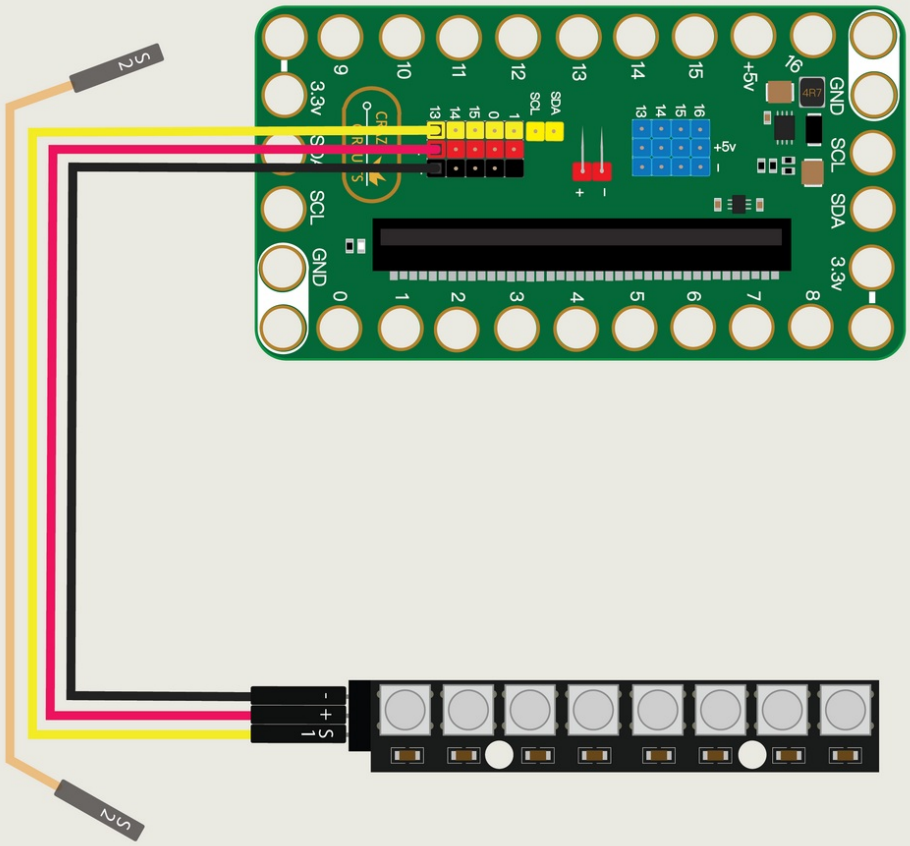
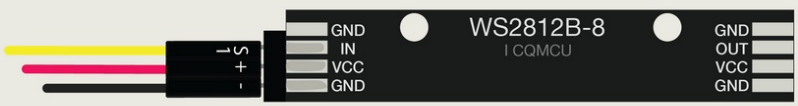
CH21-A - NeoPixel Rotate Single

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

Written By: Pete Prodoehl



Back of NeoPixel Strip



INTRODUCTION

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

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

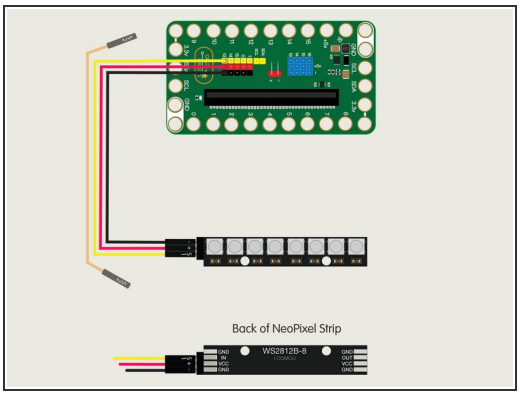
TOOLS:

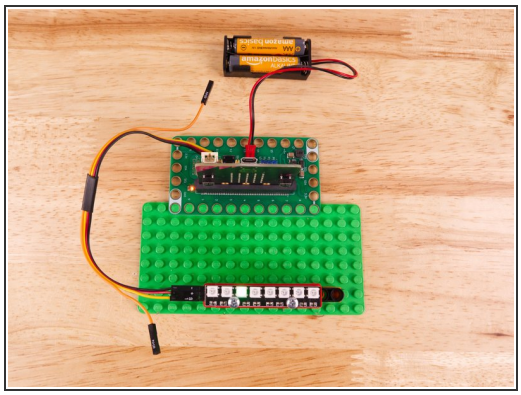
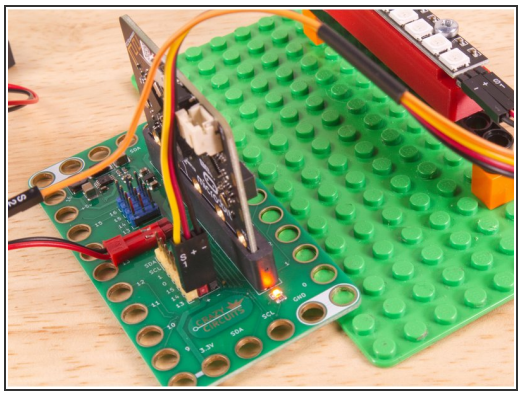
- Computer (1)
- Scissors (1)

PARTS:

- Crazy Circuits Bit Board (1)
- micro:bit (1)
- Addressable RGB LED Strip (1)
- Crazy Circuits Ribbon Cable (1)

Step 1 — Connect the NeoPixel Stick

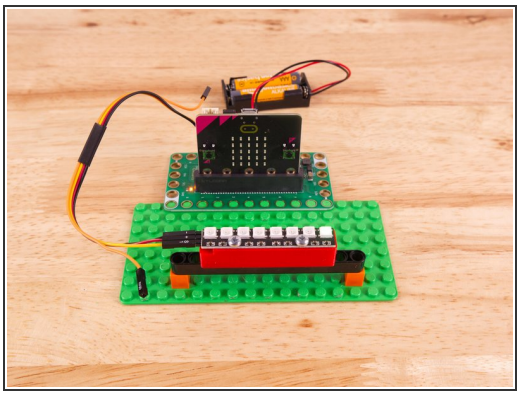
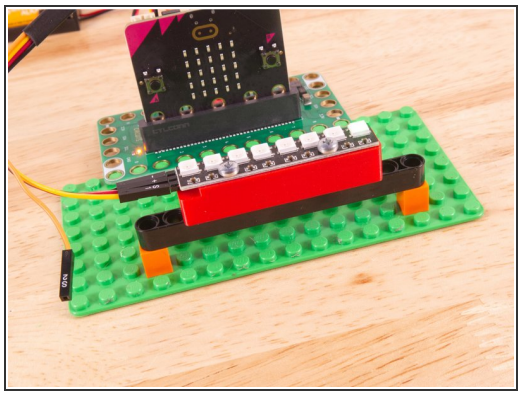
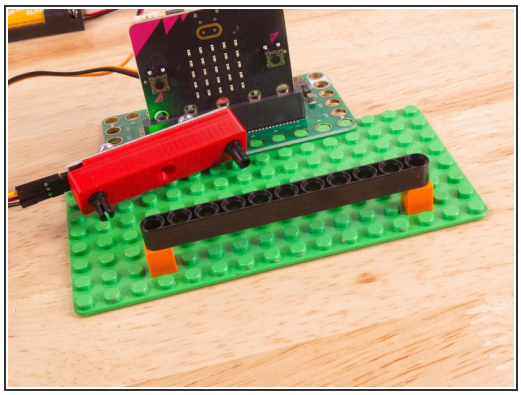


- The magical thing about these “Individually Addressable” LEDs is that you don’t have to connect each LED to an individual pin on your micro:bit, you just need **one signal wire** along with power (**Positive** and **Negative**) to light things up.
- So let's get connected! If you turn the **NeoPixel 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.

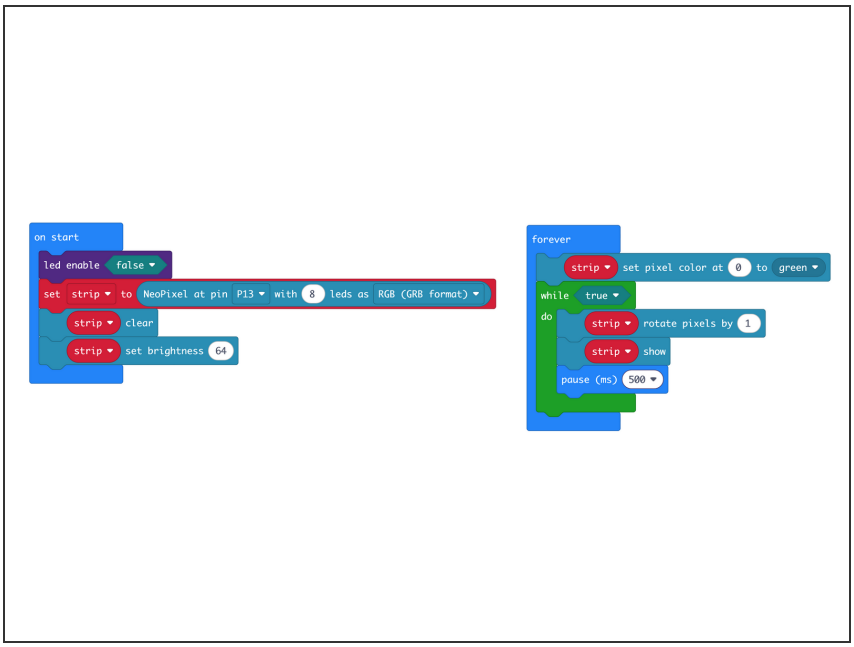
☒ We only need three wires for the **NeoPixel Strip** so you can leave **S2** (the Orange wire) unconnected.

Step 2 — Mount the NeoPixel Stick

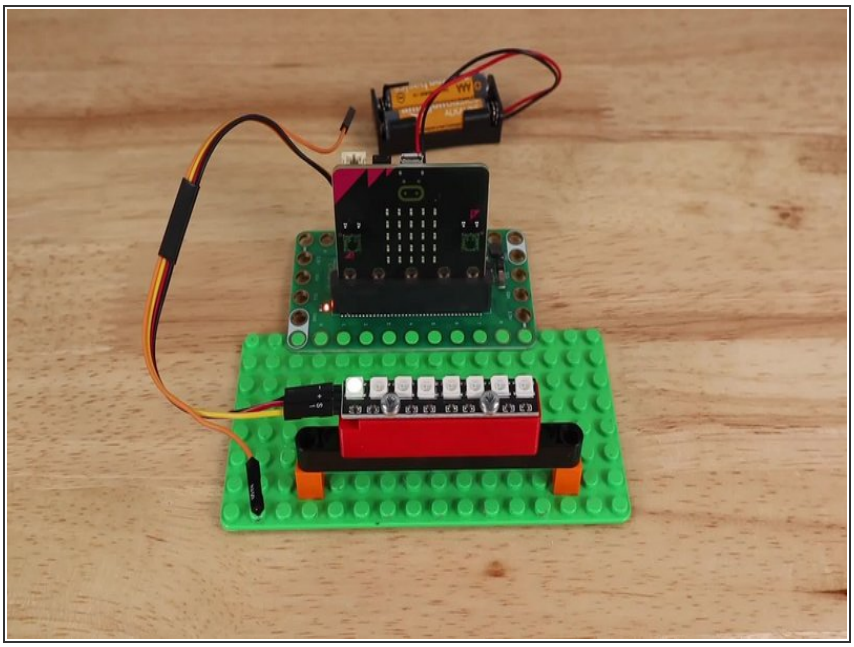
- To mount the NeoPixel Stick in place we used our NeoPixel Beam Holder with a long Technic Beam and two 1x1 LEGO bricks.
- You can always use rubber bands, tape, or some other method.
- The important thing is to make sure the connector is on the left hand side so the number index for the NeoPixel strip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

Step 3 — Load the Code



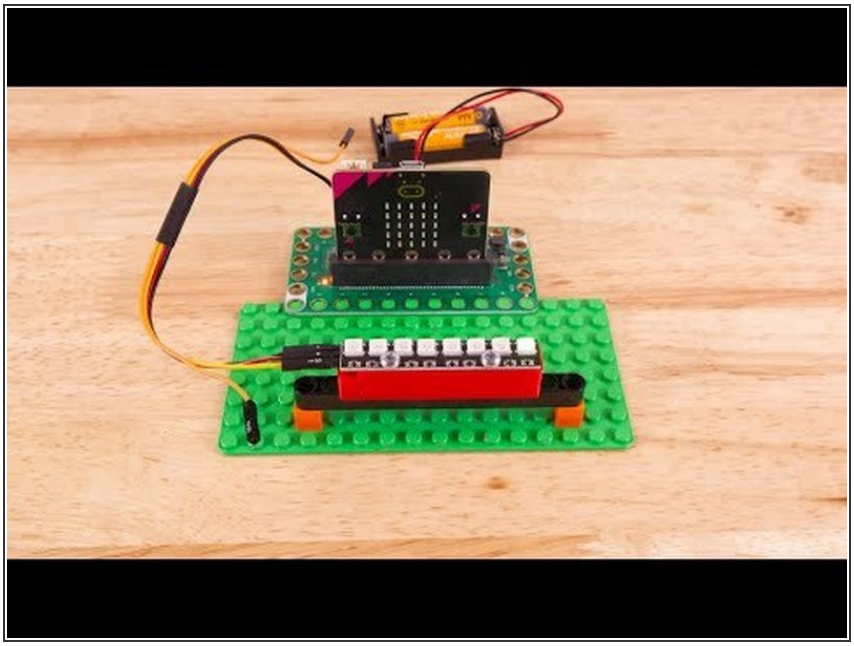
- If you've never used a micro:bit before you'll want to check out this guide: Bit Board V2 Setup and Use
- We're going to load the following code for our **NeoPixel Rotate Single** program: https://makecode.microbit.org/_MvsbYgg18...
- The rotate function provides an easy way to "move" one (or more) "pixels" in one direction.
- That sounds complex, but the code is simple. We start by setting the color of the NeoPixel at position 0 to green, then in the while loop **we rotate it by 1**, show it, pause, and then keep doing that.
- The rotate function (as well as the shift function, which we'll see in other guides) can be a bit complex, but we'll explore them in the next few chapters.

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.
- You should see the leftmost NeoPixel light up green, then it "moves" down the strip, lighting up each NeoPixel until it gets to the end, and then it starts again.

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/0AHEZyJg4M0