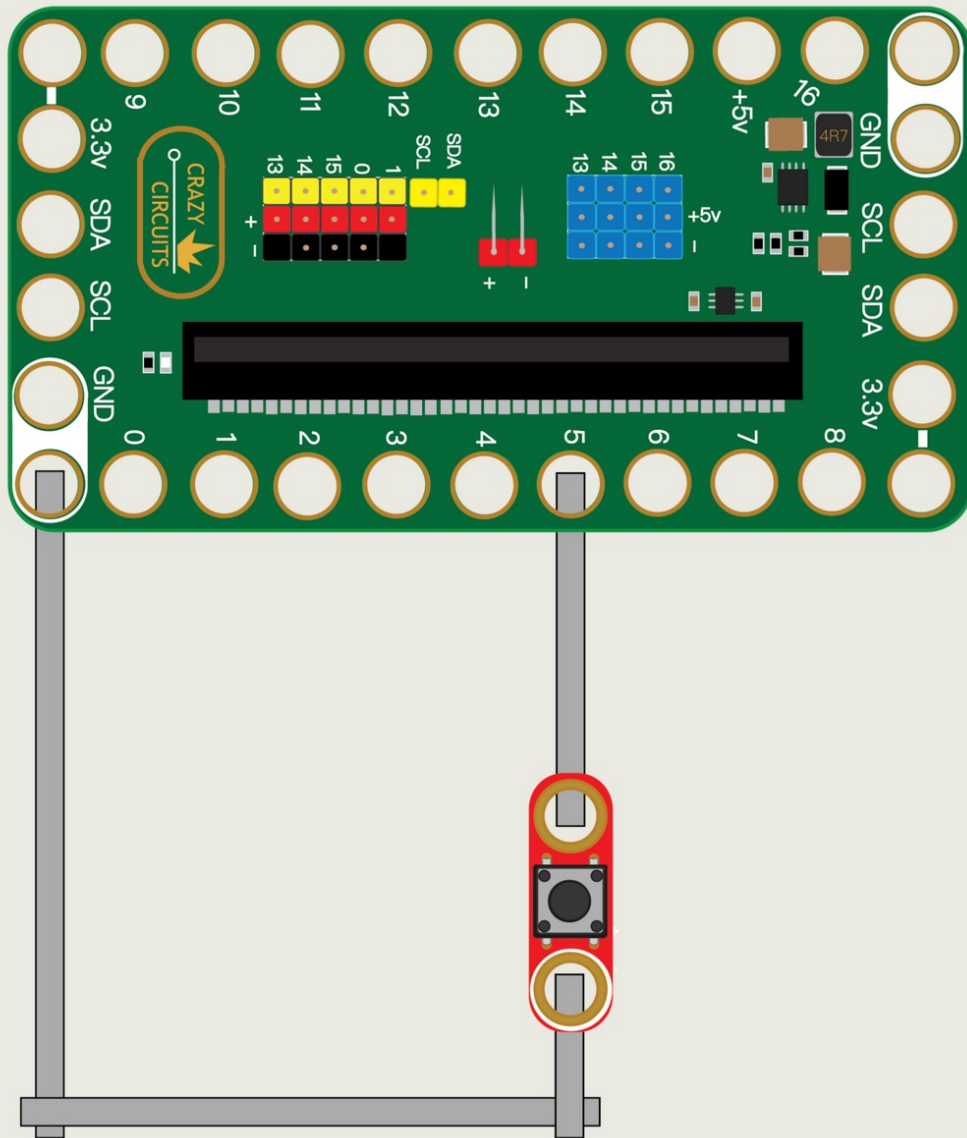




CH9-D - LED Matrix Countdown Timer

Program the built-in LED Matrix found on the micro:bit and control it with a pushbutton.

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INTRODUCTION

Program the built-in LED Matrix found on the micro:bit and control it with a pushbutton.

We'll explore how we can control the LED Matrix with a single pushbutton.



TOOLS:

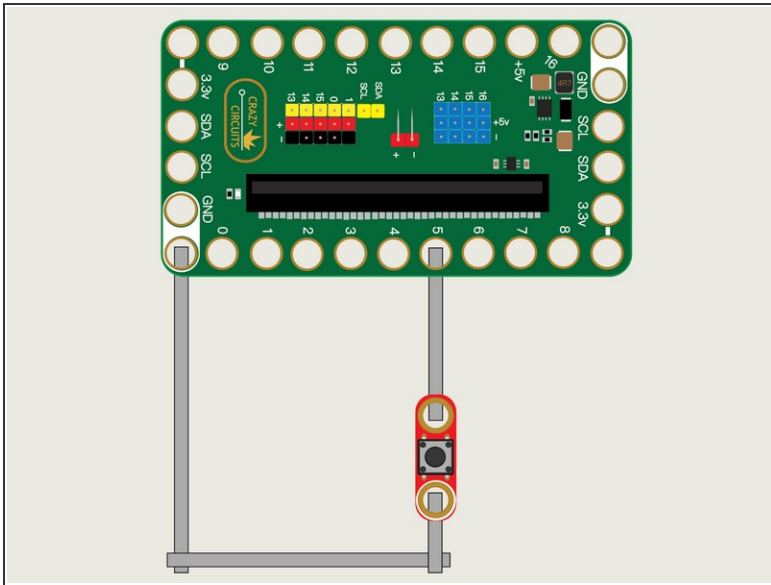
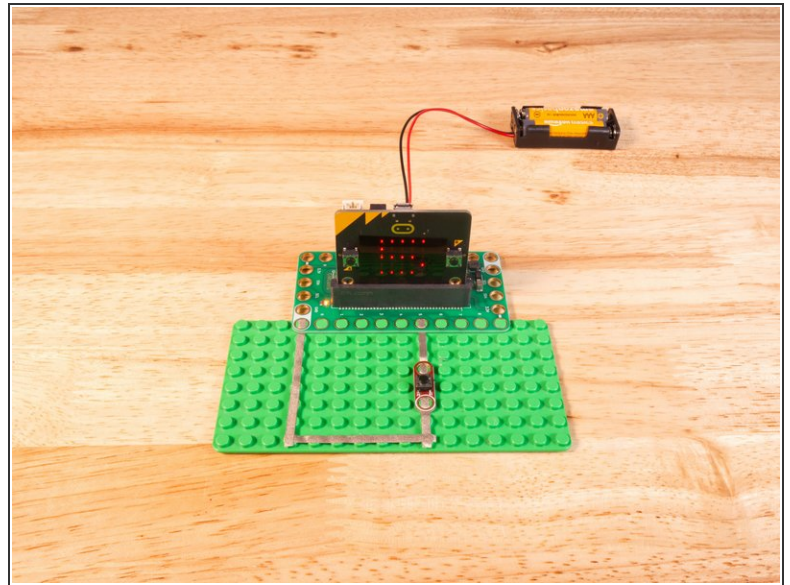
- [Computer](#) (1)
- [Scissors](#) (1)



PARTS:

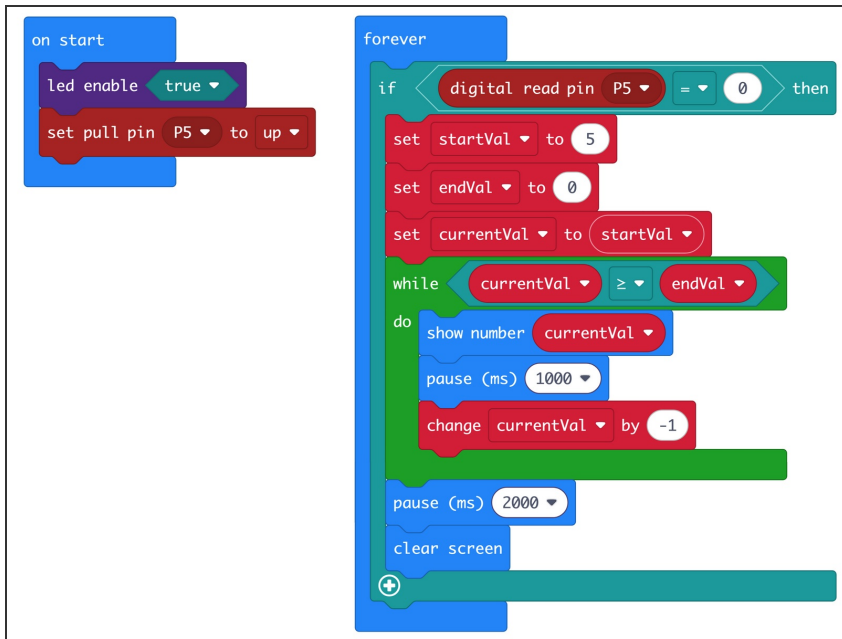
- [Crazy Circuits Bit Board](#) (1)
- [micro:bit](#) (1)
- [Maker Tape](#) (1)
1/8" Wide
- [Standard Pushbutton Chip](#) (1)

Step 1 — Connect the Button



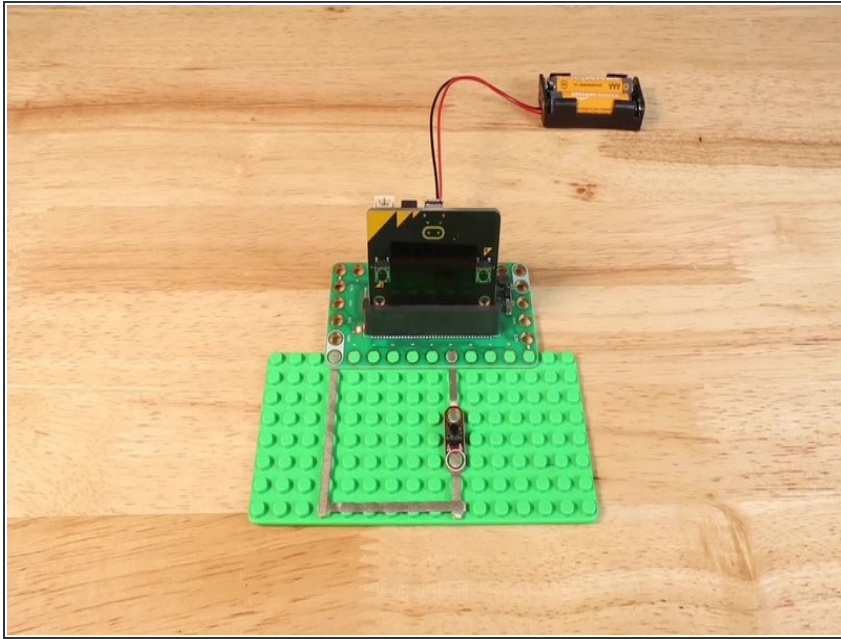
- We'll use **Maker Tape** to connect the Button to the Bit Board on a LEGO baseplate.
- We'll connect our **Button** to **Pin 5** and to **Ground (GND)**.
- ☑ You'll notice the **Ground** on the Bit Board (as well as the LED and other Crazy Circuits components we'll use) is color coded **White**.
- ☑ While some components have **Polarity** our **Button** does not. If you connect it the other way around *it will still work fine*.

Step 2 — Load the Code



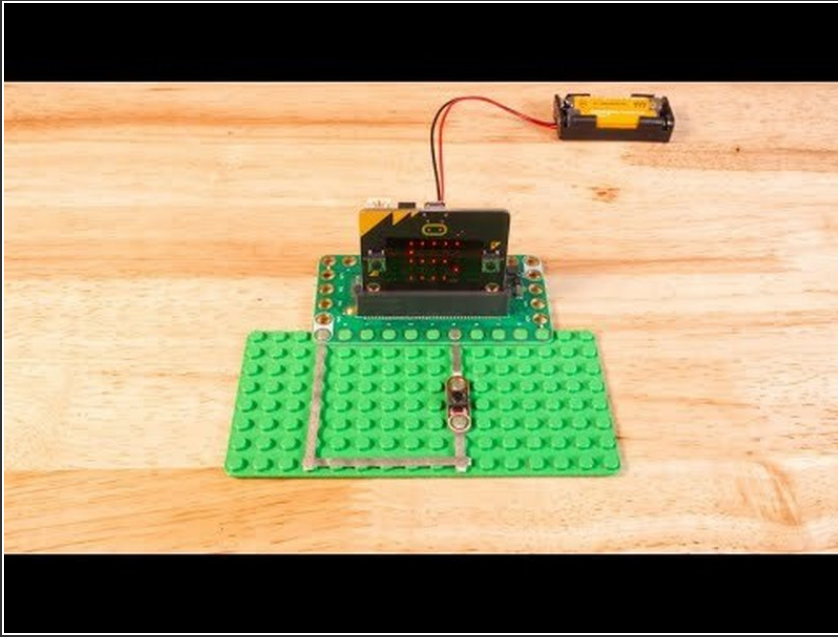
- If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use](#)
- We're going to load the following code for our **LED Matrix Countdown Timer** program: https://makecode.microbit.org/_6iL5HdFPb...
- Our code will countdown from **5** to **0** and then clear the screen after two seconds.
- You'll notice that there is a pause of 1000 milliseconds between the numbers decrementing...
- We'll examine that in the next step.

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 the button and you'll see the countdown on the LED Matrix go from 5 down to 0.
- As mentioned, the code pauses **one second** between each number change, so we would expect the time between starting at 5 and seeing the 0 appear would be 5 seconds...
- But we've noticed that when using the LED Matrix the micro:bit tends to run *a little bit slower*.
- If you compare this 5 second countdown with a stopwatch or some other time telling device you might notice **it takes longer than 5 seconds** to complete our countdown.
- In our tests the 5 second timer **tends to take about 8.5 seconds** to complete.

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/geFYVuV-DI8>