Multi Wire Cable Tester

Introduction

In a general way, the Cable Tester is the device by which we can check whether the cable has defected or it is connected in a proper way. A cable tester is the very useful way to determine the physical quality or connectivity of the cable or wires individually while installing them. It detects whether the cable is connected properly and the communicative strength between the ends of the cable. Some advanced cable tester tests the signal transmission properties like resistance, noise, interference etc. Some of the cable testers available in the market are LAN, CAT 5, CAT 6, CAT 7.

In this circuit, we are showing the Multi-Wire Cable Tester by which we can check that the wire or a cable whether it is defective or not.

Circuit Diagram
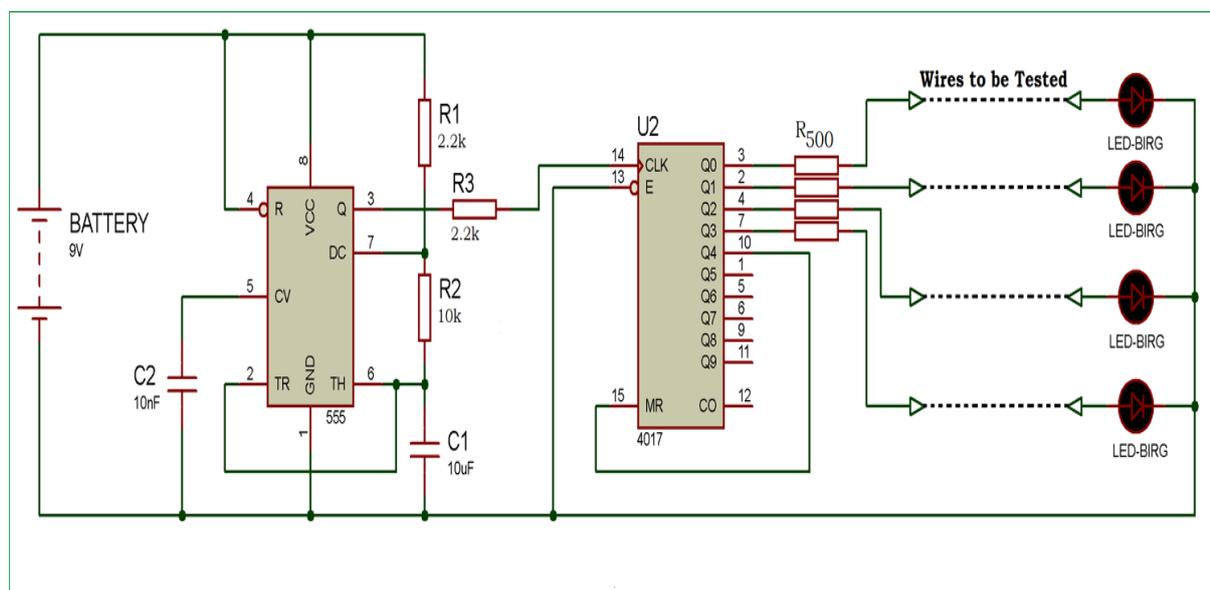
Component

- 555 Timer IC
- 4017 IC
- Resistors (10k-1, 2.2 k-2,500 k-4,)
- Capacitors (10uf-1,10nf-1)
- Red LED
- 9V supply
- Jumper Wires
- Bread Board

Working

In this circuit, we are using 555 Timer IC in a stable mode to generate a clock signal. The frequency of Clock pulse is dependent on resistance R1=2.2 KΩ, R2=10 KΩ, and capacitor C1=10μF. For finding the value of these components you can use the 555 timer frequency calculator to generate the required frequency. The speed of blinking LEDs will depend upon this Frequency.

The clock pulse through the 555timer IC feeds to the pin 14 of a 4017 decade counter IC.As we are using only four outputs of this IC so we have connected the 5th output to the reset pin to reset the IC. So that as soon as the 5th output Q4 is high, it resets the IC and makes the Q0 high again.

We have used four wires to demonstrate 4 wire Cable Tester. If the wires are not defective then it allows the current to conduct through them and feed to the LED and the LED goes HIGH. If there is any fault, break in the wire the LED will not glow. By which we will get to know that there is some defect in the wire. Here, the test is complete we get the result of wire that whether it is defective or not. So if all the four wires are fine then all the four LEDs will be blinking continuously and if any of the wire breaks then respective LED will stop blinking.