Traffic Signal Control

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Concept of Project: -

Our project ' trafic signal control ' is fundamental idea of simple electronic project to control traffic. It can be used to avoid the vehicular collisions and traffic signals. This project is one way traffic controller . Using IC555 timer and 3 Led lights (green, yellow,red) we are executing this project. Three lights in the traffic signal have different message for the drivers. By following those instructions , driver can turn on & off engine according to condition.

Component List:

- Diode – 1N4148
- Analog 555 Timer
- Decade Counter
- Axial Electronic Capacitor
- Multi-cell Battery
- Capacitor
- LEDs – Red , Yellow , Green
- Resistors

Pin Descriptions :

1) IC 555

Pin	Name	Description
1	ground	0 V supply
2	trigger	When the pin voltage falls below 0.33 Vcc, the timer is triggered and the output goes high. In the monostable configuration a high to low transition on the trigger pin starts the timer.
3	output	The output pulses during astable operation and goes high for a set time in monostable operation.

4	reset	If reset is not used, connect it to Vcc. If reset falls, a high output will be forced low.
5	control voltage	For reliable operation add a 10 nF capacitor to ground on this pin.
6	threshold	Detects when the voltage on the timing capacitor rises above 0.66 Vcc and resets the output when this happens.
7	discharge	Provides a discharge path from the timing capacitor to ground when the output is low.
8	Vcc	Positive power supply voltage.

2) 4017 10-bit shift register

Pin	Name	Description
1 to 7 and 9,10,11	Output pins Q0 to Q9	These are the 10 output pins on which the counting occurs, they are not in order hence verify pin diagram above
8	Vss or Ground	Connected to the Ground of the circuit
12	Carry Out (CO)	This pin goes high after the IC counts from 1 to 10. This is used as carry while counting.
13	Clock Enable (EN)	This is an input which when made high will hold the count at the current state
14	Clock	The counting happens when this clock pulse goes high , this pin is normally connected to 555 timer or other uC to produce a pulse
15	Resets	As the name suggests this pin resets the count back to 1
16	Vdd / Vcc	Connects to the supply voltage typically +5V

Detail Specification about Components:

- Analog 555 Timer : Threshold voltage is 5 V
- Supply Voltage of Battery 12 V

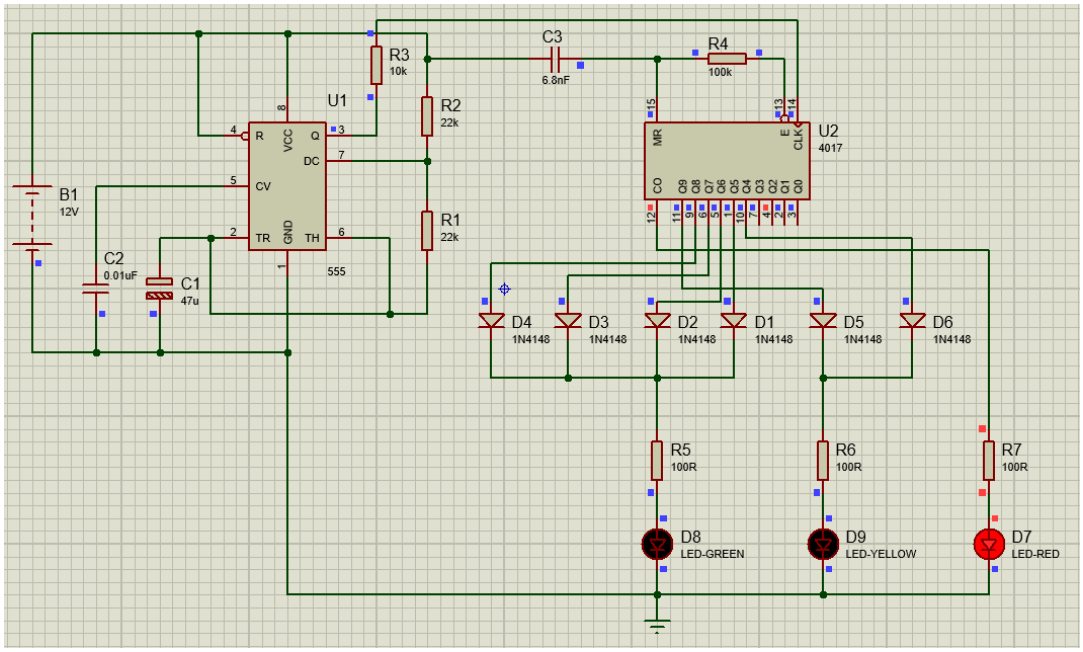
Schematic (Simulation):

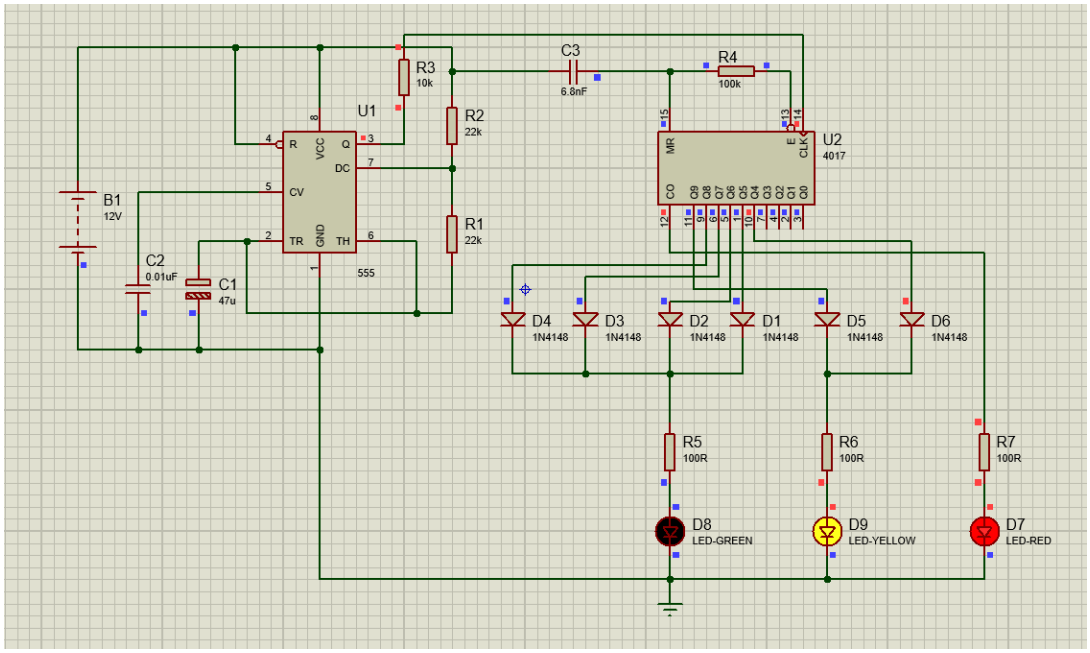
Traffic signal control is simple electronic project using ic 555 and 4017 counter IC. This system uses IC 555, IC 4017, diodes, capacitor, resistors and 3 leds. Once you connect all the external parts, system will start. By fixed time interval, green, yellow and red led will glow one by one.

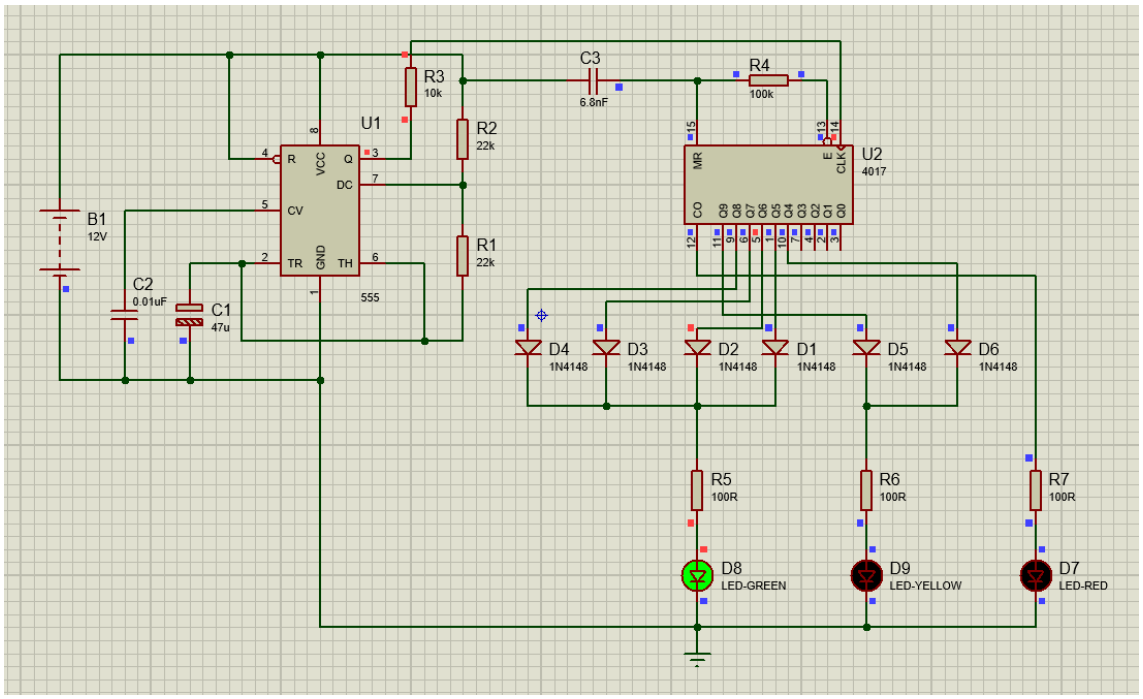
Explanation of Project:

In trafic signal control, the main IC is 4017 counter IC which is used to glow the Red, yellow and green LED respectively. 555 timer acts as a pulse generator providing an input to the 4017 counter IC. Here, timing of glow of lights depends upon the 555 timer's pulse. LEDs are not connected directly with 4017 counter, as the lights won't be stable. We have used the combination of 1N4148 diodes and the LEDs in order to get the appropriate output. With defined time interval, each led glow one by one. Red light asks the driver to yield at the intersection, green light gives the driver free license to drive through the intersection whereas the yellow light 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. So using this instuction the traffic signal contol system works.

Result:







Conclusion:

Traffic signal control system based on 555 timer circuit has been designed.

- We can use this as remote traffic controller.