CH2-D - LED Fade Up and Down While

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

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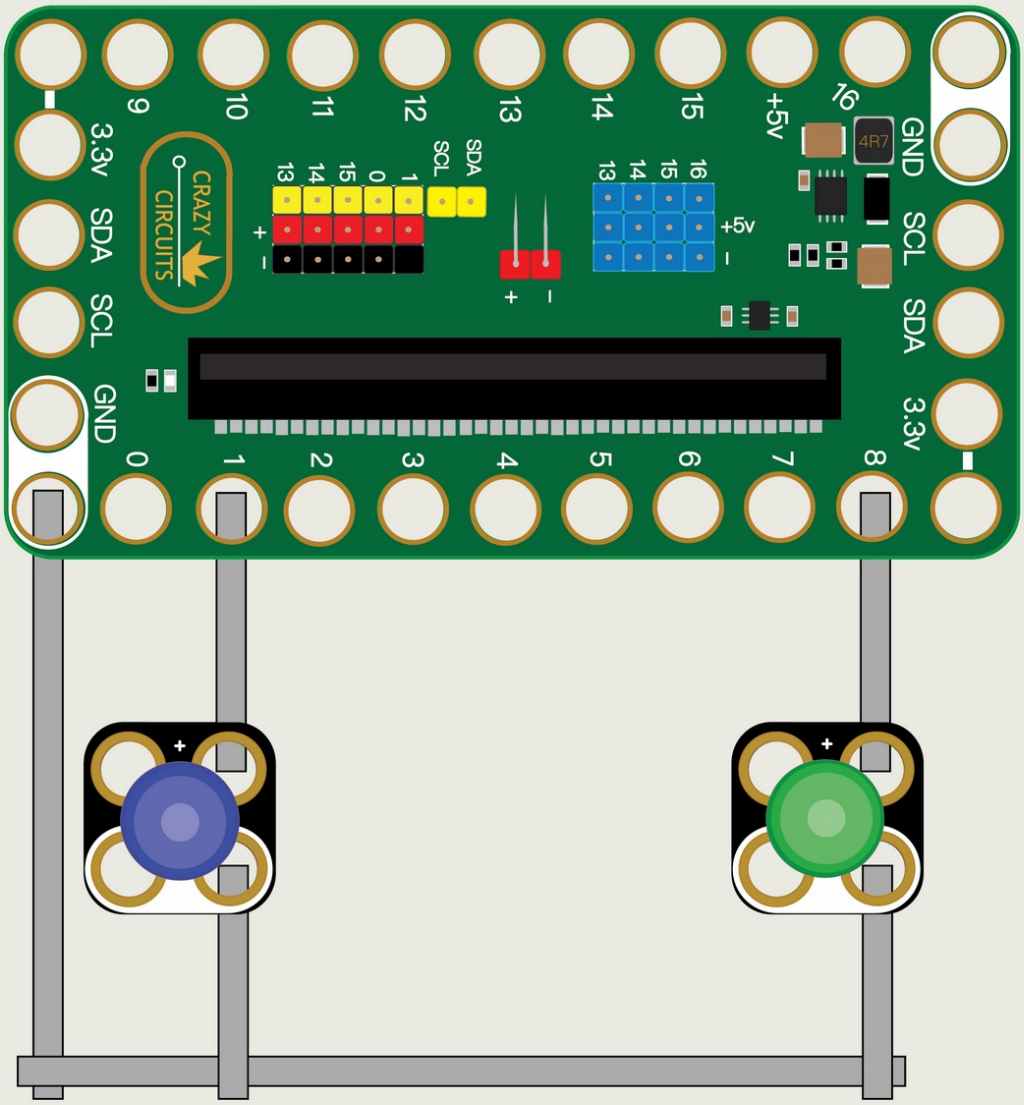

INTRODUCTION

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

We'll make the LEDs fade up and down using a while function.

TOOLS:

- Computer (1)
- Scissors (1)

PARTS:

- Crazy Circuits Bit Board (1)
- micro:bit (1)
- Maker Tape (1)
  1/8" Wide
- Crazy Circuits LED Chip (2)

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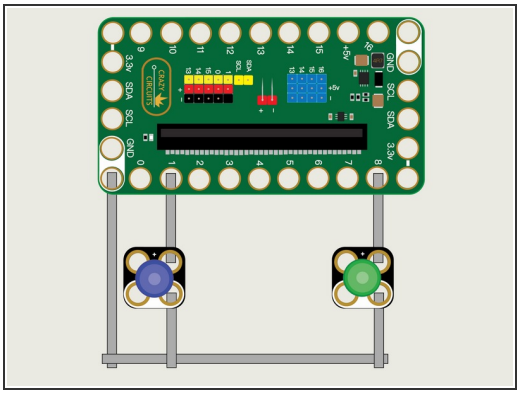
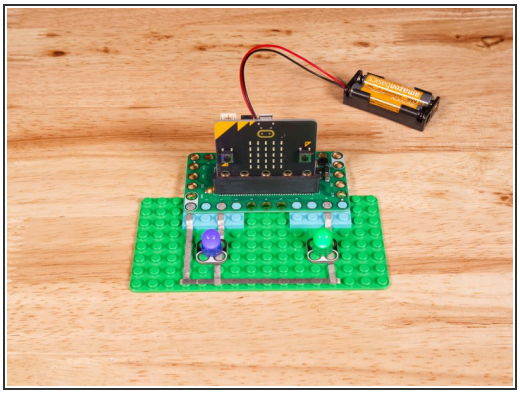
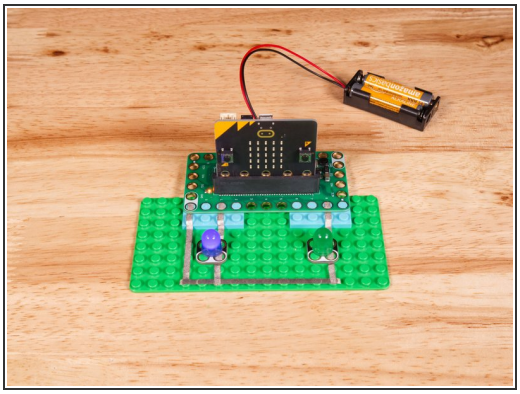
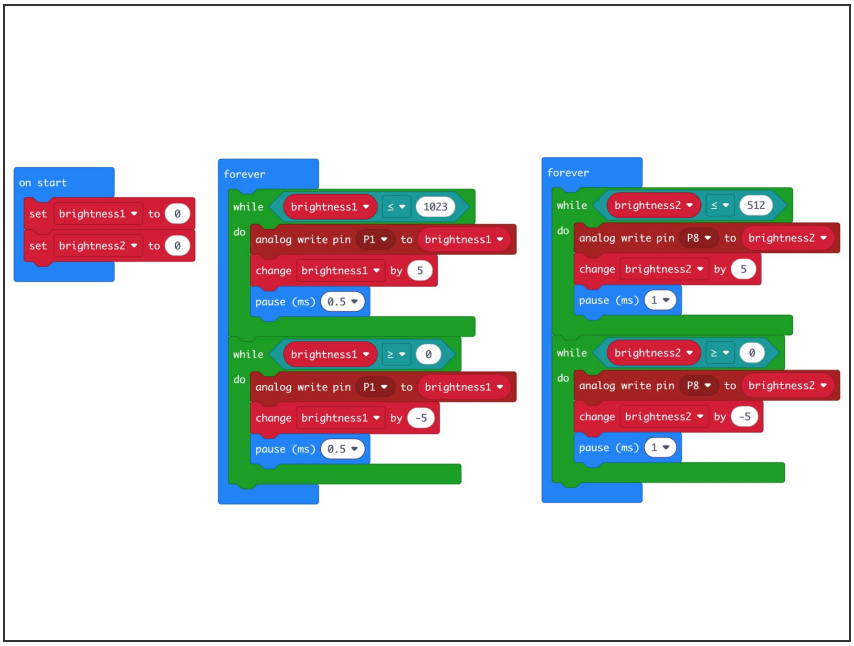
Step 1 — Connect the LEDs

- 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 8** 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 Fade Up and Down While** program: https://makecode.microbit.org/_HEPUfAdYR...

- In our previous guide we used the repeat function, which worked, but we can improve things with a *while* loop.
- In this code we are not looping a **certain number of times**, instead we are looping **until a condition is met**.
- The while block uses a **conditional statement** to determine when it will be done.
- For the LED on Pin 1 we do the first while loop as long as the variable **brightness1** is *less than or equal to* 1023.
- We then have another while loop after that where we run the loop until the **brightness1** variable is *greater than or equal to* 0.
- If we change our (hardcoded) values for the change or pause functions **it will not affect the number of times the loop repeats** because we only check for the **value** of the **brightness1** variable.

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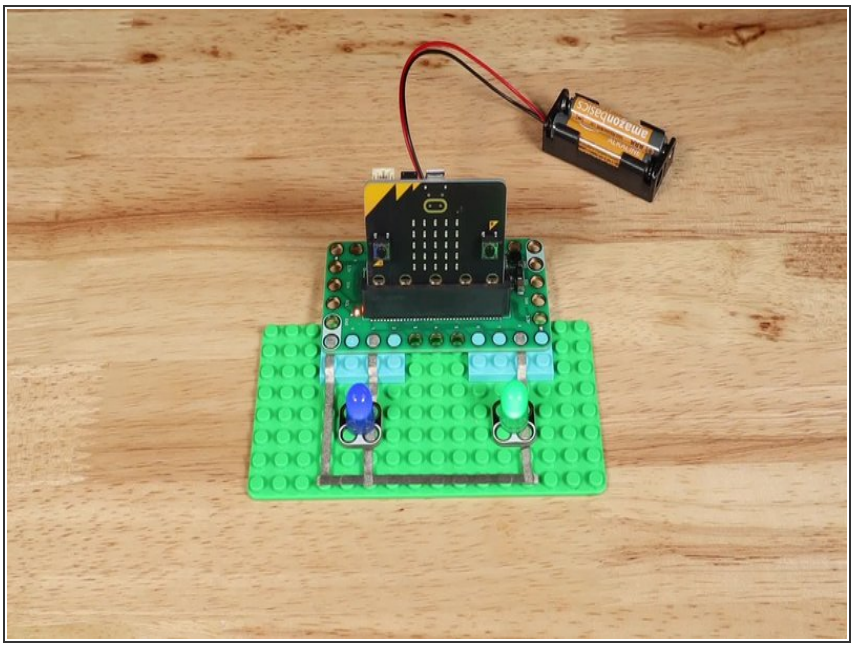
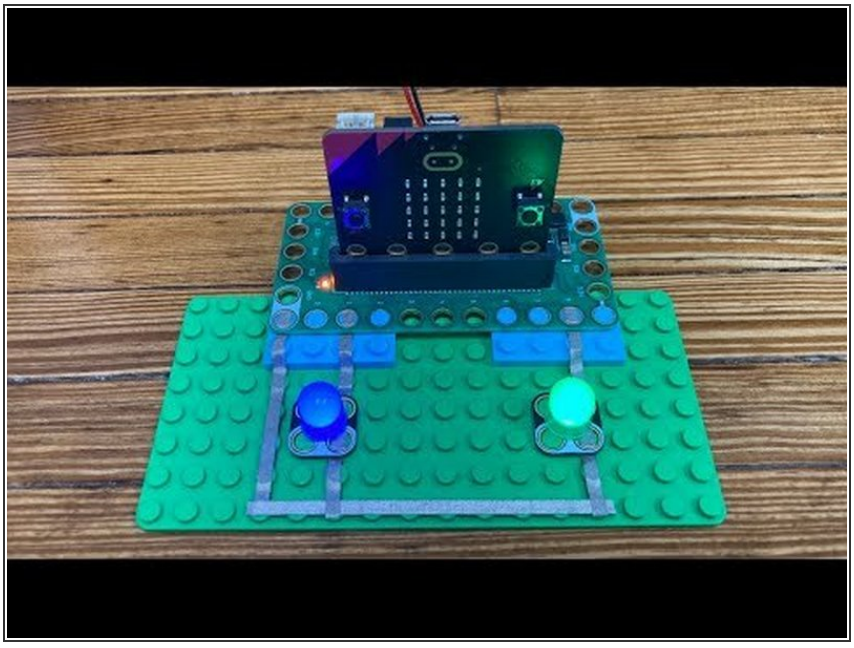
Step 3 — Test it Out!



- 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.
- The LEDs will fade up and down, at different rates, and in different steps, and you can now easily change your hardcoded values without it affecting the number of loops.

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://youtube.com/live/QZck9h1C3A8