
Arduino Alarm System

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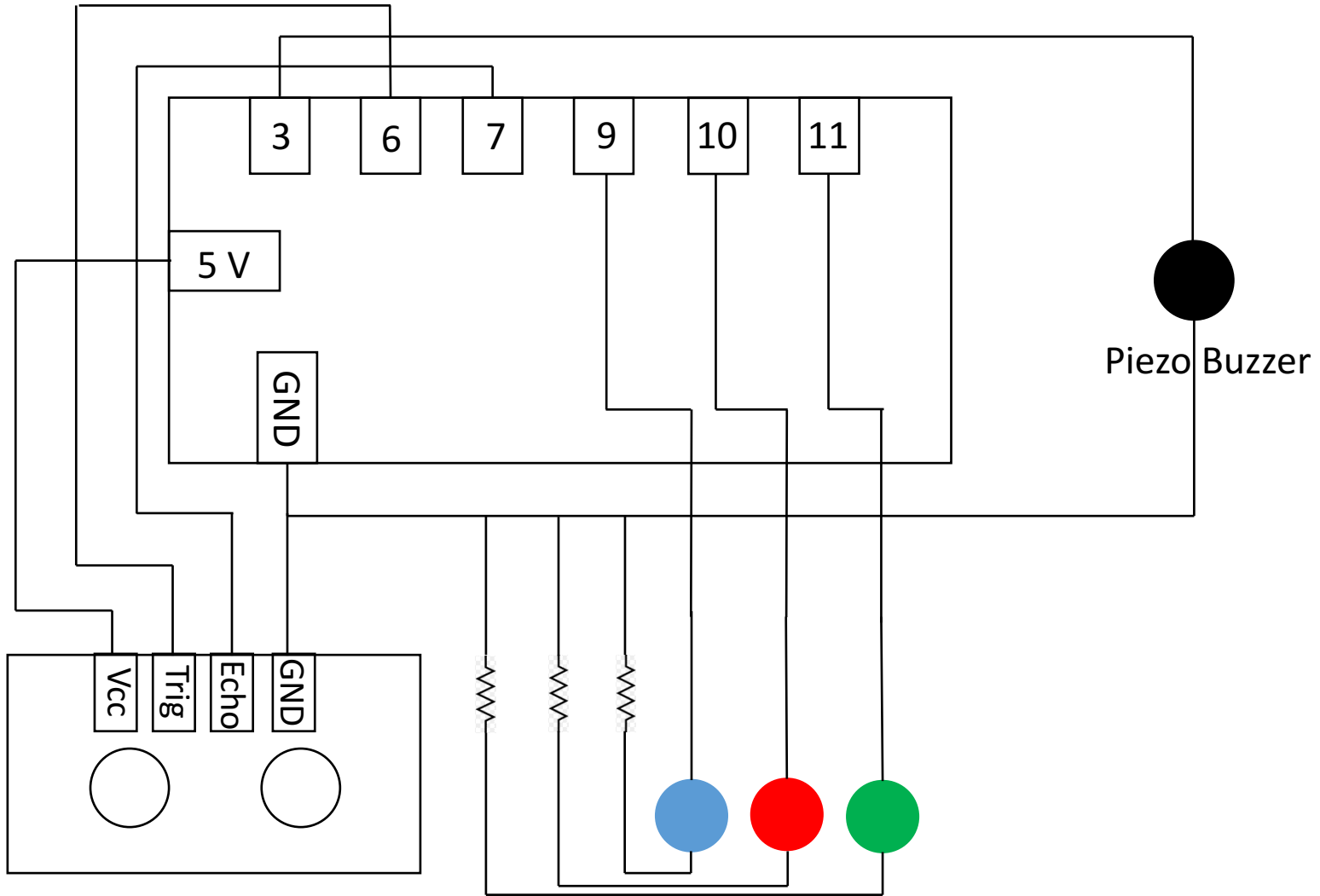
GeoSc 597 Final Project

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Why Alarm System?

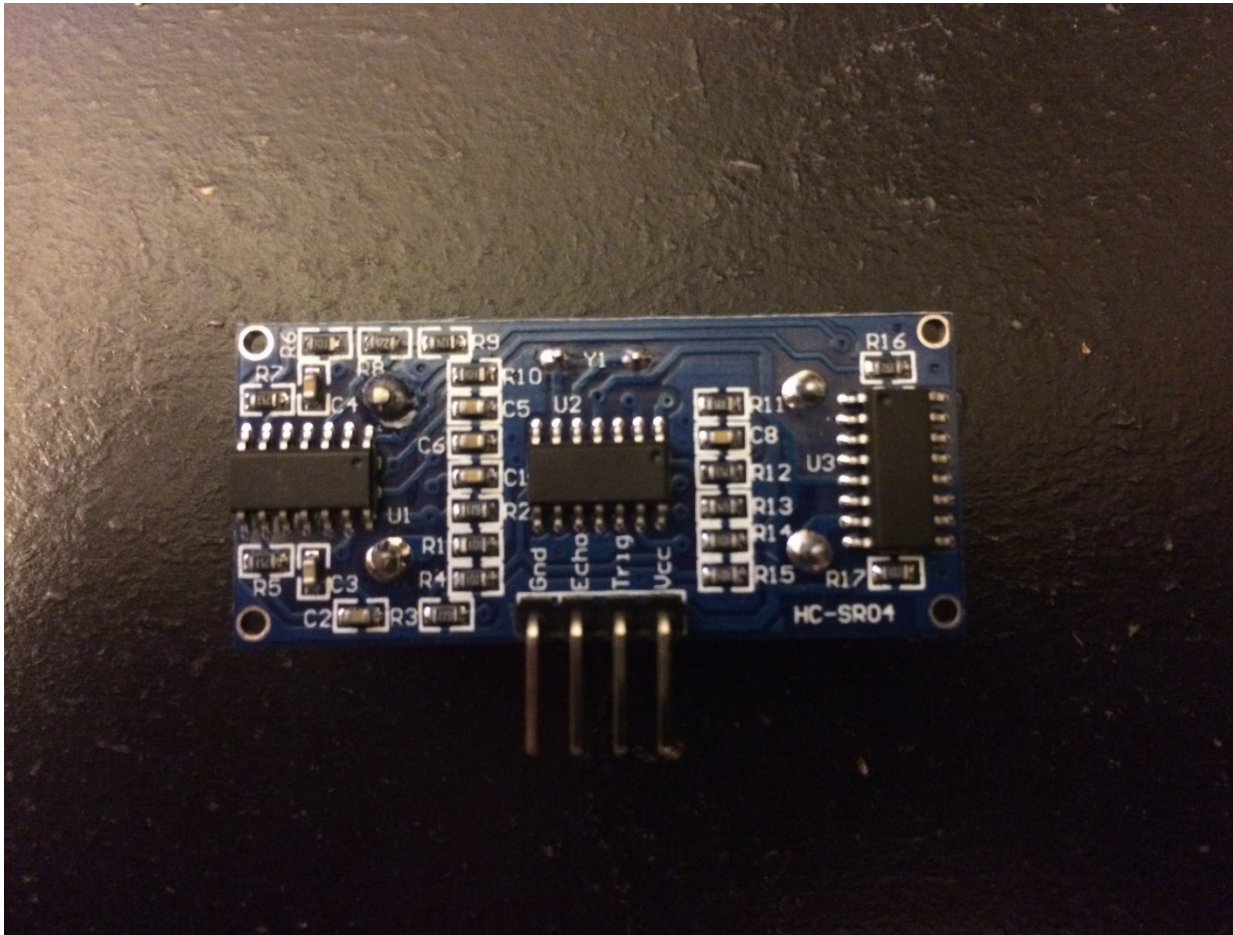
- Experience of burglary
 - Door is not locked
 - People broke in the room at 2 am
- Violence and crimes against specific ethnic group
 - “Meet the Flockers” by YG
 - Fatal home invasion in Gwinnett County, Georgia
- No AK-47 to protect myself

Schematic of Alarm System



Devices

- SR04-Ultrasonic Distance Measurement Sensor



Devices

- Distance Calculation

- At 20 degree C, speed of sound = 343.5 m/s = 0.03435 cm/ms
- Pace of sound = 1/speed of sound = 1/0.03435 = 29.1 ms/cm
- Duration = signal of Echo pin / 2
- Distance = Duration / Pace of Sound = Duration/29.1 = [cm]

Code:

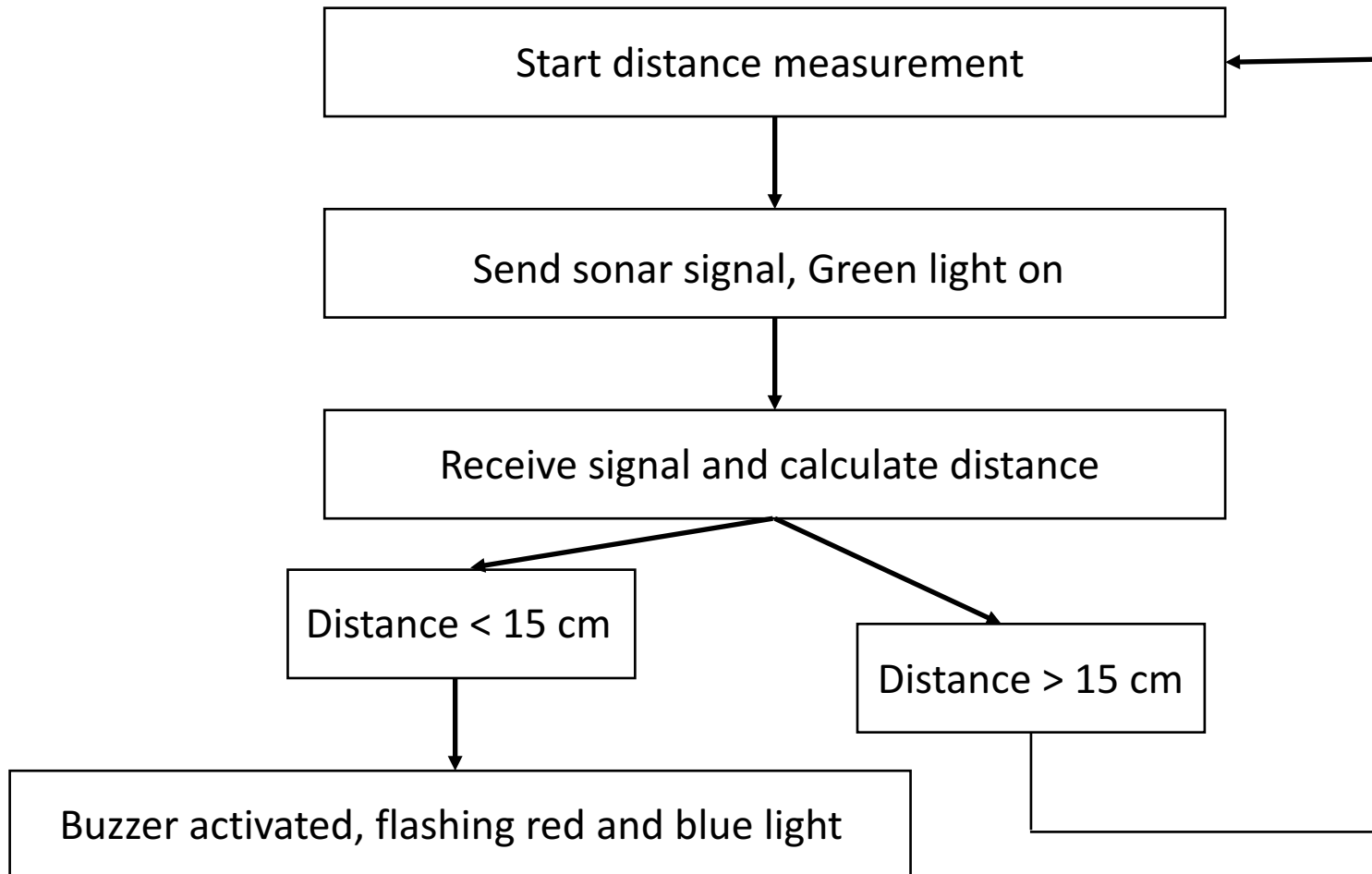
```
int duration, distance;
digitalWrite(trigPin, HIGH);
delay(100);
digitalWrite(trigPin, LOW);
duration = pulseIn(echoPin, HIGH);
distance = (duration/2) / 29.1;
```

Devices

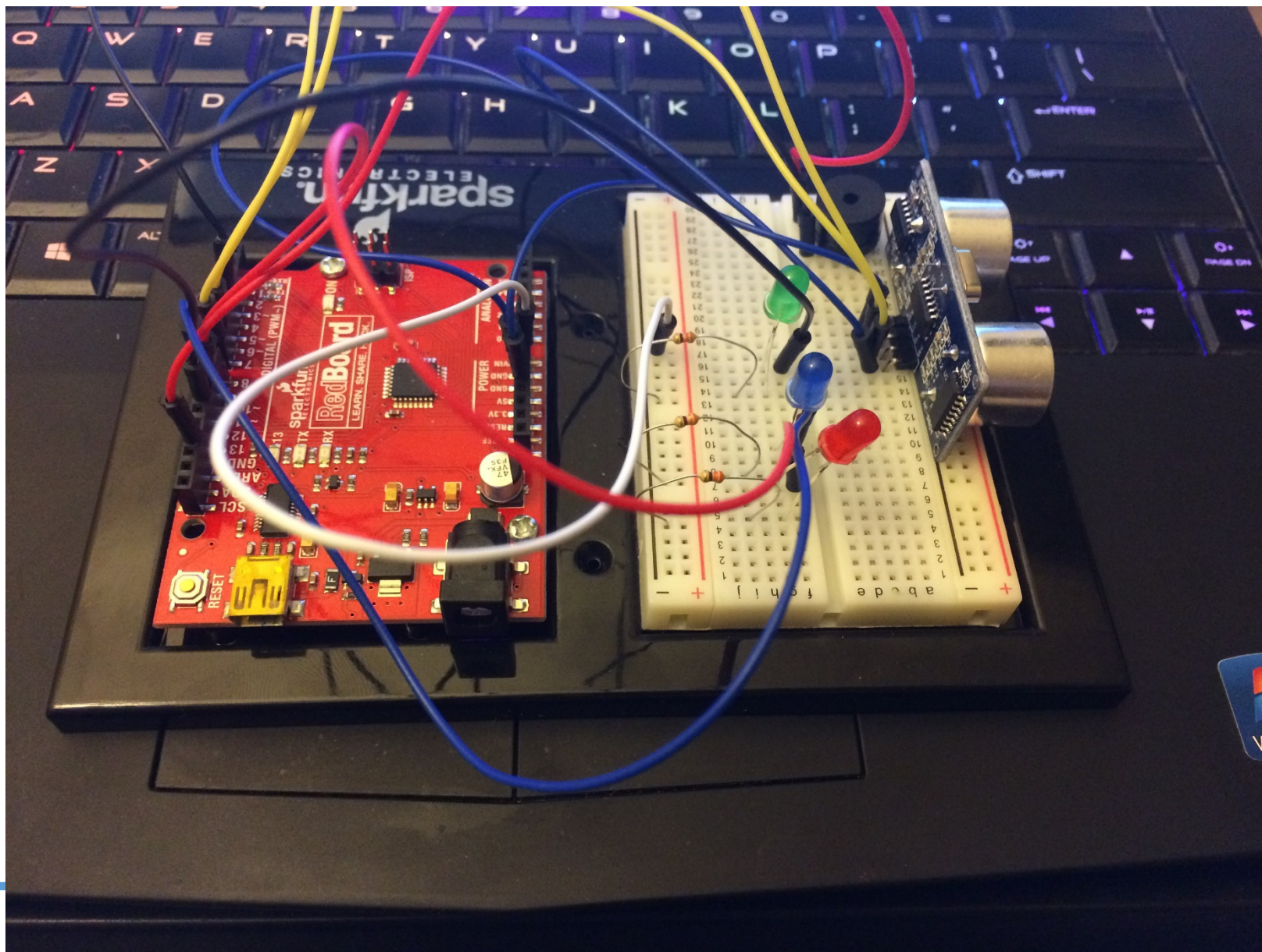
- Piezo Buzzer



State Machine Diagram



Demonstration



References

- <http://www.instructables.com/id/Using-a-SR04/>
- <http://www.instructables.com/id/SIMPLE-ARDUINO-ULTRASONIC-SENSOR-DOOR-ALARM-/>
- <http://www.makeuseof.com/tag/how-to-make-a-simple-arduino-alarm-system/>

Thank you !

Questions?