

Don Bosco Technical College
City of Mandaluyong
Mechanical Engineering Program

Basic Electronics (BELECS)
2nd Semester, AY 2022-2023

Final Document
ek3Project. Touch Sensor Circuit

We certify that we have worked on this activity and completed it on our own and that we have neither copied the work of any other student nor have we concealed any violation of the Honor Code. We will receive a grade of 5.0 (FAIL) for the course and be subject to disciplinary action if we fail to honor this code.

2ME

Wednesday, 1:00 - 4:00 pm

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Date performed: March 08, 2023

Date submitted: April 29, 2023

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Instructor

Comments:

Particulars

Theory : _____

Data : _____

Analysis : _____

Conclusion : _____

Form : _____

RATING: _____

I. Objectives

- To light up or off the LED whenever a finger is placed on the touch sensor.
- Gain familiarity with the 555 timer IC and its function.

II. Theoretical/Conceptual Framework

A. 555 Timer IC

- A 555-timer IC is an integrated circuit that is used to create precise delays in timing and oscillations. In this project experiment, the 555-timer IC is used to create a sensor that will activate once it is touched. The 555-timer IC has eight pins that serve distinct functions: Ground, Trigger, Output, Reset, Positive VCC, Discharge, Threshold, and Control voltage. In the project circuit, the Trigger, Output, and Threshold pins are used to establish an on/off mechanism.

III. Equipment and Circuit Components

Equipment and Accessories

1. Connector Wires
2. Copper Wires
3. Breadboard
4. 12V Power Supply

Components

1. Light Emitting Diode (LED)
2. 680 ohms Resistor
3. 555 Timer IC

IV. Set-up/Schematic drawings

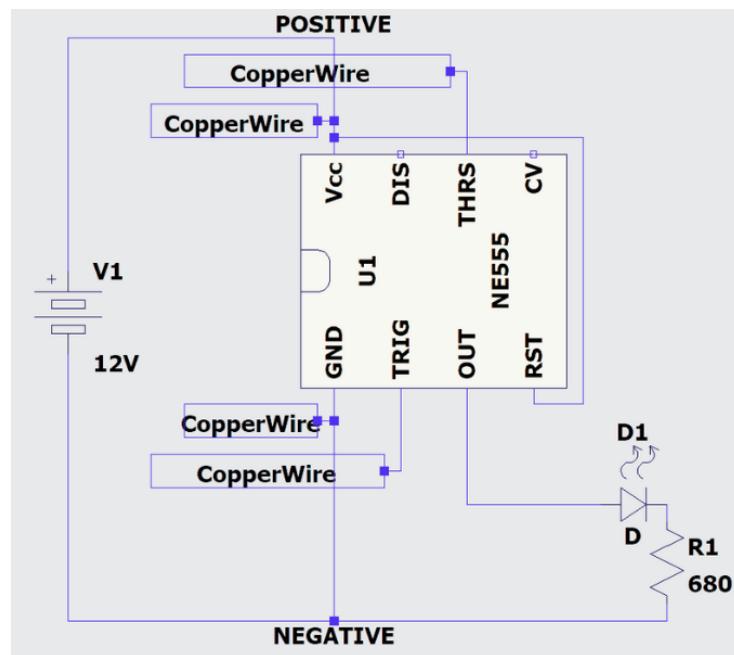


Figure 1. Schematic Drawing

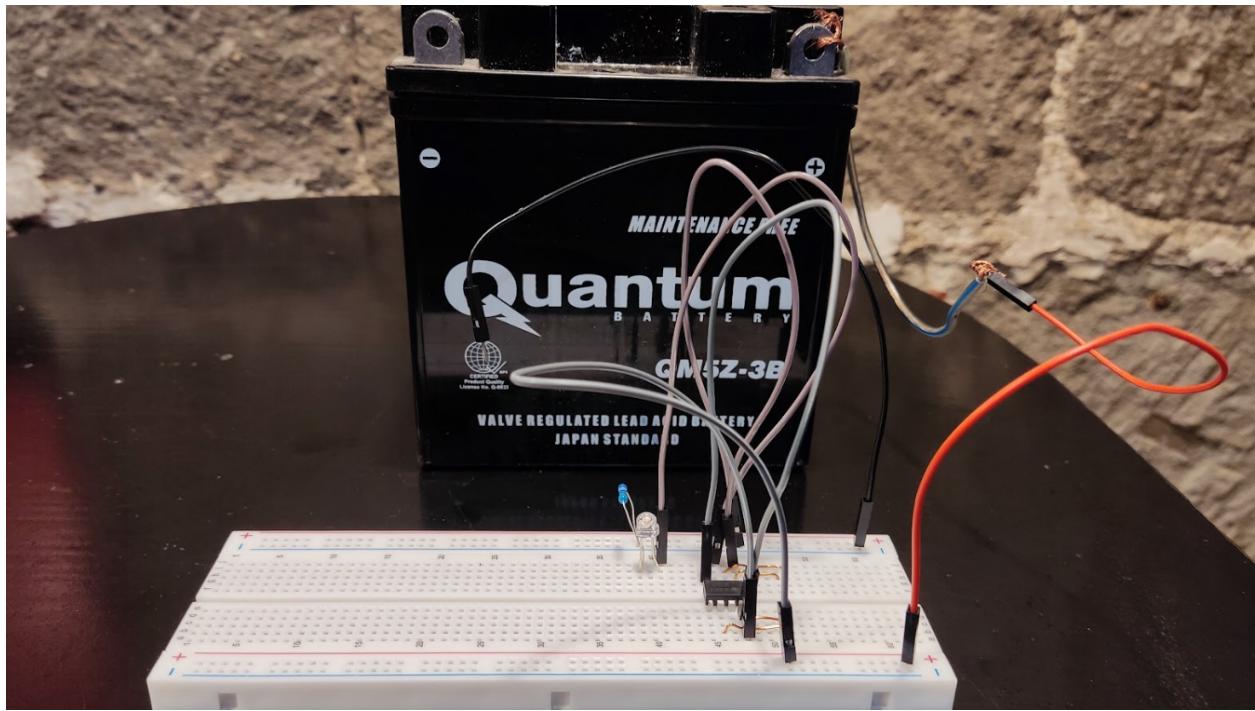


Figure 2. Set-up

V.Procedures

1. The IC 555 Timer should be placed between the positive and negative rail, and the touch contacts should be placed at pins eight, six, one, and two on the breadboard.
2. Connect pin four of the IC to the positive rail and pin one to the negative rail.
3. The reset pin, which is located at pin four, should be connected to pin eight.
4. Place the LED on the breadboard and connect a node to it and the output of the 555 Timer IC.
5. The LED's cathode should be connected from the negative rail to a 680 ohms Resistor.
6. Connect the 12V power supply to the circuit and test if the LED is turning on and off by touching the copper wire(touch sensor probes).

VI.Data and Result

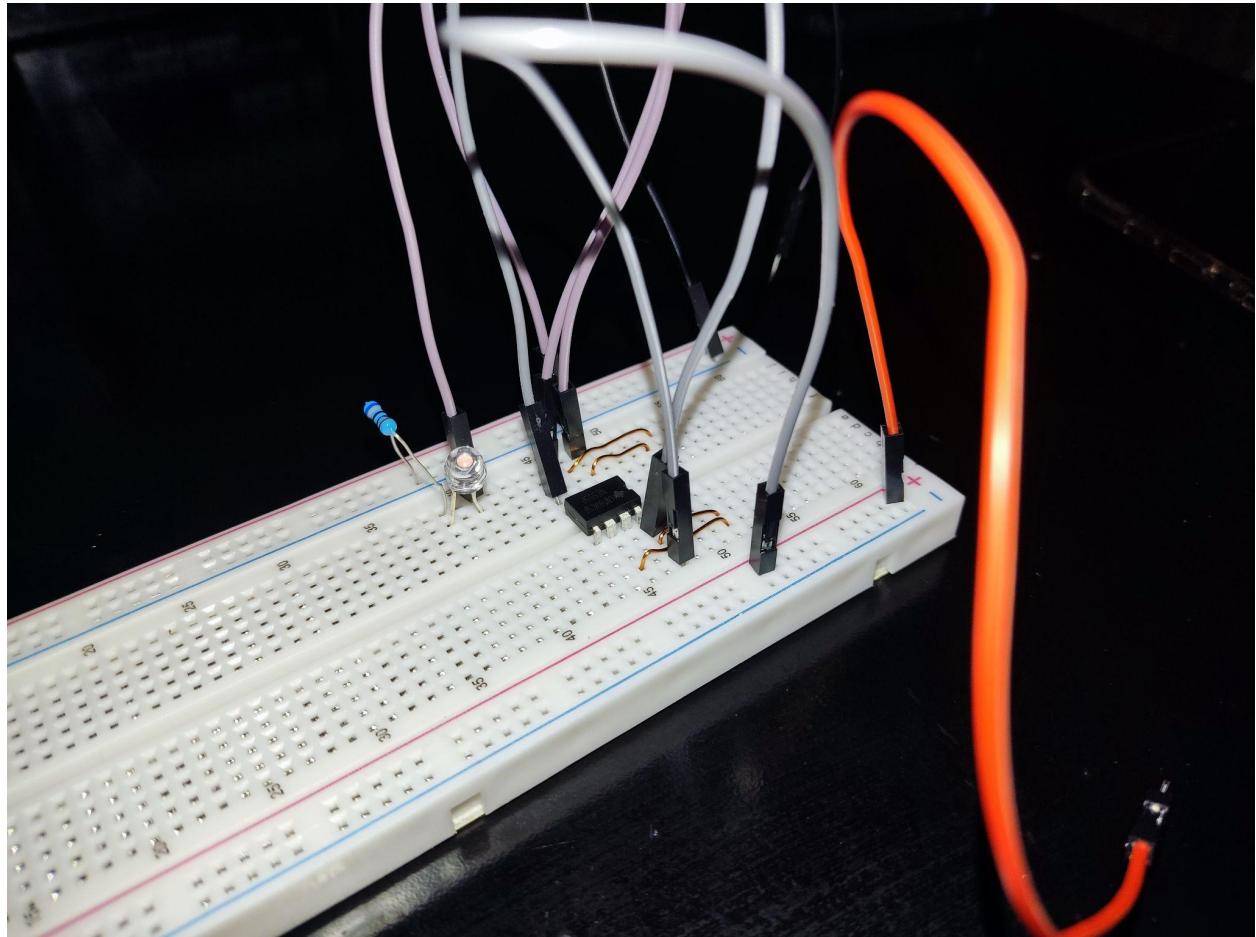


Figure 3. Project Design Circuit

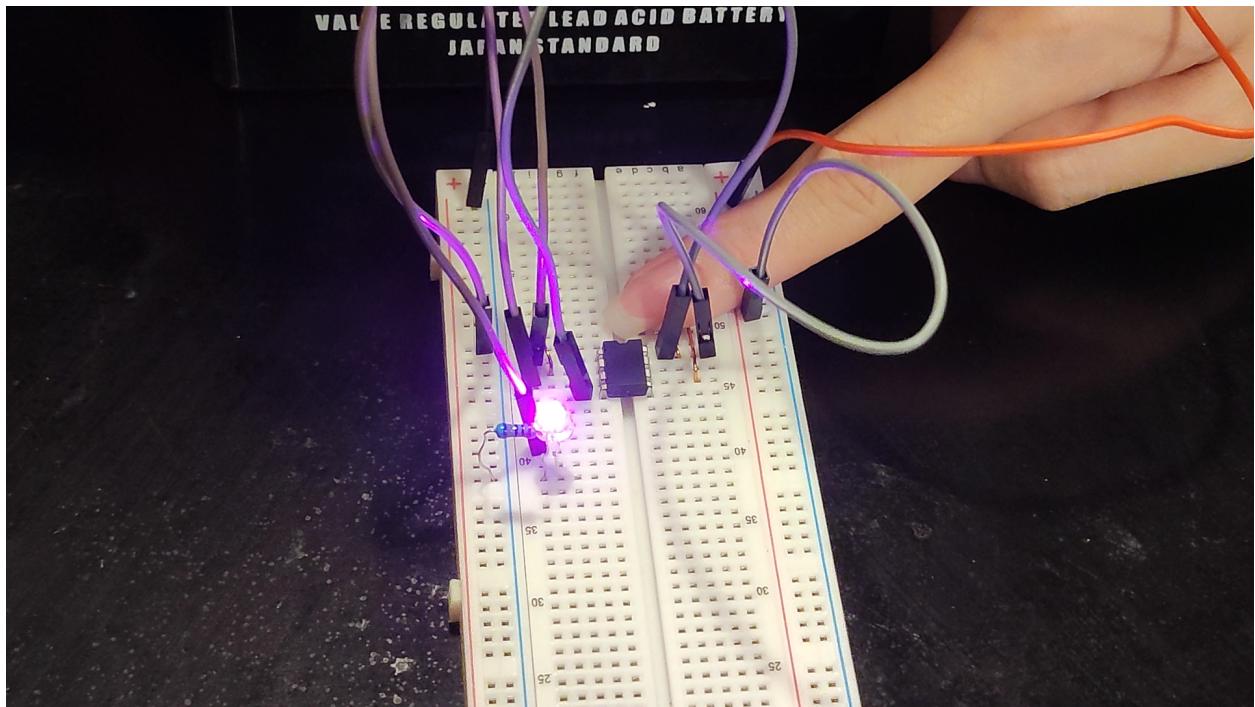


Figure 4. LED turning on

As seen on Figure four (4), when the two copper wires on the left side came into contact with the user's skin the LED turns on.

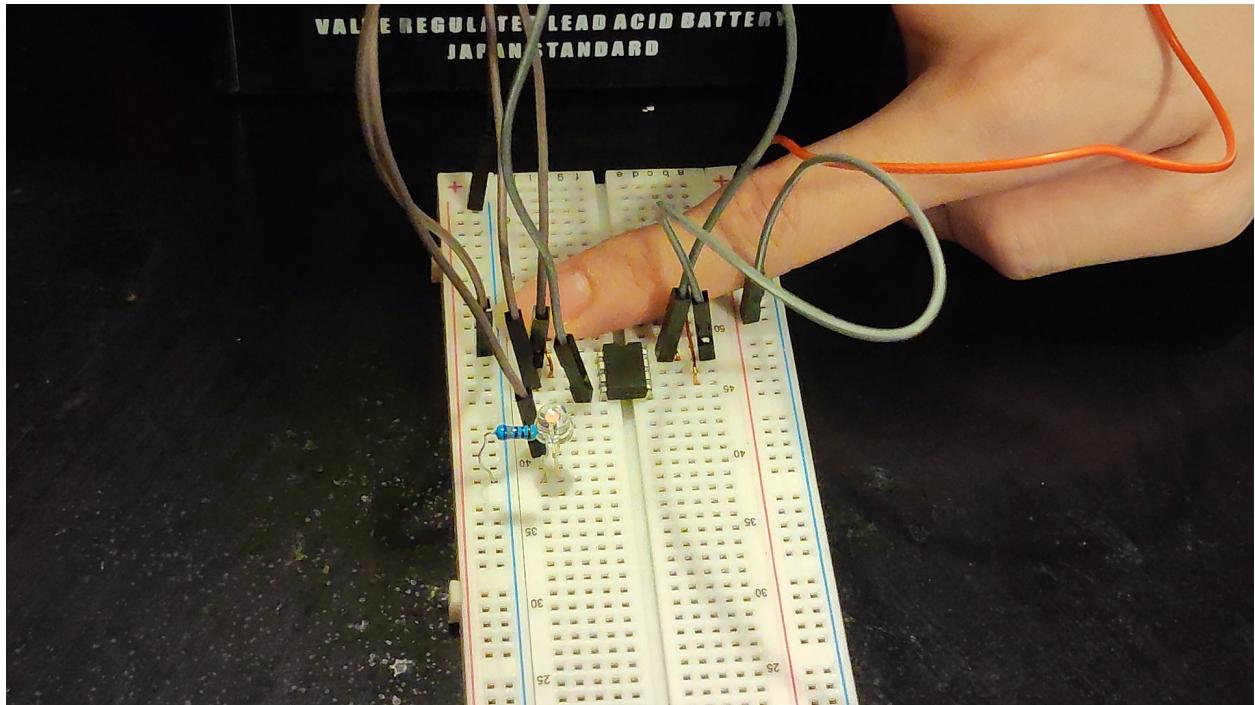


Figure 5. LED turning off

As seen in Figure five (5), when the copper wires on the right side is touched, the LED turns off.

VII. Analysis and Discussion

The project was all about employing an integrated circuit, the 555 timer IC, and it is used to create a sensor that once it is touched it will be activated. Only one (1) resistor are used in this situation and used a single power source to the circuit. By using the copper wires as a medium for the touch sensor probe, it conducts or gives out on or off signals accurately and efficiently to the entire circuit in order to turn the LED on or off. With the help of the 555 Timer IC it helps out in signalling the timing and delays in the circuit in order to turn the LED on or off.

VIII. Conclusion

Through performing this experiment, we have concluded that the 555 Timer IC is the main and important component in the circuit as it gives out delay signals or timing signals in order to turn the LED on or off precisely as one touches the copper wires/touch sensor probes. We also concluded that the copper wire is functions well as a medium for a touch sensor probe as it conducts or gives out on or off signals to the whole circuit very well whenever someone touches it. Lastly, using the touch sensor circuit as an alternative mode to turn things on or off on electrical objects can be very efficient and also low-cost as it replaces the old traditional on/off switch which can be a bothersome when malfunction or broken old switches happens.

IX. Comments

The laboratory project was conducted successfully and resulted in the expected outcome. The switching on and off of the LED was achieved through just touching the copper wires which function as the touch sensor probe. Every component works and operates well together in a circuit. However if there is more to improve in the project, it is to add more resistors to maintain the stability of the outcome, the switching on and off of the LED. In addition, to gain deeper understanding about the project, it is suggested if more concepts will be made using the main component, 555 Timer IC.