Assignment No. 10

Title:

Write a program to show the temperature and shows a graph of the recent measurements.

Aim

Understanding working principle of DHT11 temperature sensor, BlynkIOT Platform.

Objectives

1. Hardware platforms and operating systems commonly used in IoT systems.
2. Help the students in providing a good learning environment and also work with real time problems faced in day to day life.

Hardware Requirement: Arduino, LM35, DHT11, etc.

Software Requirement: Arduino IDE

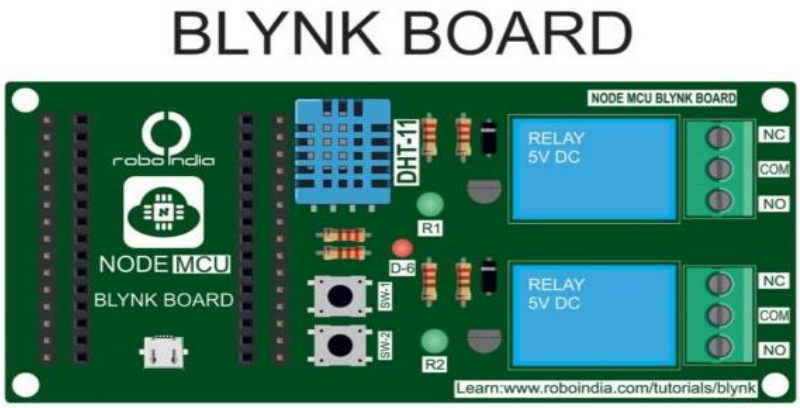
Theory

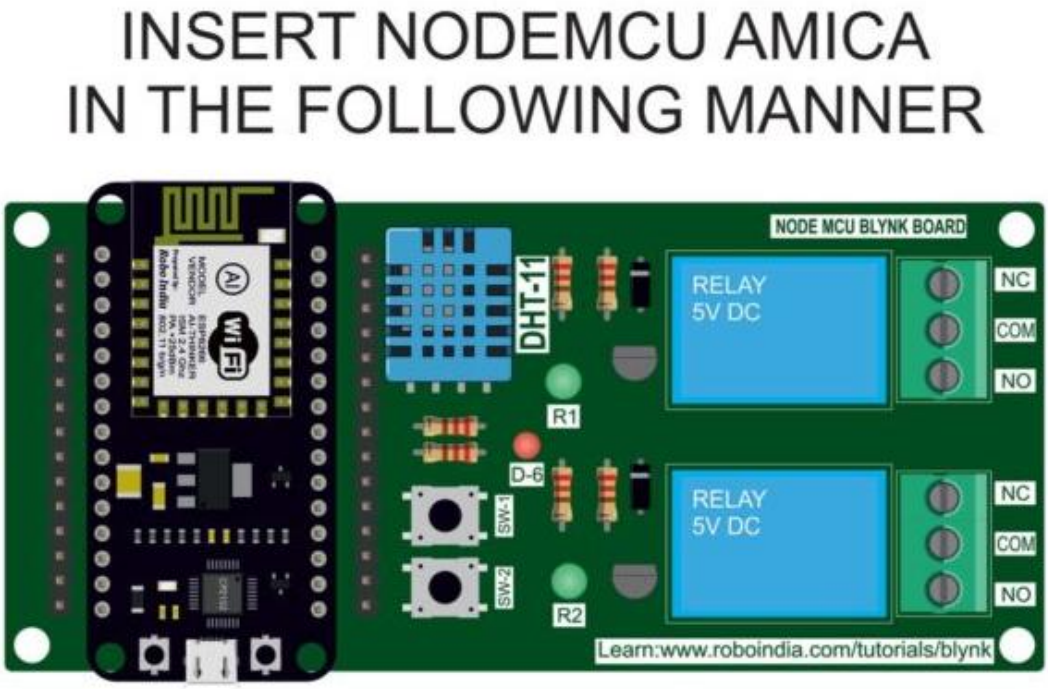
Introduction:

In this project using an esp8266, to show the temperature and humidity DHT11 sensor on yourSmartphone or tablet. The NodeMCU collects the temperature and humidity from DHT11 sensor andsends it to Blynk app every second.

Hardware required

Blynk Board and NodeMCU is used in this example. Inset NodeMCU to the Blynk board as shown in theimage ahead then connect NodeMCU to PC or Laptop through USB cable.

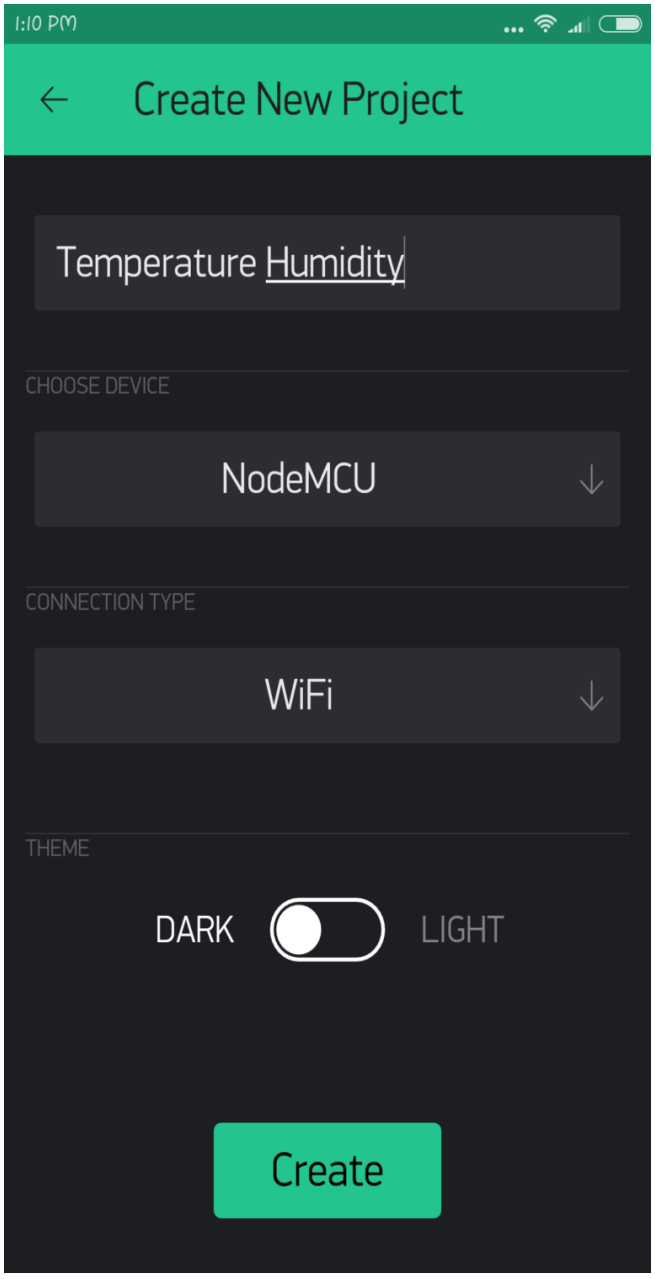




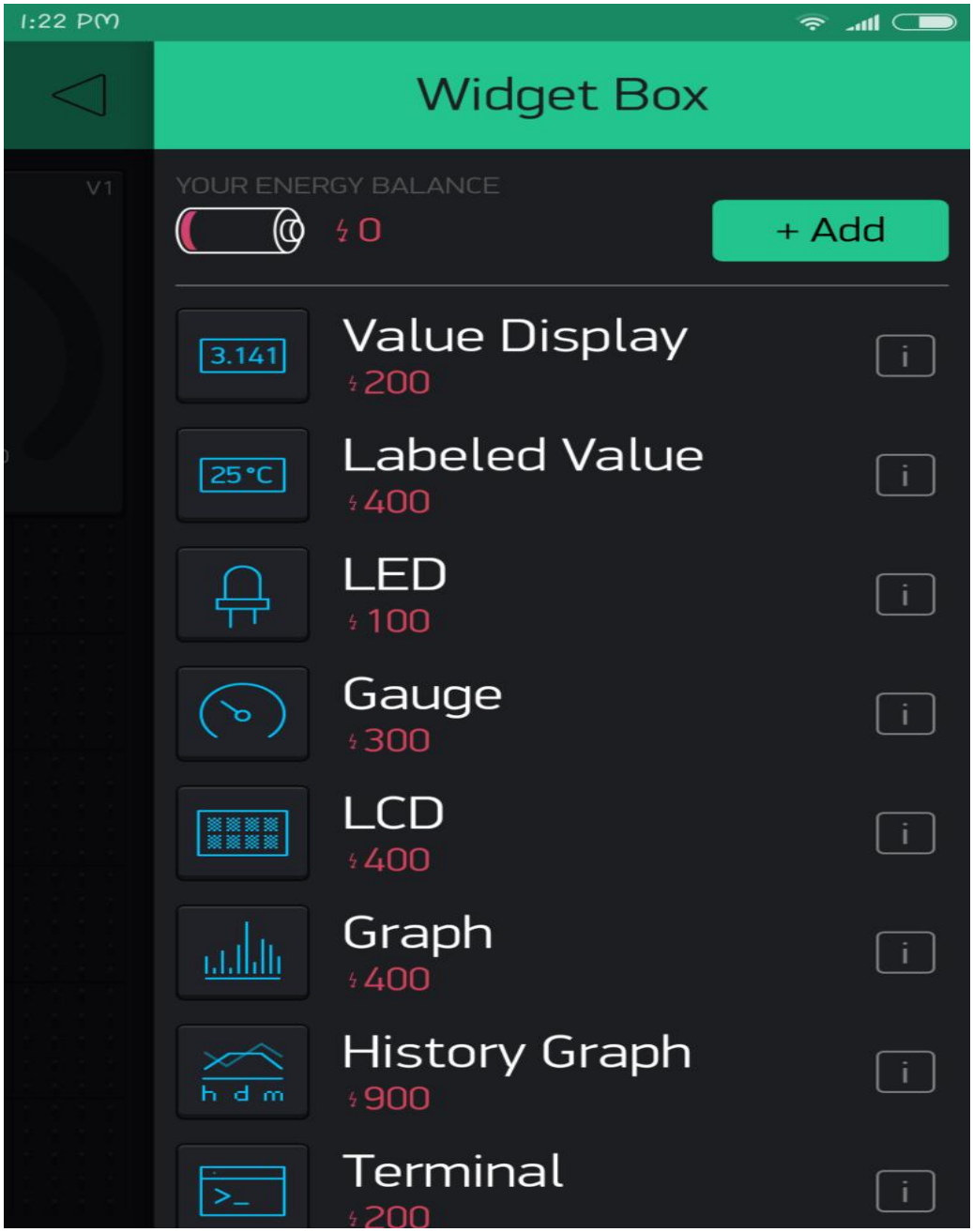
On Blynk App

You need to perform following steps on Blynk App.

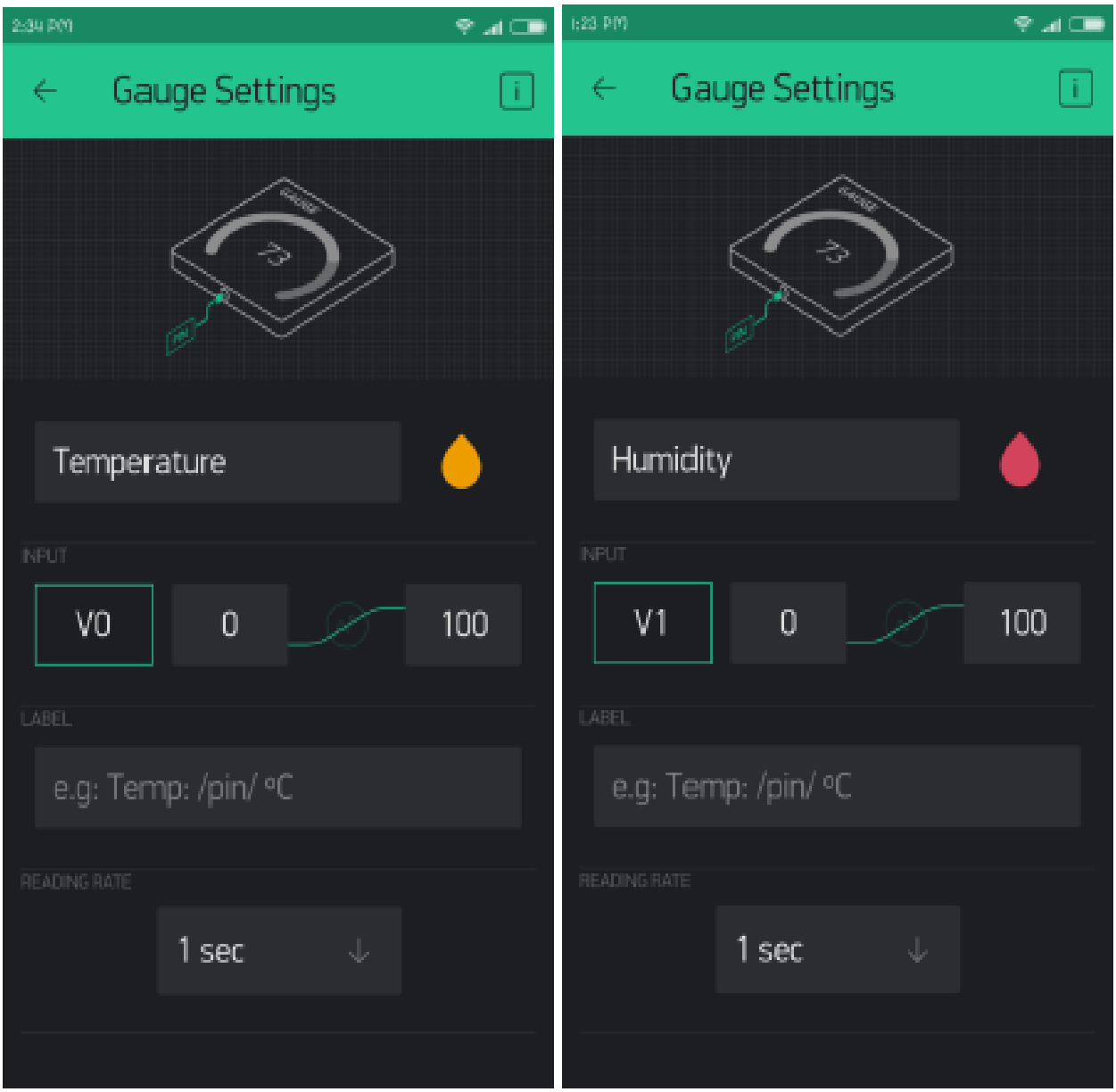
Create a New Project in BLYNK app.
Write Project name Temperature Humidity and SelectNodeMCU from drop down.



An AUTH token will be sent to your registered email, note this down.
Tap on the screen andadd a 2 Gauges.



Tap on the Widget and select the respective Virtual pins for temperature and humidity data (V0 fortemperature and V1 for humidity).



Note: Make sure to setup Reading rate as '1' second for all Widgets. And add gauges for both Humidityand Temperature.

Code the NodeMCU with the following code:

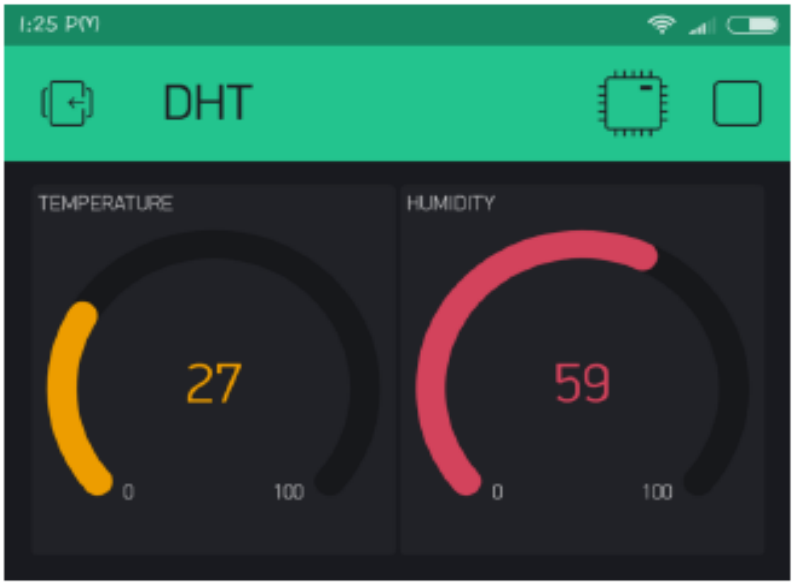
Before uploading, make sure to paste your authorization token into the auth [] variable. Also make sure toload your Wifi network settings into the Blynk.begin(auth, "ssid", "pass") function.

```
// Robo India Tutorial
// Digital Output on LED
// Hardware: NodeMCU Blynk Board

#define BLYNK_PRINT Serial

#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>
#include "DHT.h"             // including the library of DHT11 temperature
  and humidity sensor
#include <SimpleTimer.h>   //including the library of SimpleTimer
#define DHTTYPE DHT11      // DHT 11

#define dht_dpin 14
DHT dht(dht_dpin, DHTTYPE);
SimpleTimer timer;
char auth[] = "Your Auth. Key";            // You should get Auth Token in


  the Blynk App.
                                             // Go to the Project Settings
  (nut icon).

char ssid[] = "Your Wifi Network name";    // Your WiFi credentials.
char pass[] = "Password of your network";  // Set password to "" for open
  networks.
float t;                                   // Declare the variables
float h;



void setup()
{
    Serial.begin(9600);// Debug console
    Blynk.begin(auth, ssid, pass);
    dht.begin();
    timer.setInterval(2000, sendUptime);
}
```

```
void sendUptime()
{

  float h = dht.readHumidity();
  float t = dht.readTemperature();
  Serial.println("Humidity and temperature\n\n");
  Serial.print("Current humidity = ");
  Serial.print(h);
  Serial.print("%  ");
  Serial.print("temperature = ");
  Serial.print(t);
  Blynk.virtualWrite(V0, t);
  Blynk.virtualWrite(V1, h);

}

void loop()
{
  Blynk.run();
  timer.run();
}
```

Output:

After Uploading the Ardunio code IDE. Press the play button on blynk app to show the output.



Conclusion:

Successfully studied the working principle of DHT11 temperature sensor, BlynkIOT Platform.