

# Thirsty Flamingo Workshop



LAPTOP/DESKTOP

Download:

✓ The Arduino interface

(<https://www.arduino.cc/en/Main/Software>)



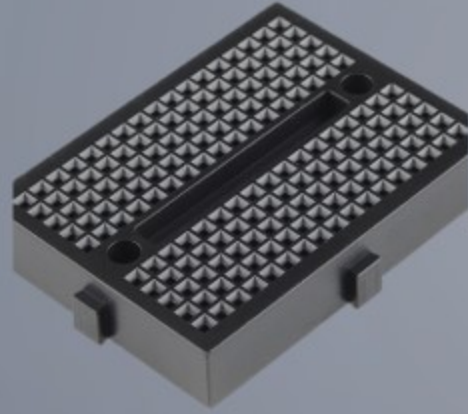
✓ The ThirstyFlamingoMaster.zip.

(<https://goo.gl/ZhbTBR>)





# MATERIALS



- Breadboard

- Diode



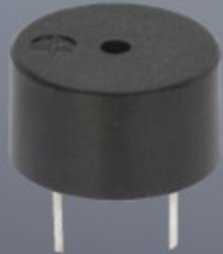
- Resister



- Transistor



- Speaker



- Moisture sensor

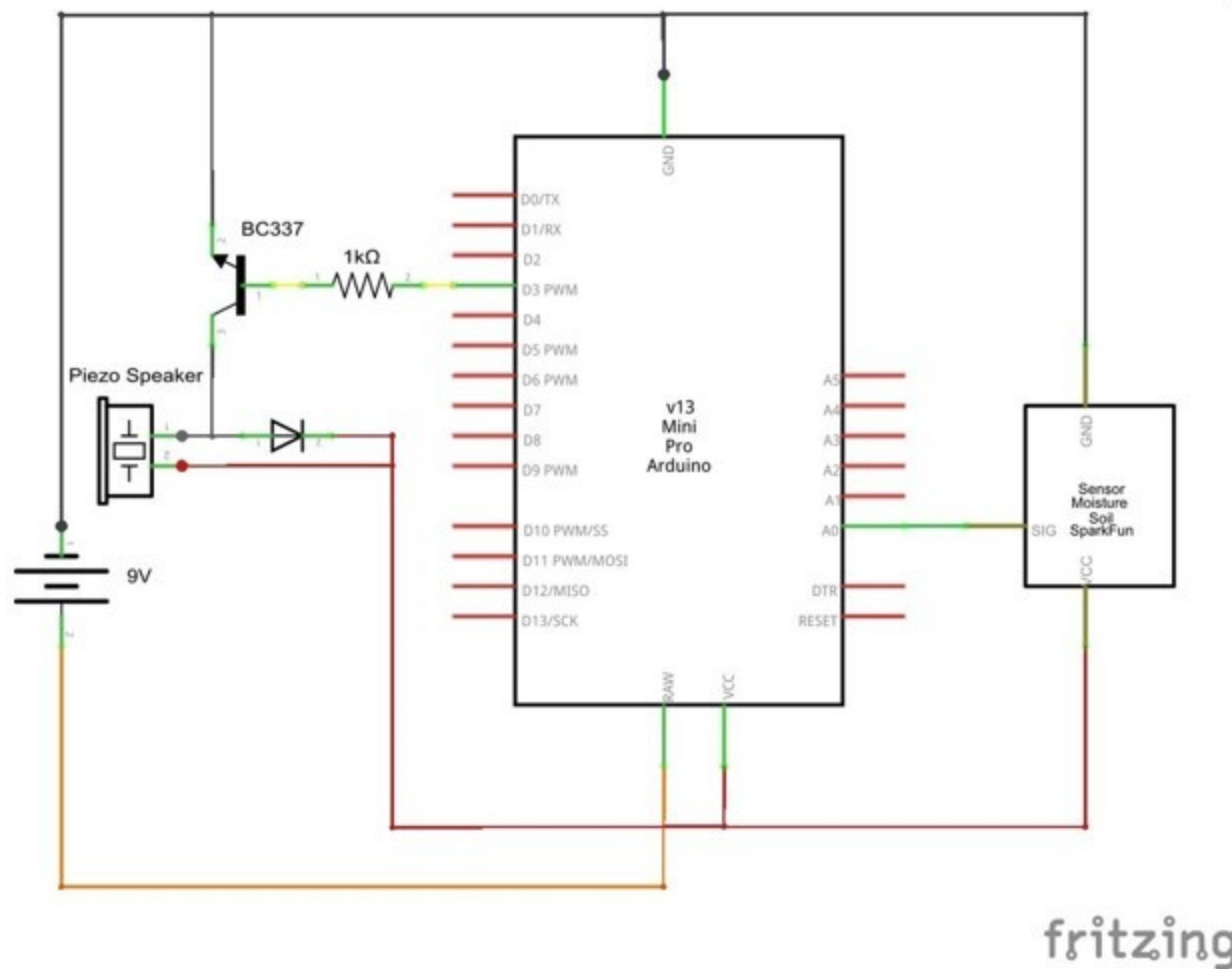


- Wires

# SAFETY PRECAUTIONS



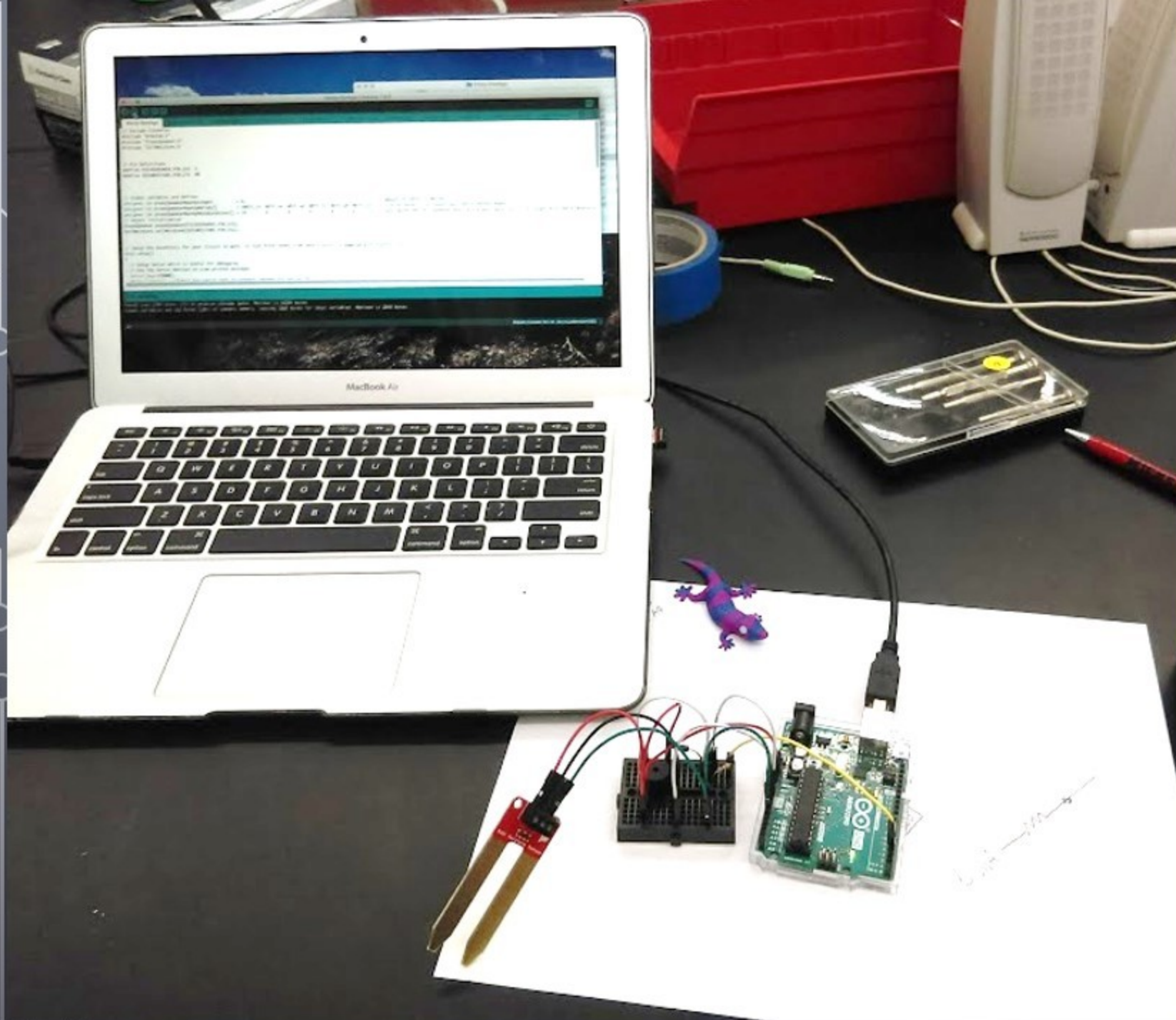
- **DO NOT touch** electronics running on a power source.
- If you must, rule of thumb: put one arm behind your back.
  - Prevents the flow of current



## A GENERAL OVERVIEW OF THE CIRCUITS

(from: <http://www.instructables.com/id/Thirsty-Flamingo/>)





END GOAL

# Instructions

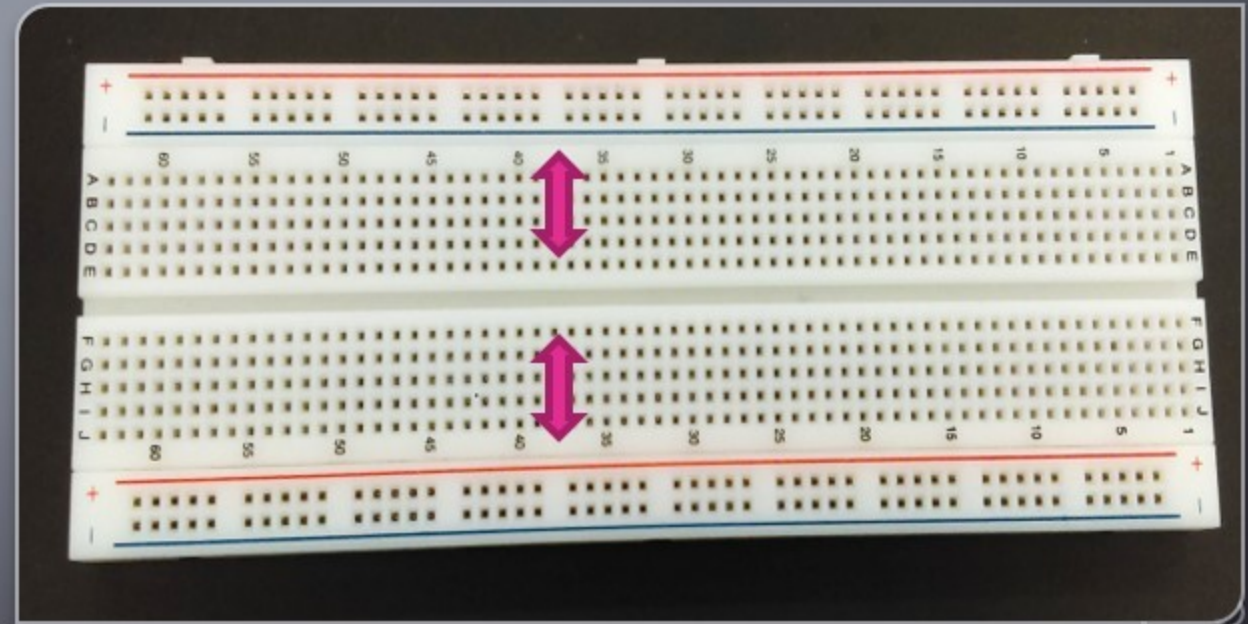




## PUTTING IN THE COMPONENTS (1)

Breadboard: have it facing  
you.

- Connections run up and down, **not** side to side. The divide separates the connections.

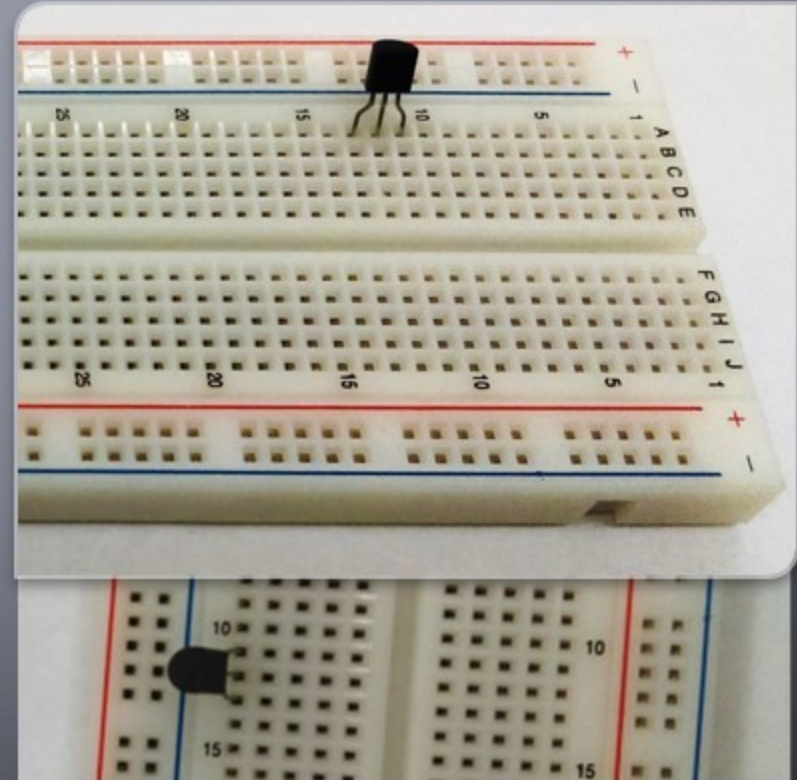


## PUTTING IN THE COMPONENTS (2)

**Transistor:** placed in the **top line** of the breadboard. Have at least 3 slots open to its side.

**Flat side** of the transistor should be facing you (makes it easier to define which prong is which).

- Used as a switch or an amplifier.

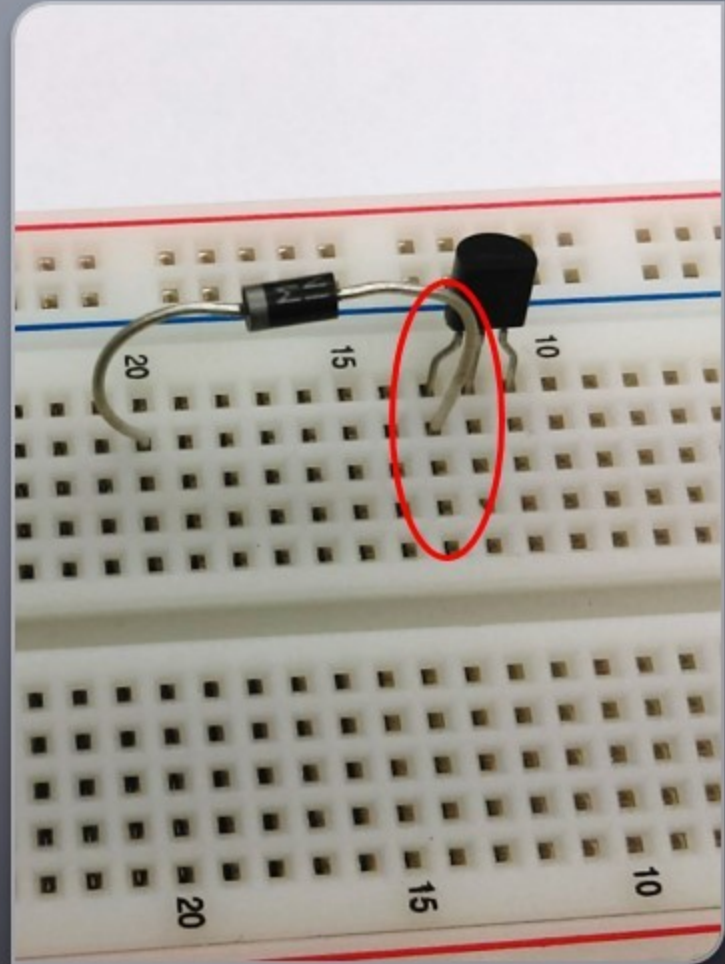




## PUTTING IN THE COMPONENTS (3)

**Diode:** one end is inserted just under the **left prong** of the **transistor** and the other end towards its left. The diode can be any length apart but keep it within 4 slots.

- Only lets current flow in one direction. Acts like a circuit breaker. This is done by inserting it into the opposite direction.





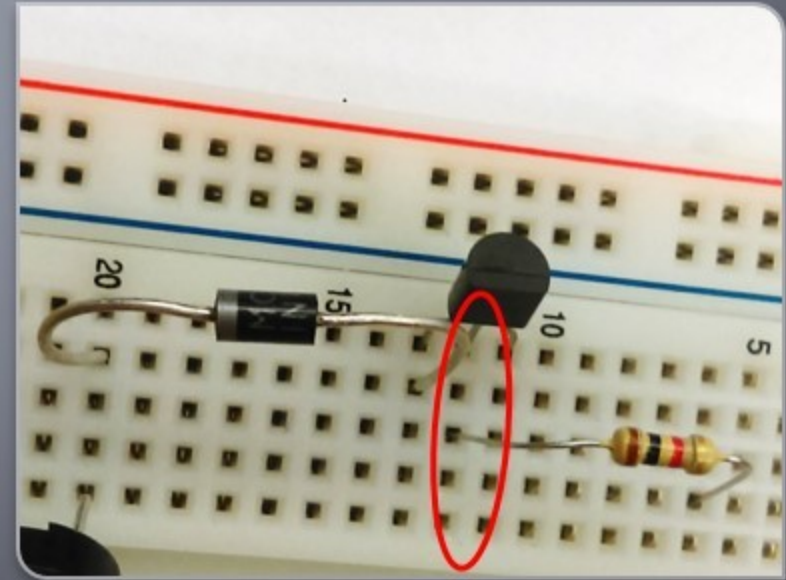


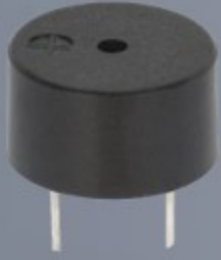
## PUTTING IN THE COMPONENTS (4)

**Resister:** one end goes in the current line of the **middle prong of transistor**

The other end goes to the right in any slot (keep it 4 or less)

- Current flows in any direction. Full of insulating material. Depending on the type and size, lowers current from one side to the other.

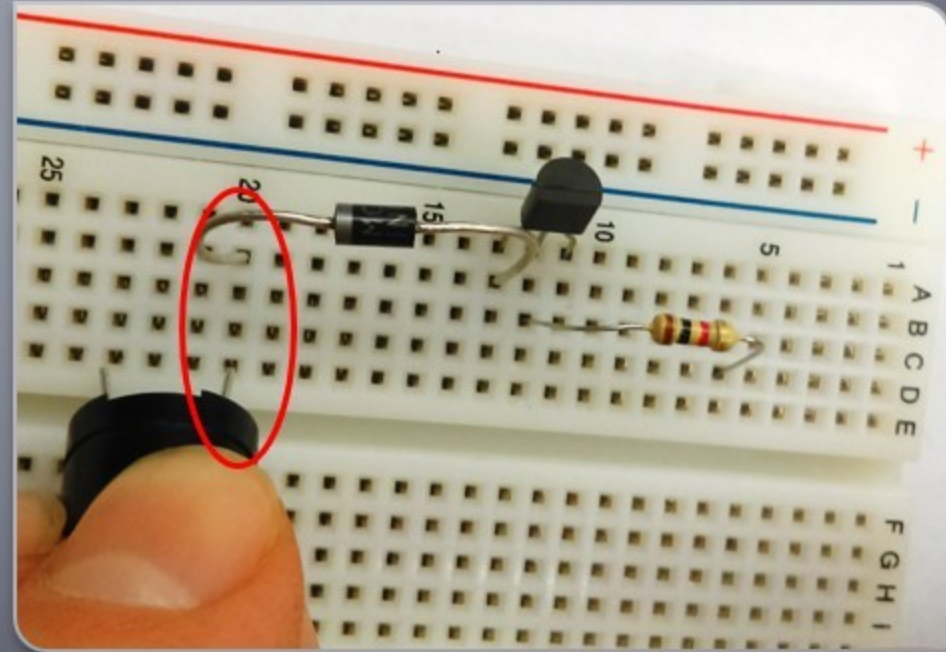




## PUTTING IN THE COMPONENTS (5)

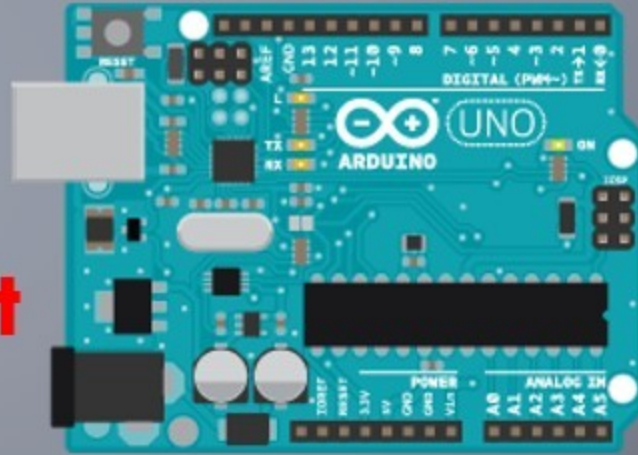
**Speaker:** may need to pull the prongs apart. One prong goes below the **left end** of the **diode** current line.

- Makes sound



# WIRING

Have Arduino out



Wire colour is arbitrary but it helps to designate certain colours for specific tasks.

- **Red** - “live” wire (has current going through it)
- **Green** – “signal” wire
- **Black** – “ground” (end point)
- **Blue** – “digital” wire

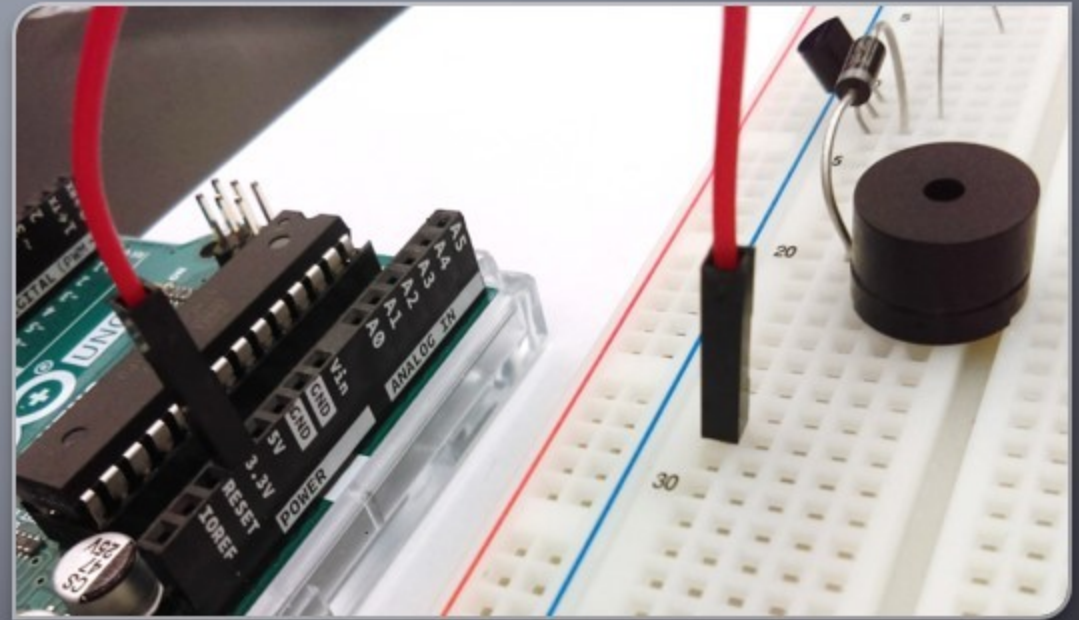


## WIRING (6) LIVE WIRES (RED)

Put one end into **3.3V** of **Arduino**.

Connect the other end in any line that does not connect with the current line of the components.

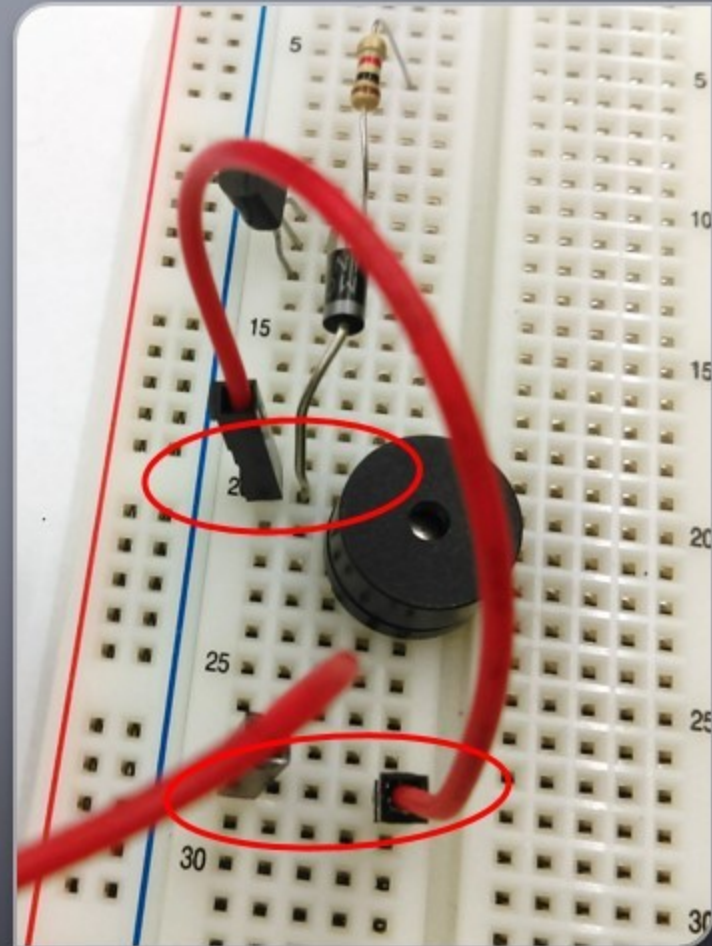
- This is where you get your power from



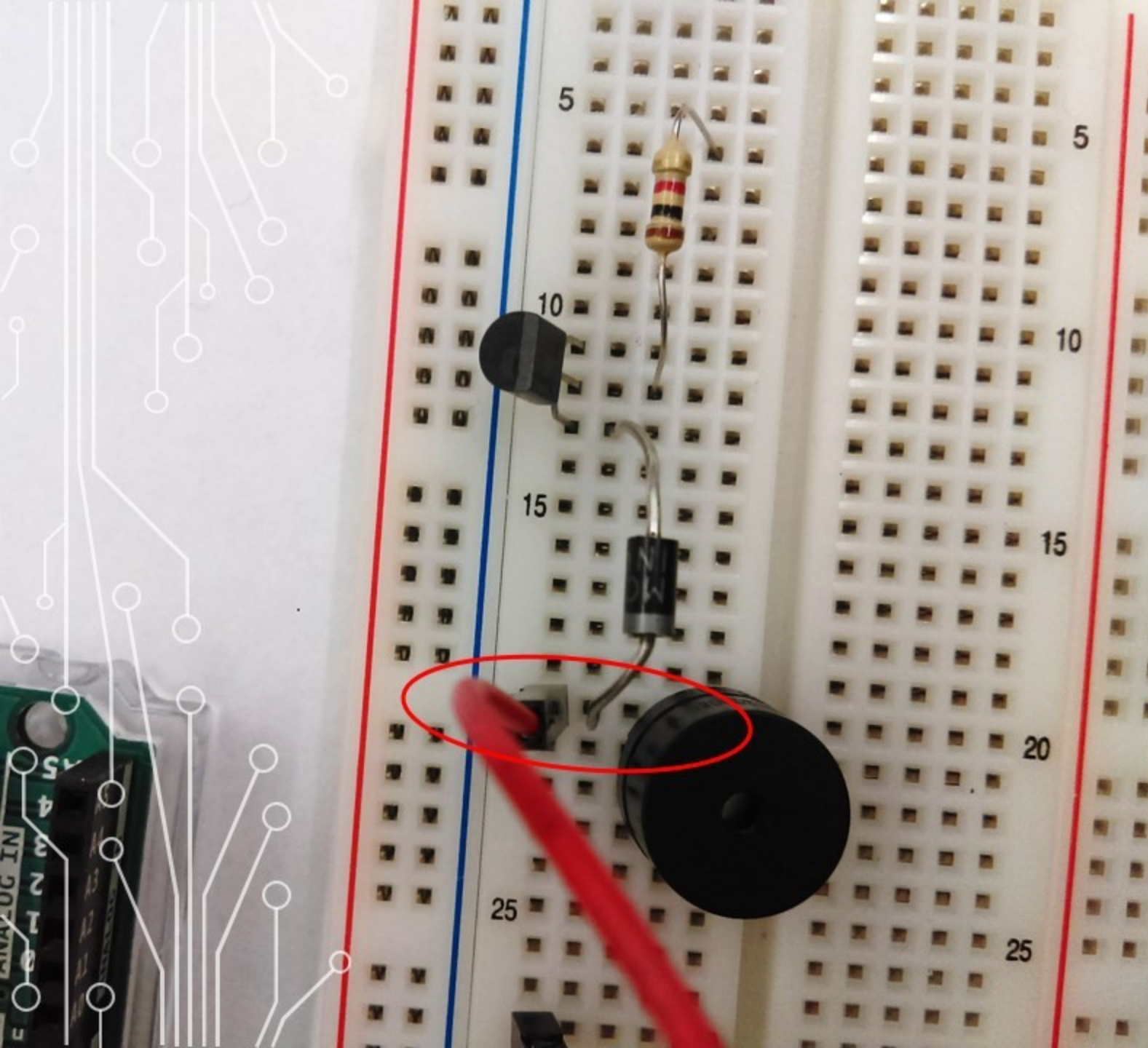
## WIRING (7) LIVE WIRES (RED)

Take another “live” wire and connect one end **above the left** side of the **diode** current line.

Insert the other end a little farther down (within the same current line) as the other “live” wire, making sure to leave a couple of slots open in-between.







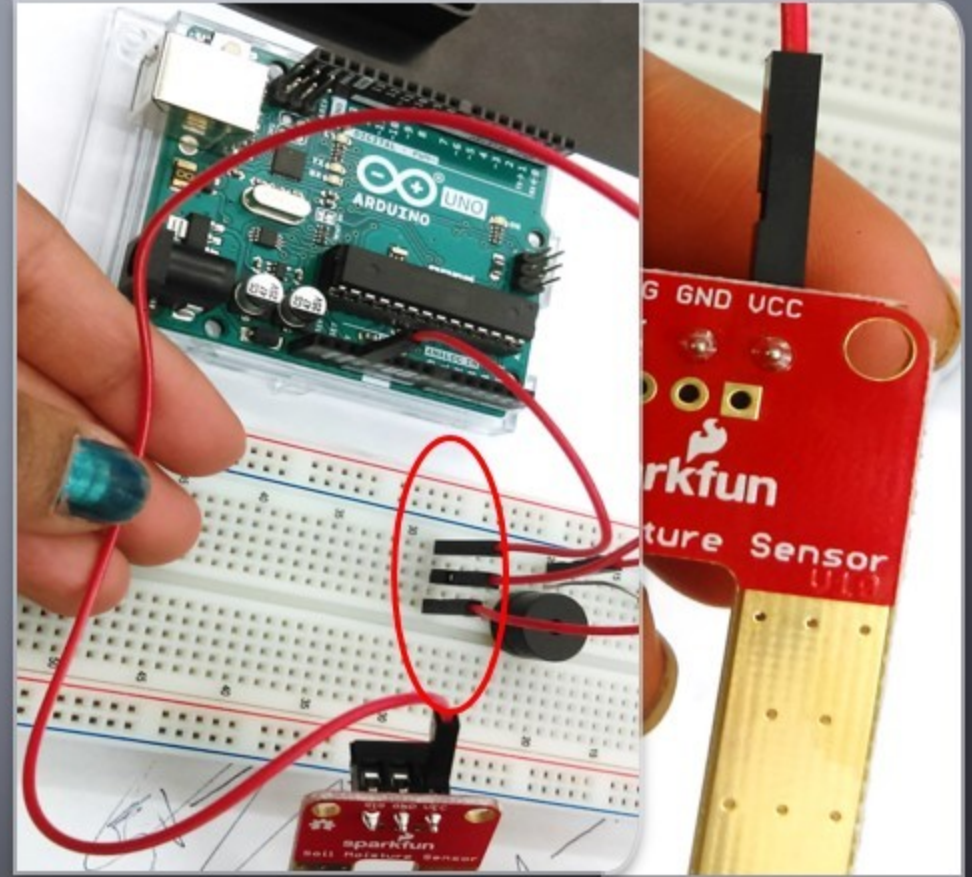
ANOTHER  
ANGLE OF THE  
2<sup>ND</sup> LIVE WIRE



## WIRING (8) LIVE WIRES (RED)

Last “live” wire: one end goes in the **middle** of the other two live wires.

The other end is connected to **VCC** on the moisture sensor. Clamp it down with a screw to set it.

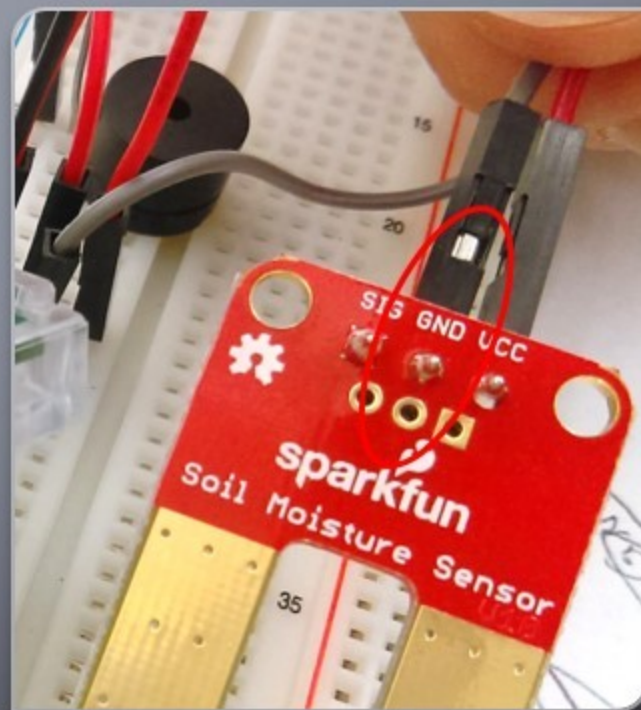


## WIRING (9)

### GROUND WIRES (GREY/BLACK WIRE)

Plug a “ground” wire in any arbitrary location, not in the current line of any other wires or components.

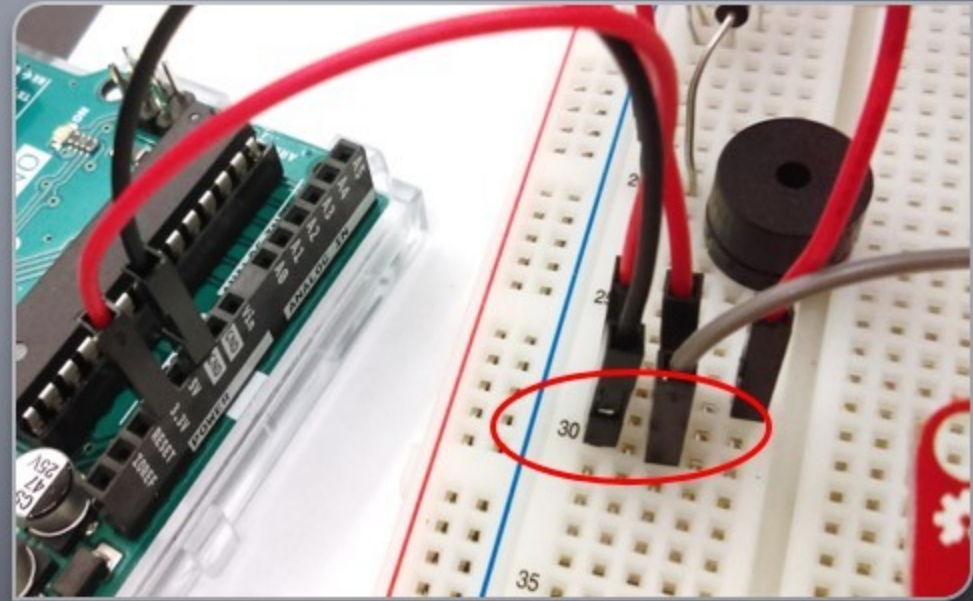
The other end goes into **GND** (ground) of the **moisture sensor**.





## WIRING (10) GROUND WIRES (GREY/BLACK WIRE)

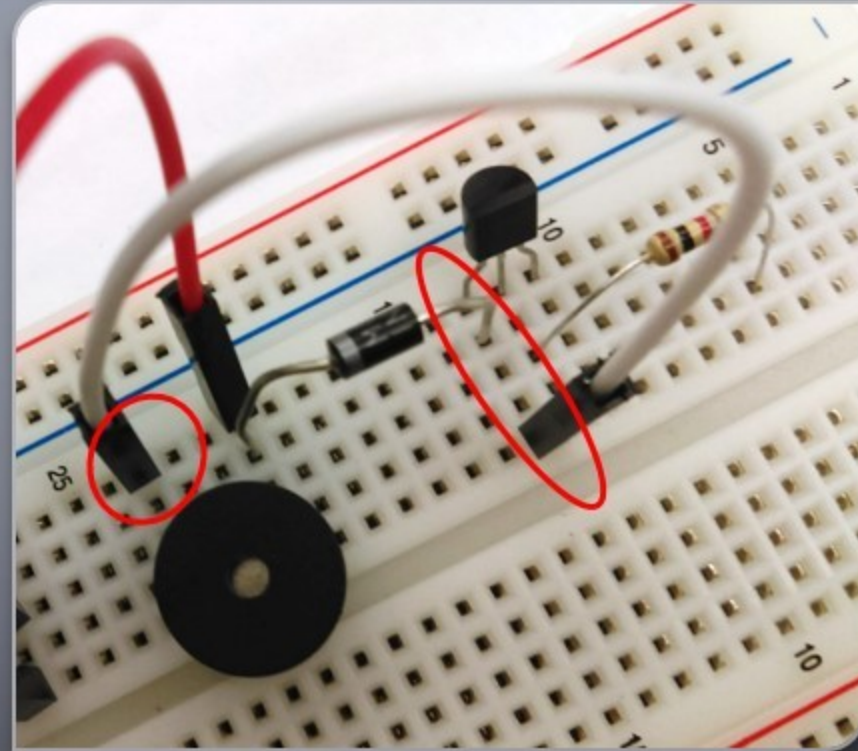
Another “ground” wire is plugged right in the current line of the other black wire. Plug the other end into the **GND** of the **Arduino**.

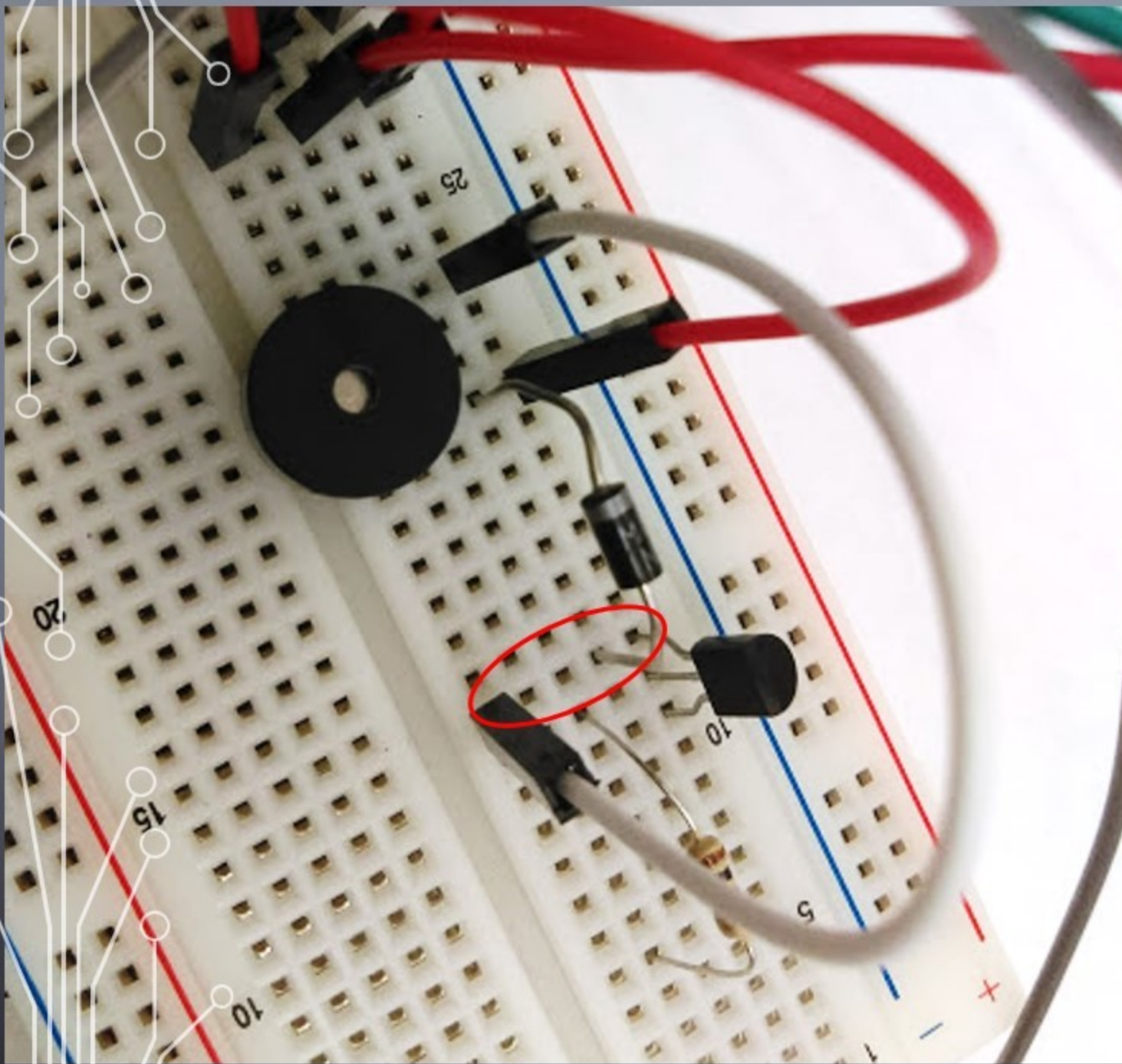




## WIRING (11) GROUND WIRES (GREY/BLACK WIRE)

Connect another ground wire to the **left** side the **transistor** current line below the diode. Plug the other end to the left side of the speaker current line.





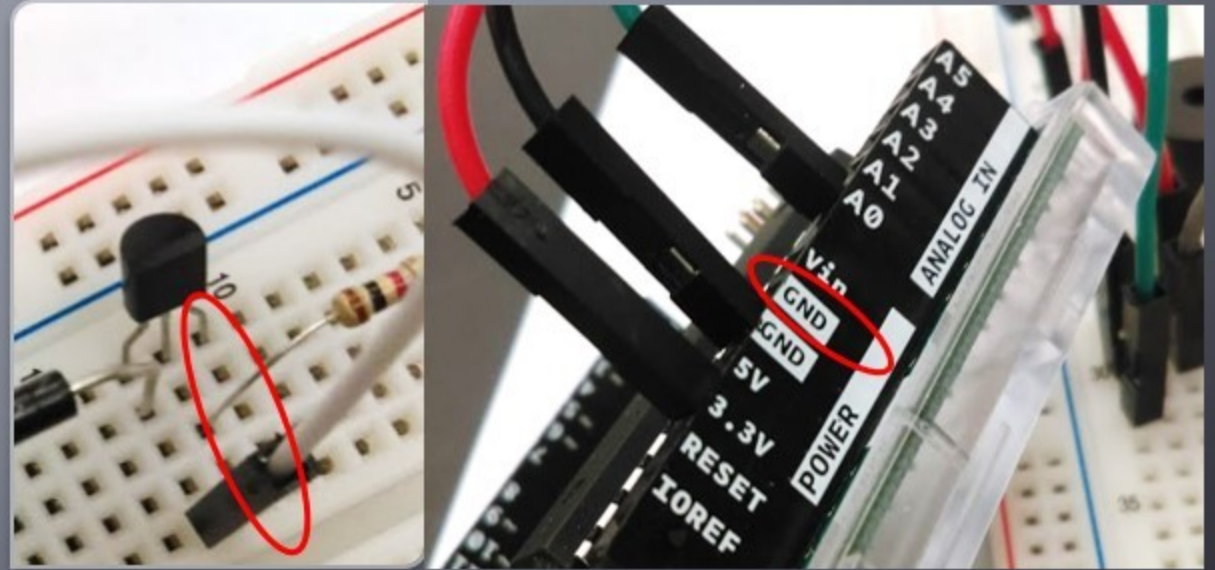
ANOTHER  
ANGLE



## WIRING (12) GROUND WIRES (GREY/BLACK WIRE)

Connect the final ground wire to the other **right** most side of the **transistor** current line.

Connect the other end to the **GND** that's left on the **Arduino**.

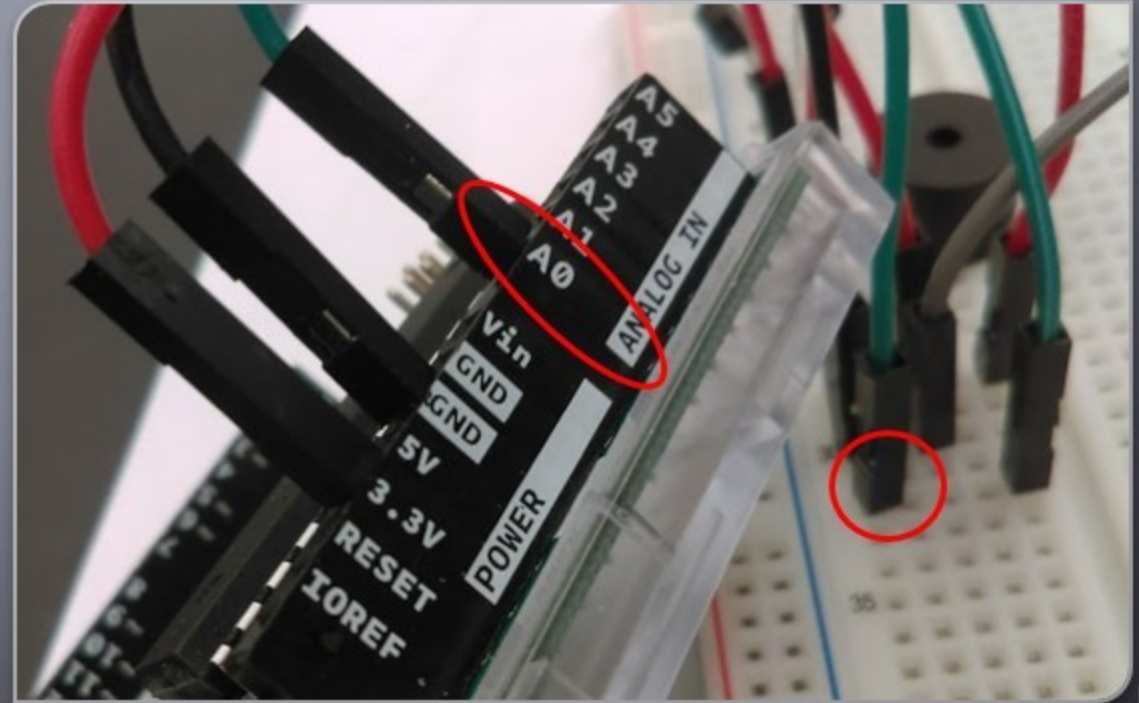




## WIRING (13) SIGNAL WIRES (GREEN)

Plug one end in any arbitrary location not in the current line of any other wires or components. Plug the other in **A0** in **Arduino**.

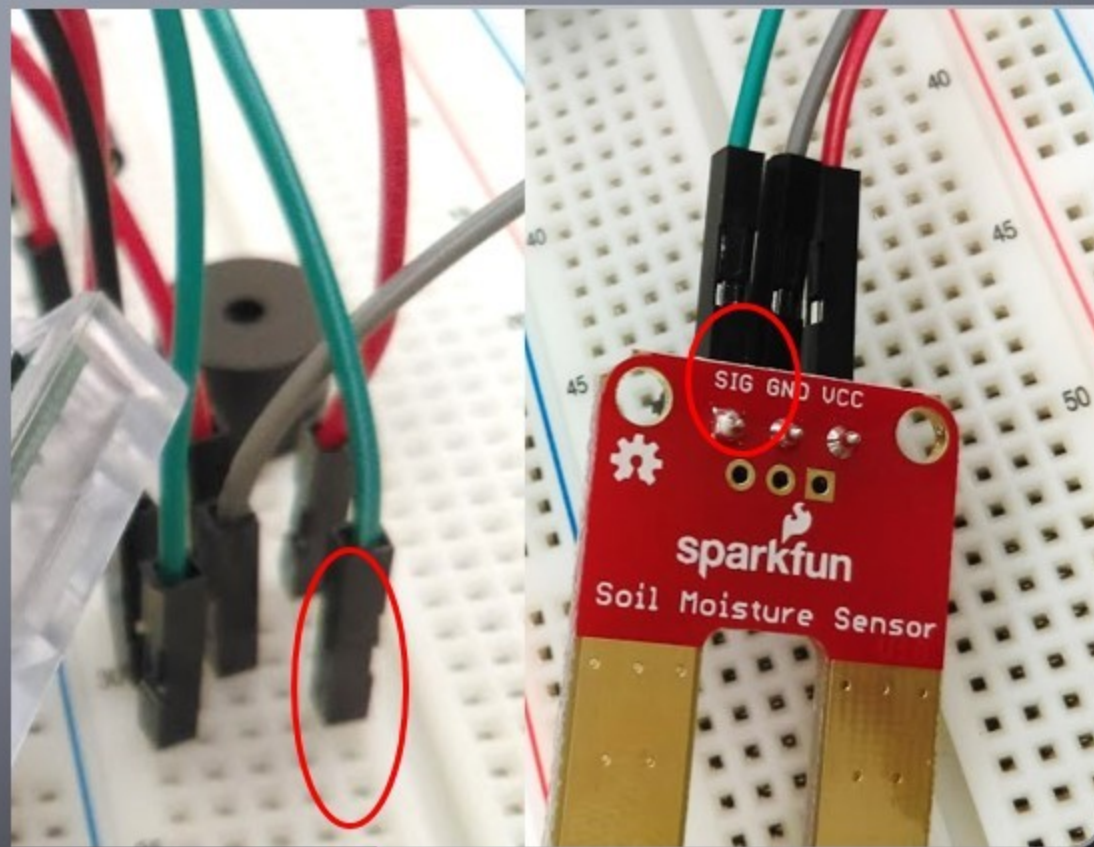
- A stands for analog meaning receiving information. Important for when we code it.



## WIRING (14) SIGNAL WIRES (GREEN)

Take another “signal” wire and plug one end in the same current line as the other “signal wire”.

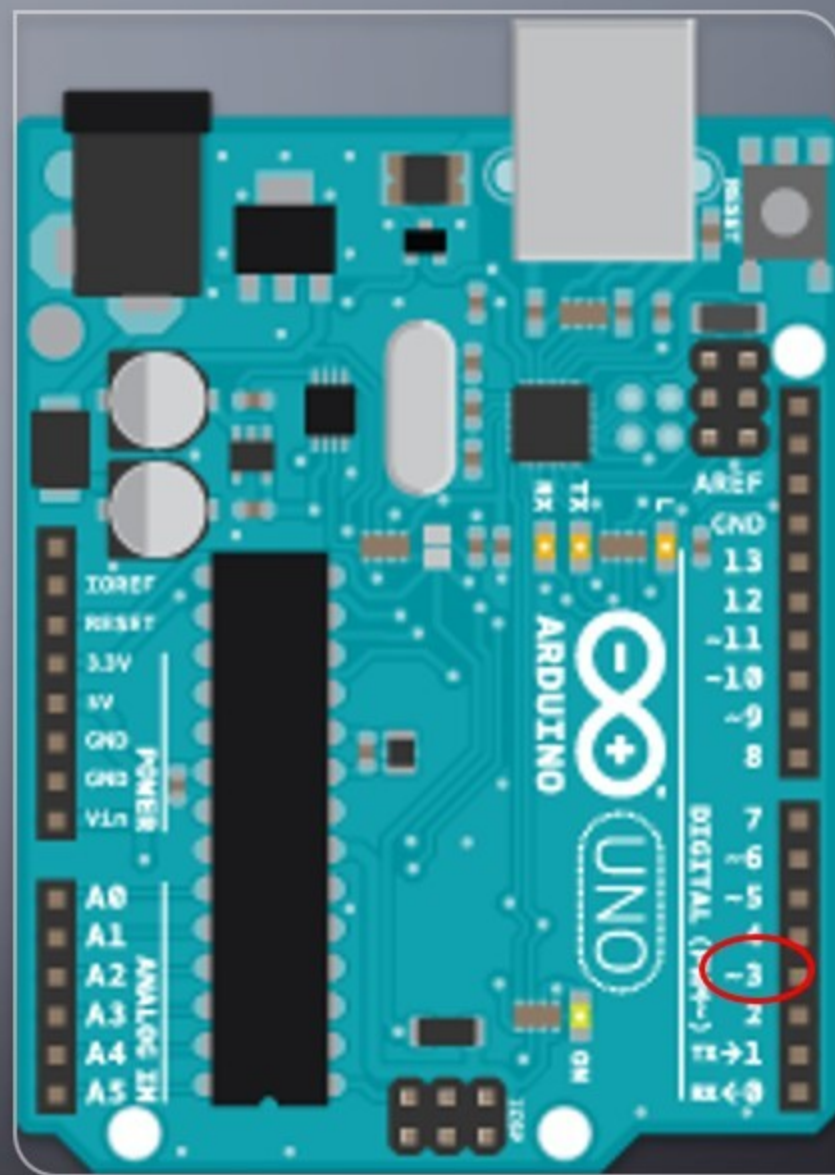
Connect the other end to **SIG** (signal) on the **moisture sensor**.





## WIRING (15) DIGITAL WIRE (BLUE)

Connect a “digital” wire to “3”  
on **Arduino**.

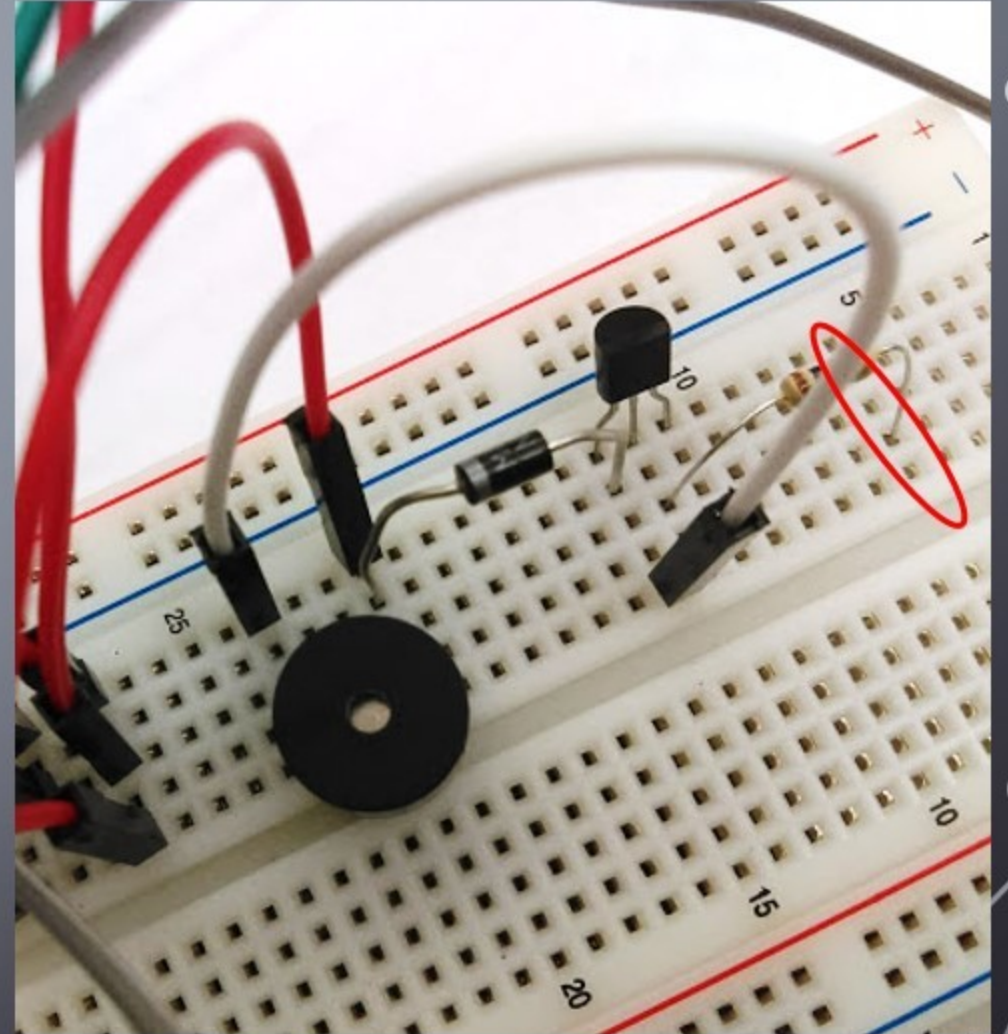




## WIRING (15) DIGITAL WIRE (BLUE)

Connect the other end to the **right** most side of the **resistor** current line.

Check that all wires are plugged in securely.



# SOFTWARE AND MAKING THE FLAMINGO SING

We have already downloaded:

✓ The Arduino interface

(<https://www.arduino.cc/en/Main/Software>)



✓ The ThirstyFlamingoMaster.zip.

(<https://goo.gl/ZhbTBR>)



## SOFTWARE AND MAKING THE FLAMINGO SING

- ✓ In ThirstyFlamingoMaster.zip, click `soilsensor.cpp`. Arduino will automatically open it.
- ✓ Click checkmark on top left to verify. This compiles all the code. Once its checked, it will say “done” on the bottom.
- ✓ The port might not connect based on computer settings.
  - On MAC: go to tools → port and select Arduino. Similarly, do the same on Windows.

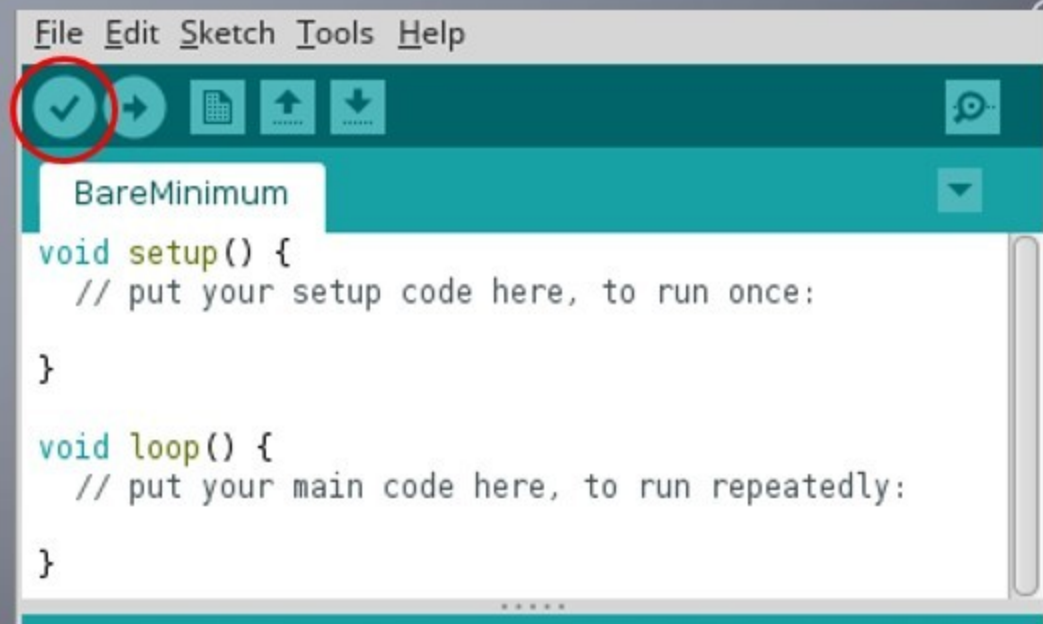
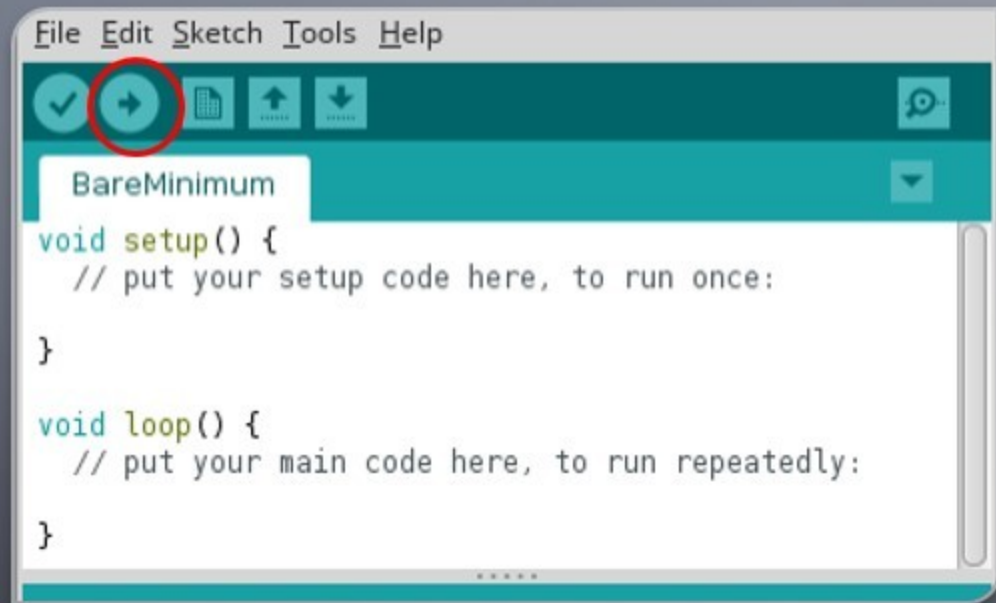


Image from:

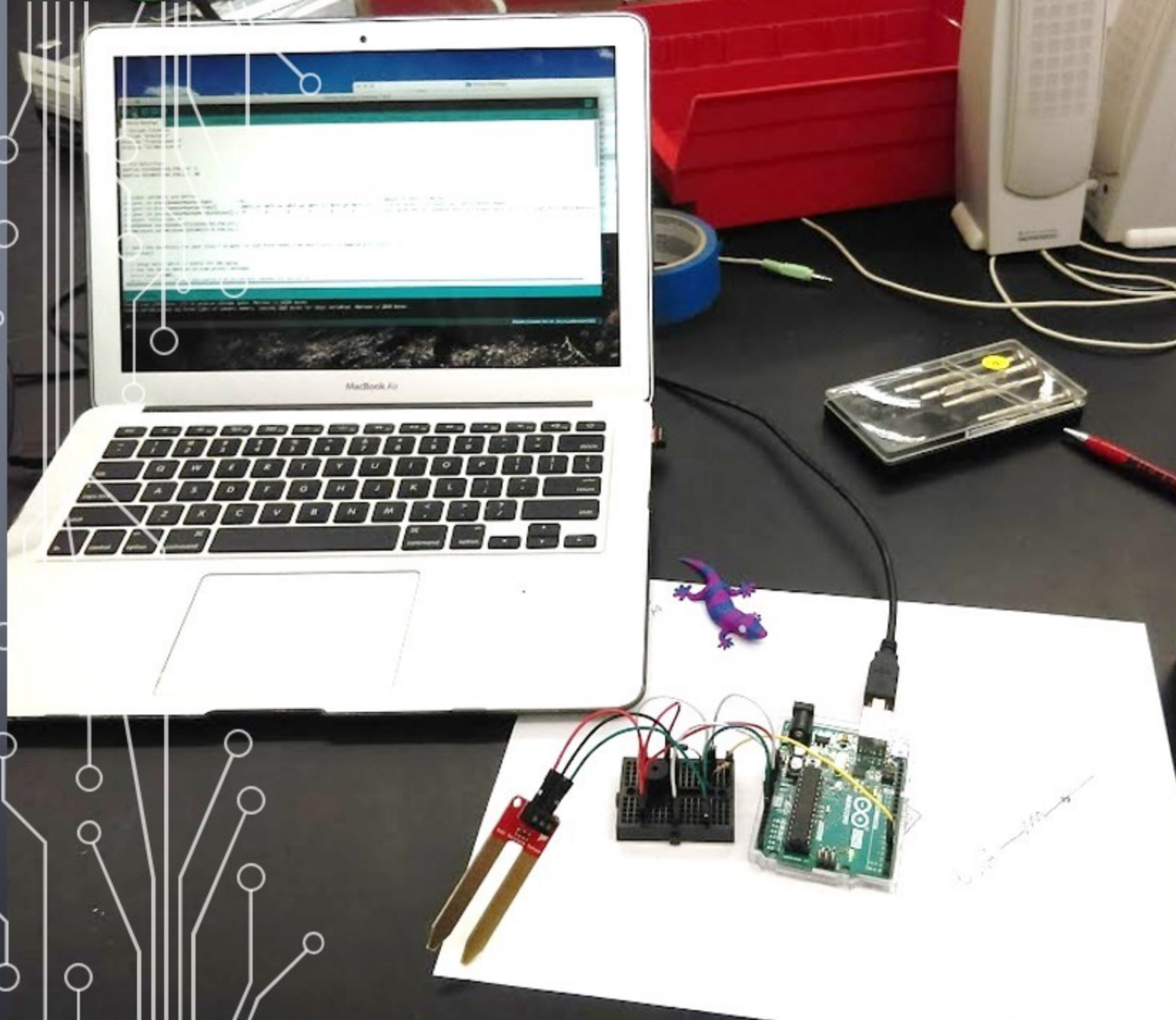
<https://www.hummingbirdkit.com/sites/default/files/arduino2.png>



## SOFTWARE AND MAKING THE FLAMINGO SING



- ✓ Plug USB wire to computer and the other to Arduino
- ✓ Click upload (→ arrow). Wait until it says completed on the bottom



WHAT YOUR SETTING  
MAY LOOK LIKE

## SOFTWARE AND MAKING THE FLAMINGO SING

Test you're your moisture sensor by dipping it in water or even pressing the prongs with your thumb, index & middle finger.

- The moisture sensor has two conducting strips. If there is no water, the conduction breaks and the speaker makes sound.



## SOFTWARE AND MAKING THE FLAMINGO SING

Within the code, scroll down to `SoilmoistureVal` which is set to 400. You can change the number to change the threshold of the moisture sensor (ex: 1000).

You can also change the melody of the Flamingo!

The image features a dark blue background with white, stylized circuit traces in the corners. These traces consist of thin lines that branch out and terminate in small circles, resembling electronic components or solder points. The traces are located in the top-left, top-right, bottom-left, and bottom-right corners, framing the central text.

CONGRATULATION, YOU ARE DONE!

Please de-wire your  
breadboard when you leave

The background is a dark blue gradient. In the corners, there are white line-art illustrations of circuit boards or neural networks, with lines and small circles representing nodes.

END

THANK YOU