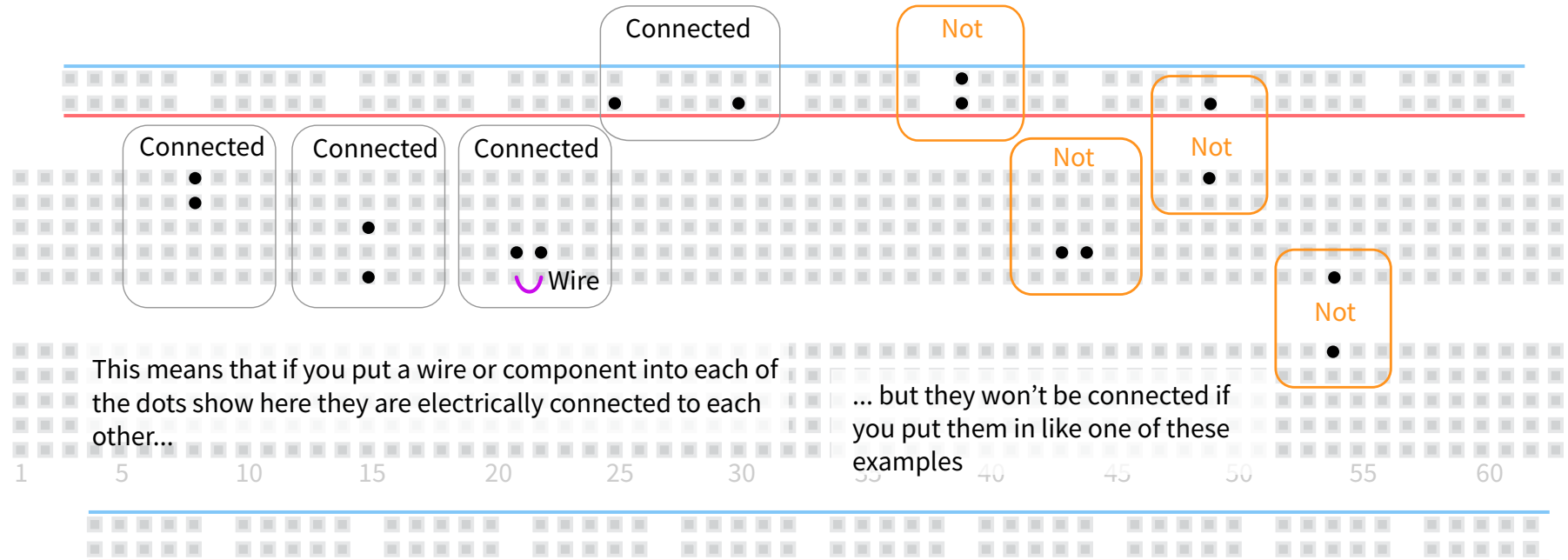


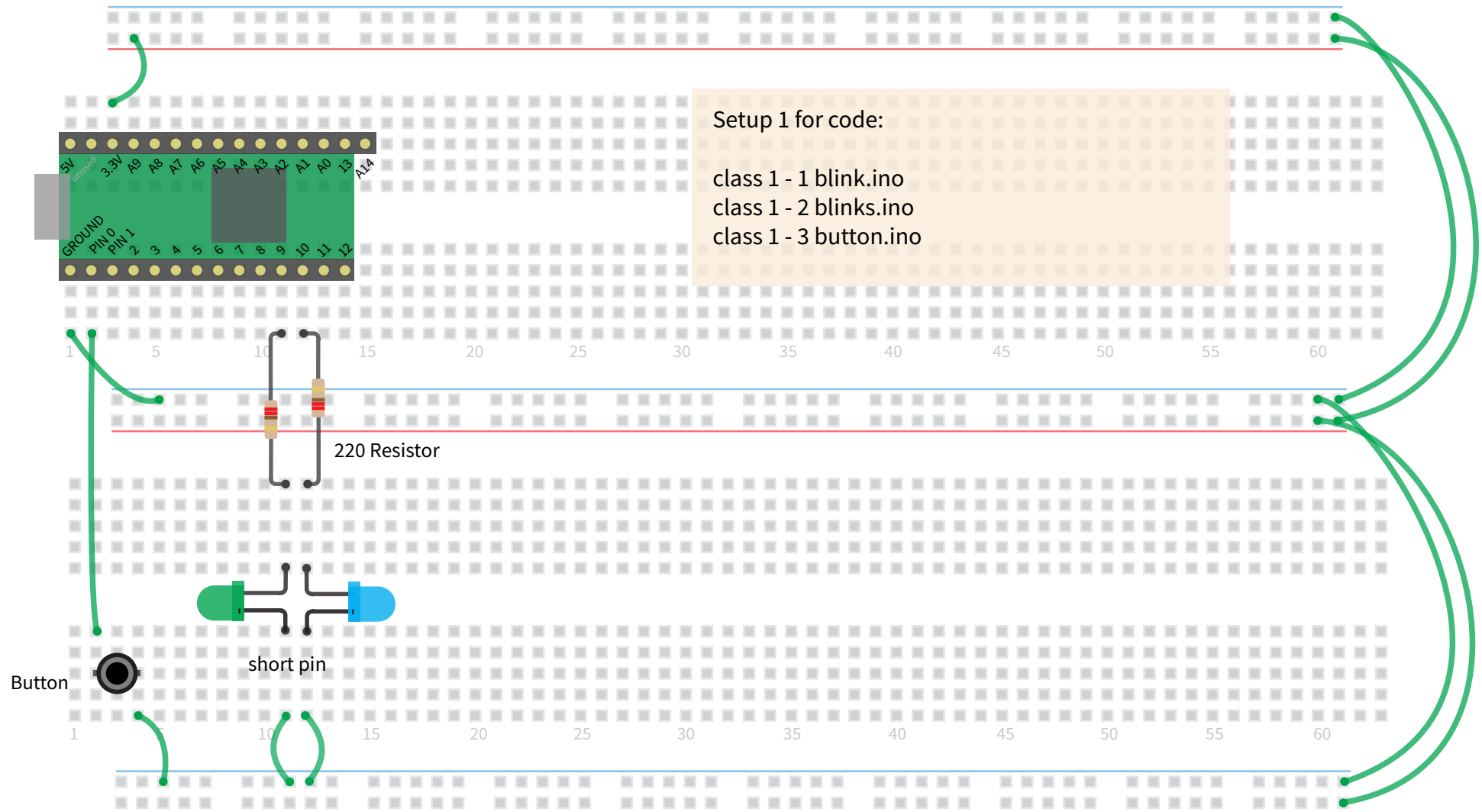
Breadboards make it easy to assemble electronic circuits without soldering

The holes on a breadboard are connected as show with the colored lines.  
 The vertical strips on either side of the central gap are connected in groups of five.  
 The horizontal red and blue “bus” lines are connected all the way across the board.



This means that if you put a wire or component into each of the dots show here they are electrically connected to each other...

... but they won't be connected if you put them in like one of these examples



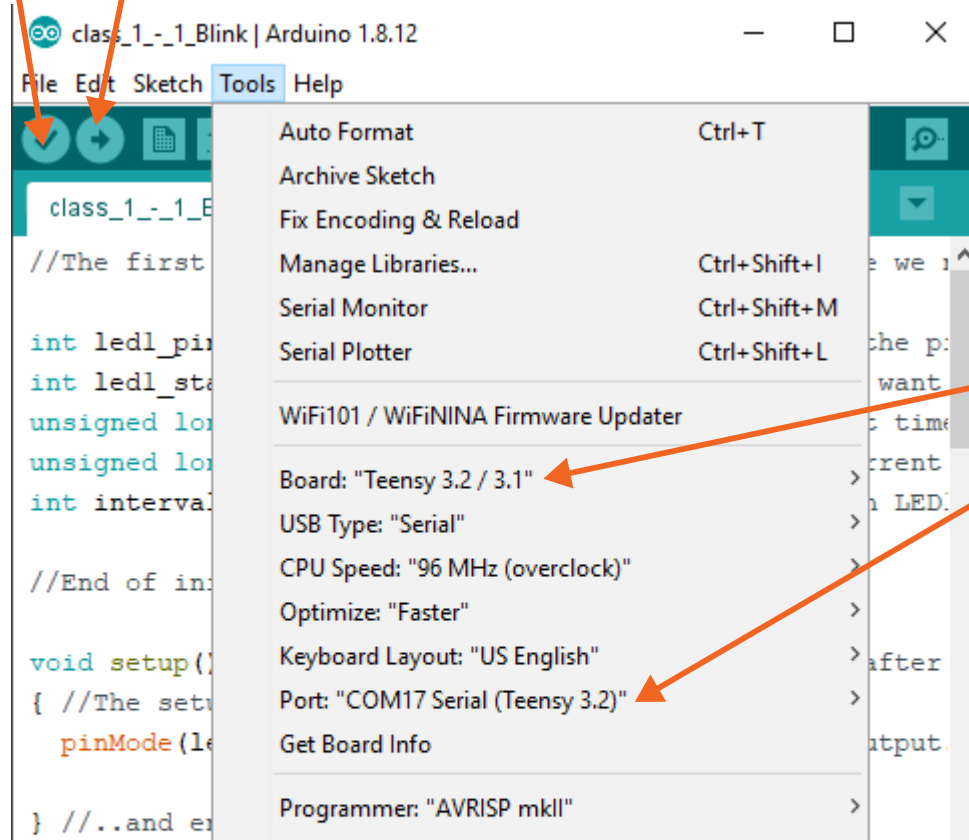
## The Arduino IDE is how we'll code and communicate with the teensy

### Verify

Check that the code doesn't have any errors and can compile but don't upload it.

### Upload

Compile the code and put it on your device



Before you can upload your code you must select the teensy board and the port it is connected to

Go to Tools and select Teensy 3.2/3.1 under board.

Plug your device in to USB and select whatever port shows "Teensy" on it.

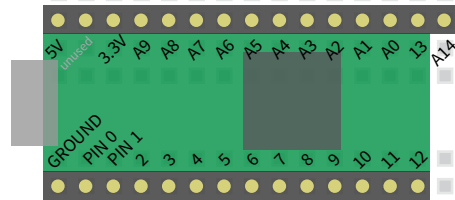
You don't need to worry about the rest for now.

Setup 2 for code:

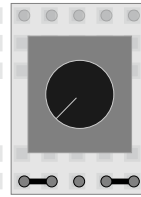
class 1 - 4 analogRead.ino

class 1 - 5 analogWrite.ino

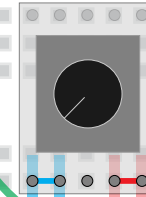
Grey wires are  
from the last step



Potentiometer

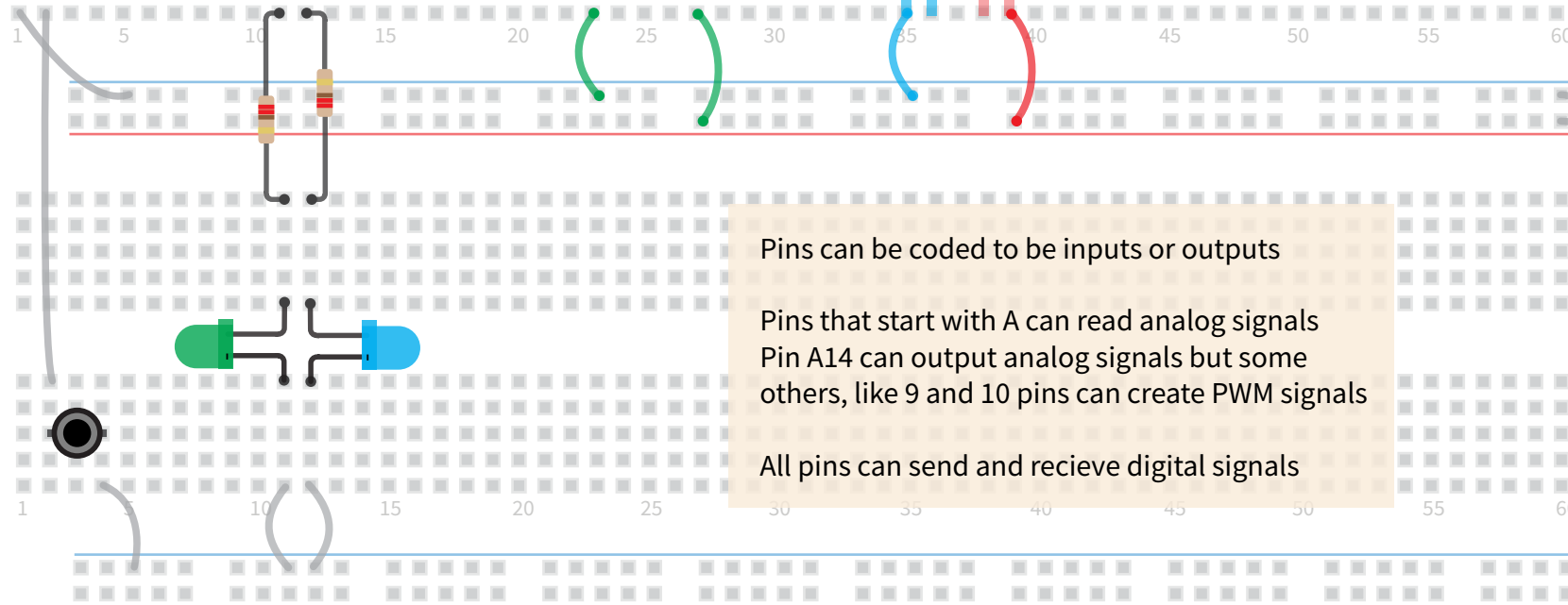


Potentiometer



On these special pots the two legs on the right  
are connected, as are the two on the left.

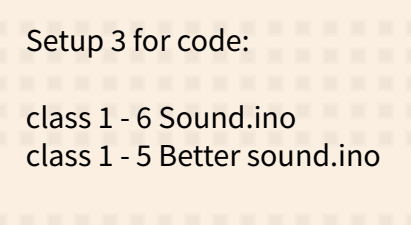
They are all 10k Ohm



Pins can be coded to be inputs or outputs

Pins that start with A can read analog signals  
Pin A14 can output analog signals but some  
others, like 9 and 10 pins can create PWM signals

All pins can send and receive digital signals



Only put one of these wires in

For mixer, amp, etc

For Headphones

Arduino is a platform.

A programming environment, hardware, software, and a community.

We program devices compatible with the platform in the C language with lots of Arduino specific code libraries.

There is no operating system or anything like that. The code you upload is all there is.

The Teensy 3.2 device we use is based on a microprocessor chip that already existed. Paul Stoffregen of PJRC decided to make work with the Arduino platform and it's become one of the main Arduino devices people use due to its price, formfactor, and power. The original Arduino UNO is still a useful device though. It just can't do audio at near the level we will.

