

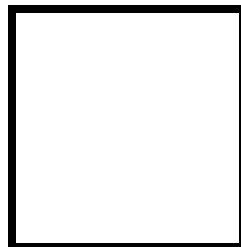


**PAMANTASAN NG LUNGSOD NG MAYNILA**  
(University of the City of Manila)  
Intramuros, Manila



**Microprocessor Lab**

Laboratory Activity No. 1  
**Familiarization with TinkerCAD**



Score

*Submitted by:*  
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**<Saturday 10:00am - 1:00pm> / <CPE 0412-1.1>**

*Date Submitted*  
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*Submitted to:*  
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## 1. Exercise

- A process in Tinkercad where we can develop electronic circuits that can be quickly updated, modified and tested is called prototyping process.
- In Tinkercad, Start/Stop simulation tests the working of the circuits and the components.
- The device used to assemble and connect the various components is known as breadboard.
- 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.
- A resistor is used to restrict the flow of current to electrical components.

## 2. Label the following:

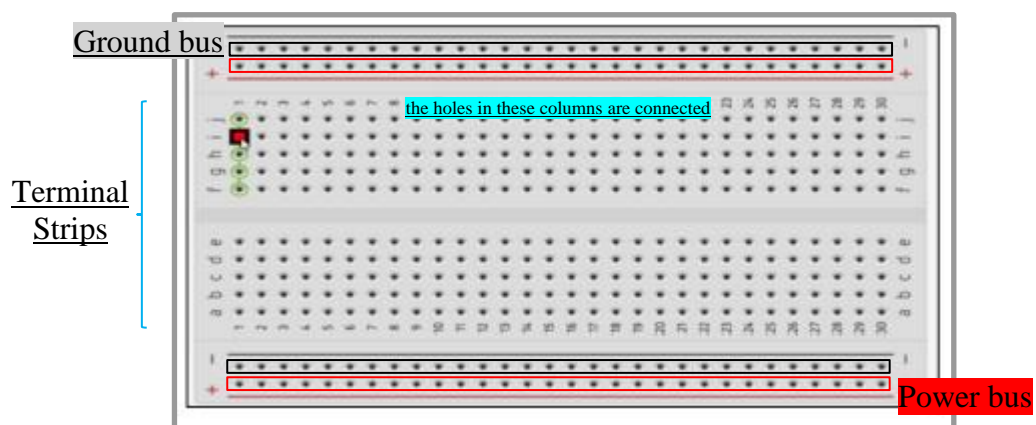
### a. Anode and Cathode in a LED



- Anode: This is the longer lead or leg of the LED. It is the positive terminal and is where the current enters the LED.
- Cathode: This is the shorter lead or leg of the LED. It is the negative terminal and is where the current exits the LED.

### b. Different parts of breadboard

- Terminal Strips: These are the rows of metal clips running horizontally along the breadboard. They are often labeled with numbers or letters (A, B, C, etc.) to help you identify them.
- Bus Strips (Ground/Power Bus): The bus strips are the sets of metal clips running vertically along the sides of the breadboard. They are typically labeled with a red "+" and a blue "-" symbol. These are used to provide power and ground connections.
- Rows: Each row consists of five connected terminal clips, and there are typically multiple rows on a breadboard. The five clips in each row are electrically connected horizontally.
- Columns: The holes or clips in a column are connected vertically but not horizontally. This allows you to connect components across rows but not within the same row.
- Power Rails: The long strips running parallel to the rows at the top and bottom of the breadboard are often referred to as power rails. The top one is usually for positive voltage (VCC), and the bottom one is for ground (GND).
- Notch: Some breadboards have a notch or gap in the middle to separate the board into two sections. This is often used to create independent circuits on the same breadboard.
- Binding Posts: Some breadboards have binding posts on the sides, which allow you to easily connect external power sources or instruments to the breadboard.



c. List the electronic components used in a circuit assembly

- Resistor: Used to limit the flow of current in a circuit.
- Capacitor: Stores electrical energy and can release it when needed.
- Diode: Allows current to flow in one direction only, commonly used in rectification.
- LED (Light-Emitting Diode): Emits light when current flows through it.
- Transistor: Amplifies or switches electronic signals.
- Integrated Circuit (IC): A chip containing multiple interconnected electronic components, often performing complex functions.
- Inductor: Stores energy in a magnetic field and resists changes in current.
- Potentiometer: Adjustable resistor used for controlling voltage or current.
- Switch: Allows you to open or close a circuit manually.
- Fuse: Protects a circuit by breaking the connection if there is excessive current.
- Relay: An electromechanical switch controlled by an electrical signal.
- Transformer: Changes the voltage level of AC (Alternating Current) signals.
- Battery: Provides a source of electrical energy.
- Connector: Used to physically join components and wires.
- Sensor: Detects changes in the environment (e.g., temperature sensor, light sensor).
- Crystal Oscillator: Generates precise frequencies for timing in digital circuits.
- Switching Regulator: Converts one voltage level to another efficiently.
- Fuse: Protects circuits by breaking the connection in case of overcurrent.
- Voltage Regulator: Maintains a stable output voltage despite variations in input voltage or load.
- Microcontroller or Microprocessor: A small computer on a chip, used for controlling and processing data in many electronic devices.
- Resistor Arrays: Multiple resistors packaged together in one component.
- Capacitor Arrays: Multiple capacitors packaged together in one component.
- Connector Headers: Used to connect wires and other components on a circuit board.
- Circuit Board (PCB): Provides a platform for mounting and interconnecting electronic components.
- Speaker or Buzzer: Produces sound when an electrical signal is applied.
- LCD Display: Used for visual output in various devices.
- Photodetector/Photodiode: Converts light into an electrical current.
- Thermistor: A resistor whose resistance changes with temperature.