



IOT Project

Distance sensor

Students name:

Renad Aladwani
2005857

Lama Almalki
2111750

Shahad Alharbi
2113525

Souad Ridwan
2115094

TABLE OF CONTENTS

01

PROJECT IDEA

Project description
Application in real life
Sensor type

02

FLOW OF WORK

Hardware
Software

03

FACED PROPLEMS

Description of the Challenges

04

TESTING

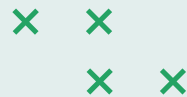
Demo video

PROJECT IDEA

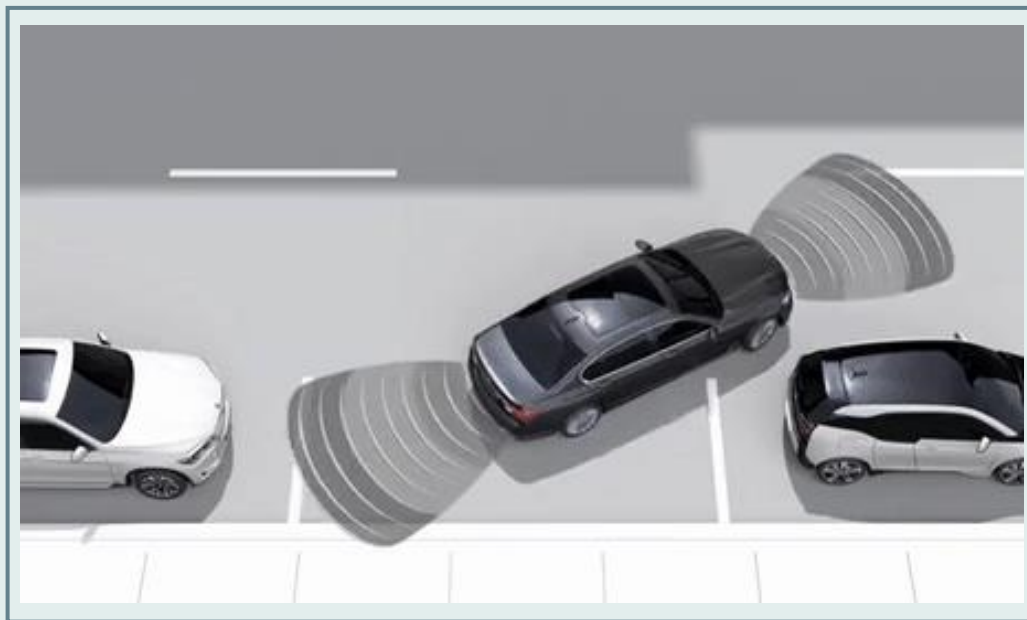
- ❑ Estimate the distance between the sensor and any object.
- ❑ when the object is closer than 10 cm An alert will start to make sounds and it automatically will send an email.



Applications in real life



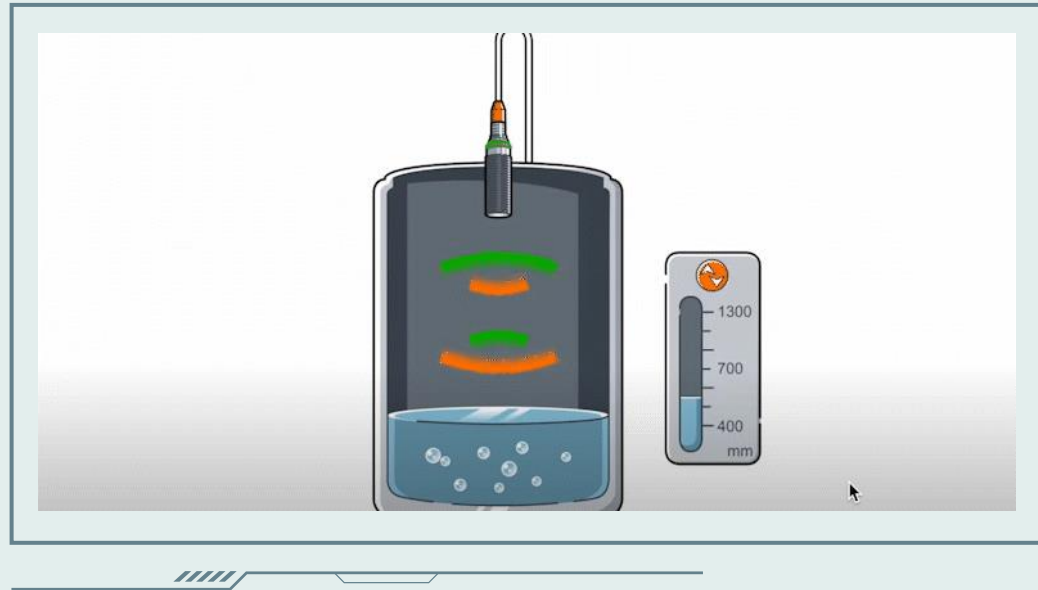
**automobile self-
parking technology**



Applications in real life



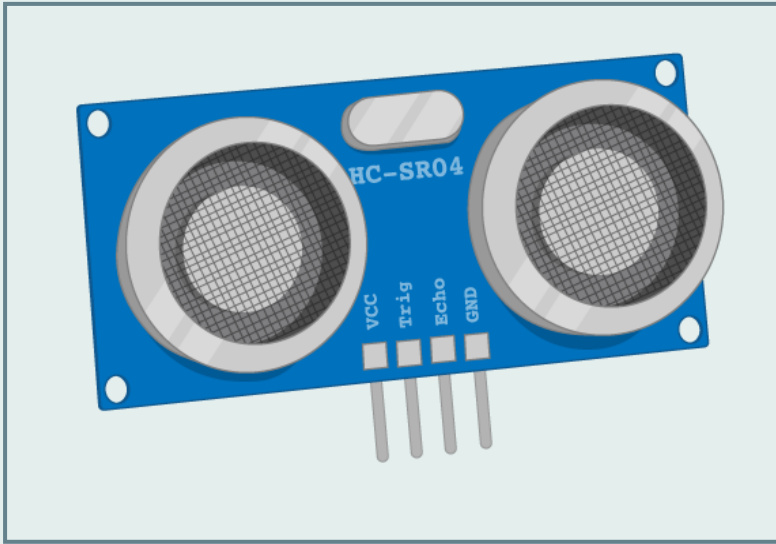
liquid level
measurement



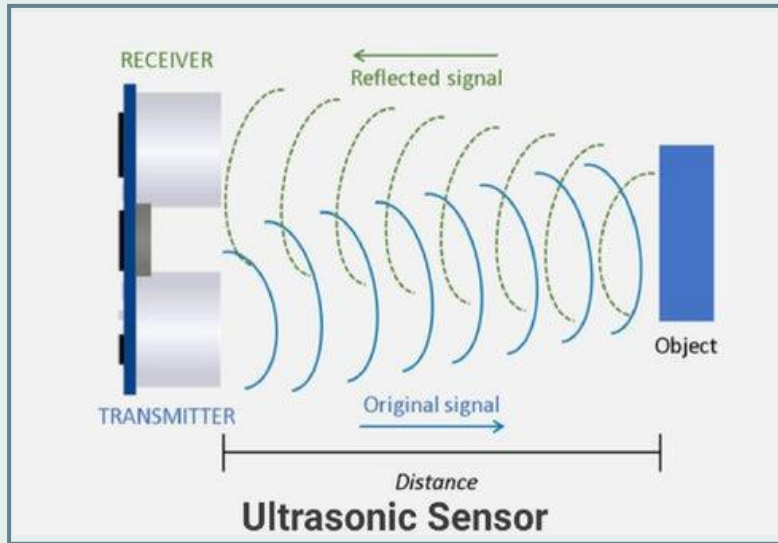
SENSOR TYPE:



ULTRASONIC SENSOR



SENSOR TYEP:



How its work ?

Connect hardware with software

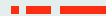
The Distance sensor has four parties , positive party , ground party , trigger party and echo party. The trigger and ego parties we connected with the node MCU.

One of the buzzer party connected with node MCU and the other one connected with the ground.

Connect hardware with software

One of the led party connected with node MCU and the other one connected with the ground.

The node MCU we programmed it to do specific task to controlled the electrical circuit





**Connect hardware with
software**

Code application

```
sensor_reading=read_ultrasonic_sensor();
cloud_connect(); // send data to thingSpeak

if(sensor_reading>0 && sensor_reading<10){
    cloud_connect();
    delay(1000);
    send_email_using_ifttt();
    Serial.println("Email is Sent");
    delay(1000);
    send_email_using_ifttt();
    for(int x=0;x<30;x++)
    {
        digitalWrite(led,HIGH);

        digitalWrite(buzzer,HIGH);
        delay(200);
        digitalWrite(led,LOW);
        digitalWrite(buzzer,LOW);
        delay(800);
    }
}
```

Code application

Matching channel ID and API key in the code and Thingspeak

```
#include <ThingSpeak.h>
int sensor_reading;

//Timer - milliseconds
unsigned long previousMillis = 0;
unsigned long currentMillis;
const unsigned long period = 5000;

//Wifi related variables
String apiKey = "8G0SEM4B1QEBN23X"; //Write API key from thingspeak

unsigned long channelID = 2146698;
```

Code

Ultrasonic Distance Sensor

Channel ID: **2146698** | measuring distance sensor
Author: mwa000029976107
Access: Private

Private View | Public View | Channel Settings | Sharing | **API Keys** | Data Import / Export

Write API Key

Key

[Generate New Write API Key](#)

Read API Keys

Help

API keys enable you to write data to a channel or read data from a private channel. API keys are auto-generated when you create a new channel.

API Keys Settings

- Write API Key:** Use this key to write data to a channel. If you feel your key has been compromised, click [Generate New Write API Key](#).
- Read API Keys:** Use this key to allow other people to view your private channel feeds and charts. Click [Generate New Read API Key](#) to generate an additional read key for the channel.
- Note:** Use this field to enter information about channel read keys. For example, add notes to keep track of users with access to your channel.

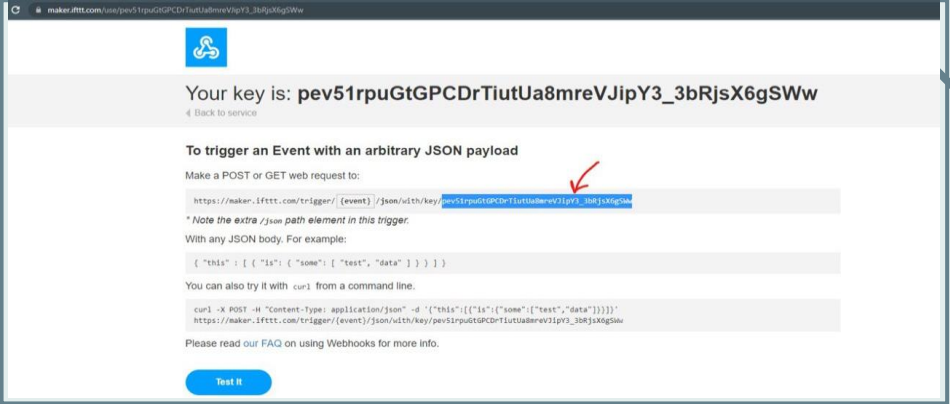
Thingspeak

Code application

Matching the key in the code and IFTTT

```
void send_email_using_ifttt() {  
    const char* host = "maker.ifttt.com";  
  
    if (client.connect(server2, 80)) {  
  
        String url = "/trigger/Alert/json/with/key/pev51rpuGtGPCDrTiutUa8mreVJipY3_3bRjsX6gSWw";  
  
        client.print(String("GET ") + url + " HTTP/1.1\r\n" +  
                        "Host: " + host + "\r\n" +  
                        "Connection: close\r\n\r\n");  
    }  
  
    client.stop();  
}
```

Code

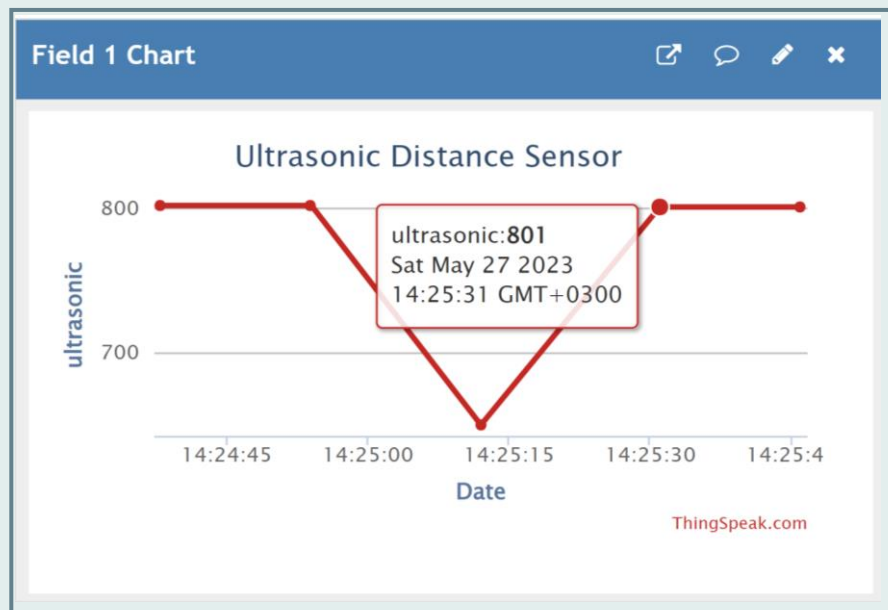


The screenshot shows the IFTTT Maker interface. At the top, it displays the key: **pev51rpuGtGPCDrTiutUa8mreVJipY3_3bRjsX6gSWw**. Below this, it instructs the user to trigger an event with an arbitrary JSON payload. A red arrow points to the key in the URL: `https://maker.ifttt.com/trigger/(event)/json/with/key/pev51rpuGtGPCDrTiutUa8mreVJipY3_3bRjsX6gSWw`. The page also provides a sample JSON body and a curl command to trigger the event.

IFTTT

Connect hardware with software

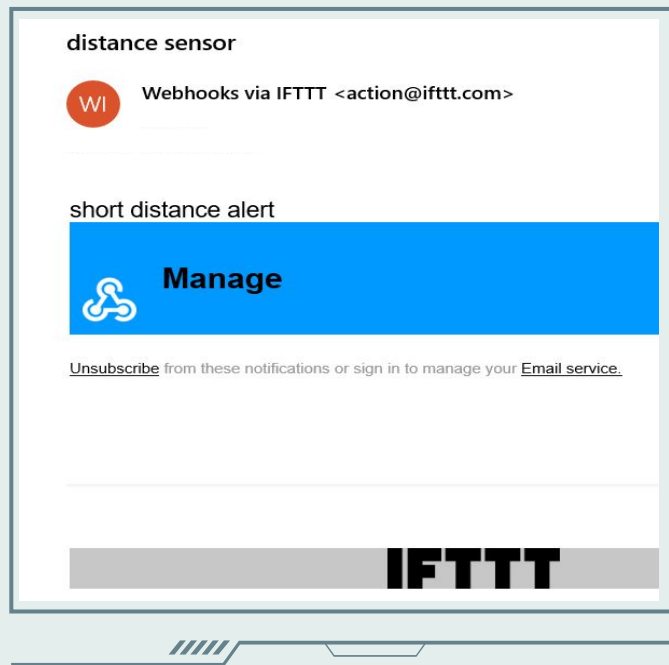
Thingspeak



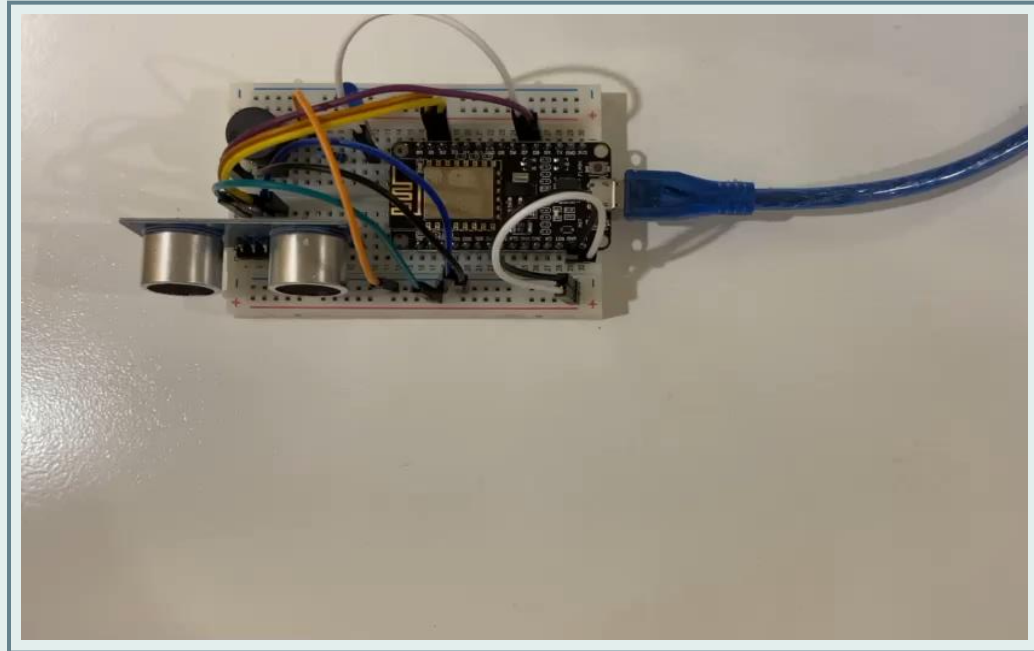
Connect hardware with software



IFTTT



Demo video



What issues are we dealing with?

- Repeatedly sending emails
- The delay in email delivery
- The slow response of the



**We are grateful for
your listening**