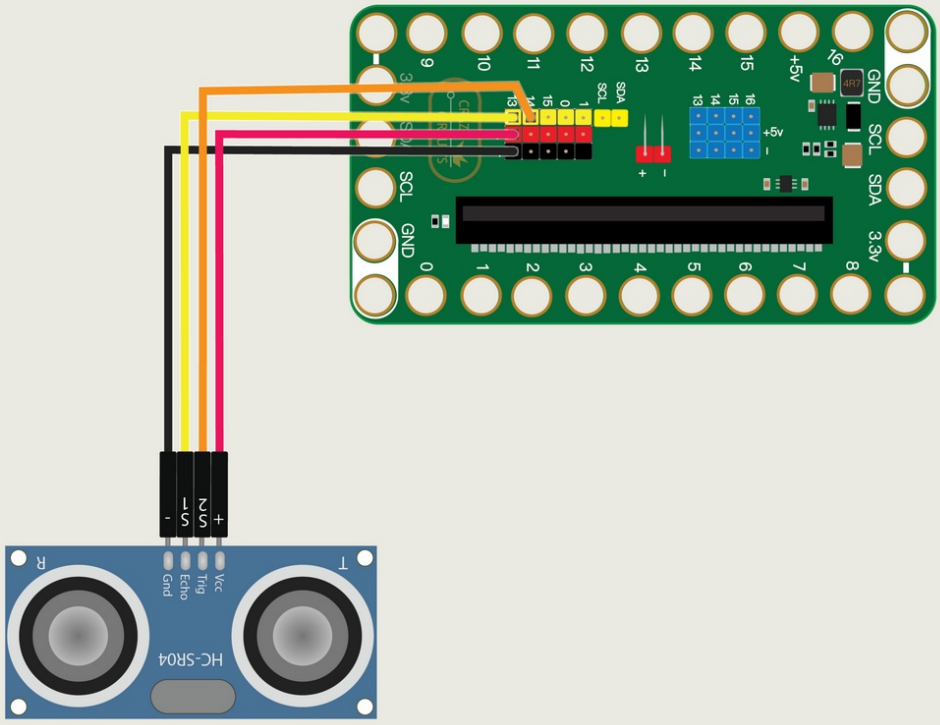
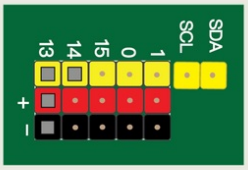
CH34-C - Distance Sensor Rows

Connect a Distance Sensor to a Bit Board and view the output using the built-in LED Matrix on the micro:bit

Written By: Pete Prodoehl



DIST	Bit Board
VCC	-> + (Positive) Pin
TRIG	-> PIN 14 (S2)
ECHO	-> PIN 13 (S1)
GND	-> - (Negative) Pin



INTRODUCTION

Connect a Distance Sensor to a Bit Board and view the output using the built-in LED Matrix on the micro:bit

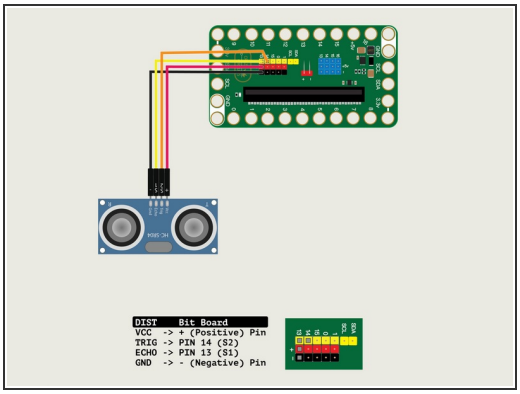
TOOLS:

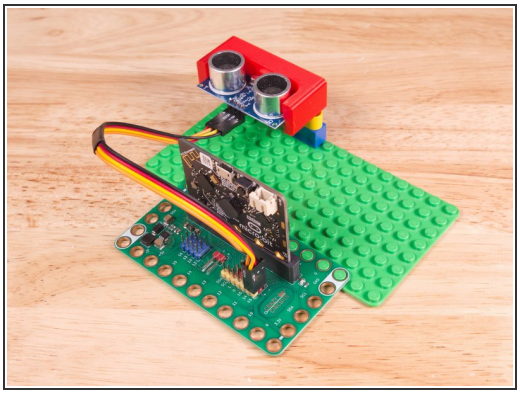
- Computer (1)
- Scissors (1)

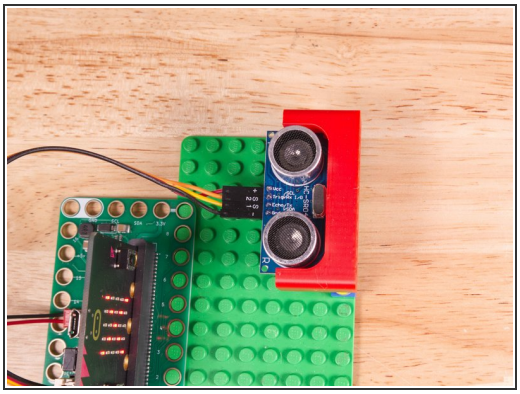
PARTS:

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

Step 1 — Connect the Distance Sensor

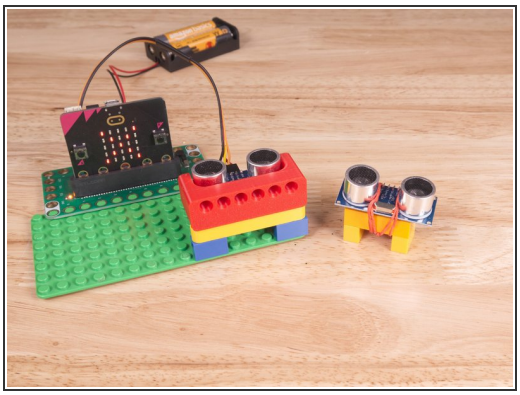
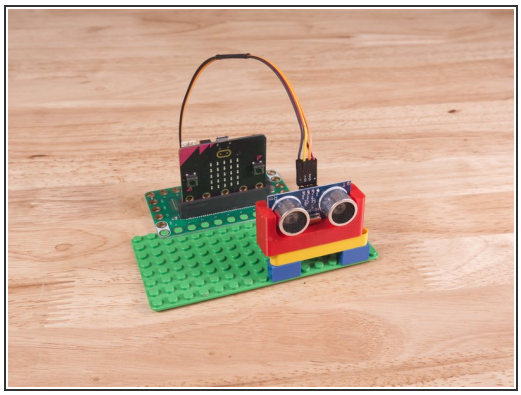
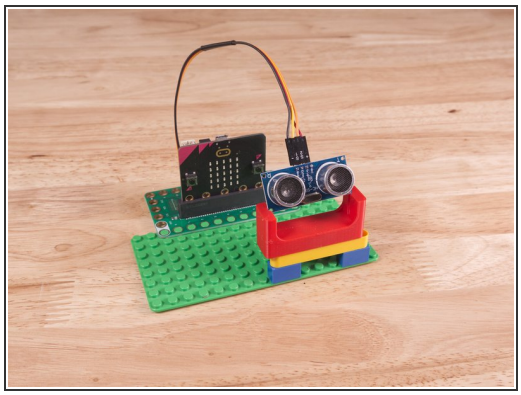






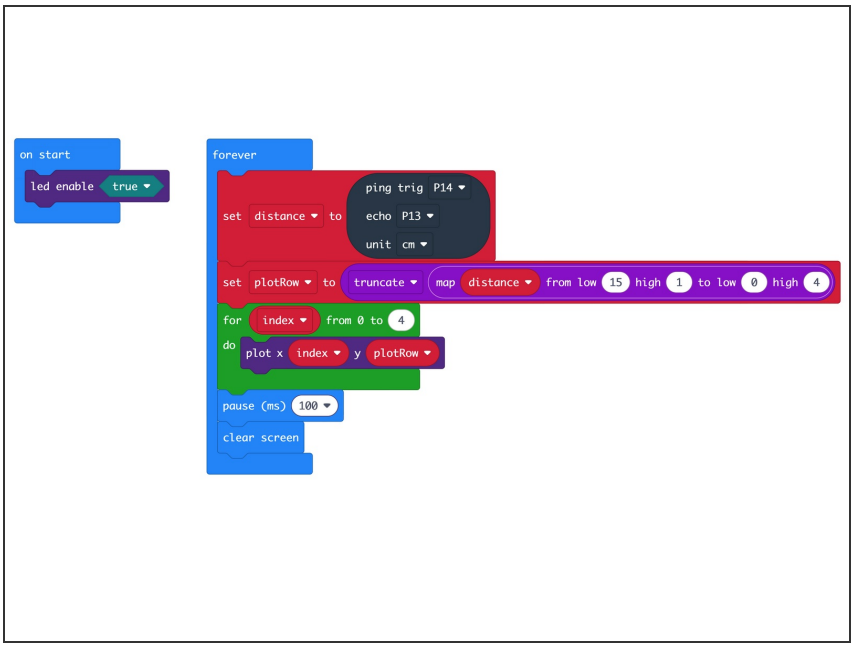
- We'll connect the **Distance Sensor** with a **Crazy Circuits Ribbon Cable** using all four wires.
- Plug the three-wire connector of the **Crazy Circuits Ribbon Cable** into the row with **Pin 13** on the Bit Board. The wire colors should match the pin header colors, with **S1** (yellow) going to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

Step 2 — Mounting the Sensor

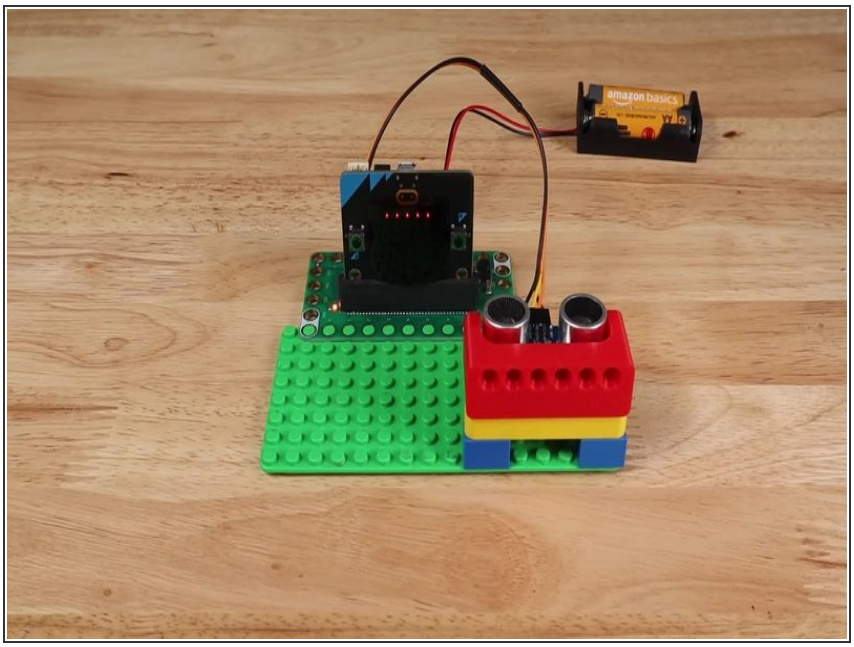
- We used a 3D printed part we designed to hold the Distance Sensor in place on the LEGO baseplate.
- A few Technic pins, a Technic beam, and some LEGO bricks are all that is needed.
- Alternately you can use some LEGO bricks and a rubber band or tape to hold the sensor in place. *(But don't use anything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

Step 3 — Load the Code



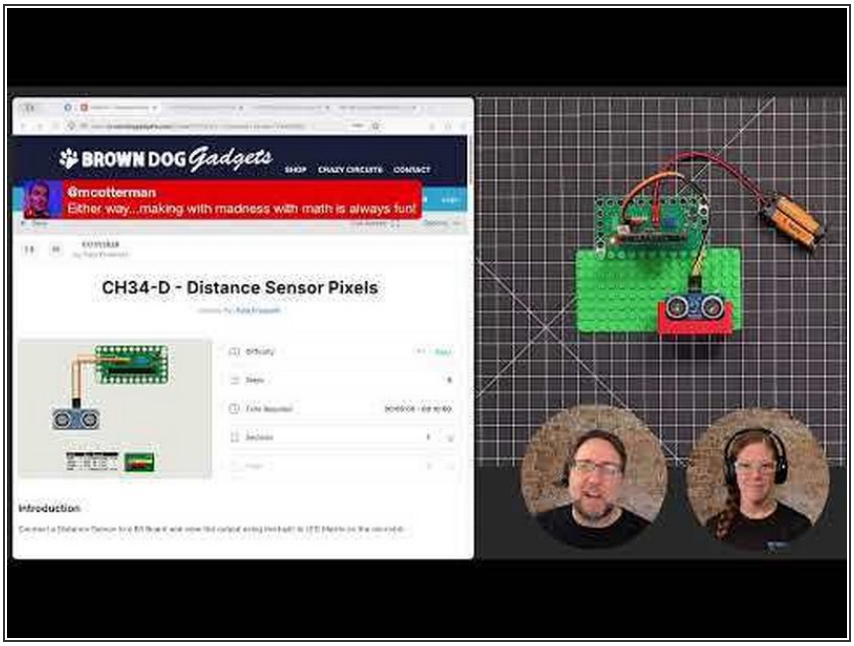
- If you've never used a micro:bit before you'll want to check out this guide: Bit Board V2 Setup and Use
- We're going to load the following code for our **Distance Sensor Rows** program: https://makecode.microbit.org/_LiP33z0Ki...
- In the forever block we'll set **Pin 14** and **Pin 13** to TRIG and ECHO (respectively) so we can read the Distance Sensor. This allows us to continually read the sensor and assign the value to **distance**.
- We'll then map the input from **15 to 1** (from the sensor) to **0 to 4** (for the LED matrix) and plot a row of LEDs using a for loop.
- We clear the screen so we can overwrite it each time around the loop.

Step 4 — 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) in front of the sensor. As you get closer you'll see the LED matrix react by showing a line of lit-up LEDs that move in relation to the distance of the object.

Step 5 — 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/BTIGtgqRKUM