**Microprocessor Lab**

Laboratory Activity No. 1

**Familiarization with TinkerCAD**

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Score

*Submitted by:*

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*Submitted to:*

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1. Exercise

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

b. In Tinkercad, **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:



* Anode and Cathode in a LED
* Different parts of breadboard

Edge





Main Area

Edge

* List the electronic components used in a circuit assembly.

1. **Resistor:** A resistor is a passive electronic component that has two terminals and a resistance value. Resistors are used to control the flow of current in a circuit. They are available in a variety of values, from ohms to megohms.
2. **Capacitor:** A capacitor is a passive electronic component that has two terminals and a capacitance value. Capacitors are used to store electrical energy. They are available in a variety of values, from picofarads to microfarads.
3. **Inductor:** An inductor is a passive electronic component that has two terminals and an inductance value. Inductors are used to oppose changes in current. They are available in a variety of values, from millihenries to henries.
4. **Diode:** A diode is a semiconductor device that allows current to flow in one direction but not the other. Diodes are available in a variety of types, such as silicon diodes, LEDs, and Zener diodes.
5. **Transistor:** A transistor is a semiconductor device that can amplify or switch electronic signals. Transistors are available in a variety of types, such as NPN transistors, PNP transistors, and MOSFETs.
6. **Integrated circuit (IC):** An IC is a small electronic device that contains many electronic components, such as transistors, resistors, and capacitors. ICs are used in a wide variety of electronic circuits, such as computers, smartphones, and televisions.
7. **Breadboard:** A breadboard is a temporary prototyping platform for electronic circuits. It has rows of holes in which electronic components can be inserted and connected with jumper wires.
8. **Jumper wire:** A jumper wire is a wire that is used to connect electronic components on a breadboard. It is typically made of insulated copper wire with a banana plug on each end.
9. **Battery:** A battery is a device that converts chemical energy into electrical energy. Batteries are used to power electronic circuits.
10. **LED:** An LED is a light-emitting diode that converts electrical energy into light. LEDs are used in a variety of electronic circuits, such as displays and lighting.
11. **Switch:** A switch is a device that is used to turn a circuit on or off. Switches are available in a variety of types, such as pushbutton switches, toggle switches, and slide switches.
12. **Motor:** A motor is a device that converts electrical energy into mechanical energy. Motors are used in a variety of electronic circuits, such as robots and toy cars.
13. **Buzzer:** A buzzer is an electronic device that produces a sound when it is activated. Buzzers are used in a variety of electronic circuits, such as alarms and timers.
14. **Breadboard jumper wires:** These wires are used to connect components on a breadboard.
15. **Male and female headers:** These headers are used to connect components to a breadboard or to other components.
16. **PCB connectors:** These connectors are used to connect components to a printed circuit board (PCB).
17. **Temperature sensor:** This sensor measures the temperature of the surrounding environment.
18. **Light sensor:** This sensor measures the amount of light in the surrounding environment.
19. **Motion sensor:** This sensor detects motion.
20. **Sound sensor:** This sensor detects sound.
21. **Touch sensor:** This sensor detects touch.
22. **DC motor:** This motor converts electrical energy into mechanical energy. It can be used to rotate a wheel or other object.
23. **Servo motor:** This motor can rotate to a specific position. It is often used to control the movement of robotic limbs.
24. **Solenoid:** This actuator converts electrical energy into mechanical energy to create a linear movement. It is often used to open and close valves or to move other objects.
25. **LED display:** This display uses LEDs to display numbers, letters, and other characters.
26. **Seven-segment display:** This display uses seven segments to display numbers.
27. **LCD display:** This display uses liquid crystal to display text and images.
28. **Potentiometer:** This component is used to vary the resistance in a circuit. It can be used to control the brightness of an LED or the speed of a motor.
29. **Push button:** This component is used to turn a circuit on or off when it is pressed.
30. **Toggle switch:** This component is used to turn a circuit on or off and to keep it in the desired state until it is switched again.
31. **Slide switch:** This component is used to select between two or more options.
32. **Buzzer:** This component produces a sound when it is activated.
33. **Arduino:** This microcontroller board can be used to create and control a wide variety of electronic circuits.