Innovative Activity Report

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“Timer Circuit by Using IC555”

Presented By

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AIM: Timer Circuit By Using IC555

Components Required:

- IC555
- Resistors(ohm):-220k 150k 560k 1.2M 2.9M
- Capacitor:- 470uF 0.1uF
- LED
- IC Base
- Push Button
- PCB Copper Plate

Theory:

The timer circuit using the IC555, or the NE555, is a popular integrated circuit used to generate precise time delays or oscillations. Here's a brief explanation of its working principle:

Modes of Operation: The IC555 can operate in two main modes: astable and monostable.

Astable Mode: In this mode, the IC555 functions as an oscillator, generating a continuous square wave output. The circuit produces a continuous series of high and low pulses. It is commonly used for applications like LED flashers, tone generators, and clock pulses.

Monostable Mode: In this mode, the IC555 acts as a one-shot timer. It produces a single output pulse of a specified duration when triggered. This mode is used in applications like pulse shaping, time delay generation, and debounce circuits.

Components of IC555:

Threshold (TH) and Trigger (TR) Pins: These pins are used to set the upper and lower thresholds for the internal comparator. When the voltage at the trigger pin (TR) falls below 1/3 of the supply voltage, the output flips to high. When the voltage at the threshold pin (TH) rises above 2/3 of the supply voltage, the output switches to low.

Control Voltage (CV) Pin: This pin allows external control of the timing parameters.

Reset (RESET) Pin: This pin is used to reset the IC555 and force its output to go low. It is typically connected to the supply voltage for normal operation.

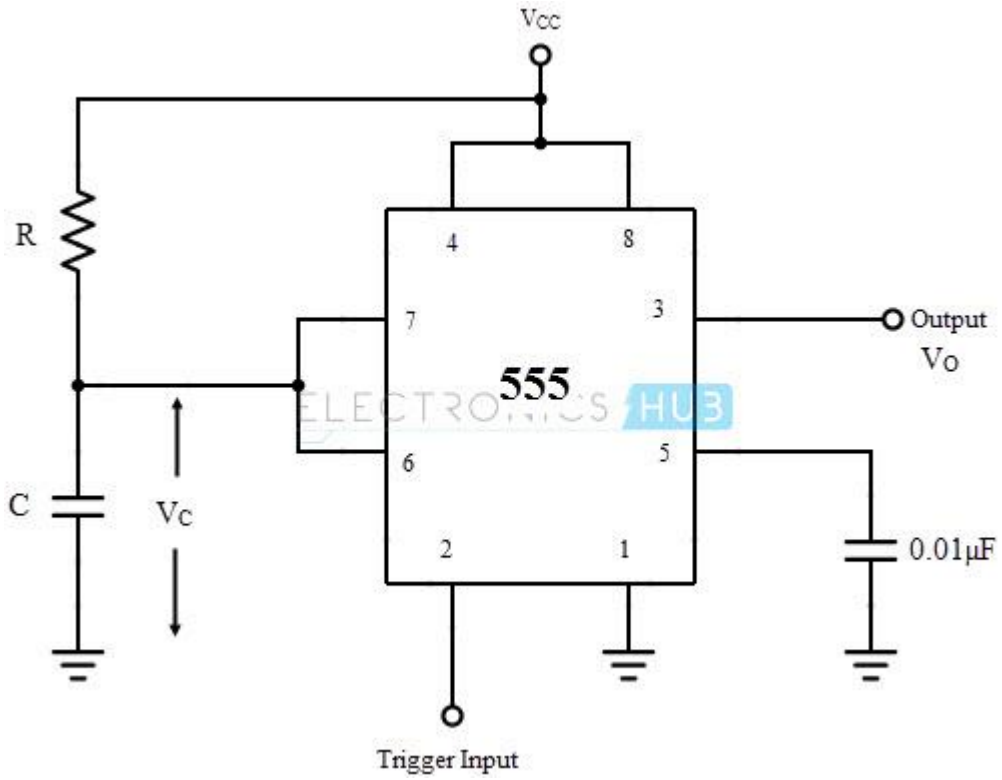
Resistors and Capacitor (R and C): The timing components, usually a resistor (R) and a capacitor (C), determine the time delay or frequency of the circuit. By choosing appropriate values for R and C, you can set the desired timing parameters for the circuit.

Operation: We Used Monostable mode of IC555 for tier circuit. In monostable mode, the timer produces a single pulse of a duration determined by R and C when triggered. The trigger input causes the timer to start timing.

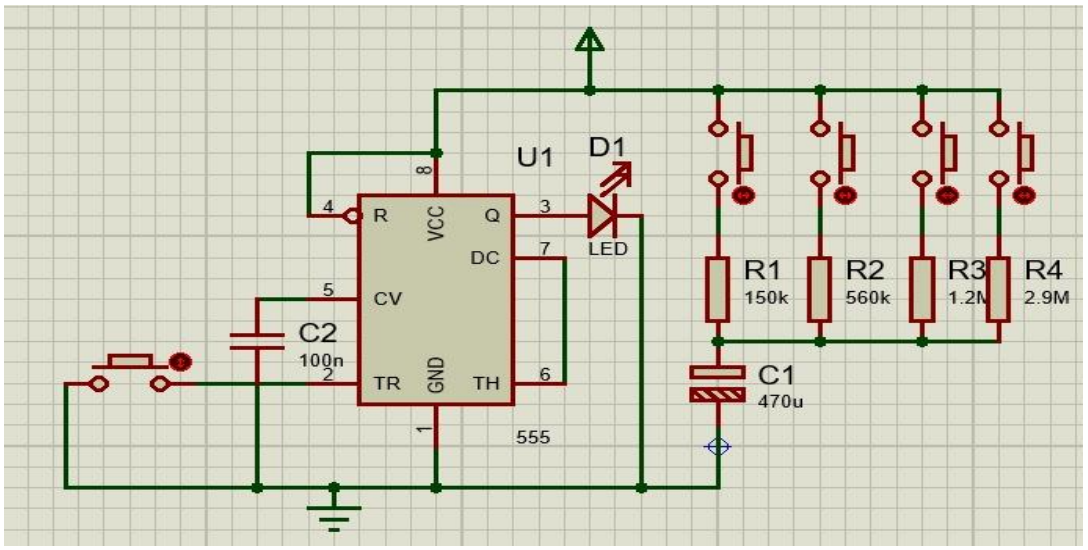
Applications: The 555 timer IC is widely used in various applications, including timers, pulse generators, LED flashers, tone generators, and more.

The specific values of resistors and capacitors, as well as the connections of pins, will determine the timing characteristics of the circuit. It's a versatile and commonly used IC in electronics for timing and pulse generation

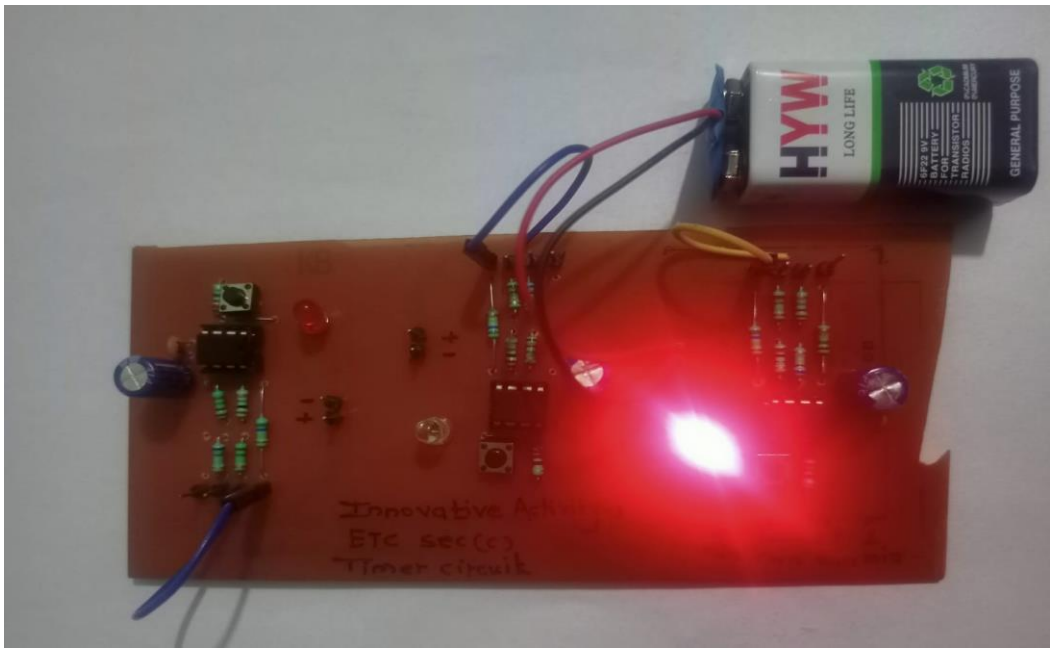
Circuit Diagram :



Simulation :



- **Output** :



- **Result** : The monostable 555 timer circuit is a fundamental building block in electronics, providing a straightforward way to create timed events, and this experiment helps you gain a deeper understanding of its operation and applications.
  After Switching on, the LED will blow for the calculated time and then switched off .