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:

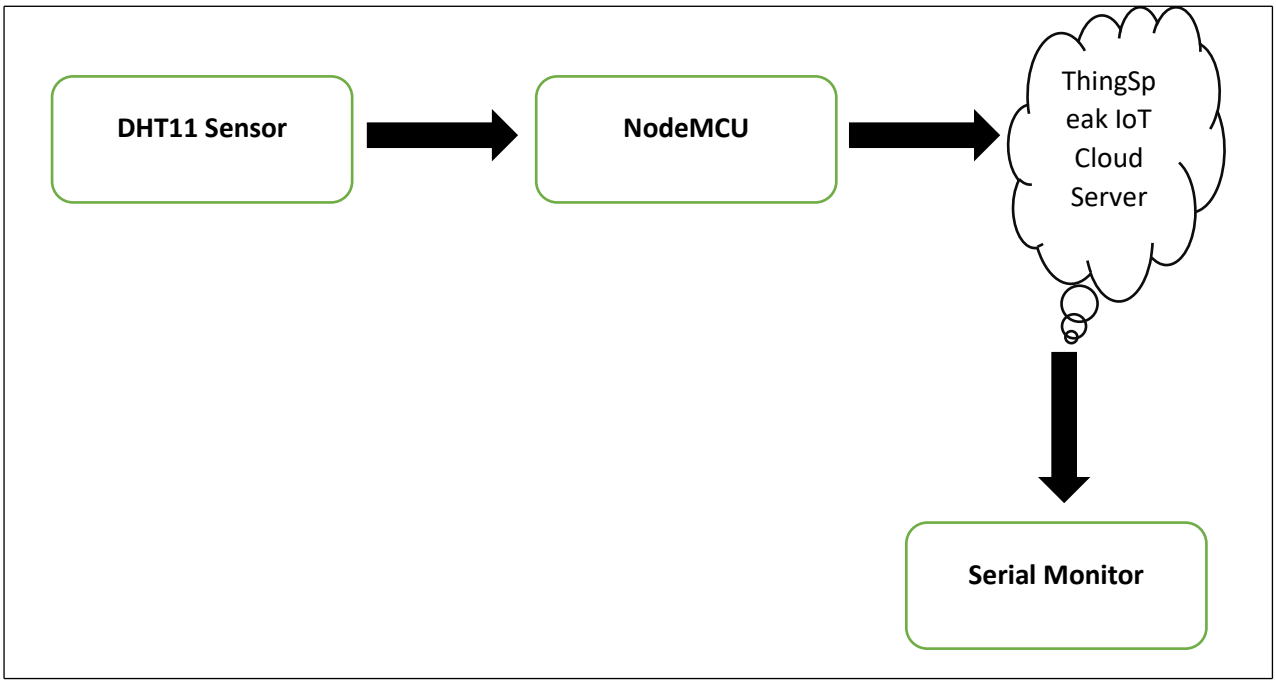

Fig:1A

- 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:

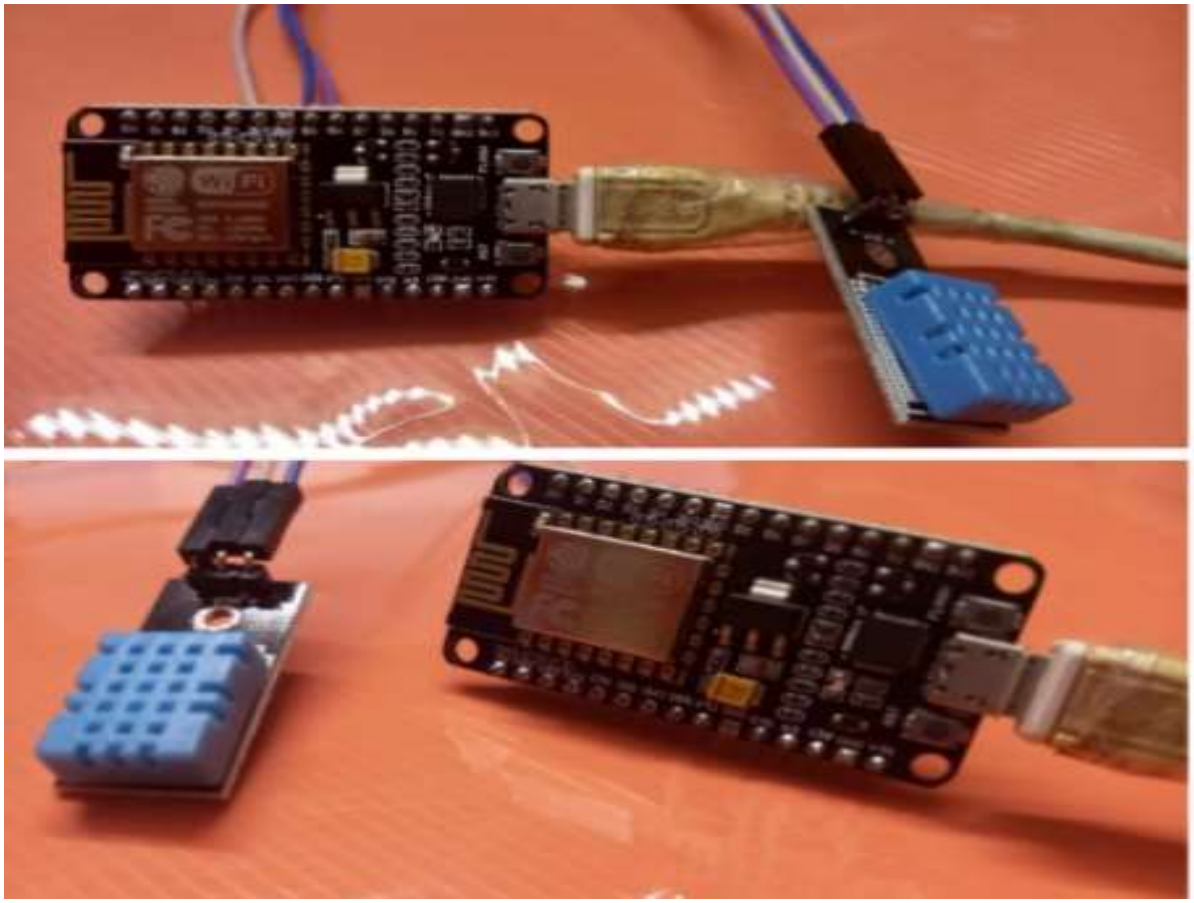

FIG:1B

OUTPUT:

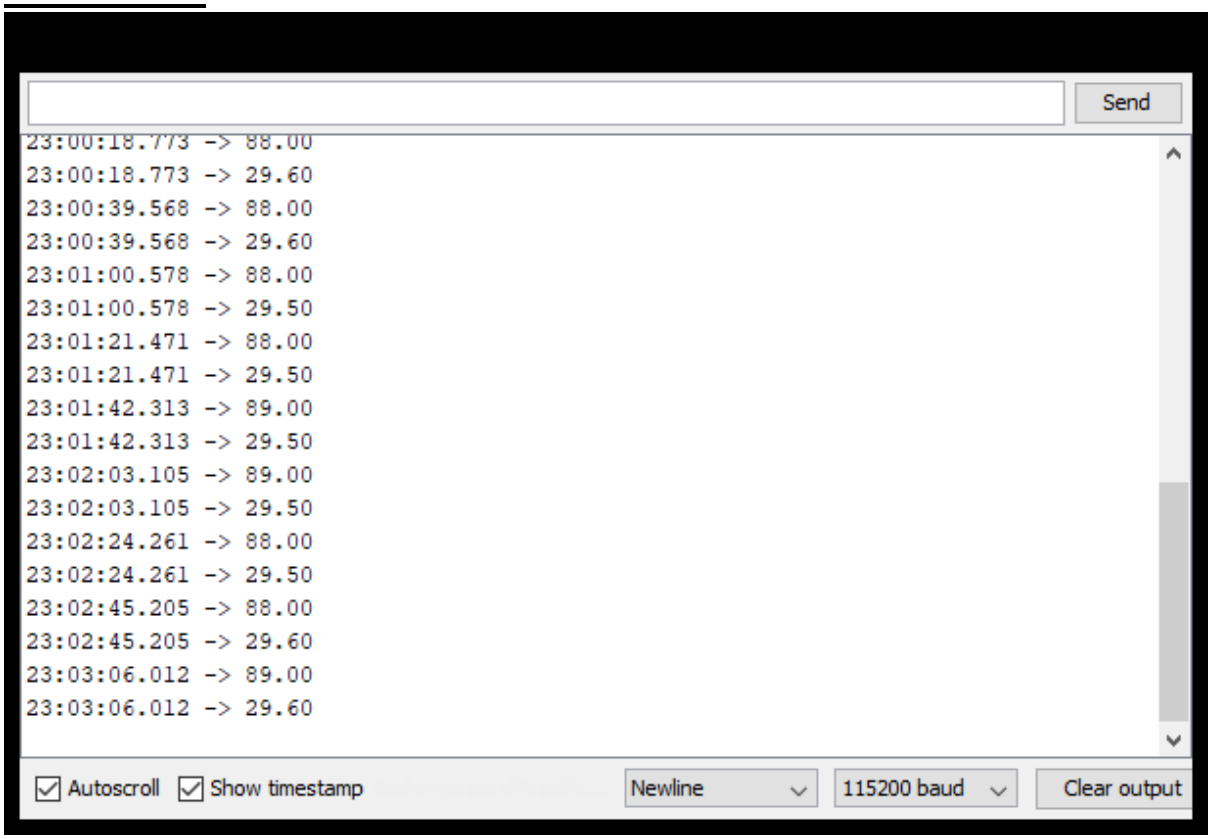

Fig:1C

Fig 1D

EXPERIMENT 6B

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

Block Diagram:-

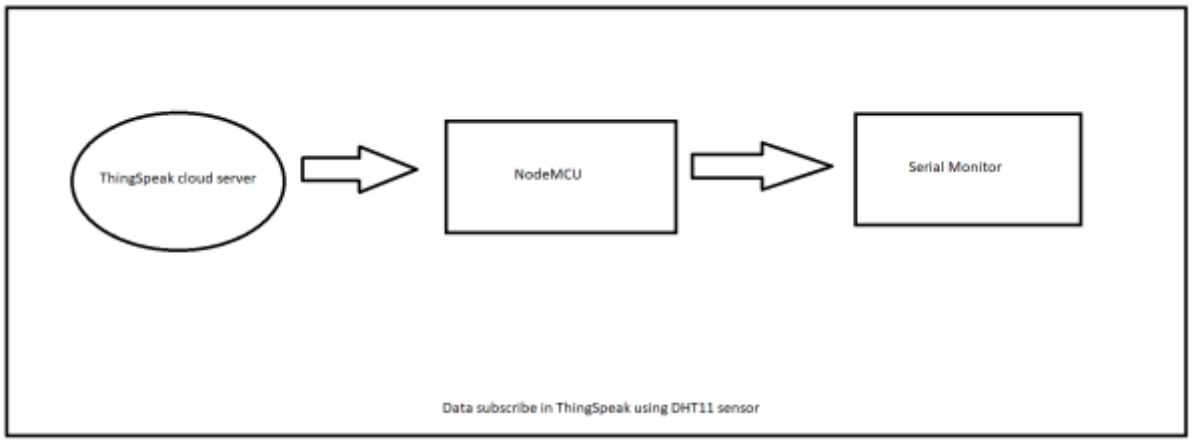

Fig:2A

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:

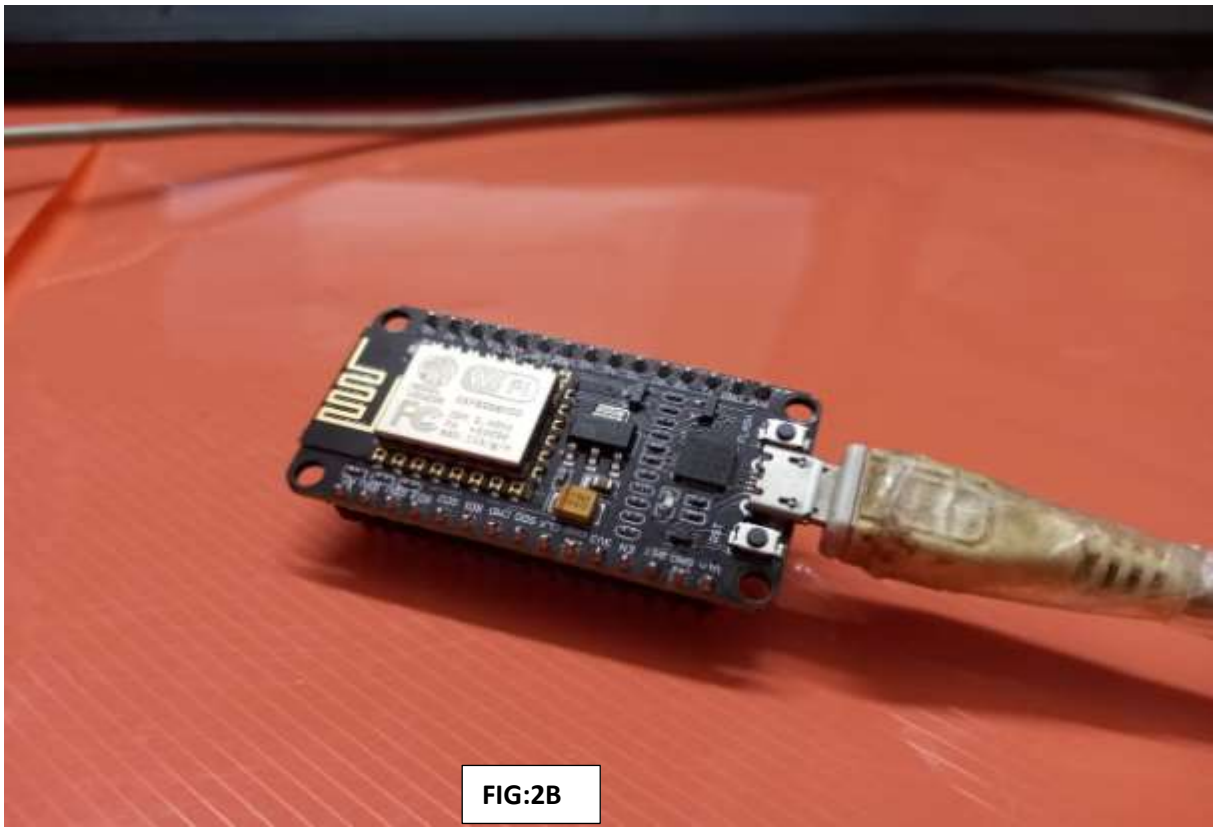

FIG:2B

Result:-

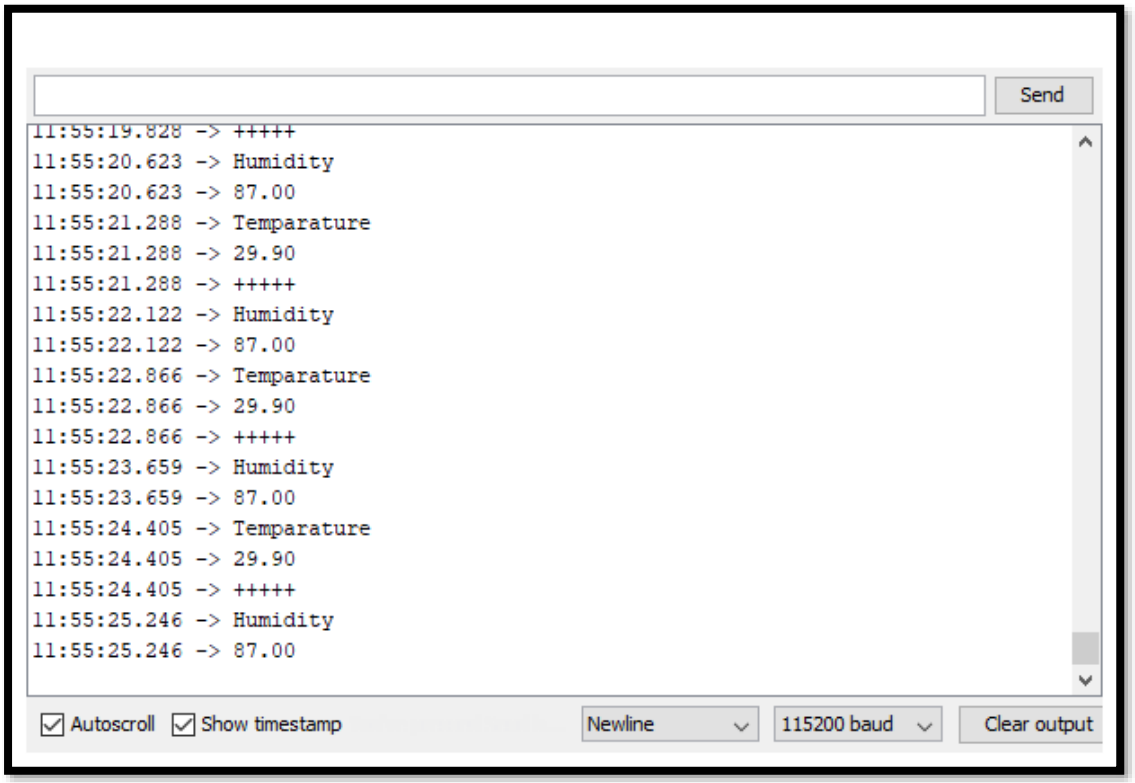

FIG:2C