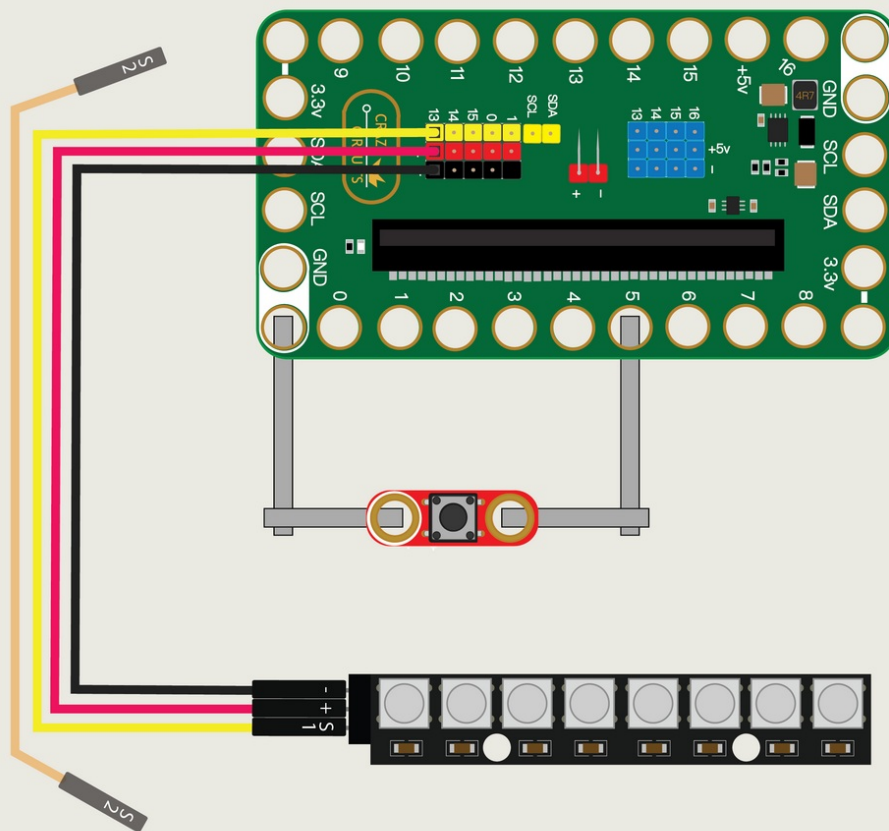




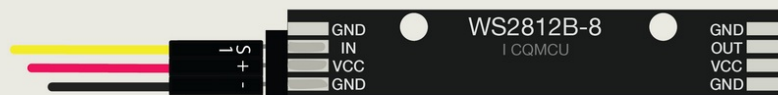
# CH22-D - NeoPixel Back and Forth

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

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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:

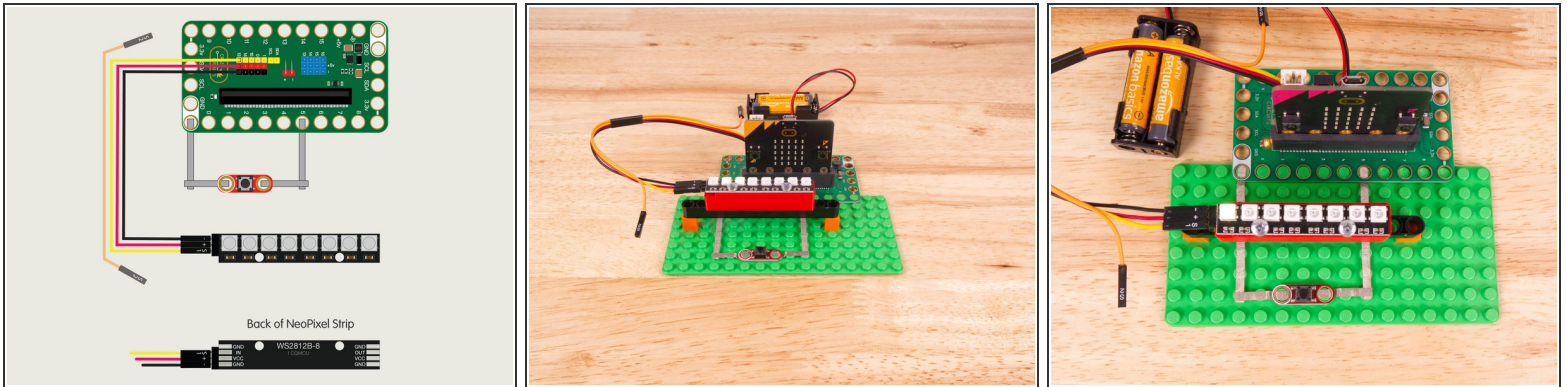
- [Computer](#) (1)
- [Scissors](#) (1)



## PARTS:

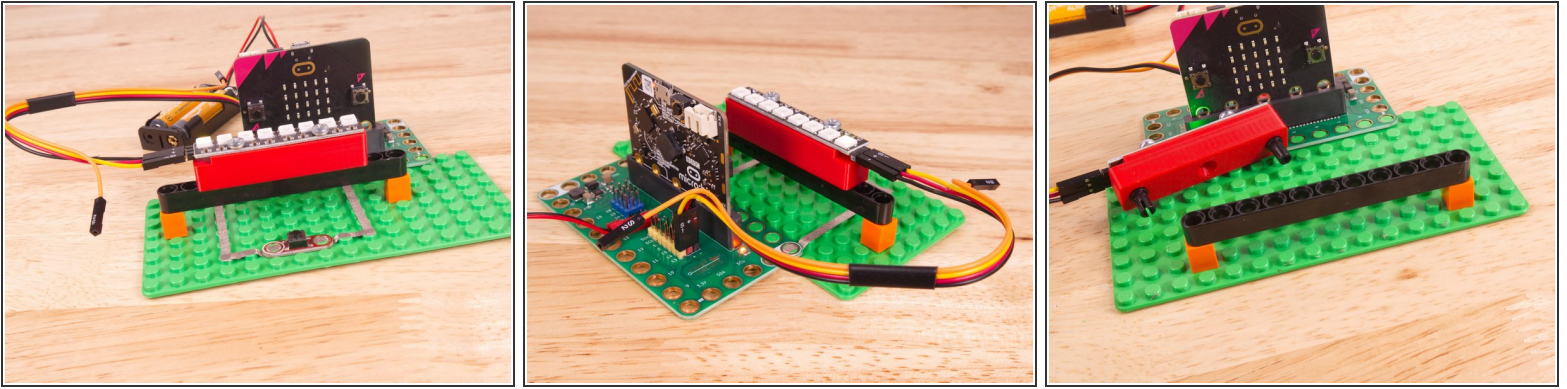
- [Crazy Circuits Bit Board](#) (1)
  - [micro:bit](#) (1)
  - [Addressable RGB LED Strip](#) (1)
  - [Standard Pushbutton Chip](#) (1)
  - [Crazy Circuits Ribbon Cable](#) (1)
  - [Maker Tape](#) (1)
- 1/8" Wide

## Step 1 — Connect the NeoPixel Stick and Button



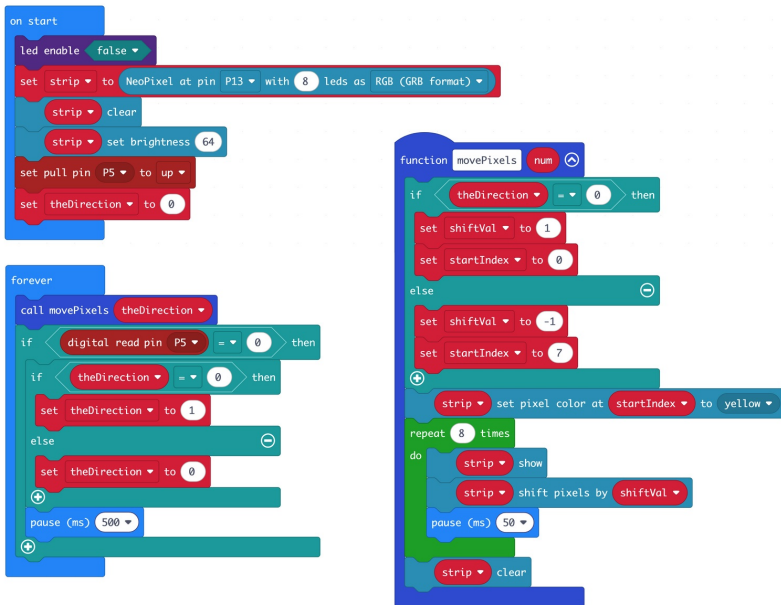
- The magical thing about these “Individually Addressable” LEDs is that you don’t have to connect each LED to an individual pin on your micro:bit, you just need **one signal wire** along with power (**Positive** and **Negative**) to light things up.
- So let's get connected! If you turn the **NeoPixel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



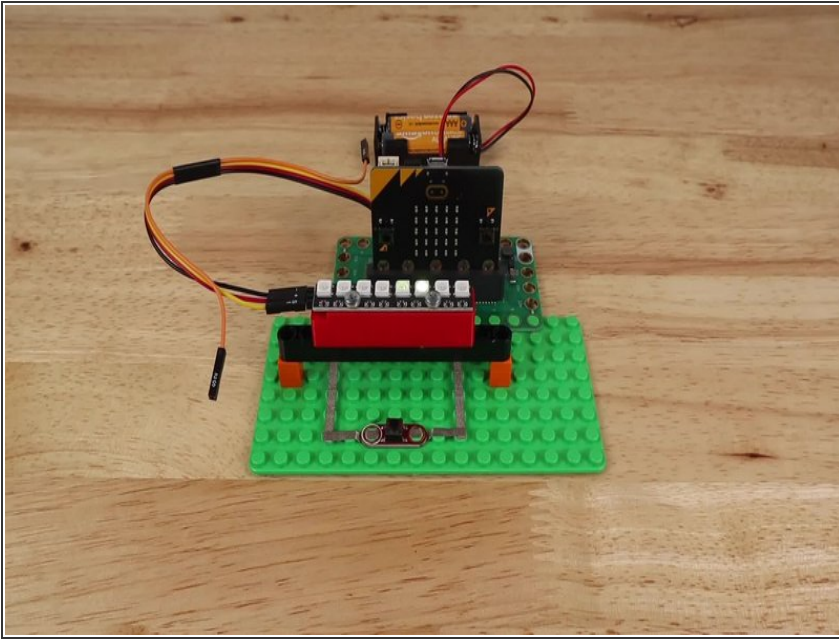
- To mount the NeoPixel Stick in place we used our [NeoPixel Beam Holder](#) with a long Technic Beam and two 1x1 LEGO bricks.
- You can always use rubber bands, tape, or some other method.
- The important thing is to make sure the connector is on the left hand side so the number index for the NeoPixel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

## Step 3 — Load the Code



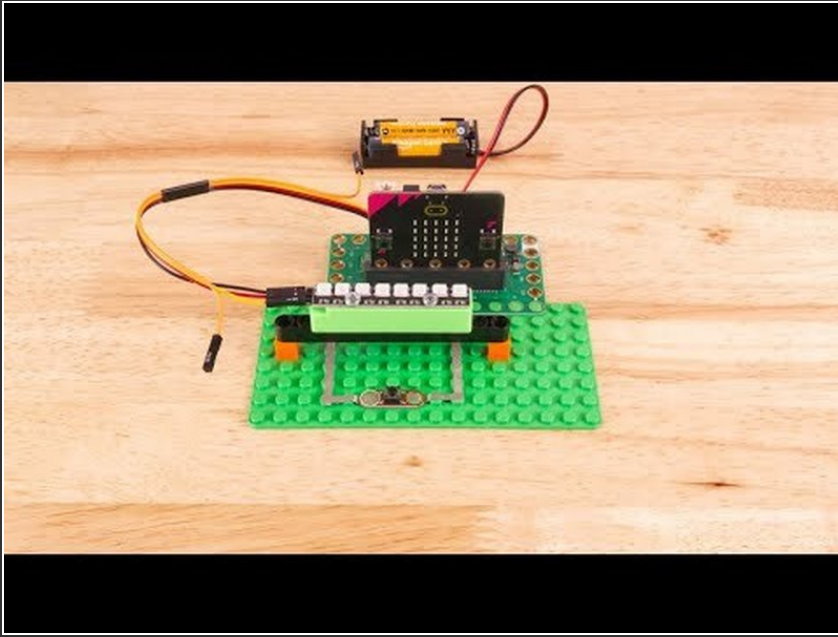
- If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use](#)
- We're going to load the following code for our **NeoPixel Back and Forth** program:  
[https://makecode.microbit.org/\\_aYfa buKuy...](https://makecode.microbit.org/_aYfa buKuy...)
- In our forever loop we're going to check for a button press, and use it to change a variable called **theDirection** to either **1** or **0**.
- Our forever loop also calls the function movePixels which will look at the **theDirection** value and use it to set the **shiftVal** and **startIndex** variables.
- Those two variables are all we need to change the direction the pixel moves in.

## 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'll see the pixel move from left to right...
- Press the button down and the pixel should reverse direction.
- If you hold down the button the pixel will just go back and forth repeatedly.
- 📌 Again, we recommend you see [CH4-D - Button Toggle Better](#) for a more advanced "toggle" 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/8EJiYAk8qk>