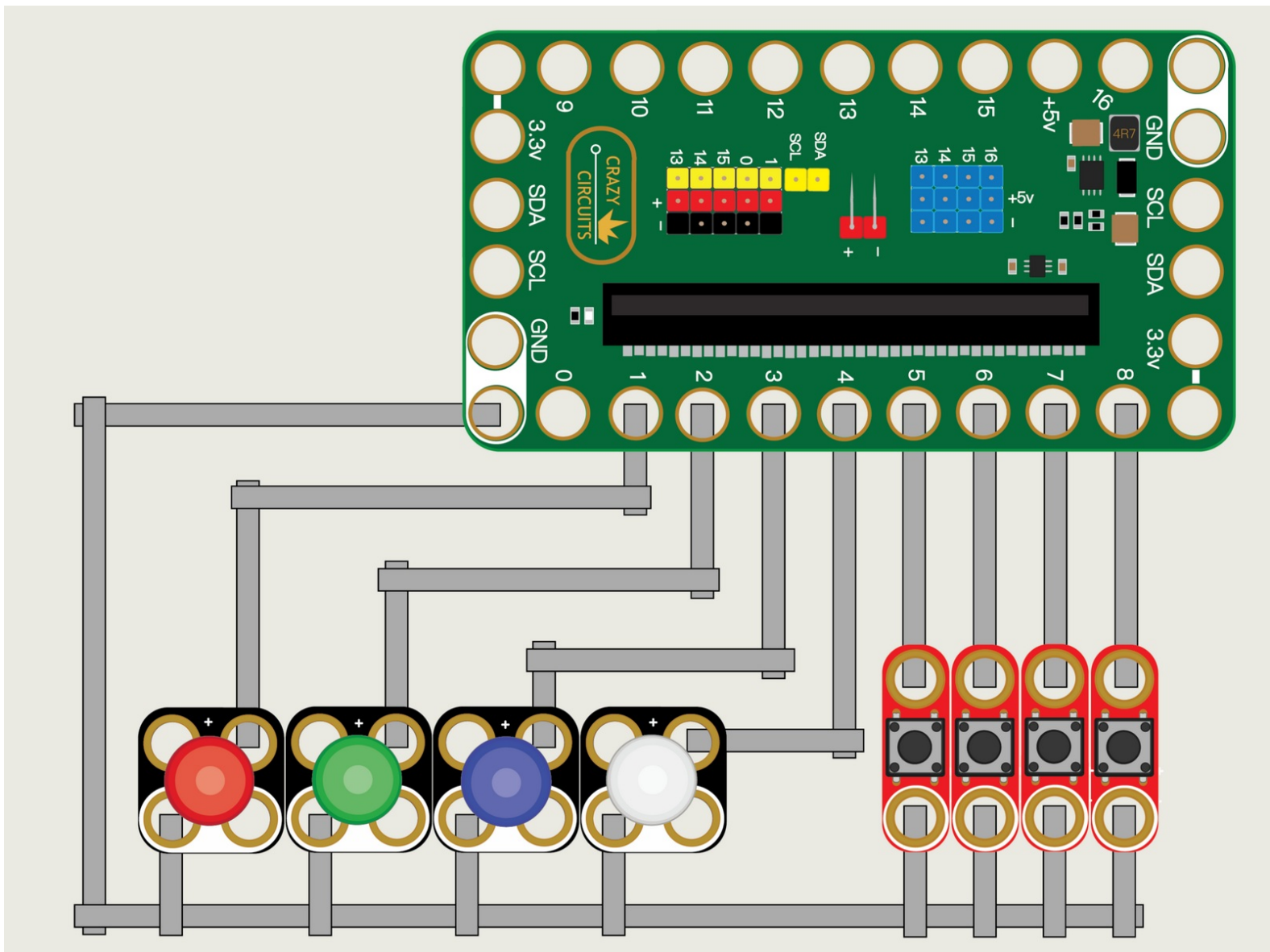




CH7-A - Four Patterns V1

Connect four pushbuttons to a Bit Board to control four LEDs with code.

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INTRODUCTION

Connect four pushbuttons to a Bit Board to control four LEDs with code.

We'll explore how we can use four pushbuttons as inputs for the micro:bit and control four LEDs as the output.



TOOLS:

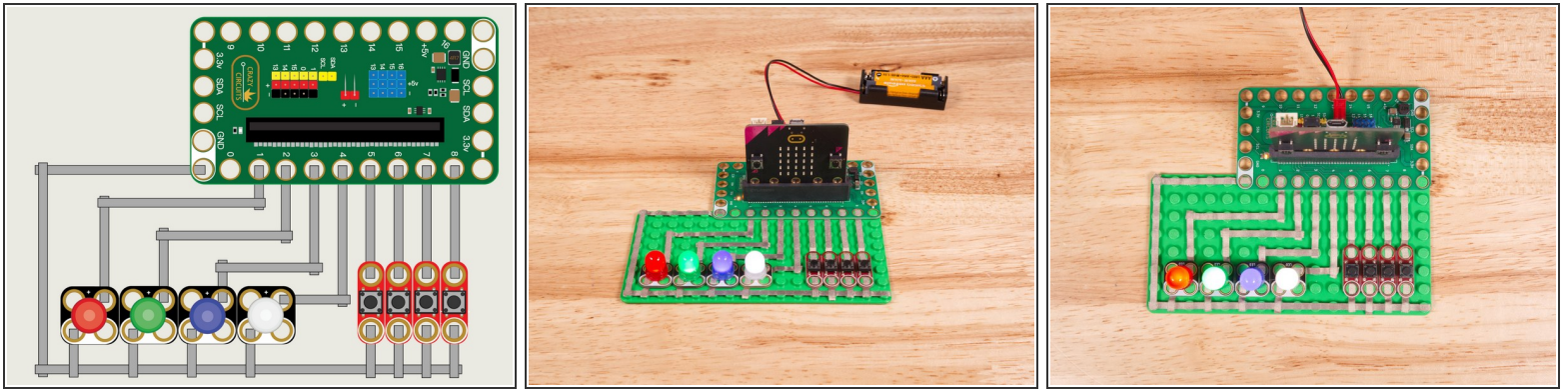
- [Computer](#) (1)
- [Scissors](#) (1)



PARTS:

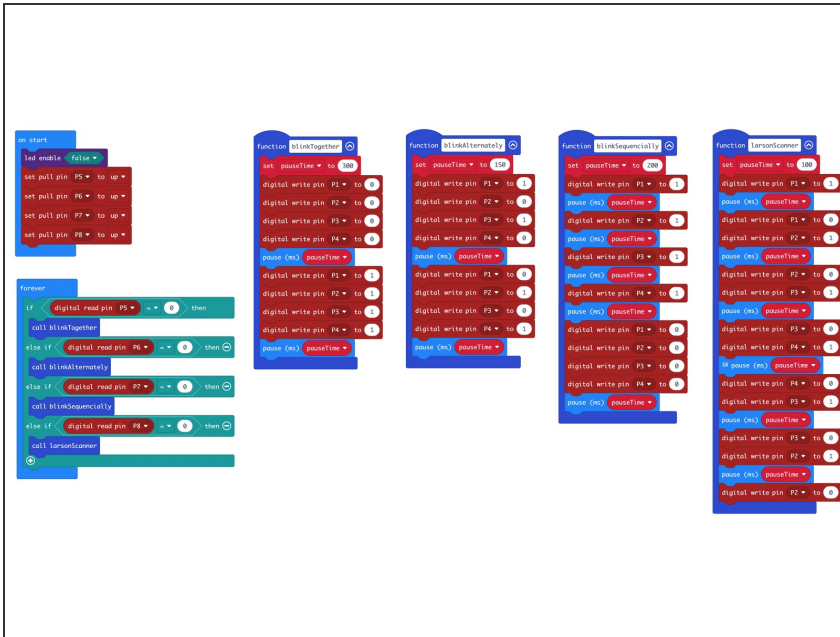
- [Crazy Circuits Bit Board](#) (1)
- [micro:bit](#) (1)
- [Maker Tape](#) (1)
1/8" Wide
- [Standard Pushbutton Chip](#) (4)
- [Crazy Circuits LED Chip](#) (4)

Step 1 — Connect the Buttons and LEDs



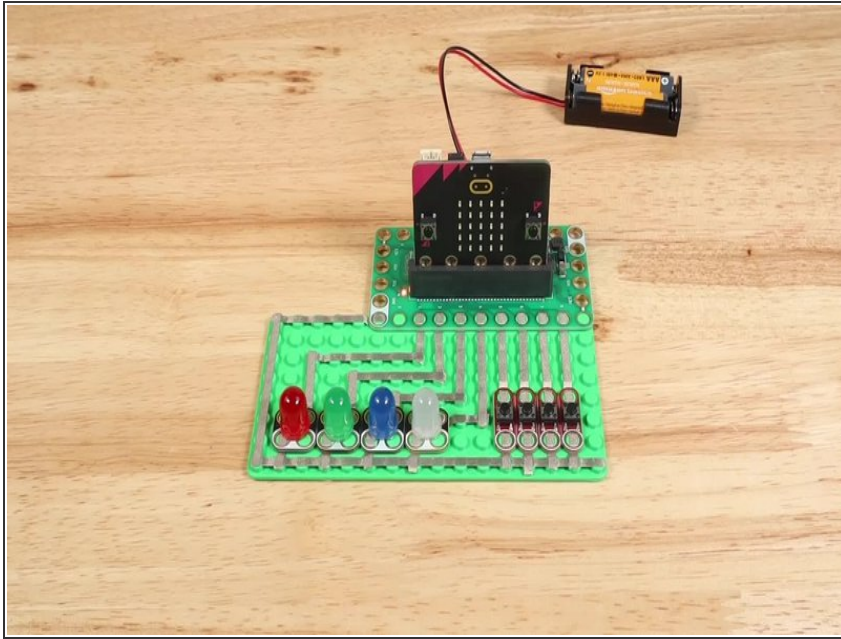
- We'll use **Maker Tape** to connect the four Buttons and the LED to the Bit Board on a LEGO baseplate.
- ⚠ If you use a larger baseplate you can space out your your components a bit more, but if you're using a small one **pay close attention to the tape paths** as there isn't room for deviation on a 16x8 baseplate.
- Connect **LEDs** to **Pin 1, Pin 2, Pin 3, and Pin 4**. Connect **Buttons** to **Pin 5, Pin 6, Pin 7, and Pin 8**.
- 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



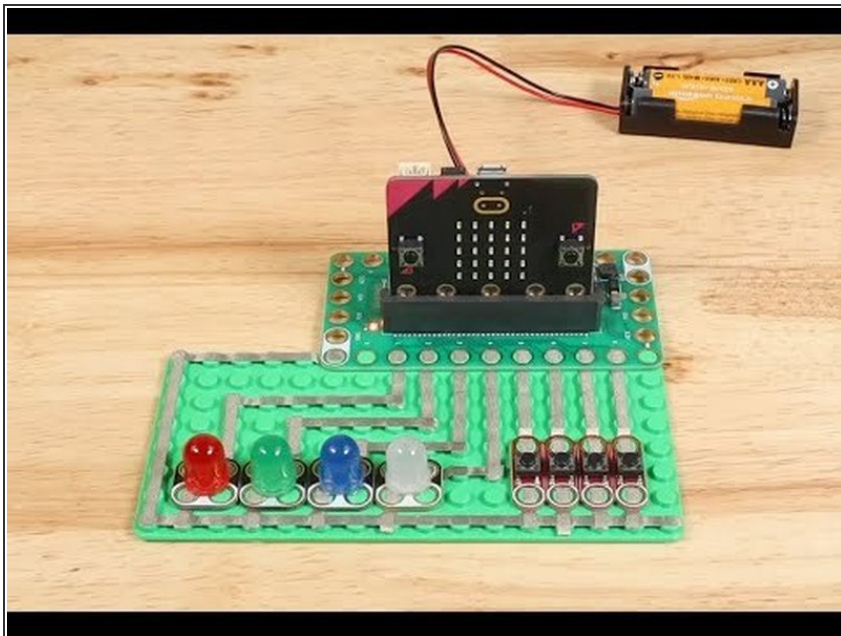
- If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use](#)
- We're going to load the following code for our **Four Patterns V1** program:
https://makecode.microbit.org/_07jeTq333...
- We've written four different functions and each can be called by holding down a specific button. Note that you need to **press and hold** the button. Once you *release* a button the *if* is no longer true, so *the function stops running*.
- We've seen these functions before (in a previous chapter) so they are not new, but now we've got them all together in one single program.
- We need to hold down the button if we want the function to get called repeatedly because *there is no loop of any kind in the function*, which means it just runs once and then **returns**.
- We use the word **return** for what a function does at the end. Sometimes it actually returns a value, and sometimes it returns **nothing**.

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.
- When you **press and hold** a button a corresponding function will run. You'll get a different light show depending on the button you press!

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://youtube.com/live/LXTZHnrClRk>