

## In lesson 1, you learned how to:

- use `ssh` to log into a remote computer (`ssh pi@[ip_address]`)
- navigate the Linux command line, including how to create new files and how to edit them
  - `ls`
  - `cd`
  - `cp`
  - `mv`
  - `touch`
  - `nano`
  - `cat`
  - `sudo`
  - tab completion
  - history recall
  - relative paths (`~`, `.`, `..`)
- create variables and print in python
- create python scripts (plain text files with the `.py` extension) and how to run them (`python3 [filename]`)
- write a python script that can ask for input and return a response
- write a python script with an if-then statement

## In lesson 2, you learned how to:

- import a python library (e.g. `import RPi-GPIO`)
- wire up a three-color LED using a breadboard, jumper wires, and a 470ohm resistor
- write a script that made the LED blink on and off, and another that made it change color
- write a loop that would repeat indefinitely (`while True:`)

## Today, for lesson 3, you will learn how to interface with sensors

- we will focus on a temperature sensor and a motion sensor
  - try to understand how they work
  - try to read the provided script and figure out how to wire them up
- once they are both working, see if you can combine forces. What can you make with the two sensors and LEDs?

Below, you will find two python scripts. One is for a temperature/humidity sensor (the DHT/AM2302). The other is for a generic motion (PIR) sensor. Before typing them in, look them over. Can you figure out how they work? See if you can decipher what these programs might do before typing them in.

Then, at the bottom of the page, you will find two images that contain information about the “pinout” of each sensor. In each case, see if you can figure out how to wire up the sensor. Remember that Vcc is the voltage (5v).

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```
import RPi.GPIO as GPIO
import Adafruit_DHT
import time

sensor = Adafruit_DHT.AM2302
sensor_pin = 23

GPIO.setmode(GPIO.BCM)

GPIO.setup(23, GPIO.OUT)

while True:

    humidity, temperature = Adafruit_DHT.read_retry(sensor, sensor_pin)
    print('Temp: {0:0.1f} C Humidity: {1:0.1f} %'.format(temperature, humidity))
    time.sleep(2)

GPIO.cleanup()
```

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```
from gpiozero import MotionSensor

pir = MotionSensor(14)

while True:
    pir.wait_for_motion()
    print("You moved")
    time.sleep(2.5)
    pir.wait_for_no_motion()
    print("Very still.")
    time.sleep(2.5)
```

