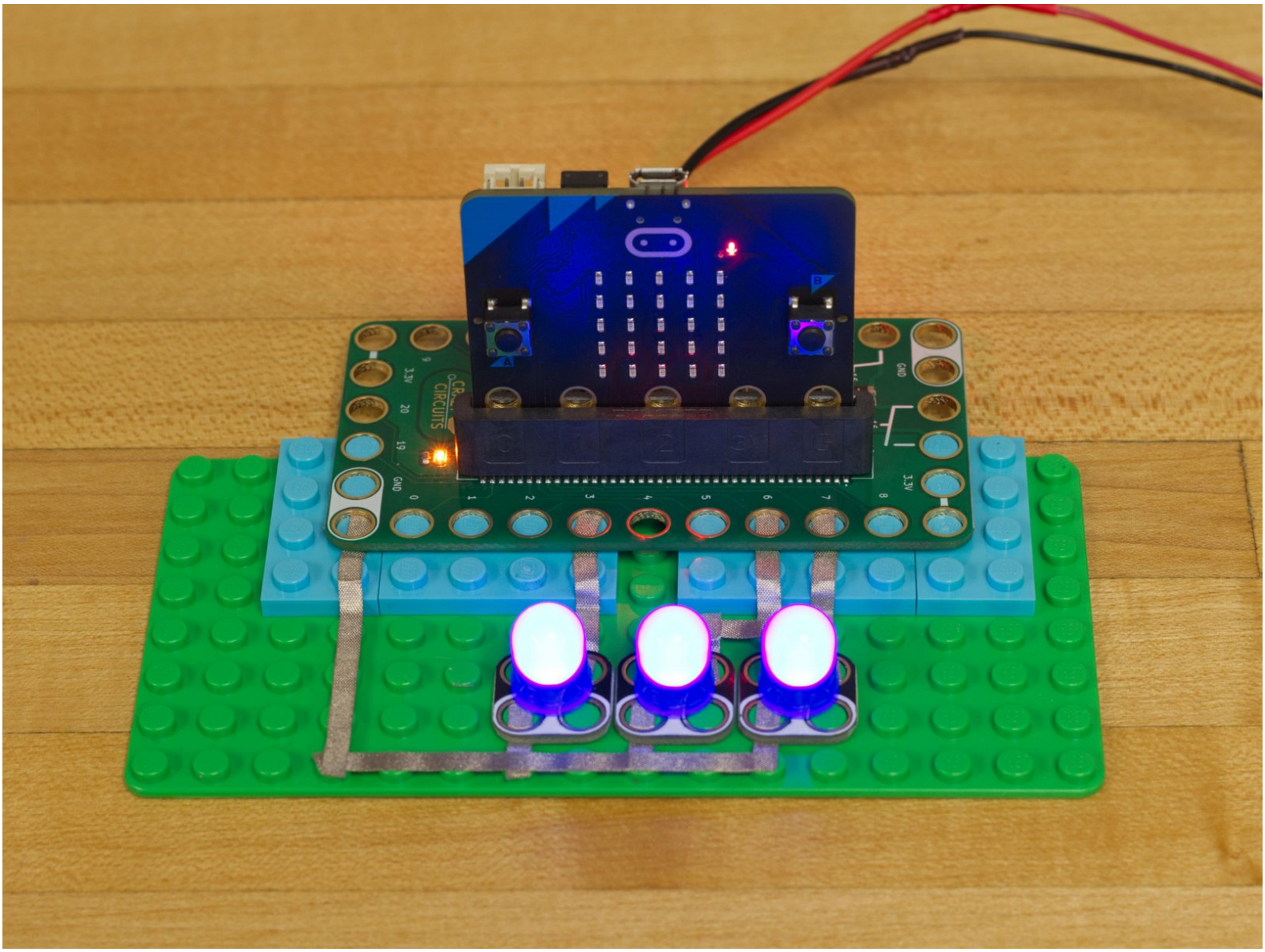
The Clapper

Want to turn off some LEDs with a clap of your hands? With the micro:bit V2 it's easy!

Written By: Pete Prodoehl



INTRODUCTION

Want to turn off some LEDs with a clap of your hands? With the micro:bit V2 it's easy!

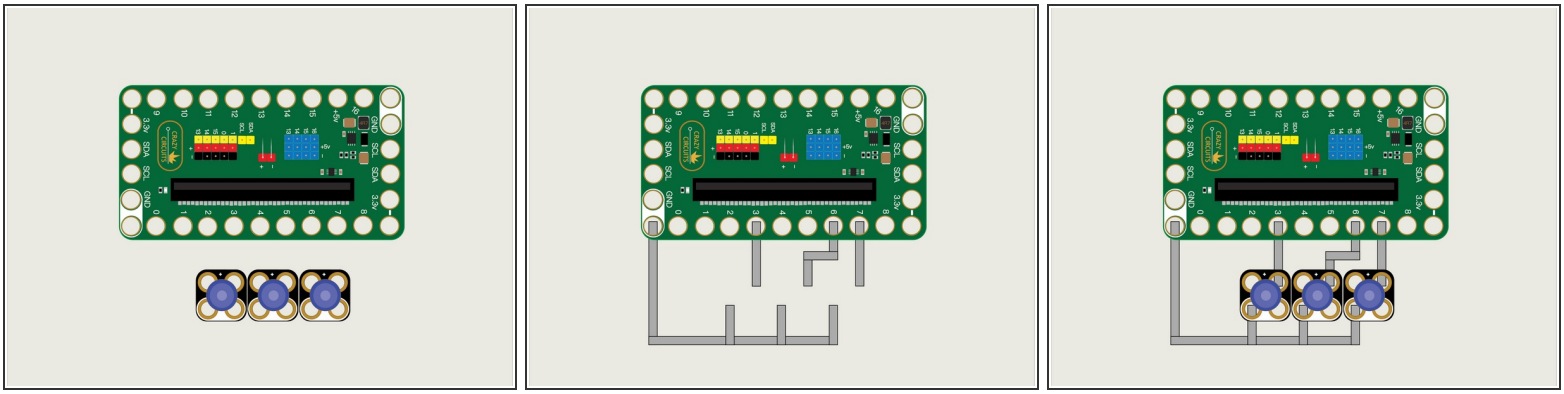
TOOLS:

- Computer (1)
- Scissors (1)

PARTS:

- Crazy Circuits Bit Board (1)
- micro:bit (1)
- Crazy Circuits LED Chip (3)
- Maker Tape (1)
  1/8"
- LEGO Baseplate (1)

Step 1 — Build your Circuit

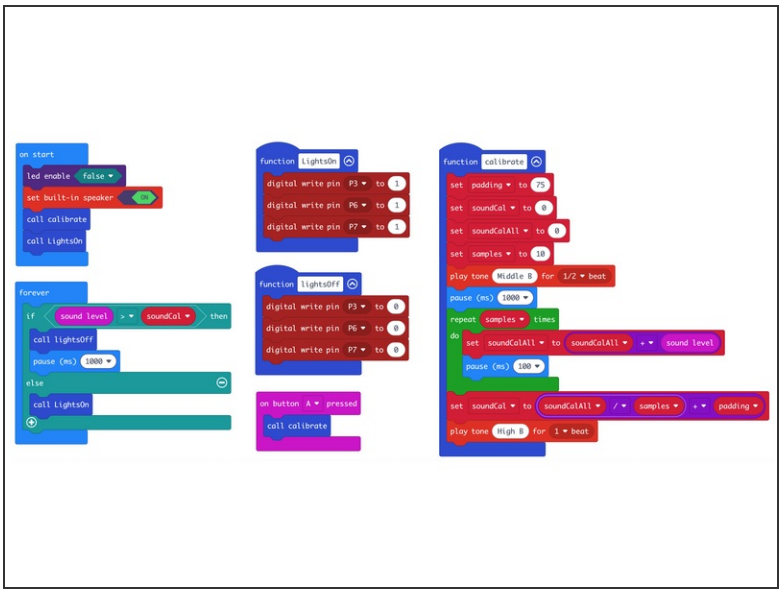


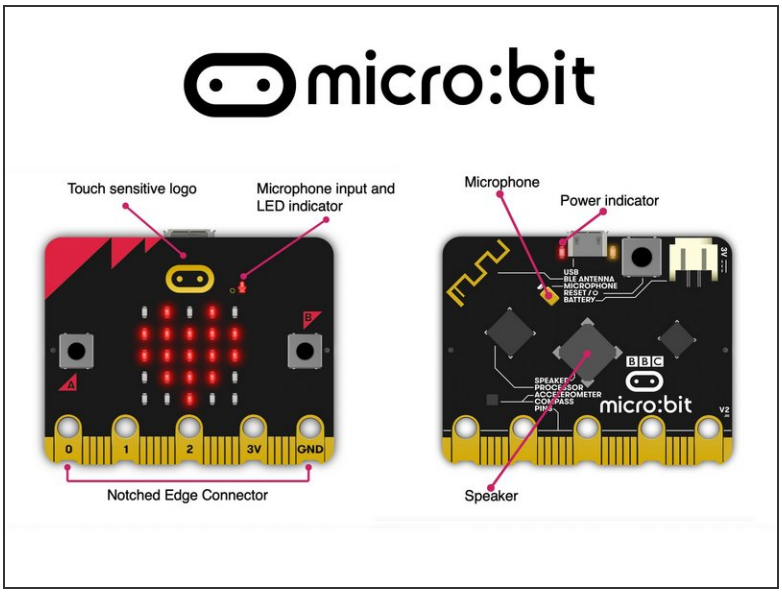
- Gather your components. You will need a micro:bit V2, a Bit Board, some Crazy Circuits LEDs, and some 1/8" Maker Tape.

⚠ You do need a V2 micro:bit as it has a built-in microphone. Previous versions will not work for this project.

- Once you have your components, assemble the parts onto a LEGO baseplate and use Maker Tape to connect the LEDs.

Step 2 — Load the Code

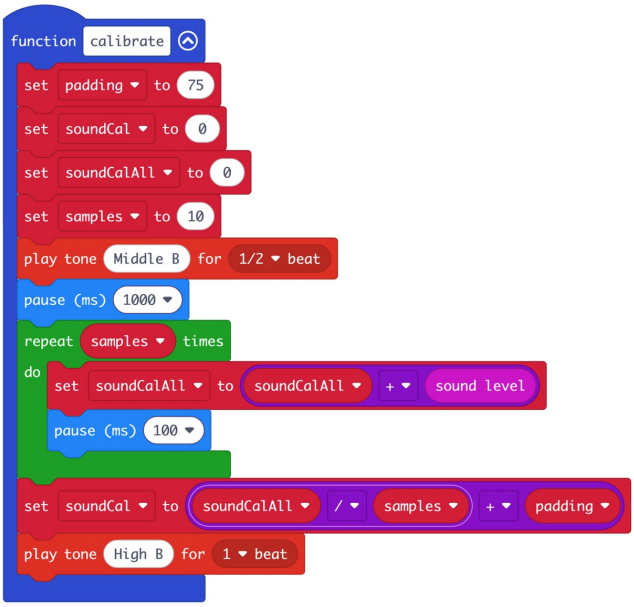




⚠ If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use]

- We're going to load the following code for our **The Clapper v3** program: [https://makecode.microbit.org/_4q0MgbKfh...]
- **Note!** We've updated and improved this code! It now runs a calibration function when it starts to calculate the sounds levels in the room.

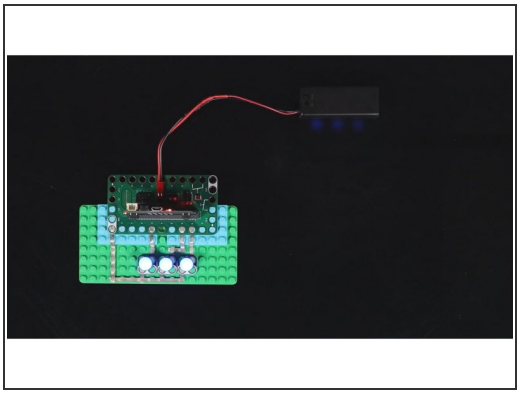
Step 3 — The Calibration

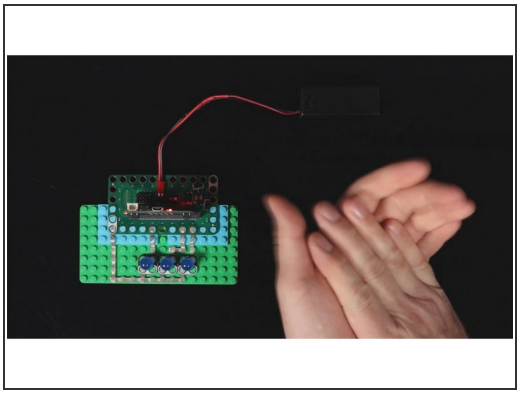


- Let's take a closer look at the calibration! First, we'll set some variables...
- The **padding** variable adds a little *padding* to the sound calibration we do with this function. It means the sound has to hit a certain value *plus the padding* to turn off the LEDs.
- The **soundCal** variable will hold the final result of the sound levels we capture into **soundCalAll**. The **soundCalAll** variable is the *sum* of all the **samples** we capture
- This "sampling" is common when working with sensors where you are reading values and basically creates an **average** from a number of sample results.
- In the repeat loop we fill up the **SoundCalAll** (which starts at 0) **samples** number of times (10 in this case) and then divide the total **SoundCalAll** by **samples** to get **soundCal**.
- You'll see we also add in our **padding** value in the equation.

- The **sound level** measurement will be between 0 and 255 with 0 being very quiet and 255 being very loud. Feel free to play with the value of the **padding** variable to require more (or less) sound to trigger the LEDs turning off.

Step 4 — Test it Out!







- Once you've got your circuit built, and the code is loaded, you can test it out.
- Power up your circuit using a USB cable plugged into the micro:bit or using a two AAA battery pack plugged into the Bit Board.
- Shhh! Be quiet... The micro:bit will beep once, calibrate the room sound, then beep a second time, and turn on the LEDs.
- Now clap your hands near the micro:bit and the LEDs should turn off!
- But wait! The LEDs turn back on after a second, so get ready to clap again!
- Keep clapping, my friend... Keep clapping.