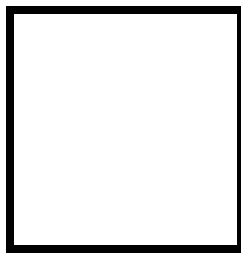**PAMANTASAN NG LUNGSOD NG MAYNILA**

(University of the City of Manila)

Intramuros, Manila

Microprocessor Lab

Laboratory Activity No. 2
Arduino and Tinkercad Interface

Score

Submitted by:
Bitara, Jan Vincent S.
< Saturday 10:30am – 1:00pm > / < CPE 0412-1.1>

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

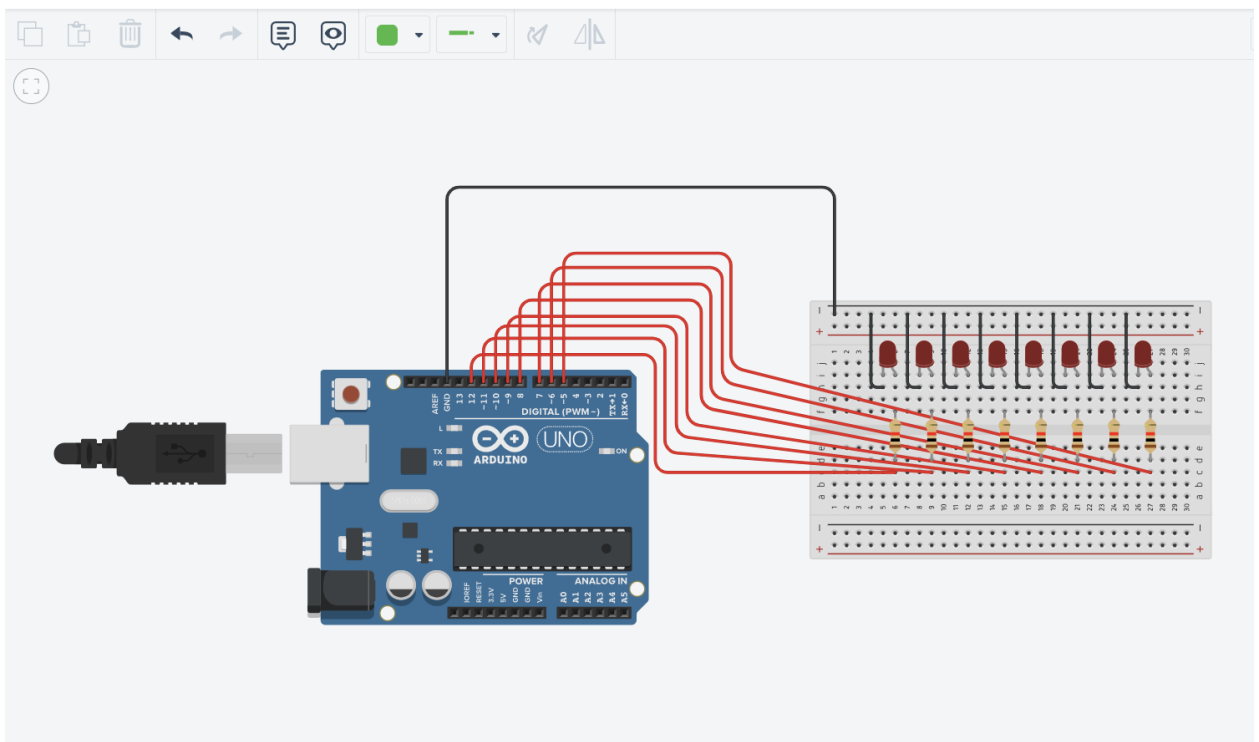**Exercise 1: Write a code that does a ring counter display for eight (8) LEDs starting from left.**


Figure No.1 Ring Counter Display Circuit Diagram

Components Used

1. 8 LEDs
2. Resistor
3. Breadboard

CODE:

```cpp
// C++ code
//
/*
  Ring counter display for eight (8) LEDs starting from left.
*/

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
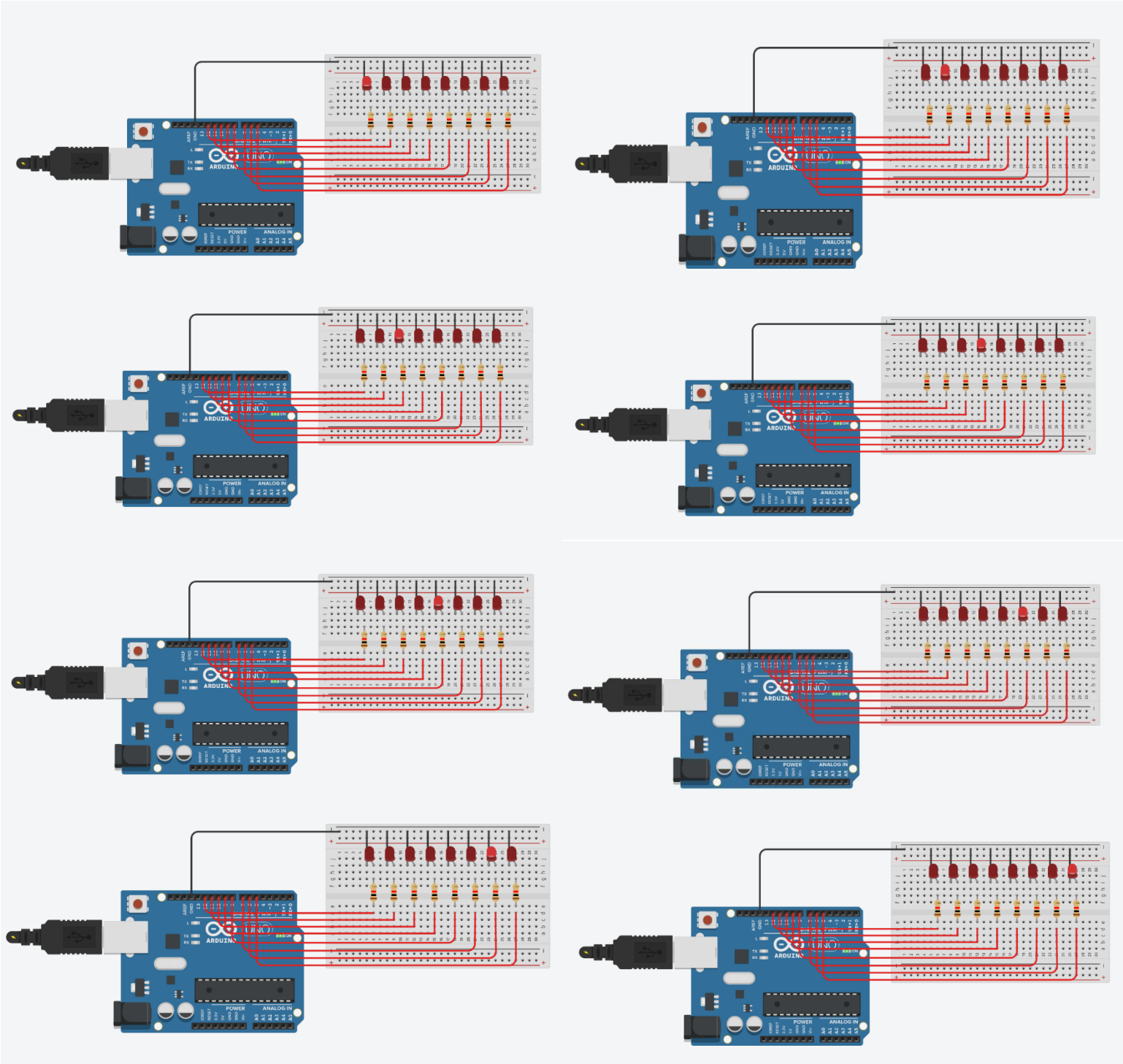
      The 8-LED ring counter display is a simple but effective way to demonstrate the concept of a ring counter. The circuit is relatively easy to build and requires only a few basic components: an Arduino board, a breadboard, jumper wires, and 8 LEDs.The circuit works by sequentially turning on and off the LEDs in a ring. The Arduino board controls the switching of the LEDs using a simple program. The program uses a counter to keep track of which LED should be turned on next.

References

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

<This is in a separate page>