

# LASER DANCE

## FUTURE GENERATION

Space Rock

— STEREO —  
DOLBY SYSTEM



BIEM  
ZAIKS



SUPER  
QUALITY



ALL RIGHTS RESERVED.  
UNAUTHORIZED DUPLICATION IS A VIOLATION OF APPLICABLE LAWS

11:00 - 11:30 Welcome & Introduction & exercise

11:30 - 12:30 Introduction to Electronics, Arduino  
and Touch sensors

12:30 - 13:30 Lunch

13:30 - 17:00 Constructing Wearables

17:00 - 18:00 Outcomes, Conclusions, Discussions

19:00 onwards Dance, Jan van Eyck Basement

# Download the Arduino IDE



## ARDUINO 1.8.10

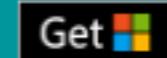
The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software.

This software can be used with any Arduino board. Refer to the [Getting Started](#) page for Installation instructions.

**Windows** Installer, for Windows XP and up

**Windows** ZIP file for non admin install

**Windows app** Requires Win 8.1 or 10



**Mac OS X** 10.8 Mountain Lion or newer

**Linux** 32 bits

**Linux** 64 bits

**Linux ARM** 32 bits

**Linux ARM** 64 bits

[Release Notes](#)

[Source Code](#)

[Checksums \(sha512\)](#)

Go to [www.arduino.cc](http://www.arduino.cc) and click Downloads > Software

or

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

MADE IN  
ITALY

(0^0^0)  
(0^0^0)

AREF GND 13 12 ~11 ~10 ~9 ~8 7 6 5 4 3 2 1 0  
DIGITAL (PWM ~) TX RX



UNO

ON

Arduino

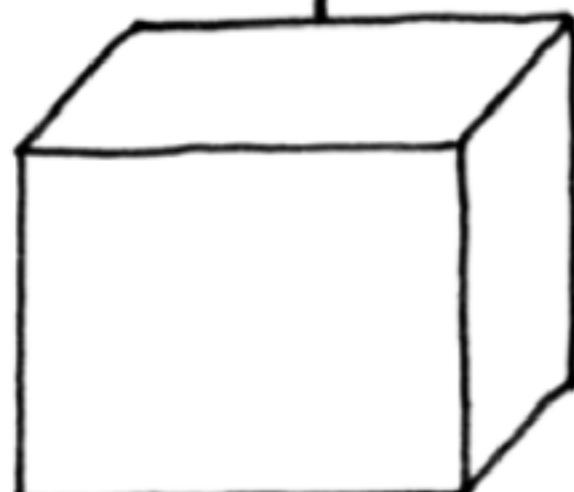
RESET-EN



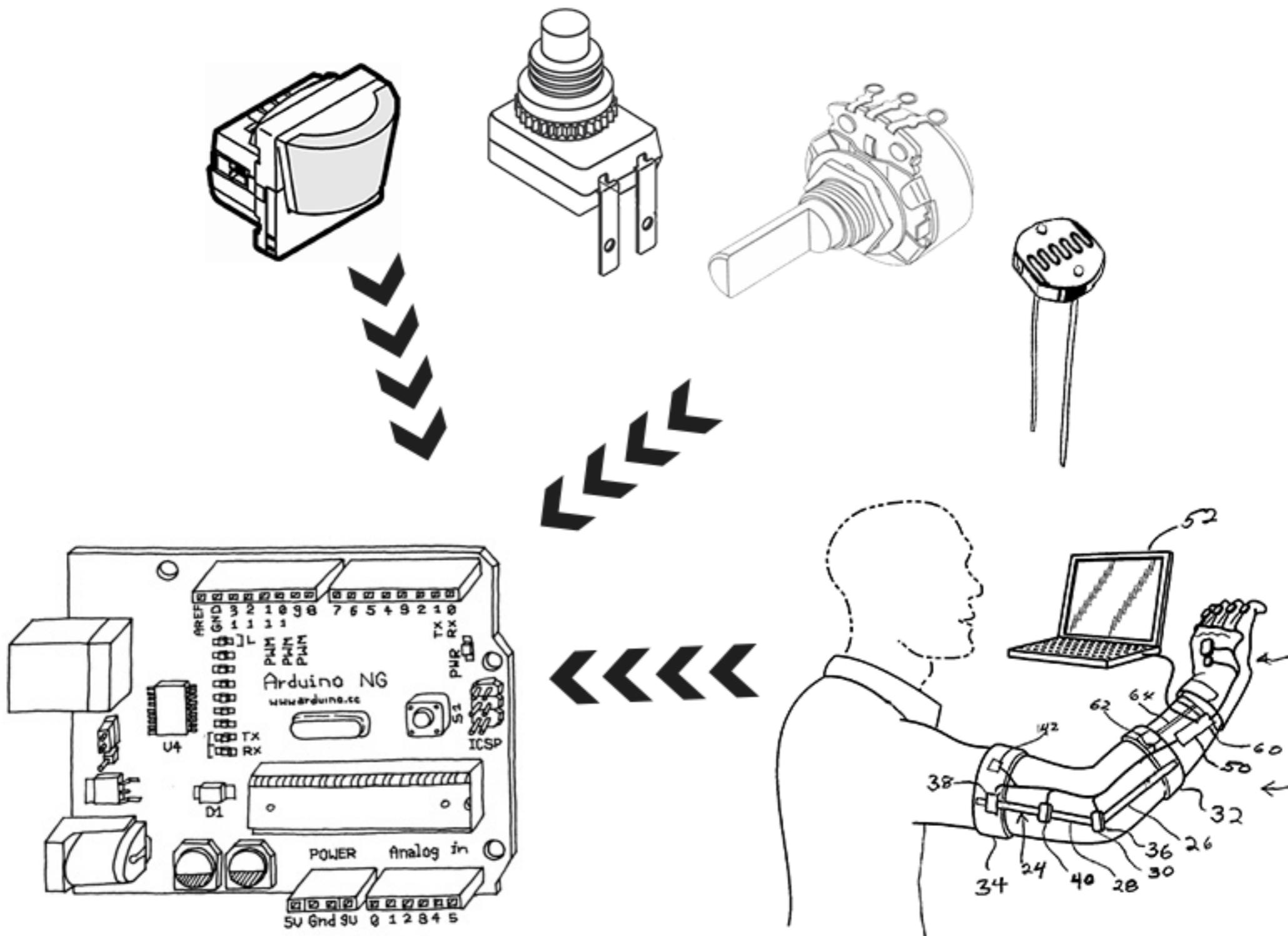
www.arduino.cc

RESET  
3V3 5V GND POWER  
GND VIN

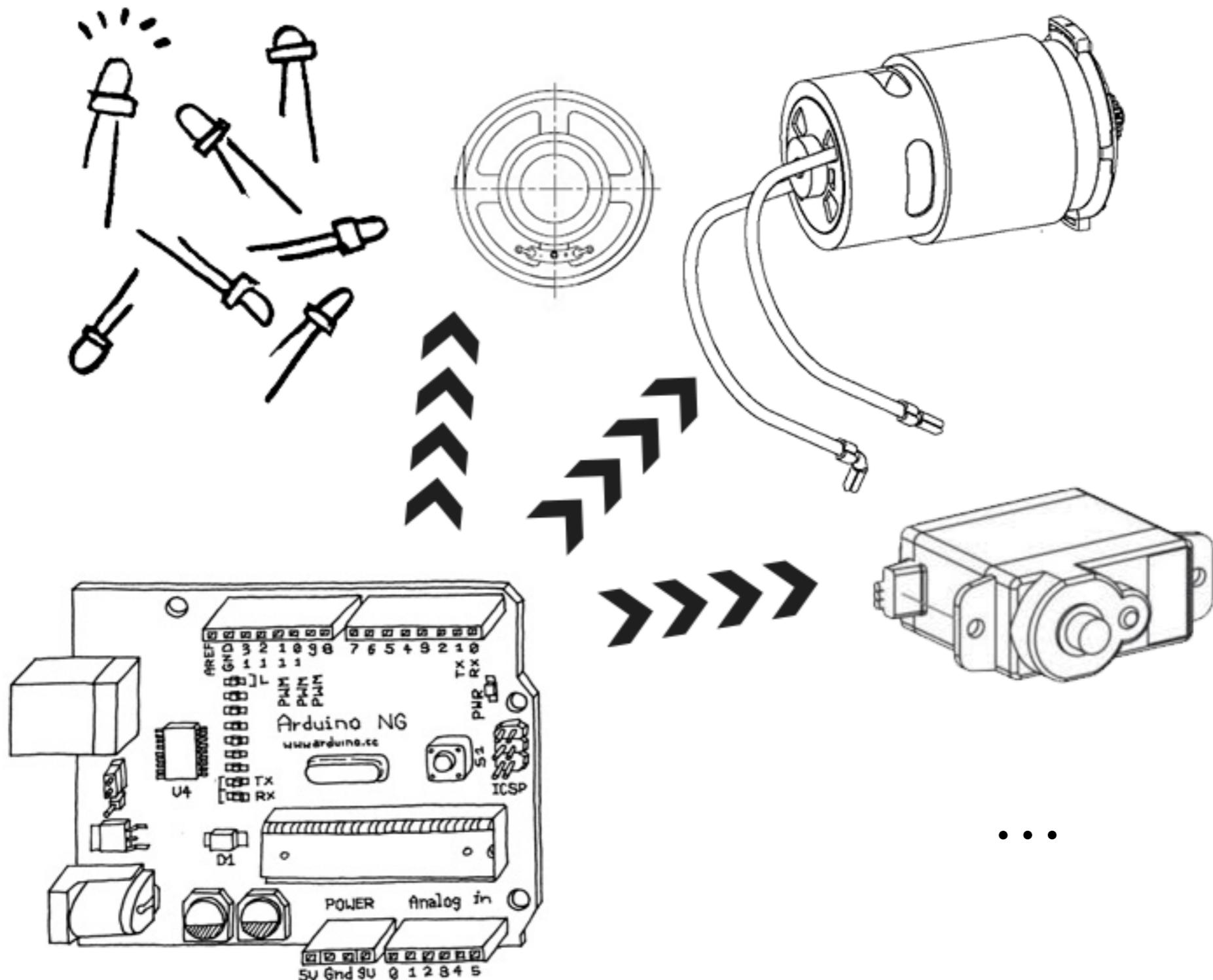
ANALOG IN  
A0 A1 A2 A3 A4 A5



# sensors - input

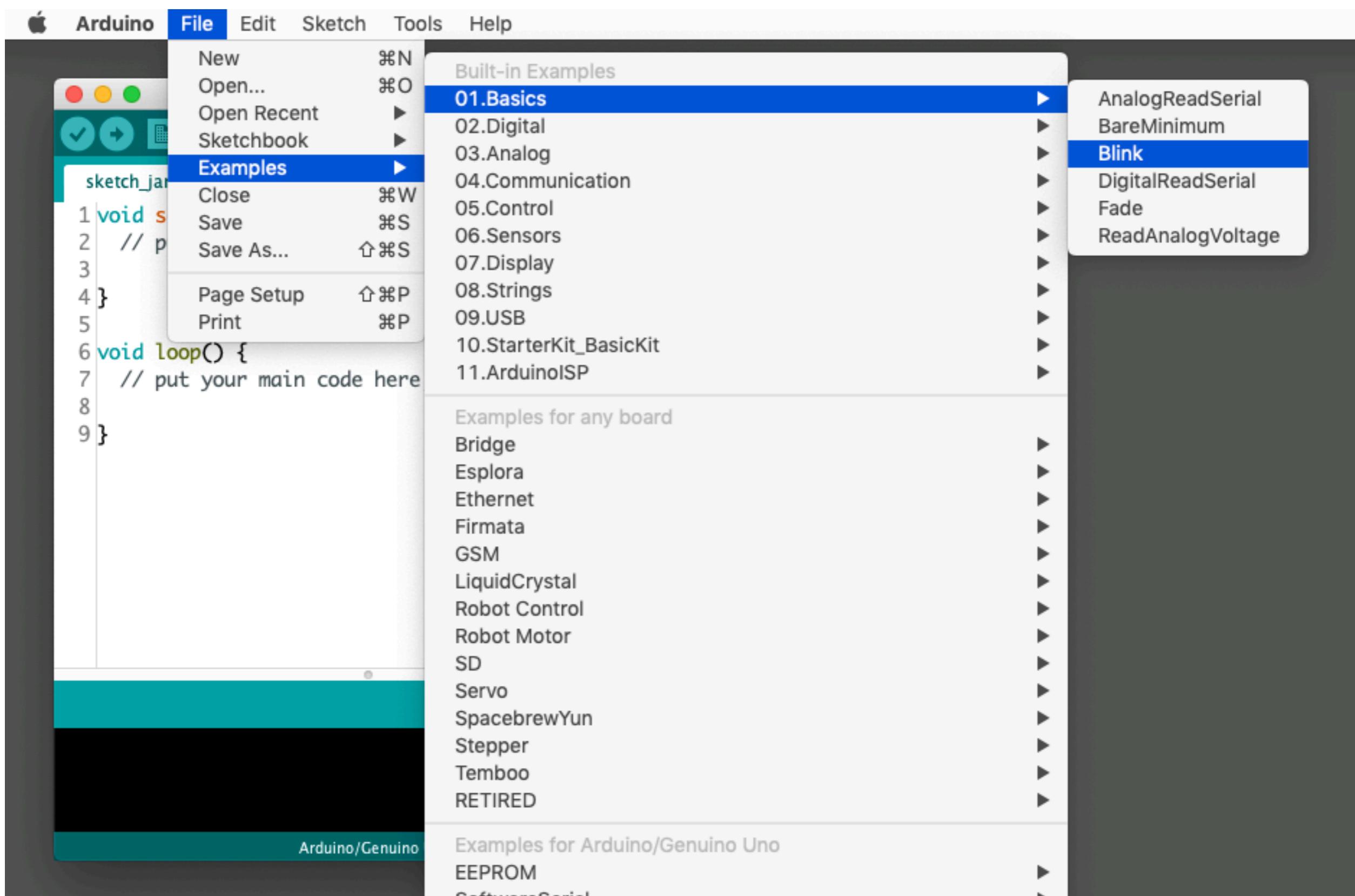


# actuator - output



# Arduino Terms

- ‘sketch’ – program that runs on the Arduino
- ‘pin’ – input or output connected to something, like a LED or a switch



The screenshot shows the Arduino IDE interface with the title bar "Blink | Arduino 1.8.9". The main window displays the "Blink" sketch code. The code consists of two functions: setup() and loop(). The setup() function initializes the digital pin LED\_BUILTIN as an output. The loop() function alternates between turning the LED on (HIGH) and off (LOW), with a one-second delay between each state change. The code is numbered from 24 to 37. At the bottom of the screen, a status bar indicates "Arduino/Genuino Uno on /dev/cu.usbmodem14201".

```
24
25 // the setup function runs once when you press reset or power t
26 void setup() {
27     // initialize digital pin LED_BUILTIN as an output.
28     pinMode(LED_BUILTIN, OUTPUT);
29 }
30
31 // the loop function runs over and over again forever
32 void loop() {
33     digitalWrite(LED_BUILTIN, HIGH);      // turn the LED on (HIGH i:
34     delay(1000);                      // wait for a second
35     digitalWrite(LED_BUILTIN, LOW);     // turn the LED off by makin
36     delay(1000);                      // wait for a second
37 }
```

Arduino/Genuino Uno on /dev/cu.usbmodem14201

Arduino File Edit Sketch

Tools Help

Auto Format ⌘T  
Archive Sketch  
Fix Encoding & Reload  
Manage Libraries... ⌘I  
Serial Monitor ⌘M  
Serial Plotter ⌘L

WiFi101 / WiFiNINA Firmware Updater

ESP32 Sketch Data Upload

Board: "Arduino/Genuino Uno" ▶

Port ▶  
Get Board Info

Programmer: "AVRISP mkII" ▶

Burn Bootloader

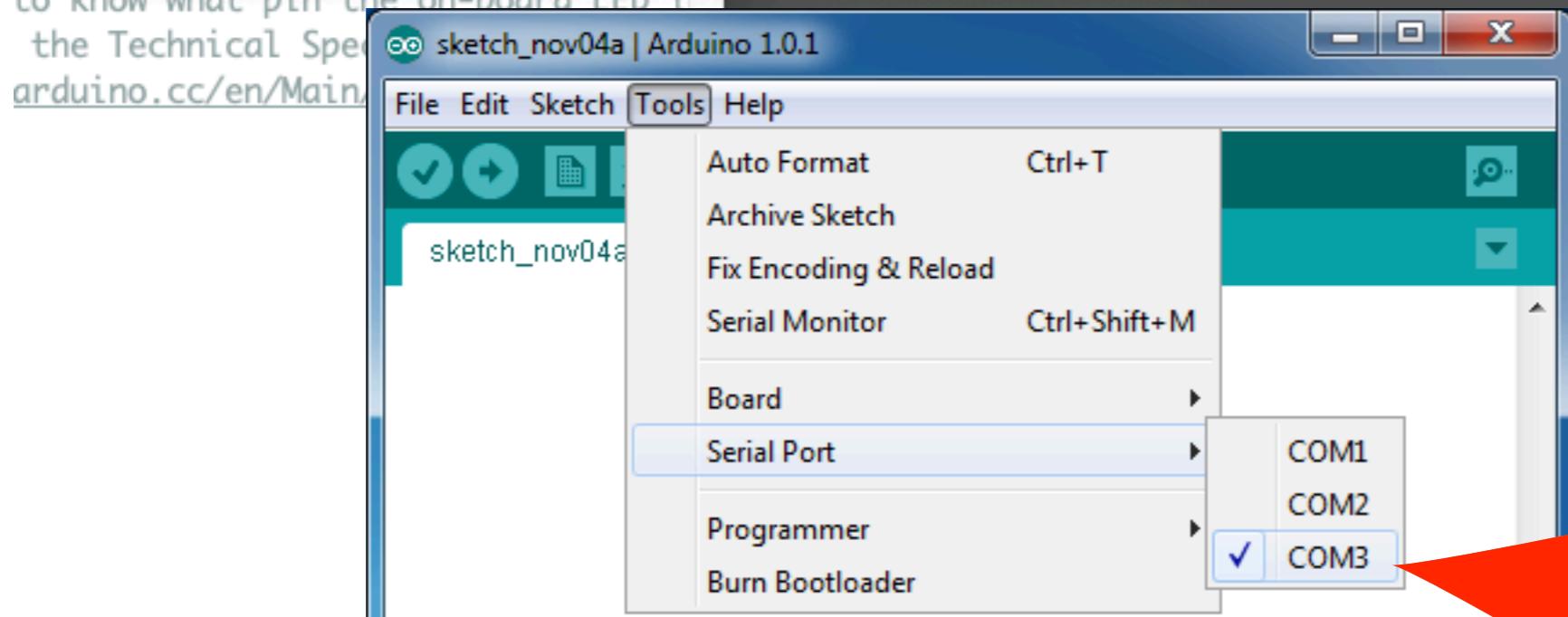
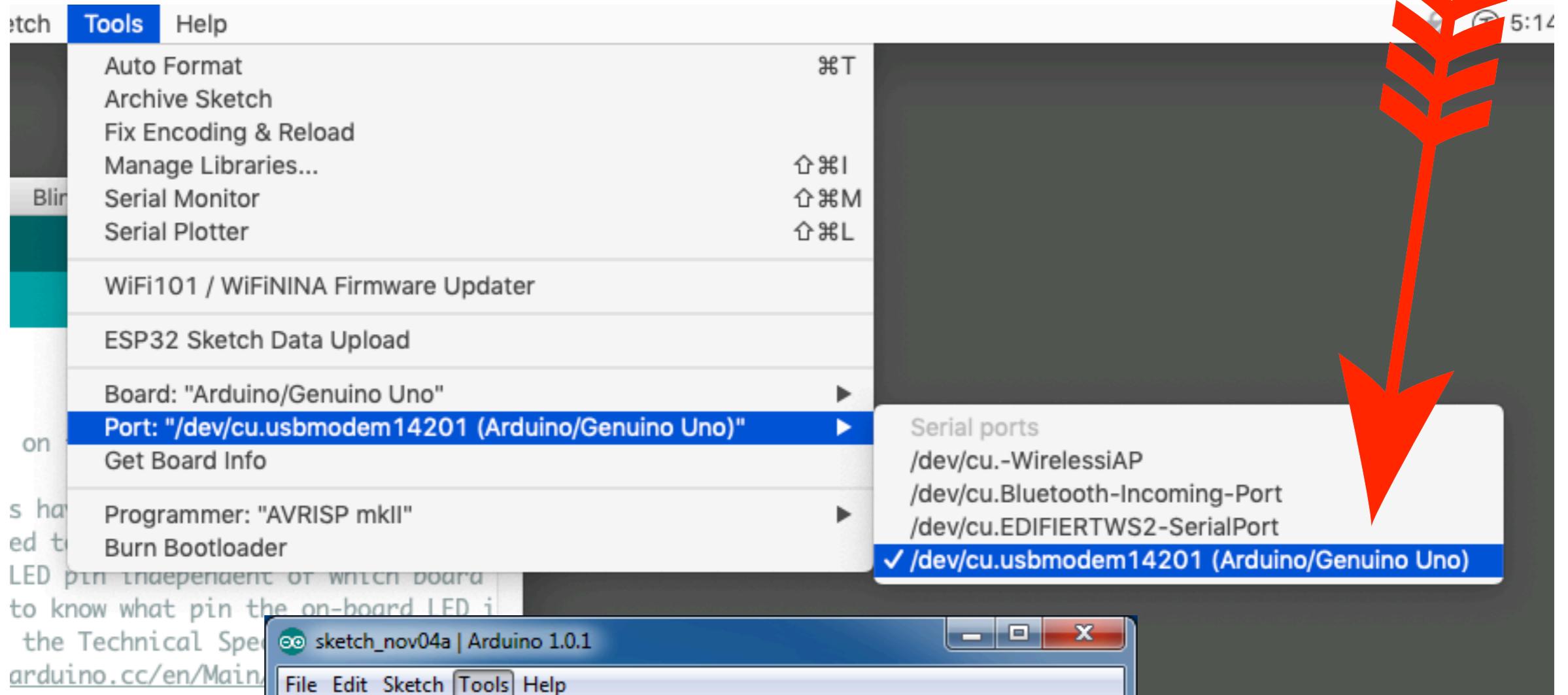
```
1 /*  
2  * Blink  
3  *  
4  * Turns an LED on  
5  * and off again.  
6  * Most Arduinos have a  
7  * red LED attached to pin 13.  
8  * When you turn the Arduino on,  
9  * you'll see the LED flash.  
10 * If you want to know what pin the on-board LED is  
11 * on, check the Technical Specs of your board  
12 * at https://www.arduino.cc/en/Main/Products
```

modified 9 May 2014

Boards Manager...

Arduino AVR Boards  
Arduino Yún  
✓ Arduino/Genuino Uno  
Arduino Duemilanove or Diecimila  
Arduino Nano  
Arduino/Genuino Mega or Mega 2560  
Arduino Mega ADK  
Arduino Leonardo  
Arduino Leonardo ETH  
Arduino/Genuino Micro  
Arduino Esplora  
Arduino Mini  
Arduino Ethernet  
Arduino Fio  
Arduino BT  
LilyPad Arduino USB  
LilyPad Arduino  
Arduino Pro or Pro Mini  
Arduino NG or older





# Verify and Upload



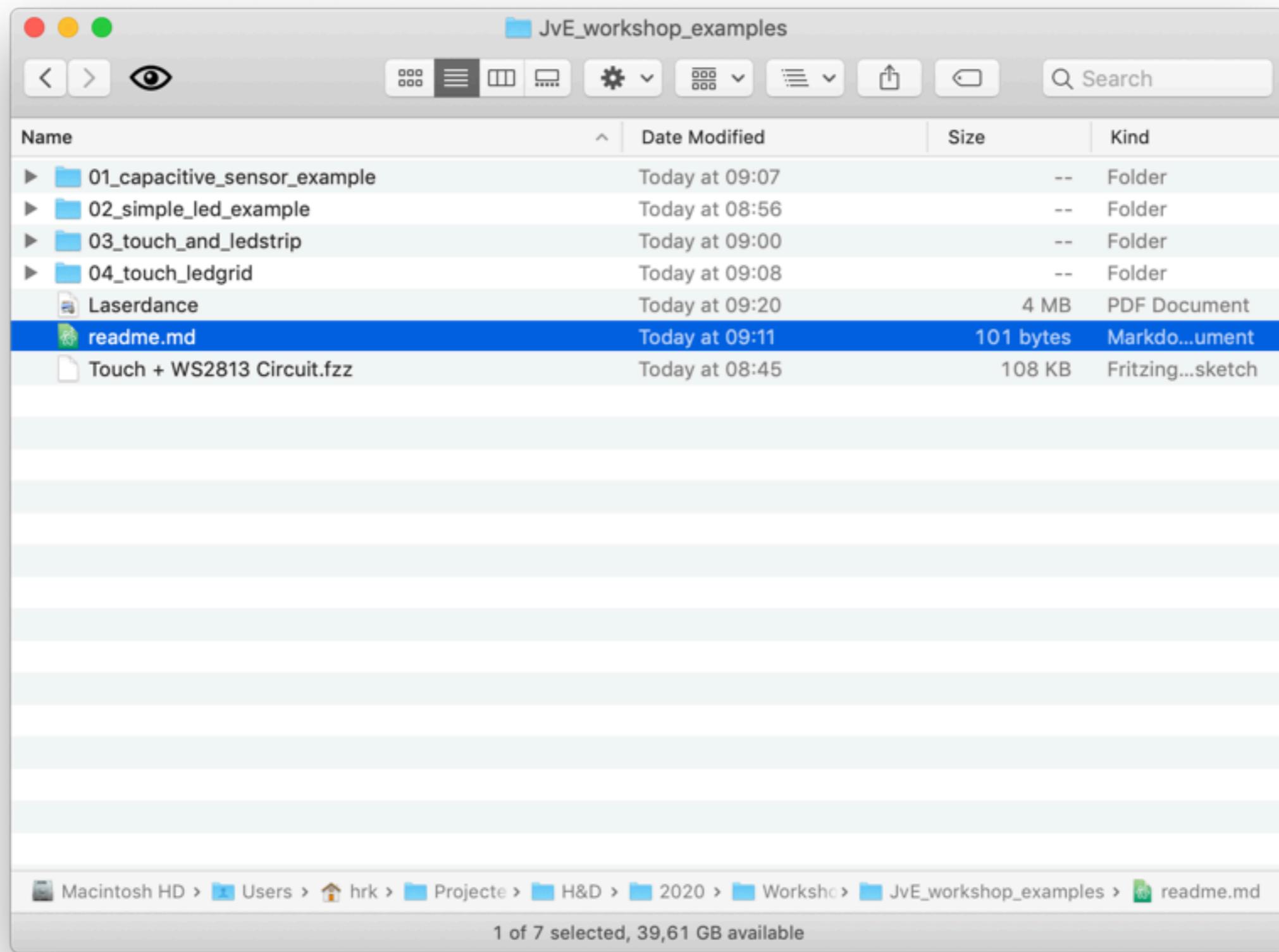
# woohoo!



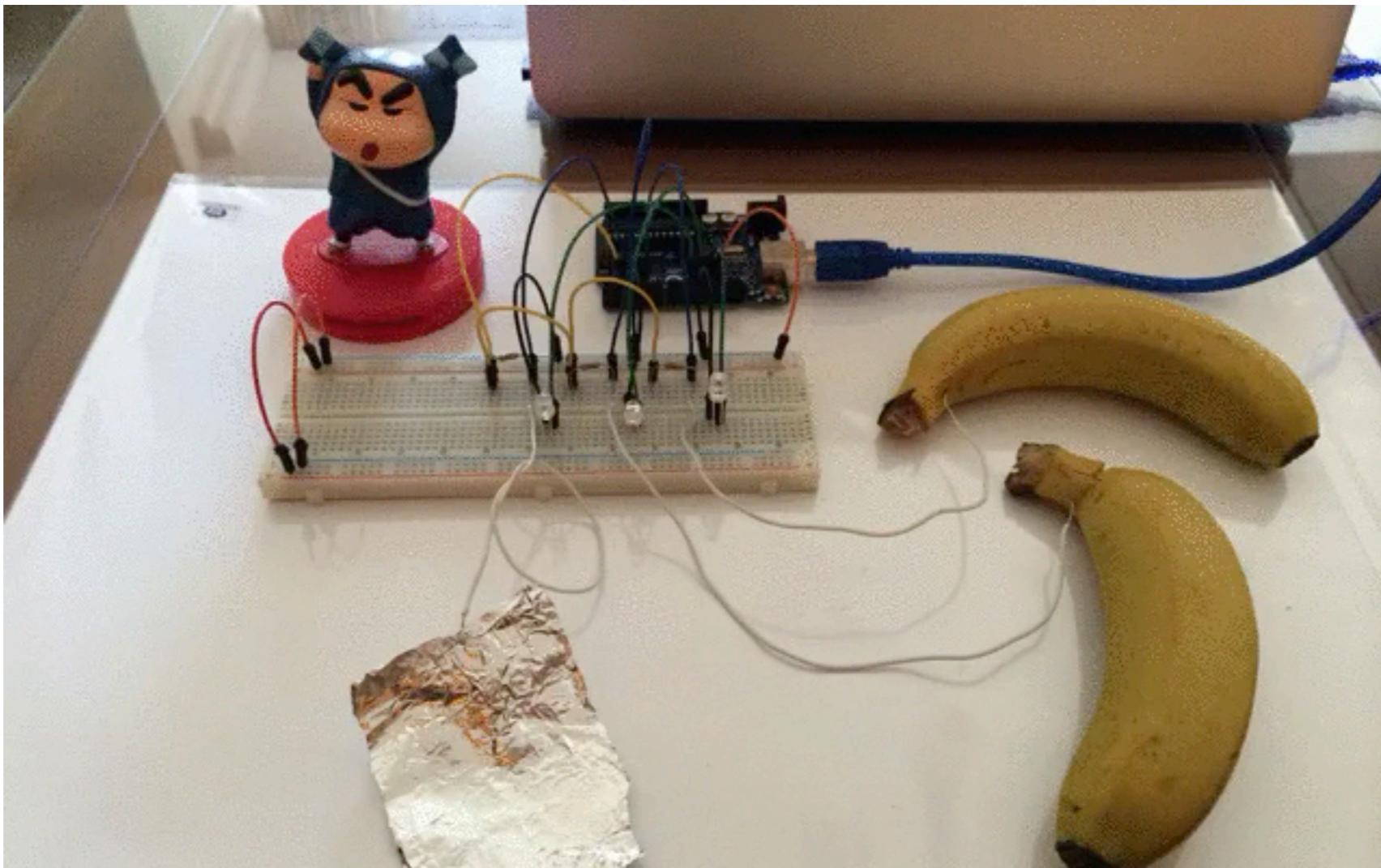
# Be careful

- Your computer is connected to the Arduino. Be careful with short circuits. Avoid metallic surfaces.
- Components can be toxic.

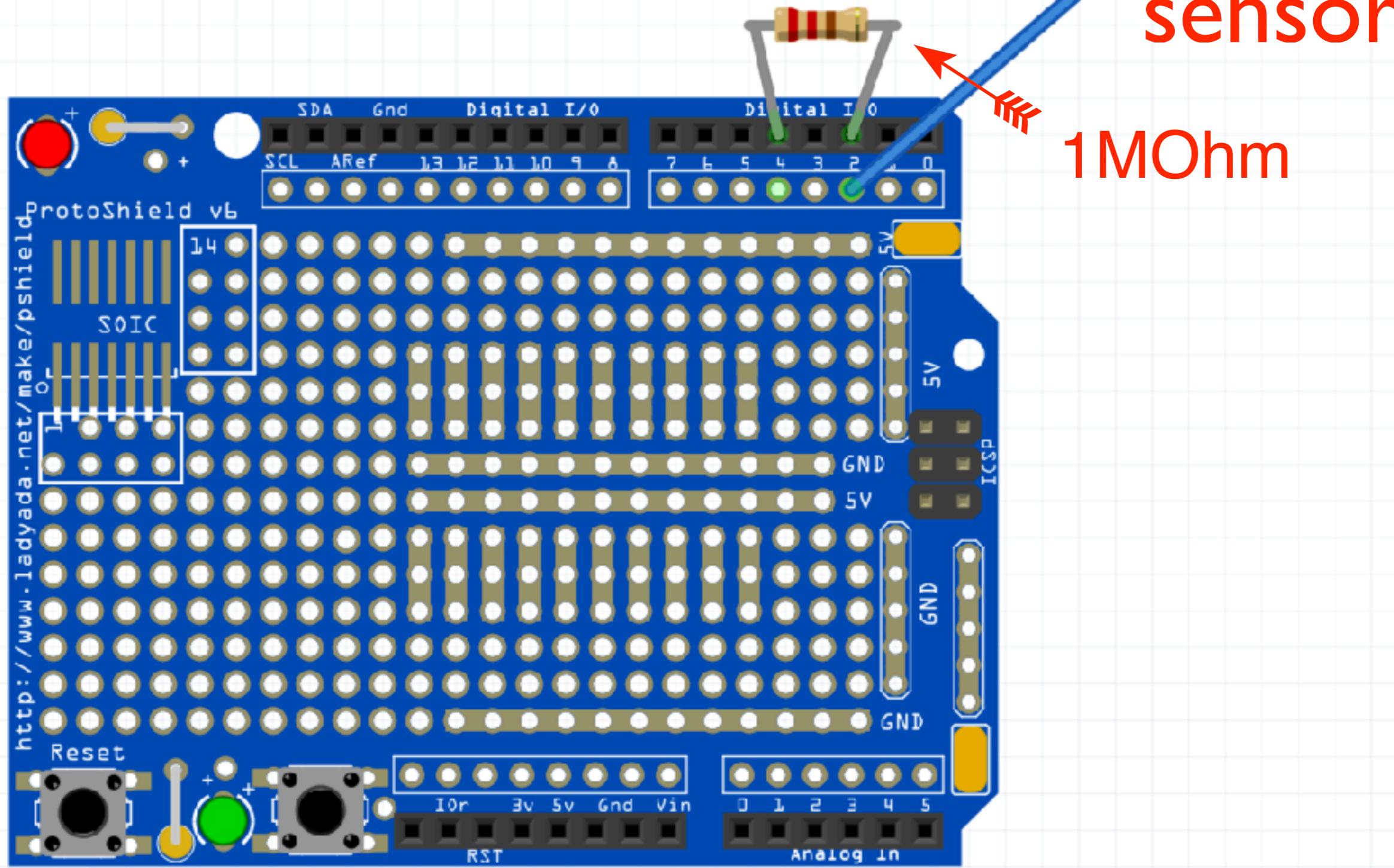
<https://github.com/hackersanddesigners/Laserdance>

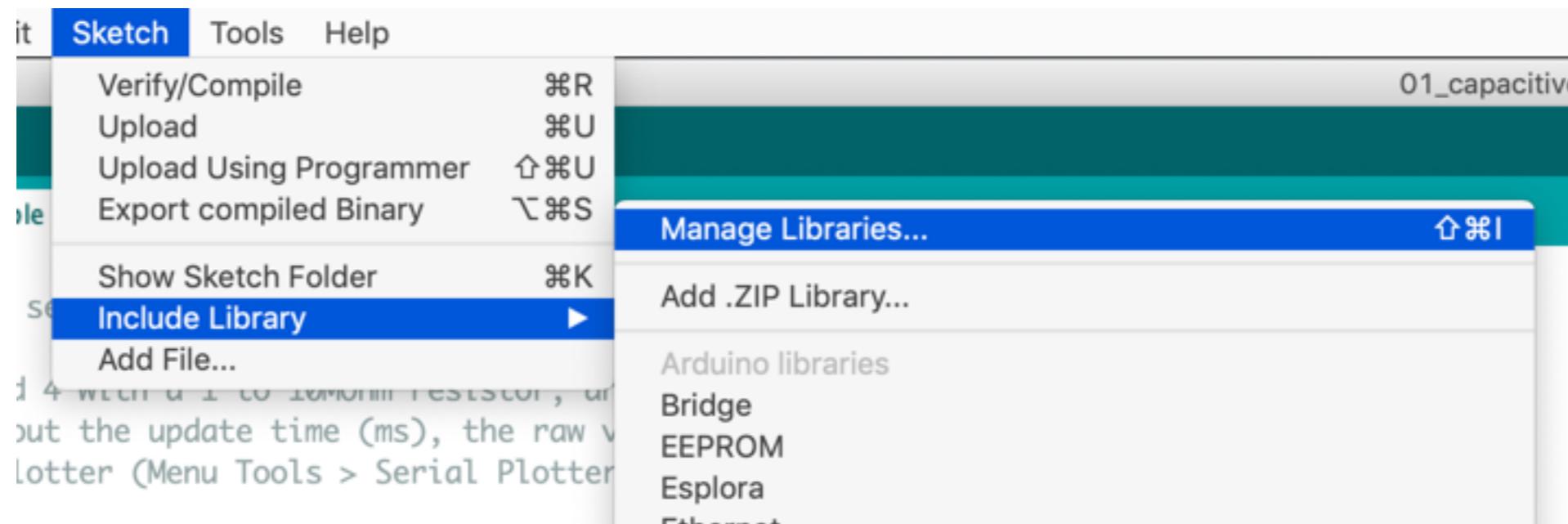


# Capacitive sensor



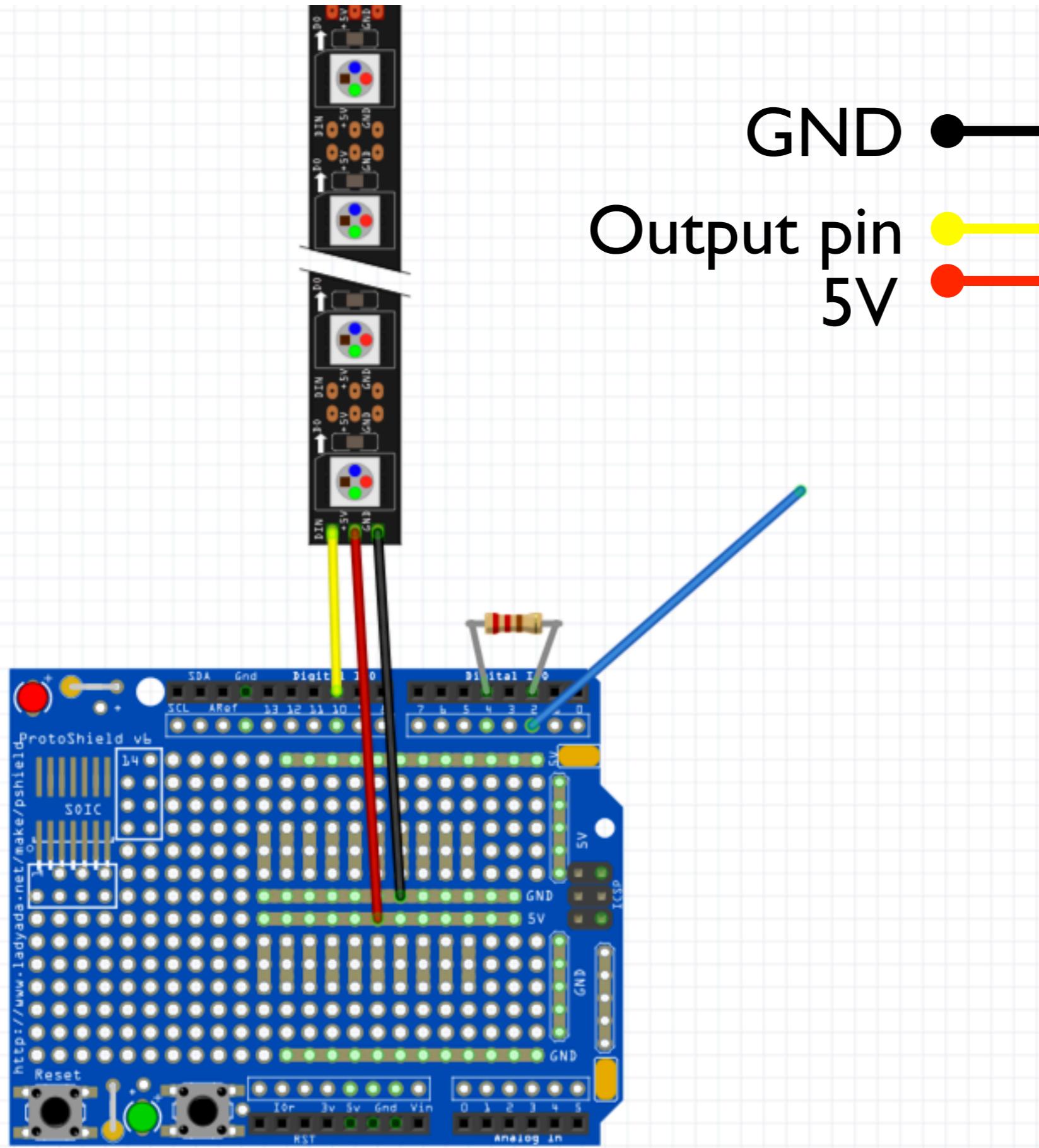
# Capacitive sensor



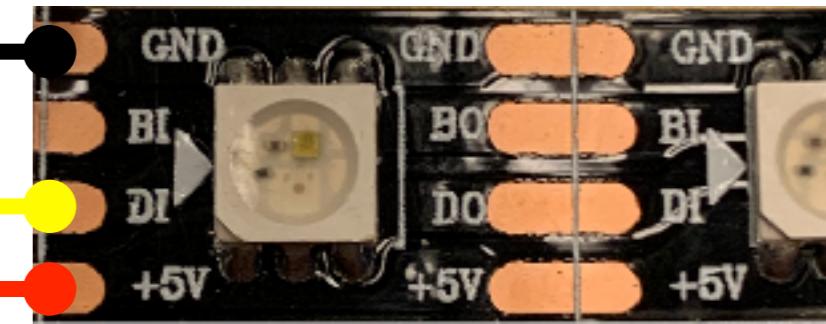


Install ‘CapacitiveSensor’ library.

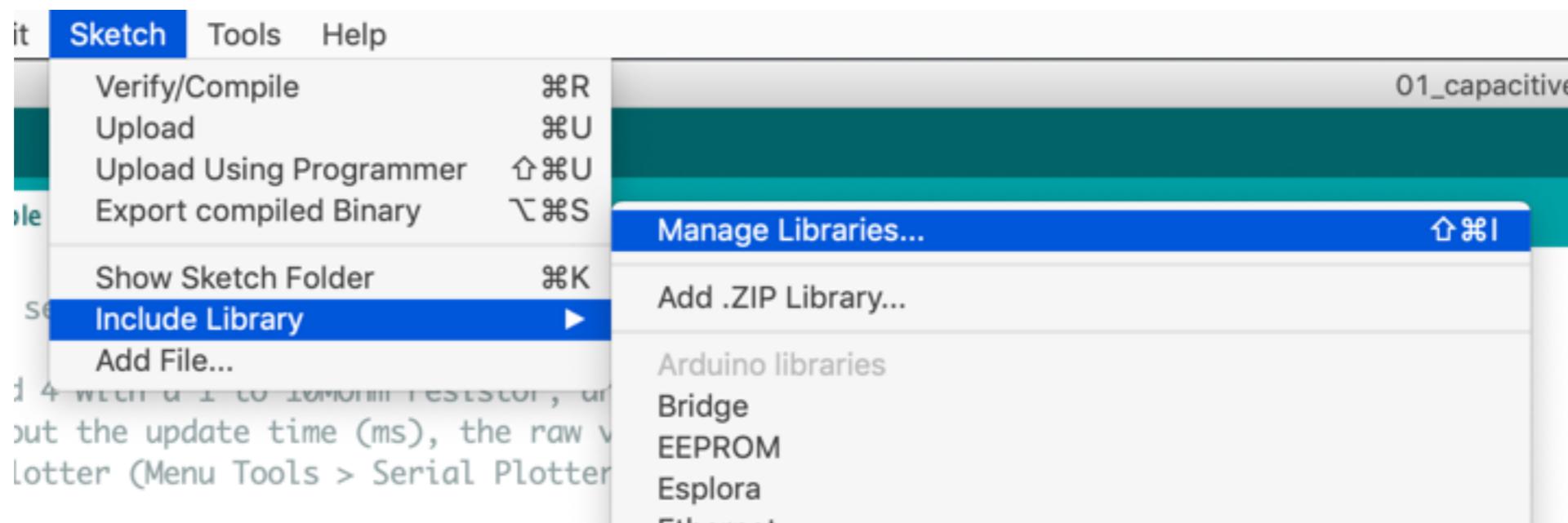
Open & upload example  
01\_capacitive\_sensor\_example



GND  
Output pin  
5V



# Led strip



Install ‘FastLed’ library.

Open & upload 02\_simple\_led\_example

Next steps:

Try the other examples.

Experiment.

Magic.

Dance.

