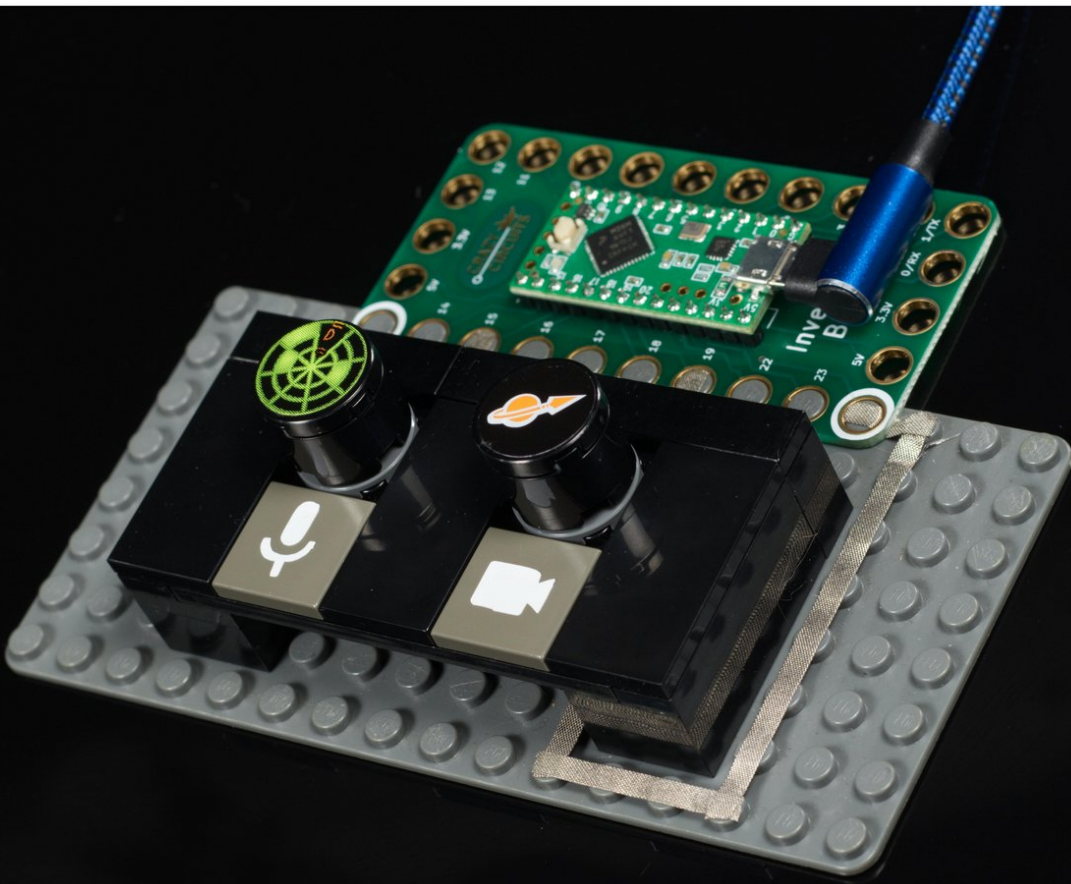




# Meeting Controls

Use a Crazy Circuits Invention Board connected to a computer to control your videoconferencing experience.

Written By: Pete Prodoehl



# INTRODUCTION

The Crazy Circuits Invention Board can act just like a USB keyboard when we plug it into a computer. This allows us to control our mic and camera when doing videoconferencing.



## TOOLS:

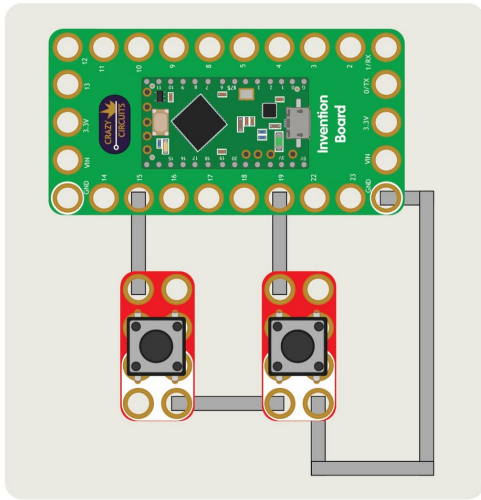
- [Scissors](#) (1)
- [Computer](#) (1)



## PARTS:

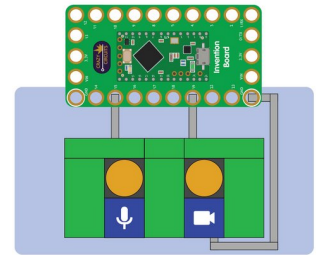
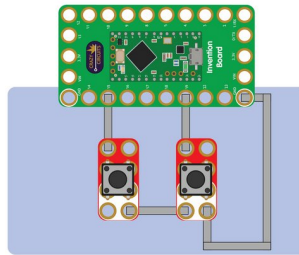
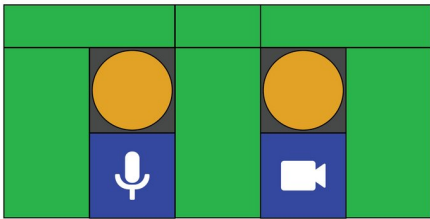
- [Crazy Circuits Invention Board](#) (1)
  - [Jumbo Pushbutton Chip](#) (2)
  - [Maker Tape](#) (1)
- 1/8"

## Step 1 — Build your Circuit



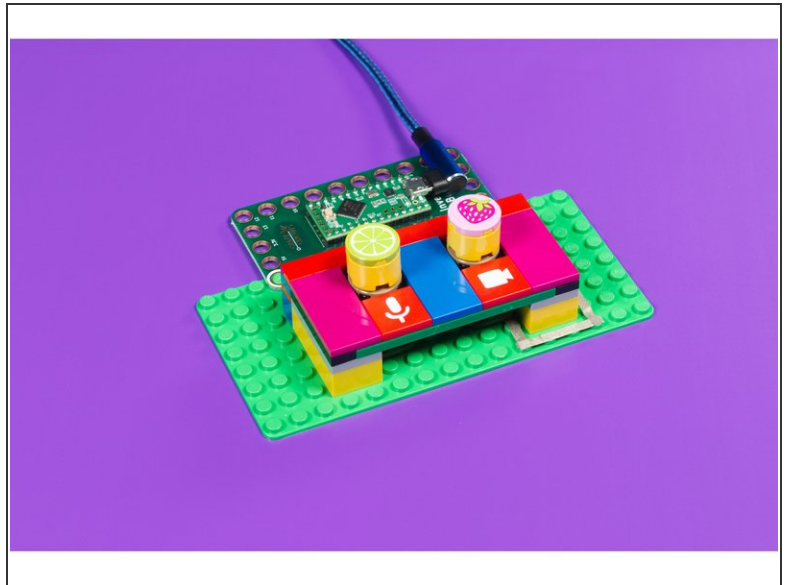
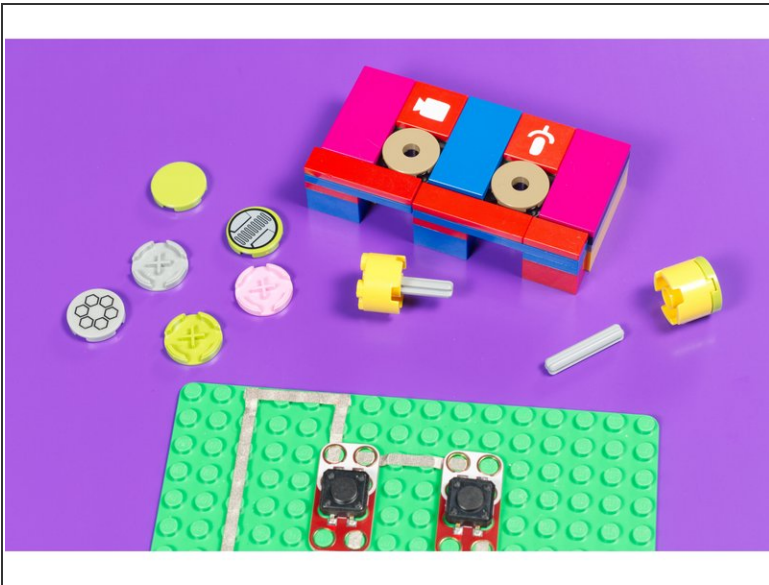
- Use a LEGO baseplate to determine the layout of your circuit. You'll need space for the Invention Board, two Jumbo Pushbuttons, and Maker Tape to connect it all together.

## Step 2 — Build with LEGO



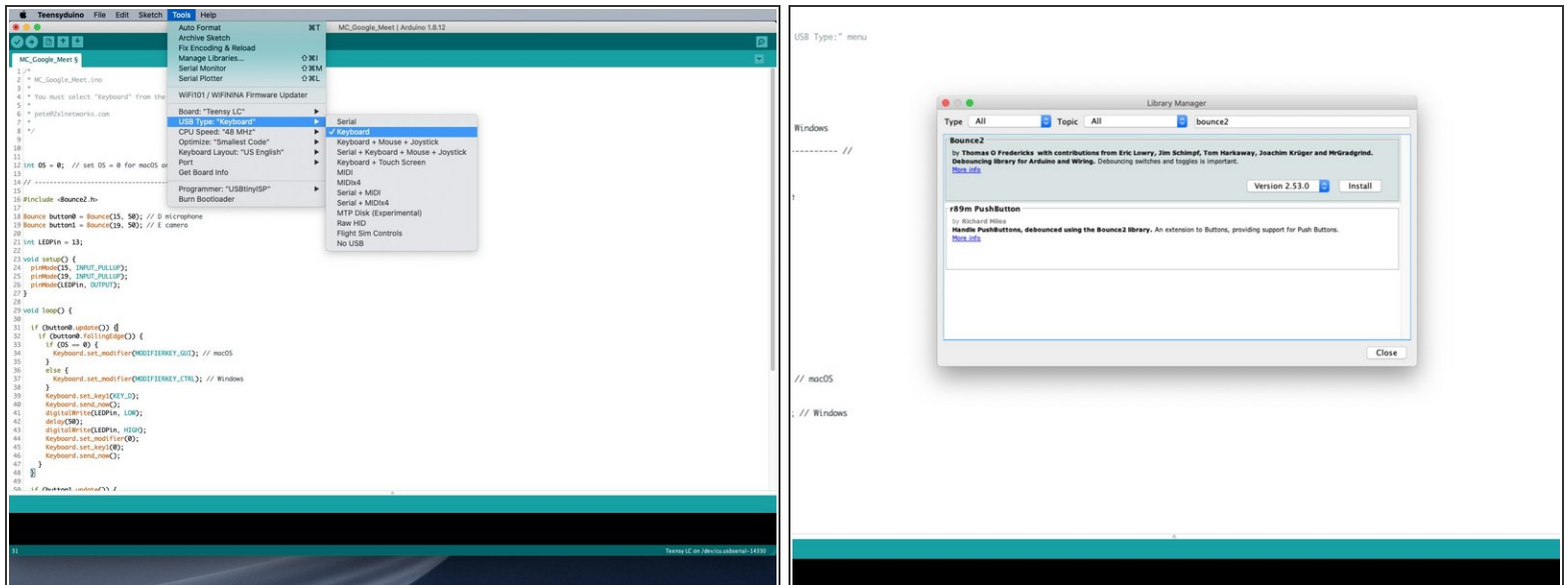
- Plan out your LEGO build. You'll want to fit the LEGO on top of the circuit, so getting it all lined up, and leaving room for the Maker Tape is the challenge here.
- ❗ It may be helpful to build the top LEGO part before you get all of your components in place so you can determine the needed spacing.

## Step 3 — LEGO Buttons



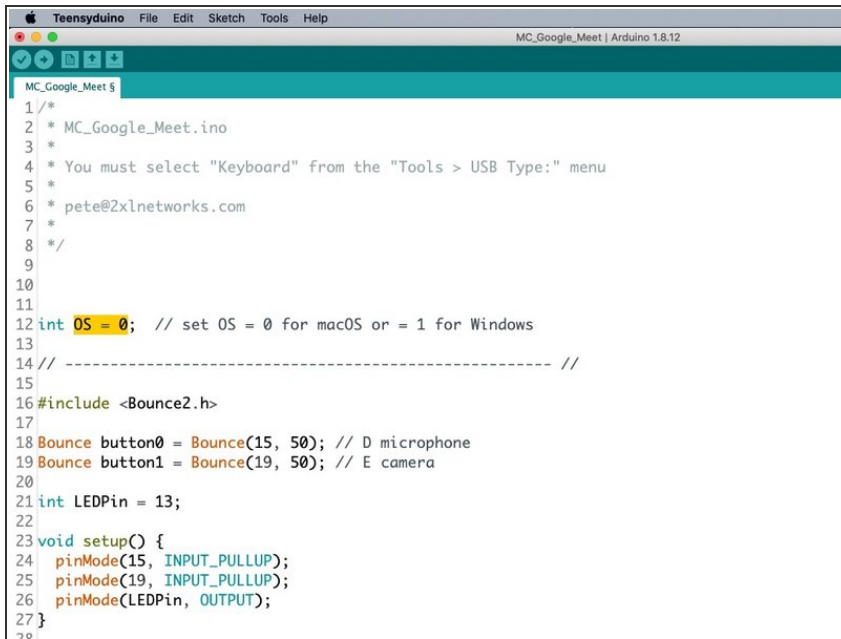
- If you haven't built a LEGO button before, check out our [LEGO to Jumbo Pushbutton](#) guide for some good tips.
- You can use button covers that are plain or that have fun graphics on them.
- ① Tip: Lime means you can't hear me and strawberry means you can't see me!

## Step 4 — Load the Code



- ❏ If you've never used our Invention Board before we recommend that you read the user guide and install the correct software.
- Find the code you'll need in our GitHub repository under [Meeting Controls](#). We have versions that work for Google Meet, Zoom, and Microsoft Teams.
- ❏ In the [Teensyduino software](#) you'll need to select "Keyboard" under the **Tools -> USB Type** menu.
- ❏ You'll need the **Bounce2** library for your sketch. If it's not installed you will be warned when you try to compile or upload your code. You can easily add it using the **Library Manager**.
- Upload the code to the Invention Board. The software will tell you if it worked properly. Once uploaded, you are all set!

## Step 5 — Notes About the Code



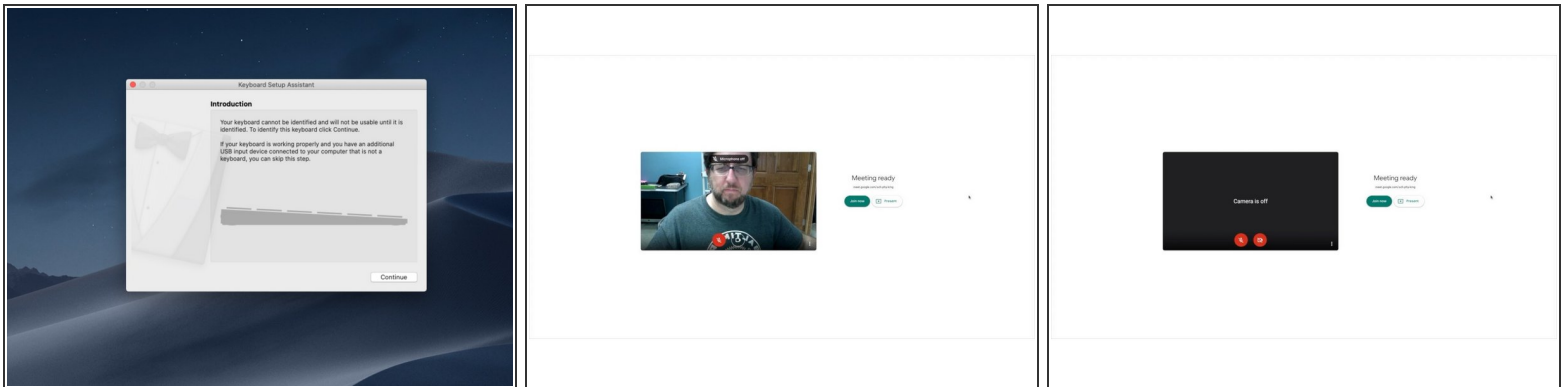
```

1 /*
2  * MC_Google_Meet.ino
3  *
4  * You must select "Keyboard" from the "Tools > USB Type:" menu
5  *
6  * pete@2xlnetworks.com
7  */
8
9
10
11
12 int OS = 0; // set OS = 0 for macOS or = 1 for Windows
13
14 // -----
15
16 #include <Bounce2.h>
17
18 Bounce button0 = Bounce(15, 50); // D microphone
19 Bounce button1 = Bounce(19, 50); // E camera
20
21 int LEDPin = 13;
22
23 void setup() {
24   pinMode(15, INPUT_PULLUP);
25   pinMode(19, INPUT_PULLUP);
26   pinMode(LEDPin, OUTPUT);
27 }
28
29

```

- There is one thing you may need to change in the code. Look for the line that has **OS = 0** in it. If you are using a Mac set this to 0 and if you are using Windows set it to 1.
- There is a section in the code that will send a different key combination depending on your operating system. Often key commands on Windows use the Control key while key commands on the Mac use the Command Key, so this *flag* takes care of that.

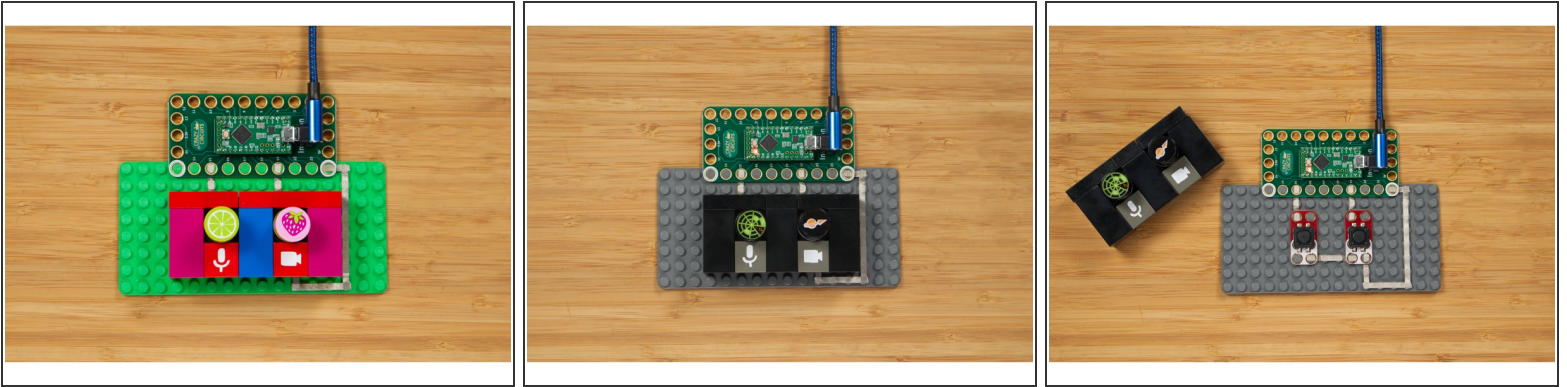
## Step 6 — Test it Out!



- ☑ The first time your computer sees the new "keyboard" plugged it in *may* show a window asking you to help identify the new keyboard. You can just close this helpful wizard as it isn't really helpful in this case.
- Launch your videoconferencing software and test it out! We're using Google Meet so when we press the left button we toggle the mic and when we press the right button we toggle the camera.
- ❗ For the Microsoft Teams version controlling the camera only works in the desktop client, not the browser. Google Meet and Zoom should work fine based on the latest releases of their software.



## Step 7 — Take it Further



- We decided to make two versions of our Meeting Controls device, a "fun" version for the kids, and a "serious" version that is perfect for business.
- You can easily make different covers that are interchangeable depending on your mood.
- If you want to change the code to support other software with different key commands [check out the key codes for Teensyduino](#).
- Since we have a vinyl cutter we added small icons for a mic and camera to our flat LEGO pieces. If you want to add them you can [find vector files in the Icons directory](#).