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Seven segment one digit object counter

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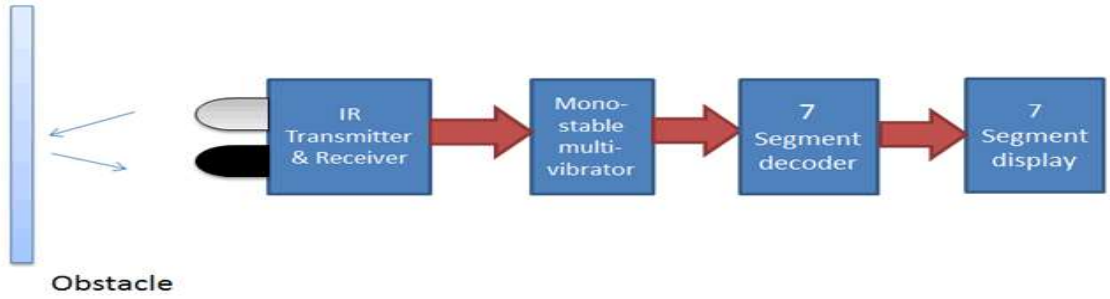
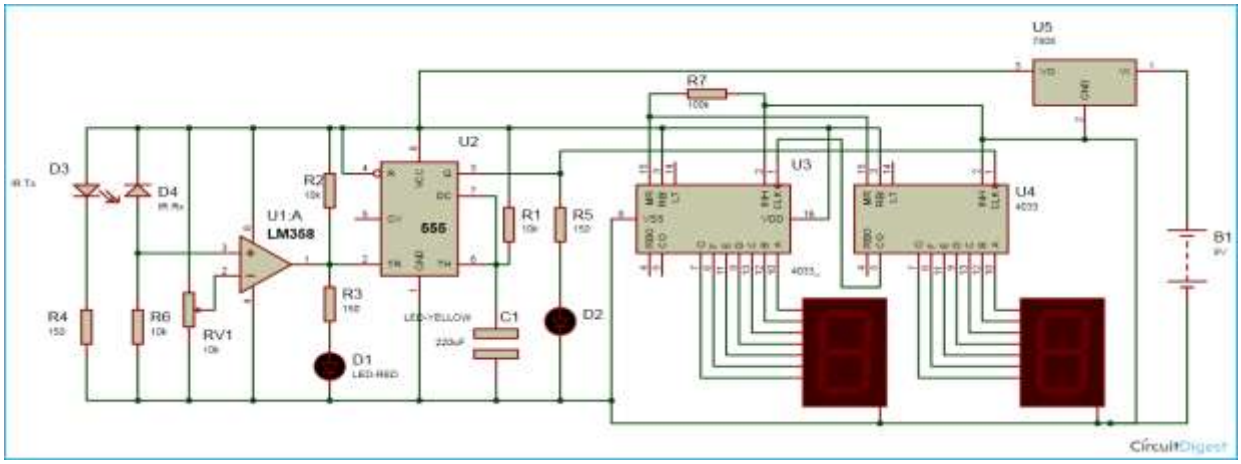
I.INTRODUCTION

The project is designed to monitor the counting operations in industries. For example, products moving on a conveyor belt are counted by IR interruption concept and displayed on a seven segment display. There are two pair sensors, each kept at certain distance from the other. One pair of sensor consists of a transmitter and a receiver, kept exactly opposite to each other. TheCount down is also achieved if the object moves in reverse direction. This project can also be used in any public transport/trains to count the number of passengers for monitoring purpose.

II.BLOCK DIAGRAM



III.CIRCUIT DIAGRAM



IV.WORKING

In this circuit we detects object by using IR sensor and comparator and then we applied output of comparator to mono-stable multi-vibrator. This mono-stable multi-vibrator generates a pulse of fix time period which can be set by using given formula.

T=1.1RC

In this circuit we have selected R1 is 10K and C1

After getting a pulse from 555 timer we applied this to clock pin of 7 segment decoder (U4) and then carry out signal (pin 5) to clock pin of another 7segment decoder (U3). After getting pulse from 555 timer 7 segment counter changes number value of segment display. and when number counting reaches at 10 in U4 decoder then it sends carry out signal or pulse to seconds 7segment decoder (U3) and then second display changes his number value. And this process repeats again. This **object counter circuit** can count 00-99.

V.COMPONENTS

The following is the list of components used in this project:

- LM358 IC – 1
- 555 timer IC -1
- Voltage Regulator 7805 -1
- 150 Ohm - 2
- CD4033 -2
- 10K resistor -2
- 100K resistor -1
- 10K POT -1
- 220uF capacitor -1
- IR sensors-1
- Bread board-1
- 9 Volt Battery -1
- Battery Connector-1
- LED -2

VI.COMPONENT INFORMATION:

1) NE555 timer

555 timers is an extremely stable regulator which is capable of producing precise time delays. In the time delay process the time is controlled by one external resistor and capacitor. The frequency and the cycle are controlled by two external resistors and one capacitor for a stable operation as an oscillator. The output can drop down to 200mA.

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2) IR Transmitter:

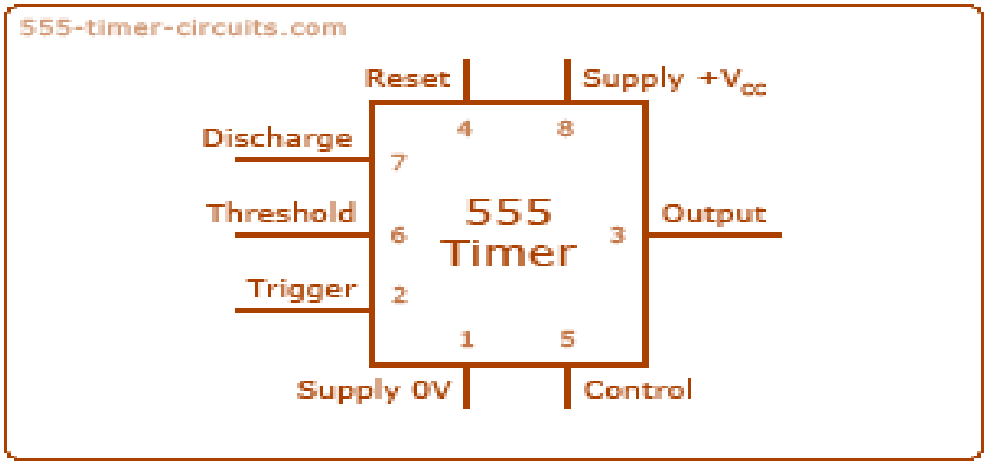
The operating voltage of transmitter is around two to 3V, to drop the remaining voltage and we connect a resistor in series with IR led.

3) IR Receiver:

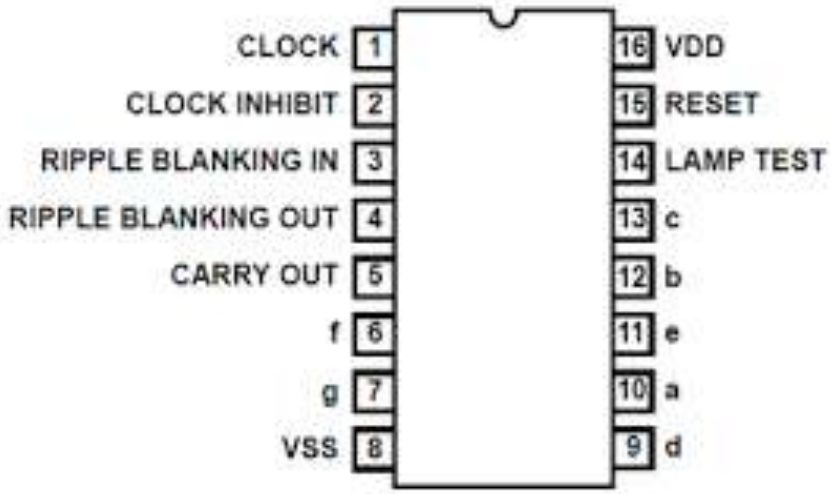
It is used in reverse bias and its acts as a closed circuit when it receives IR rays and it has high resistance when it does not receive any IR rays.

VII.PIN CONFIGURATION

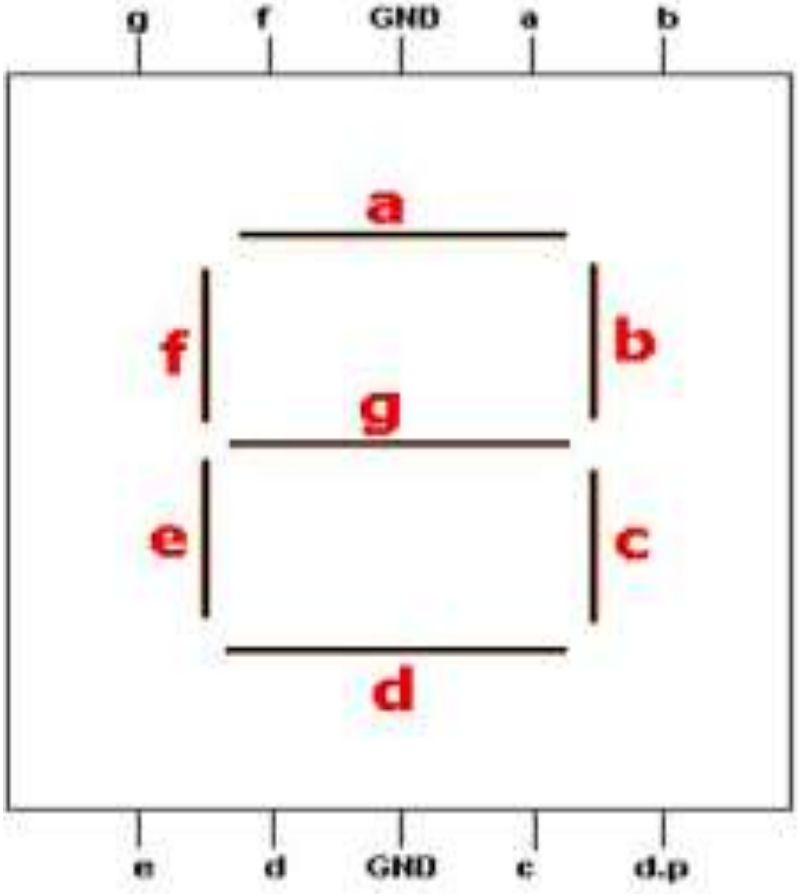
1) IC 555



2) IC 4033



3) LT 543



VIII.APPLICATIONS

- Conversion Rate:

  People counting systems in the retail environment are used to calculate the conversion rate, which is the percentage of total visitors versus the number that make purchases.

- Marketing Effectiveness

  Shopping mall marketing professionals rely on visitor statistics to measure the effectiveness of the current marketing campaign. Often, shopping mall owners measure marketing effectiveness with the same conversion rate as retail stores.[citation needed

- Monitoring of High-Traffic Areas

  Shopping centers use people counters to measure the number of visitors in a given area. People counters also assist in measuring the areas where people tend to congregate, the areas where people tend to gather are often charged higher rent.

- Funding Justification

  Non-profit organizations often use visitor counts as evidence when applying for grants or other financial aid, when planning for seasonal staffing, or other strategic operational decisions. In

cases where tickets are not sold, such as in museums and libraries, counting is either automated or staff keep a log of how many clients use different services.[citation needed]

Stadiums and Concert Halls

- Crowd Management

  People counters are used to measure the traffic flows of events; traffic patterns are used to improve traffic flow, particularly when large crowds are entering and exiting the stadium

REFERENCES

[1.] www.google.com
[2.] www.wikipedia.com
[3.] www.electronicshub.com