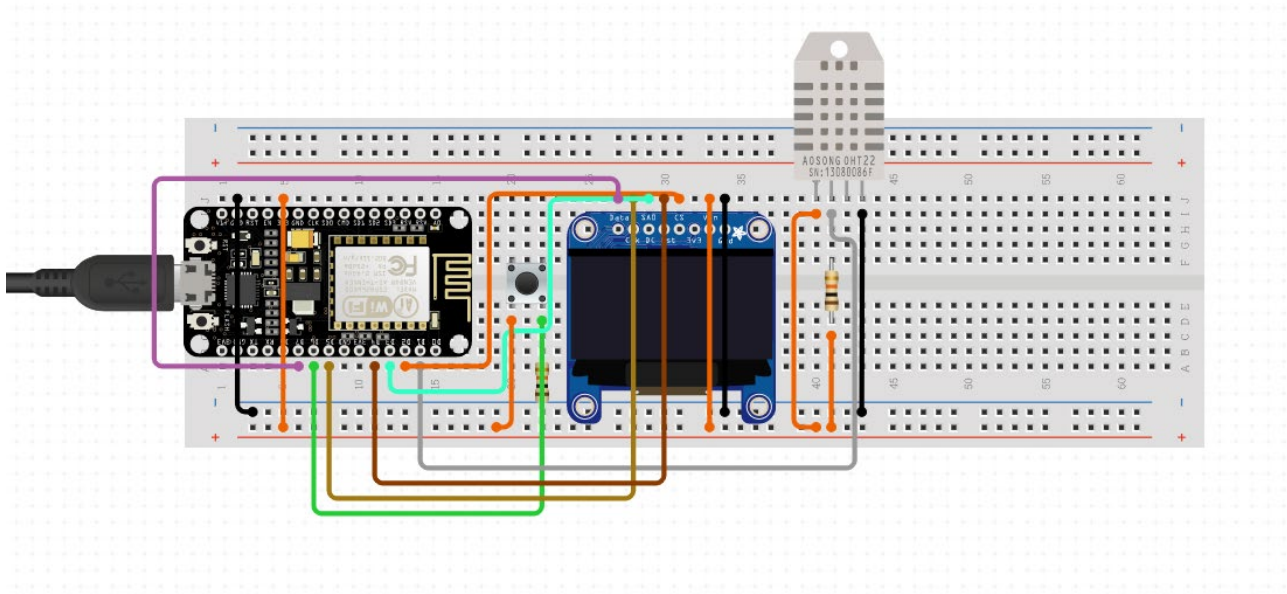


IOT WEATHER STATION

Project Description

Hardware Circuit:



The NodeMCU is connected to OLED display, DHT-11 sensor and a push button with appropriate resistor where needed.

OLED serves as the output for our project. Connect the display pins as specified in the code. Different libraries are used to interface the screen with MCU like “ESP8266 OLED Driver for SSD1306” display developed by Daniel Eichhorn that was used in this project. OLED requires many functions to set the screen colour, for pixel drawings, for display control, text operations and for controlling the frames.

DHT-11 is used to give us the indoor data for Temperature and Humidity. Make sure you a resistor so that the sensor is not damaged. We can also calculate the Dew Point and Humidity index using these values. Dht or Adafruit library can be used to assimilate this sensor into the code.

The Push Button is used to tell the MCU to upload the current weather data to the OM2M server. The code will check if the button is pressed then the block of code to publish data will be executed.

We have to make sure the connections are proper and all the components are grounded.

If we wish to transfer this circuit to a box, we need to use a battery for the supply and use the PCB board to solder all the connections and keep all in place.

Software:

First, we include libraries for OLED display.

```
#include <Wire.h>
#include "SSD1306.h"
SSD1306 display(0x3c, 5, 4);
```

Write the network details into the code which the MCU will be connected to;

```
//network details
#include <ESP8266WiFi.h>
#define mainSsid "Connect"
#define mainPass "Fast45678"
```

Information of the server on which we want to publish the data

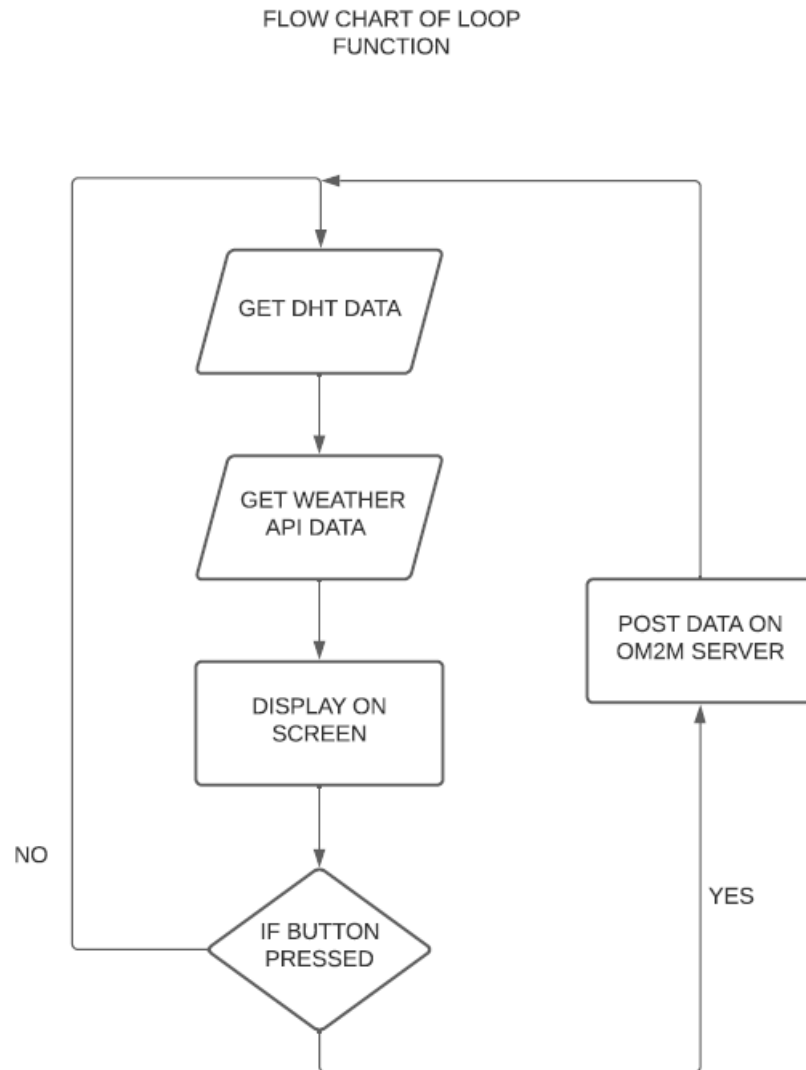
```
//server info
#define CSE_IP "192.168.18.25"
#define CSE_PORT 8080
#define HTTPS false
#define OM2M_ORIGIN "admin:admin"
#define OM2M_MN "/~/mn-cse/mn-name/"
#define OM2M_MN_1 "/~/in-cse/in-name/"
#define OM2M_AE "Weather"
#define OM2M_DATA_CONT "DATA"
#define LISTENER_PORT 8000
WiFiServer listener(LISTENER_PORT);
HTTPClient http;
```

DHT library and variables

```
// DHT11
#include "DHT.h"
#define DHTPIN D3
#define DHTTYPE DHT11
DHT dht(DHTPIN, DHTTYPE);
int localHum = 0;
int localTemp = 0;
```

In the setup function write code to connect to the wifi and begin serial communication. Also begin the listener port and the display.

The loop function will follow the given flow of command:



buttonPressed() Function: Checks if the user wants to upload the data to the server or not

```
int buttonPressed(uint8_t button)
{
    static uint16_t lastStates = 0;
    uint8_t state = digitalRead(button);
    if (state != ((lastStates >> button) & 1))
    {
        lastStates ^= 1 << button;
        return state == HIGH;
    }
    return false;
}
```