**GROUP 9**

**EXPERIMENT 6A**

**DEBARYA PAL (13005318051)**

**OBJECTIVE:** **DATA PUBLISH in THING SPEAK IoT cloud server using DHT11 sensor.(MCU-NODE MCU).**

**APPARATUS :**

1. NodeMCU( ESP8266 12E Board)
2. DHT11 Sensor
3. Breadboard
4. Jumper Wires
5. USB Cable

**BLOCK DIAGRAM:**

ThingSpeak IoT Cloud Server

**NodeMCU**

**DHT11 Sensor**

**Serial Monitor**

**Fig:1A**

* We are going to send humidity and temperature data to thingSpeak using DHT11, ESP8266 module.
* The NodeMCU ESP8266 Module 12E requests humidity and temperature readings from the DHT11 sensor;
* We have to  upload a program code to ESP8266 module; the uploaded program code on ESP8266 will accept data which will be forwarded to ThingSpeak platform via Wi-Fi connection.
* Then the collected data of humidity and temperature will be sent to the Serial Monitor also .

**CODE:**

#include <WiFiClient.h>;

#include <ESP8266WiFi.h>;

#include <ThingSpeak.h>;

#include <DHTesp.h>;

#include <stdlib.h>;

#define DHTpin D3

const char ssid[] = "Codermaker"; // your network SSID (name)

const char pass[] = "babi1pal"; // your network password

DHTesp dht;

WiFiClient client;

unsigned long myChannelNumber =1387827;

const char \* myWriteAPIKey = "2QVR2FRX38758GN3";

void setup()

{

Serial.begin(115200);

dht.setup(DHTpin,DHTesp::DHT11);

WiFi.begin(ssid,pass);

ThingSpeak.begin(client); // Initialize ThingSpeak

}

void loop()

{

float h = dht.getHumidity();

float t = dht.getTemperature();

Serial.println(h);

Serial.println(t);

ThingSpeak.setField(1, h);

ThingSpeak.setField(2, t);

ThingSpeak.writeFields(myChannelNumber, myWriteAPIKey);

delay(20000); // Wait 20 seconds to update the channel again

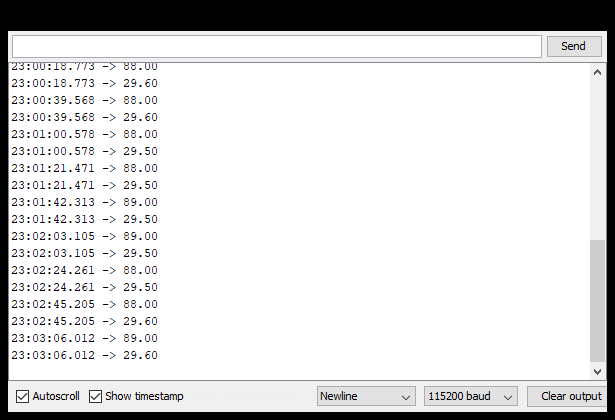
}

**APPARATUS SETUP:**

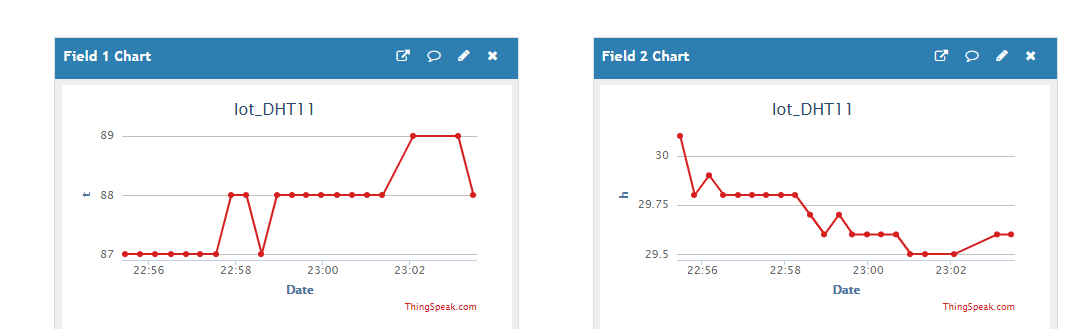
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**FIG:1B**

**OUTPUT:**

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**Fig:1C**

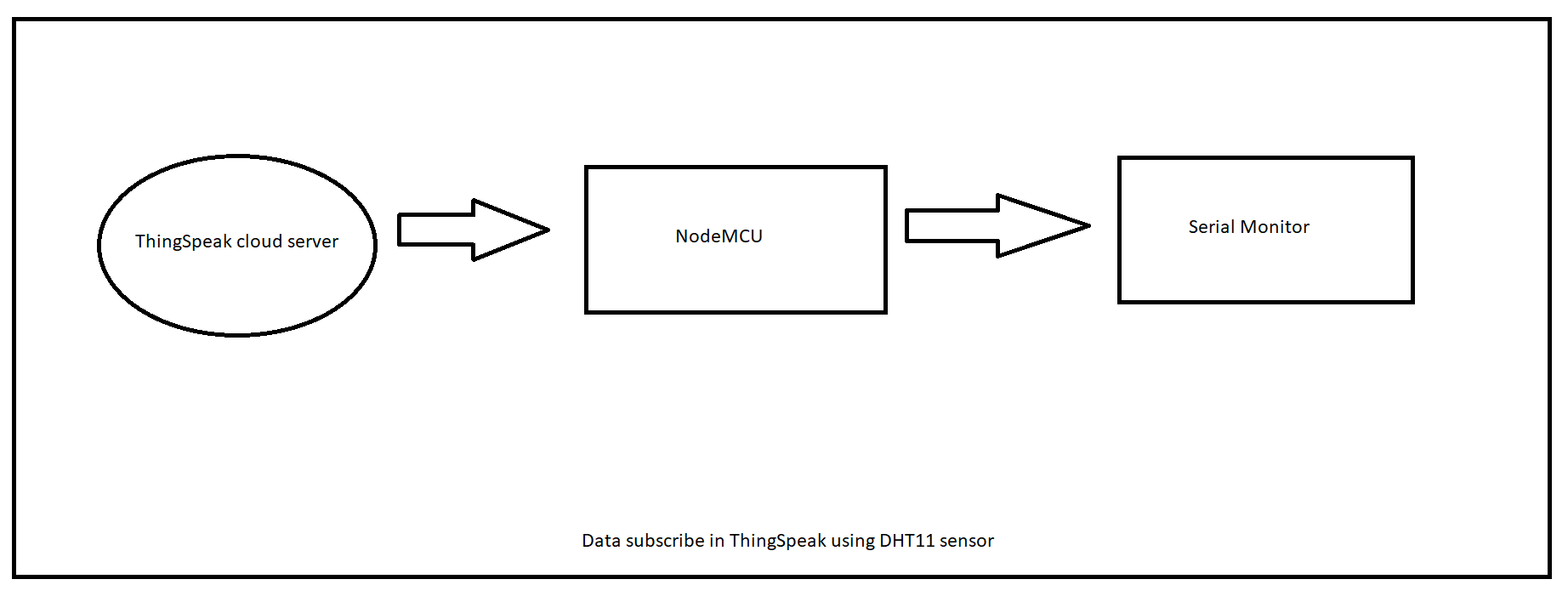
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**Fig 1D**

**EXPERIMENT 6B**

**Objective:- Data Subscribe in Thing Speak IoT cloud Server using DHT11 sensor.(MCU-NODE MCU)**

**Block Diagram:-**

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**Fig:2A**

**Explanation of the Block Diagram:-**

DHT11 sensor is connected to NodeMCU and NodeMCU is connected to the ThingSpeak cloud server using the Authentication key given during the registration . Data is subscribed from the ThingSpeak cloud using the http protocol.

**Apparatus:-**

* ESP8266 Wifi SOC
* DHT11 sensor
* Breadboard
* Connecting Wires
* ThingSpeak Cloud account.
* Wifi Internet Connection

**Programming:-**

#include <ESP8266WiFi.h>;

#include <WiFiClient.h>;

#include <ThingSpeak.h>;

const char\* ssid = "Codermaker";

const char\* password = "babi1pal";

WiFiClient client;

unsigned long myChannelNumber =1387827;

const char \* myReadAPIKey ="BJRO60CVB2IMWXPK";

int a,b;

void setup() {

Serial.begin(115200);

WiFi.begin(ssid, password);

ThingSpeak.begin(client);

}

void loop() {

a = ThingSpeak.readFloatField(myChannelNumber,1,myReadAPIKey);

Serial.println("Temperature");

Serial.println(a);

b = ThingSpeak.readFloatField(myChannelNumber,2,myReadAPIKey);

Serial.println("Humidity");

Serial.println(b);

Serial.println("+++++");

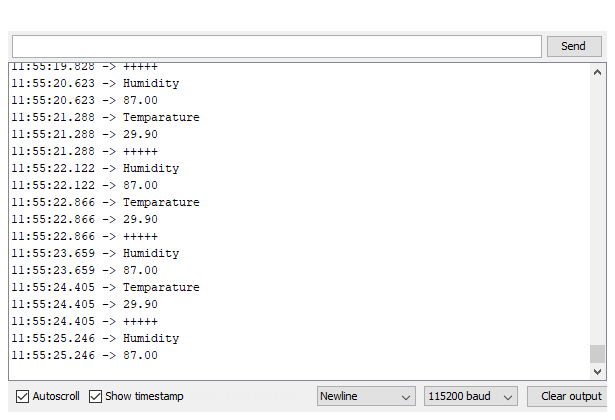
delay(1000);}

**APPARATUS SETUP:**

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**FIG:2B**

**Result:-**

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**FIG:2C**