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:
Sunga, Charles Edward T.
< S 10:00a-1:00p> / <Section 1>

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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.

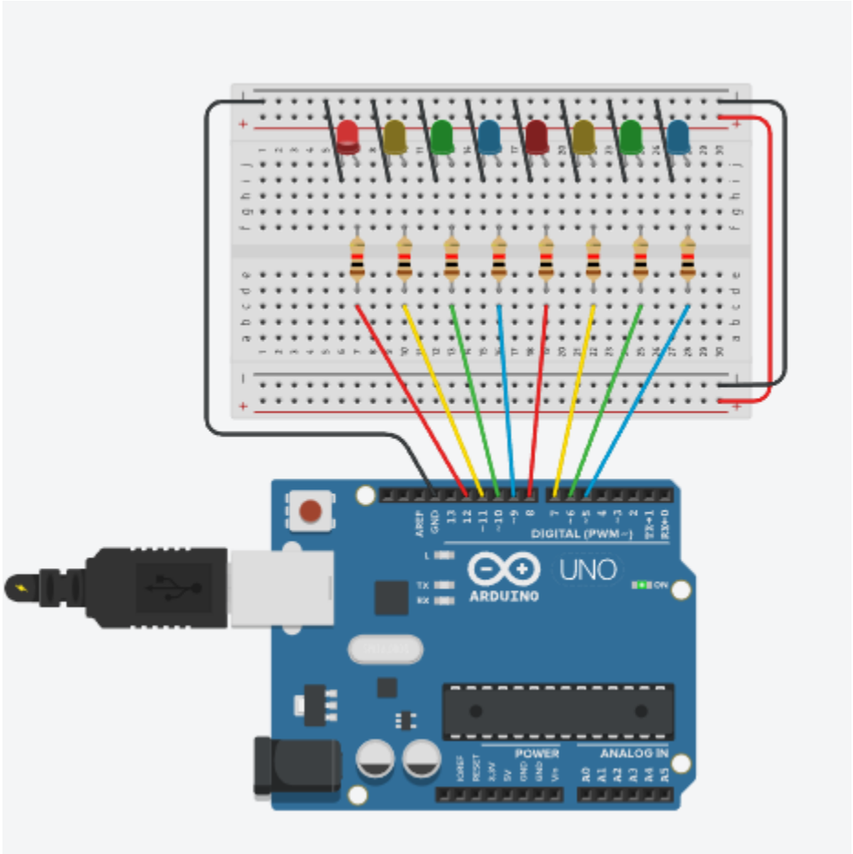

Figure No.1 Ring Counter Display Circuit Diagram

Components Used

1. 8 LEDs
2. Resistor
3. Breadboard

CODE:

```
// C++ code
//Ring Counter

void setup()
{
  pinMode(5, OUTPUT);
  pinMode(6, OUTPUT);
  pinMode(7, OUTPUT);
  pinMode(8, OUTPUT);
  pinMode(9, OUTPUT);
  pinMode(10, OUTPUT);
  pinMode(11, OUTPUT);
  pinMode(12, OUTPUT);
  Serial.begin(9600);
}

void loop()
{

  digitalWrite(12, HIGH);
  delay(500); // Wait for 500 millisecond(s)
  Serial.println("The LED2 is High");
  digitalWrite(12, LOW);
  delay(500);
  Serial.println("The LED2 is Low");

  digitalWrite(11, HIGH);
  delay(500); // Wait for 500 millisecond(s)
  Serial.println("The LED3 is High");
  digitalWrite(11, LOW);
  delay(500);
  Serial.println("The LED3 is Low");

  digitalWrite(10, HIGH);
  delay(500); // Wait for 500 millisecond(s)
  Serial.println("The LED4 is High");
  digitalWrite(10, LOW);
  delay(500);
  Serial.println("The LED4 is Low");

  digitalWrite(9, HIGH);
  delay(500); // Wait for 500 millisecond(s)
  Serial.println("The LED5 is High");
  digitalWrite(9, LOW);
  delay(500);
  Serial.println("The LED5 is Low");
```

```
  digitalWrite(9, HIGH);
  delay(500); // Wait for 500 millisecond(s)
  Serial.println("The LED5 is High");
  digitalWrite(9, LOW);
  delay(500);
  Serial.println("The LED5 is Low");

  digitalWrite(8, HIGH);
  delay(500); // Wait for 500 millisecond(s)
  Serial.println("The LED6 is High");
  digitalWrite(8, LOW);
  delay(500);
  Serial.println("The LED6 is Low");

  digitalWrite(7, HIGH);
  delay(500); // Wait for 500 millisecond(s)
  Serial.println("The LED7 is High");
  digitalWrite(7, LOW);
  delay(500);
  Serial.println("The LED7 is Low");

  digitalWrite(6, HIGH);
  delay(500); // Wait for 500 millisecond(s)
  Serial.println("The LED8 is High");
  digitalWrite(6, LOW);
  delay(500);
  Serial.println("The LED8 is Low");

  digitalWrite(5, HIGH);
  delay(500); // Wait for 500 millisecond(s)
  Serial.println("The LED9 is High");
  digitalWrite(5, LOW);
  delay(500);
  Serial.println("The LED9 is Low");
}
```

IV. Conclusion

In conclusion, this laboratory activity enabled us to apply the principles and techniques of hardware programming using Arduino effectively. We successfully created an Arduino program and circuit diagram that displayed eight LEDs in a left-to-right sequence. This hands-on experience not only deepened our understanding of Arduino programming and circuit design but also honed our practical skills in controlling hardware components with software logic. It was a valuable exercise that contributed significantly to our knowledge and proficiency in the field of embedded systems and electronics.

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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