

HOW TO USE A TEMPERATURE and HUMIDITY SENSOR



DHT11



DHT22

DOCUMENTATION

DHT22 / DHT11

Both sensors measure ambient temperature (°C / °F) and relative humidity (% RH).



WHICH ONE SHOULD YOU CHOOSE?

<https://www.estartrade-ic.com/dht22-vs-dht11-which-one-to-choose/>

MORE INFO:

<https://www.makerguides.com/dht11-dht22-arduino-tutorial/>

<https://learn.adafruit.com/dht>

Image		
Part Number	DHT11	DHT22
Price	\$1 to \$5	\$4 to \$10
Sampling period	1 second	2 seconds
Current supply	0.5 ~ 2.5 mA	1 ~ 1.5 mA
Operating voltage	3 ~ 5.5 V	3 ~ 6 V
Temperature range	0 ~ 50 °C (+/-2 °C)	-40 ~ 80 °C (+/-0.5° C)
Humidity range	20 ~ 90% (+/-5%)	0 ~ 100% (+/-2%)
Body size	15.5mm x 12mm x 5.5mm	15.1mm x 25mm x 7.7mm
Resolution	Humidity: 1% Temperature: 1°C	Humidity: 0.1% Temperature: 0.1° C

WARNING!

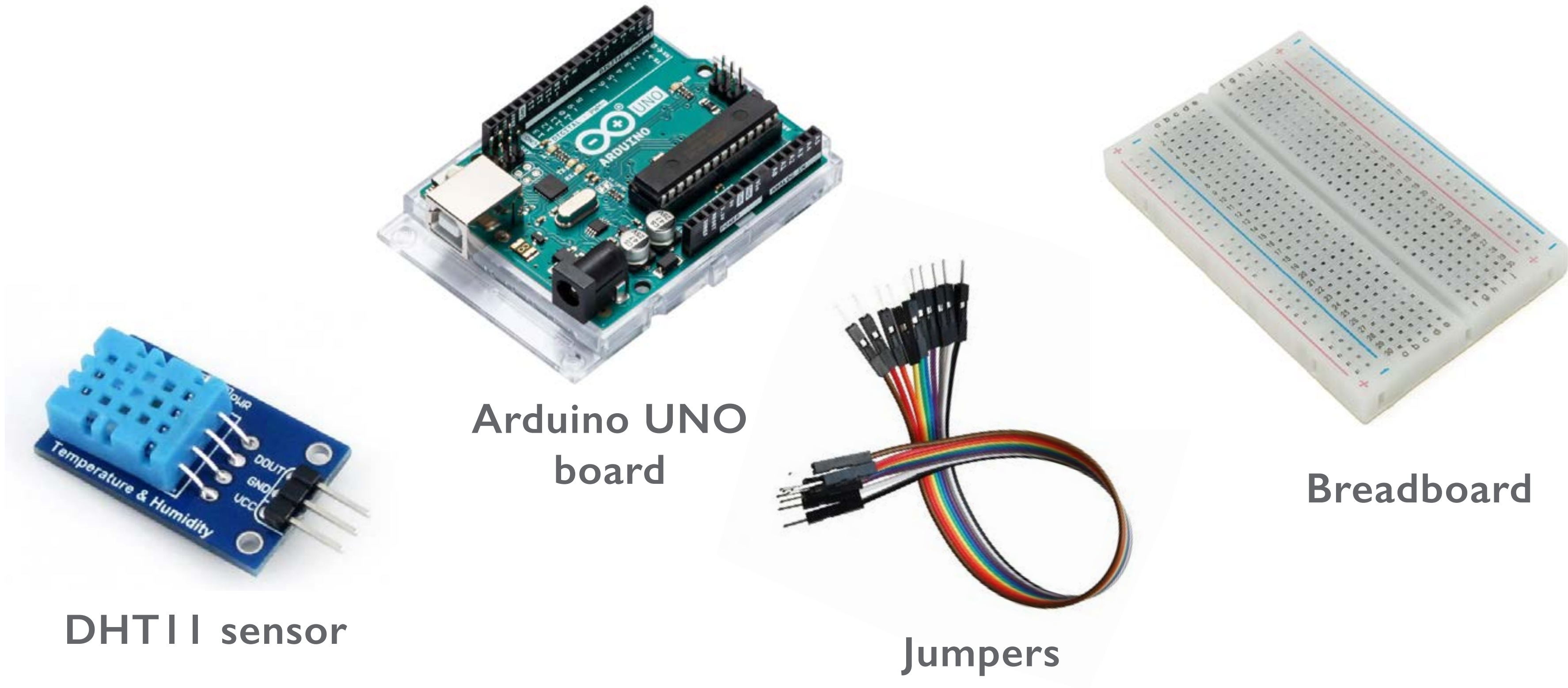
They are not waterproof

ACTIVITY

SENSING AMBIENT TEMPERATURE AND HUMIDITY

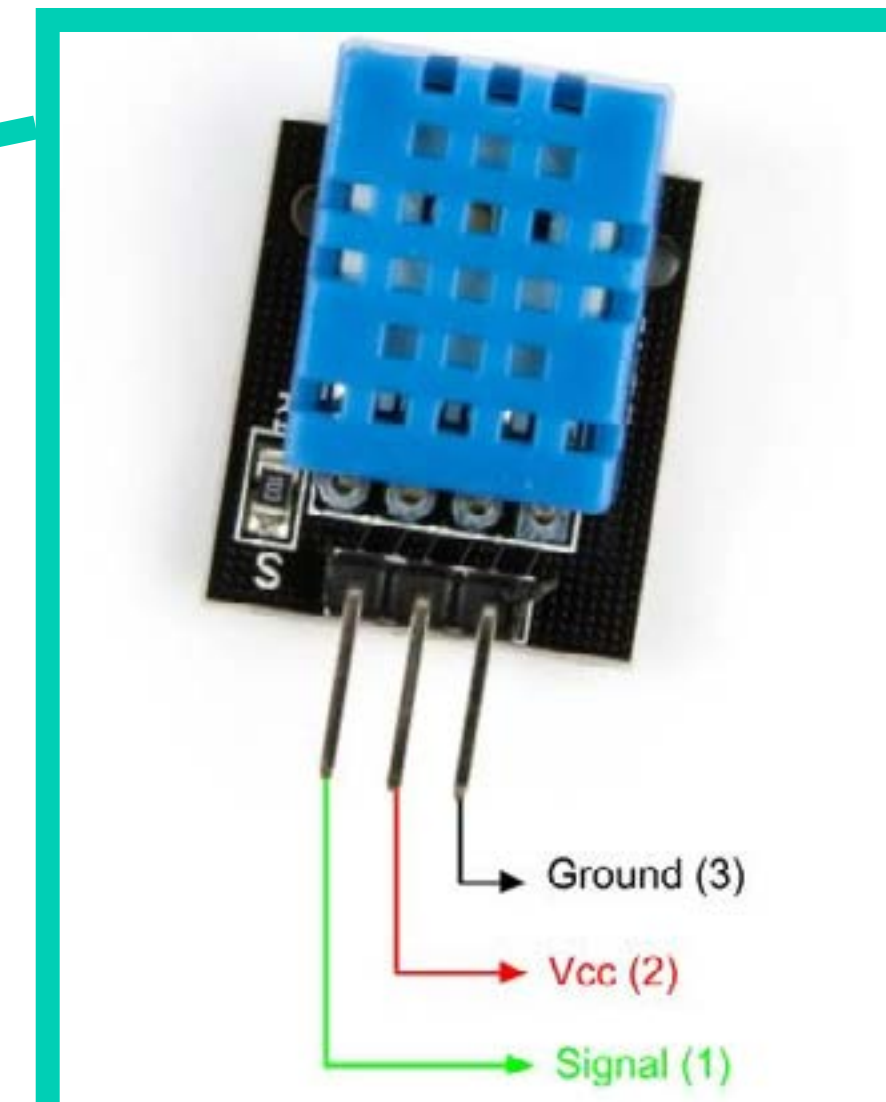
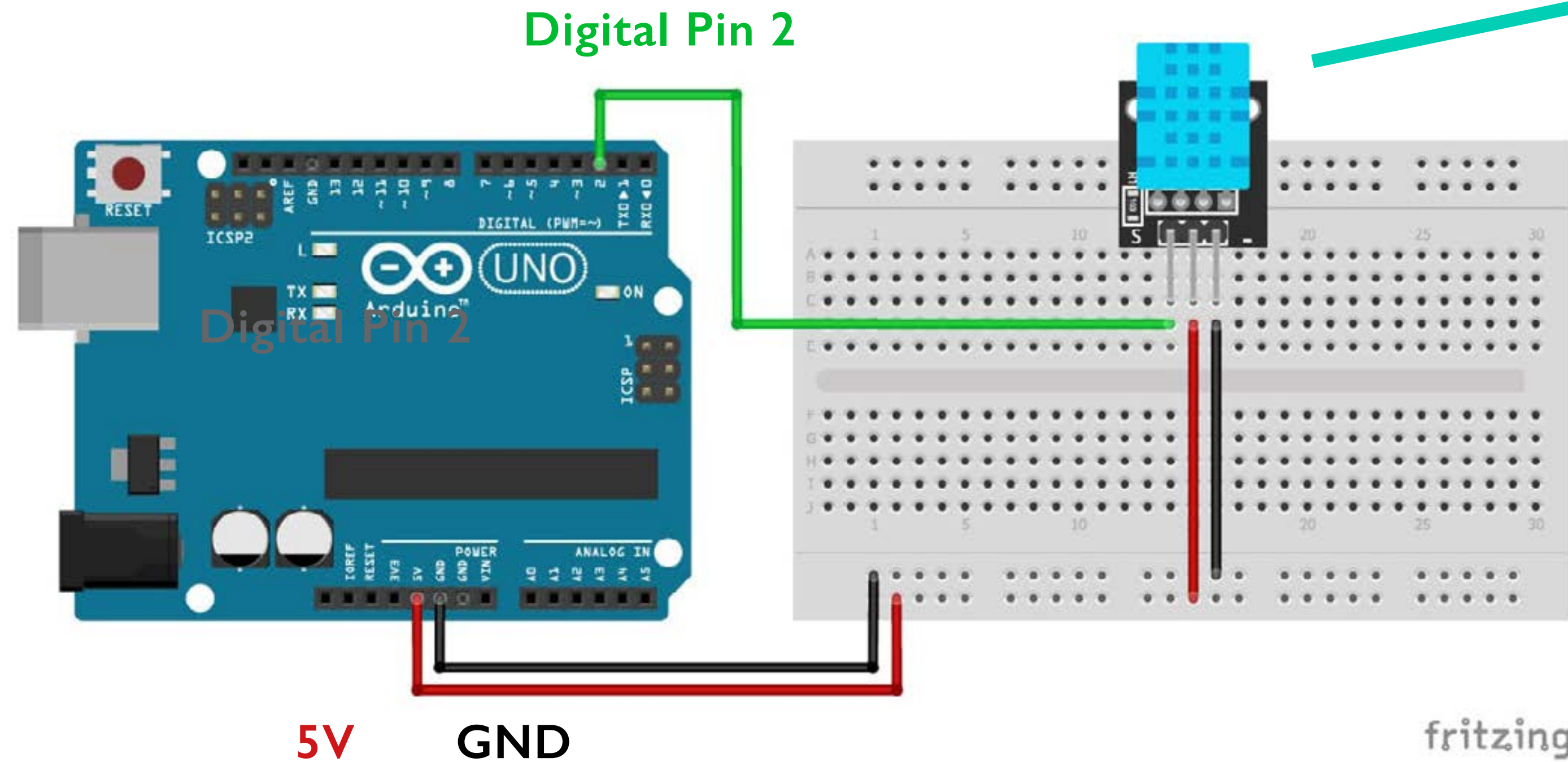
Sensing Environmental Temperature and Humidity

HARDWARE COMPONENTS



Sensing Environmental Temperature and Humidity

WIRING



WARNING!

Some sensors may have different pin order. Look at your sensor and identify the pins for correct wiring:

DHT		Arduino UNO
VCC	_____	5V
GND	_____	GND
Data or Signal	_____	Digital Pin 2

INSTALLING ARDUINO LIBRARIES

STEP 1: Download Libraries

[DHT-sensor-library-master.zip](#)

[Adafruit_Sensor-master.zip](#)

STEP 2: Install Libraries

- Open Arduino IDE
- Go to
Sketch > Include Library > Add .ZIP Library
- Select the libraries previously downloaded

Sensing Environmental Temperature and Humidity

CODING

The link below will direct you to a GitHub website.
Download the code from there.

[Link to download Arduino Code for DHT11 sensor](#)



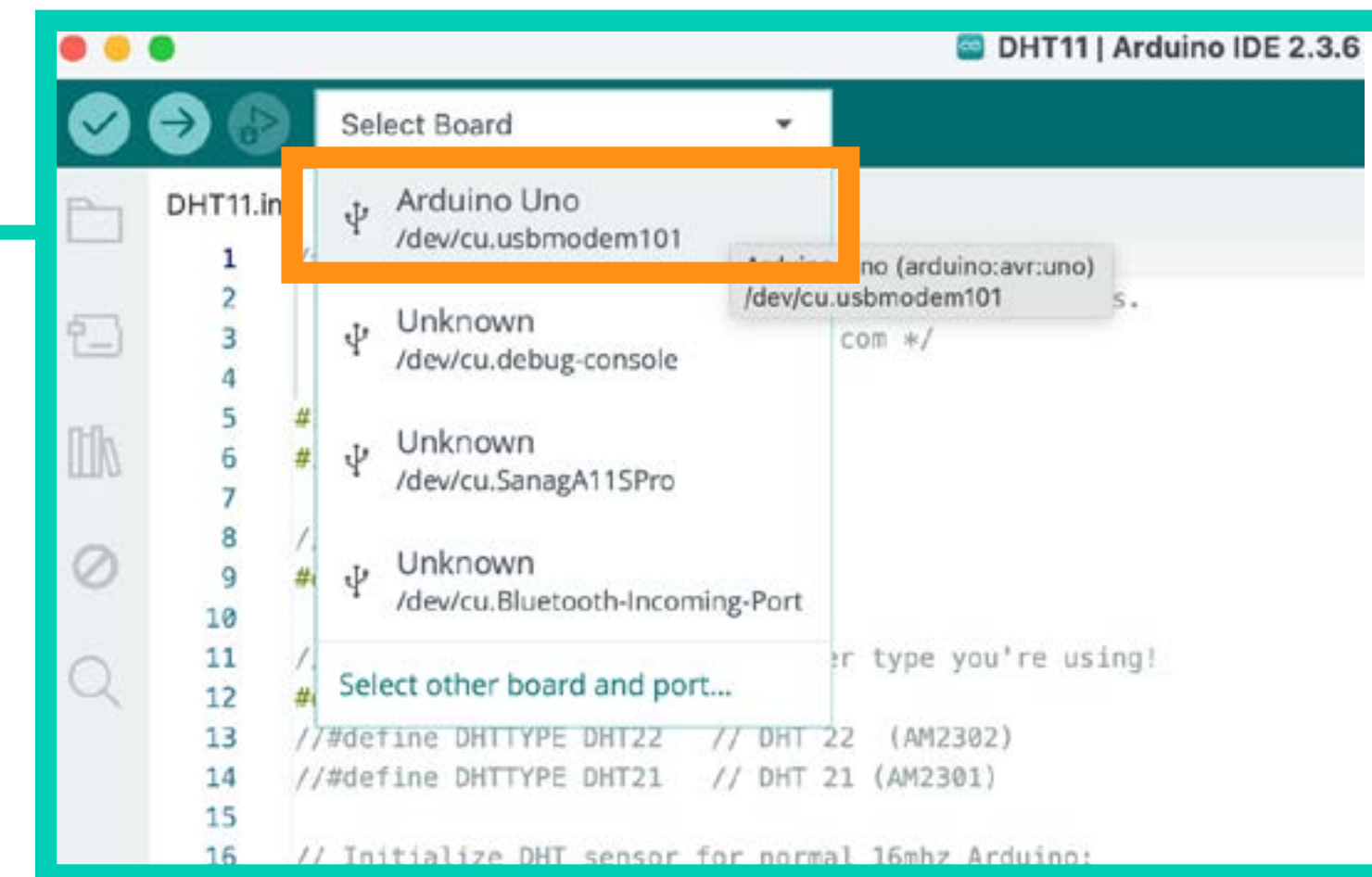
The image shows a screenshot of a GitHub repository page for an Arduino code file. The file is named "Executable File" and has 71 lines (56 loc) and 1.75 KB. The code is written in C++ and is for a DHT11 sensor. The code includes comments and preprocessor directives for DHT11, DHT22, and DHT21 sensors. The code is shown in a dark-themed editor. On the right side of the code editor, there is a toolbar with buttons for "Raw", "Download raw file", "Copy", "Download", "Edit", and a dropdown menu. The "Download raw file" button is highlighted with an orange square.

```
1  /* Arduino example code for DHT11, DHT22/AM2302
2     and DHT21/AM2301 temperature and humidity sensors.
3     More info: www.makerguides.com */
4
5  #include "Adafruit_Sensor.h"
6  #include "DHT.h"
7
8  // Set DHT pin:
9  #define DHTPIN 2
10
11 // Set DHT type, uncomment whatever type you're using!
12 #define DHTTYPE DHT11 // DHT 11
13 //#define DHTTYPE DHT22 // DHT 22 (AM2302)
14 //#define DHTTYPE DHT21 // DHT 21 (AM2301)
15
16 // Initialize DHT sensor for normal 16mhz Arduino:
17 DHT dht = DHT(DHTPIN, DHTTYPE);
18
19 void setup() {
20     Serial.begin(9600);
21
22     // Setup sensor:
```


Sensing Environmental Temperature and Humidity

- Plug The Arduino Board to your computer
- Open the Arduino file (.ino) that you previously downloaded

- Select the **Arduino UNO** Board

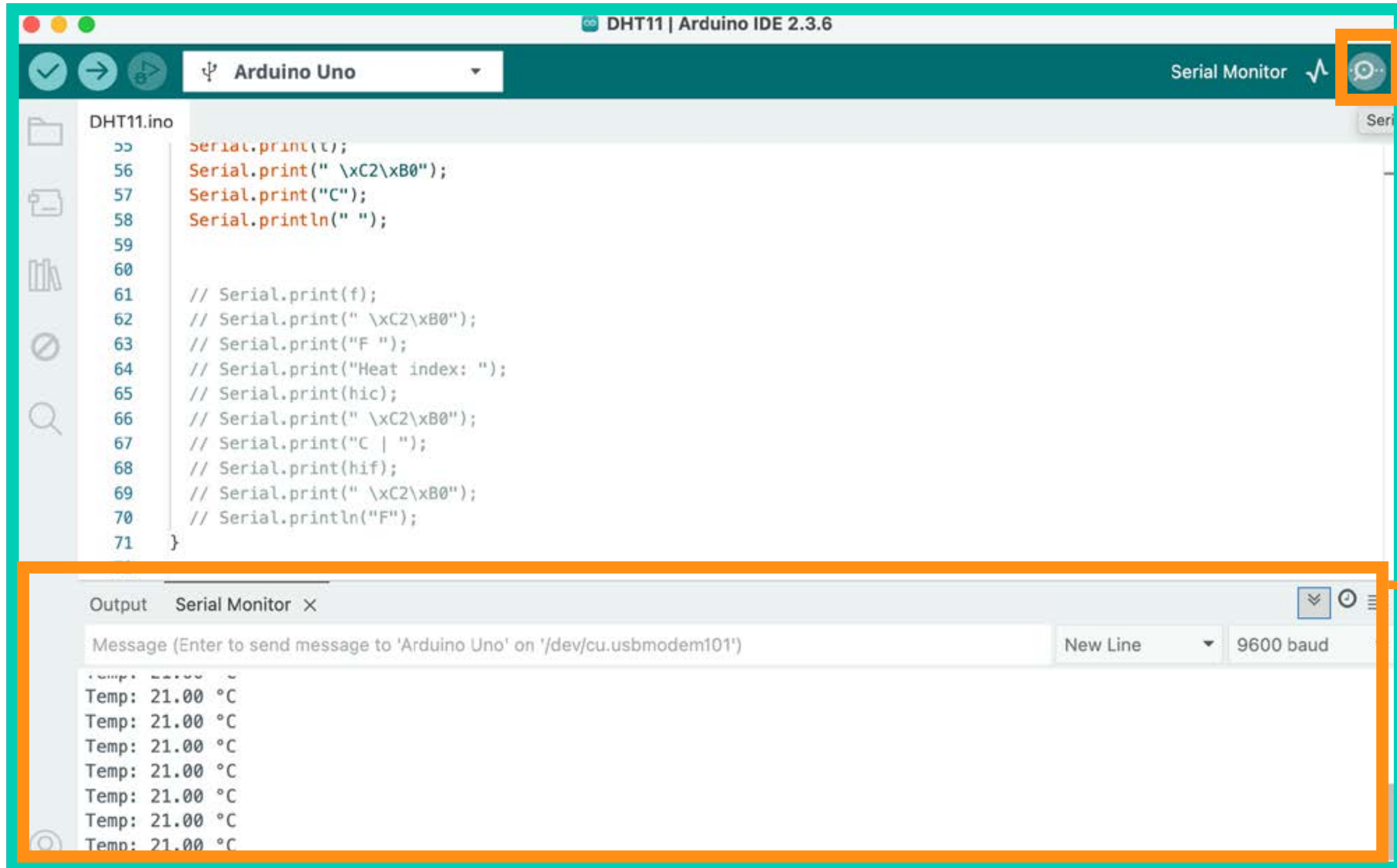


- Upload the code to the board



Sensing Environmental Temperature and Humidity

Open the Serial Monitor to see the incoming data from your DHT11



The screenshot shows the Arduino IDE 2.3.6 interface. The main window displays the code for `DHT11.ino`. The code includes comments and function calls for printing temperature and humidity data to the serial monitor. The Serial Monitor window is open at the bottom, showing the output of the program. The output displays the temperature in Celsius (21.00 °C) for each line of data received. The Serial Monitor window is highlighted with an orange border, and an orange arrow points to the Serial Monitor icon in the top right corner of the IDE.

Click to open Serial Monitor

Serial Monitor:

Printing Data in-real-time from your DHT11 sensor

Sensing Environmental Temperature and Humidity

Incoming Data:

```
dht.readTemperature()           // Ambient Temperature °C (Celsius)
dht.readTemperature(true)       // Ambient Temperature °F (Fahrenheit)
dht.readHumidity()              // Relative Humidity(RH) in %
dht.computeHeatIndex(t, h, false/true); // Heat Index (“Feels Like” Temp °C/°F)
```

Troubleshooting:

- Research online sources, look for examples.
- Approach to a hackSpace technician. Bring your code and equipment.

