

# NodeMCU

# IOT

# device

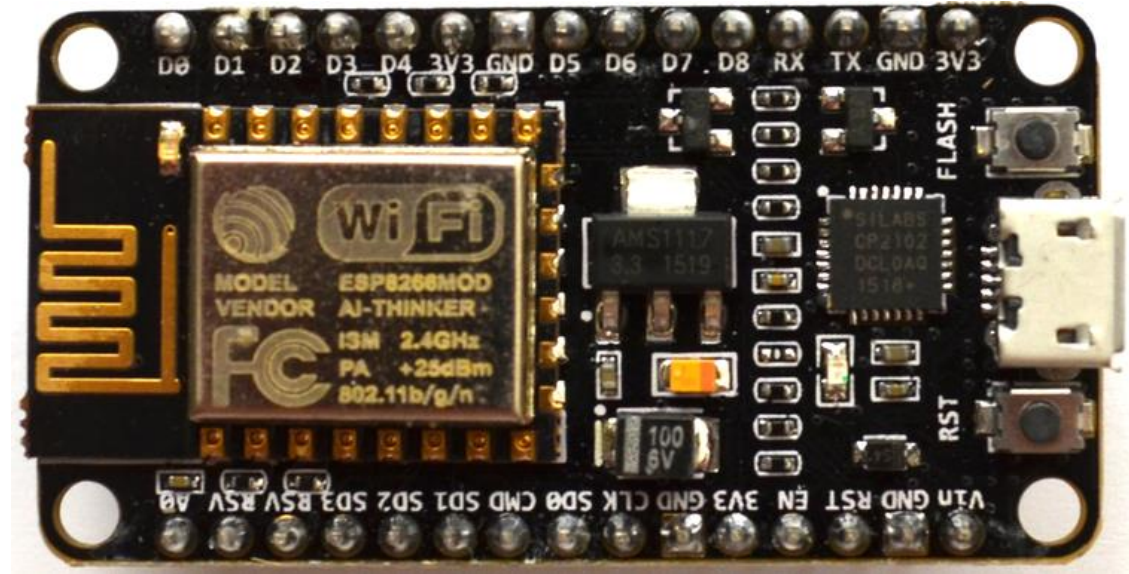
**Topic**

**Overview and Basic programming**

**Mr.Surawut Sukkum**

# NodeMCU

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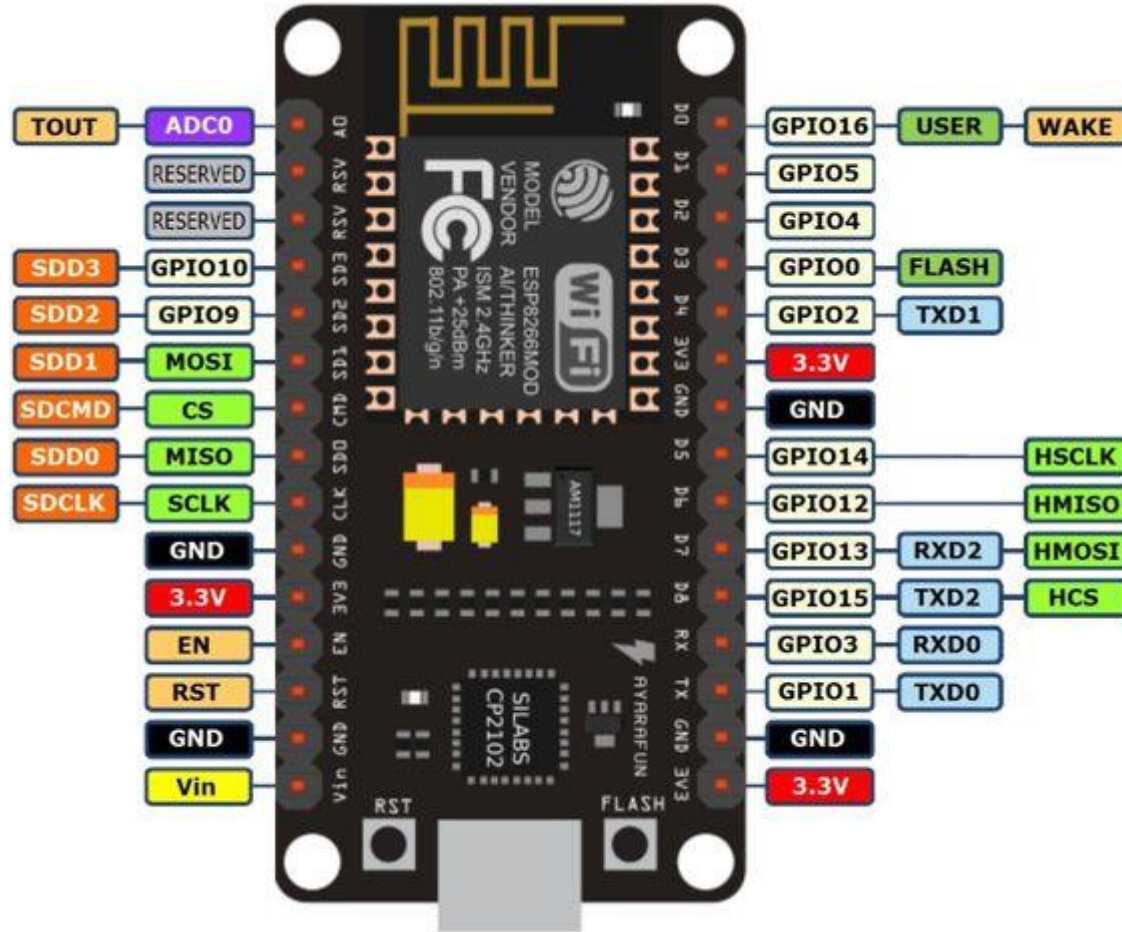
NodeMCU is an open source IoT platform.

<https://www.tindie.com/products/friedcircuits/nodemcu/>

# GPIO (General Purpose Input/Output) and a pin mapping

## NodeMCU VS Arduino

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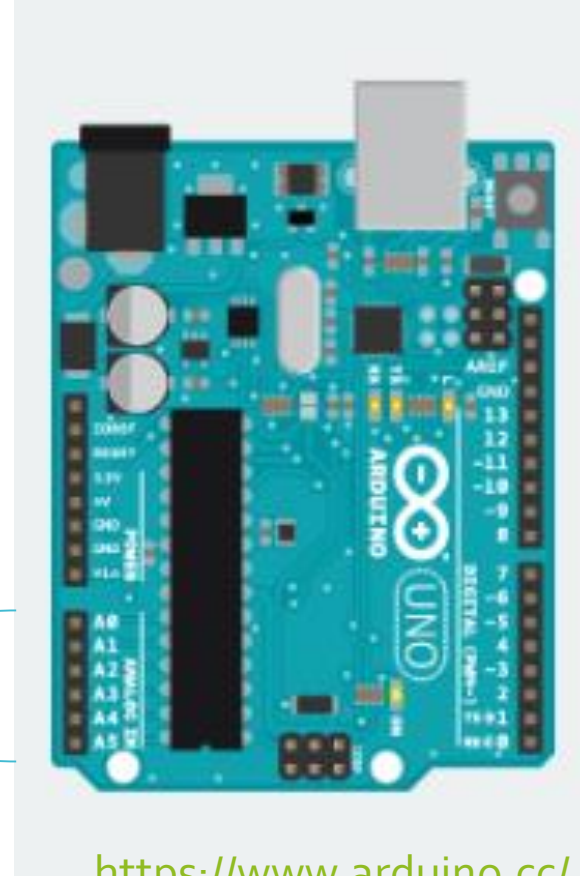
<https://esp8266-shop.com/esp8266-guide/esp8266-nodemcu-pinout/>

# GPIO (General Purpose Input/Output) and a pin mapping

## NodeMCU VS Arduino

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Analog



GPIO

<https://www.arduino.cc/>

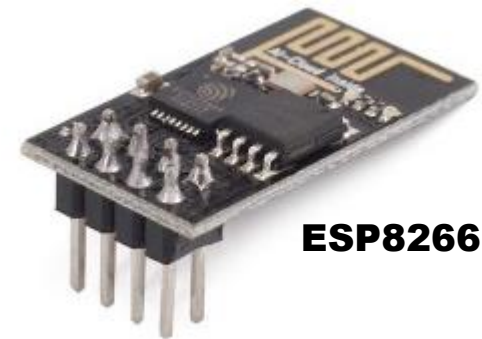
# IOT application

## NodeMCU VS Arduino

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+



**ESP8266**

<https://www.arduino.cc/>

<https://www.robotshop.com/uk/wifi-serial-transceiver-module-esp8266.html>

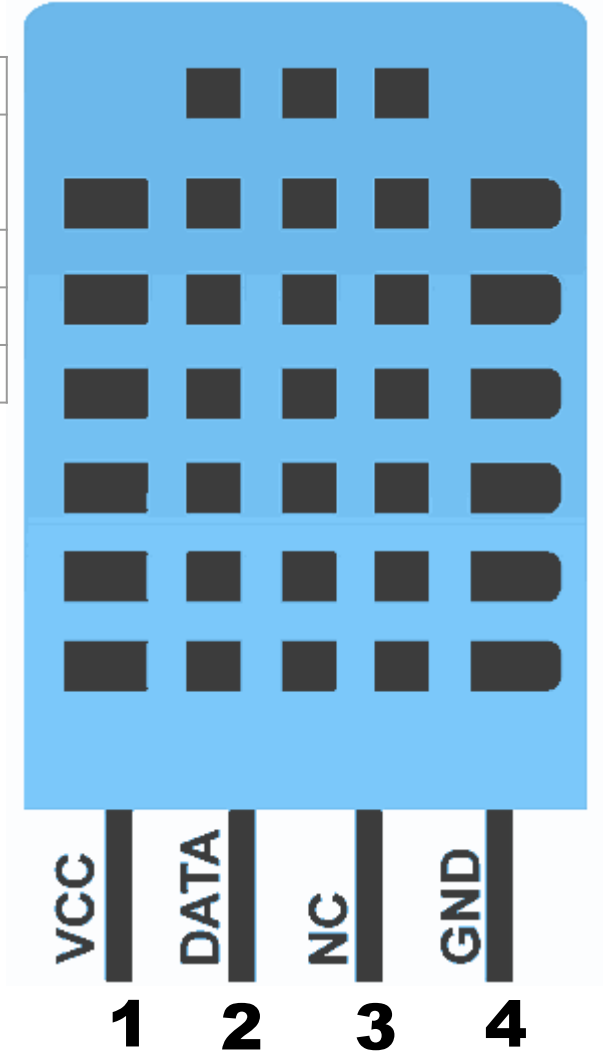
# DHT11

## Humidity and Temperature Sensor

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Pin No.	Pin Name	Pin Description
1	VCC	Power supply 3.3 to 5.5 Volt DC
2	DATA	Digital output pin
3	NC	Not in use
4	GND	Ground

### DHT11



<https://www.electronicwings.com/sensors-modules/dht11>  
[http://ayarafun1.rssing.com/chan-65920856/all\\_p1.html](http://ayarafun1.rssing.com/chan-65920856/all_p1.html)

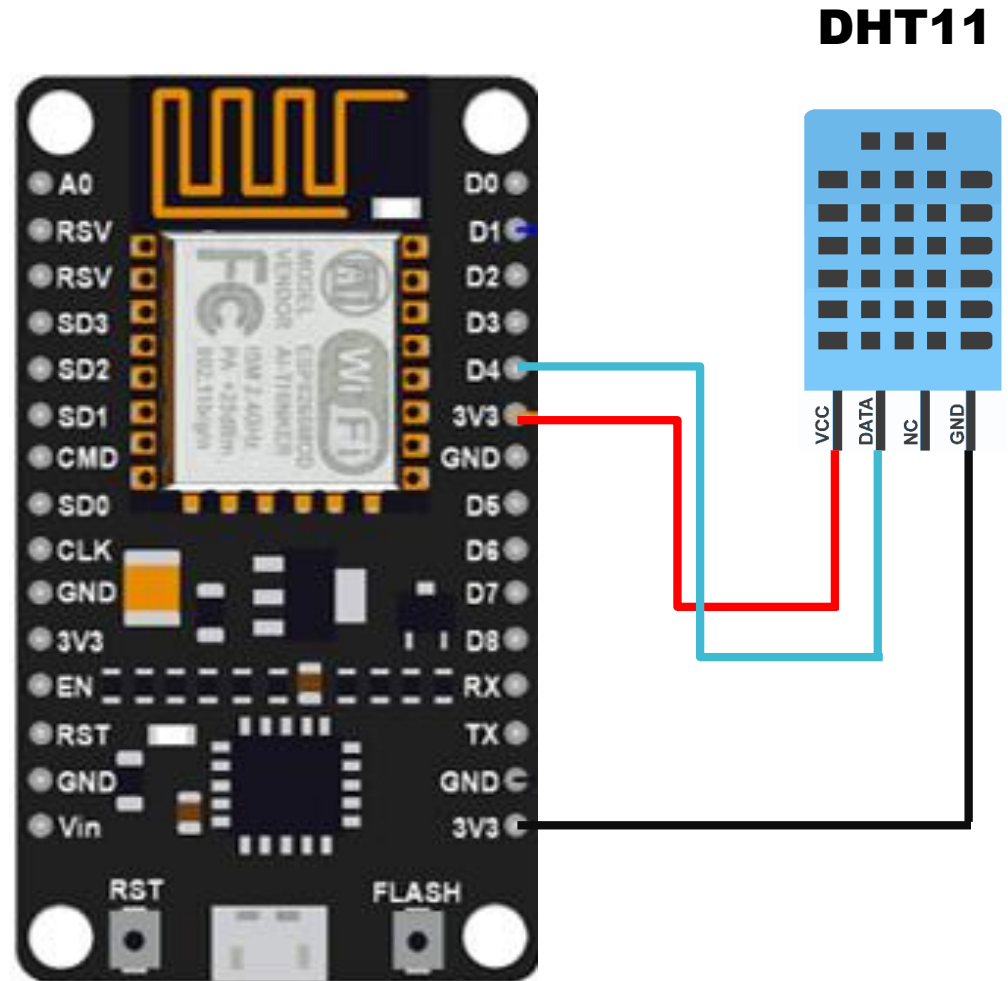


# DHT11

Temperature  
Sensor

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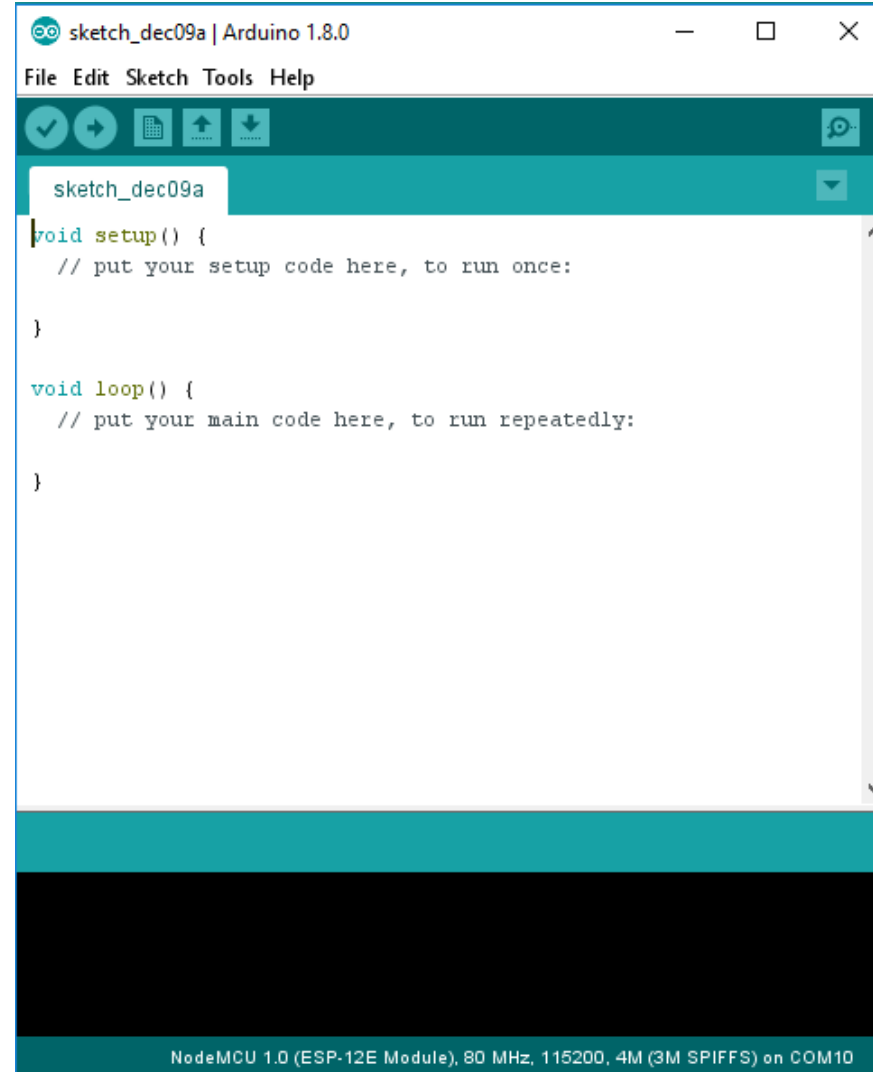
## Circuit diagram



<https://www.electronicwings.com/sensors-modules/dht11>  
[http://ayarafun1.rssing.com/chan-65920856/all\\_p1.html](http://ayarafun1.rssing.com/chan-65920856/all_p1.html)

# Arduino IDE

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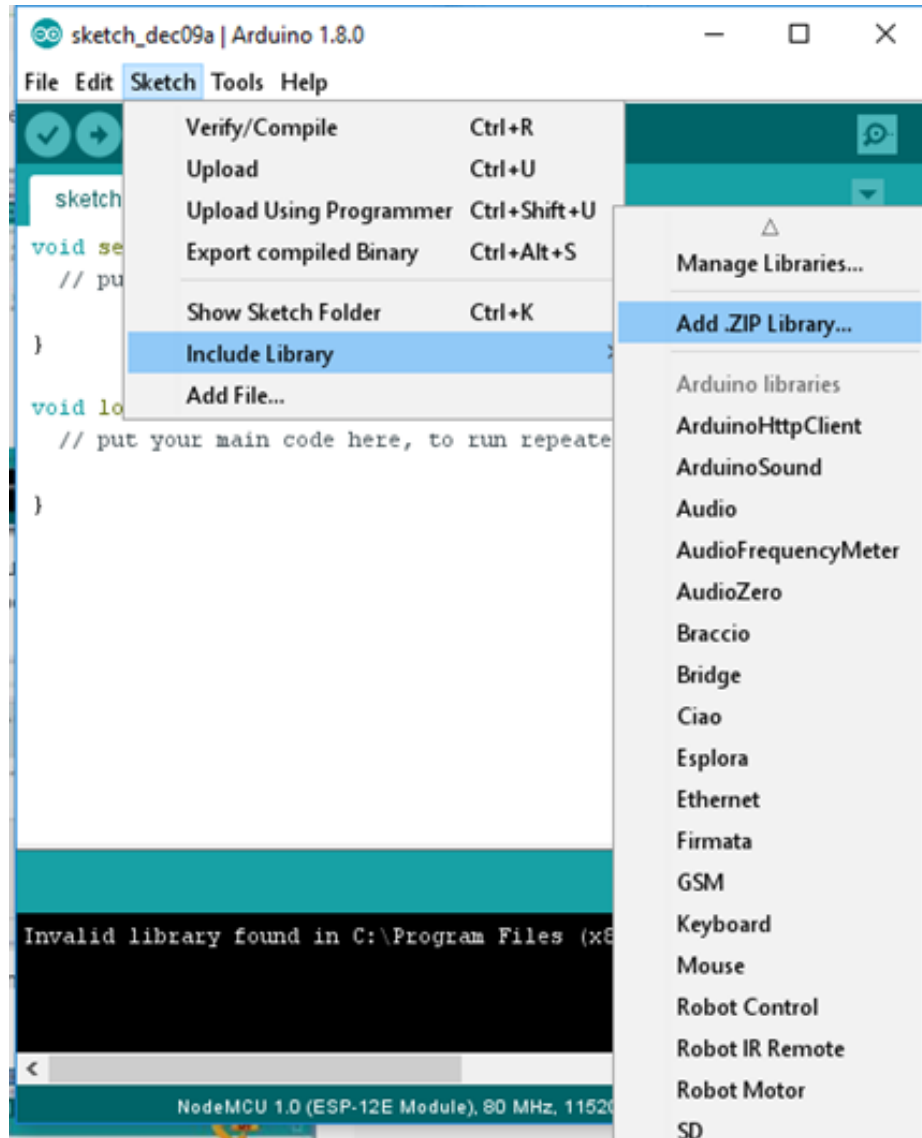


<https://www.arduino.cc/en/main/software>



# Arduino library for DHT11

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Import **library**

<https://github.com/adafruit/DHT-sensor-library>

# Programming

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**Select Pin**



**Select Type**



```
DHTtester | Arduino 1.8.0
File Edit Sketch Tools Help

DHTtester $

#include "DHT.h"

#define DHTPIN 2      // Digital pin connected to the DHT sensor
// Feather HUZZAH ESP8266 note: use pins 3, 4, 5, 12, 13 or 14 --
// Pin 15 can work but DHT must be disconnected during program upl

// Uncomment whatever type you're using!
#define DHTTYPE DHT11  // DHT 11
// #define DHTTYPE DHT22  // DHT 22  (AM2302), AM2321
// #define DHTTYPE DHT21  // DHT 21 (AM2301)

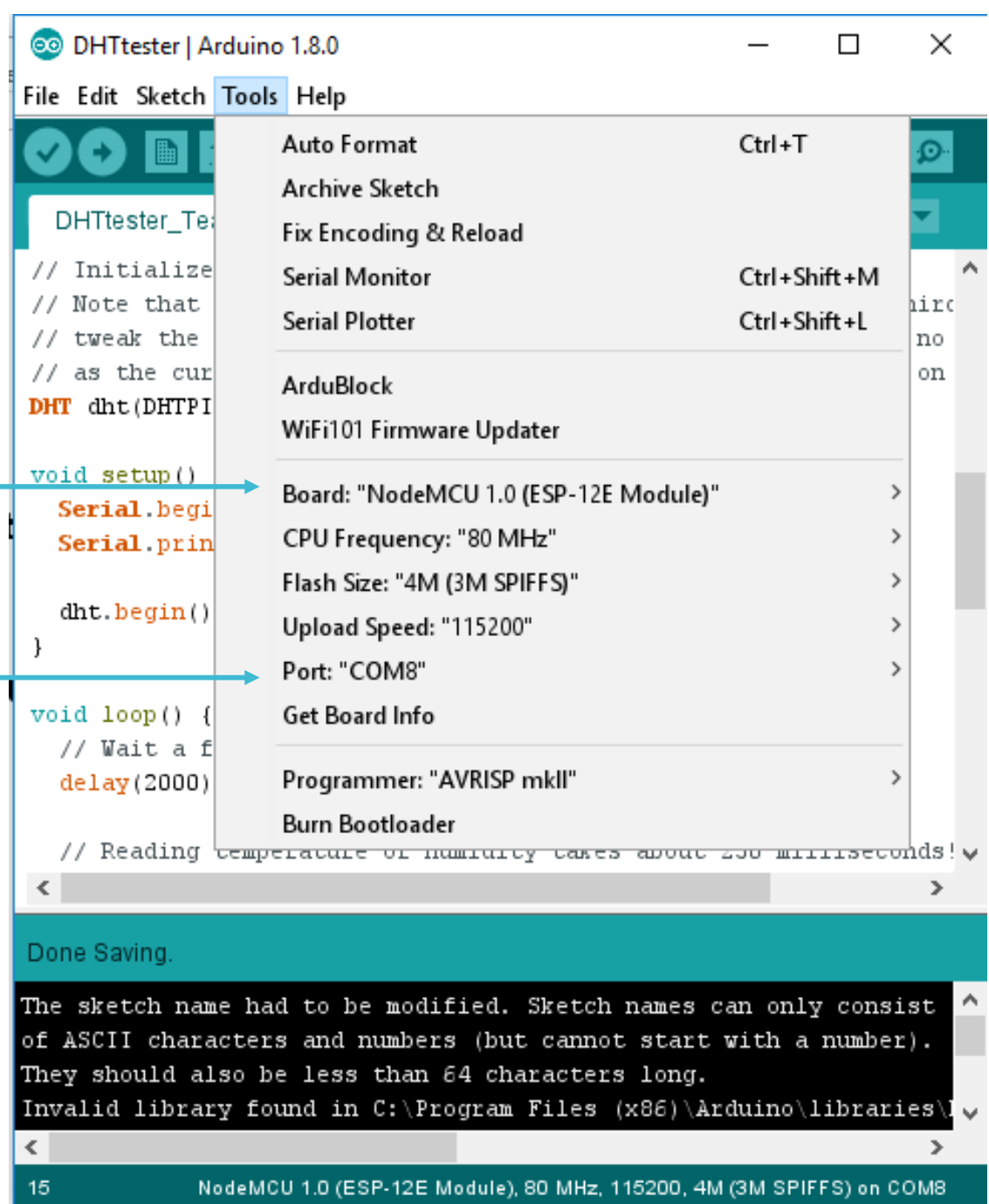
// Connect pin 1 (on the left) of the sensor to +5V
// NOTE: If using a board with 3.3V logic like an Arduino Due conr
// to 3.3V instead of 5V!
// Connect pin 2 of the sensor to whatever your DHTPIN is
// Connect pin 4 (on the right) of the sensor to GROUND
// Connect a 10K resistor from pin 2 (data) to pin 1 (power) of th
```

# Programming

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Select board

Select Port

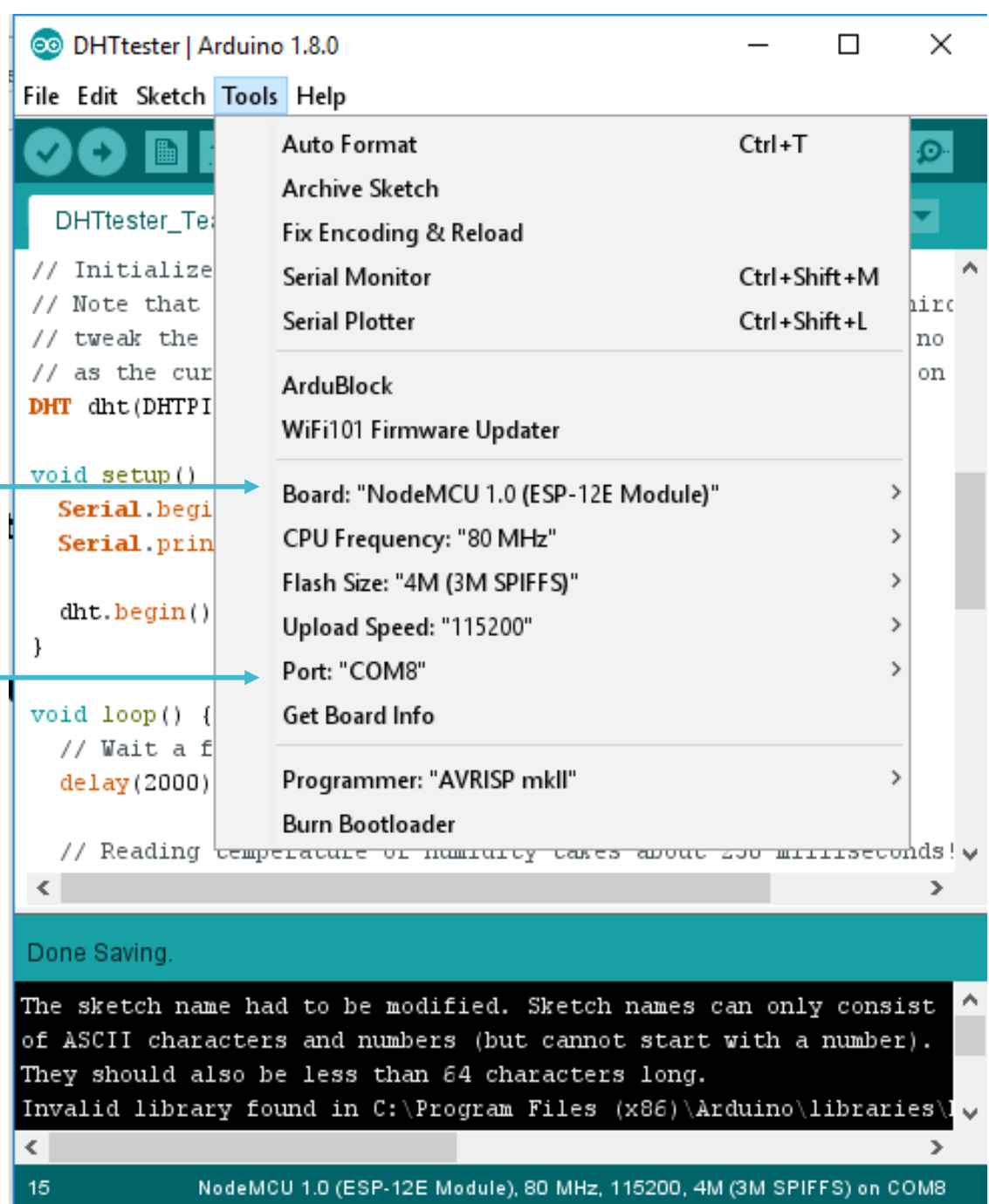


# Programming

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Select board

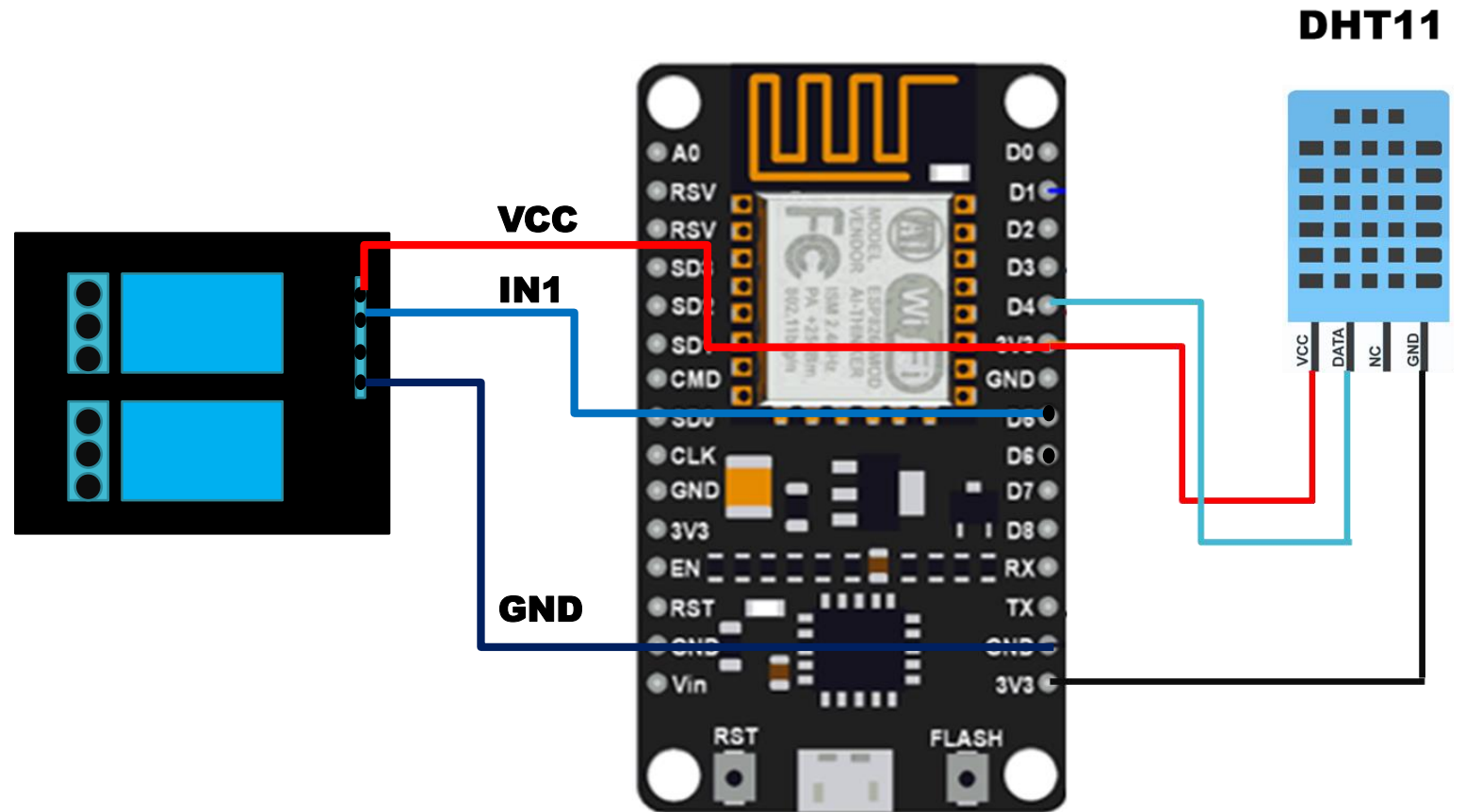
Select Port



# Circuit diagram

Relay

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<https://www.electronicwings.com/sensors-modules/dht11>  
[http://ayarafun1.rssing.com/chan-65920856/all\\_p1.html](http://ayarafun1.rssing.com/chan-65920856/all_p1.html)

# Programming

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**Add relay**



```
DHTtester_Teach_class_1_Relay | Arduino 1.8.0
File Edit Sketch Tools Help

// Example testing sketch for various DHT humidity/temperature ser
// Written by ladyada, public domain

// REQUIRES the following Arduino libraries:
// - DHT Sensor Library: https://github.com/adafruit/DHT-sensor-li
// - Adafruit Unified Sensor Lib: https://github.com/adafruit/Adafruit

#include "DHT.h"

#define Relay_1 12 //Relay

#define DHTPIN 2 // Digital pin connected to the DHT sensor
// Feather HUZZAH ESP8266 note: use pins 3, 4, 5, 12, 13 or 14 --
// Pin 15 can work but DHT must be disconnected during program upl

// Uncomment whatever type you're using!
#define DHTTYPE DHT11 // DHT 11
// #define DHTTYPE DHT22 // DHT 22 (AM2302), AM2321

Invalid library found in C:\Program Files (x86)\Arduino\libraries\Da
```

# Programming

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**Configuration Pin mode**



**Turn off**



DHTtester\_Teach\_class\_1\_Relay | Arduino 1.8.0

File Edit Sketch Tools Help

DHTtester\_Teach\_class\_1\_Relay

```
// as the current DHT reading algorithm adjusts itself to work on
DHT dht(DHTPIN, DHTTYPE);

void setup() {
  Serial.begin(9600);
  Serial.println("DHTxx test!");

  dht.begin();

  pinMode(Relay_1, OUTPUT);

  digitalWrite(Relay_1, HIGH);
}

void loop() {
  // Wait a few seconds between measurements.

  // Reading temperature or humidity takes about 250 milliseconds!
```

Invalid library found in C:\Program Files (x86)\Arduino\libraries\Data

8 NodeMCU 1.0 (ESP-12E Module), 80 MHz, 115200, 4M (3M SPIFFS) on COM10

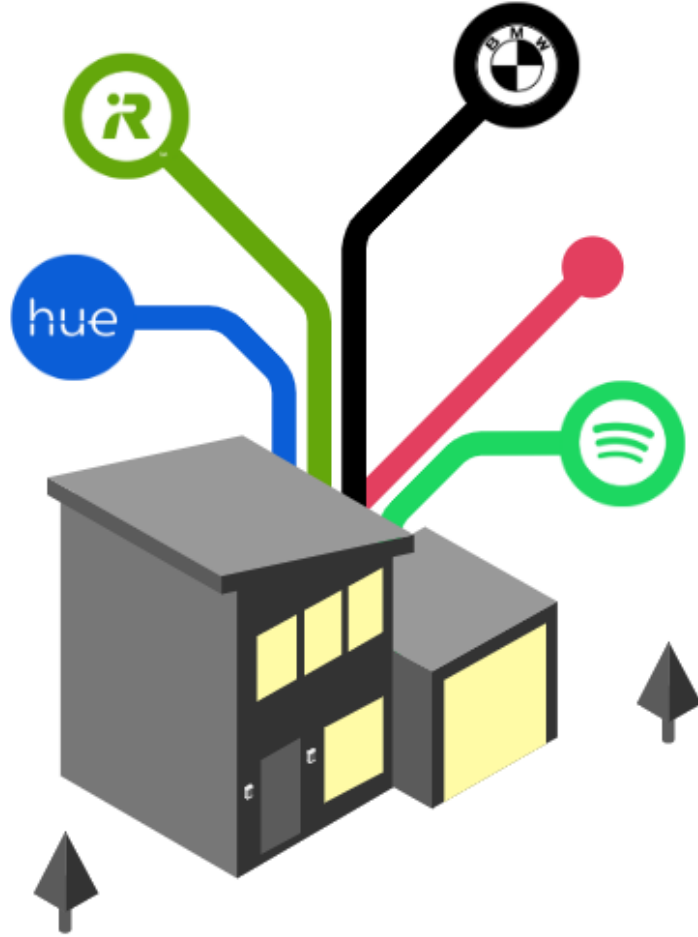


# Internet of thing

# IOT

# device

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# Make your home more relaxing

[Get started](#)

or

[Continue with Google](#)[Continue with Facebook](#)

<https://ifttt.com/>

# IFTTT

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Create your own

# If This Then That

Build your own service on the **IFTTT** Platform [↗](#)

# webhooks

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## Choose a service

Step 1 of 6

Q webhooks|



Webhooks

# trigger

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[< Back](#)

## Receive a web request

This trigger fires every time the Maker service receives a web request to notify it of an event. For information on triggering events, go to your Maker service settings and then the listed URL (web) or tap your username (mobile)



## Choose trigger

Step 2 of 6

# Create trigger name

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## Complete trigger fields

Step 2 of 6

Event Name

The name of the event, like "button\_pressed" or "front\_door\_opened"

**Create trigger**

---

**If**  **Then**  **That**



# Choose action service

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## Choose action service

Step 3 of 6



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[< Back](#)

#### **Send message**

This Action will post a message to LINE.



## **Choose action**

Step 4 of 6

# Define parameter

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## Recipient

รับการแจ้งเตือนแบบตัวต่อตัว ▼

Message destination

## Message

EventName

OccurredAt

Temp: Value1 <br>

Humi: Value2 <br>

Add ingredient

## Photo URL

Add ingredient

EventName

OccurredAt

Temp: Value1 <br>

Humi: Value2 <br>

Add ingredient

Photo URL

Add ingredient

Create action

Step 6 of 6



If Maker Event "MONITOR", then  
Send message

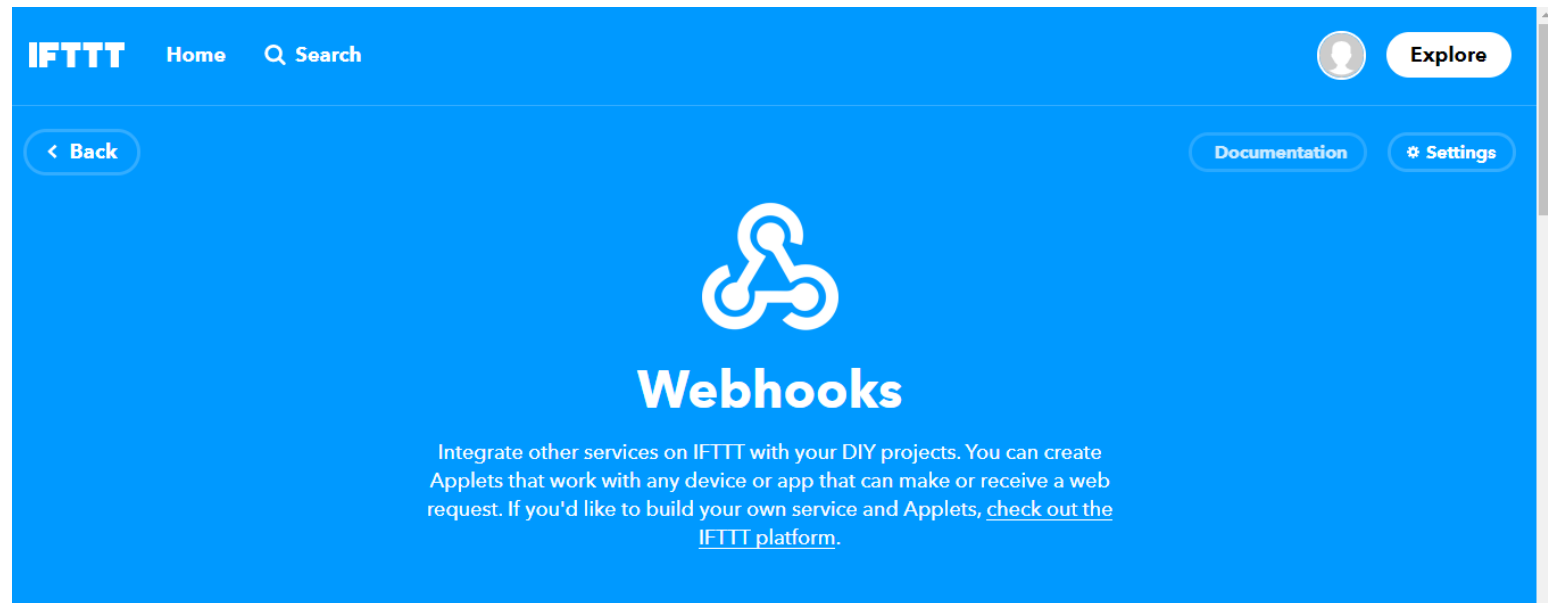
43/140

by surawut1

Receive notifications  
when this Applet runs



**Finish**



# If Maker Event "IOTMONITOR", then Send message

[Edit title](#)

By surawut1

Get notifications when  
this connection is active



- Connected Dec 10, 2019
- Never run

**View activity**

This connection usually runs within a  
few seconds

**Check now**



# Programming

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NodeMCU\_IFTTT\_LINE | Arduino 1.8.0

File Edit Sketch Tools Help



NodeMCU\_IFTTT\_LINE

genJsonObject

senddataToIFTTT

```
/*
 * This sketch sends data via HTTP GET requests to data.sparkfun.com service
 *
 * You need to get streamId and privateKey at data.sparkfun.com and paste them
 * below. Or just customize this script to talk to other HTTP servers.
 */

#include "DHT.h"
#include <ESP8266WiFi.h>

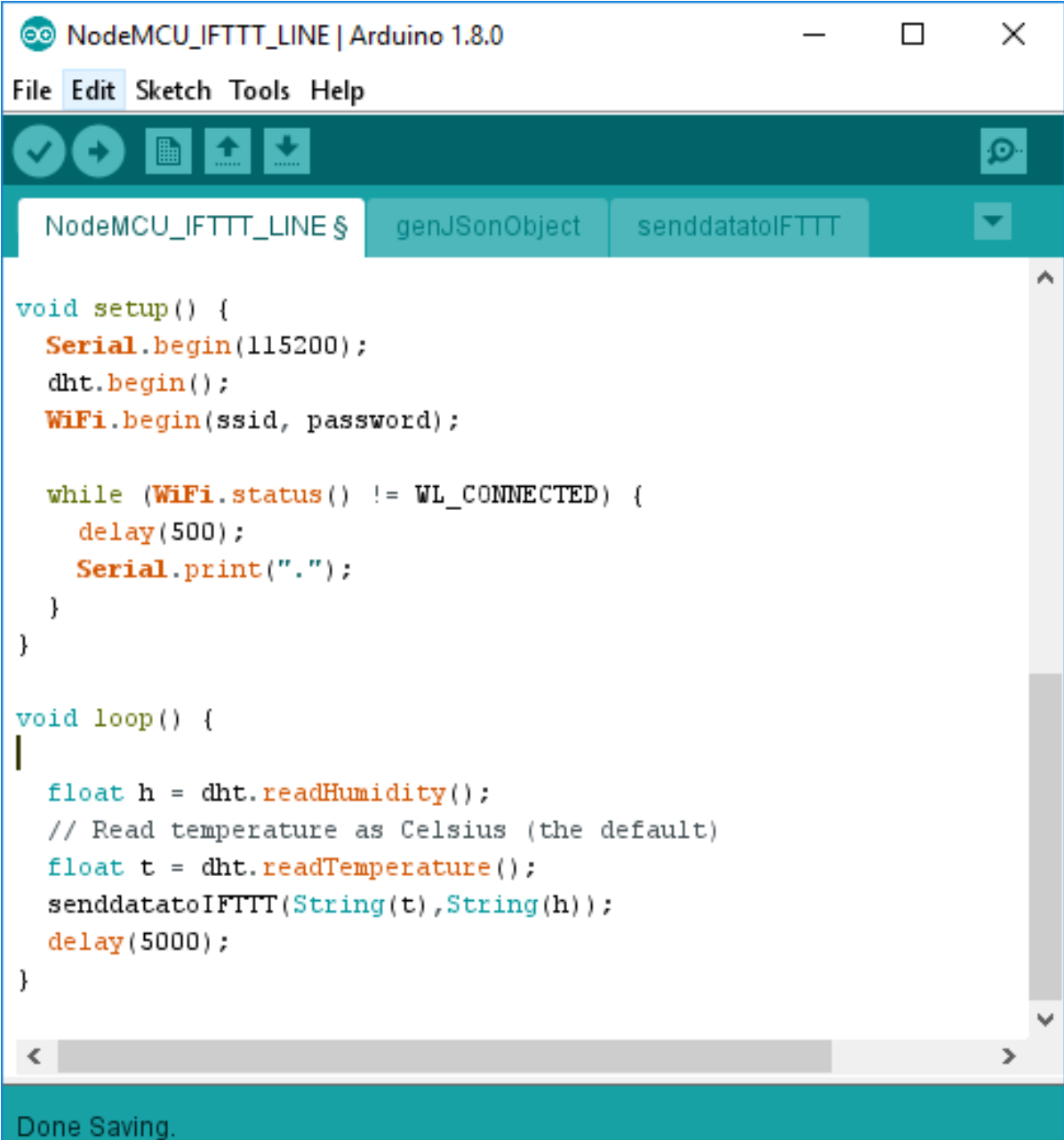
#define DHTPIN 2
#define DHTTYPE DHT11
DHT dht(DHTPIN, DHTTYPE);

const char* ssid = "HOST"; // add your host of network
const char* password = "PASSWORD"; // add your password of network

const char* host = "maker.ifttt.com";
const char *privateKey = "privateKey "; // add your privateKey .
const char *event = "IOTMONITOR";
String value1, value2, value3;
String postData = "";
```

# Programming

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The screenshot shows the Arduino IDE interface with the title bar "NodeMCU\_IFTTT\_LINE | Arduino 1.8.0". The menu bar includes "File", "Edit", "Sketch", "Tools", and "Help". The toolbar contains icons for saving, running, and uploading. The file name is "NodeMCU\_IFTTT\_LINE \$". The code editor displays the following C++ code:

```
void setup() {  
  Serial.begin(115200);  
  dht.begin();  
  WiFi.begin(ssid, password);  
  
  while (WiFi.status() != WL_CONNECTED) {  
    delay(500);  
    Serial.print(".");  
  }  
}  
  
void loop() {  
  float h = dht.readHumidity();  
  // Read temperature as Celsius (the default)  
  float t = dht.readTemperature();  
  senddatatoIFTTT(String(t), String(h));  
  delay(5000);  
}
```

A status bar at the bottom indicates "Done Saving.".

# Example display

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