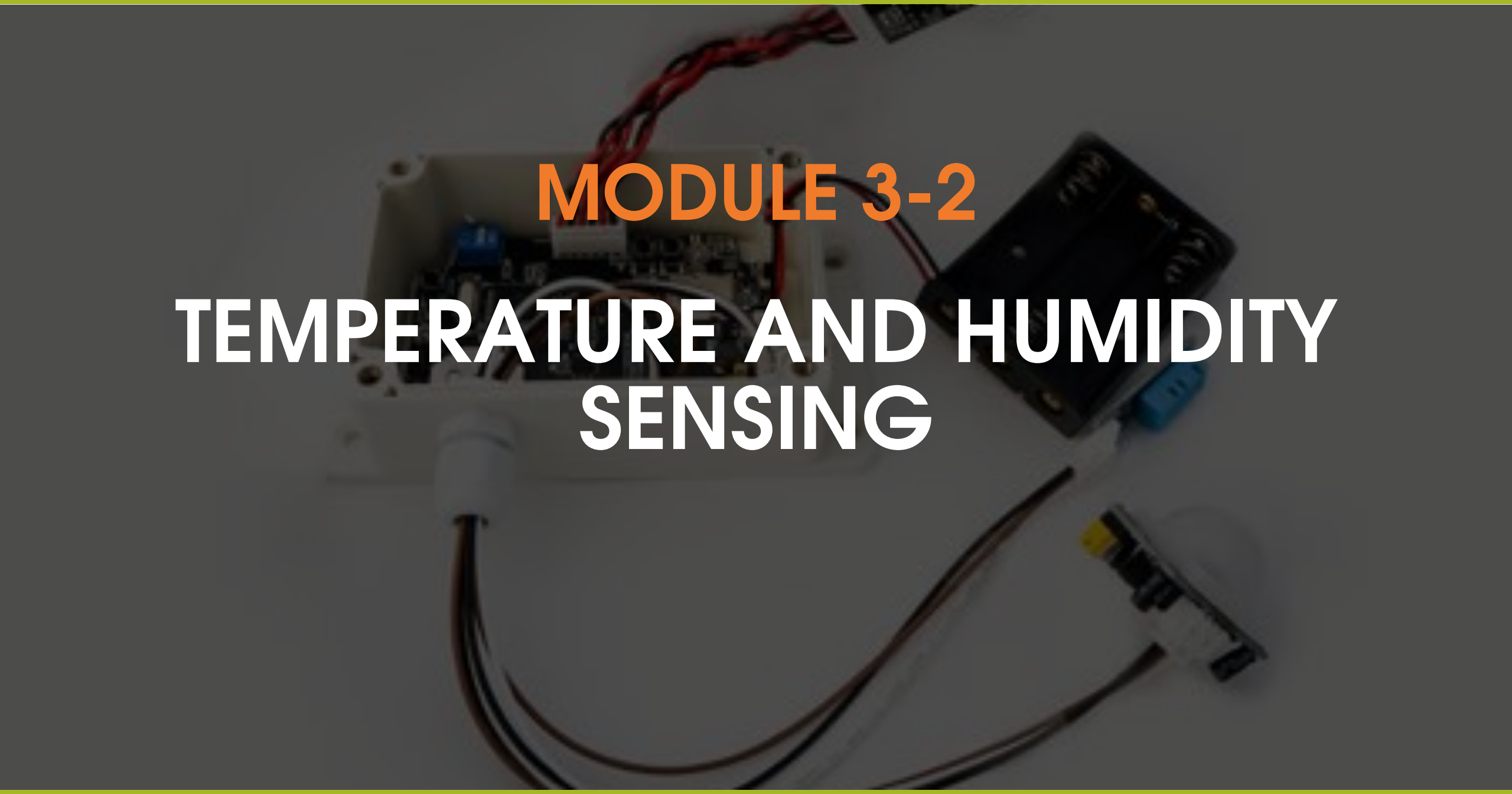
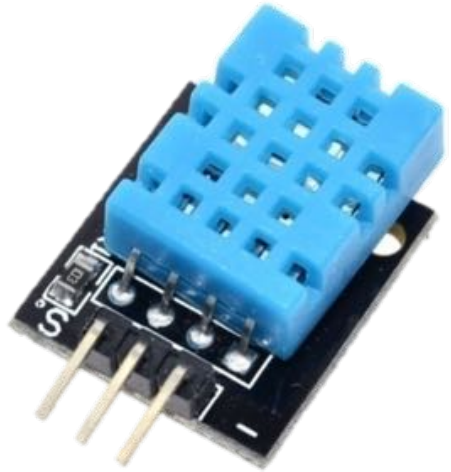

VIRTUAL COURSE
BUILD YOUR OWN
DATA LOGGER
WILDLABS.NET
[The conservation technology network]
FREAKLABS



MODULE 3-2

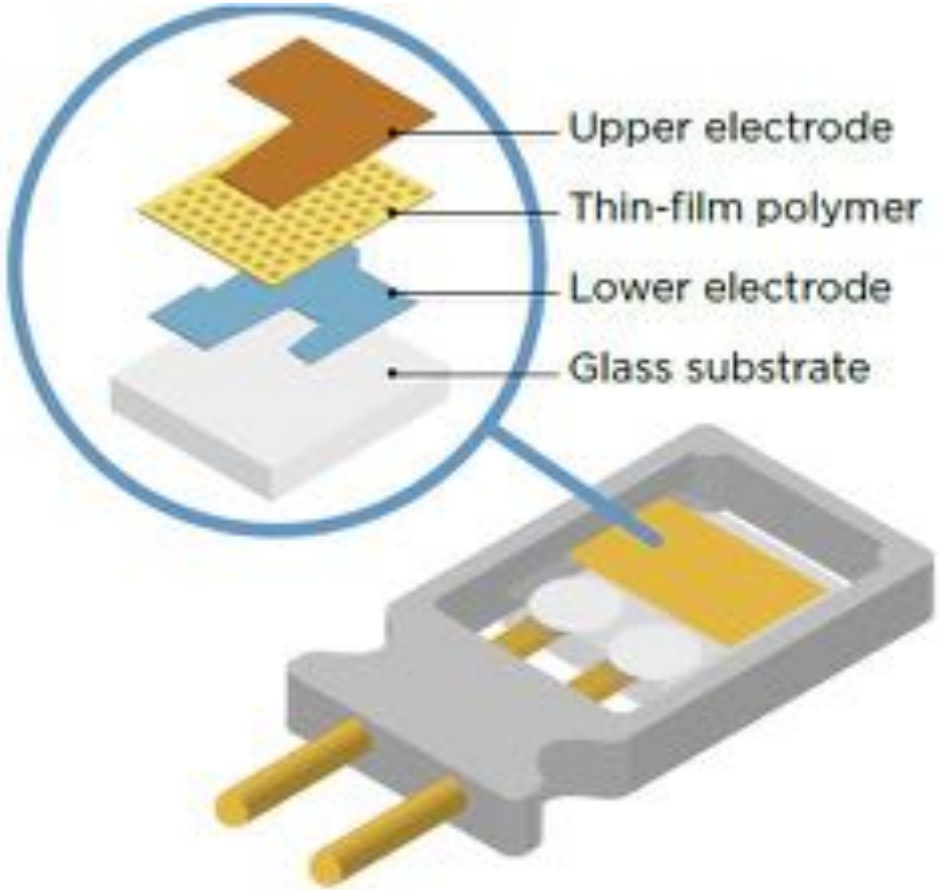
TEMPERATURE AND HUMIDITY SENSING

Temperature

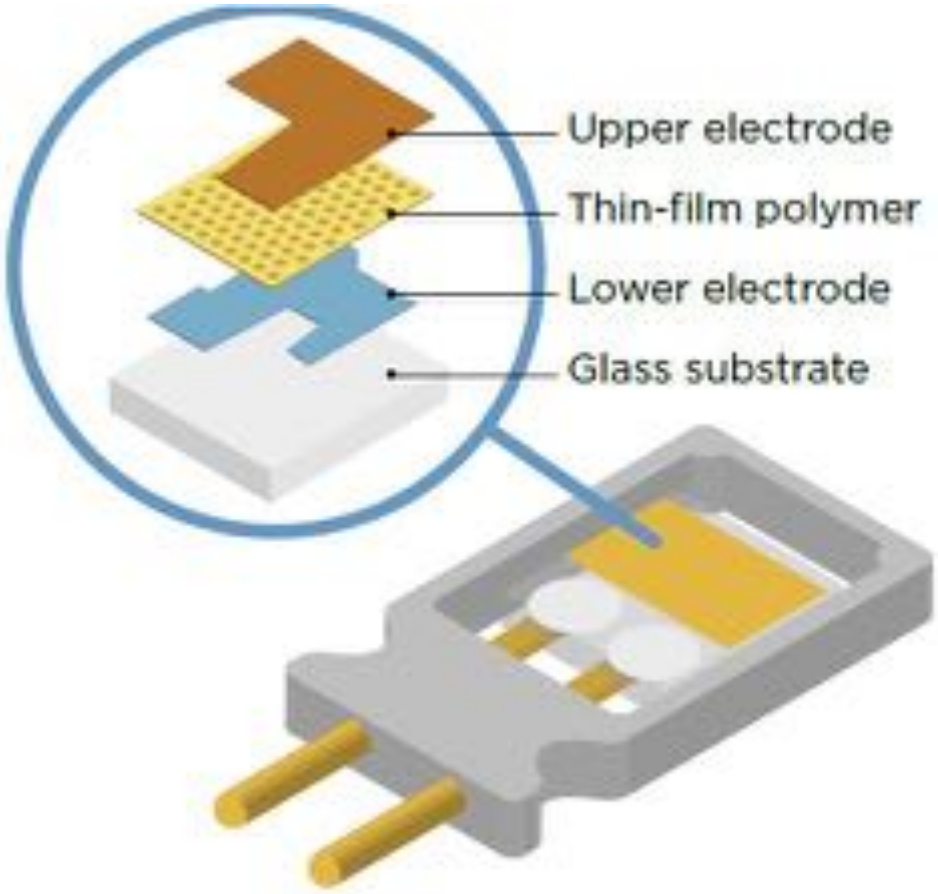


Humidity

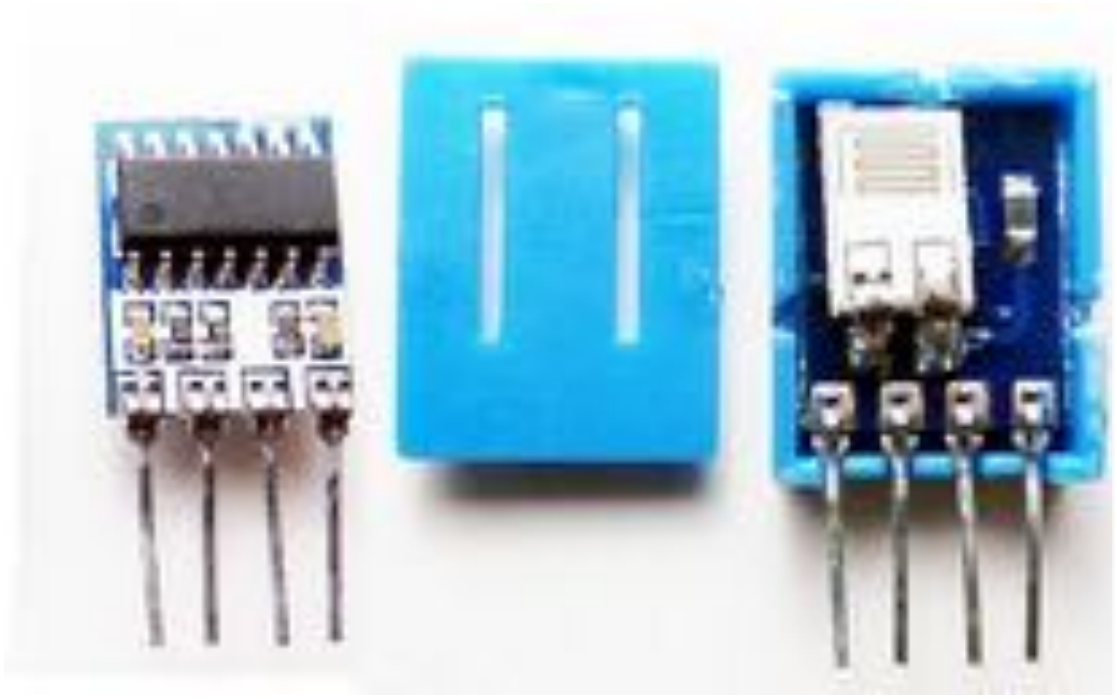

40
50
60
30
70
NORMAL
20
80
10
90
0%RH
100
Shortland Bowen
HYGROMETER
CORONA
CIGAR Co.

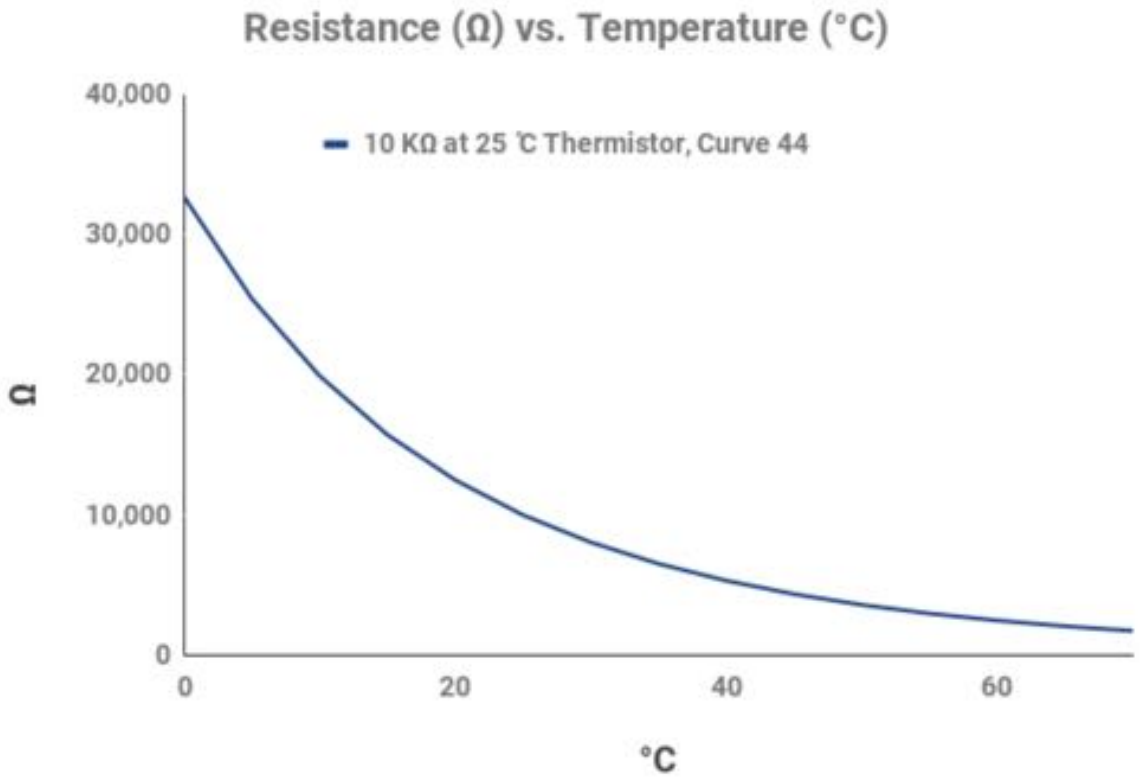

Upper electrode
Thin-film polymer
Lower electrode
Glass substrate

DHT11 - Humidity

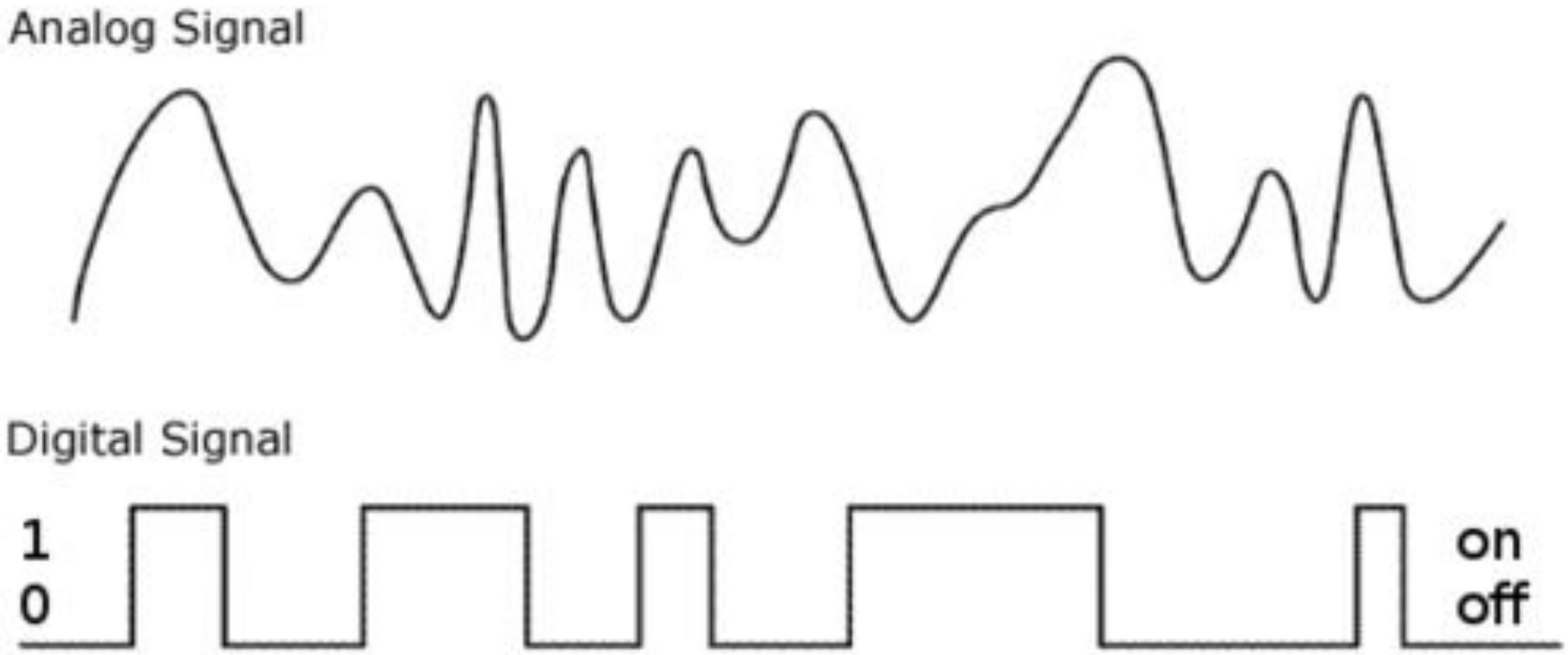


DHT-11 Temperature

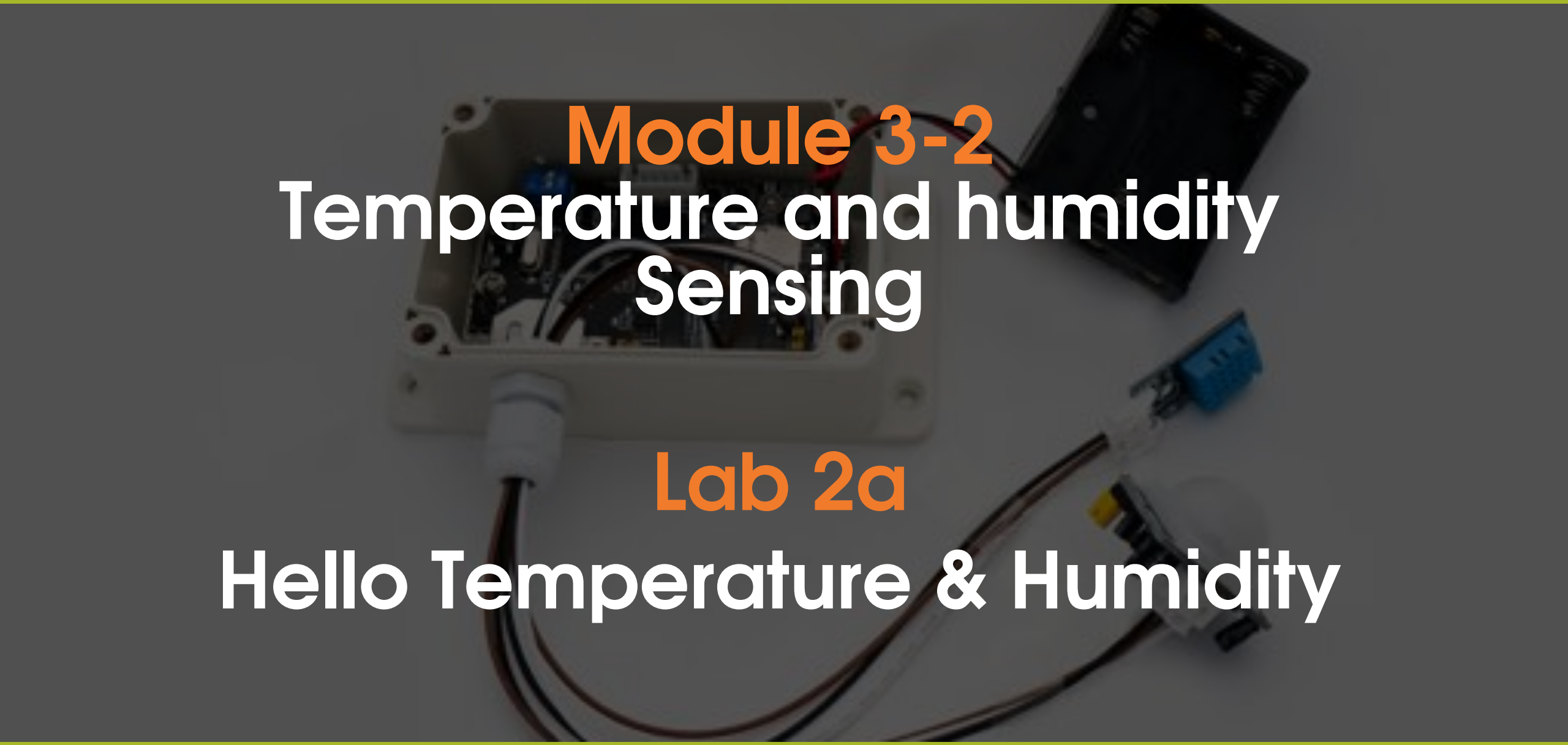




DHT-11 Temperature



DHT-11 Temperature



Module 3-2
Temperature and humidity Sensing

Lab 2a
Hello Temperature & Humidity

Lab 2a – Hello Temperature & Humidity

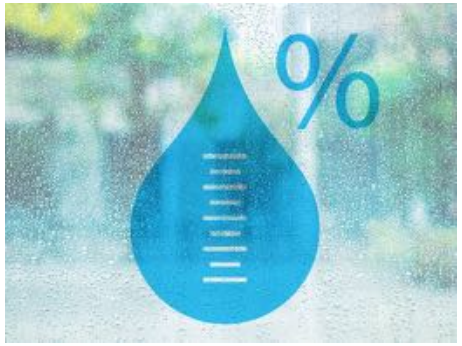
Goal:

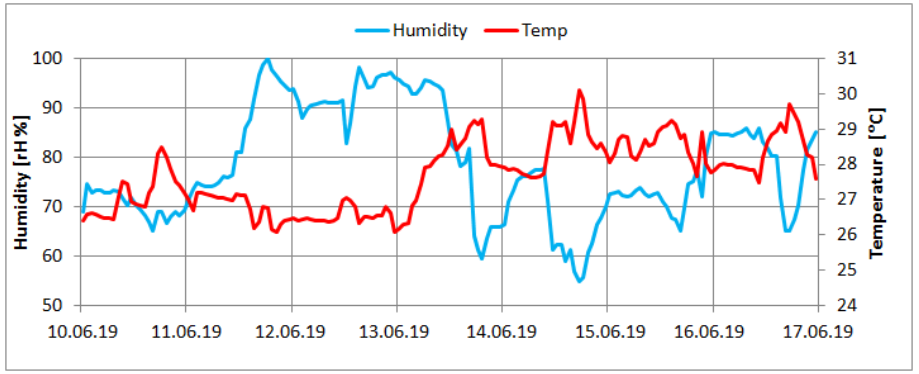
- Install DHT11 sensor library
- Read temperature and humidity from sensor

Lab 2a – Hello Temperature & Humidity

Why do I need to know this?

- Environmental factors that affect humans and animals
- Important for health and safety
- Affects storage of things like food, equipment
- Also potentially environmental variable that can affect behavior





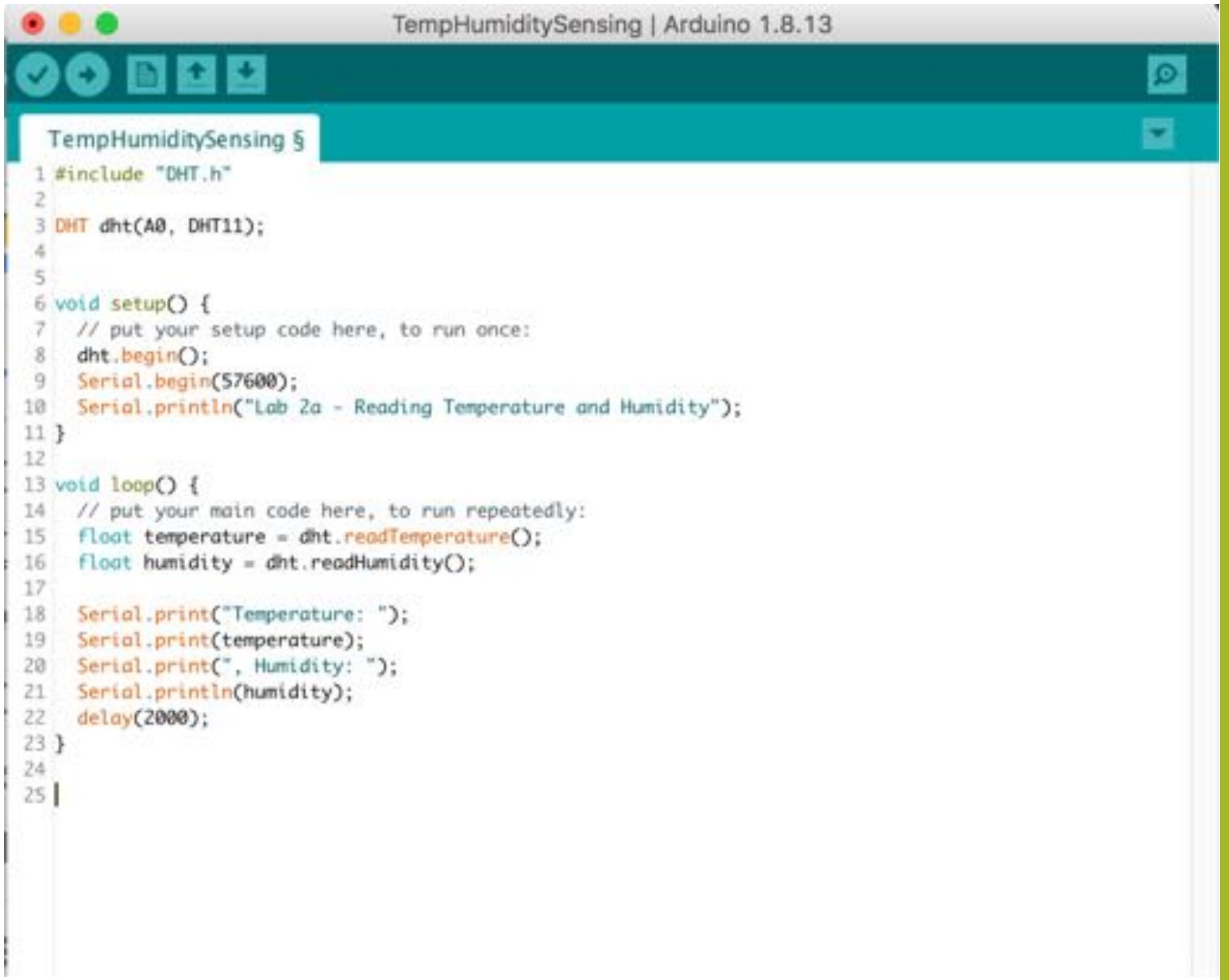
Lab 2a – Hello Temperature & Humidity

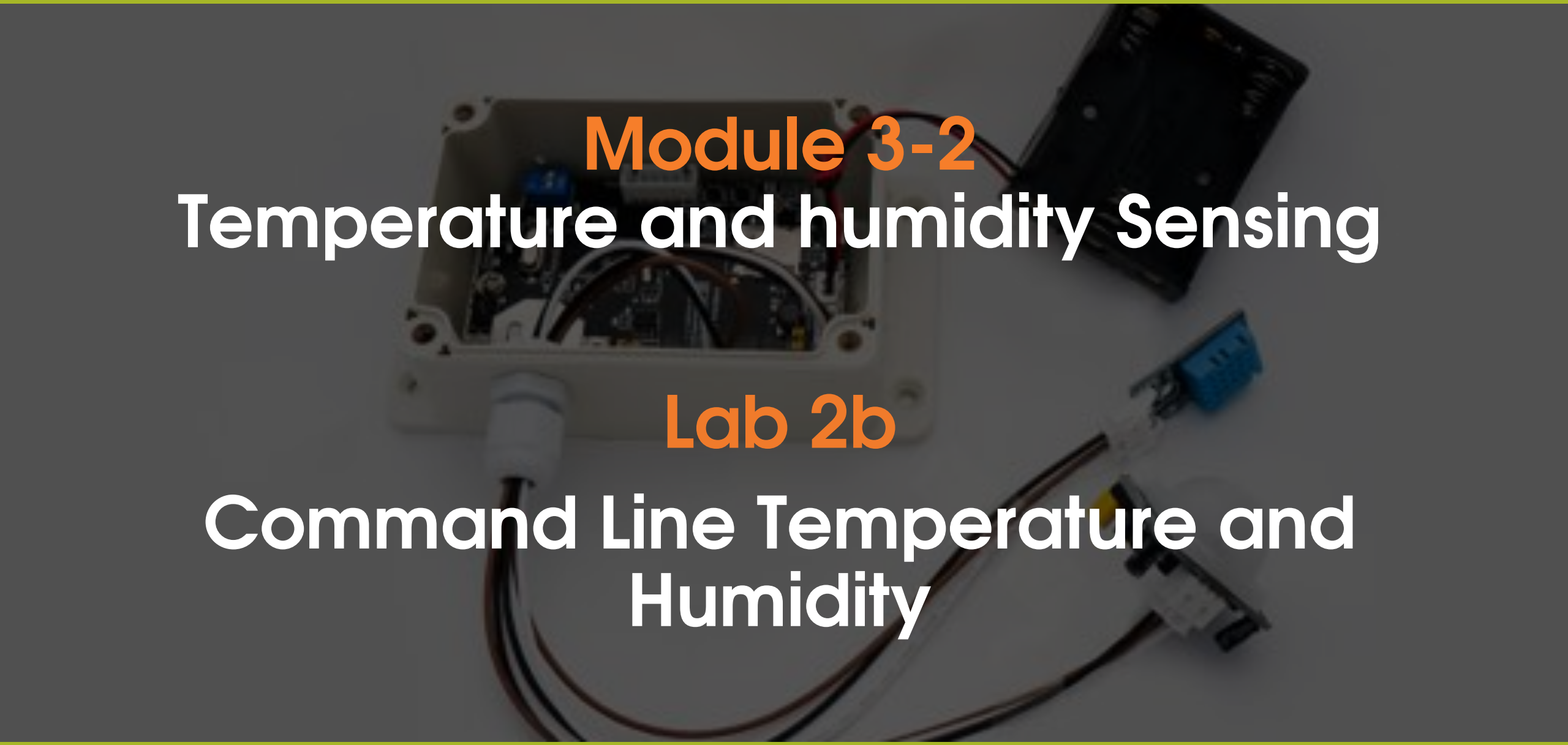
What do I need to know?

- Install DHT11 library via Arduino Library manager
  - Also need to install Adafruit Unified Sensor Library
- **DHT dht(pin, sensor)**
  - Constructor that initializes sensor object
- **dht.begin()**
  - Initializer for the sensor
- **dht.readTemperature()**
  - Read temperature from sensor in Celsius units
- **dht.readHumidity()**
  - Read temperature from sensor in %RH

Lab 2a

Temperature & Humidity Sensing





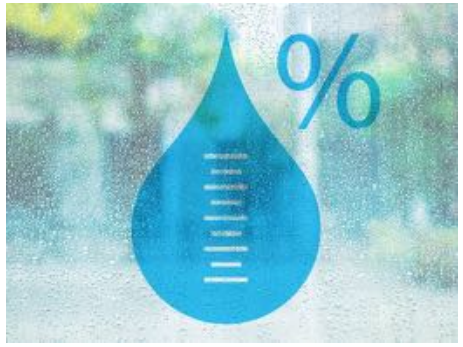
Module 3-2
Temperature and humidity Sensing

Lab 2b
Command Line Temperature and Humidity

Lab 2b – Command Line Temp & Humidity

Goal:

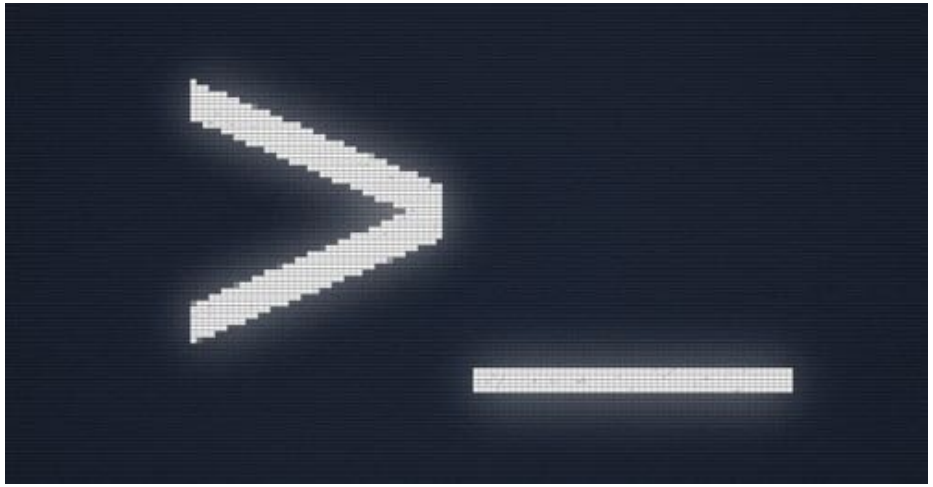
- Create a command that prints out the temperature
- Create a command that prints out the humidity



Lab 2b – Command Line Temp & Humidity

Why do I need to know this?

- We can interactively test out the sensor without having to constantly loop readings
- We can combine the interactive commands with other commands into a test program

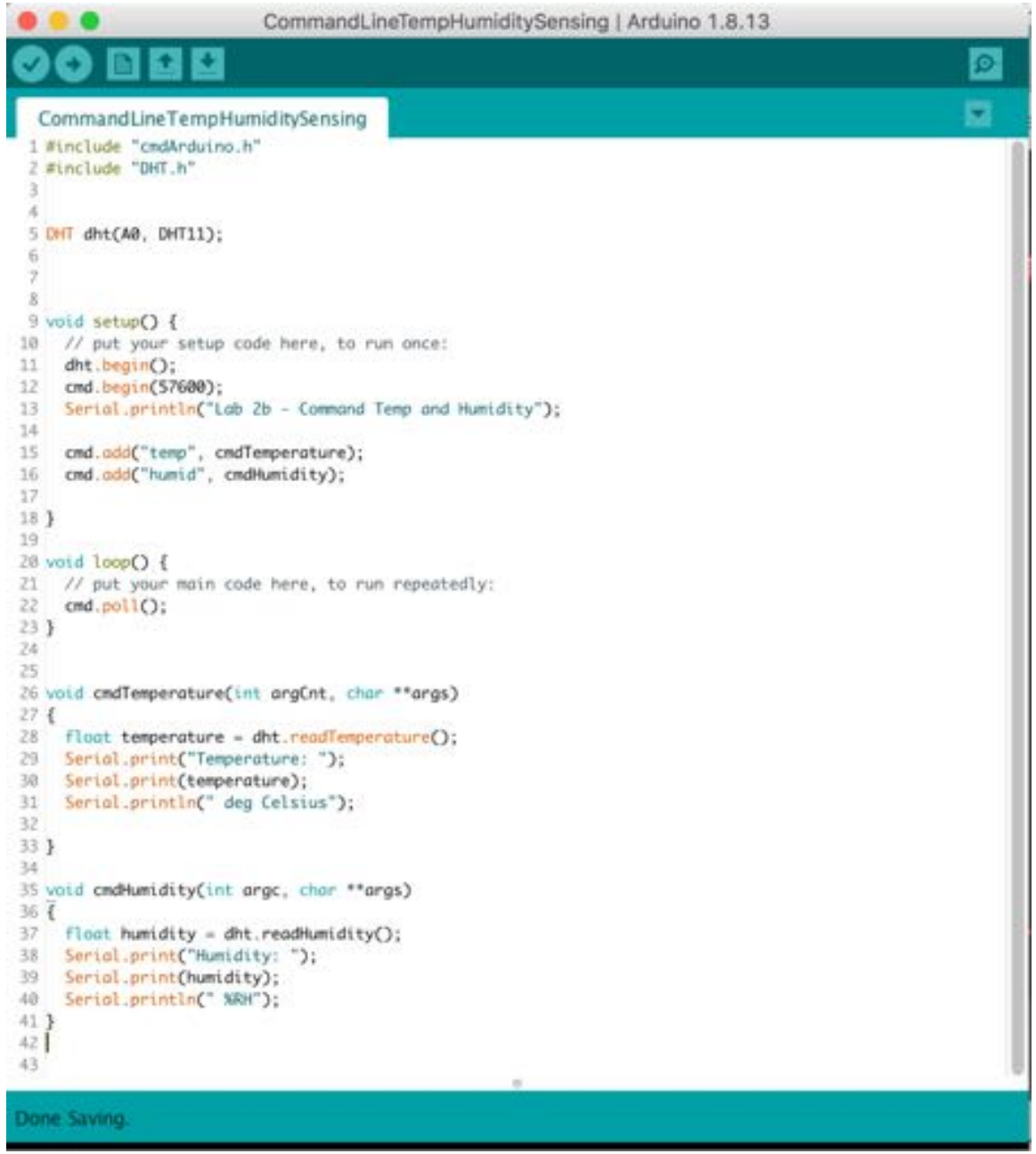


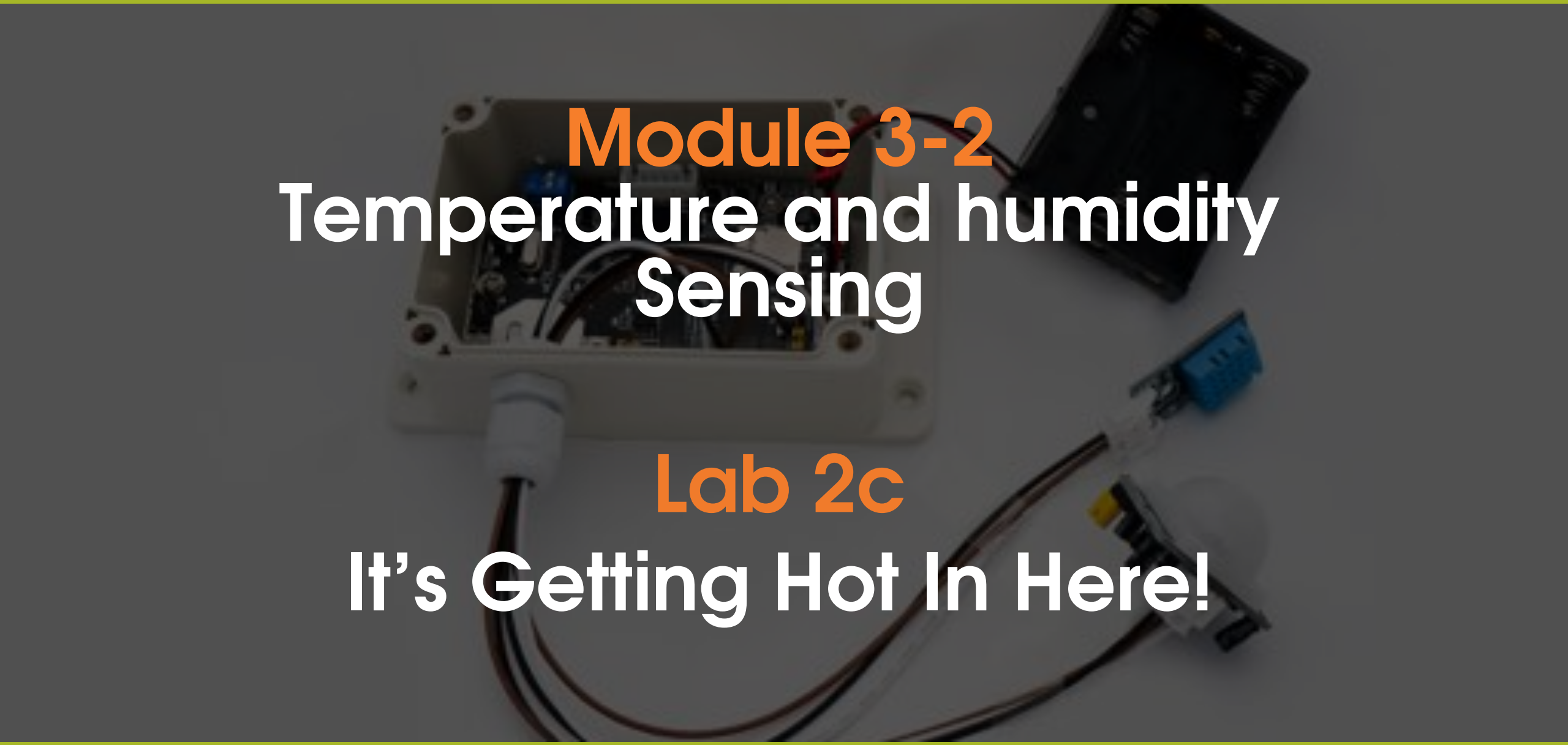
Lab 2b – Command Line Temp & Humidity

What do I need to know?

Lab 2b

Command Line – Temperature & Humidity Sensing





Module 3-2
Temperature and humidity Sensing

Lab 2c
It’s Getting Hot In Here!

Lab 2c – It's Getting Hot In Here!

Goal:

- Create a program that uses sensor input to trigger an output

Lab 2c – It's Getting Hot In Here!

Why do I need to know this?

- Understanding temperature control
- Using information from sensors to trigger outputs

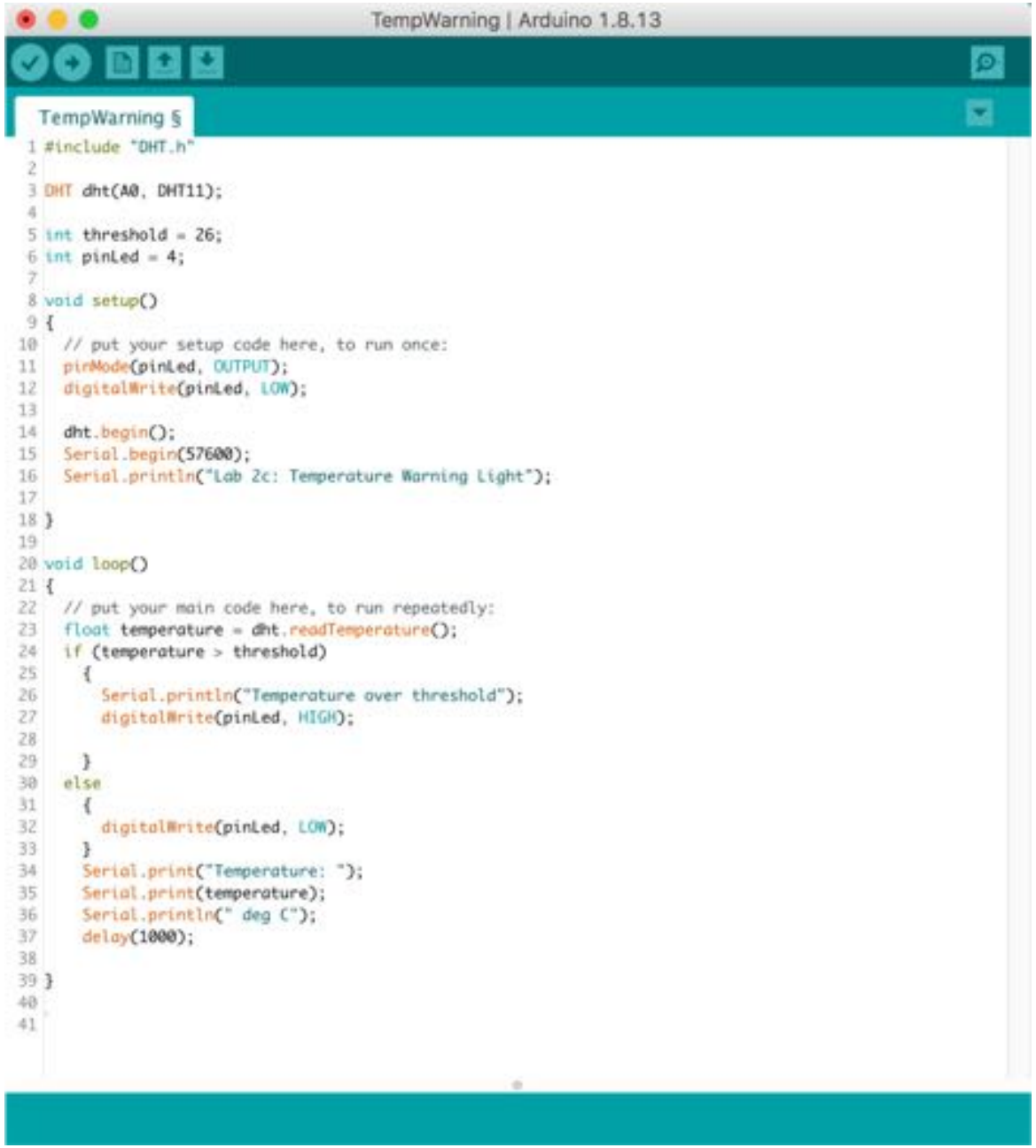
Lab 2c – It's Getting Hot In Here!

What do I need to know?

- Conditional statements
  - **if (something > somethingElse) doSomething();**

Lab 2c

Temperature Over Threshold Warning



COMING UP

Module 3-3

Measuring Battery Status With the ADC