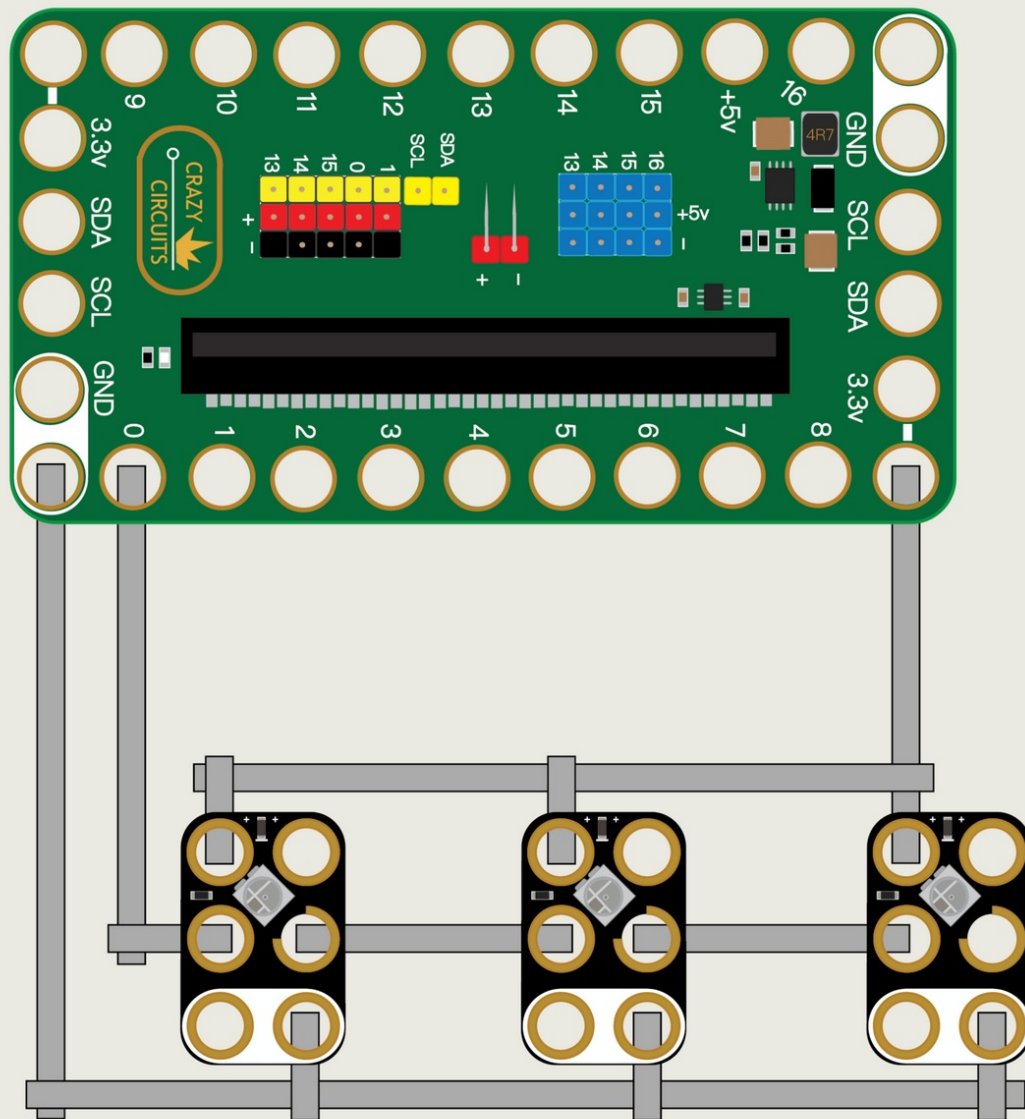




CH20-E - Three NeoPixels Random Better

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

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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:

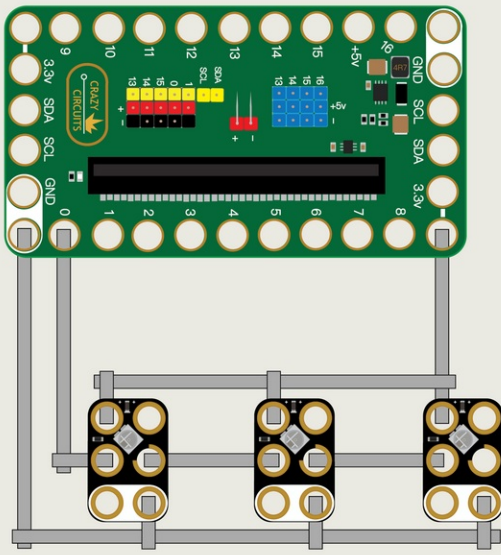
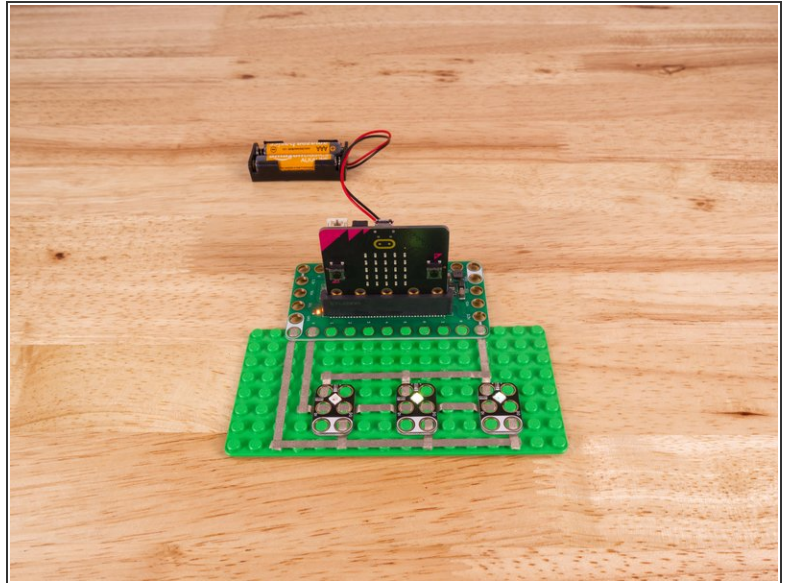
- [Computer](#) (1)
- [Scissors](#) (1)



PARTS:

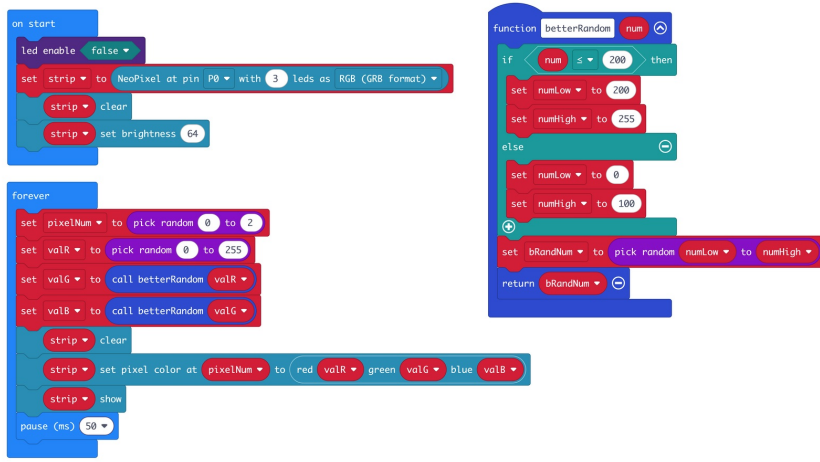
- [Crazy Circuits Bit Board](#) (1)
- [micro:bit](#) (1)
- [Maker Tape](#) (1)
1/8" Wide
- [NeoPixel Chip](#) (3)

Step 1 — Connect the NeoPixels



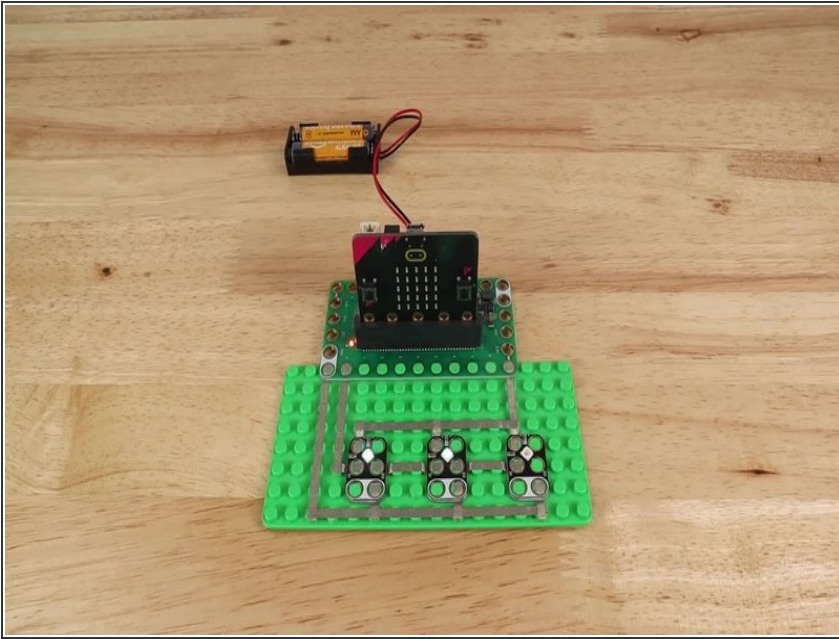
- We'll use **Maker Tape** to connect the three NeoPixels to the Bit Board on a LEGO baseplate.
- The NeoPixels need to be **chained together**. You'll notice the labels **DI** and **DO** on each one. These stand for **Digital Input** and **Digital Output**.
- From the Bit Board, **Pin 0** connects to 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



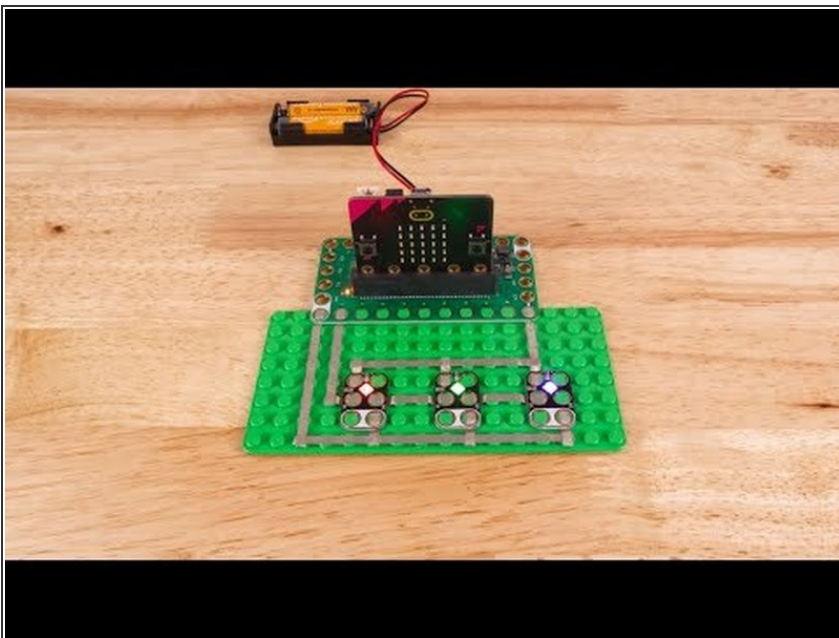
- If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use](#)
- We're going to load the following code for our **Three NeoPixels Random Better** program: https://makecode.microbit.org/_AjbH696ac...
- For this example we've just slightly improved the previous example by adding a function called betterRandom.
- The betterRandom function will attempt to force the RGB values to be higher or lower for more "solid" color versus the more "washed out" colors in the previous example.
- ① It's still not perfect! But it does demonstrate a slight improvement in more colorful colors being displayed.

Step 3 — 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.
- A NeoPixel will light up, then a different one, and so on. Each time a different color will be shown. You may see very similar colors, and you may see the same NeoPixel light up multiple times in a row.

Step 4 — 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://www.youtube.com/live/_pM0oZnZ9wQ...