MODEL TRAFFIC LIGHT USING 555IC

Submitted by:

SREESHIMA C

SWATHY SAJEEV

VISHNU K

VISHNU K

VYSAKH

Department of Electrical and Electronics Engineering

GOVERNMENT ENGINEERING COLLEGE IDUKKI

PAINAVU

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1.INTRODUCTION

The world's very first traffic lights were invented by J P Knight. First traffic lights were controlled by either timing, or manually switched. Traffic Lights are used to control the vehicular traffic. In the modern era, everyone has different types of vehicles resulting in rise to the numbers of vehicles. That's why traffic lights are mandatory to avoid the traffic jams and accidents. There are three lights in the traffic signal, having different message for the drivers. Red light (upper one)asks the driver to yield at the intersection, green light (last one) gives the driver free license to drive through the intersection whereas the yellow light (middle one) alerts the driver to wait if the next light is red one or get ready to go /turn the engine ON if the green light is next.The function of traffic lights is to provide coordination to ensure that traffic moves as smoothly and safely as possible.This project uses a LED light as an indicator.Traffic light is made with the help of 555IC .The project on how to make a model traffic lights circuit using 2 555 timer IC's and a few other electronic components.

2.ABSTRACT

The project on how to make a model traffic lights circuit using 2 555 timer IC's and a few other electronics components. This circuit turns ON green LED, keeps it ON for some time, then turns ON yellow LED for a moment and finally turns ON red LED for almost the same duration as the green LED. This cycle again starts from green LED.

The function of traffic light is to provide coordination to ensure that traffic moves as smoothly and safely as possible.Inorder to maintain the steady flow of vehicles when their numbers are increasing by leaps and bound each day, an efficient controlling of traffic is extremely required. This work provides a simple schematic model with which a very basic level of safe unmanned traffic signaling with pedestrian crossing request has been accomplished by using simple electronics circuits without the help of computer programs. The work also illustrates the design, the outputs and test cases used to implement the model.

3. CIRCUIT DIAGRAM

## MODEL TRAFFIC LIGHTS CIRCUIT

elonics.org
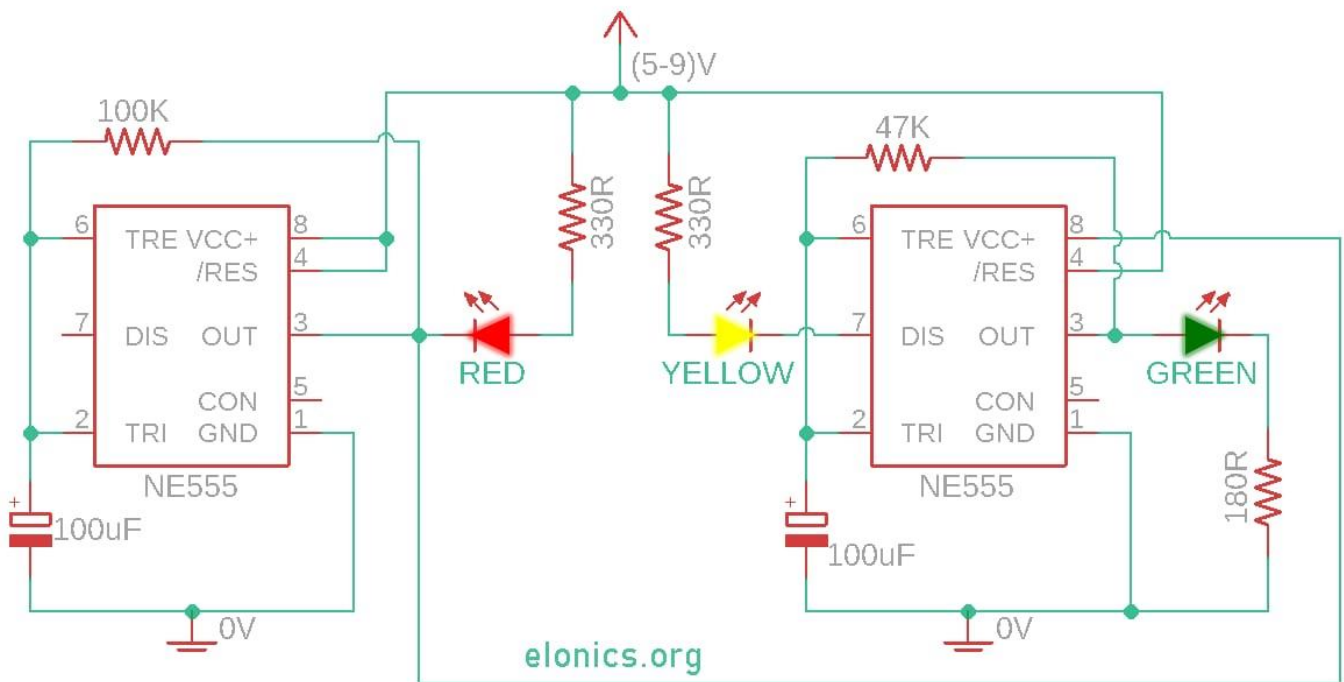
4. <u>COMPONENTS REQUIRED</u>

1. 2 x 555 Timer ICs

2. LEDs: 1 Red, 1 Yellow, 1 Green

3. Resistors: 100K, 47K, 2 x 330R, 180R

4. Capacitors: 2 x 100uF

5.Breadboard

6. Few Breadboard Connectors

7. (5-12)V Power Supply

5.COMPONENTS REQUIRED

555 IC

The 555 timer IC is an integrated circuit (chip) used in a variety of timer, pulse generation, and oscillator applications. The 555 canbe used to provide time delays, as an oscillator, and as a flip-flop element. Derivatives provide up to four timing circuits in one package.The 555 timer chip is probably the most popular integrated circuit ever made.

Ground	1	8	Vcc (+4.5 – 15V)
Trigger	2	7	Discharge
Output	3	6	Threshold
Reset	4	5	Control Voltage
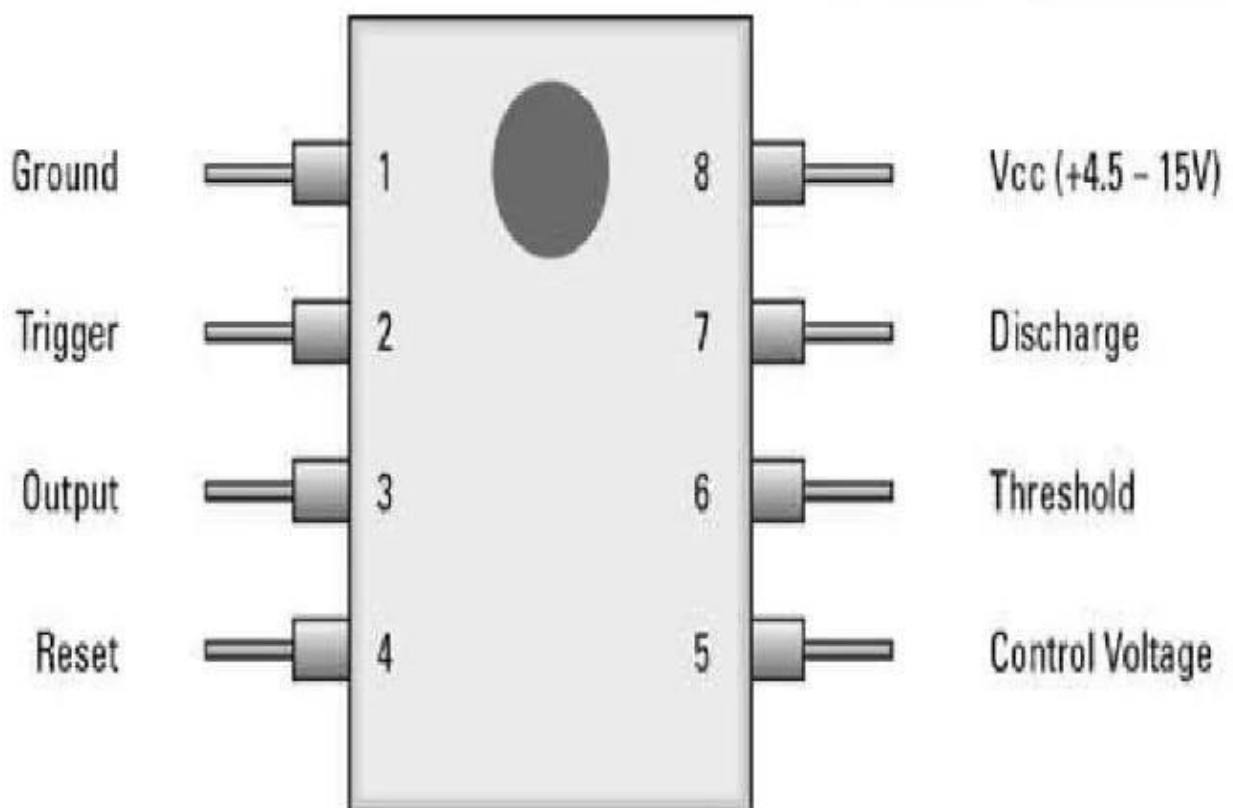
6.WORKING

Here we have used two such astable circuits with the first astable circuit powering the other. So the second 555 timer IC will be powered only if the output of first 555 timer IC is ON.The red LED Is connected such that it turns ON only if the output of first 555 timer IC is at 0V. This is because the other terminal of red LED is connected to positive voltage. Yellow LED turns ON during discharge mode of second 555 IC, and the green LED turns ON whenever the output of second 555 timer IC is at positive voltage.Immediately after we power ON this circuit, output of the first 555 timer IC will be in ON state because the voltage at PIN-3 (Trigger Pin) is less than 1/3rd of the supply voltage. The red LED cannot turn ON yet, but the second 555 IC is powered and so the green light turns ON.The capacitor of 2nd 555 timer IC slowly charges and as soon as it charges to 2/3rd of the supply voltage (Threshold Voltage), the output of 2nd 555 IC turns OFF and the yellow LED glows because the discharge pin is activated.

Normally the yellow LED would turn ON for the same time as the green LED. But even before the capacitor of 2nd 555 timer IC reaches 1/3rd of supply voltage, the voltage across capacitor of 1st555 timer IC reaches 2/3rds of the supply voltage and so the output of 1st 555 IC turns OFF, resulting in yellow LED turning OFF and the red LED turning ON.This cycle repeats again and again.

7.TRAFFIC LIGHT

RED

*Come to complete stop at stop line or before cross walk or intersection.

*After stopping,you may turn right on red at most intersection if the way is clear.

*Some school districts have local police that prohibit right turns on red by bus operators.

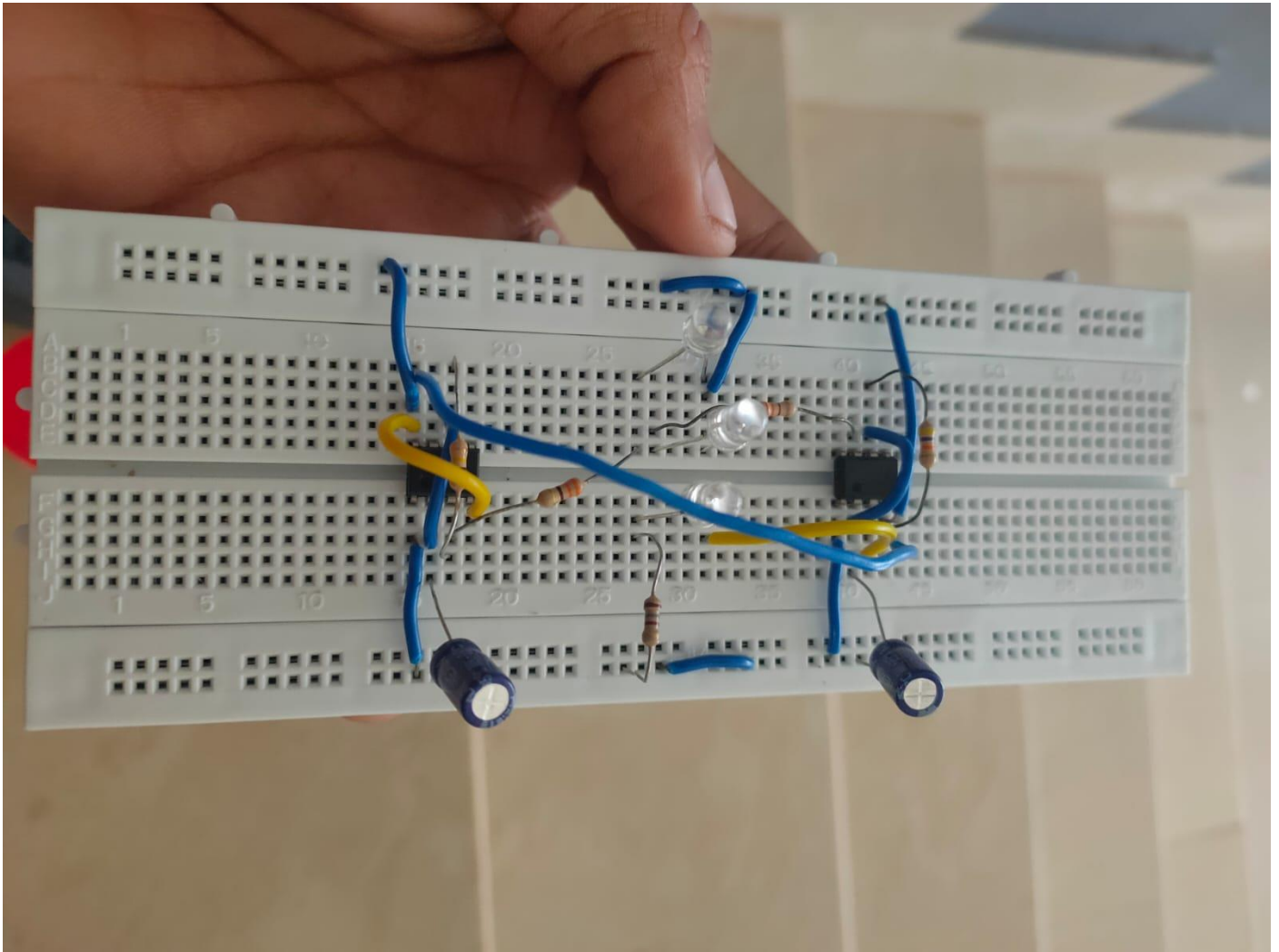*Some intersections display "NO TURN ON RED",which you must obey.

YELLOW

*Stop if you can do so safely.

*The light we soon be red.

GREEN

*Go,but only if intersection is clear.

*If turning left,wait for gap in on oncoming traffic to complete turn.

8.CONNECTION DIAGRAM

9. CONCLUSION

In order to maintain the steady flow of vehicles when their numbers are increasing by leaps and bound each day, an efficient controlling of traffic is extremely required. This work provides a simple schematic model with which a very basic level of safe unmanned traffic signaling with pedestrian crossing request has been accomplished by using simple electronics circuits without the help of computer programs. The work also illustrates the design, the outputs and test cases used to implement the model