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 (1pm to 7pm) > / <20231 - CPE 0412.1-2>

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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.

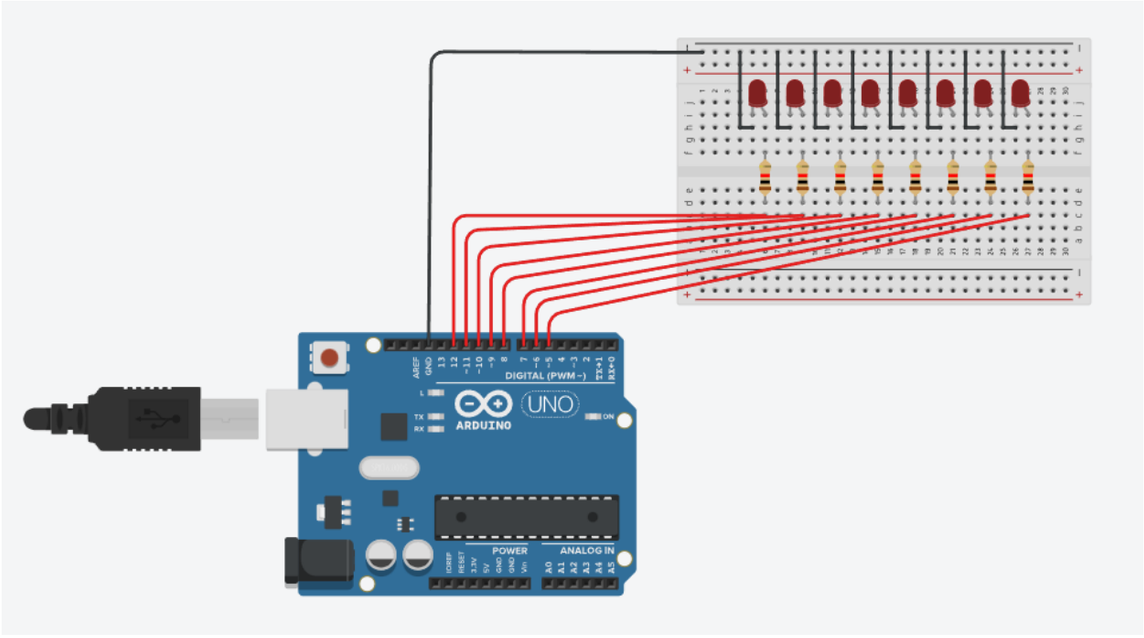

Figure No.1 Ring Counter Display Circuit Diagram

Components Used

1. 8 LEDs
2. Resistor
3. Breadboard

CODE:

```
// C++ 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);
  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

In conclusion, the goal of this Tinkercad lab project was to demonstrate how to use Arduino for hardware programming in a practical setting. The development of an Arduino programming code and the related circuit schematic was one of the main goals. Throughout the activity, participants were required to write code and create an Arduino circuit schematic for a ring counter to solve a specific challenge described in the presentation. This counter was made to sequentially illuminate eight LEDs, starting with the leftmost LED. Participants had the chance to learn insightful details about hardware programming and Arduino applications through this practical activity, which improved their comprehension of these ideas and methods.

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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