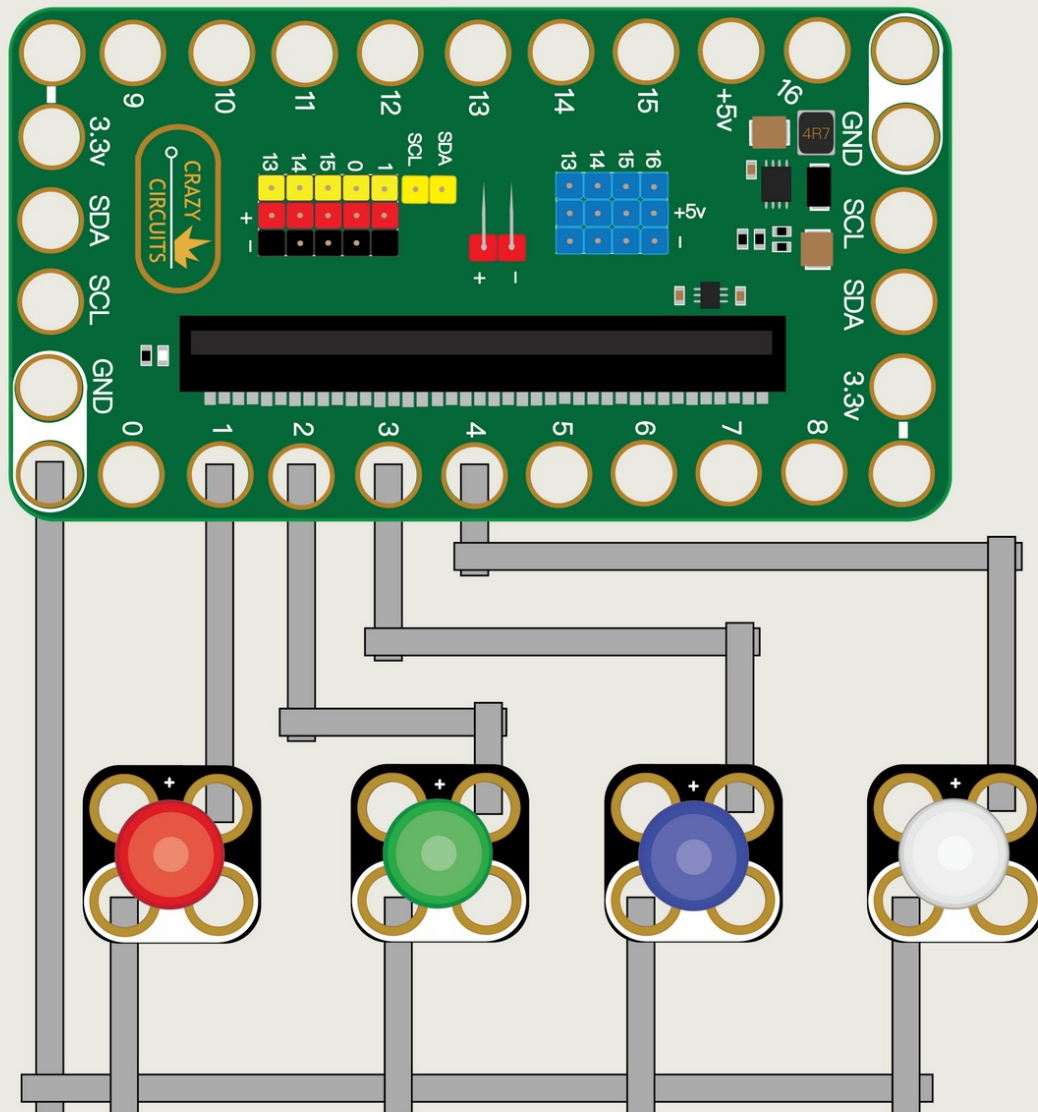




CH3-D - LED Larson Scanner

Connect four LEDs to a Bit Board and control them with a micro:bit

Written By: Pete Prodoehl



INTRODUCTION

Connect four LEDs to a Bit Board and control them with a micro:bit

We'll recreate the classic "Larson Scanner" using four LEDs.



TOOLS:

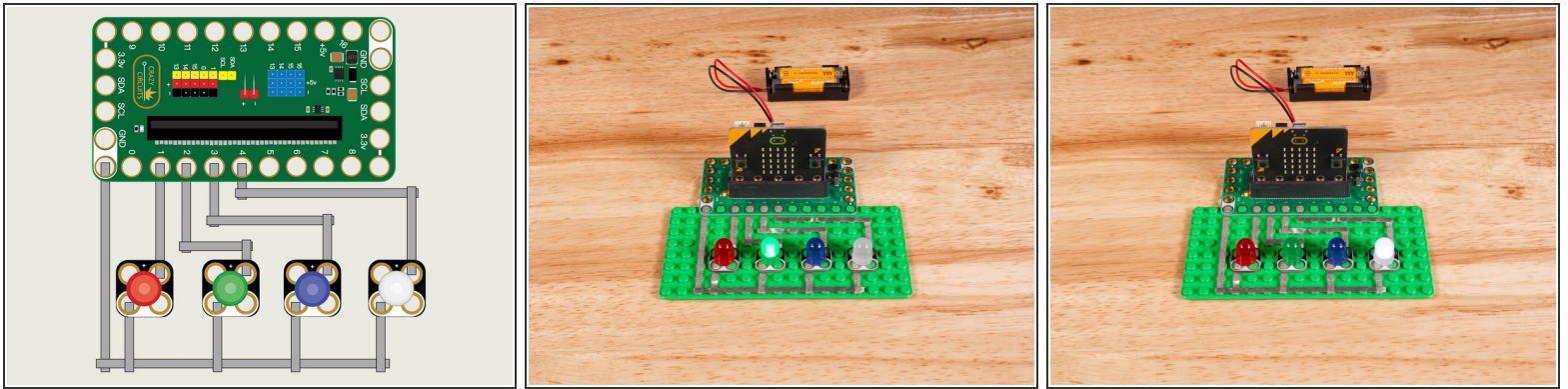
- Computer (1)
- Scissors (1)



PARTS:

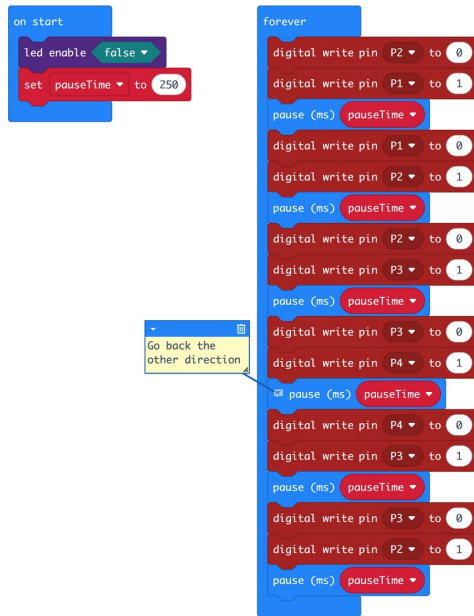
- Crazy Circuits Bit Board (1)
- micro:bit (1)
- Maker Tape (1)
1/8" Wide
- Crazy Circuits LED Chip (4)

Step 1 — Connect the LEDs



- We'll use **Maker Tape** to connect the LEDs to the Bit Board on a LEGO baseplate.
 - Connect the **Negative** (-) sides of the LEDs to a **Ground** (GND) hole on the Bit Board.
 - Connect the **Positive** (+) side of the first LED to **Pin 1** on the Bit Board.
 - Connect the **Positive** (+) side of the second LED to **Pin 2** on the Bit Board.
 - Connect the **Positive** (+) side of the third LED to **Pin 3** on the Bit Board.
 - Connect the **Positive** (+) side of the fourth LED to **Pin 4** on the Bit Board.
- ☒ You'll notice the **Ground** on the Bit Board (as well as the LED and other Crazy Circuits components we'll use) is color coded **White**.

Step 2 — Load the Code



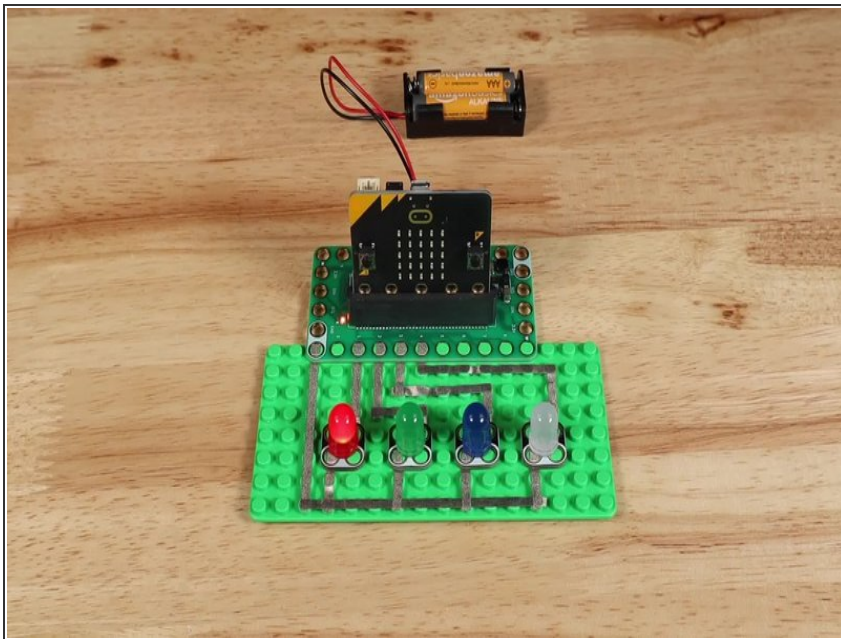
- If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use](#)
- We're going to load the following code for our **LED Larson Scanner** program:
https://makecode.microbit.org/_3qvTjUUJr...
- This code will turn on an LED, then turn it off as it turns on the one next to it, and down the line to the end, and then go back in the other direction.
- This code is pretty simple so we'll just call out two things. First the **comment** in the code. The little post-it note with some additional information. Comments can be very helpful in reminding you what a piece of code does.
- Second, you'll notice the first line in the forever block turns off the LED on **Pin 2**. Isn't the pin already off when we start running our code? It is, but we need to account for when the loop comes back around, since the last thing the loop does it turns on the LED attached to **Pin 2**.

- You'll notice we have a command for led enable set to **false** in the on start block. The led enable

command **enables** or **disables** the **built-in LED matrix** on the front of the micro:bit

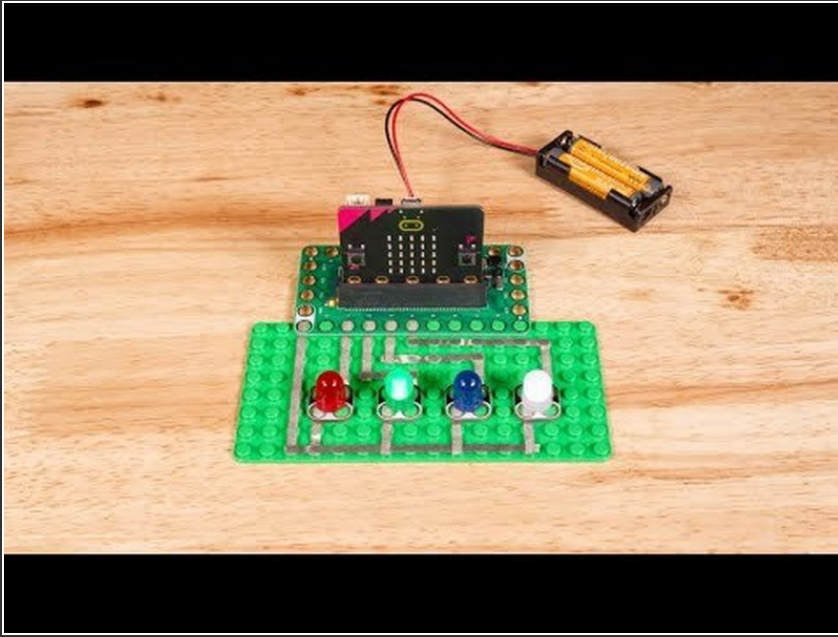
- We need to turn off the built-in LED matrix to properly use **Pin 3** and **Pin 4** otherwise they will be used by the built-in LED matrix and conflict with our code to control our LEDs.
- You can see a description of the micro:bit pins here:
<https://makecode.microbit.org/device/pin...>

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.
- This code looks fairly simple, and it is, though using just 4 LEDs and sequential pin numbering helps quite a bit.
- ★ In future guides we'll use four LEDs along with sensors or other input to act as a small **bar graph** or **level indicator**.

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/watch?v=_ArsMH4A...