WEATHER STATION

Description: Weather monitoring using Temperature Sensor and Smoke Sensor.

Components Required:

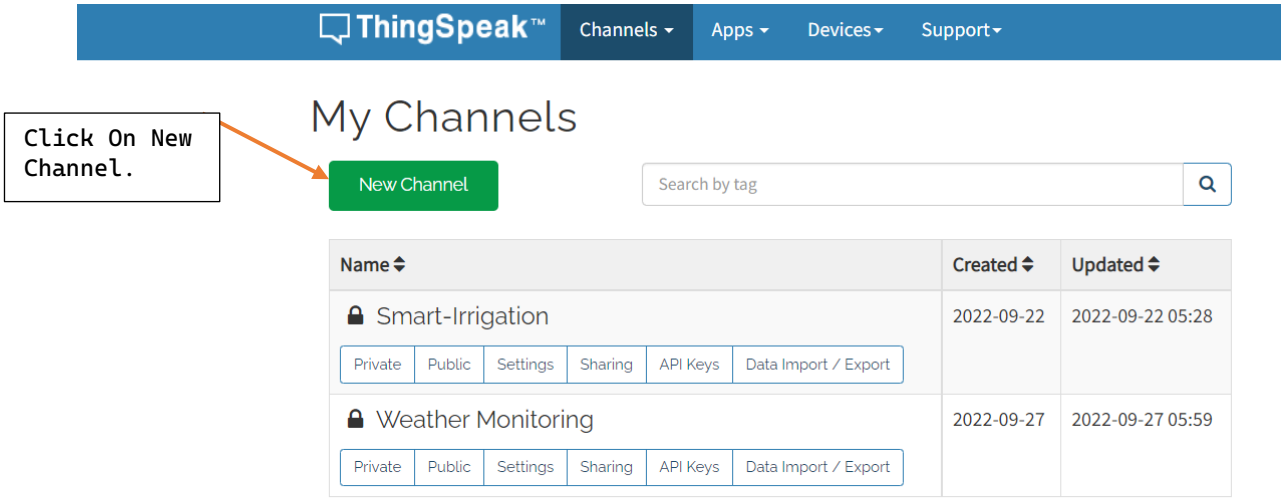
1. Arduino UNO
2. WIFI module
3. Smoke Sensor
4. Temperature Sensor (LM35)
5. Power Supply
6. Connectors
7. ThingSpeak (IOT analytic platform service)

Creating Channel in ThingSpeak

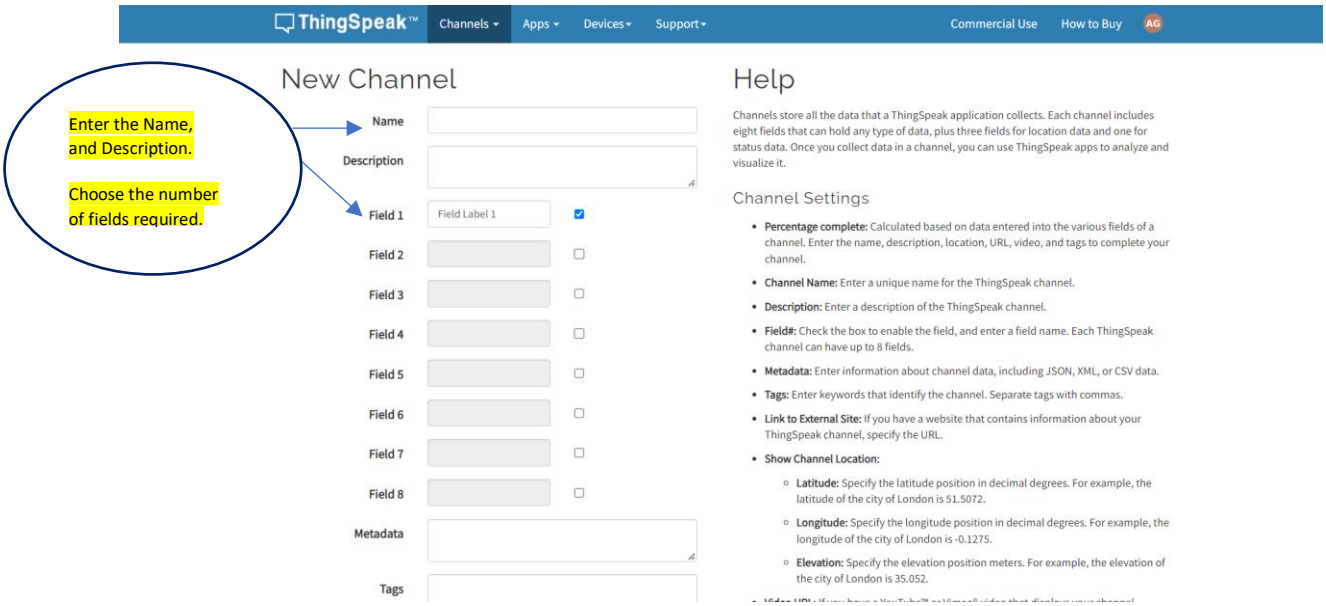
Step 01: Create ThingSpeak Account. The URL is given below.

URL: https://thingspeak.com/

Step 02:



Step 03: Providing Details



Step 04: Save changes

CODE:

```
//WEATHER MONITORING PROJECT.01


#include <SoftwareSerial.h>


#define RX 8    // it works as a UART
#define TX 9 //  so Rx is connected to Pin no 9 in Arduino Uno, Tx is connected to pin no 8 in UNO
SoftwareSerial esp8266(RX,TX);



String inputString = "";
boolean RX_ST_Flag = false;
boolean stringComplete = false;



String AP = "Nokia";       // CHANGE ME  HOTSPOT NAME
String PASS = "12345678"; // CHANGE ME  HOTSPOT NAME password
String API = "5AYF6UISFWRT03F9";   // CHANGE ME
String HOST = "api.thingspeak.com";
//String HOST = "184.106.153.149";
String PORT = "80";
```

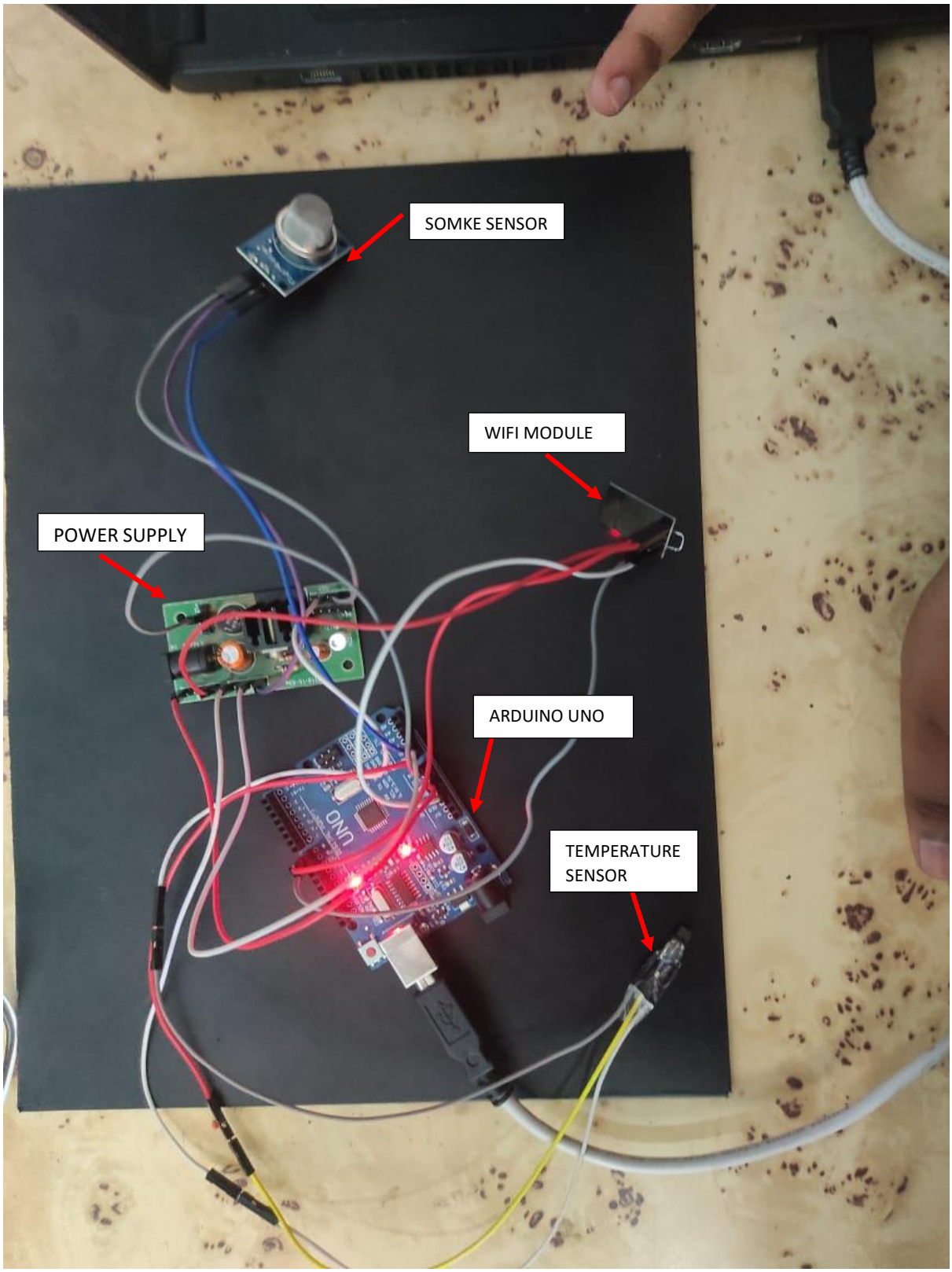
```
String field1 = "field1";
String field2 = "field2";
String field3 = "field3";   //Extra Field is taken inCase if we use another sensor and forget to mention, we can use this

int countTrueCommand;
int countTimeCommand;
boolean found = false;


void setup()
{
  delay(500);
  Serial.begin(9600);
  delay(500);

  Serial.println("WEATHER MONITORING");
  delay(500);

  esp8266.begin(9600);
  sendCommand("AT",5,"OK");
  sendCommand("AT+CWMODE=1",5,"OK");
  sendCommand("AT+CWJAP=\""+ AP +"\",\""+ PASS +"\"",20,"OK");
  delay(500);
}


void loop()
{

  int Temperature = analogRead(A0);
  int Temperature_Temp = (( Temperature/1024.0 )*5000 ) / 10;
  Serial.print( "Temperature = " );
  Serial.println( Temperature_Temp );
  delay(2000);

  int Smoke_Sensor = analogRead(A1);
```

```
  int Smoke_Sensor_Temp = ( ( Smoke_Sensor/1024.0 )*5000 ) / 10;
  Serial.print( "Smoke_Sensor = " );
  Serial.println( Smoke_Sensor_Temp );
  delay(2000);



//  String getData = "GET /update?api_key="+ API +"&"+ field1
+"="+String(Solar_Volt_Tx);+"&"+ field2 +"="+String(Wind_Volt_Tx);
  String getData = "GET /update?api_key="+ API +"&"+ field1
+"="+String(Temperature_Temp)+"&"+ field2 +"="+String(Smoke_Sensor_Temp);
  sendCommand("AT+CIPMUX=1",5,"OK");
  sendCommand("AT+CIPSTART=0,\"TCP\",\""+ HOST +"\","+ PORT,15,"OK");
  sendCommand("AT+CIPSEND=0," +String(getData.length()+4),4,">");
  esp8266.println(getData);
  delay(1500);
  countTrueCommand++;
  sendCommand("AT+CIPCLOSE=0",5,"OK");
  delay(5000);


}



void sendCommand( String command, int maxTime, char readReplay[] )
{
  Serial.print(countTrueCommand);
  Serial.print(". at command => ");
  Serial.print(command);
  Serial.print(" ");
  while(countTimeCommand < (maxTime*1))
  {
    esp8266.println(command);//at+cipsend
    if(esp8266.find(readReplay))//ok
    {
      found = true;
      break;
    }
```

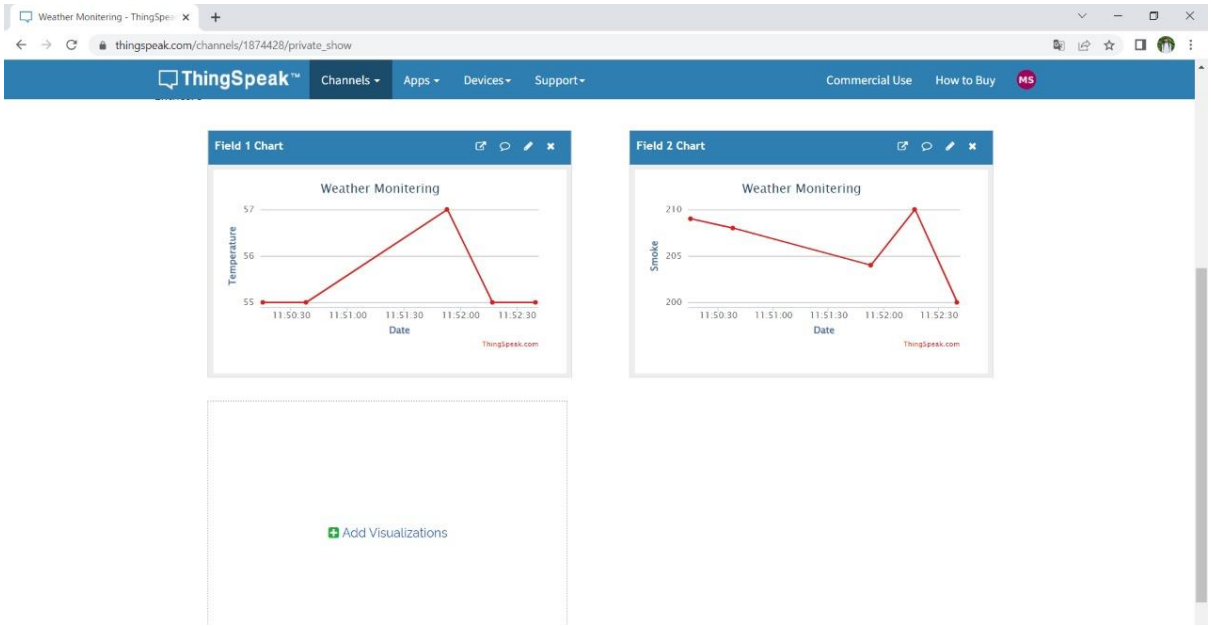
```
    countTimeCommand++;
  }

  if(found == true)
  {
    Serial.println("OYI");
    countTrueCommand++;
    countTimeCommand = 0;
  }

  if(found == false)
  {
    Serial.println("Fail");
    countTrueCommand = 0;
    countTimeCommand = 0;
  }

  found = false;
}



void serialEvent()
{
  while (Serial.available())
  {
    char inChar = (char)Serial.read();     // get the new byte:
    inputString += inChar;       // add it to the inputString:
    if(inChar == '#')
    {
      RX_ST_Flag = true;
    }
  }
}
```

NOTE: Change the API key, String AP (Hotspot Name), String PASS (Hotspot password)

CIRCUIT CONNECTION



RESULT SNAPSHOT:



Conclusion: The above snapshots show the Real-Time Monitoring of Temperature and Smoke.