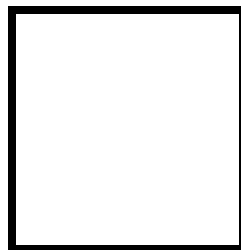




PAMANTASAN NG LUNGSOD NG MAYNILA
(University of the City of Manila)
Intramuros, Manila

Microprocessor Lab

Laboratory Activity No. 2
Arduino and Tinkercad Interface



Score

Submitted by:
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Saturday 7:00-10:00 am / CPE 0412-1

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

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

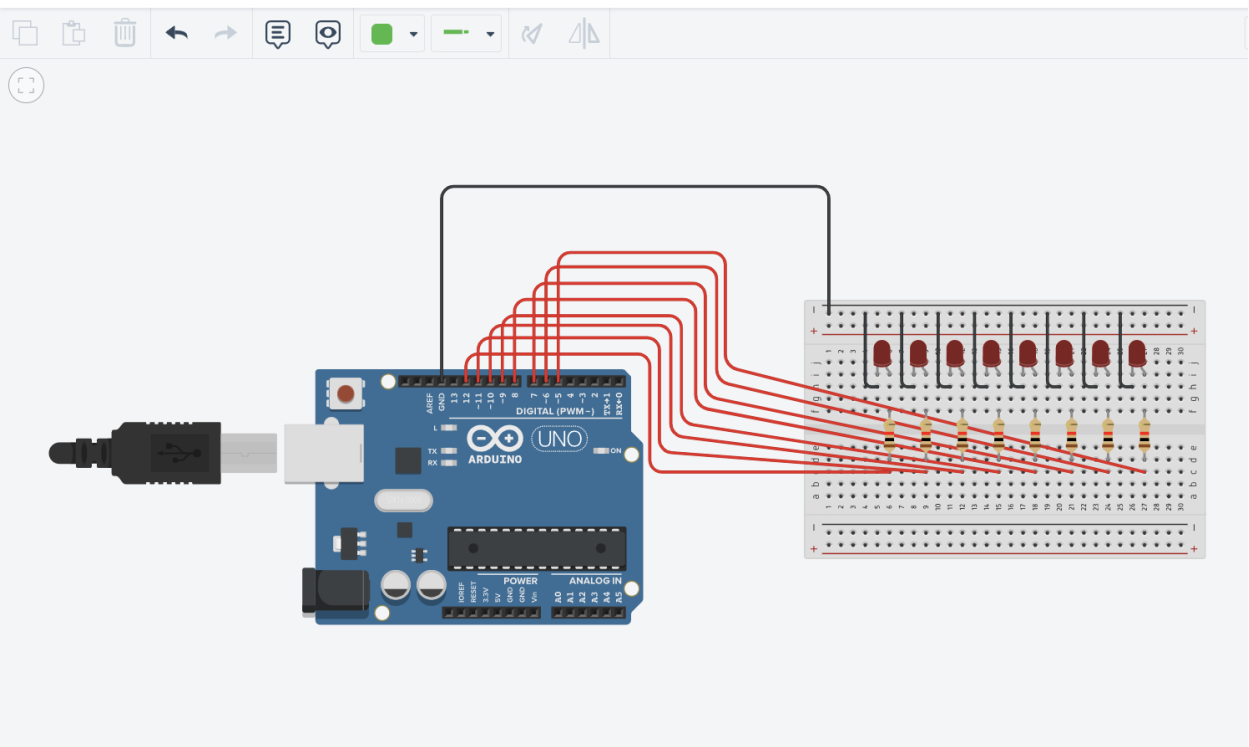


Figure No.1
Ring
Counter
Display
Circuit
Diagram

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);

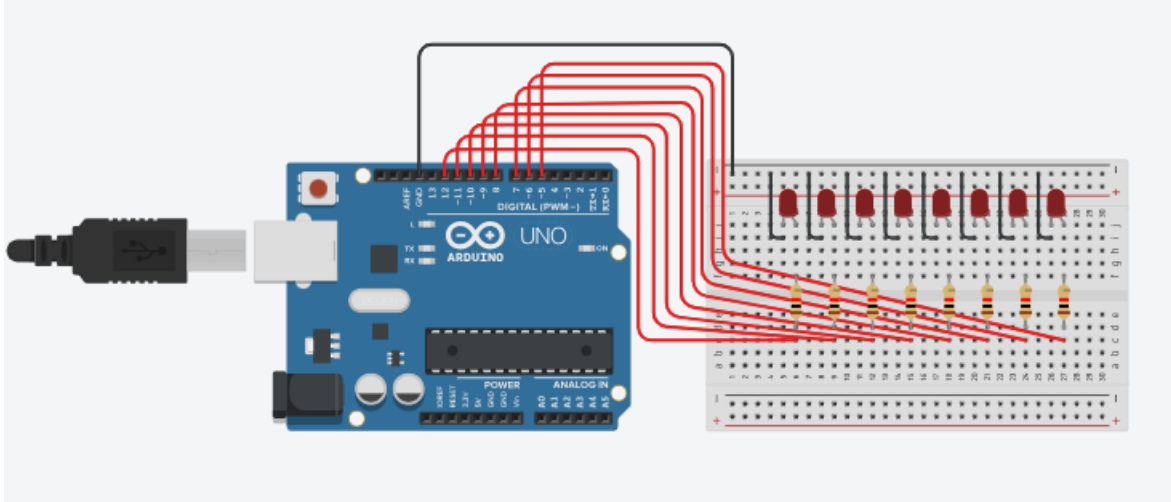
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```

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");

```

RESULT:



IV. Conclusion

In Laboratory Experiment 2, the relationship between Arduino programming and the design of a ring counter display graphic was tested out in practice. The main goal was to create a working counter display utilizing eight red LEDs and 1k ohm resistors to demonstrate how Arduino technology can be used in the real world. This experiment highlighted the critical relationship between hardware and software elements, illuminating how they function in unison to produce the desired display and counting capability.

The experiment demonstrated the complex interaction between hardware and software in providing workable solutions by successfully controlling the entire system with well written Arduino code. In addition to demonstrating the capabilities of Arduino technology, this practical experience gave important insights into how to combine electronic hardware and code to build interactive.

References

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