MY PROJECTS

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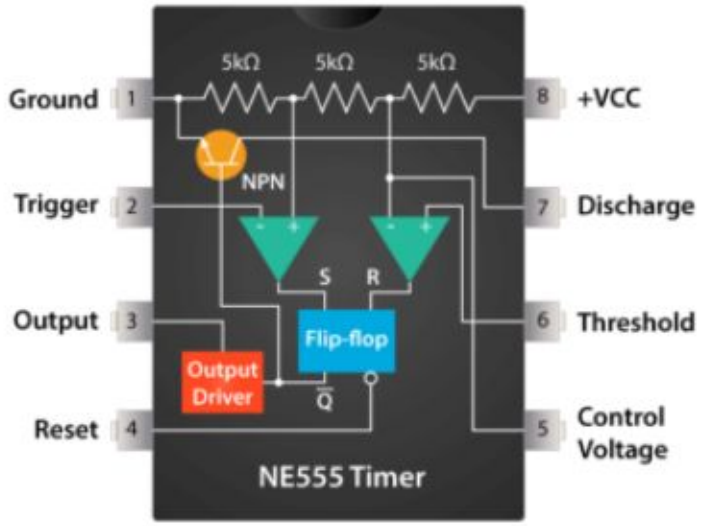
(IIIT-DWD)

SECURITY ALARM:

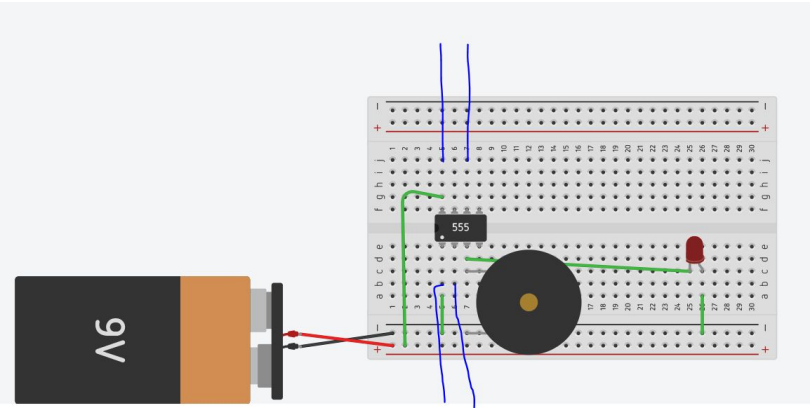
The main aim of this alarm is to notify us when someone is using our things.
The buzzer will turn ON when someone tries to touch our object and it will continuously make sound until we switch if off. Here (pin 1 , pin 2) touch panel is our object and (pin 6, pin 8) touch panel is control switch.

Components used - 555 timer , buzzer , touch panel , IEDs.



Here we are connecting touch panels to (pin 1 , pin 2) and (pin 6 , pin 8) .
Here we can control the output using trigger , threshold and control pins. When voltage at trigger pin is less than 1/3Vcc the comparator attached to it will be high and when voltage at threshold pin is greater than 2/3Vcc then the comparator attached to it will be high .
From the knowledge of flip flops,

S	R	Q	$\bar{Q}$
0	0	1 0	0 1
0	1	0	1
1	0	1	0
1	1	0	0

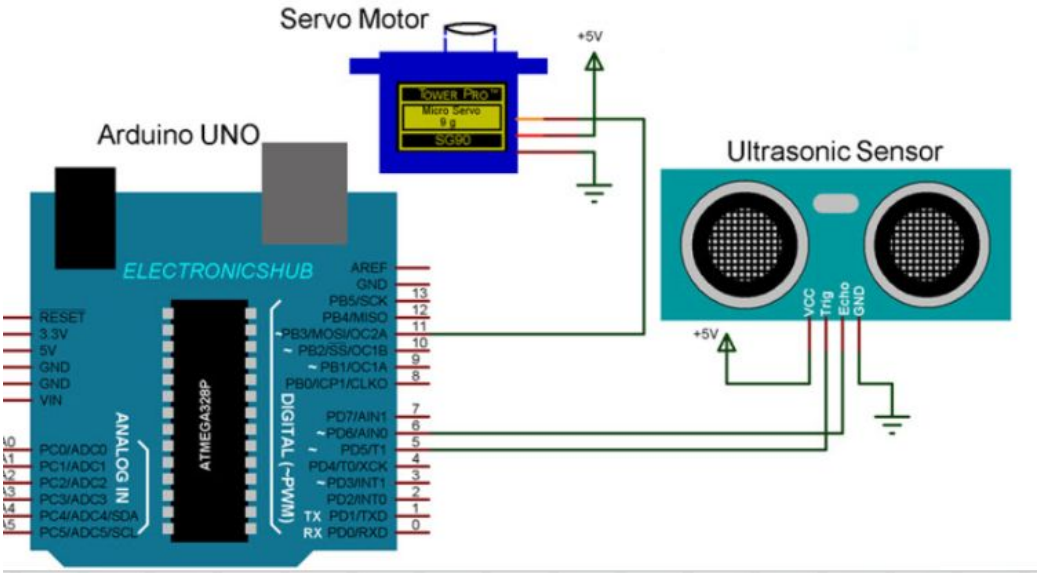


When we touch (pin1 , pin2) the trigger voltage will be zero which makes the corresponding comparator high and S in SR flipflop will be one and since threshold voltage is less than 2/3 Vcc , R will be 0.
When S=1 AND R=0 then Q=1 implies output will be high . since positive terminal of buzzer and negative the terminal of LED is connected to pin 3 which is output pin makes buzzer ON and Led OFF.
Similarly when we touch (pin 6, pin 8) the threshold voltage will be Vcc which is greater than 2/3Vcc which makes R= 1 and S = 0 implies Q=0 .output is low which turns ON led and turns OFF buzzer.

AUTOMATIC DUSTBIN:

In this project, I have designed a simple system called Smart Dustbin using Arduino, Ultrasonic Sensor and Servo Motor, where the lid of the dustbin will automatically open itself upon detection of the human hand.

Components used- Arduino UNO , Servo motor , Ultrasonic Sensor

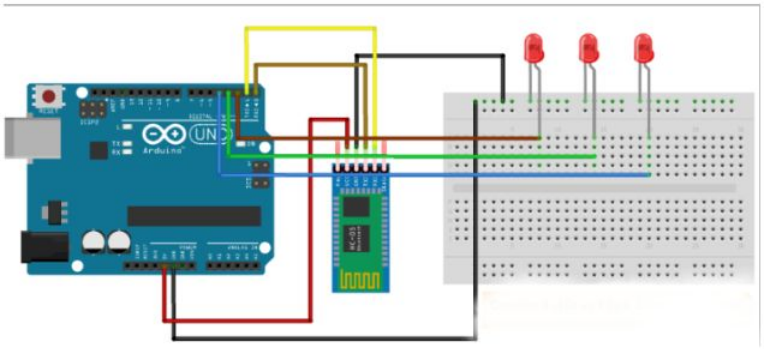


A pulse is sent into ultrasonic sensor as an input to trigger pin then by emitting the ultrasonic waves it will calculate the distance of the object and will send the distance to arduino . Here echo pin duration is equal to total propagation of time .
Distance=speed*t/2 (because it travels twice).
After setting up the Smart Dustbin and making all the necessary connections, upload the code to Arduino and provide 5V power supply to the circuit. Once the system is powered ON, Arduino keeps monitoring for any object near the Ultrasonic Sensor.If the Ultrasonic Sensor detects any object like a hand for example, Arduino calculates its distance and if it less than a certain predefined value, Arduino will activate the Servo Motor and with the support of the extended arm, it will list the lid open.After certain time, the lid is automatically closed.

LED CONTROL USING VOICE COMMANDS:

The main objective of the project is to develop a automation system using an Arduino board with bluetooth being remotely controlled by any Android OS smartphone.

Components used: Arduino UNO , HC-05 (bluetooth module) , LEDs , Arduino bluetooth controller app



VOICE COMMANDS:

Sl. No	Command	Action
1	turn on green LED	Green LED turns on
2	turn on red LED	Red LED turns on
3	turn on yellow LED	Yellow LED turns on
4	turn on blue LED	Blue LED turns on
5	turn off green LED	Green LED turns off
6	turn off red LED	Red LED turns off
7	turn off yellow LED	Yellow LED turns off
8	turn off blue LED	Blue LED turns off
9	turn on all LEDs	All LEDs turns on
10	turn off all LEDs	All LEDs turns off

After setting up all the things, you have to send the voice command by using the app which is further sent to the bluetooth module and the bluetooth module is serially communicate with the arduino UNO and then the task is performed as per the command. Arduino will turn on or off the LED according to the given Voice command. We are saving all the received command in variable “Value”.