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| **[ Internet of things ]** |
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Practical-9

**-:AIM:-**

**Raspberry pi basic Programming with Sensors.**

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**GANPAT UNIVERSITY**

**U. V. Patel College of Engineering**

**Computer Engineering Department**

**AIM:- Raspbian pi basic programming with Sensors.**

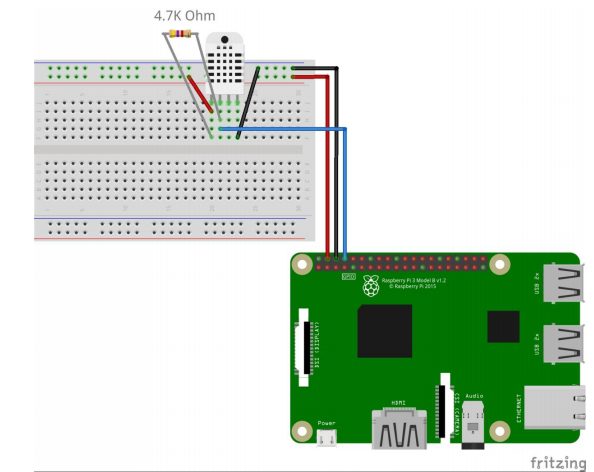
**Experiments**

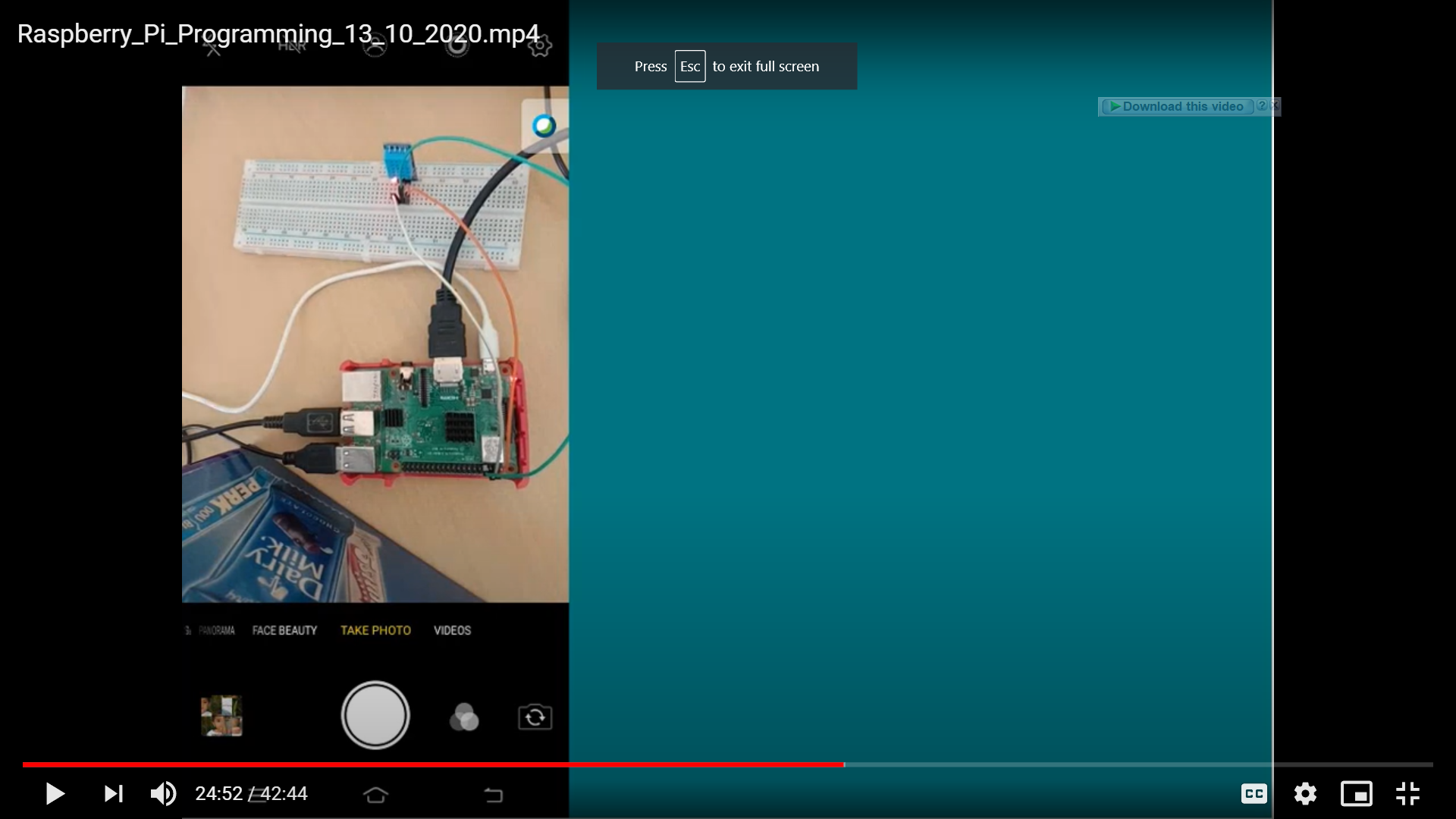
1. **Display room Temperature**

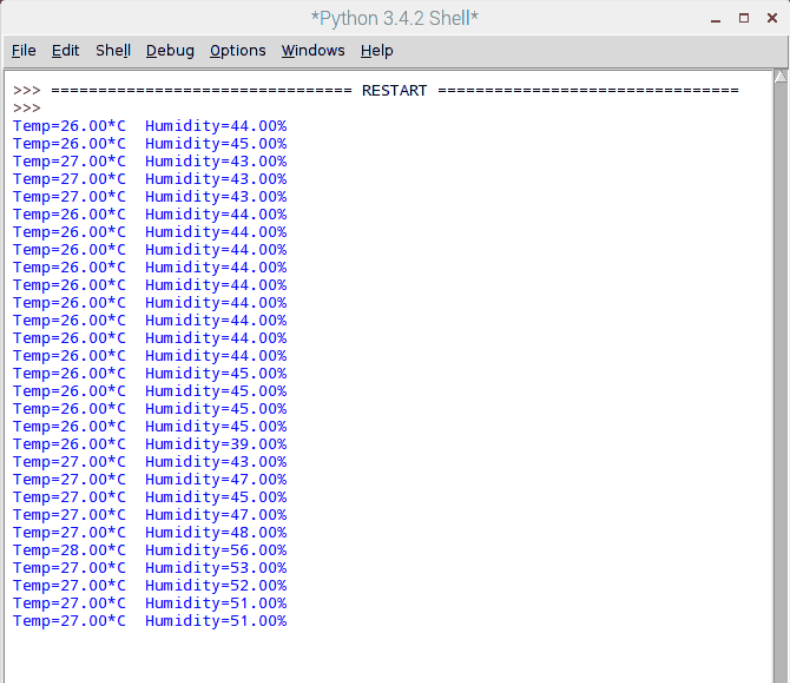
**Components used :** Breadboard , LED , 4.7K Ohm Resistor , Raspberry pi , USB Cable

SD Card & Adapter , Jumper Wire , Temperature Sensor

**Circuit**:







**Code** : Adafruit\_DHT.py

import sys

import Adafruit\_DHT

sensor\_args = { '11' : Adafruit\_DHT.DHT11,

'22' : Adafruit\_DHT.DHT22,

'2302' : Adafruit\_DHT.DHT2302

}

if lng(sys.argv) == 3 and sys.args[1] in sensor\_args:

sensor = sensor\_args[sys.argv[1]]

pin = sys.argv[2]

else:

print("Usage : sudo ./Adafruit\_DHT.py [11|22|2302] <GPIO pin number> ")

print("Example : sudo ./Adafruit\_DHT.py 2302 4 - Read From AM2302 Connected to GPIO pin #4")

sys.exit()

humidity,temperature = Adafruit\_DHT.read\_retry(sensor,pin)

if humidity is not None temperature is not None:

print('Temp: {0:0.1f} C Humidity: {1:0.1f} %'.format(temperature,humidity))

else:

print('Failed to get Reading. Try Again !')

sys.exit()

1. **Upload room Temperature on Cloud ( Thinspeak )**

**Code :** Adafruit\_DHT.py

**import sys**

**import Adafruit\_DHT**

**import RPi.GPIO as GPIO**

**import urllib2**

**myAPI = 'JR0EK9X8Z7VN2LP6'**

**baseURL = 'https://api.thingspeak.com/update?api\_key=%s' % myAPI**

**GPIo.setmode(GPIO.BCM)**

**sensor\_args = { '11' : Adafruit\_DHT.DHT11,**

**'22' : Adafruit\_DHT.DHT22,**

**'2302' : Adafruit\_DHT.DHT2302**

**}**

**if lng(sys.argv) == 3 and sys.args[1] in sensor\_args:**

**sensor = sensor\_args[sys.argv[1]]**

**pin = sys.argv[2]**

**else:**

**print("Usage : sudo ./Adafruit\_DHT.py [11|22|2302] <GPIO pin number> ")**

**print("Example : sudo ./Adafruit\_DHT.py 2302 4 - Read From AM2302 Connected to GPIO pin #4")**

**sys.exit()**

**print("Starting Uplpoading Data . . .")**

**humidity,temperature = Adafruit\_DHT.read\_retry(sensor,pin)**

**while True:**

**try:**

**print("Uploading Tem[erature %.1f"%temperature)**

**print(baseURL + &field1=%s&field2=%s"%(temperature,humidity))**

**f = urllib2.urlopen(baseURL + &field1=%s&field2=%s"%(temperature,humidity))**

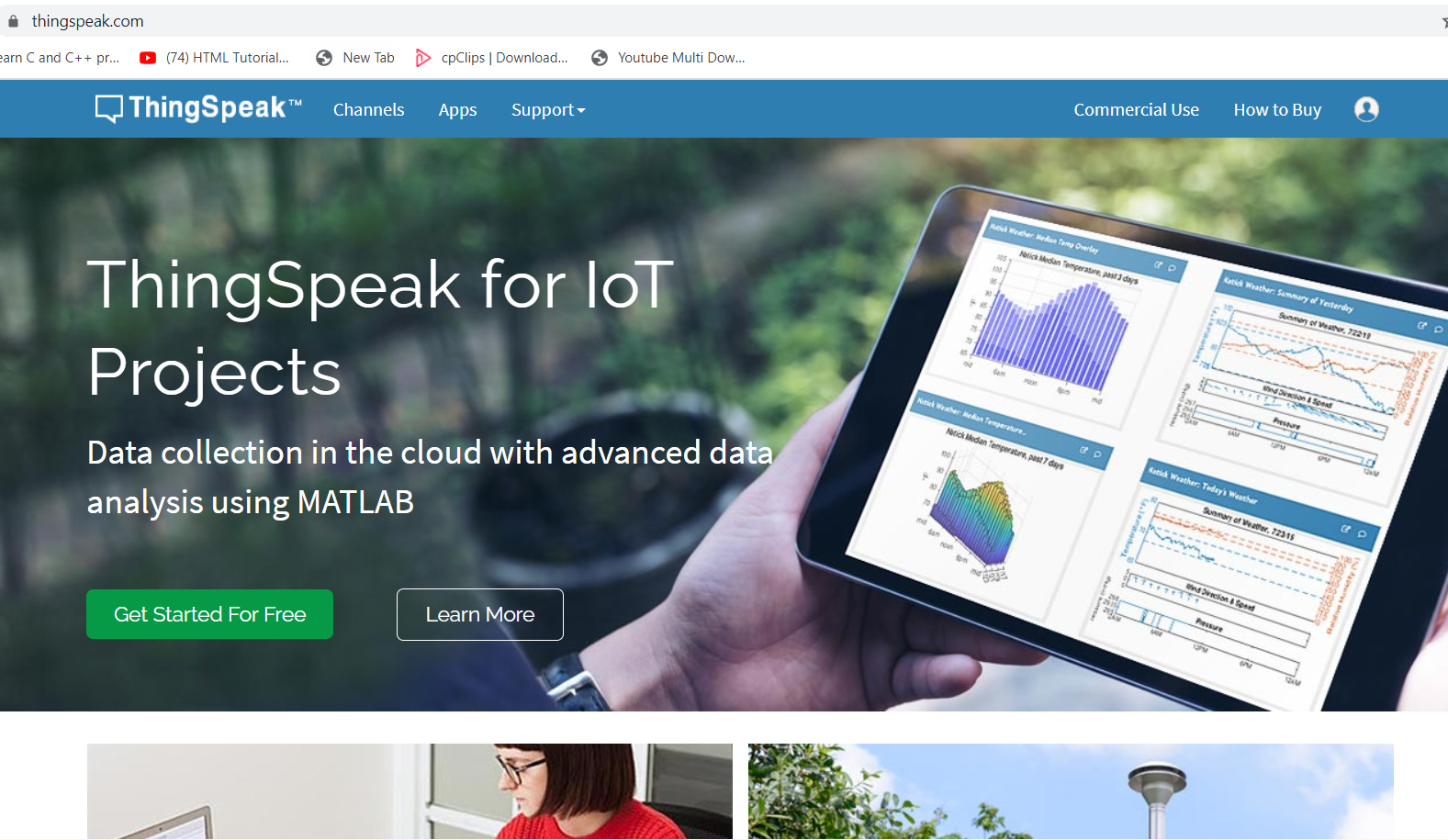
**f.close()**

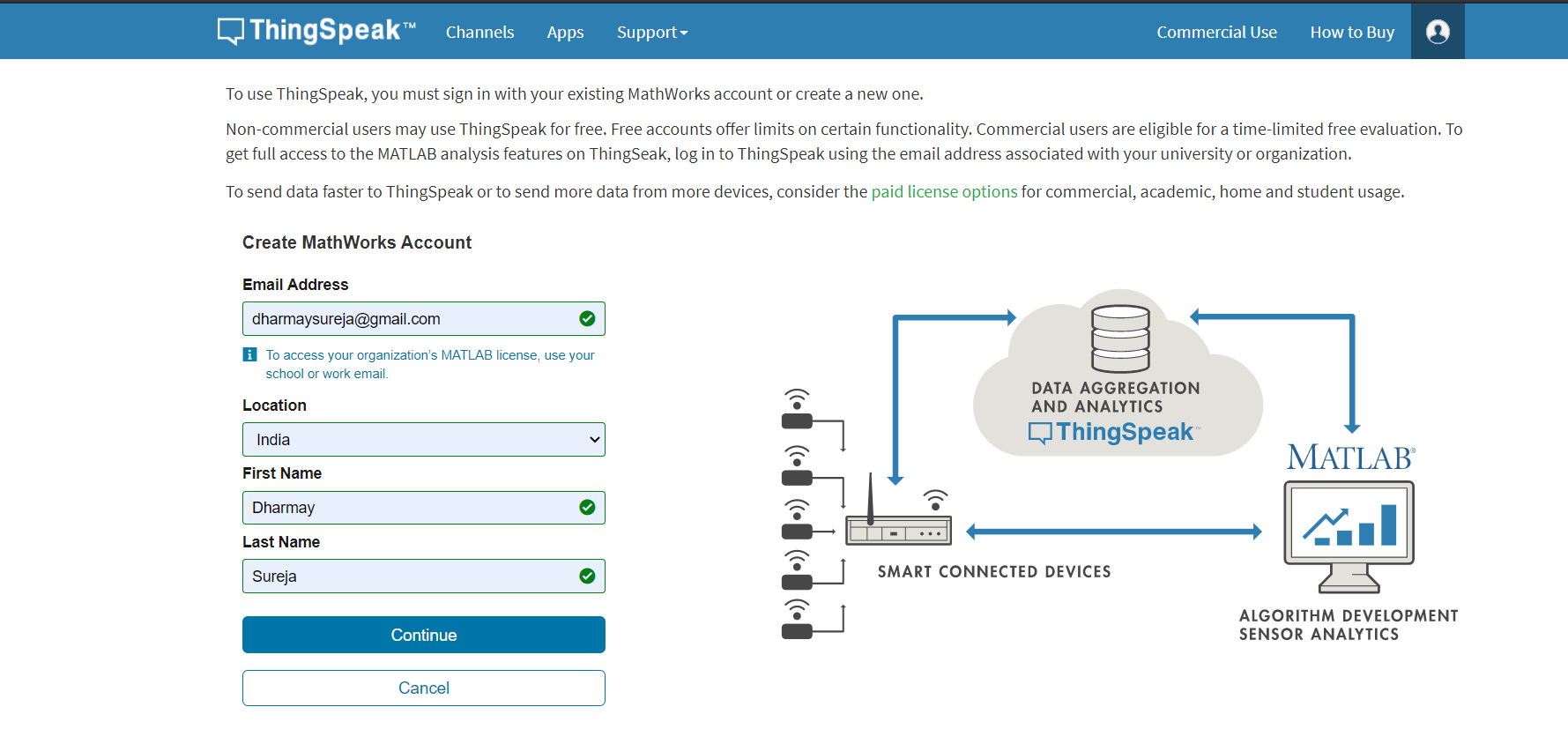
**except:**

**print("Exiting .")**

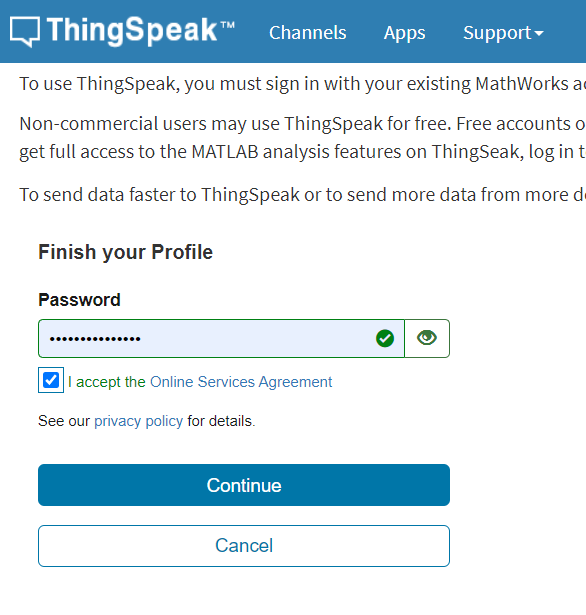
**break**

1. Sign Up on www.thingspeak.com using your email id

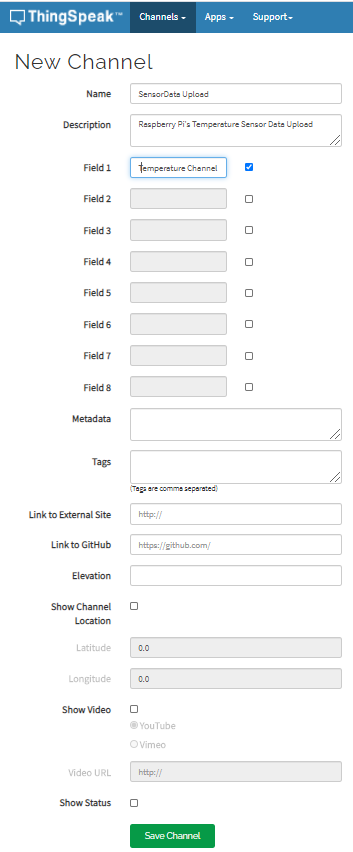


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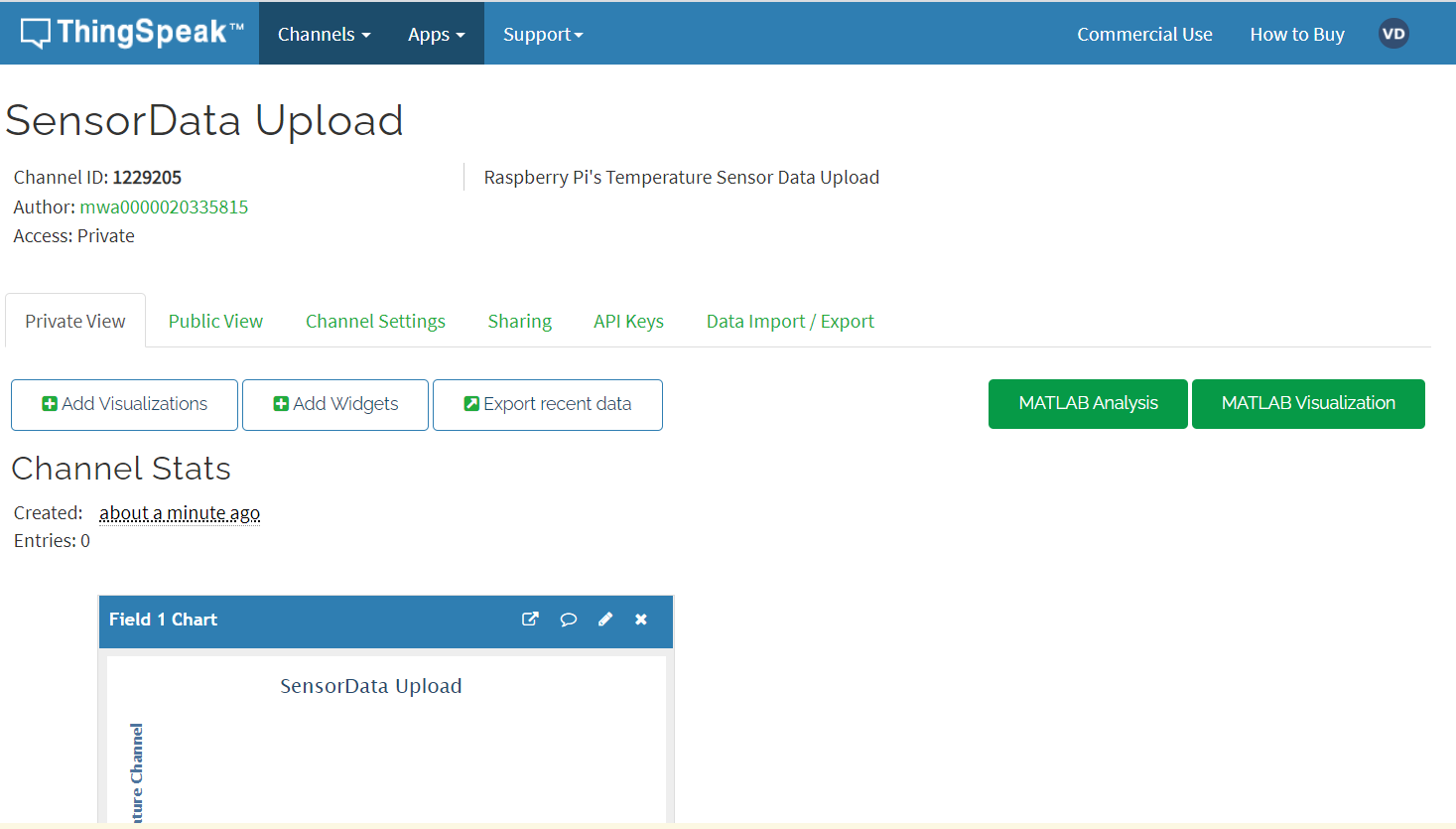
1. Make sure to click the checkbox saying "By signing up, you agree to the Terms of Use and Privacy Policy".



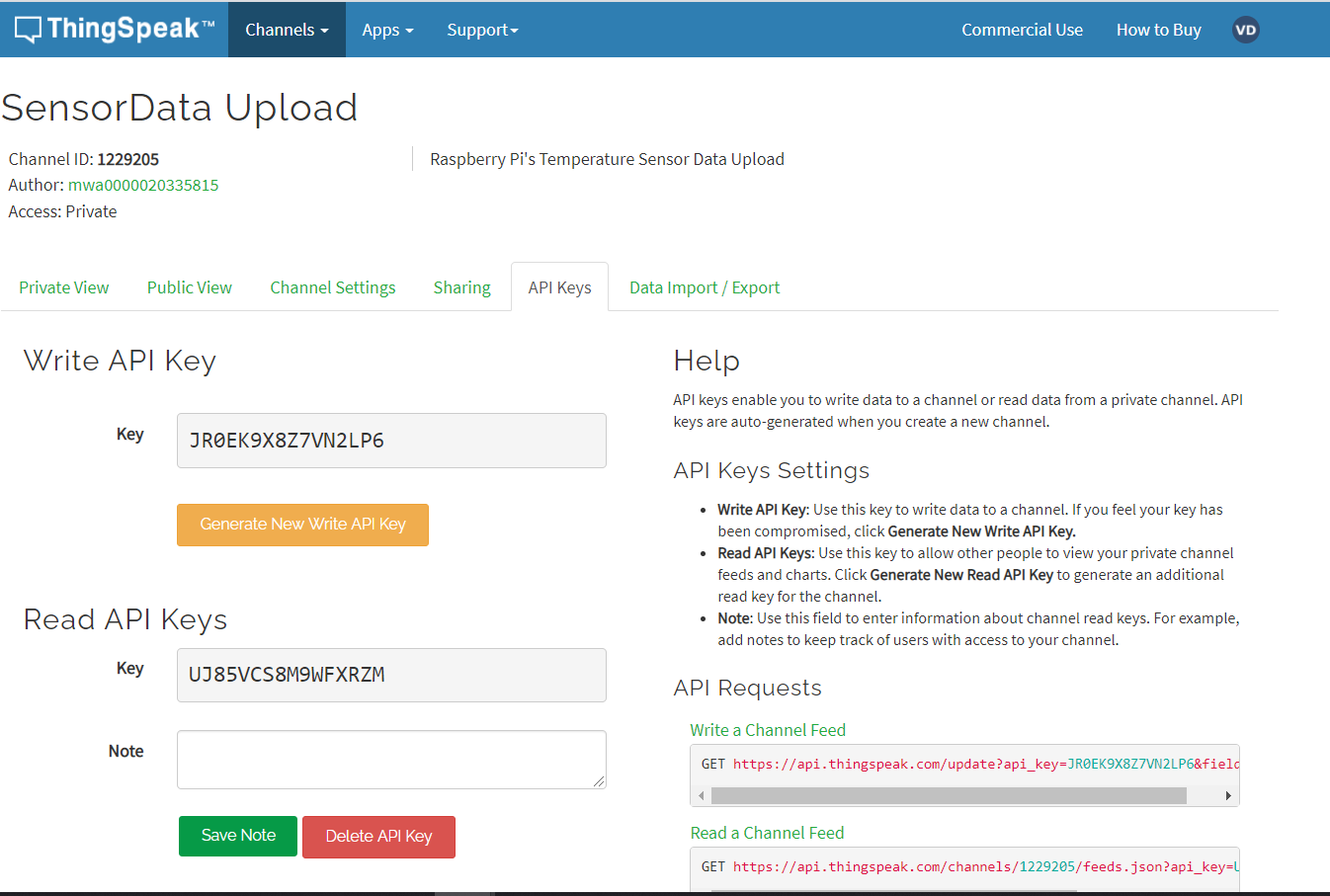
1. Goto Channels and Create a New Channel
2. Fill the following Details
3. Any Name for Your Channel
4. Description : if you have any description like “Temperature Channel”
5. Field 1 Label as “Temperature ” Since we are going to upload .
6. Save Channel



1. Saving Process might Take a While
2. Please Select Your Channel.
3. You would see tabs like
4. Private View
5. Public View
6. Channel Settings
7. API Keys
8. Data Import/Export

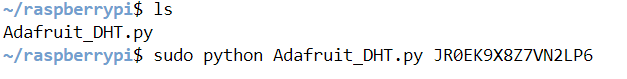


1. Click API Keys Tab
2. You will Find API Key similar to this **: “**7BMH83M0KARON75Z**”**

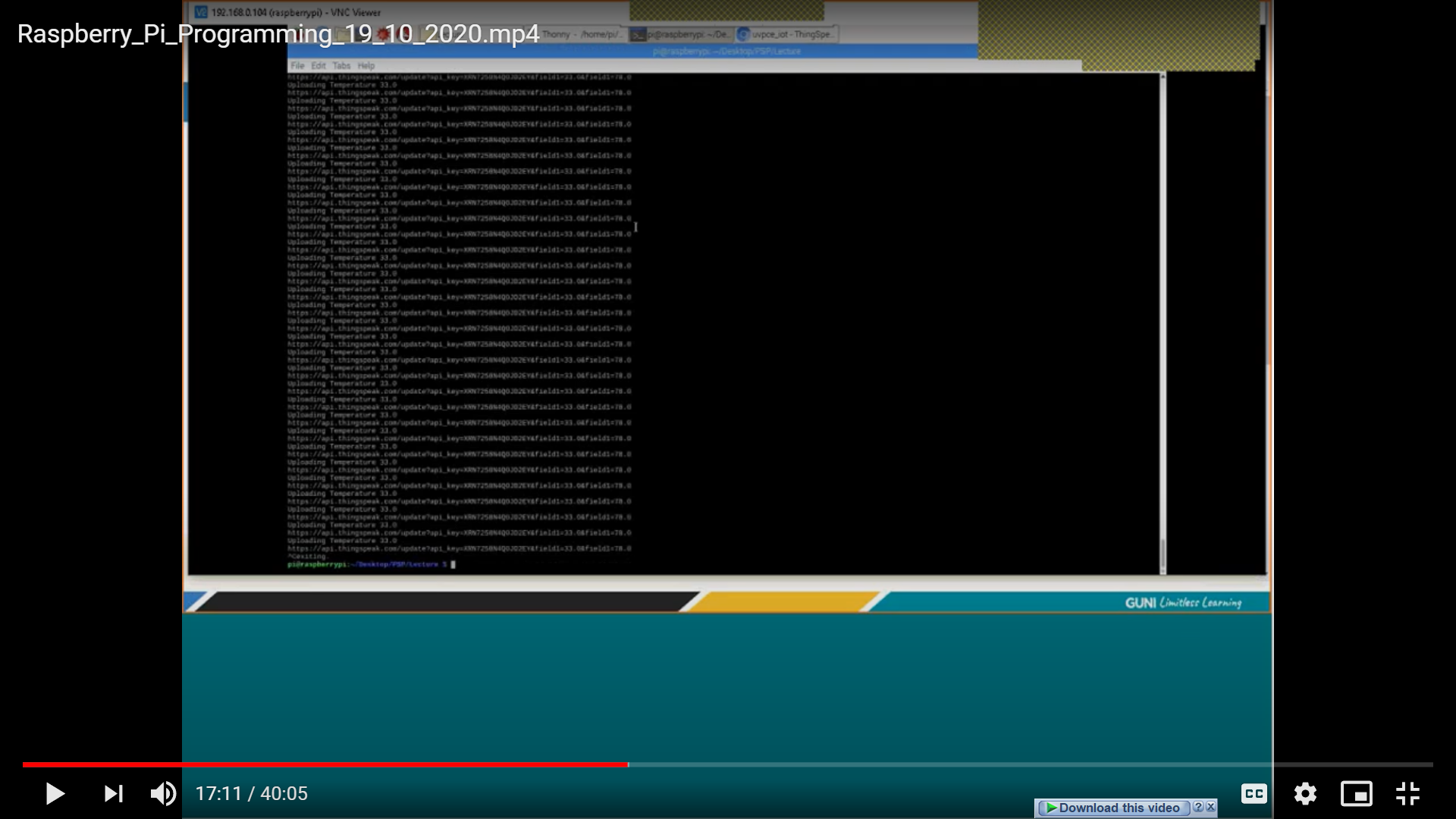


1. Please run the following commands in Your SSH Connection .

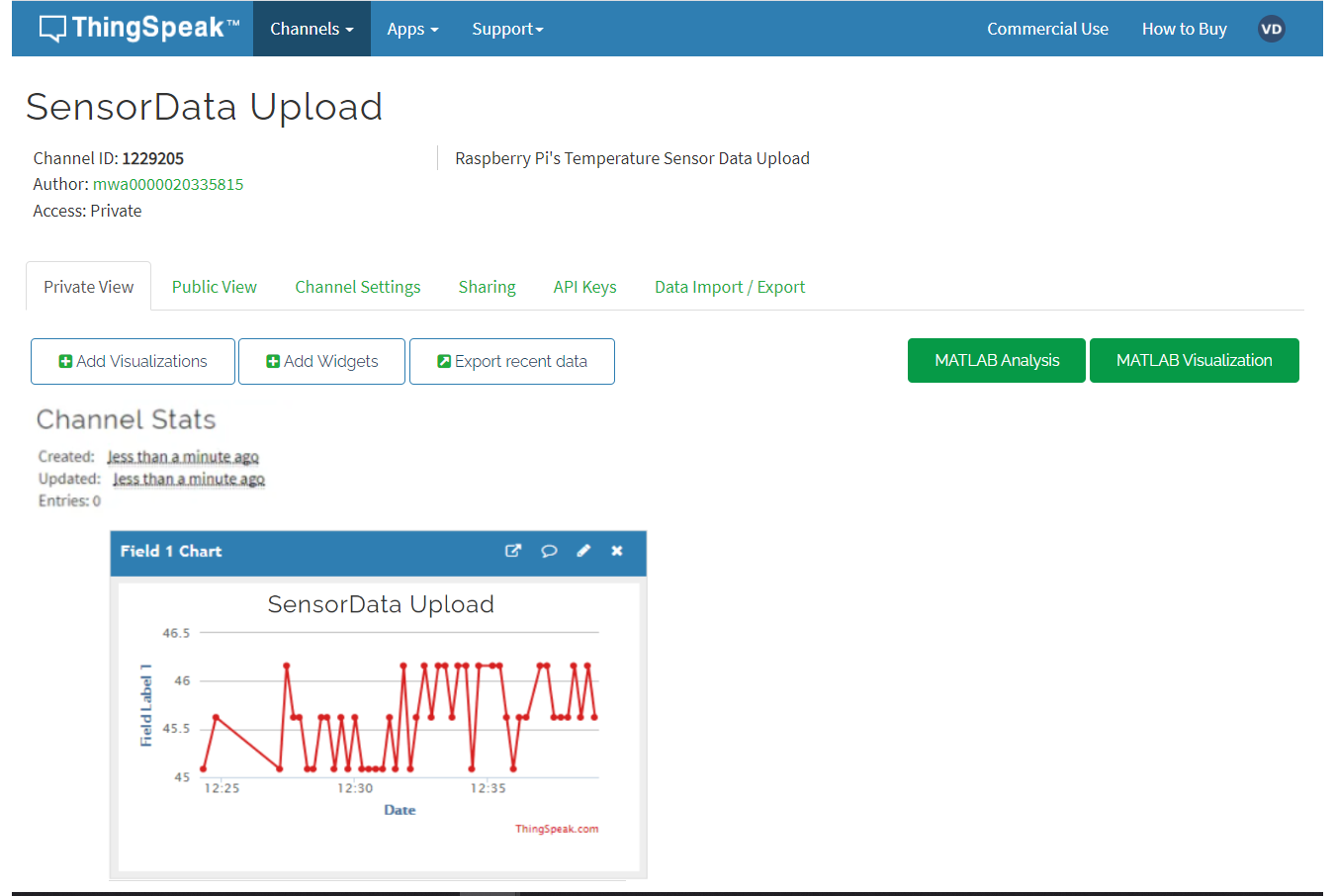
sudo python ~/Projects/temp\_upload.py YOURWRITEAPIKEY



1. Once the script starts running it will upload the temperature values of the room.



1. Click Private View Tab to see the graph with temperature vs Time

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1. You can change the values by changing room temperature.