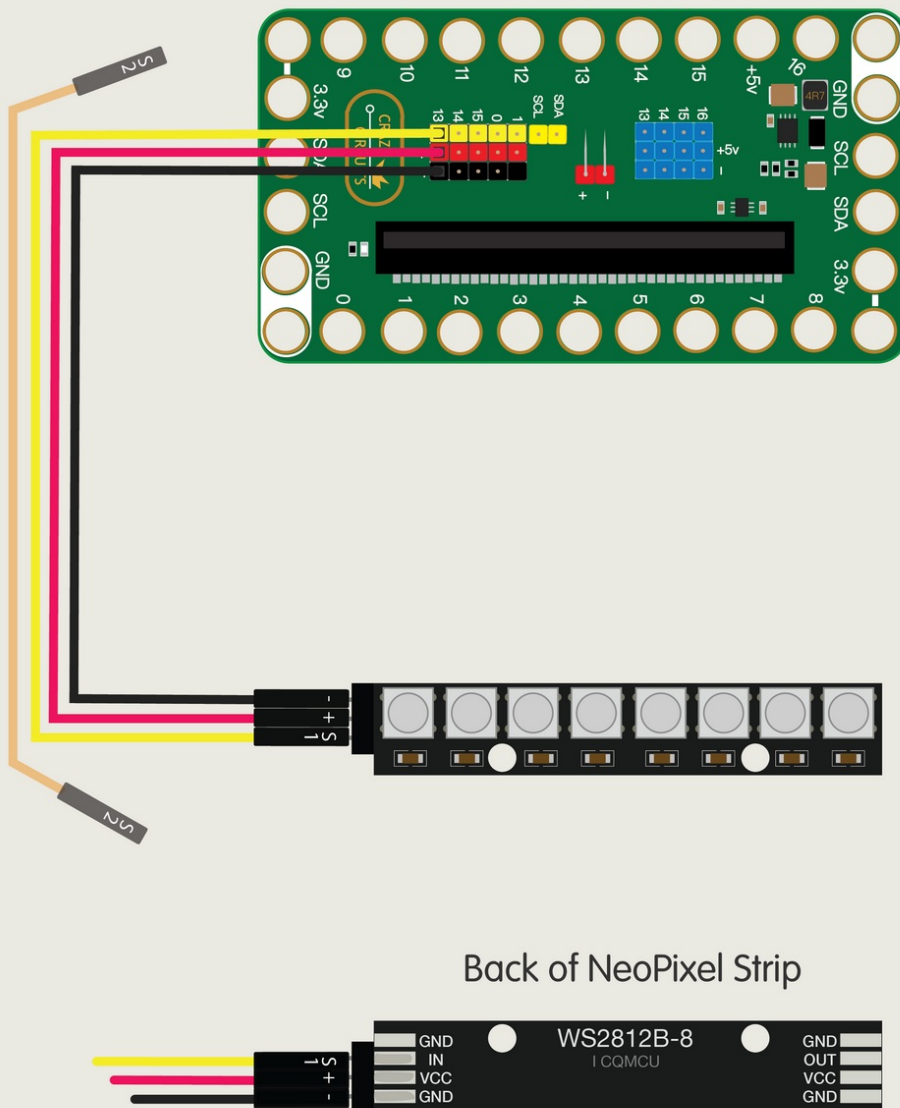




# CH21-C - NeoPixel Shift RGB

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

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# 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:

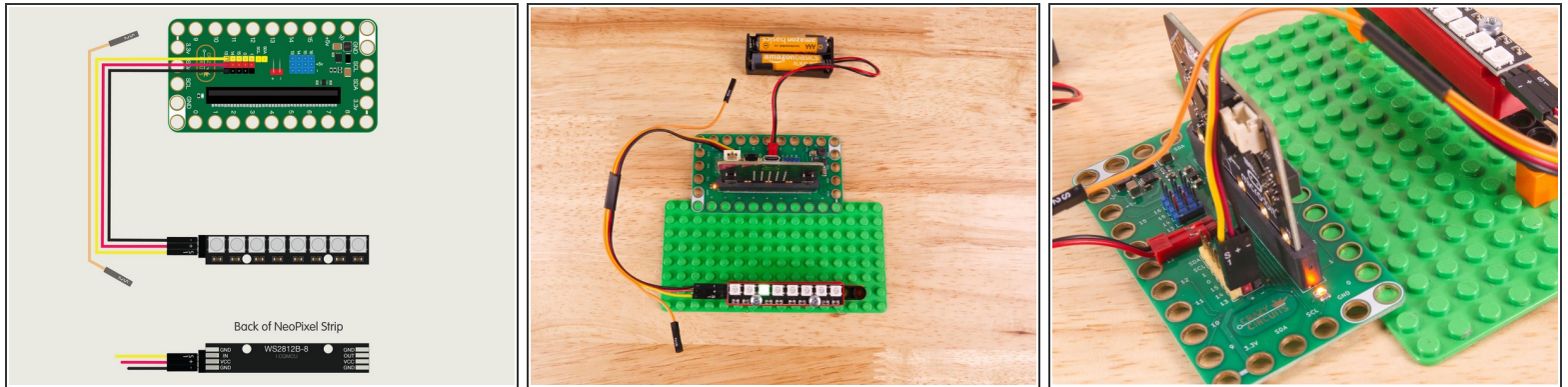
- [Computer](#) (1)
- [Scissors](#) (1)



## PARTS:

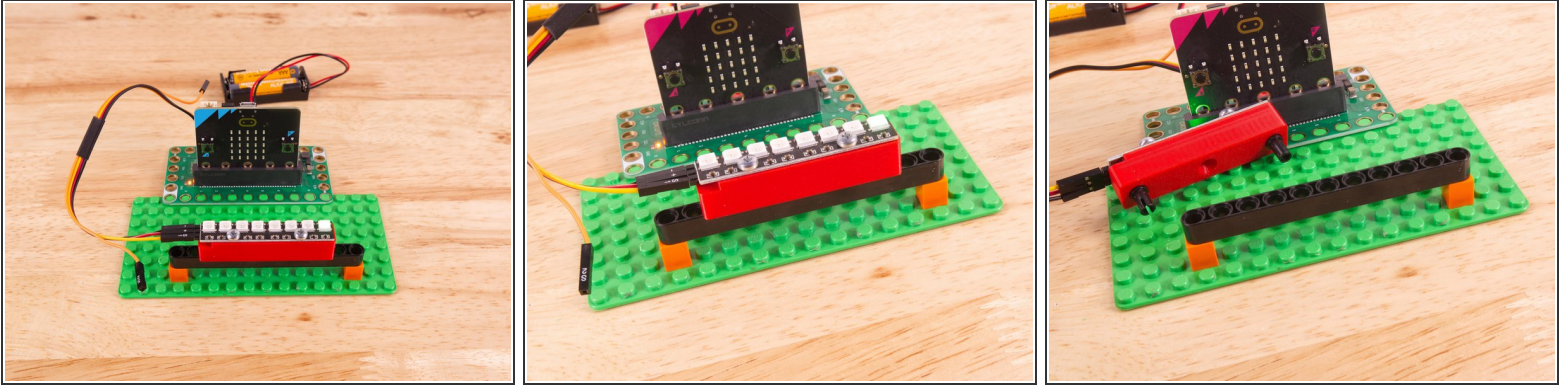
- [Crazy Circuits Bit Board](#) (1)
- [micro:bit](#) (1)
- [Addressable RGB LED Strip](#) (1)
- [Crazy Circuits Ribbon Cable](#) (1)

## Step 1 — Connect the NeoPixel Stick



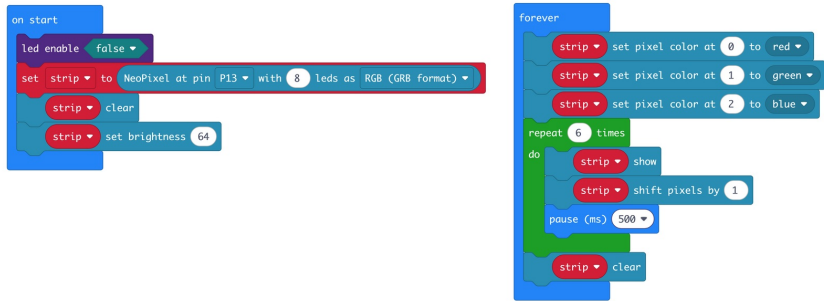
- The magical thing about these “Individually Addressable” LEDs is that you don’t have to connect each LED to an individual pin on your micro:bit, you just need **one signal wire** along with power (**Positive** and **Negative**) to light things up.
- So let's get connected! If you turn the **NeoPixel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



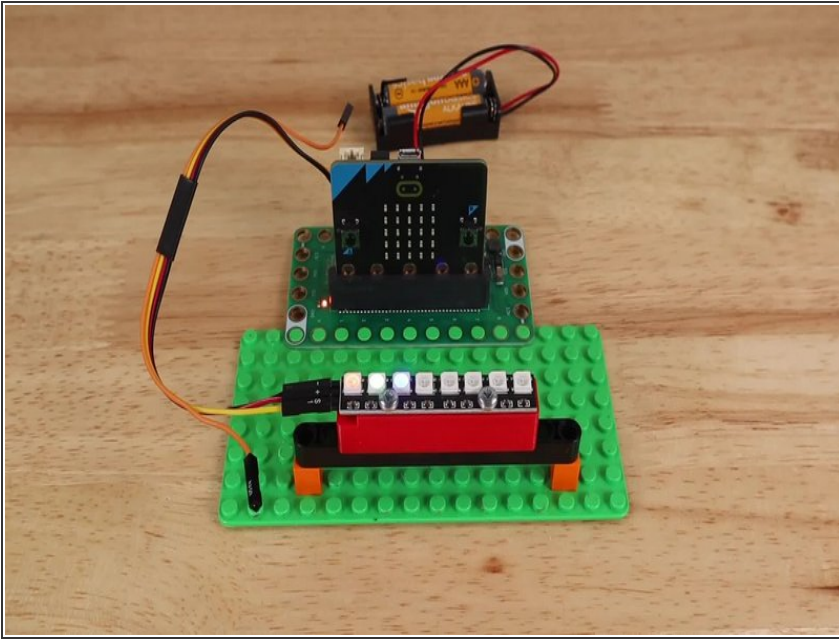
- To mount the NeoPixel Stick in place we used our [NeoPixel Beam Holder](#) with a long Technic Beam and two 1x1 LEGO bricks.
- You can always use rubber bands, tape, or some other method.
- The important thing is to make sure the connector is on the left hand side so the number index for the NeoPixel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

## Step 3 — Load the Code



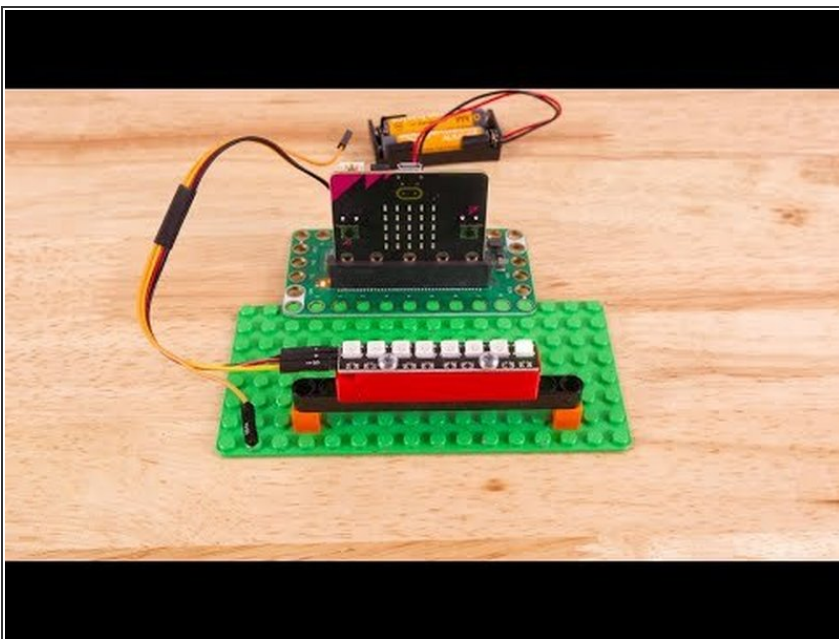
- If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use](#)
- We're going to load the following code for our **NeoPixel Shift RGB** program:  
[https://makecode.microbit.org/\\_4vv8TkapP...](https://makecode.microbit.org/_4vv8TkapP...)
- The shift function sends pixels down a string as the number index keeps increasing.
- In this example we've set our code to **shift 6 times**, then clear and start over.
- ✦ The shift function (as well as the rotate 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.
- ① 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 red, green, and blue pixels (starting at the second NeoPixel) shift to the end of the stick then repeat from the beginning again.
- Note how they do not "wrap around" like the previous example.

## Step 5 — Follow Along



- Follow along with our recorded Live Stream!
- ① You can watch the full video of us walking through this project, along with explaining and exploring the code:  
<https://youtube.com/live/0AHEZyJg4M0>