



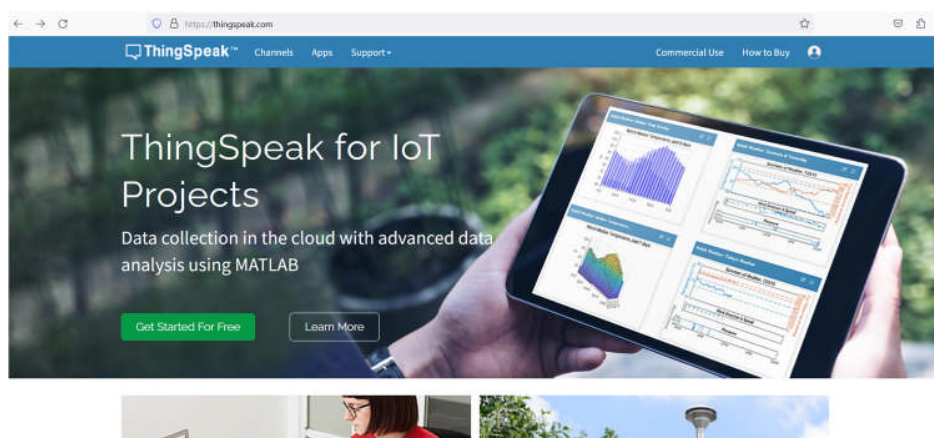
LAB MANUAL 1

Deployment of HTTPS protocol on IoT Devices

Deployment of HTTPS protocol on RaspberryPI with GrovePI

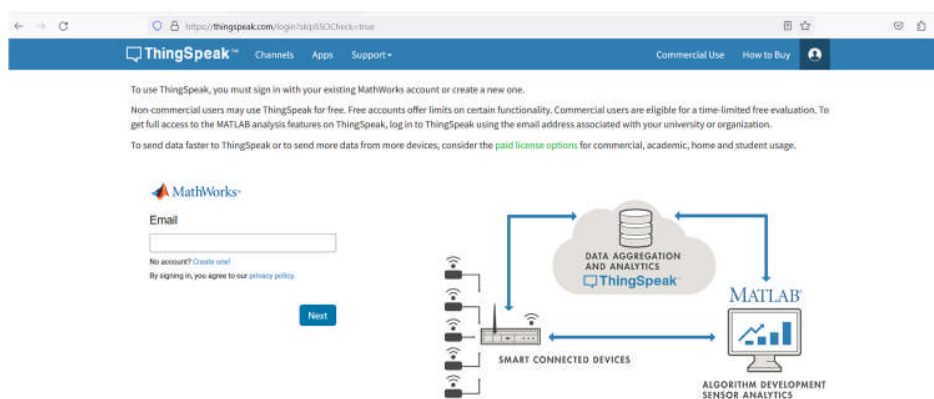
Let's start work with ThingSpeak.

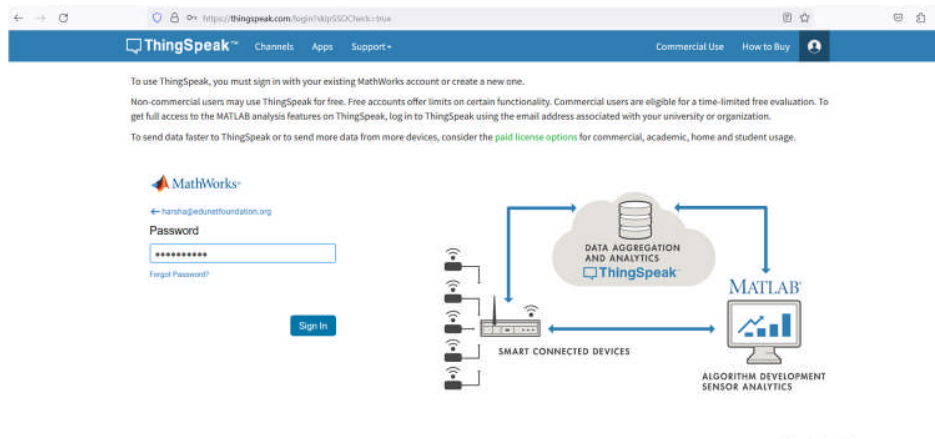
Step 1: Click on this link <https://thingspeak.com/>



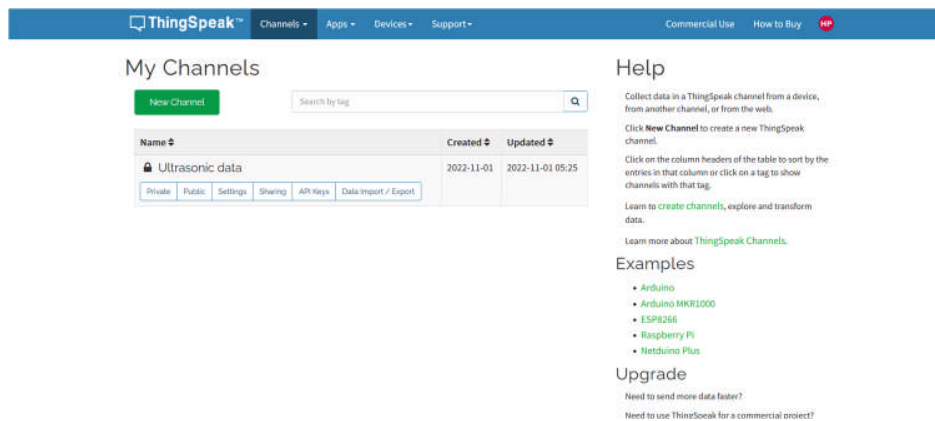
<https://thingspeak.com/>

Step 2: Create Account on the ThingSpeak

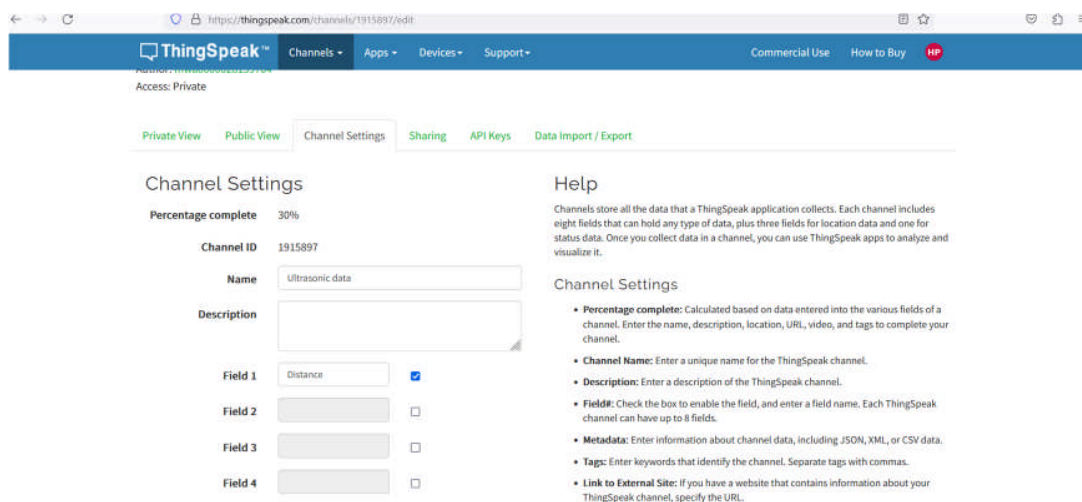


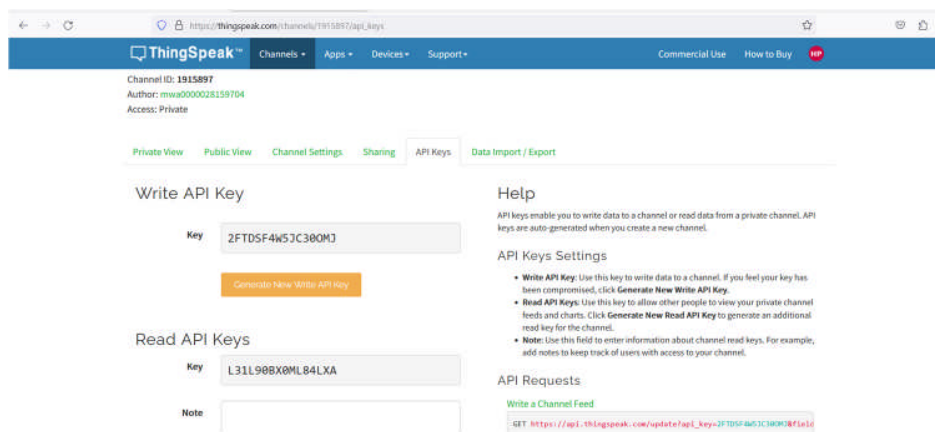


Step 3: Create new Channel



Step 4: Select the appropriate settings



Step 5: Generate API key and Copy key in your code

Step 6: Connect DHT sensor to port D7 and LCD to any I2C ports and run the below code.

Install library using below installation command

pip3 install thingspeak

Code-

```
#pip3 install thingspeak
```

```
import thingspeak
```

```
import time
```

```
from grovepi import *
```

```
dht_sensor_port = 7
```

```
dht_sensor_type = 0
```

```
channel_id = '2224094'
```

```
write_key = 'IN6UY2EWBYP1173' # PUT YOUR WRITE KEY HERE
```

```
# PUT YOUR WRITE KEY HERE
```

```
def measure(channel):
```

```
    try:
```

```
        [ t,h ] = dht(dht_sensor_port,dht_sensor_type)
```

```

response = channel.update({'field1': t, 'field2': h})
print(f"Temp:{t} C Humidity:{h}% ")
except:
print("connection failed")

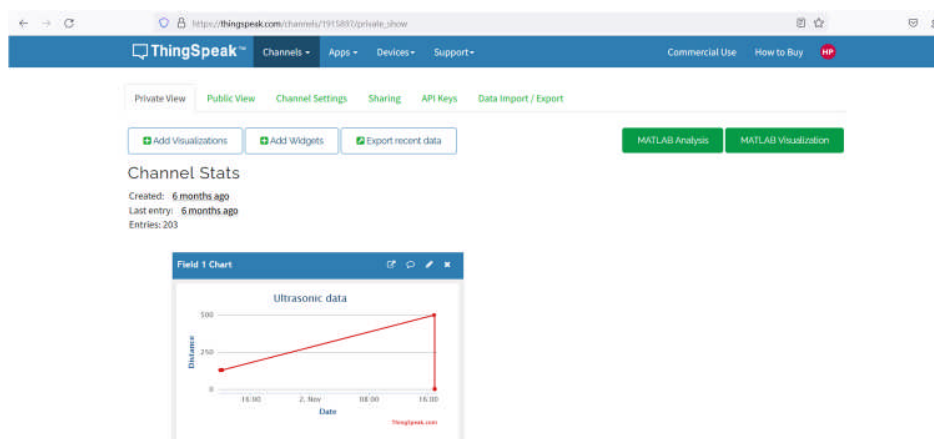
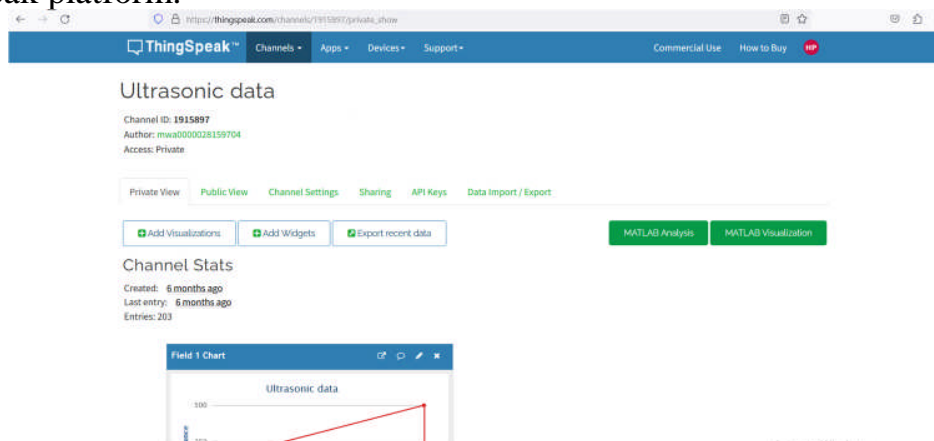
```

```

channel = thingspeak.Channel(id=channel_id,api_key=write_key)
while True:
    measure(channel) # free account has an api limit of 15sec
    time.sleep(15)

```

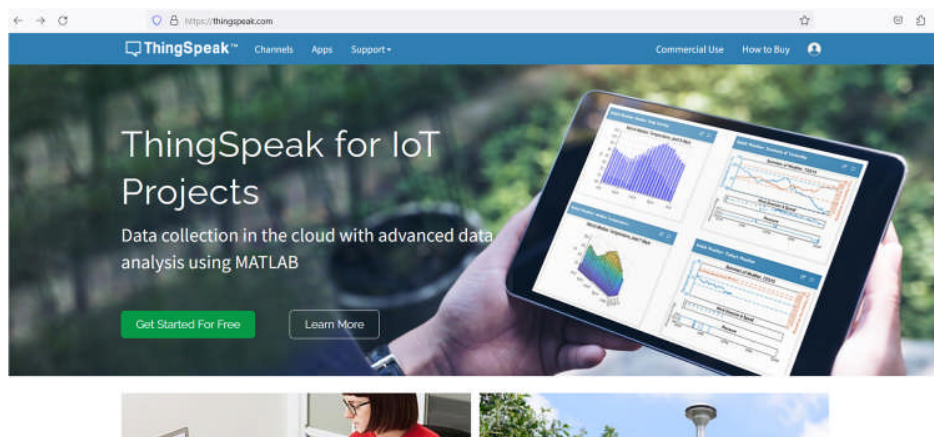
Now you can timely observe the update in the measured value visible on Thingspeak platform.



Deployment of HTTPS protocol on RaspberryPI with DFRobot Hat

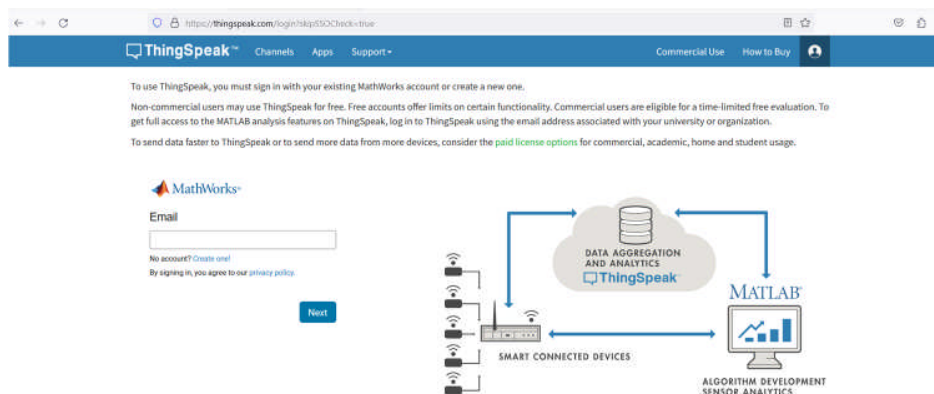
Lets start work with ThingSpeak.

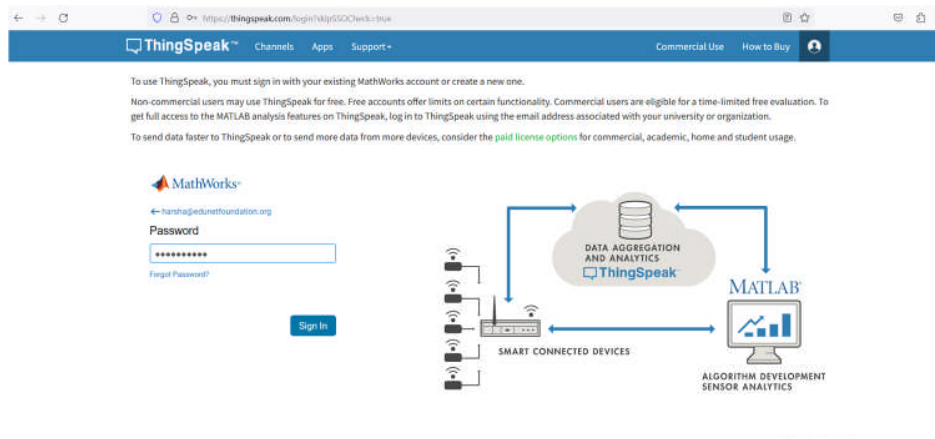
Step 1: Click on this link <https://thingspeak.com/>



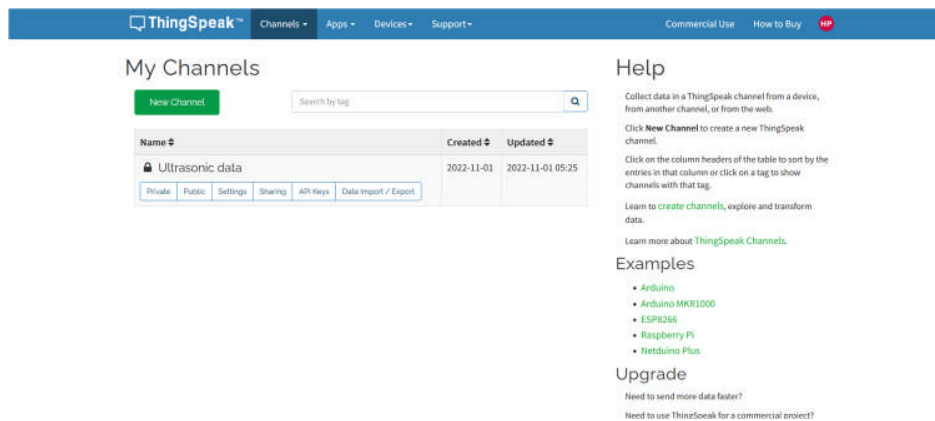
<https://thingspeak.com/>

Step 2: Create Account on the ThingSpeak





Step 3: Create new Channel



Step 4: Select the appropriate settings

Channel Settings

Percentage complete 30%

Channel ID 1915897

Name Ultrasonic data

Description

Field 1 Distance ☒

Field 2 ☐

Field 3 ☐

Field 4 ☐

Help

Channels store all the data that a ThingSpeak application collects. Each channel includes eight fields that can hold any type of data, plus three fields for location data and one for status data. Once you collect data in a channel, you can use ThingSpeak apps to analyze and visualize it.

Channel Settings

- Percentage complete:** Calculated based on data entered into the various fields of a channel. Enter the name, description, location, URL, video, and tags to complete your channel.
- Channel Name:** Enter a unique name for the ThingSpeak channel.
- Description:** Enter a description of the ThingSpeak channel.
- Fields:** Check the box to enable the field, and enter a field name. Each ThingSpeak channel can have up to 8 fields.
- Metadata:** Enter information about channel data, including JSON, XML, or CSV data.
- Tags:** Enter keywords that identify the channel. Separate tags with commas.
- Link to External Site:** If you have a website that contains information about your ThingSpeak channel, specify the URL.

Step 5: Generate API key and Copy key in your code

Write API Key

Key 2FTD5F4W5JC3BOMJ

Generate New Write API Key

Read API Key

Key L31L90BX8ML84LXA

Note

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 Key:** 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.

API Requests

Write a Channel Feed

GET: https://api.thingspeak.com/update?api_key=2FTD5F4W5JC3BOMJ&field1=1

Step 6: Connect LM35 temperature sensor to Analog port A0 and Soil Moisture sensor to analog port A1 of DFRobot hat. Install library using below installation command

pip3 install thingspeak

Code-

```
#pip3 install thingspeak
from dfadc import *
import thingspeak
```



```

import time
board_detect()
channel_id = '2465172'
write_key = 'VJMU8L2I7EWO13LK' # PUT YOUR WRITE KEY HERE
while board.begin() != board.STA_OK:
    print_board_status()
    print("board begin faild")
    time.sleep(2)
print("board begin success")

board.set_adc_enable()
channel = thingspeak.Channel(id=channel_id,api_key=write_key)
while True:
    temp = board.get_adc_value(board.A0) # A0 channels read
    humidity = board.get_adc_value(board.A1)
    temperature = (temp/4096)* 100+20
    humid = (humidity/4096)* 100
    # print("Temperature = %d C" %Temperature)
    # val=val/4096*100
    print(temperature)
    print(humid)
    response = channel.update({'field1': temperature, 'field2': humid})

    time.sleep(2)

```

Now you can timely observe the update in the measured values visible on Thingspeak platform.

