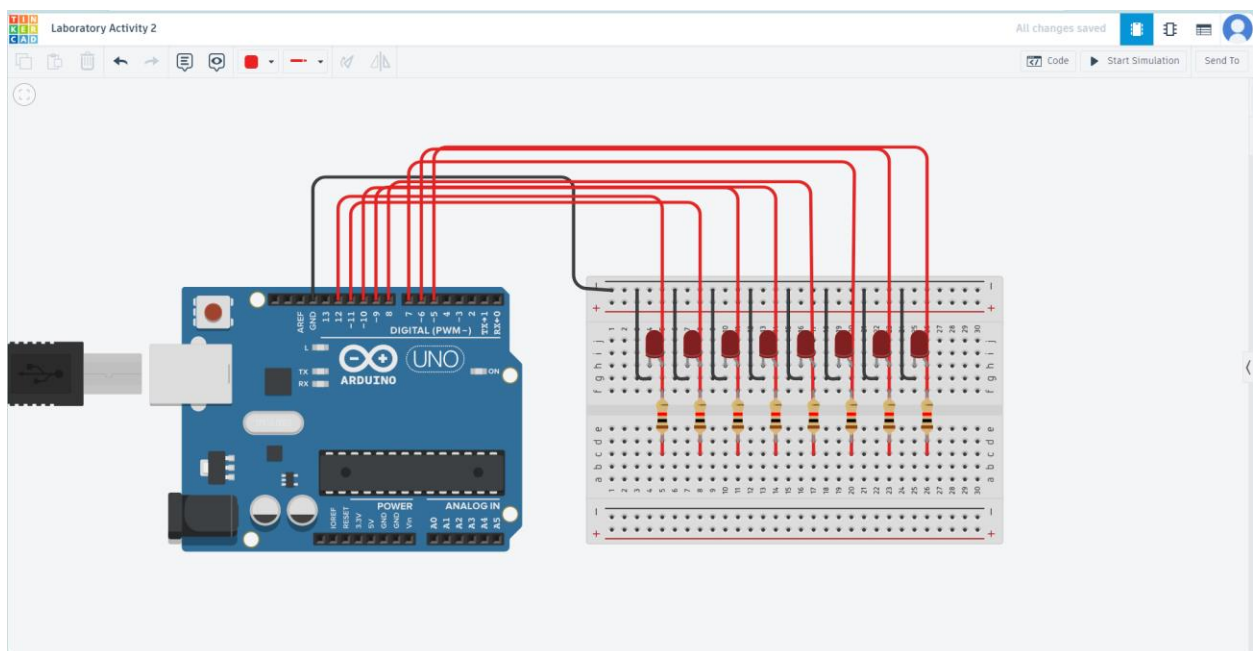
```
1 // C++ code
2 //
3 /*
4  * Ring counter display for eight (8) LEDs starting from left.
5  */
6
7 void setup()
8 {
9     Serial.begin(9600);
10    pinMode(5, OUTPUT);
11    pinMode(6, OUTPUT);
12    pinMode(7, OUTPUT);
13    pinMode(8, OUTPUT);
14    pinMode(9, OUTPUT);
15    pinMode(10, OUTPUT);
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");
67     digitalWrite(6, LOW);
68     delay(500);
69     Serial.println("The LED7 is LOW");
70
71     digitalWrite(5, HIGH);
72     delay(500);
73     Serial.println("The LED8 is HIGH");
74     digitalWrite(5, LOW);
75     delay(500);
76     Serial.println("The LED8 is LOW");
77
78 }
```

IV. Conclusion

In this laboratory activity, it tackles about how to create a ring counter display in tinkercad. The Arduino program shows a simple ring counter display that starts from the left. It uses a single variable to keep track of which LED is currently on. Additionally, The serial begin function initializes the serial monitor so that the arduino board can communicate with the PC. Next is, the pinMode sets all the pins to output mode, meaning that the Arduino board can put voltage in all the pins. Furthermore, the setup is the one that declares all the variables in the code, the loop is an never-ending loop in which it turns on the LEDs in a sequence starting from the left. Overall, the arduino program is working as intended and it shows the ring counter in sequence that turns on the LEDs.

References

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



Code:

```
void setup()
{
  Serial.begin(9600);
  pinMode(5, OUTPUT);
  pinMode(6, OUTPUT);
  pinMode(7, OUTPUT);
  pinMode(8, OUTPUT);
  pinMode(9, OUTPUT);
  pinMode(10, OUTPUT);
  pinMode(11, OUTPUT);
  pinMode(12, OUTPUT);
}
```

```
}

void loop ()
{

    digitalWrite(12,HIGH);
    delay(500);
    Serial.println("The LED1 is HIGH");
    digitalWrite(12,LOW);
    delay(500);
    Serial.println("The LED1 is LOW");

    digitalWrite(11,HIGH);
    delay(500);
    Serial.println("The LED2 is HIGH");
    digitalWrite(11,LOW);
    delay(500);
    Serial.println("The LED2 is LOW");

    digitalWrite(10,HIGH);
    delay(500);
    Serial.println("The LED3 is HIGH");
    digitalWrite(10,LOW);
    delay(500);
    Serial.println("The LED3 is LOW");

    digitalWrite(9,HIGH);
    delay(500);
    Serial.println("The LED4 is HIGH");
    digitalWrite(9,LOW);
    delay(500);
    Serial.println("The LED4 is LOW");

    digitalWrite(8,HIGH);
    delay(500);
    Serial.println("The LED5 is HIGH");
    digitalWrite(8,LOW);
    delay(500);
    Serial.println("The LED5 is LOW");

    digitalWrite(7,HIGH);
    delay(500);
```

```
Serial.println("The LED6 is HIGH");  
digitalWrite(7,LOW);  
delay(500);  
Serial.println("The LED6 is LOW");
```

```
digitalWrite(6,HIGH);  
delay(500);  
Serial.println("The LED7 is HIGH");  
digitalWrite(6,LOW);  
delay(500);  
Serial.println("The LED7 is LOW");
```

```
digitalWrite(5,HIGH);  
delay(500);  
Serial.println("The LED8 is HIGH");  
digitalWrite(5,LOW);  
delay(500);  
Serial.println("The LED8 is LOW");
```

```
}
```