



V&A P5.js Series: Arduino

@lexicobob

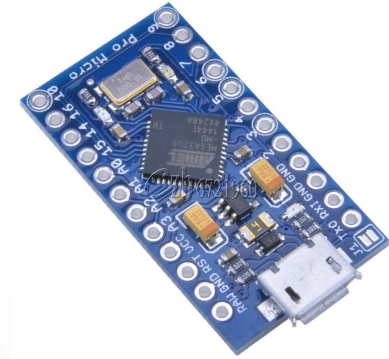


Why keyboards are great





HOW THO?

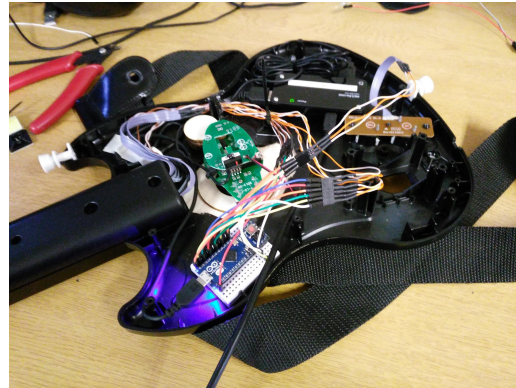
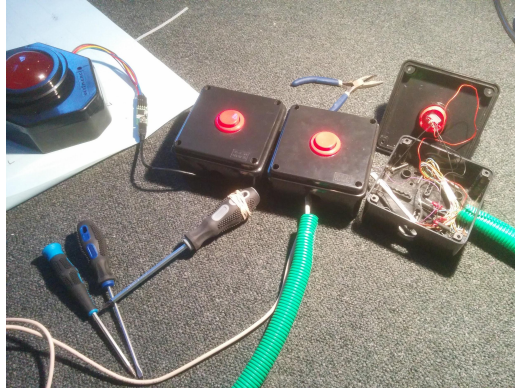


v.pololu.com

ATmega 32u4 <3



Buttons







What's in the Bag

- Arduino Pro Micro
- Breadboard
- 2 x wires (DuPont cables)
- 1 x arcade button



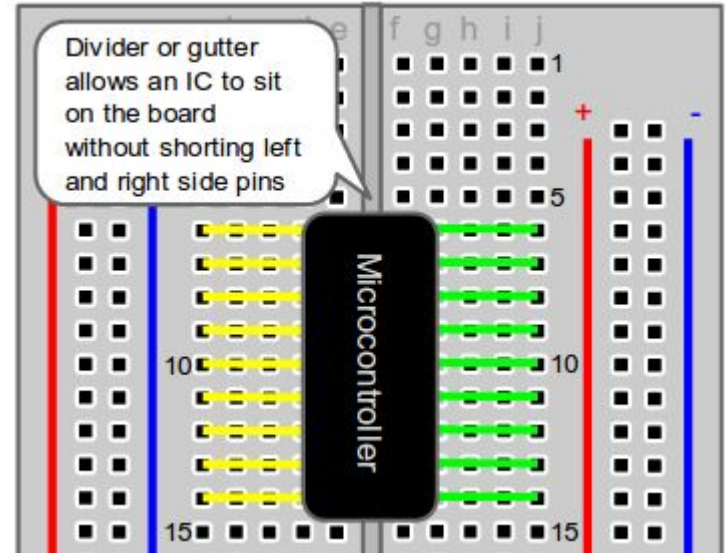
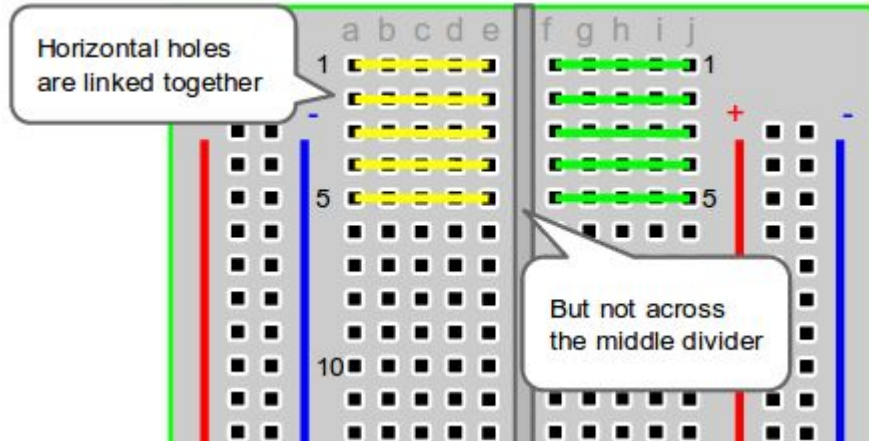


TODAY

- Make a hole in a box
- Solder wires to a button
- Use a breadboard
- Put it together
- Write the code!
- Play your game

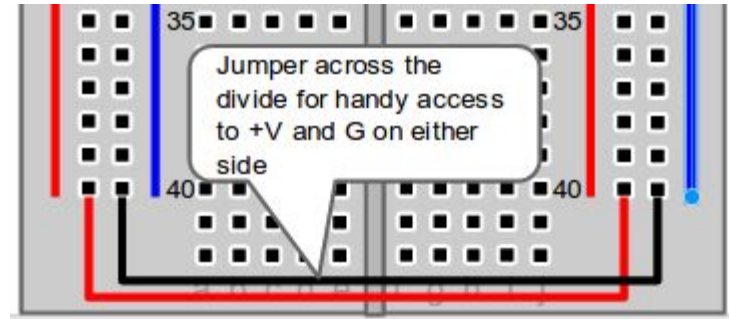
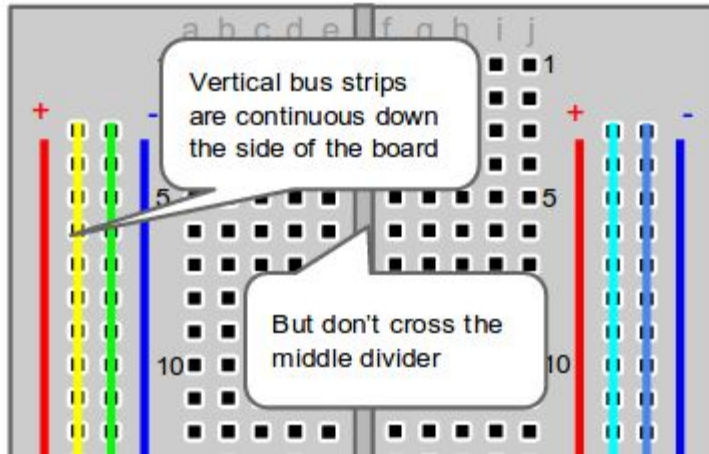


Breadboards





Breadboards



Images from Ben Miller's tutsplus.com article:
[How to Use a Breadboard and Build a LED Circuit](https://tutsplus.com/articles/how-to-use-a-breadboard-and-build-a-led-circuit)

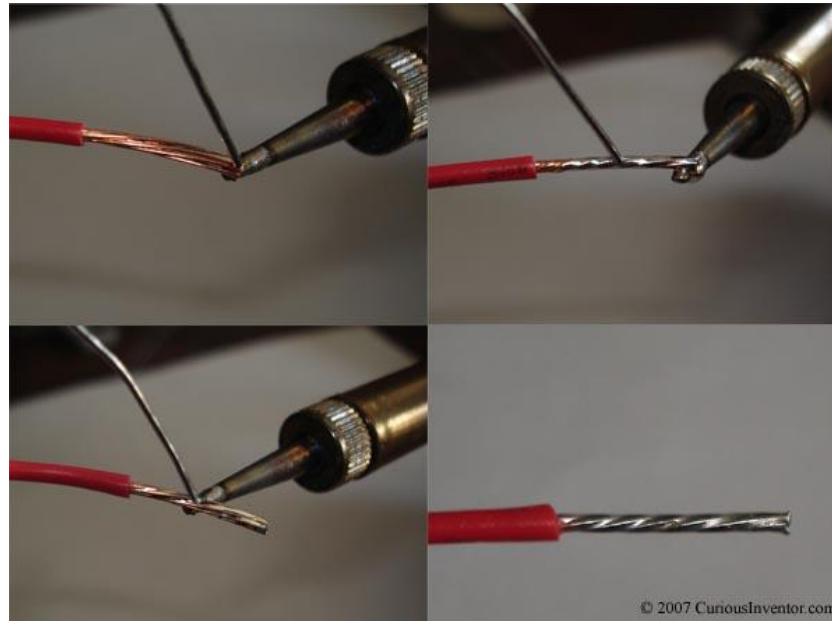


Soldering

- Decide whether you want to use the breadboard.
- Cut off one end of your wire.
- Strip the plastic off the end.
- Tin the wire
- Solder to the button
- Repeat!

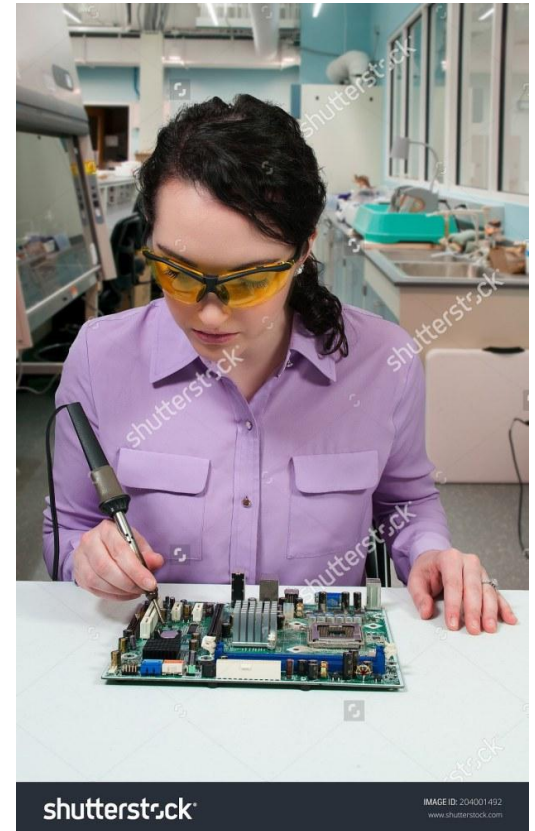
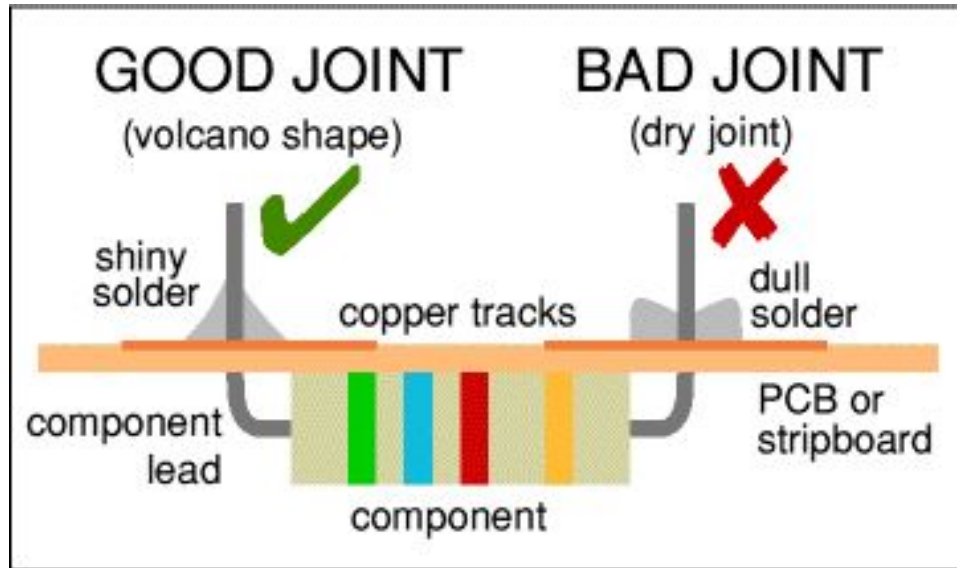


Tinning





Soldering





Cutting Holes - using a knife

- Don't point the knife at your face.
- Don't point the knife at anyone else's face.
- Don't run with the knife.
- Protect the surface you're cutting on.
- Draw a 28mm circle.
- Cut it out.



Putting it together

- Push button through the hole
- Screw on the nut
- Plug one pin from the button into any of the pins labelled GND (ground)
- Plug the other pin into one of the digital pins
- Plug the USB cable in!



Coding Time!





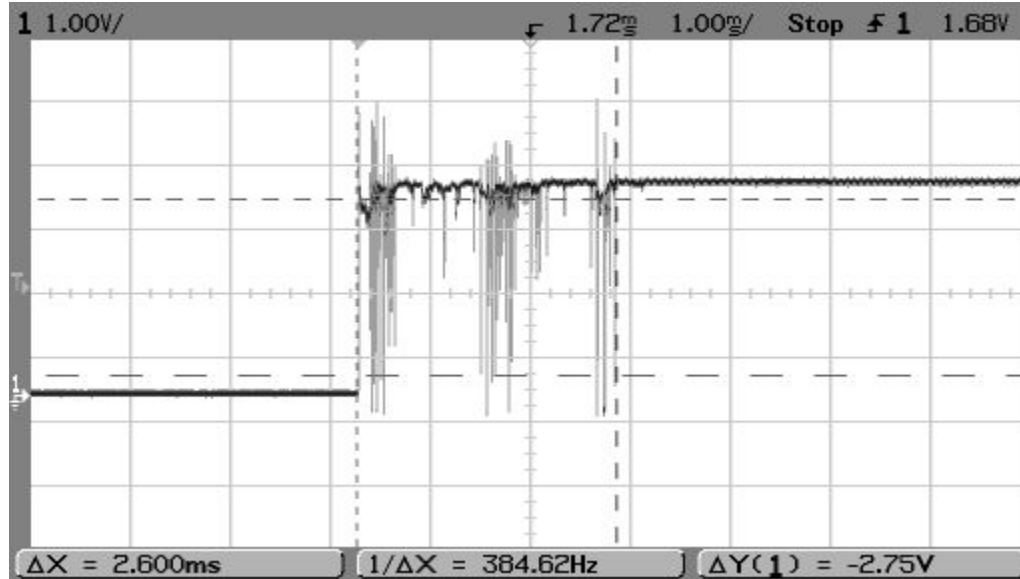
Arduino IDE + Bounce library

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

<https://github.com/thomasfredericks/Bounce-Arduino-Wiring/archive/master.zip>

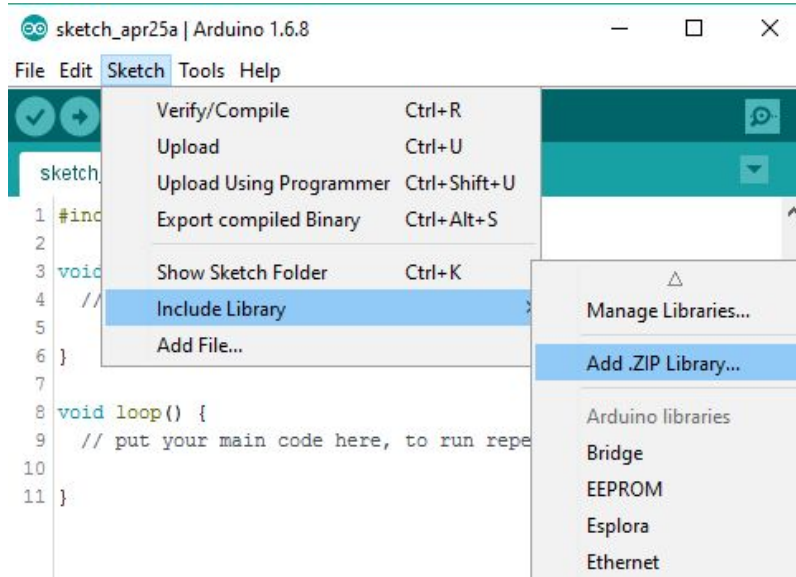


Bounce?





Installing the Library





The Setup

keyboardtutorial

```
1
2 #include <Bounce2.h> //to access the bounce library we added
3 #include <Keyboard.h> // access the built in keyboard library
4
5 #define BUTTON_PIN 1 //using pin 1 for my button
6
7 const char key = 'q'; // going to press the q key
8 Bounce button = Bounce(); //create bounce button called button
9
10 void setup() {
11     // put your setup code here, to run once:
12
13     //use arduino as keyboard
14     Keyboard.begin();
15
16     //set button pin to be an input
17     //activate pull up resistor
18     pinMode( BUTTON_PIN ,INPUT_PULLUP);
19
20     //setup the button
21     button.attach( BUTTON_PIN );
22     button.interval(5);
23 }
24
```



SPECIAL KEYS

KEY_LEFT_CTRL

KEY_LEFT_SHIFT

KEY_LEFT_ALT

KEY_LEFT_GUI

KEY_RIGHT_CTRL

KEY_RIGHT_SHIFT

KEY_RIGHT_ALT

KEY_RIGHT_GUI

KEY_UP_ARROW

KEY_DOWN_ARROW

KEY_LEFT_ARROW

KEY_RIGHT_ARROW

KEY_BACKSPACE

KEY_TAB

KEY_RETURN

KEY_ESC

KEY_INSERT

KEY_DELETE

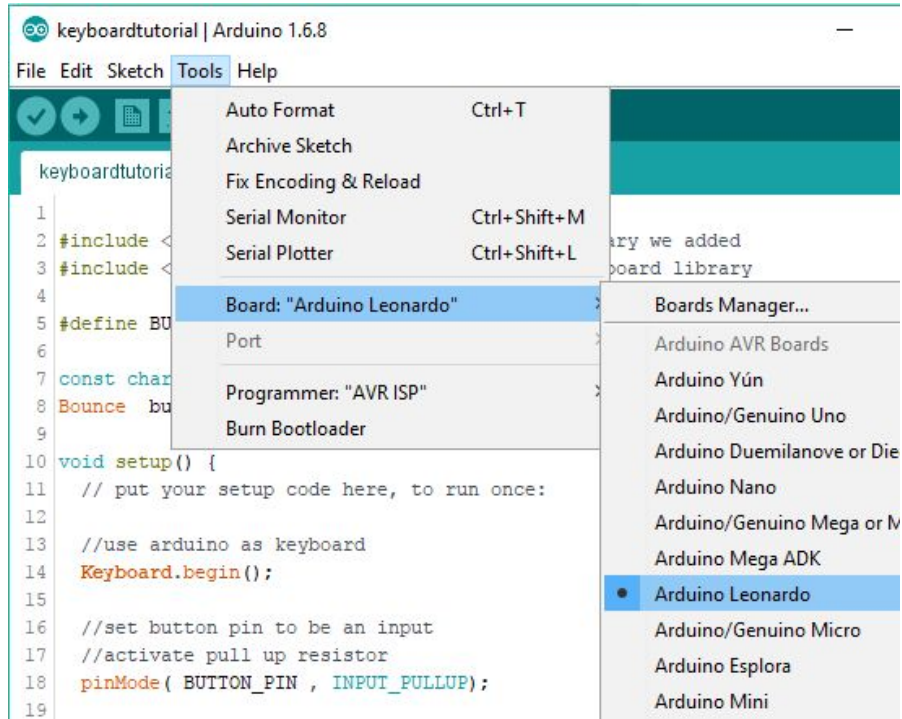


The Loop

```
keyboardtutorial
24
25 void loop() {
26   // put your main code here, to run repeatedly:
27
28   //button.update is true if button state has changed.
29   if (button.update()) {
30
31     //if button went from 1 to 0 - ie. was pressed
32     if(button.fell()){
33       Keyboard.press(key); //press key down
34     }
35     //if button went from 0 to 1 - ie. was released
36     else if (button.rose()){
37       Keyboard.release(key); //release key
38     }
39   }
40
41   //OR
42
43   if(button.update()) {
44     if(button.fell()){
45       Keyboard.write(key); //send 1 keypress |
46     }
47   }
48 }
49
```

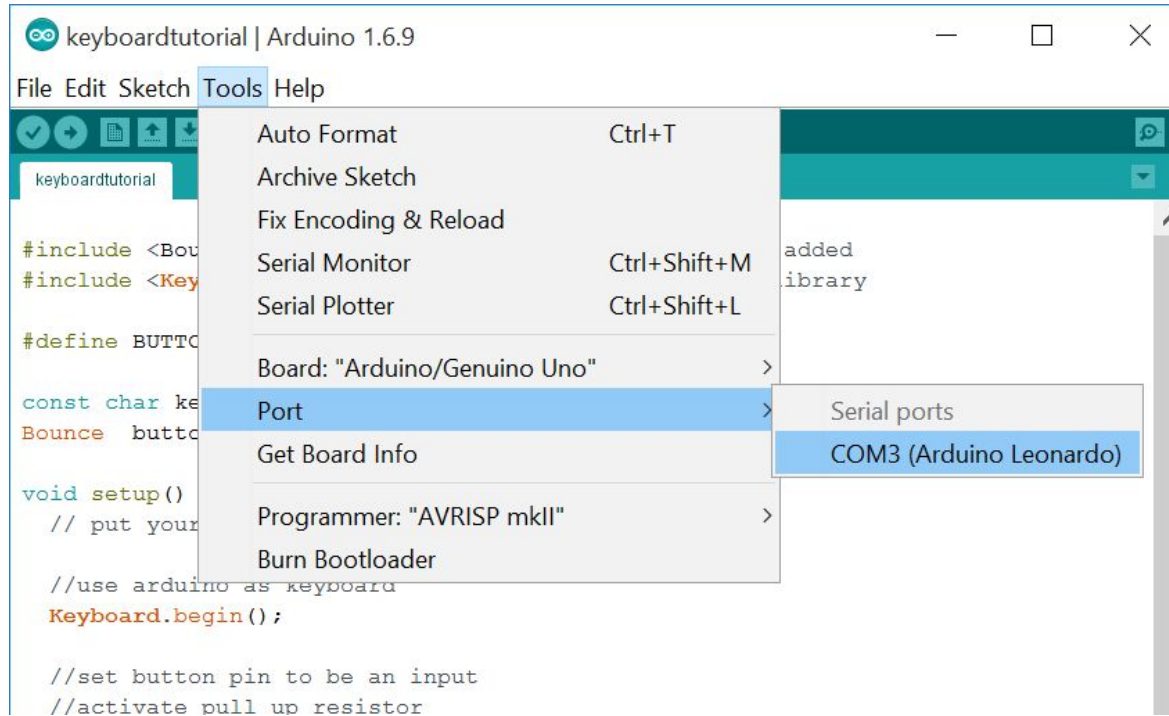


UPLOOOOADING...





UPLOOOOADING...





FINISHING UP





Amazing Job!

