**Microprocessor Lab**

Laboratory Activity No. 1

**Familiarization with TinkerCAD**

|  |
| --- |
|  |

Score

*Submitted by:*

**Naguit, Eingel Marvic Emmanuelle E.**

**<S 10:00am-1:00pm> / <Section 1>**

*Date Submitted*

**16-09-2023**

*Submitted to:*

**Engr. Maria Rizette H. Sayo**

1. Exercise

a. A process in Tinkercad where we can develop electronic circuits that can be quickly updated, modified, and tested is called a prototyping process.

b. In Tinkercad, the Start/Stop Simulation tests the working of the circuits and the components.

c. The device used to assemble and connect the various components is known as Breadboard.

d. In an electronic circuit with LED, the positive end of the circuit should be connected to

Anode and negative end should be connected to Cathode of the LED.

e. A Resistor is used to restrict the flow of current to electrical components.



2. Label the following:

1. Anode and Cathode in a LED

Anode

Cathode

1. Different parts of breadboard

Power Bus



Row of connected strips

Ground Bus

Row of connected strips

Main/Circuit Area

Power Bus

Row of connected strips

Ground Bus

1. List the electronic components used in a circuit assembly.
   1. **Resistor** - A device that opposes or limits the flow of electrical current.
   2. **LED** - A semiconductor light source that emits light when current flows through it.
   3. **Pushbutton** - A switch that closes a circuit when pressed and often opens it when released.
   4. **Potentiometer** - A variable resistor used to adjust the current flowing in a circuit.
   5. **Capacitor** - A component that stores electrical energy in an electric field.
   6. **Slideswitch** - A switch that operates by sliding its handle into one of several positions.
   7. **9V Battery** - A battery that provides 9 volts of electrical potential.
   8. **Coin Cell 3V Battery** - A compact battery typically used in small electronic devices, delivering 3 volts.
   9. **1.5V Battery** - A battery that provides 1.5 volts of electrical potential.
   10. **Breadboard Small** - A tool that allows for the prototyping of circuits without soldering.
   11. **Micro:bit** - A compact and versatile microcontroller designed for education and beginners in electronics.
   12. **Arduino Uno R3** - An open-source microcontroller board used for building digital devices and interactive projects.
   13. **Vibration Motor** - A motor that creates vibration, commonly used in mobile devices for alerts.
   14. **DC Motor** - A device that converts direct current electrical energy into mechanical energy.
   15. **Micro Servo** - A small motor device with an output shaft whose position can be controlled precisely.
   16. **Hobby Gearmotor** - A motor used for hobbyist projects that turns electrical energy into motion.
   17. **NPN Transistor (BJT)** - A type of bipolar junction transistor that allows current to flow when a positive voltage is applied to its base.
   18. **LED RGB** - A light-emitting diode that can produce a range of colors by combining red, green, and blue light.
   19. **Diode** - A semiconductor that allows current to flow in one direction only.
   20. **Photoresistor** - A resistor whose resistance changes based on the amount of light it is exposed to.
   21. **Soil Moisture Sensor** - A device that measures the moisture content in soil.
   22. **Ultrasonic Distance Sensor** - A sensor that measures distance using ultrasonic waves.
   23. **PIR Sensor** - A motion sensor that detects moving objects, particularly humans, using infrared radiation.
   24. **Piezo Buzzer** - A device that produces sound based on the piezoelectric effect.
   25. **Temperature Sensor (TMP36)** - A sensor that measures temperature and outputs an analog voltage.
   26. **Multimeter** - An instrument used to measure voltage, current, and resistance in electronic circuits.

REFERENCES:

* Das, S. (2023, August 17). *Electronic components function: Basic components / parts & function*. Electronics Tutorial | The Best Electronics Tutorial Website. <https://www.electronicsandyou.com/blog/electronic-components-parts-and-their-function.html>
* *14 essential electronic components and their functions*. Allied Components International. (n.d.). <https://www.alliedcomponents.com/blog/essential-electronic-components-functions>
* Powerpoint Presentation of Engr. Sayo titled *“Tinkercad 3D Design and Circuit Modelling”.*