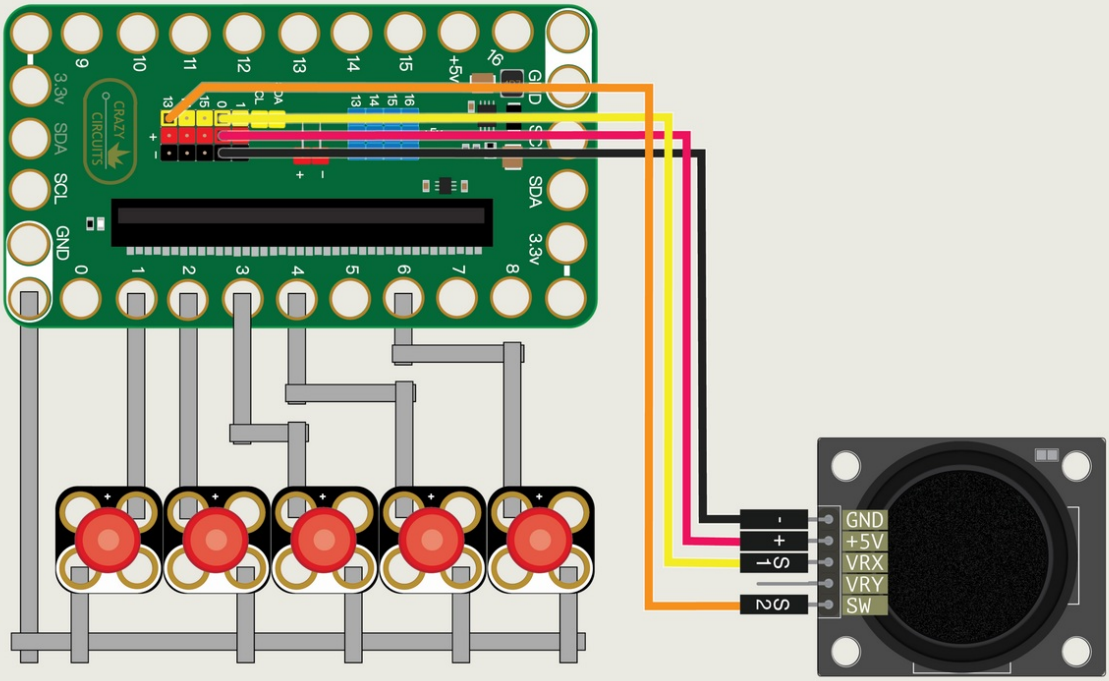
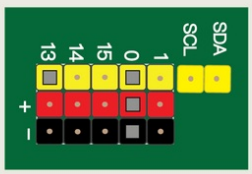
CH41-A - Thumbstick LEDs Simple

Connect a Thumbstick to a Bit Board and control a set of LEDs connected via Maker Tape.

Written By: Pete Prodoehl



TSTK	Bit Board
GND	-> - (Negative) Pin
+5V	-> + (Positive) Pin
VRX	-> PIN 0 (S1)
VRY	-> (not used)
SW	-> PIN 13 (S2)



INTRODUCTION

Connect a Thumbstick to a Bit Board and control a set of LEDs connected via Maker Tape.

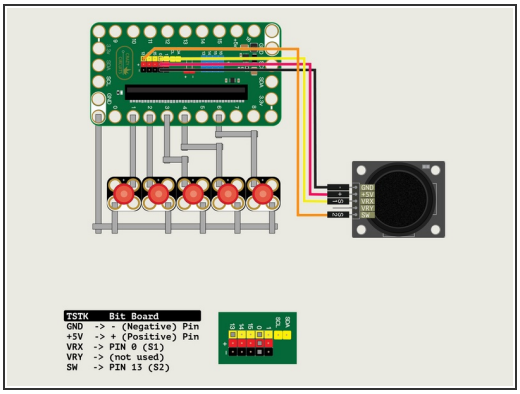
TOOLS:

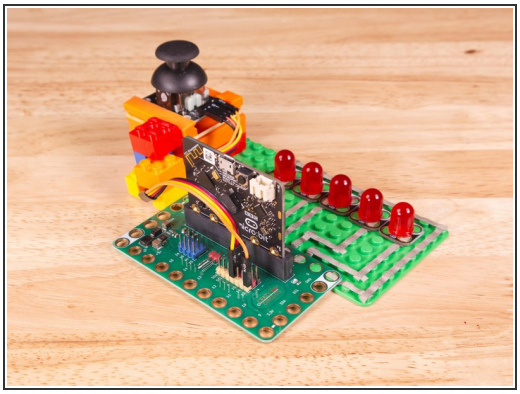
- Computer (1)
- Scissors (1)

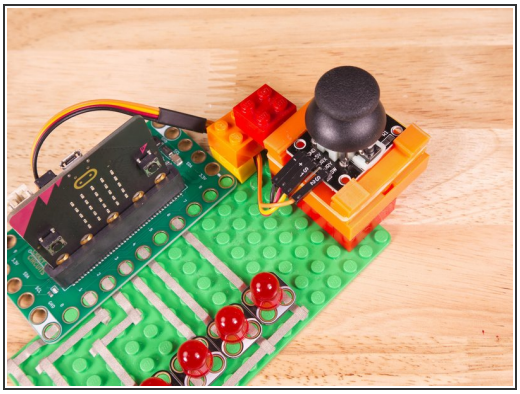
PARTS:

- Crazy Circuits Bit Board (1)
- micro:bit (1)
- Crazy Circuits Ribbon Cable (1)
- Thumbstick (1)
- Crazy Circuits LED Chip (5)
- Maker Tape (1)
  1/8" Wide

Step 1 — Connect the Thumbstick and LEDs





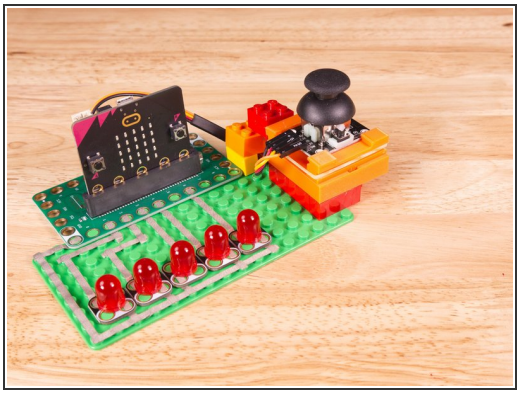
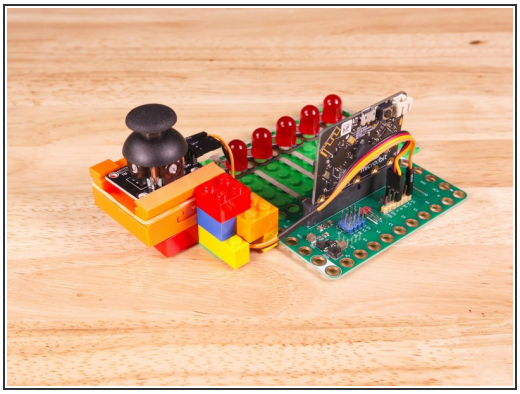
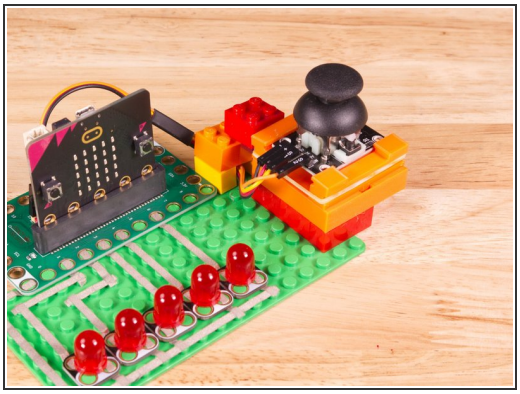


- We'll connect the **Thumbstick** with a **Crazy Circuits Ribbon Cable** using all four wires.
- Plug the three-wire connector of the **Crazy Circuits Ribbon Cable** into the row with **Pin 0** on the Bit Board. The wire colors should match the pin header colors, with **S1** (yellow) going to the yellow pin.
- Next, plug **S2** (orange) into **Pin 13**. *(S2 is separated from the three-wire connector to allow you to plug it into another row.)*
- To the Thumbstick plug **-** (black) into **GND**, **+** (red) into **+5V**; **S1** (yellow) into **VRx**; **S2** (orange) into **SW**.

☒ We won't plug anything into **VRy** pin for this example.

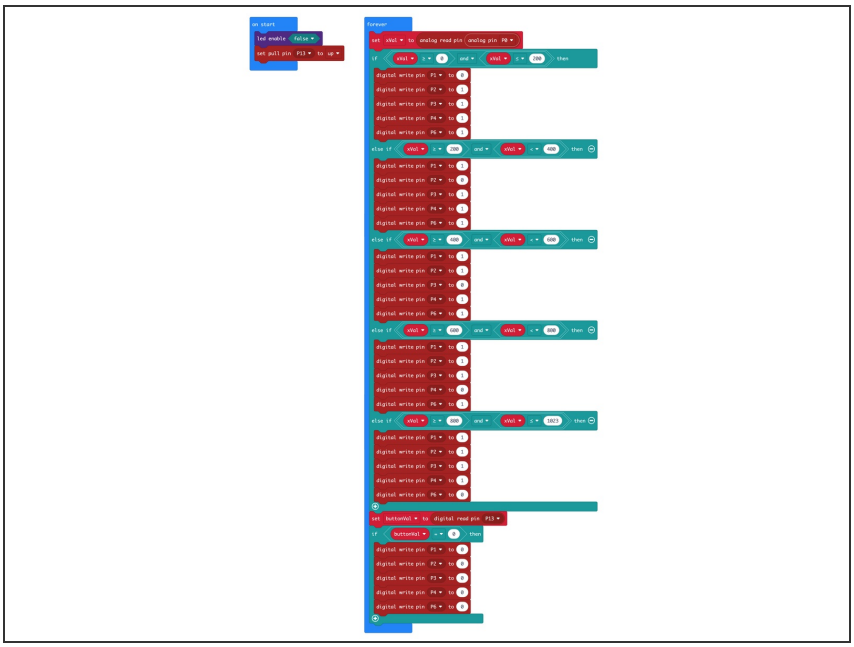
- Connect the Crazy Circuits LEDs using 1/8" Maker Tape as shown.

Step 2 — Mounting the Thumbstick

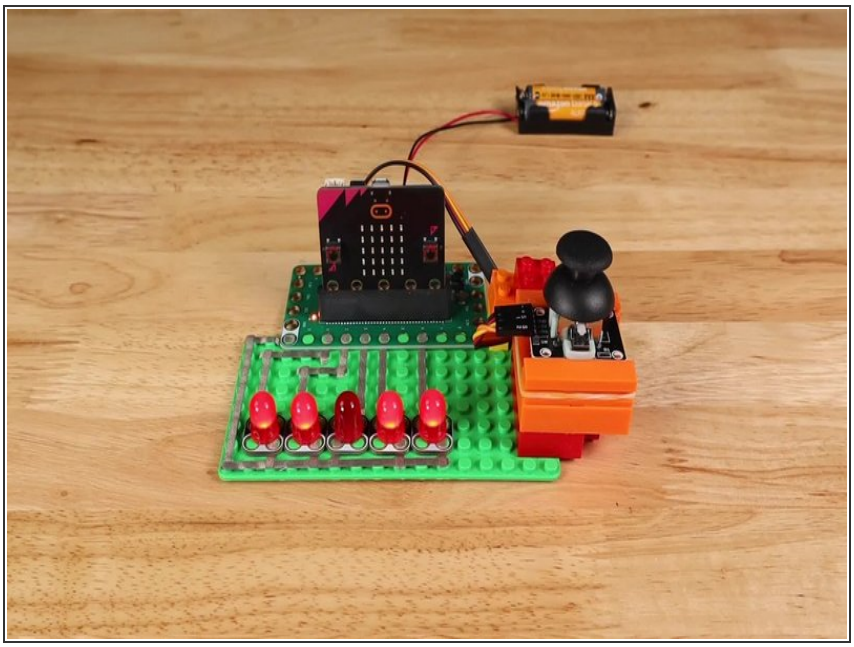
- We used a 3D printed part we designed to hold the Thumbstick in place on a LEGO baseplate.
- We attached two 2x4 LEGO Bricks to the bottom of the 3D printed holder to allow it to snap onto the LEGO Baseplate a bit easier. (We also added a few small bricks to hold the ribbon cable in place.)
- Alternately you can try to use some LEGO bricks and some rubber bands to hold the sensor in place, or just hold it in your hand.
- 3D print your own Thumbstick Sensor Holder.

Step 3 — Load the Code



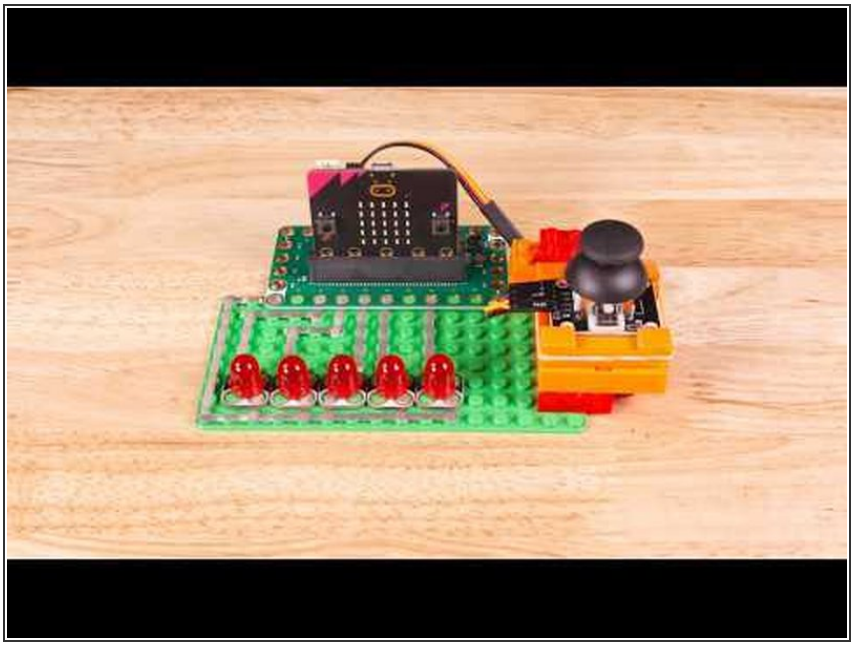
- If you've never used a micro:bit before you'll want to check out this guide: Bit Board V2 Setup and Use
- We're going to load the following code for our **Thumbstick LEDs Simple** program: https://makecode.microbit.org/_679Ue3F3u...
- In the on start block we'll disable the LED matrix and set **Pin 13** to **pull up**.
- In the forever loop we'll set **xVal** to the value from **Pin 0** (which is connected to **VRx**, the X-axis of the Thumbstick) and then check if the value is between a number of ranges.
- For each range we'll turn on all but one of the LEDs. By moving the Thumbstick we can "move" the unlit LED left or right.
- We'll also set **buttonVal** to read **Pin 13** (which is connected to the button/switch on the Thumbstick) and if it's pressed we'll turn off all of the LEDs.
- Remember, an *analog input* can give us values from **0 to 1023**. Here we've divided that range into five sets, each covering approximately 1/5 of the range.

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 the Thumbstick left and right and you should see the "unlit" LED move from left to right. Press the Thumbstick down and all of the LEDs should turn off.

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://www.youtube.com/live/B9hns5Rp3LY