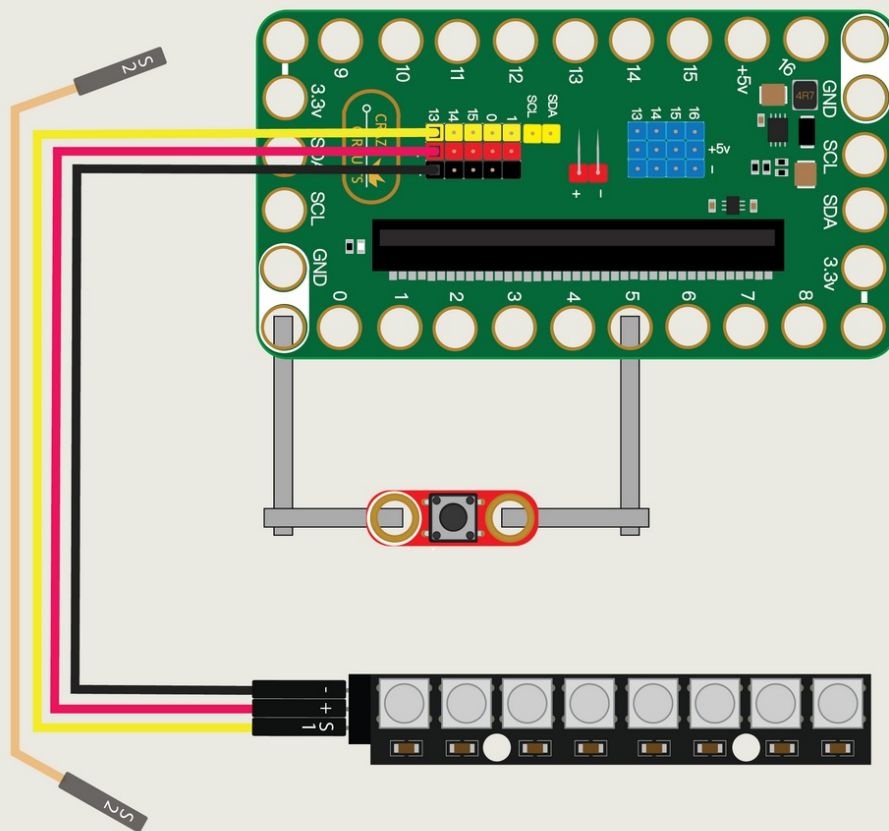




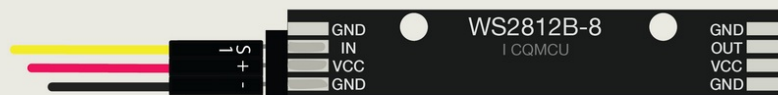
CH22-B - NeoPixel Shift

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

Written By: Pete Prodoehl



Back of NeoPixel Strip



INTRODUCTION

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

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



TOOLS:

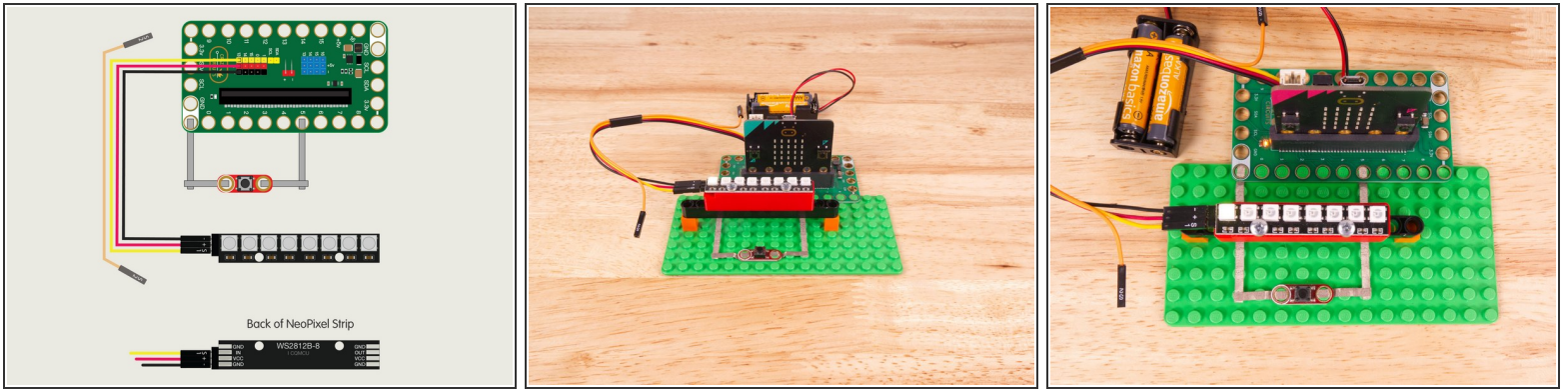
- [Computer](#) (1)
- [Scissors](#) (1)



PARTS:

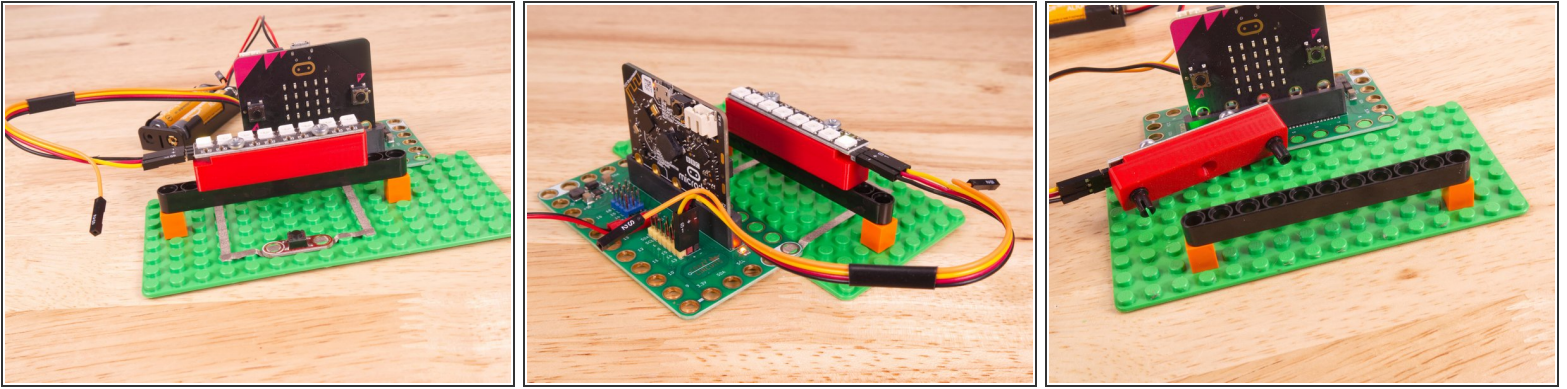
- [Crazy Circuits Bit Board](#) (1)
 - [micro:bit](#) (1)
 - [Addressable RGB LED Strip](#) (1)
 - [Standard Pushbutton Chip](#) (1)
 - [Crazy Circuits Ribbon Cable](#) (1)
 - [Maker Tape](#) (1)
- 1/8" Wide

Step 1 — Connect the NeoPixel Stick and Button



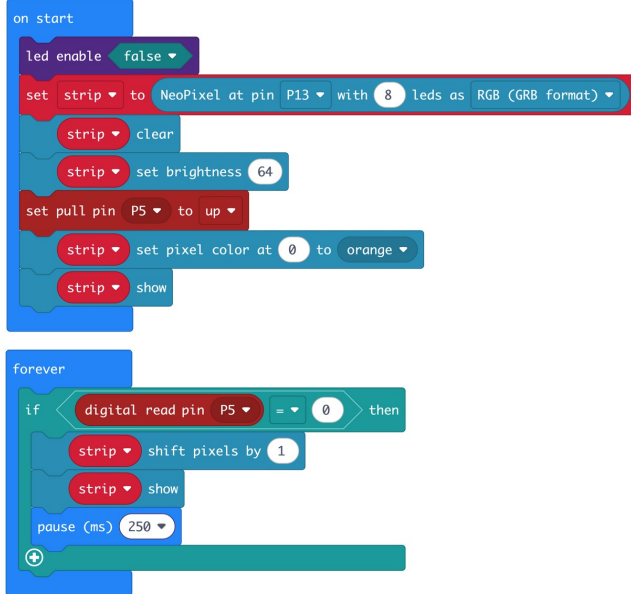
- The magical thing about these “Individually Addressable” LEDs is that you don’t have to connect each LED to an individual pin on your micro:bit, you just need **one signal wire** along with power (**Positive** and **Negative**) to light things up.
- So let's get connected! If you turn the **NeoPixel 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 button using Maker Tape. Connect it to **Pin 5** and **GND**. (Polarity does not matter with these buttons.)

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

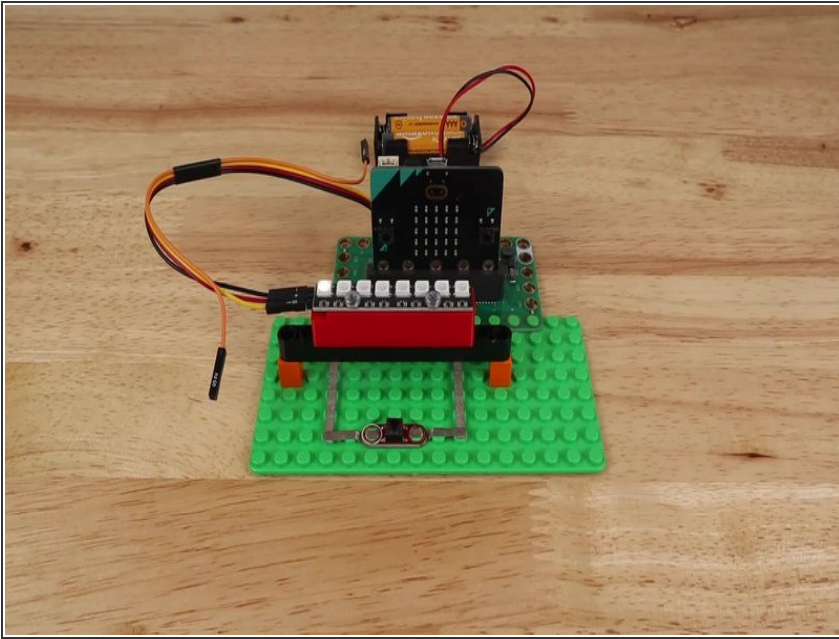


```
on start
  led enable false
  set strip to NeoPixel at pin P13 with 8 leds as RGB (GRB format)
  strip clear
  strip set brightness 64
  set pull pin P5 to up
  strip set pixel color at 0 to orange
  strip show

forever
  if digital read pin P5 = 0 then
    strip shift pixels by 1
    strip show
  pause (ms) 250
```

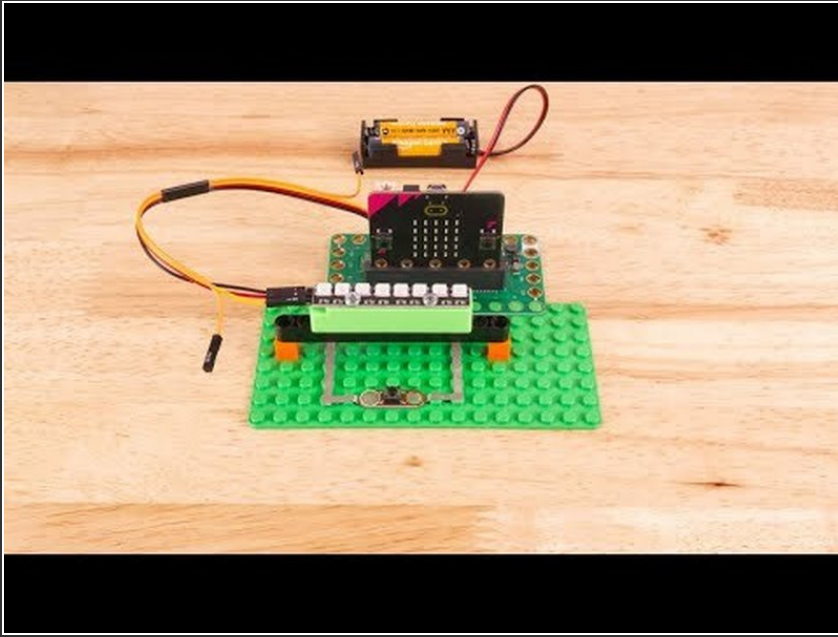
- If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use](#)
- We're going to load the following code for our **NeoPixel Shift** program:
https://makecode.microbit.org/_LuLdqdMVE...
- The shift function provides an easy way to "move" one (or more) "pixels" in one direction.
- We covered the shift function in a previous guide, but this time we're controlling it with a button. Each time the button is pressed the pixel will shift one position.

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.
- The pixel on the very left should light up. If you press the button the lit-up pixel should move to the right.
- Press and hold the button down and the pixel should keep moving until you release it.
- ☞ If you keep pressing (or hold down) the button the pixel will eventually go off the right side and disappear!
- ☞ Unlike the rotate function, the shift function just keeps pushing the pixel to the right, and it never comes back around. You won't see it again unless you restart the micro:bit

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/8EJiYAk8qk>