**Experiment-4**

**Aim Of The Experimet:**

Posting Sensor Data to the Thingspeak to aggregate, visualize and analyze live data streams in the cloud.

DHT11 Humidity Temperature Monitor on ThingSpeak with NodeMCU

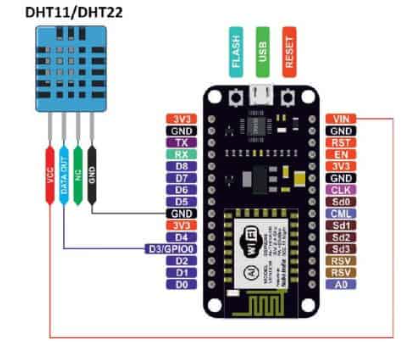
**Component Required:**

| **S.N.** | **COMPONENTS NAME** | **DESCRIPTION** | **QUANTITY** |
| --- | --- | --- | --- |
| 1 | NodeMCU | ESP8266-12E Board | 1 |
| 2 | DHT11 Sensor | DHT11 Humidity Temperature Sensor | 1 |
| 3 | Connecting Wires | Jumper Wires | 10 |
| 4 | Breadboard | - |  |

Theory:

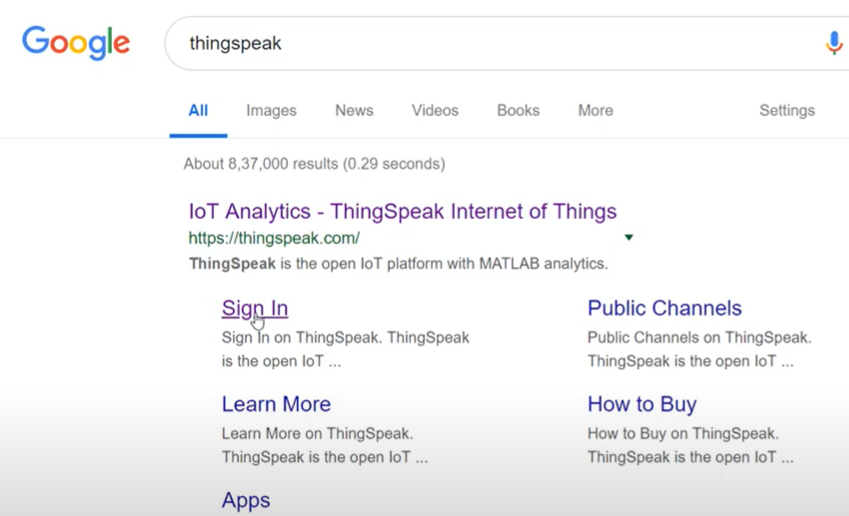
In this experiment Humidity & Temperature Monitoring using DHT11 & NodeMCU on ThingSpeak. It explains how to log Humidity & Temperature data on the cloud. We can use Thingspeak as a cloud service provider and DHT11 to measure temperature and humidity.

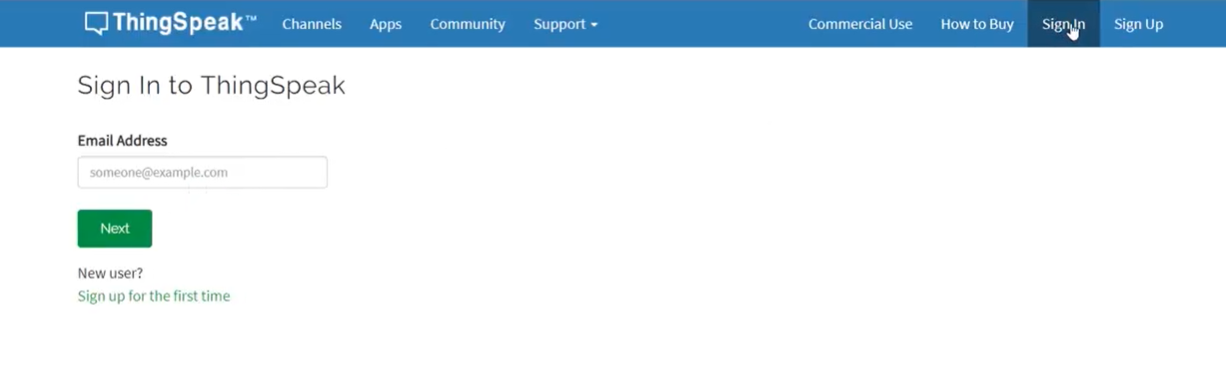
Circuit Diagram:

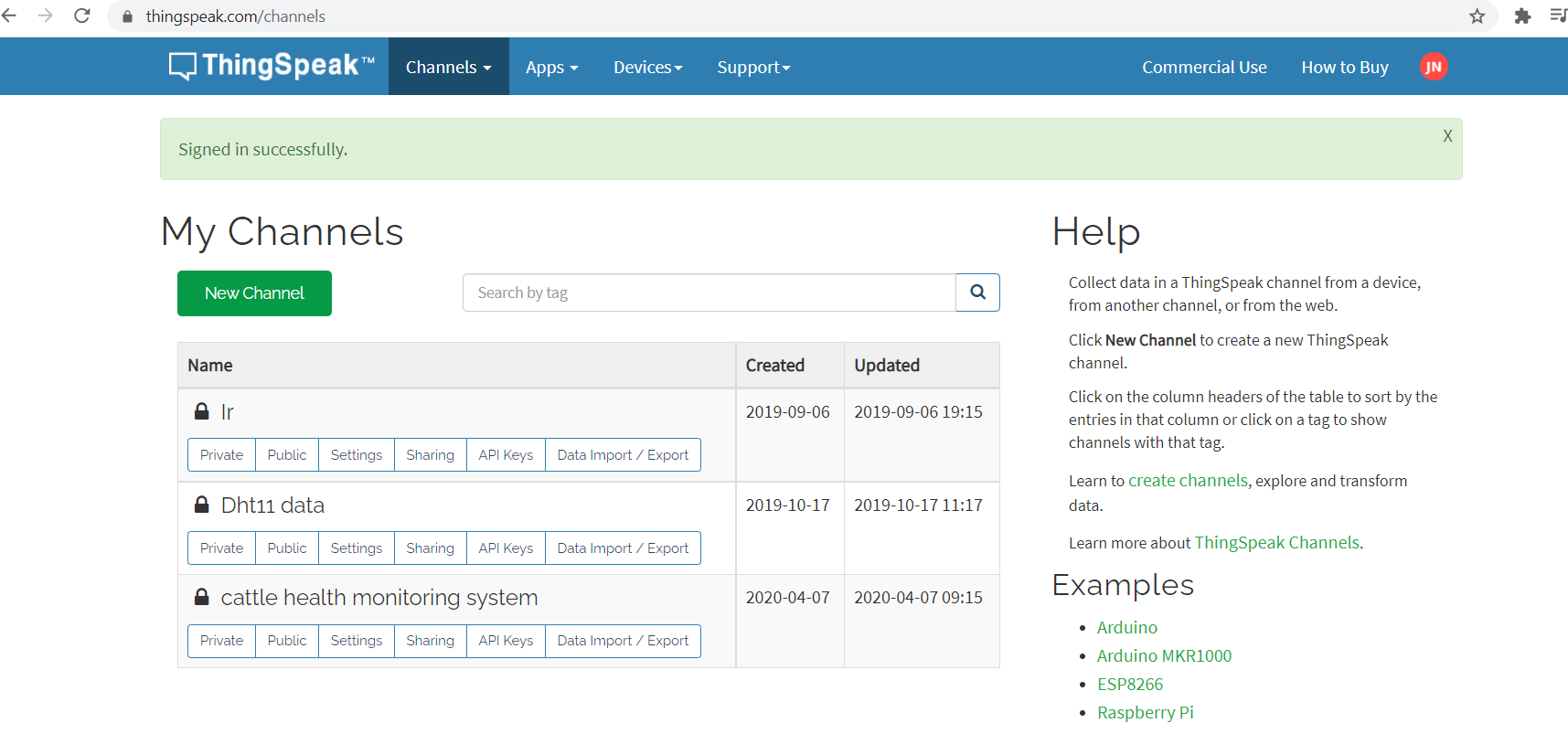


### ****Setting Thingspeak & Getting API Key:****

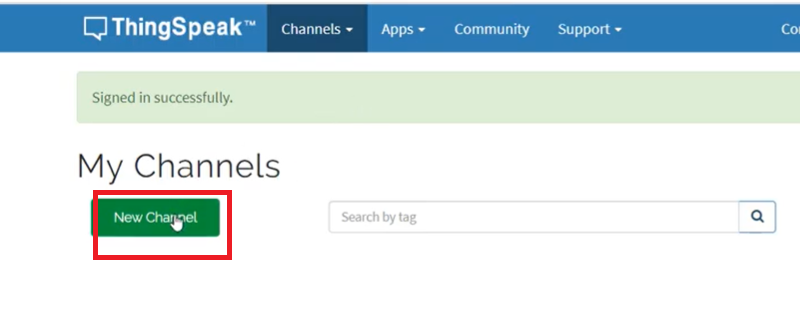
1. Go to [**https://thingspeak.com/**](https://thingspeak.com/) and create an account if you do not have one. Login to your account.  
2. Create a new channel by clicking on the button. Enter the basic details of the channel. Then Scroll down and save the channel. You can follow the video guide below.  
3. Then go to API keys copy and paste this key to a separate notepad file. You will need it later while programming.

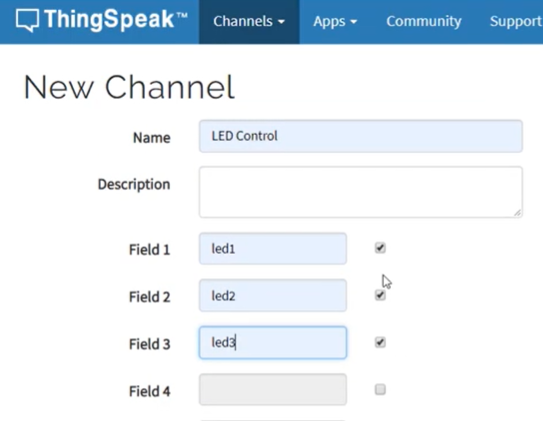


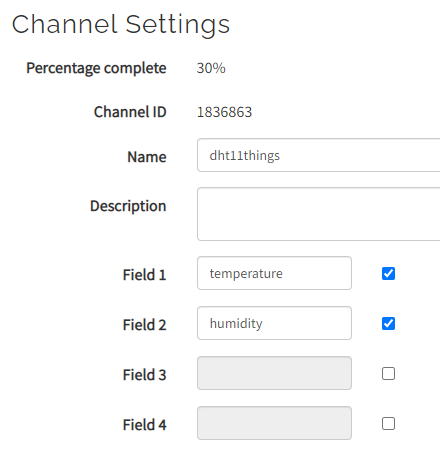


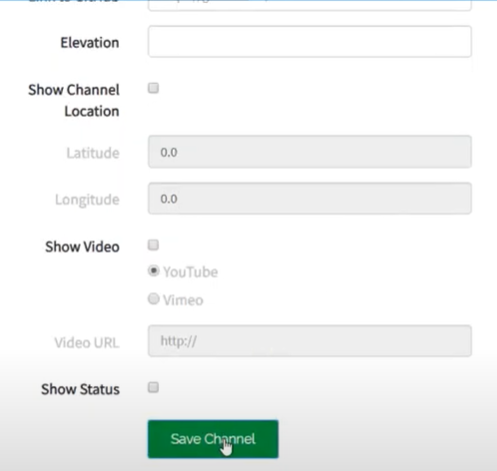


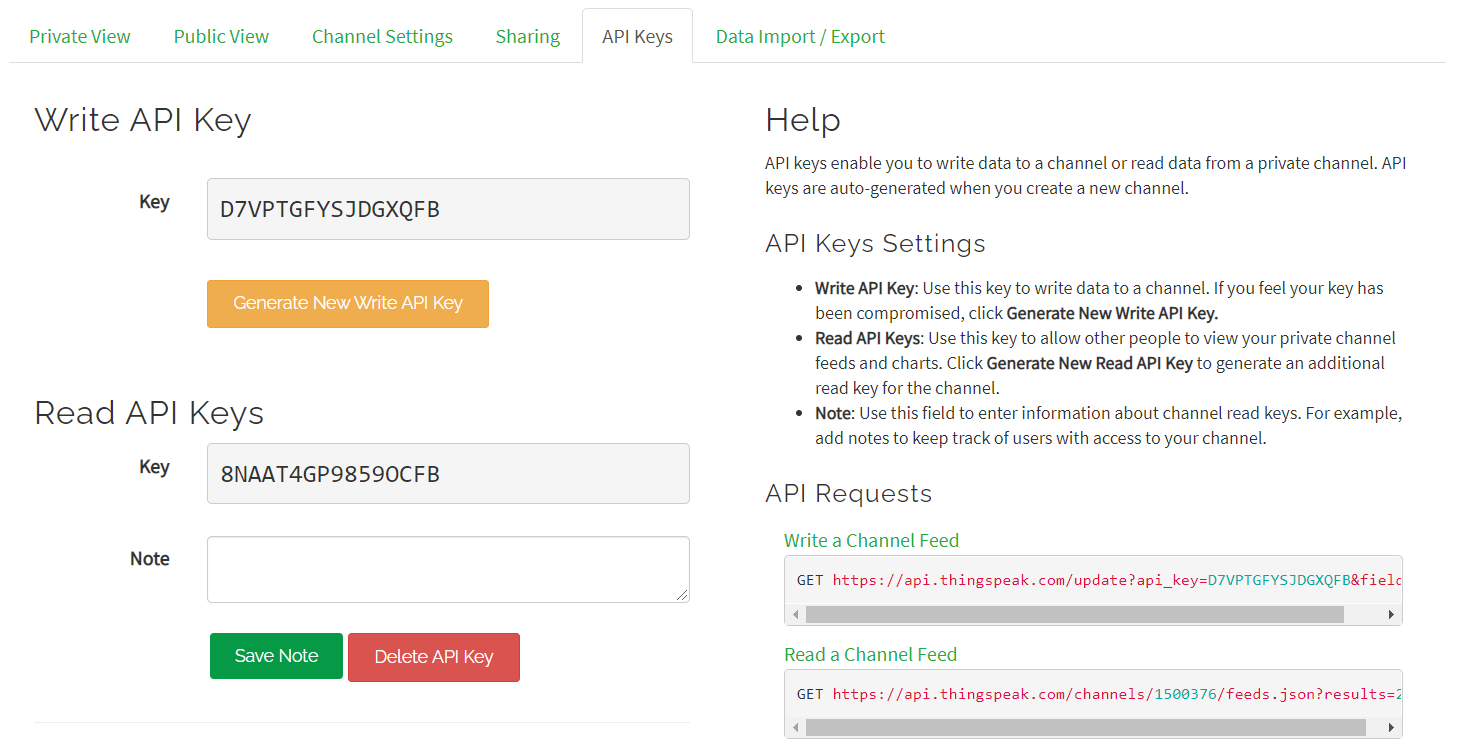
Create New Channel











**CODE:**

#include <DHT.h> // Including library for dht

#include <ESP8266WiFi.h>

String apiKey = "H38TEGNC0XKW43BB"; // Enter your Write API key from ThingSpeak

const char \*ssid = "how2electronics"; // replace with your wifi ssid and wpa2 key

const char \*pass = "alhabibi";

const char\* server = "api.thingspeak.com";

#define DHTPIN 0 //pin where the dht11 is connected

DHT dht(DHTPIN, DHT11);

WiFiClient client;

void setup()

{

Serial.begin(115200);

delay(10);

dht.begin();

Serial.println("Connecting to ");

Serial.println(ssid);

WiFi.begin(ssid, pass);

while (WiFi.status() != WL\_CONNECTED)

{

delay(500);

Serial.print(".");

}

Serial.println("");

Serial.println("WiFi connected");

}

void loop()

{

float h = dht.readHumidity();

float t = dht.readTemperature();

if (isnan(h) || isnan(t))

{

Serial.println("Failed to read from DHT sensor!");

return;

}

if (client.connect(server,80)) // "184.106.153.149" or api.thingspeak.com

{

String postStr = apiKey;

postStr +="&field1=";

postStr += String(t);

postStr +="&field2=";

postStr += String(h);

postStr += "\r\n\r\n";

client.print("POST /update HTTP/1.1\n");

client.print("Host: api.thingspeak.com\n");

client.print("Connection: close\n");

client.print("X-THINGSPEAKAPIKEY: "+apiKey+"\n");

client.print("Content-Type: application/x-www-form-urlencoded\n");

client.print("Content-Length: ");

client.print(postStr.length());

client.print("\n\n");

client.print(postStr);

Serial.print("Temperature: ");

Serial.print(t);

Serial.print(" degrees Celcius, Humidity: ");

Serial.print(h);

Serial.println("%. Send to Thingspeak.");

}

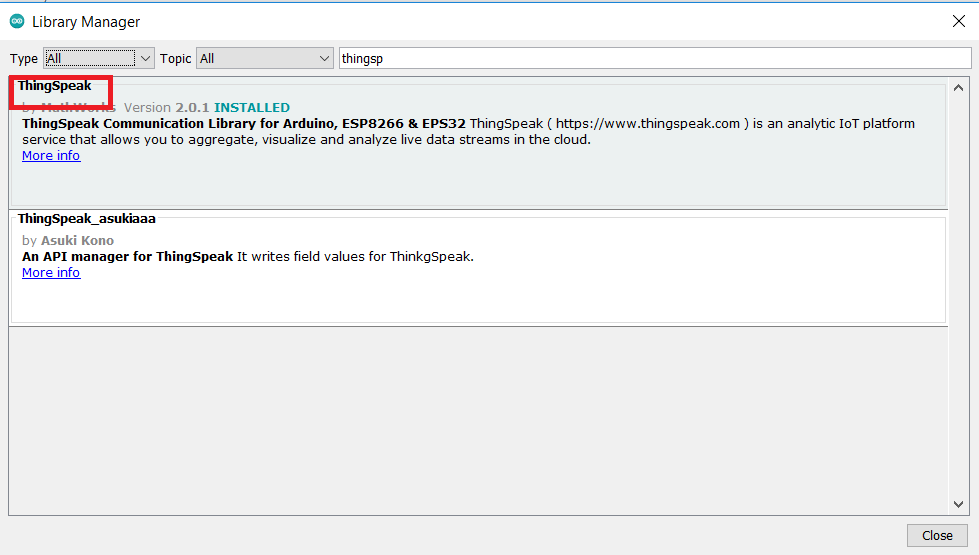
client.stop();

Serial.println("Waiting...");

// thingspeak needs minimum 15 sec delay between updates

delay(1000);

}



### ****Monitor Humidity Temperature Data on ThingSpeak****

