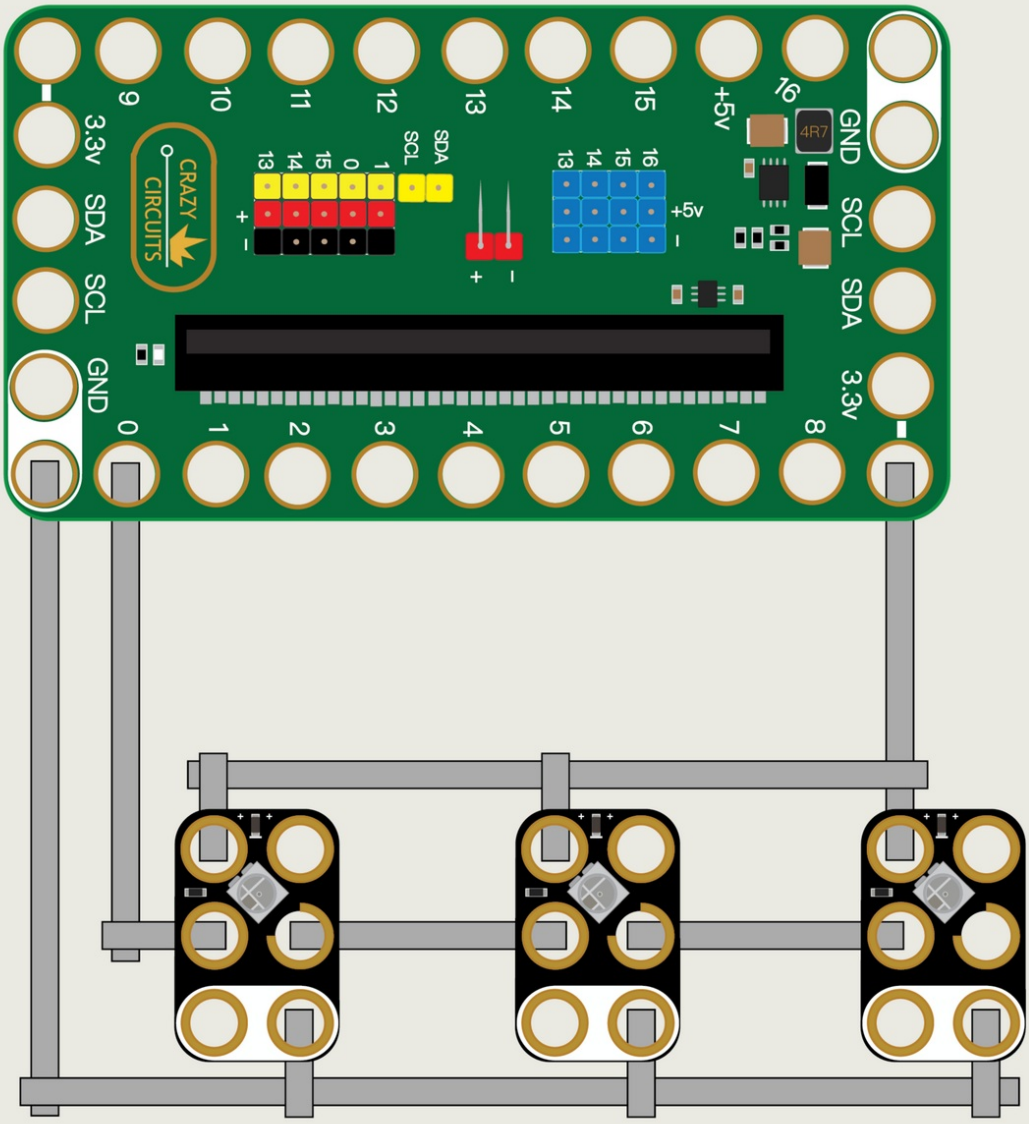
CH20-C - Three NeoPixels Range

Connect three Crazy Circuits NeoPixels to a Bit Board and control them with code.

Written By: Pete Prodoehl



INTRODUCTION

Connect three Crazy Circuits NeoPixels to a Bit Board and control them with code.

We'll explore how to control a series of three RGB LEDs (also called "NeoPixels").

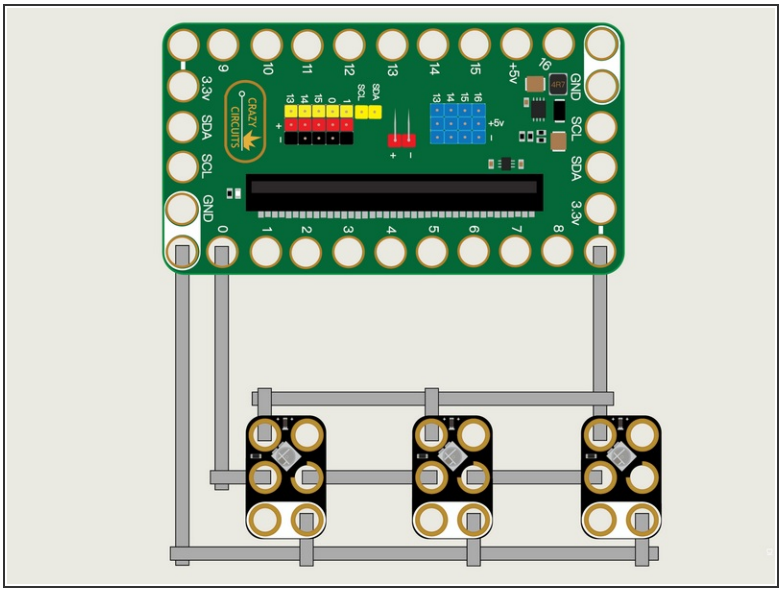
TOOLS:

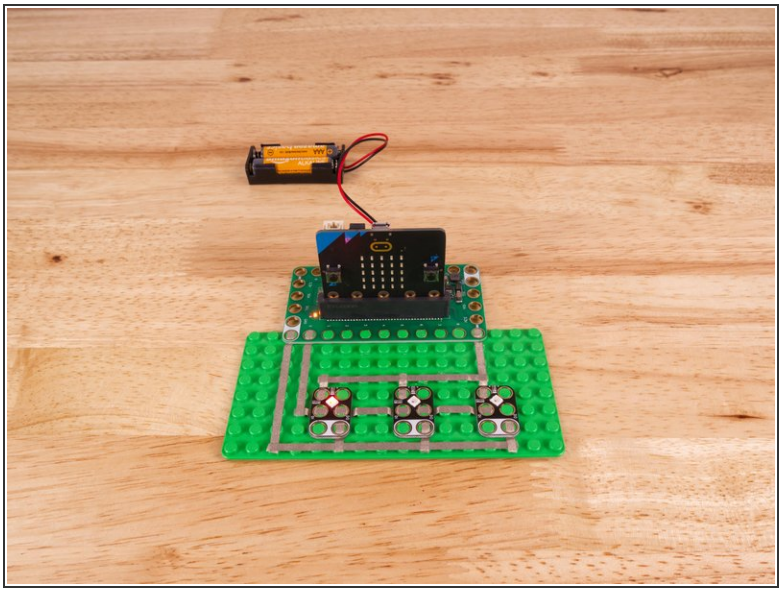
- Computer (1)
- Scissors (1)

PARTS:

- Crazy Circuits Bit Board (1)
- micro:bit (1)
- Maker Tape (1)
  1/8" Wide
- NeoPixel Chip (3)

Step 1 — Connect the NeoPixels





- We'll use **Maker Tape** to connect the three NeoPixels to the Bit Board on a LEGO baseplate.
- The NeoPixels need to be **chained together**. You'll notice the labels **DI** and **DO** on each one. These stand for **Digital Input** and **Digital Output**.
- From the Bit Board, **Pin 0** connects to the **DI** (center hole) of the NeoPixel on the left side. We then connect the **DO** from the first one to the **DI** of the second one, and so on...

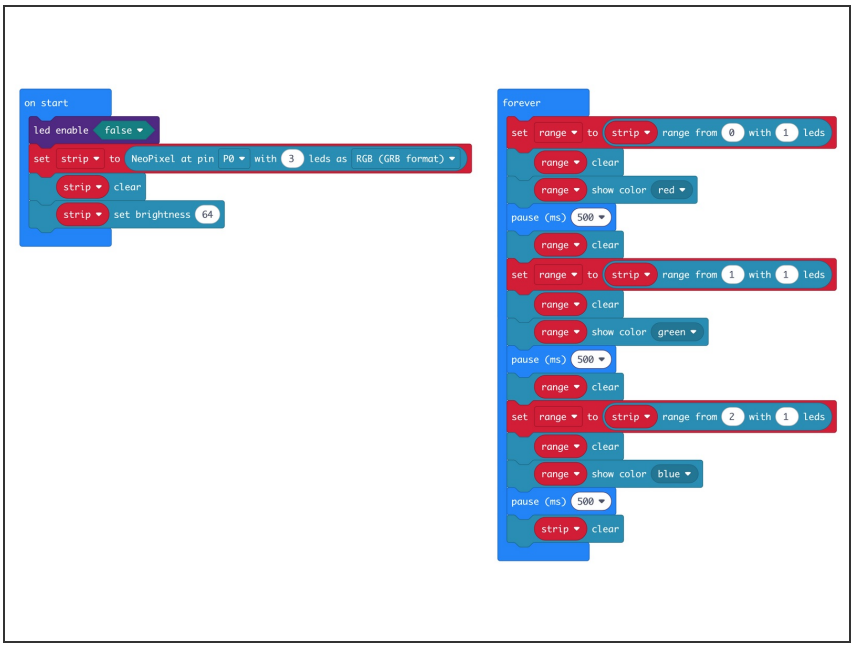
ⓘ Make sure you don't bridge the connection of **DI** and **DO** beneath a NeoPixel, or that will short the circuit and bypass that NeoPixel. (If one does **not** light up, check for this.)

- You'll also need to connect the three NeoPixels to **Ground** (GND) and to **3.3v** as shown.

☒ You'll notice the **Ground** on the Bit Board (as well as the NeoPixel and other Crazy Circuits components we'll use) is color coded **White**.

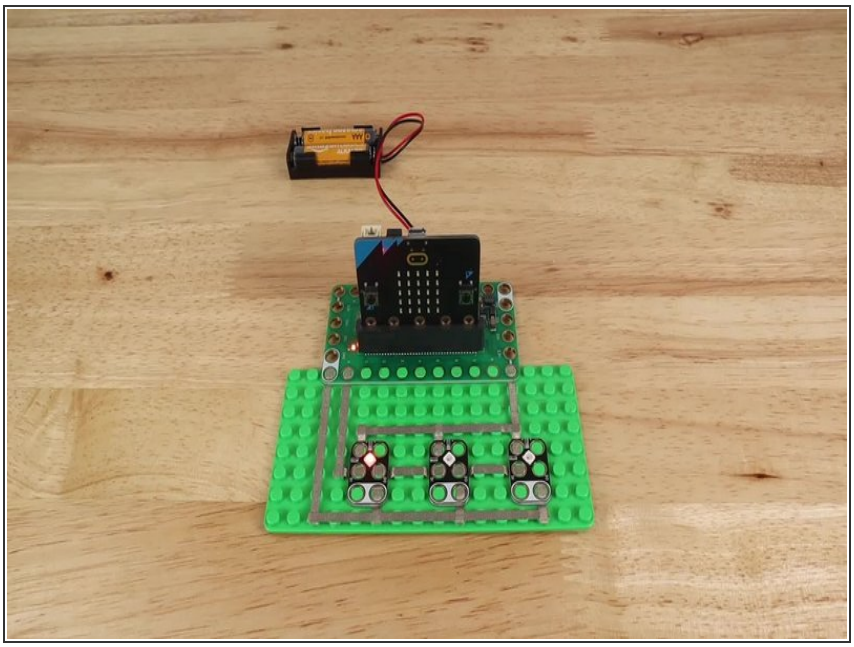
☒ The **3.3v** hole on the Bit Board is labeled and is actually two holes right next to each other on the Bit Board. (There is a small line showing the connection between them.)

Step 2 — Load the Code



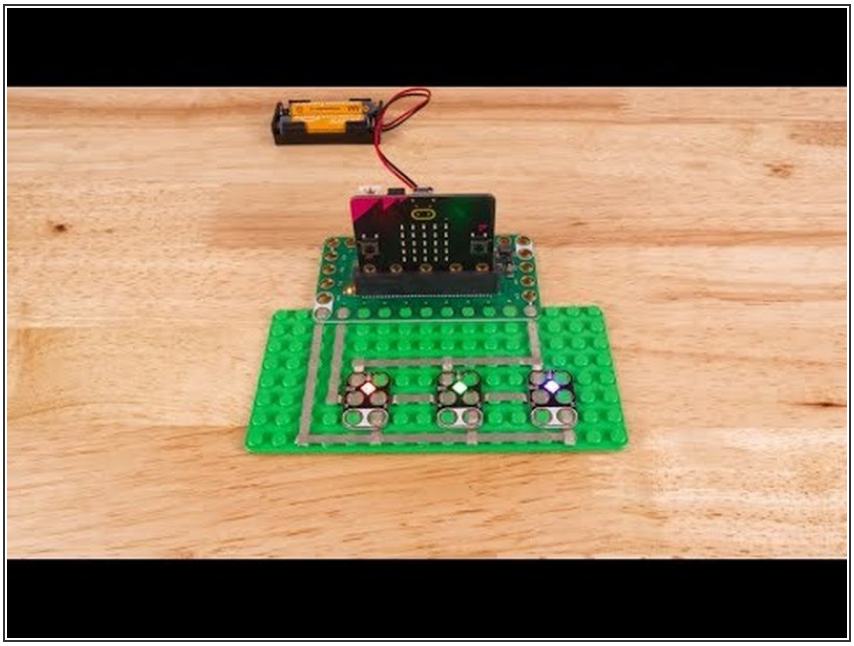
- If you've never used a micro:bit before you'll want to check out this guide: Bit Board V2 Setup and Use
- We're going to load the following code for our **Three NeoPixels Range** program: https://makecode.microbit.org/_FyaiXTX3E...
- We can select certain **NeoPixels** by setting a range. A range requires you to specify which NeoPixel in the string to start with, and then how many NeoPixels are in the range.
- For this example each **range** contains just **one** NeoPixel. While the output is simple (lighting up one NeoPixel at a time) the range function allows us to do more advanced things with longer strips of NeoPixels.
- Note that we are **redefining** (reusing) the range variable each time we set it, but for more complex code we might create a number of different ranges.

Step 3 — 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 left NeoPixel light up red, then turn off, then the middle one light up green, then turn off, and finally the right one light up blue, and then turn off.
- ⓘ If you look at the code we're actually turning off *all* of the NeoPixels before we turn one on.

Step 4 — 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/_pM0oZnZ9wQ...

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