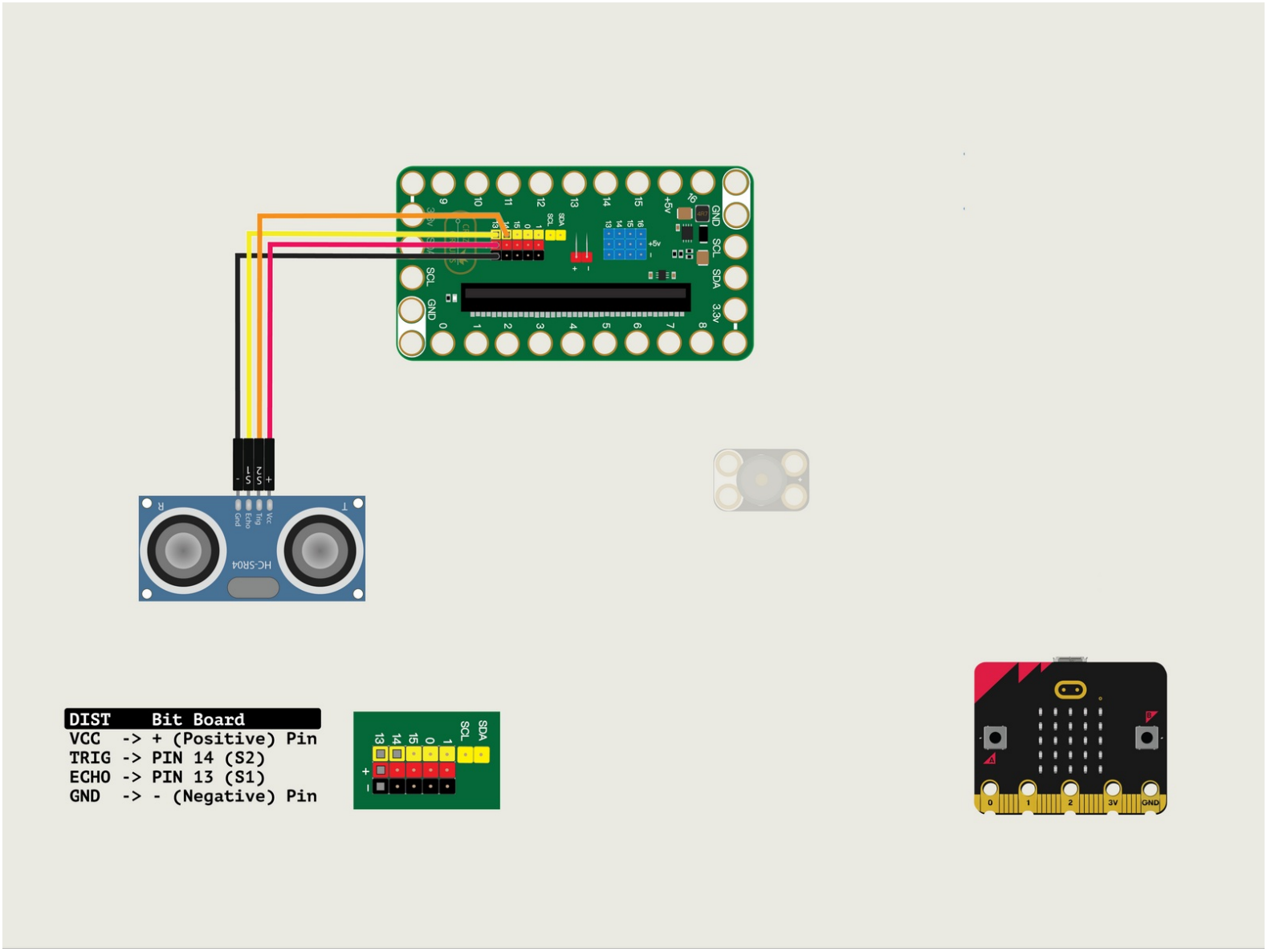
CH39-A - Distance Piezo Alarm

Connect a Distance Sensor to a Bit Board and use it to control the output of a Piezo Speaker.

Written By: Pete Prodoehl



INTRODUCTION

Connect a Distance Sensor to a Bit Board and use it to control the output of a Piezo Speaker.

TOOLS:

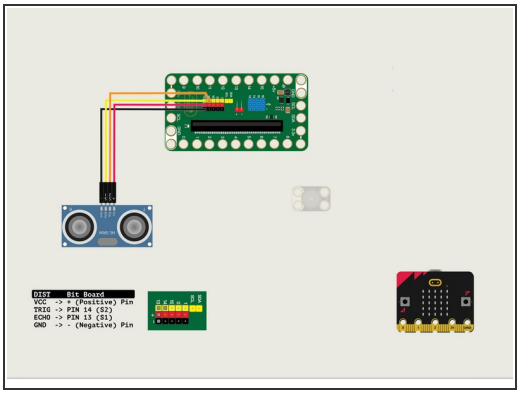
- Computer (1)

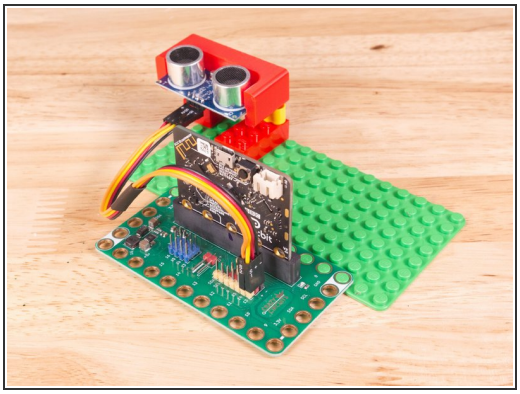
PARTS:

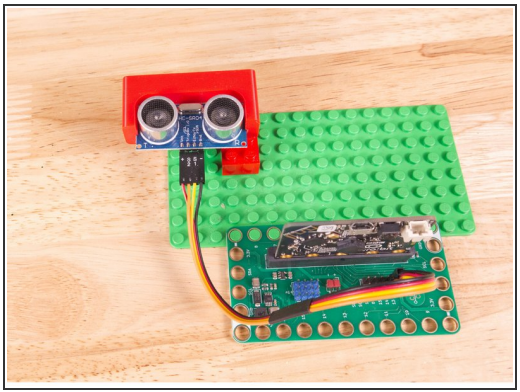
- Crazy Circuits Bit Board (1)
- micro:bit (1)
- Crazy Circuits Ribbon Cable (1)
- Distance Sensor (1)
- Crazy Circuits Piezo Speaker Chip (1)

(Optional)

Step 1 — Connect the Distance Sensor



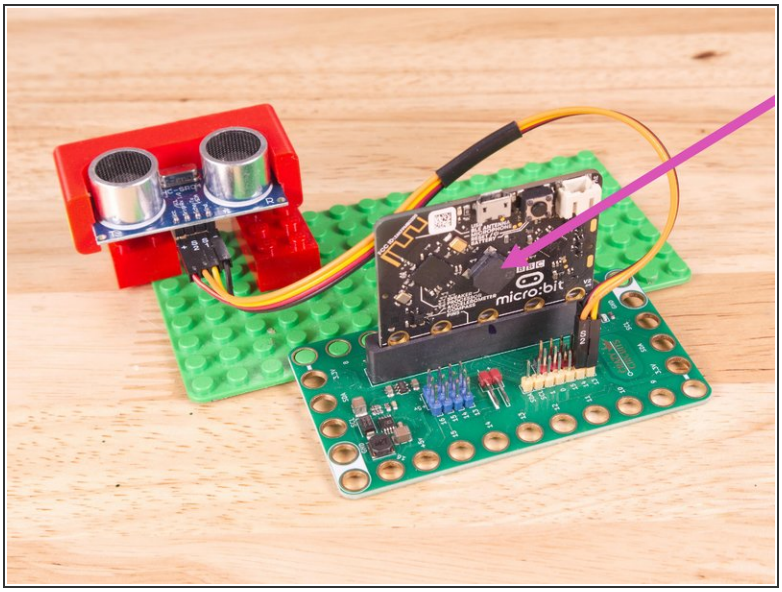


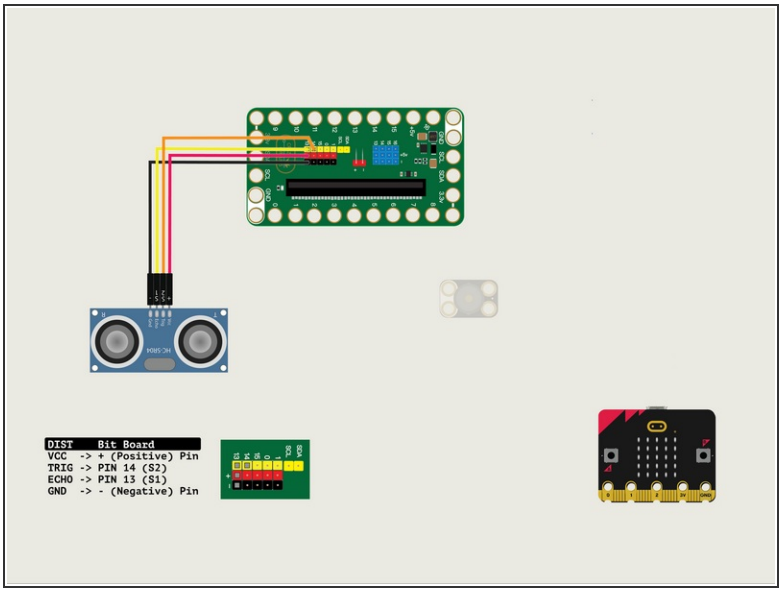


- We'll connect the **Distance Sensor** with a **Crazy Circuits Ribbon Cable** using all four wires.
- Plug the three-wire connector of the **Crazy Circuits Ribbon Cable** into the row with **Pin 13** on the Bit Board. The wire colors should match the pin header colors, with **S1** (yellow) going to the yellow pin.
- Next, plug **S2** (orange) into **Pin 14**. *(S2 is separated from the three-wire connector to allow you to plug it into another row.)*
- To the Distance Sensor plug **+** (red) into **VCC**; **S2** (orange) into **TRIG**; **S1** (yellow) into **ECHO**; and **-** (black) into **GND**.

© 2026

Step 2 — Connect the Piezo (Optional)

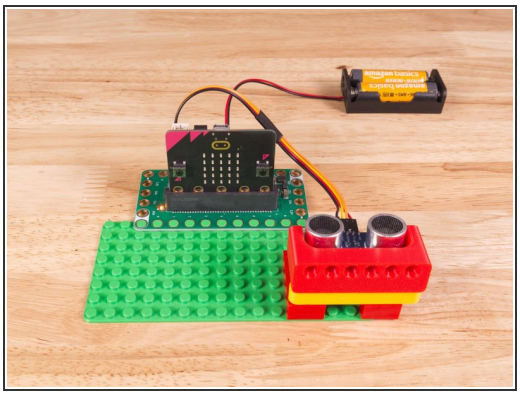
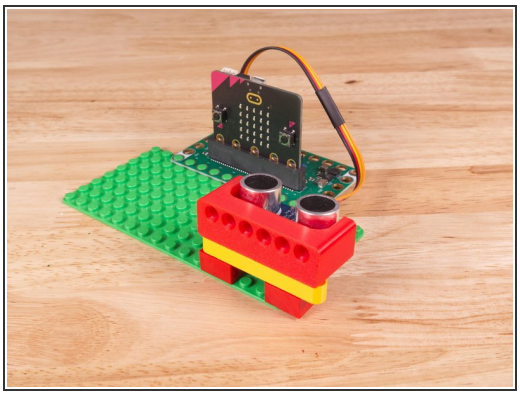
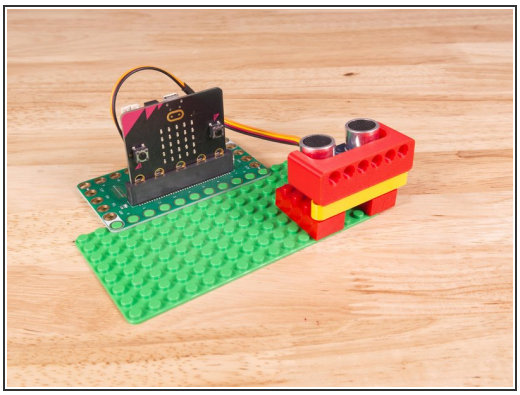




- For this guide we'll use the **built-in** piezo speaker found on the micro:bit V2.

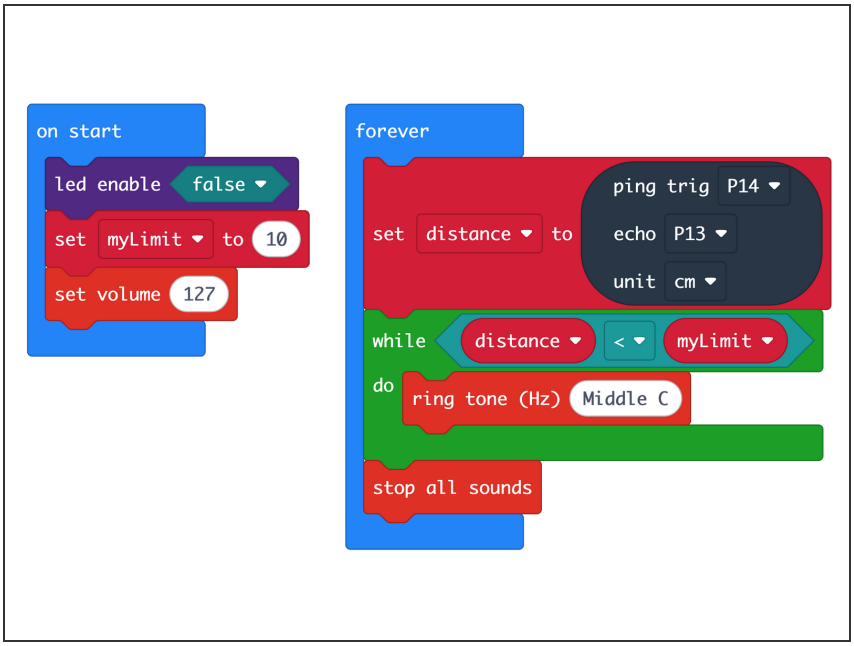
- If you prefer to connect a Crazy Circuits Piezo Speaker take a look at Chapter 13 for notes on connecting one and adding code to use it.

Step 3 — Mounting the Sensor

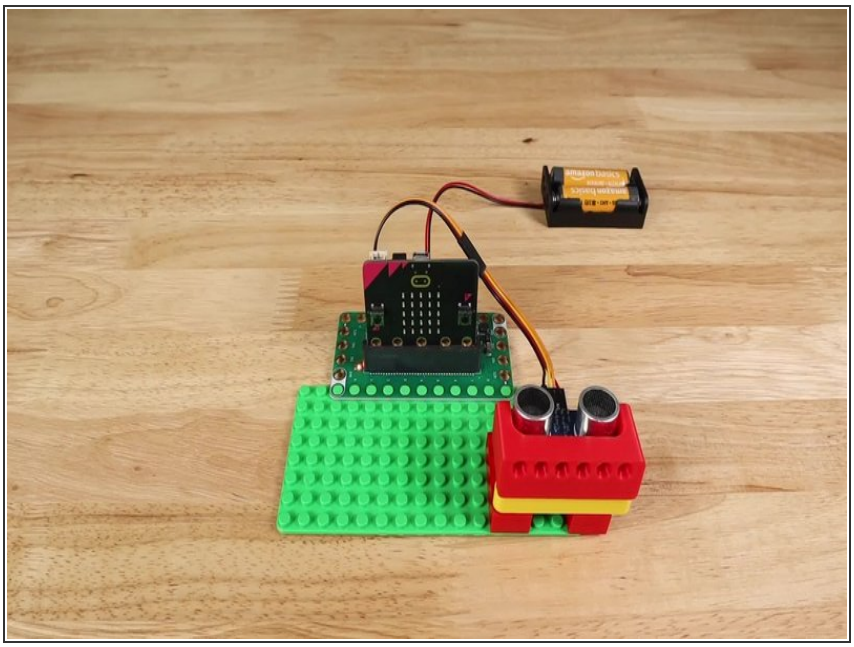
- We used a 3D printed part we designed to hold the Distance Sensor in place on the LEGO baseplate.
- A few Technic pins, a Technic beam, and some LEGO bricks are all that is needed.
- Alternately you can use some LEGO bricks and a rubber band or tape to hold the sensor in place. *(But don't use anything conductive!)*
- 3D print your own Distance Sensor Holder with Holes.

Step 4 — Load the Code



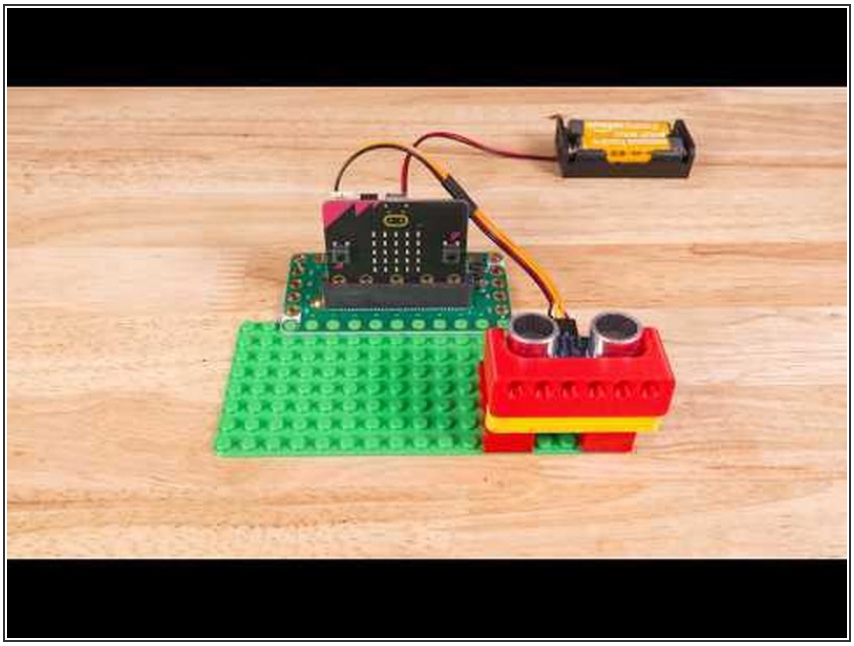
- If you've never used a micro:bit before you'll want to check out this guide: Bit Board V2 Setup and Use
- We're going to load the following code for our **Distance Piezo Alarm** program: https://makecode.microbit.org/_iVfHc5JhE...
- In the on start block we disable the LED matrix, set **myLimit** to 10, and set the **volume** to 127 (out of 255).
- In our forever loop we'll check if the distance is less than **myLimit**, and **while** it is, the micro:bit will play the sound.
- When the **while** statement is no longer *true* we will **stop all sounds**.

Step 5 — Test it Out!



- Once the code is loaded it should start running immediately.
- ⓘ You can power the micro:bit via the USB cable you used to load the code or you can use a battery pack plugged into the Bit Board.
- Move your hand (or a flat object) close to the sensor. If the object is less than 10cm away the piezo will play a sound.

Step 6 — Follow Along



- Follow along with our recorded Live Stream!
- ⓘ You can watch the full video of us walking through this project, along with explaining and exploring the code: https://youtube.com/live/8rIhboQLKSo