Reaction Timer Game Circuit

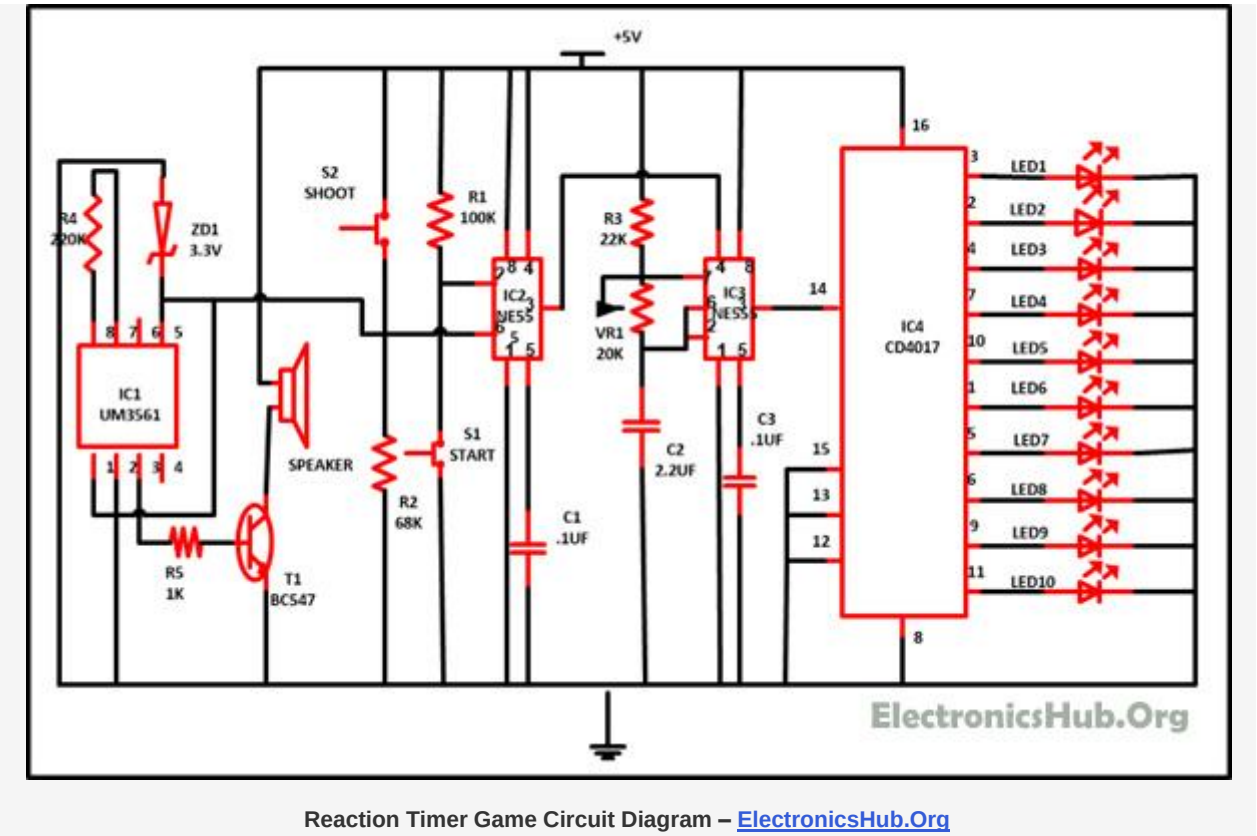
Nowadays, video games are very much popular with the kids. The circuit which is portrayed below is more like of shooting video game. You can play this game with your friends to know their reaction time.

This is very simple game in which 10 LEDs are moving in a arbitrary fashion. And you have to target a particular LED given by your challenger. And if he or she hits the correct one, 10 points will be given. In this circuit, one of the contenders has to hit the target that was given by the other opponent. If the contender hit the target, then he gets 10 points for that. And in the end, out of all the participants who have got the highest score will be the champion.

The plus point of this circuit designed is that, it does not harm the eyes of kids, even they play games for longer duration. The reason is that in the place of video screen, LEDs are used in the circuit for display. The circuit can be easily assembled as the components are less and easily obtainable. Kids get the sense of playing a genuine video game, as the circuit generates sound when the target is hit by any participant. With the help of easily obtainable adapters in the bazaar, you can power the circuit. Any number of contenders can take part in the game at a time.

Now let us look at the circuit diagram and working of this game.

Circuit Diagram of Reaction Timer Game:



Reaction Timer Game Circuit Diagram – ElectronicsHub.Org

Components used in this Circuit:

- IC
- NE55 – 2
- CD4017 – 1
- UM3561 – 1
- Resistor
- R1(100K) – 1
- R2(68K) – 1
- R3(22K) – 1
- R4(220K) – 1
- R5(1K)
- VR1(20K) – 1
- C1,C3(.1uf) – 2
- C2(2.2uf) – 1
- T1(BC547) – 1
- Speaker – 1
- S1,S2 – 2
- ZD1(3.3V) – 1

Working of Reaction Timer Game Circuit:

IC2 is worked in bistable mode i.e. it remains stable in the high or low state till the time an external pulse is applied to it. That is the reason it is also known as flip flop and able to store one bit of data if needed. When the circuit is on the voltage is given to IC2 at pin number 2 and the given voltage is 2/3 times less than Vcc , due to this the voltage stays high and stay in that condition till the time threshold voltage of the IC2 at pin 6 is more than 2/3 of Vcc. So when the participant press S2 switch (which is a shoot switch) the output of IC2 goes to low state which in result reset the IC3 and IC4.

NE555 timer IC3 is worked like an astable oscillator. Clock pulse for the circuit is generated by the NE555, it is used as an oscillating wave for IC4 output pin 3. By the support of the resistor R2 the speed of the oscillation may change.

The oscillation frequency of timer 555 calculated by using the formula f = 1. 44/(R1+2* (VR1) *C1)

To start the counter pin 14 of IC4 receive the clock signal and each time the counter is increased by 1 when the pin 14 of IC4 reaches at high state same as the first when the output is get from pin 3 ie Qo which in turns on the LED1 than from 2 which is Q1 which glow's LED2 and so on in the same manner.You can also find from the circuit that pin number 4 of IC3 is attached to pin number 3 of IC2 so each time when the shoot switch (S2) is pressed by the participant it will seize that output which in turn glow the singled LED. And when the start switch S1 is again pressed, its counter is started from 0 to 10.

IC UM3561 is used to build sound generating circuit and it is joined with an S2 shoot switch so that whenever a shoot switch (S2) is pressed IC1 receives power supply and sound of a gun is heared. Need to be careful while giving power supply to

UM3561 as voltage higher than 3.3V may damage the IC . To avoid this problem you can use a Zenner diode in your circuit same as we used in this circuit.

Different sounds like ambulance, fire force as well as a police siren can be produced by making by making minute changed with pin 1 and 6 as described in the table below.

Sound	Pin 1	Pin 6
Police Siren	Unconnected	Unconnected
Fire Force	Unconnected	Supply
Ambulance	Unconnected	Ground
Gun Sound	Supply	Unconnected

How to Play the Game?

Accumulate the circuit after supplying the power in the circuit. LEDs that are in the circuit are arbitrarily ON and OFF. With the help of the VR1 (Variable Resistor), you can change the time period for the LEDs ON and OFF. Now one of the contestant will give the target to shoot to another participant to shoot, suppose LED number 4. Then the shooter has to press the button which is switch S2 in such a way that only LED4 have to glow. If the shooter is succeed than got 10 points otherwise no points. To restart the game participants have to press the start button S1 and once more all the LED starts glowing. Repeat the same process all the time and at the end of the game one who got the highest point win the game.

In the front of LED players, we can use stickers of airplanes that will make the game more interesting, as it will provide you a visibility of shooting planes.

Source: http://www.electronicshub.org/reaction-timer-game-circuit/