**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:*
**David, Charles Joshua G.**
**Saturday 1:00 PM - 7:00 PM / 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**

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

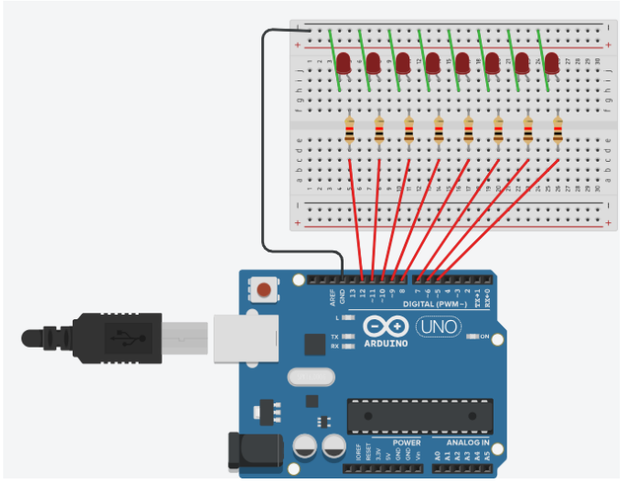


Figure No.1 Ring Counter Display Circuit Diagram

**Components Used**

1. 8 LEDs
2. Resistor
3. Breadboard

**CODE:**

```
// C++ code
//Ring counter display for eight (8) LEDs starting from left.
// Charles Joshua G. David
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");

}
```

## IV. Conclusion

*The Arduino circuit layout for an eight-LED ring counter that counts up from left to right is a useful and eye-catching example of digital logic and microcontroller programming. This project demonstrates the Arduino's adaptability and instructional usefulness in building different digital circuits. Sequential logic circuits may be readily understood and implemented by hobbyists utilizing basic components like LEDs, resistors, and transistors in conjunction with Arduino's programming capabilities.*

*For those who are unfamiliar with digital electronics, the successive lighting of LEDs gives a simple illustration of how a ring counter works. This project can also act as a starting point for more complicated applications and experiments, promoting investigation into the field of digital logic and microcontroller-based projects.*

*Overall, the Arduino ring counter circuit diagram for displaying eight LEDs in a left-to-right sequence is a great starting point for electronics enthusiasts to delve into digital circuitry, programming, and creative applications in the realm of microcontroller projects. It combines theory and hands-on experience, fostering a deeper understanding of sequential logic and Arduino programming, while also offering room for customization and expansion as users gain confidence and expertise in the field.*