CH23-C - NeoPixel Rotate Steps

Connect a NeoPixel Stick and a Potentiometer to a Bit Board and control them with code.

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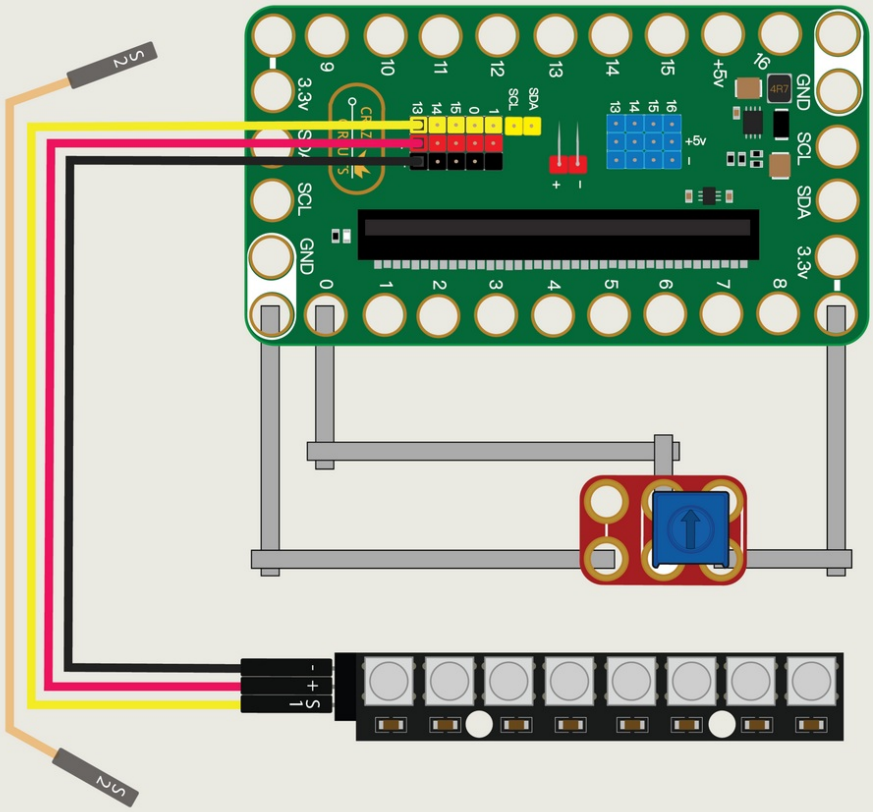
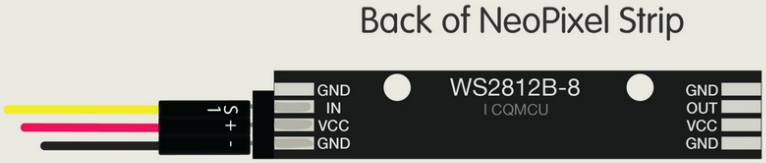




INTRODUCTION

Connect a NeoPixel Stick and a Potentiometer to a Bit Board and control them with code.

We'll explore how to control an Addressable RGB LED Strip (also called "NeoPixels").

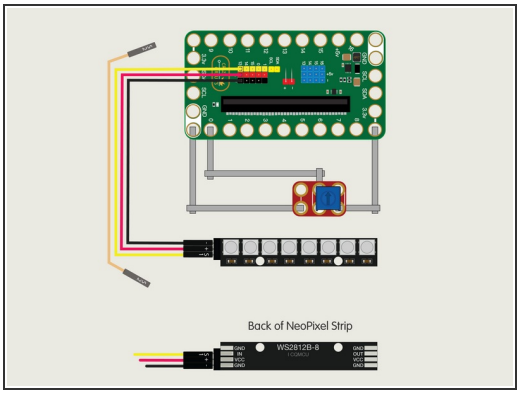
TOOLS:

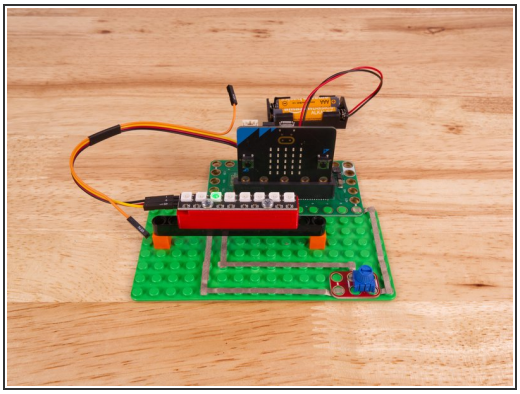
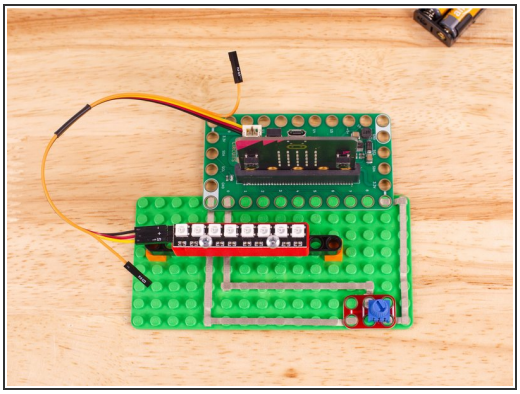
- Computer (1)
- Scissors (1)

PARTS:

- Crazy Circuits Bit Board (1)
- micro:bit (1)
- Addressable RGB LED Strip (1)
- Crazy Circuits Potentiometer Chip (1)
- Crazy Circuits Ribbon Cable (1)
- Maker Tape (1)
  1/8" Wide

Step 1 — Connect the NeoPixel Stick and Potentiometer



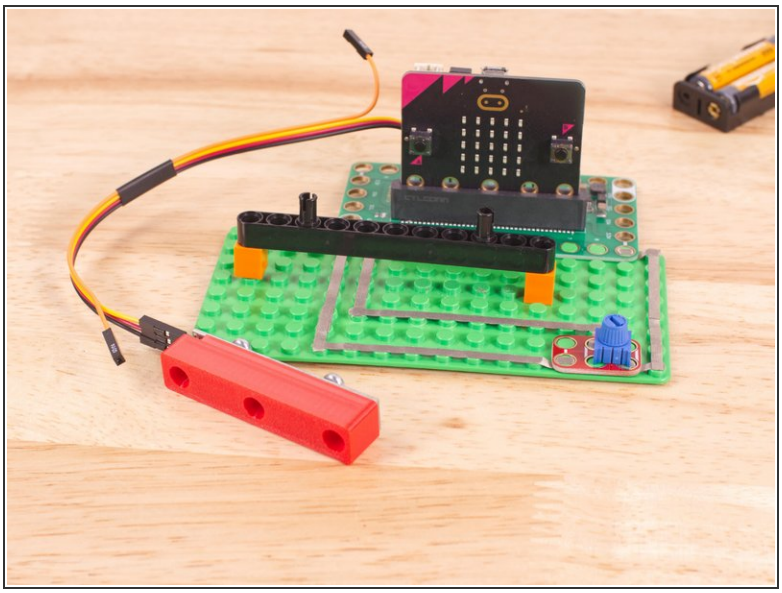



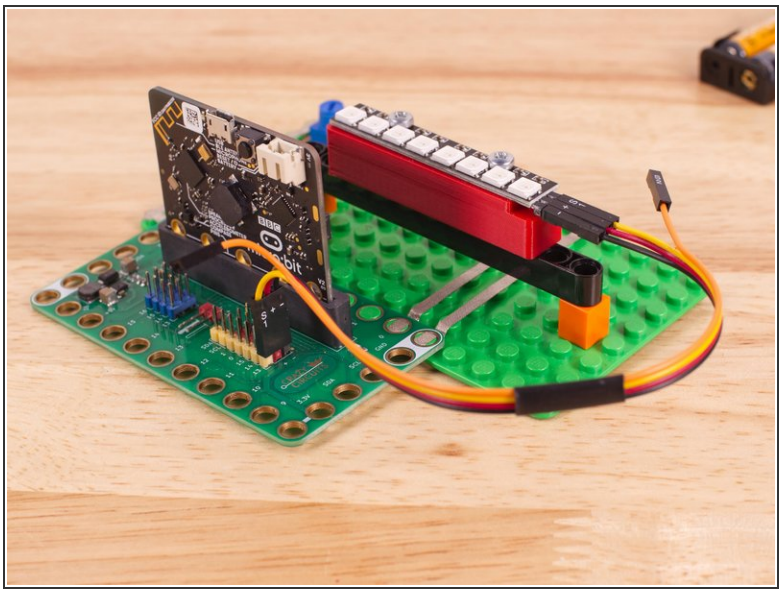
- The magical thing about these “Individually Addressable” LEDs is that you don’t have to connect each LED to an individual pin on your micro:bit, you just need **one signal wire** along with power (**Positive** and **Negative**) to light things up.
- So let's get connected! If you turn the **NeoPixel Strip** over you'll see labels for the three pins. You should see **IN**, **VCC**, and **GND**.
- Use the Crazy Circuits Ribbon Cable to connect the **NeoPixel Strip** to the **Bit Board**.
- The end with **S1**, **+**, and **-** can plug directly into the **Pin 13** row (make sure S1 goes into 13) and the other end should plug into the **NeoPixel Strip** as shown.

☒ We only need three wires for the **NeoPixel Strip** so you can leave **S2** (the Orange wire) unconnected.

- We'll also connect a potentiometer using Maker Tape. Connect it to **GND**, **Pin 0**, and **3V**. (The center hole connects to **Pin 0**.)

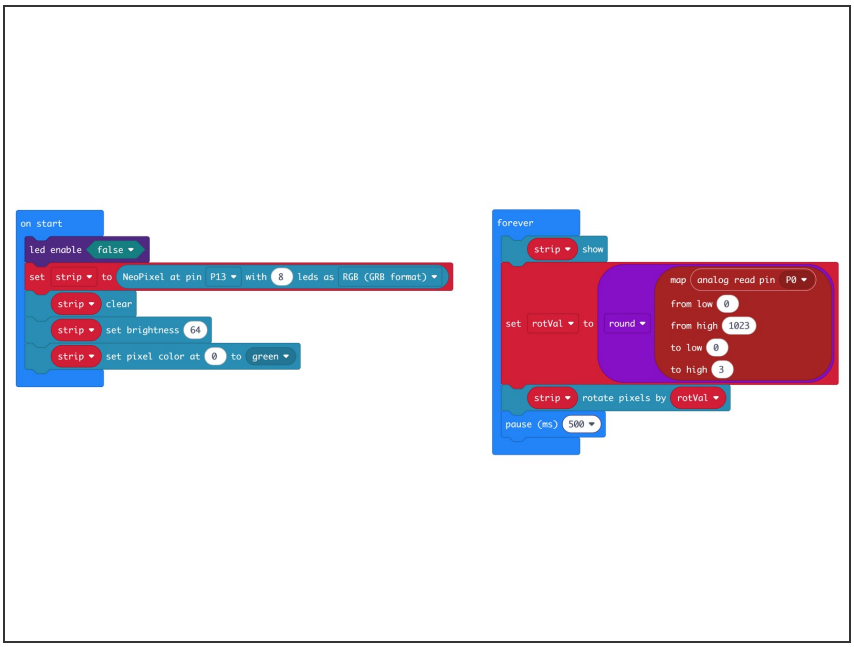
Step 2 — Mount the NeoPixel Stick





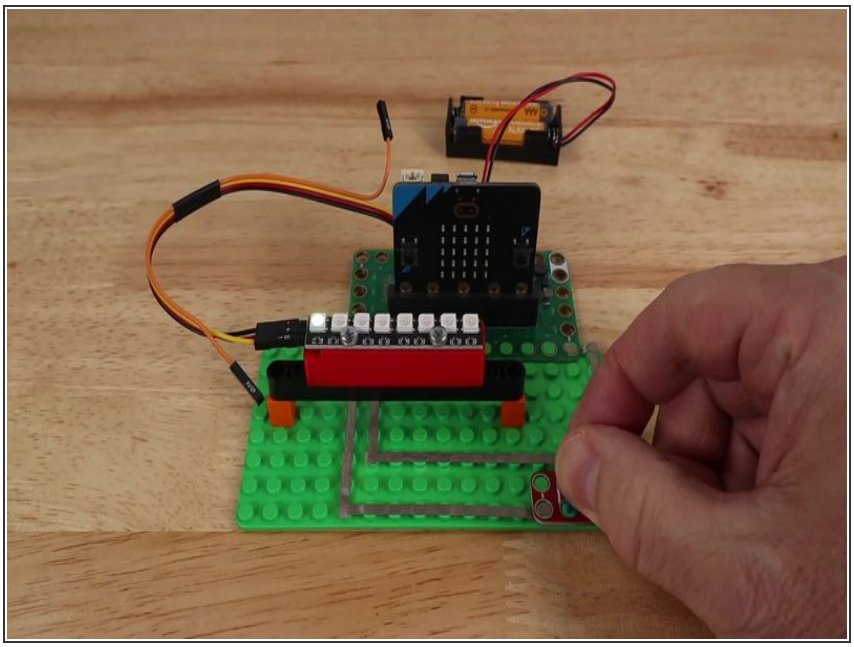
- To mount the NeoPixel Stick in place we used our NeoPixel Beam Holder with a long Technic Beam and two 1x1 LEGO bricks.
- You can always use rubber bands, tape, or some other method.
- The important thing is to make sure the connector is on the left hand side so the number index for the NeoPixel strip makes sense.

Step 3 — Load the Code



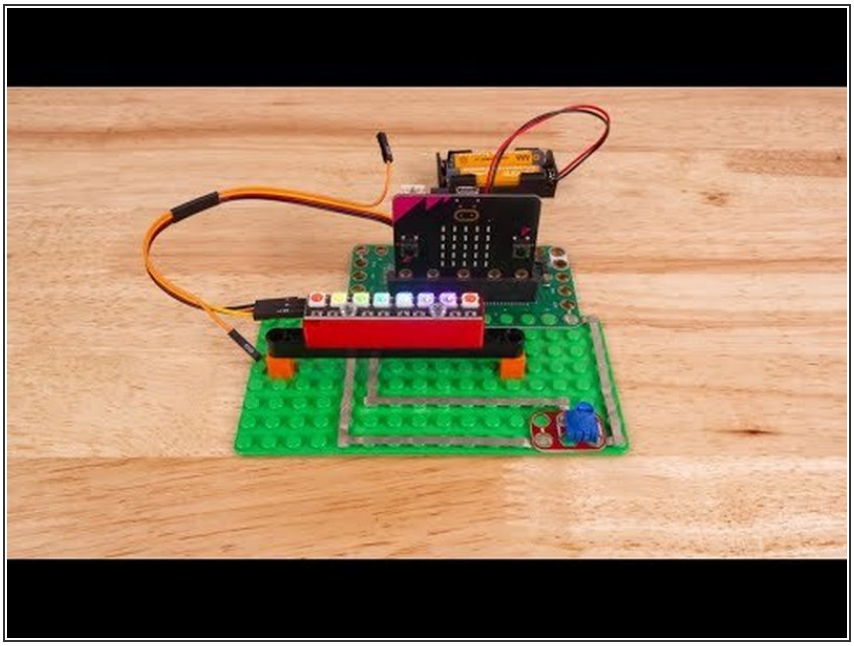
- If you've never used a micro:bit before you'll want to check out this guide: Bit Board V2 Setup and Use
- We're going to load the following code for our **NeoPixel Rotate Steps** program: https://makecode.microbit.org/_VMgbJWfH6...
- We'll map the input from the potentiometer to a smaller scale. While the input will be from **0 to 1023** our output will be from **0 to 3**. This effectively turns the potentiometer into a four-position switch.
- We will rotate the lit up pixel either 0, 1, 2, or 3 steps as the potentiometer dial is turned.

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.
- With the potentiometer turned all the way anti-clockwise you'll see that the pixel does not move.
- Turn the potentiometer slowly in the clockwise direction and you'll see the pixel move. First one step, then two, and finally three.
- This should be a good demonstration of how the shift function operates.

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/-2ECPBjKX1Q