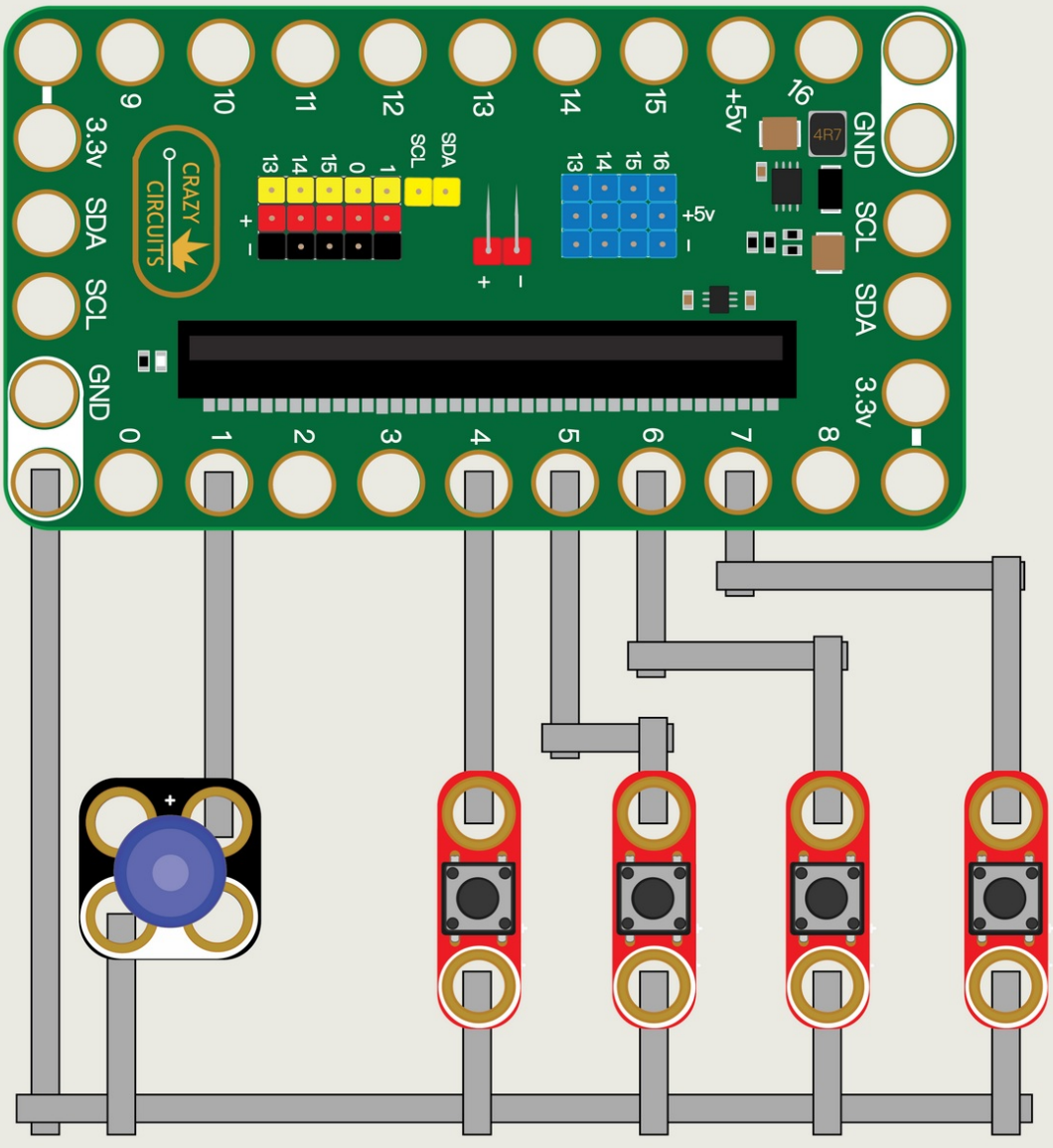
CH6-B - Four Buttons Fade Down

Connect four pushbuttons to a Bit Board and control an LED with code.

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INTRODUCTION

Connect four pushbuttons to a Bit Board and control an LED with code.

We'll explore how we can use four pushbuttons as inputs for the micro:bit

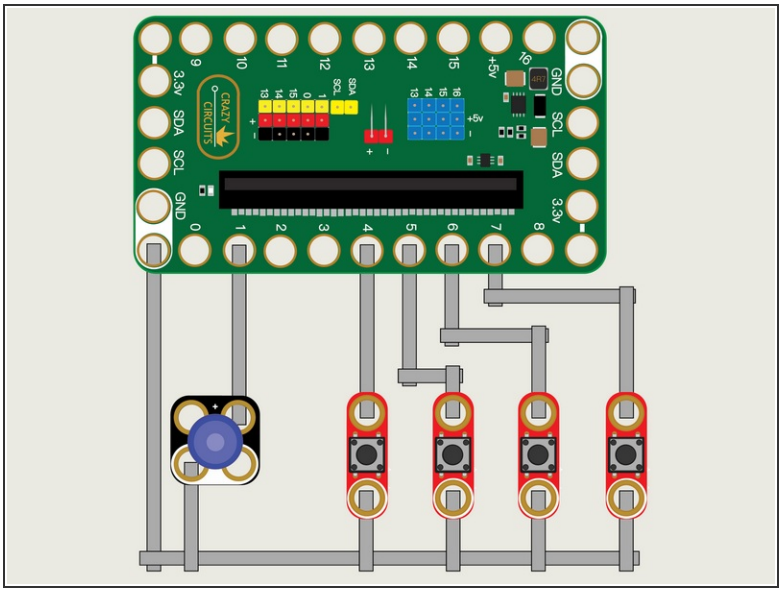
TOOLS:

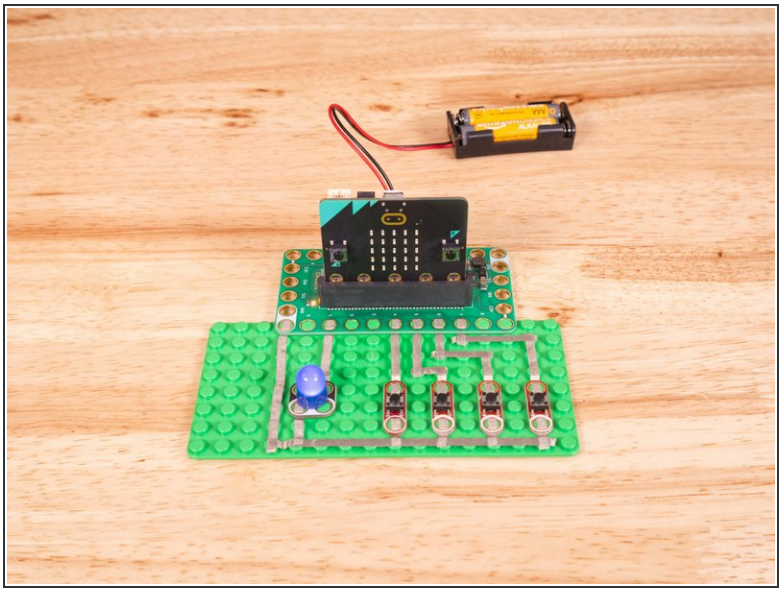
- Computer (1)
- Scissors (1)

PARTS:

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

Step 1 — Connect the Buttons (and LED)

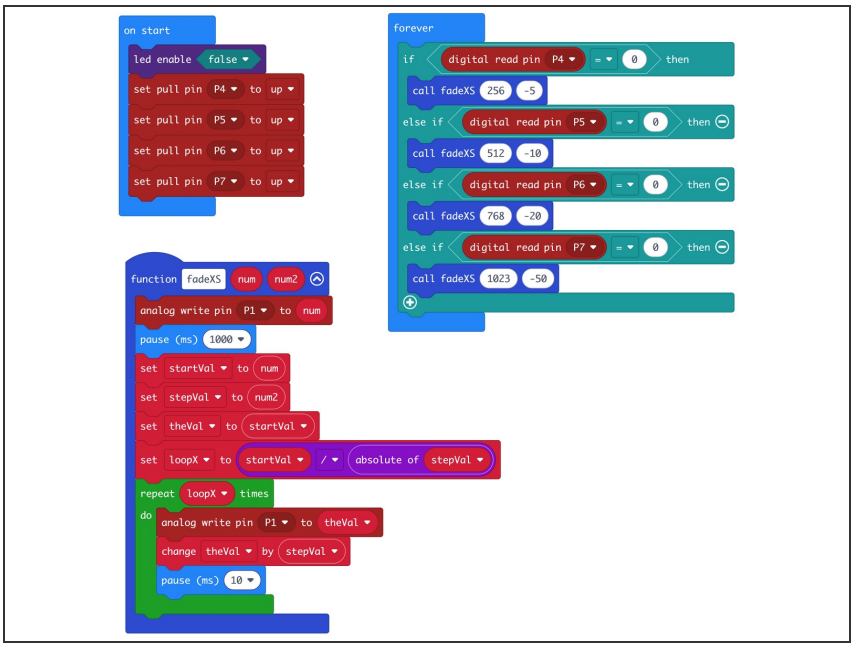




- We'll use **Maker Tape** to connect the four Buttons and the LED to the Bit Board on a LEGO baseplate.
- We'll connect our **LED** to **Pin 1** and one of our **Buttons** to **Pin 4** and the others to **Pin 5**, **Pin 6**, and **Pin 7**, respectively.
- And of course we'll connect the **Ground** (GND) sides of each component to **Ground** on the Bit Board.

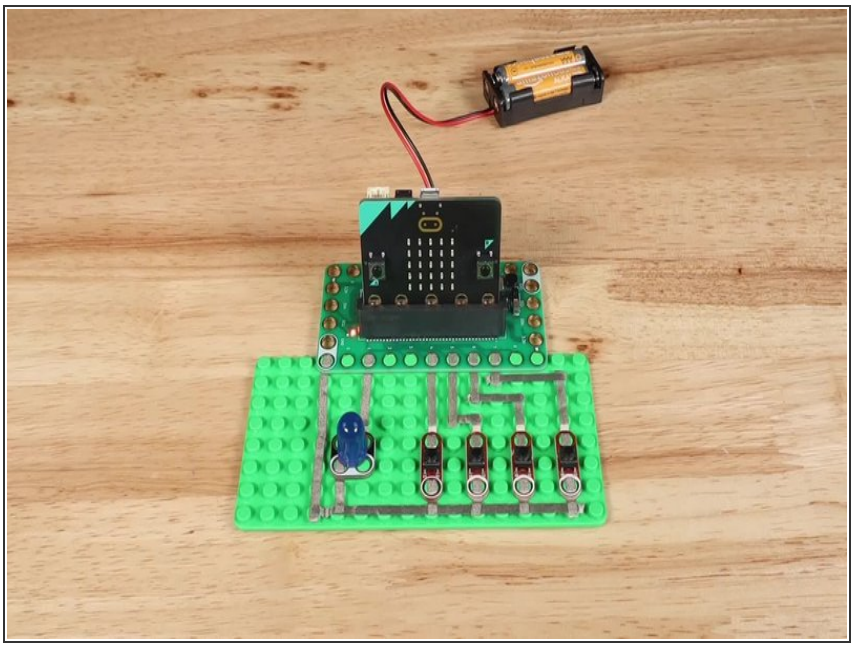
- You'll notice the **Ground** on the Bit Board (as well as the LED and other Crazy Circuits components we'll use) is color coded **White**.
- While the LED has **Polarity** our **Button** does not. If you connect it the other way around *it will still work fine*. Not all components have **Polarity**.

Step 2 — Load the Code



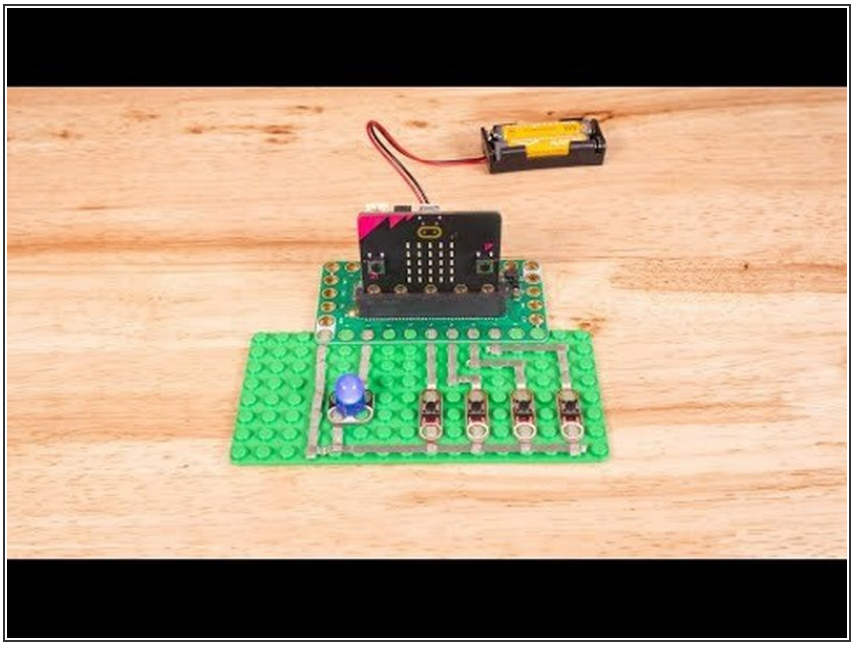
- If you've never used a micro:bit before you'll want to check out this guide: Bit Board V2 Setup and Use
- We're going to load the following code for our **Four Buttons Fade Down** program: https://makecode.microbit.org/_gUE20vVTs...
- For this code we've added an additional parameter to our function call. The function fadeXS will take the **initial brightness** as well as the **step (down) value** when fading down the LED.
- The function will turn on the LED at the determined brightness, wait one second (1000 milliseconds) and then start a repeat loop to decrease the brightness, making the LED fade down.
- We're setting a few variables and even calculating the absolute value of a *negative value* this time.
- We're still "hardcoding" how many milliseconds we'll pause during the repeat loop but it would be trivial to add a third parameter to set a variable for that.

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.
- Press a button and you'll see the LED turn on for a second, and then start to dim. Try the different buttons for different initial brightness values.

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/watch?v=Huqyi9A8...