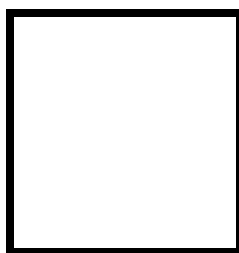**PAMANTASAN NG LUNGSOD NG MAYNILA**
(University of the City of Manila)
Intramuros, Manila

Microprocessor Lab

Laboratory Activity No. 2
Arduino and Tinkercad Interface

Score

Submitted by:
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SAT 10:00A.M-1:00P.M / 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.
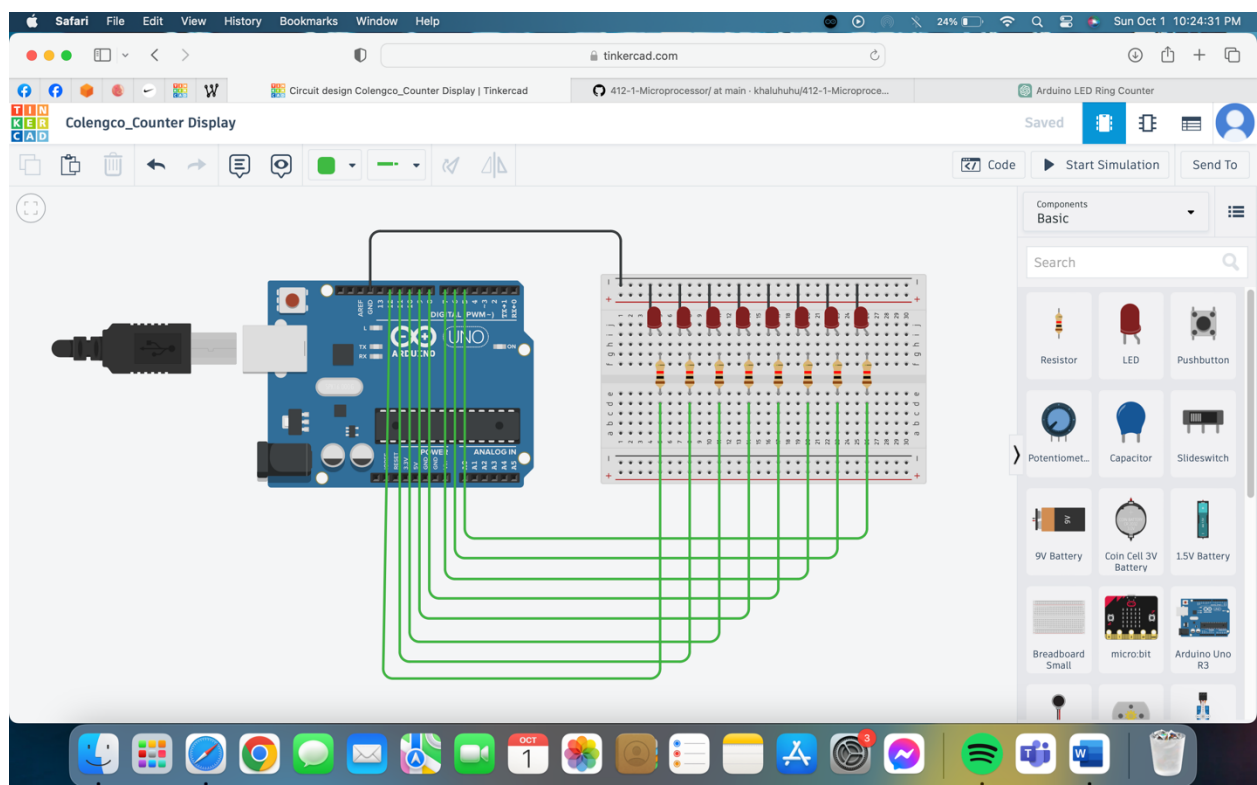

Figure No.1 Ring Counter Display Circuit Diagram

Components Used
1. 8 LEDs
2. Resistor
3. Breadboard

CODE:

```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);
```

```cpp
  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");
```

IV. Conclusion

In conclusion, creating a LED blinking ring counter on an Arduino Uno and simulating it on Tinkercad is an engaging and educational project that combines both hardware and software aspects. Throughout this project, you've not only learned about digital electronics and programming but also gained experience in using virtual simulation tools like Tinkercad to test and validate your designs.

By successfully implementing this project in Tinkercad, you've had the opportunity to visualize and validate your circuit connections and code execution before moving to physical hardware. This simulation process can save time and resources and help identify and correct potential issues in your design. As you continue to explore Arduino projects and simulations on platforms like Tinkercad, you'll further enhance your skills in electronics and programming. You can apply these skills to create more intricate and innovative projects, pushing the boundaries of what you can achieve with the Arduino Uno and other microcontroller platforms.

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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