Cloud Weather Station

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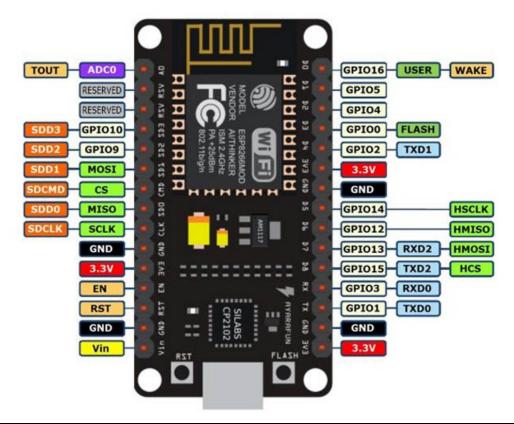
Introduction

Cloud Weather Station is an Arduino project that will read weather data such as temperature and humidity and it will be synchronized with the Arduino IoT Cloud, a service that let's us remotely monitor data.

This means that whenever we read data on the board, it will also be visible in the cloud dashboard, where we can create different ways of visualizing the data.

General Description

We use the Amica NODEMCU cp2102 wifi module as our base arduino board, in which we will plug in our temperature and humidity sensors, we connect it to WIFI, then to Arduino IoT Cloud and put together the dashboard where we will see the data.



How the **dashboard** should look like:

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ADD ~ \oplus	Environmental Data Dashboard	i
	D uvIndex : D uva : D uvb :	
۵	0.054 23.56 29.1	
	D humidity i D temperature i D illuminance i 41.178 25.211 398.387	
	© pressure : 100.883	

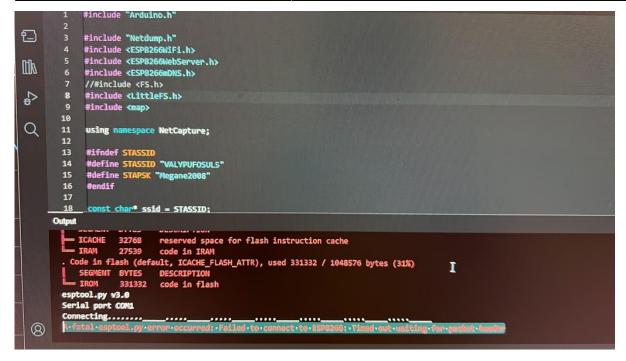
After installing all drivers and libraries for NODEMCU ESP8266 wifi module, it doesn't work. I have consulted the arduino.cc forum and many people have the same problem, the drivers don't work, so I had to change the project a little bit.

Hardware Design

The components used are as follows:

1. Amica NODEMCU cp2102 wifi module 2. CONNFLY temperature sensor 3. CONNFLY humidity sensor

After several tries, the NODEMCU ESP8266 drivers do not work. There is only 1 driver available and it is the same on arduino.cc, nodemcu support page and multiple forums.



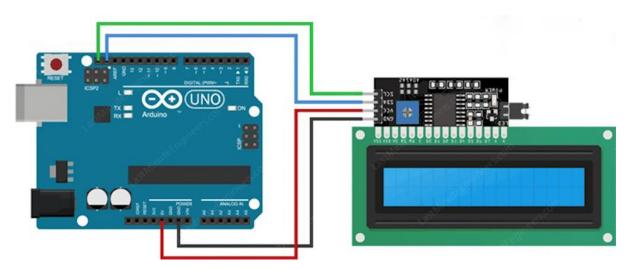
So, I've decided to **change** the project a little bit so I can make it work.

Instead of it transmitting the data from sensors to arduino cloud, it will show it on an 16×2 I2C LCD.

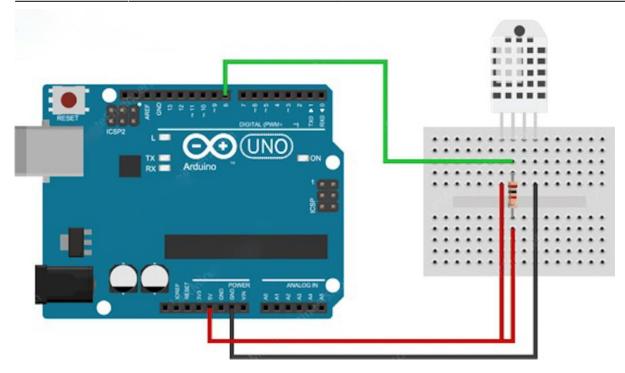
THE NEW SETUP LOOKS LIKE THIS:

1. Arduino UNO 2. 16×2 I2C LCD 3. DHT22 temperature and humidity sensor 4. wires 5. breadboard

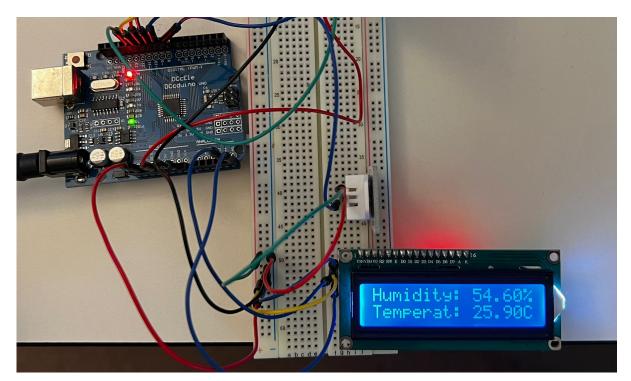
How to connect the I2C LCD to Arduino UNO:



After connecting the I2C LCD to Arduino UNO, we will **connect the DHT22 temperature and humidity sensor** too.



After connecting both the I2C LCD and DHT22 temperature and humidity sensor, the setup looks like this:



Software Design

Libraries #include <dht.h> #include <LiquidCrystal_I2C.h> #include <Wire.h> dht DHT;

Constants #define DHT22_PIN 8 pin used for DHT22 LiquidCrystal_I2C lcd(0x27,16,2); set the LCD address to 0x27 after finding it from serial monitor for a 16 chars and 2 line display

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Variables float hum; Stores humidity value float temp; Stores temperature value

}

void loop() {

```
int chk = DHT.read22(DHT22_PIN);
//Read data and store it to variables hum and temp
hum = DHT.humidity;
temp= DHT.temperature;
//Print temp and humidity values to LCD
lcd.setCursor(0,0);
lcd.print("Humidity: ");
lcd.print(hum);
lcd.print(hum);
lcd.print("%");
lcd.setCursor(0,1);
lcd.setCursor(0,1);
lcd.print("Temperat: ");
lcd.print(temp);
lcd.print(temp);
lcd.print("C");
delay(2000); //Delay 2 sec between temperature/humidity check.
```

}

Results Obtained

I obtained a great thermometer that I can use in my house or anywhere else. You just need to plug it to a power source and it will tell you the humidity and temperature wherever you are.

Conclusions

Try using genuine arduino wifi boards, some of the other ones are not well maintained in matters of drivers. I've had problems for days with the NODEMCU ESP8266 wifi because the micro sub to usb drivers do not work and the board is simply unusable. I tried 7 different micro usb cables, tried programming it with 3 different computers with the drivers installed on each one. **NOTHING WORKED**. Checked arduino.cc forum and most people have the same issue, it's unusable. I chose to change my project a little bit so I can work it out. Instead of making it read data from sensors and transmit them to arduino IoT cloud, I made it read the data from the sensors and show it on an LCD screen. Now it works perfectly fine, the only thing i need to find now is a power source.

I recommend informing yourself about the things you want to buy if they're not genuine since some of them have issues and **will not work**, making it a hard time for you.

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Bibliography/Resources

https://lastminuteengineers.com/dht11-dht22-arduino-tutorial/ https://lastminuteengineers.com/i2c-lcd-arduino-tutorial/ https://forum.arduino.cc/ https://www.ardumotive.com/how-to-use-dht-22-sensor-en.html https://www.instructables.com/How-to-Connect-I2C-Lcd-Display-to-Arduino-Uno/ https://www.circuitgeeks.com/arduino-i2c-lcd-tutorial/

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