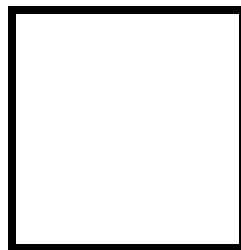




PAMANTASAN NG LUNGSOD NG MAYNILA
(University of the City of Manila)
Intramuros, Manila

Microprocessor Lab

Laboratory Activity No. 2
Arduino and Tinkercad Interface



Score

Submitted by:
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< Saturday 10:30am – 1:00pm > / < 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

<https://www.tinkercad.com/things/iocngtS48Yl>

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

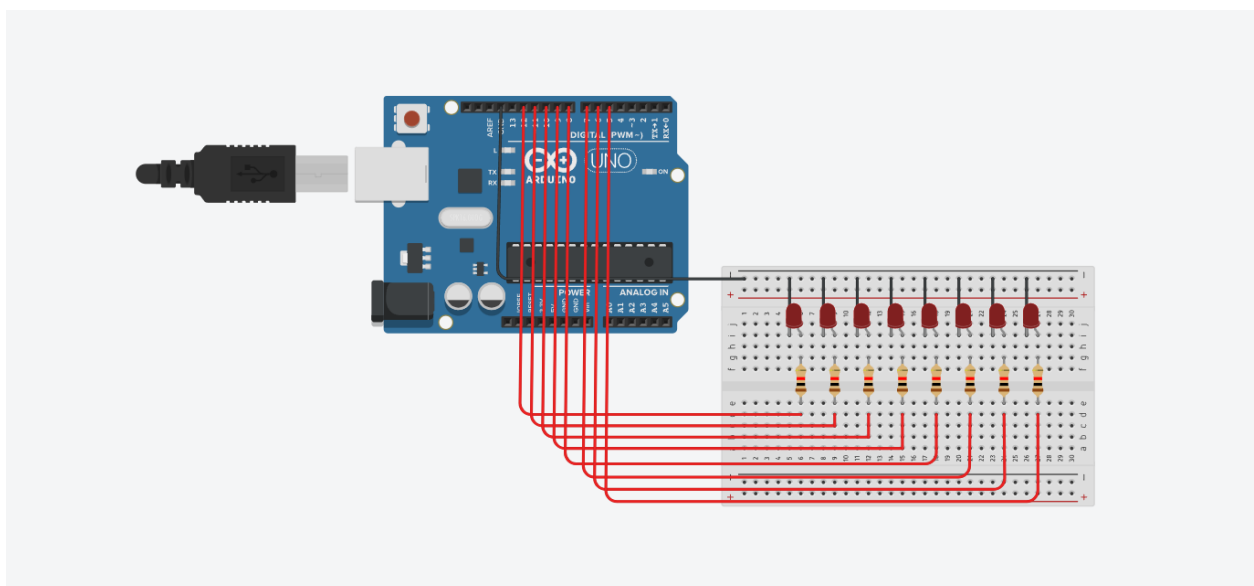


Figure No.1 Ring Counter Display Circuit Diagram

Components Used

1. 8 LEDs
2. Resistor
3. Breadboard

CODE:

```
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); // Wait for 500 millisecond(s)
    Serial.println("The LED1 is HIGH");
    digitalWrite(12, LOW);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED1 is LOW");

    digitalWrite(11, HIGH);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED2 is HIGH");
    digitalWrite(11, LOW);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED2 is LOW");

    digitalWrite(10, HIGH);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED3 is HIGH");
    digitalWrite(10, LOW);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED3 is LOW");

    digitalWrite(9, HIGH);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED4 is HIGH");
    digitalWrite(9, LOW);
```

```
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED4 is LOW");

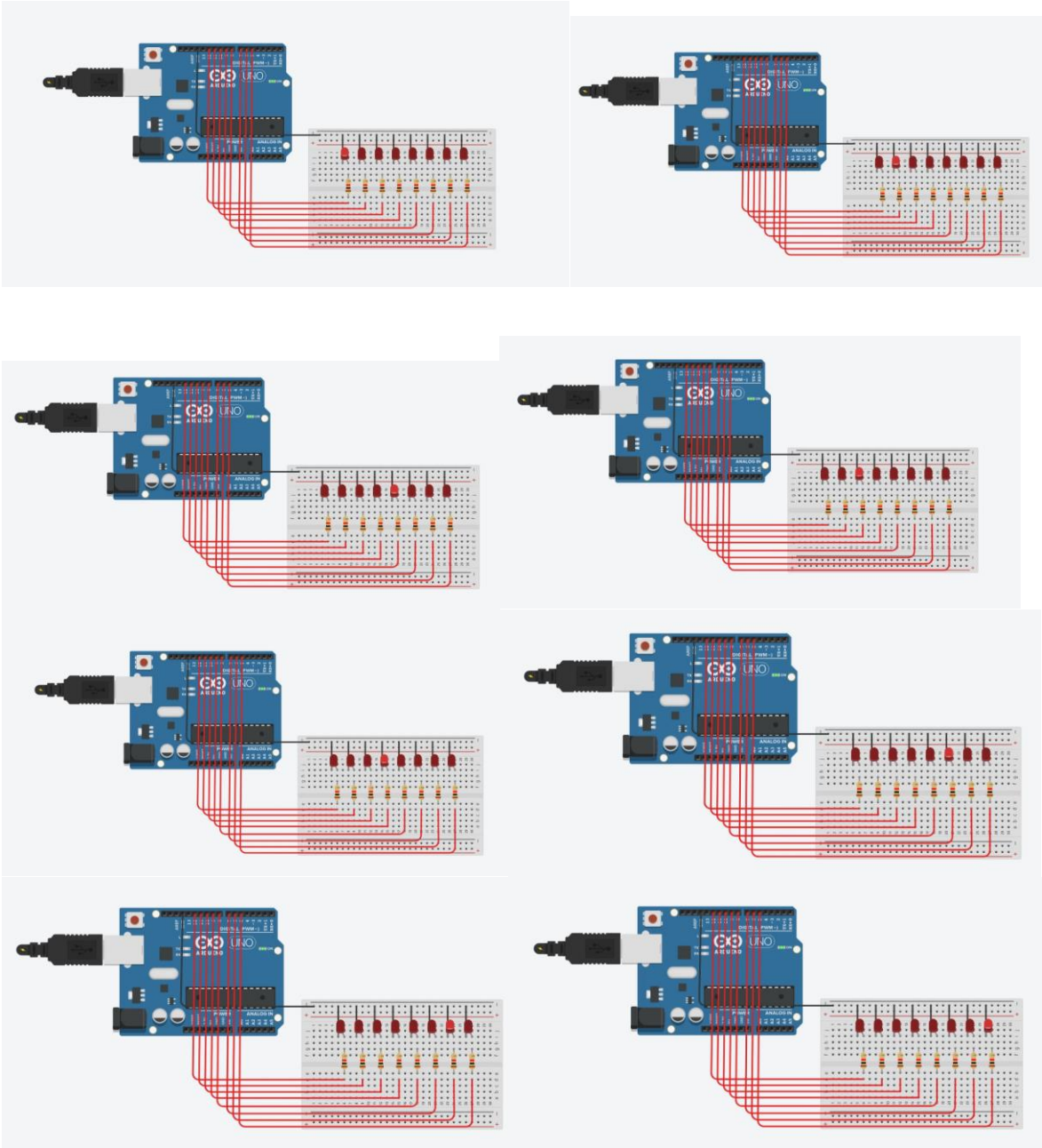
    digitalWrite(8, HIGH);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED5 is HIGH");
    digitalWrite(8, LOW);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED5 is LOW");

    digitalWrite(7, HIGH);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED6 is HIGH");
    digitalWrite(7, LOW);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED6 is LOW");

    digitalWrite(6, HIGH);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED7 is HIGH");
    digitalWrite(6, LOW);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED7 is LOW");

    digitalWrite(5, HIGH);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED8 is HIGH");
    digitalWrite(5, LOW);
    delay(500); // Wait for 500 millisecond(s)
    Serial.println("The LED8 is LOW");
}
```

IV. Conclusion



The 8-LED ring counter display effectively illustrates the idea of a ring counter with its straightforward design. This easy-to-construct circuit involves minimal components: an Arduino board, a breadboard, jumper wires, and 8 LEDs. It operates by lighting up the LEDs in a sequence, creating a ring effect. The Arduino board manages this process through a basic program, which uses a counter to identify the next LED to illuminate.

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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