Experiment No : 9

Title: Iot implementation using NodeMCU & Blynk console to display temperature & humidity.

Objective:

To build an IoT system using NodeMCU (ESP8266), Blynk, and a DHT11 sensor to monitor temperature and humidity remotely.

Components Needed:

1. NodeMCU (ESP8266)
2. DHT11 Temperature and Humidity Sensor
3. USB Cable for NodeMCU
4. Breadboard and Jumper Wires

Procedure:

Setup Blynk:

- Download and install the Blynk app on your smartphone (iOS/Android).
- Create a new account or log in if you already have one.
- Create a new project.
- Select NodeMCU as the hardware model.
- You'll receive an authentication token via email. Note it down.

Install Blynk Library in Arduino IDE:

- Open Arduino IDE.
- Go to Sketch -> Include Library -> Manage Libraries.
- Search for "Blynk" and install the Blynk library.

Configure the Sketch:

- Replace **"YourAuthToken"** with the authentication token received from Blynk.
- Replace **"YourWiFiSSID"** and **"YourWiFiPassword"** with your WiFi credentials.

Upload the Sketch:

- Connect NodeMCU to your computer via USB.
- Select the correct board and port in Arduino IDE.
- Click on the upload button to upload the sketch to NodeMCU.

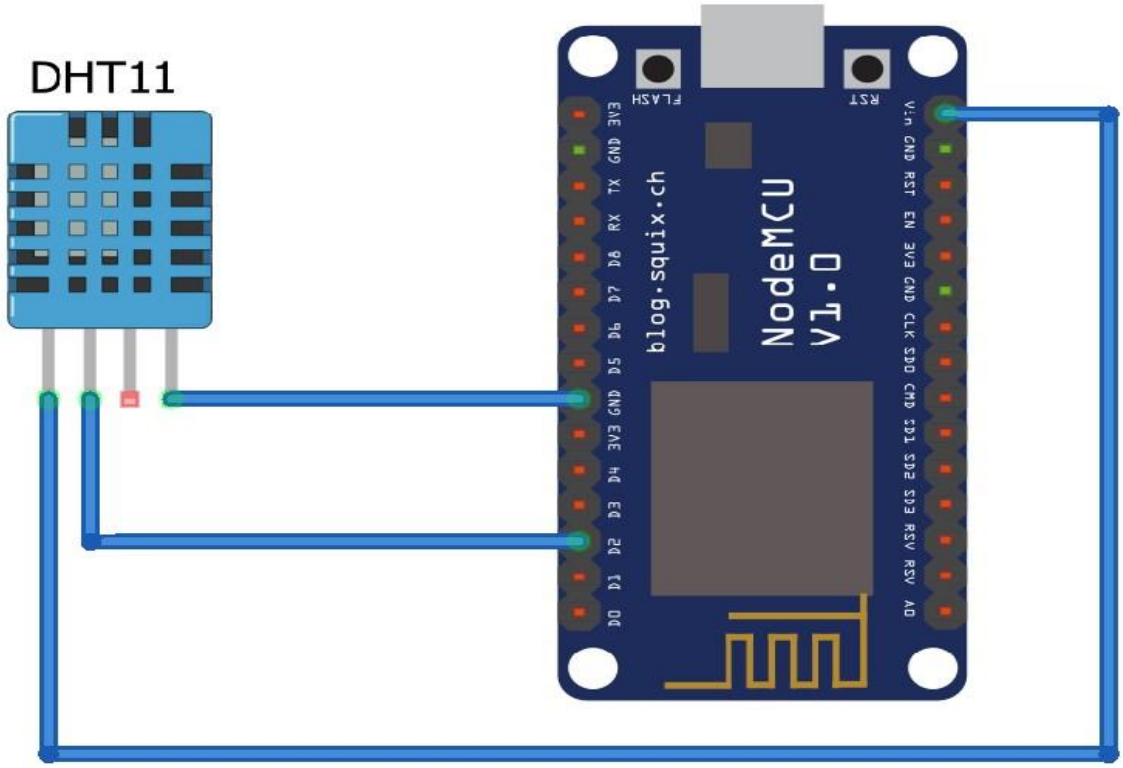
Run the Blynk App:

- Open the Blynk app on your smartphone.
- Run the project you created earlier.
- You should see temperature and humidity readings displayed on the app.

Testing:

- Place the DHT11 sensor in the desired location.
- Open the Blynk app from anywhere to monitor temperature and humidity remotely.

Circuit Diagram:



Program :

```
#include <DHT.h>
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>

#define DHTPIN D2
#define DHTTYPE DHT11
#define BLYNK_AUTH "YourAuthToken"

DHT dht(DHTPIN, DHTTYPE);

void setup() {
Serial.begin(9600);
  Blynk.begin(BLYNK_AUTH, "YourWiFiSSID", "YourWiFiPassword");
dht.begin();
}

void loop() {    Blynk.run();
float h = dht.readHumidity();
float t =
dht.readTemperature();    if
(isnan(h) || isnan(t)) {
   Serial.println("Failed to read from DHT sensor!");
return;
  }
  Blynk.virtualWrite(V5, t);
Blynk.virtualWrite(V6, h);
delay(2000);
}
```

Conclusion:

You have successfully built an IoT system using NodeMCU, Blynk, and a DHT11 sensor to monitor temperature and humidity remotely. Experiment with different sensors and actuators to expand the functionality of your IoT project.