

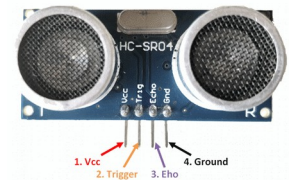
Q) Design and develop IOT based traffic light system to give the alert message by using LED's Buzzers and ultrasonic sensors to avoid the congestion.

Aim: To conduct experiment on Traffic Light Automation System using Raspberry pi 3 to give alert message by using LED's Buzzers and ultrasonic sensors to avoid the congestion.

Description: Traffic congestion is increasing day by day and we have to face with many problems. Main reasons for traffic congestion are high volume of vehicles, inadequate infrastructure, and the irrational distribution of the development. In this system, we propose a smart traffic signal controller system. The proposed system tries to minimize the possibilities of traffic jams, caused by the traffic lights, to some extent by clearing the road with higher density of vehicles. Through which less number of vehicles in waiting state and can reduce time consuming. And our system try to minimize the traffic by using ultrasonic sensor and indication using LED's. By reading analog data about minimum distance from ultrasonic sensor the congestion due to the traffic is controlled.

Ultrasonic sensor:

The ultrasonic sensor head emits an ultrasonic wave and receives the wave reflected back from the target. Ultrasonic Sensors measure the distance to the target by measuring the time between the emission and reception.



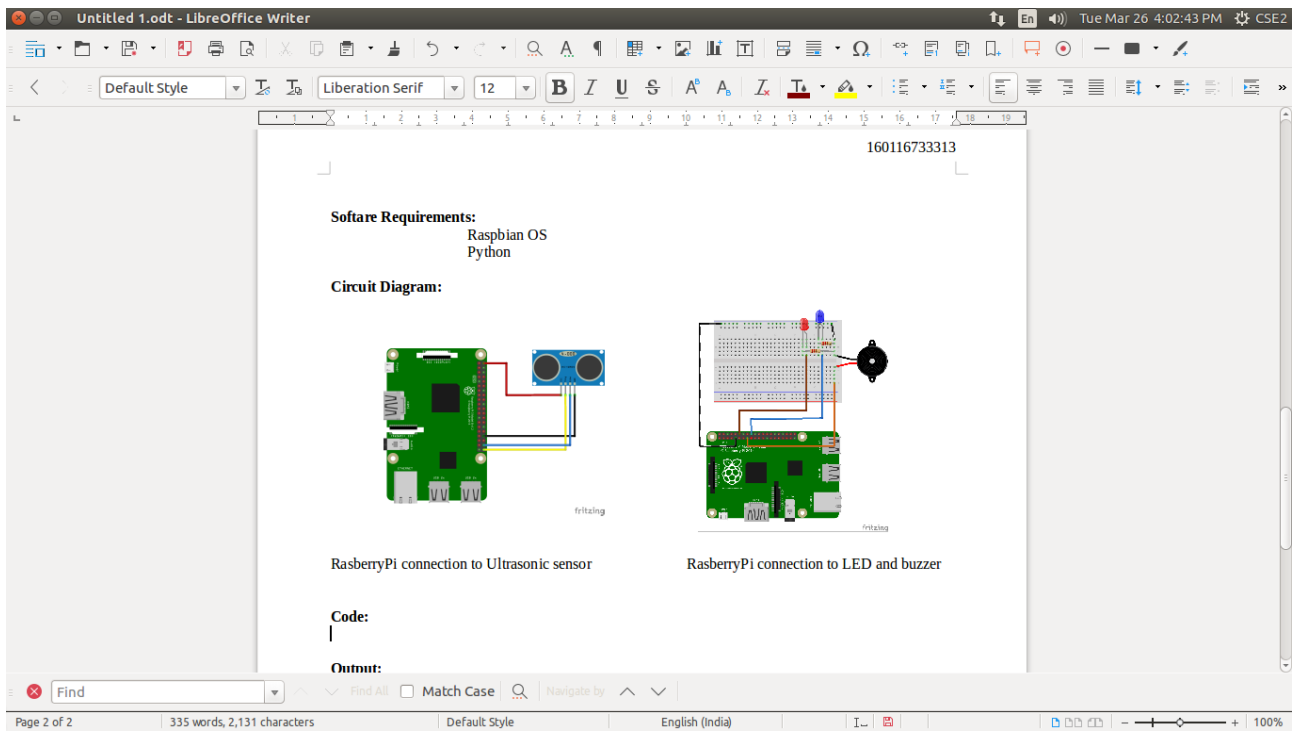
Hardware and Software requirements :

Raspberry pi 3
Ultrasonic sensor
Bread Board
USB cables
connecting wires
Buzzer
LED

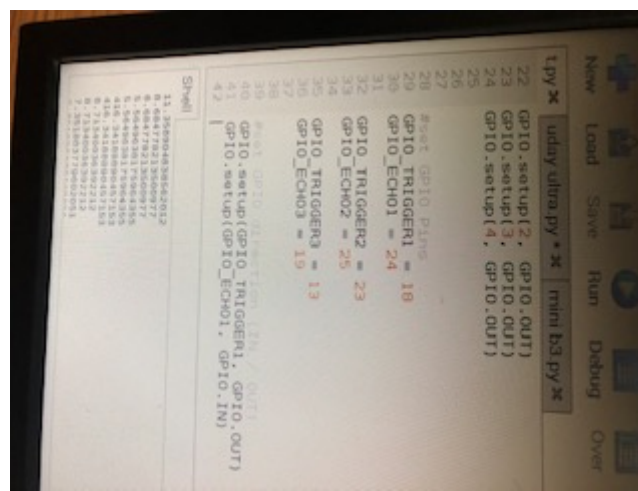
SOFTWARE :

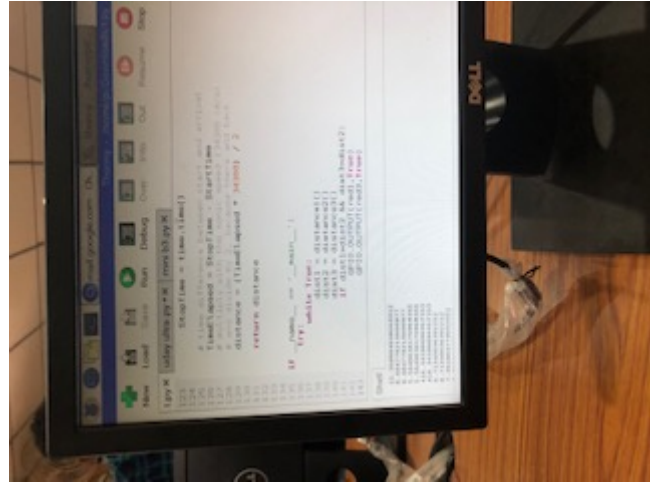
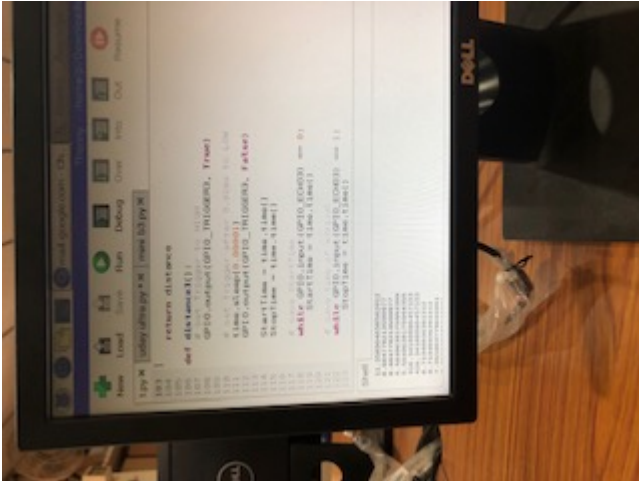
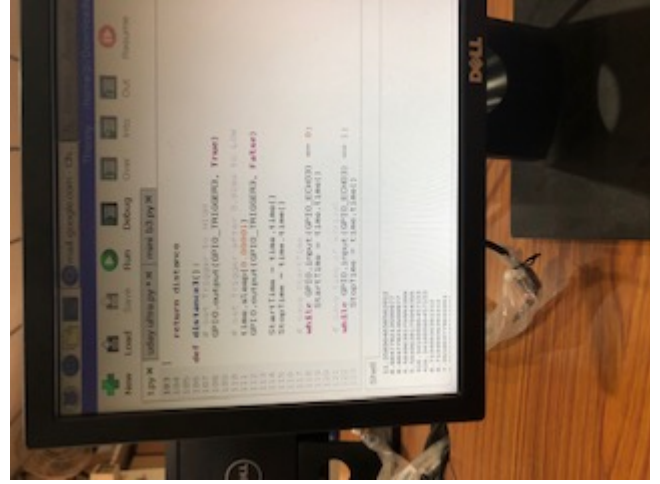
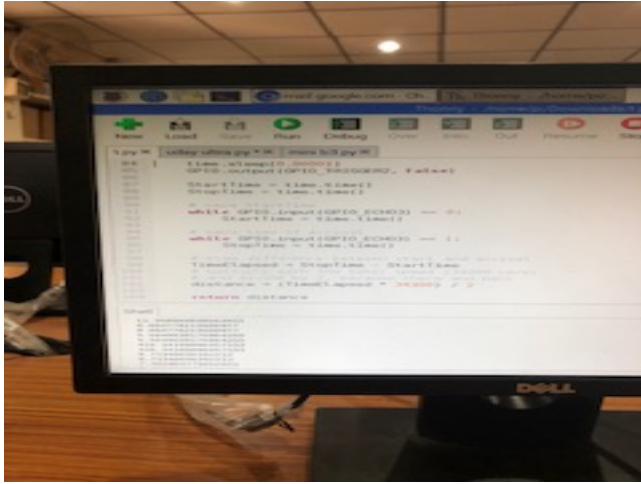
python3 (IDLE) - Thonny

Circuit Diagram:



Code:





output:

```
13 # Red and amber
14     GPIO.output(3, True)
15     time.sleep(1)
16 # Green
17     GPIO.output(3, False)
18     GPIO.output(5, False)
19     GPIO.output(7, True)
20     time.sleep(5)
21 # Amber
```

Shell

```
11.358904838562012
8.684778213500977
8.684778213500977
5.5649638175964355
5.5649638175964355
416.34188890457153
416.34188890457153
8.71340036392212
8.71340036392212
7.351803779602051
7.351803779602051
```

