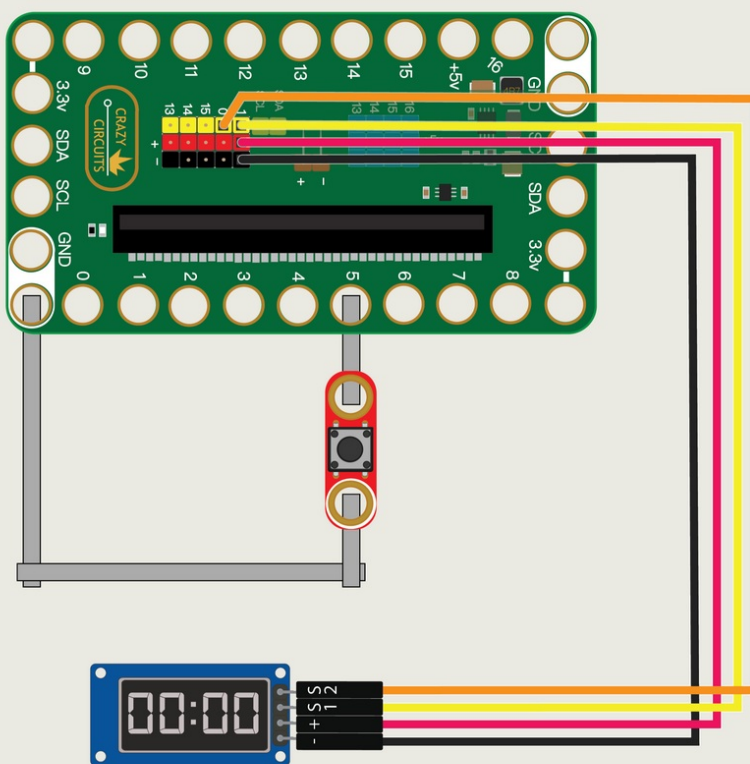




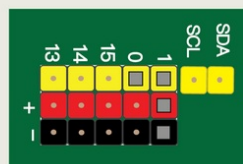
CH31-A - 7 Segment Count Fast

Connect a 7 Segment Display and a Push Button to a Bit Board and control them with code.

Written By: Pete Prodoehl



7SEG	Bit Board
CLK	-> Pin 0 (S2)
DIO	-> Pin 1 (S1)
VCC	-> + (Positive) Pin
GND	-> - (Negative) Pin



INTRODUCTION

Connect a 7 Segment Display and a Push Button to a Bit Board and control them with code.

We'll explore code to control a 7 Segment Digital Display that can show numbers up to 9999.



TOOLS:

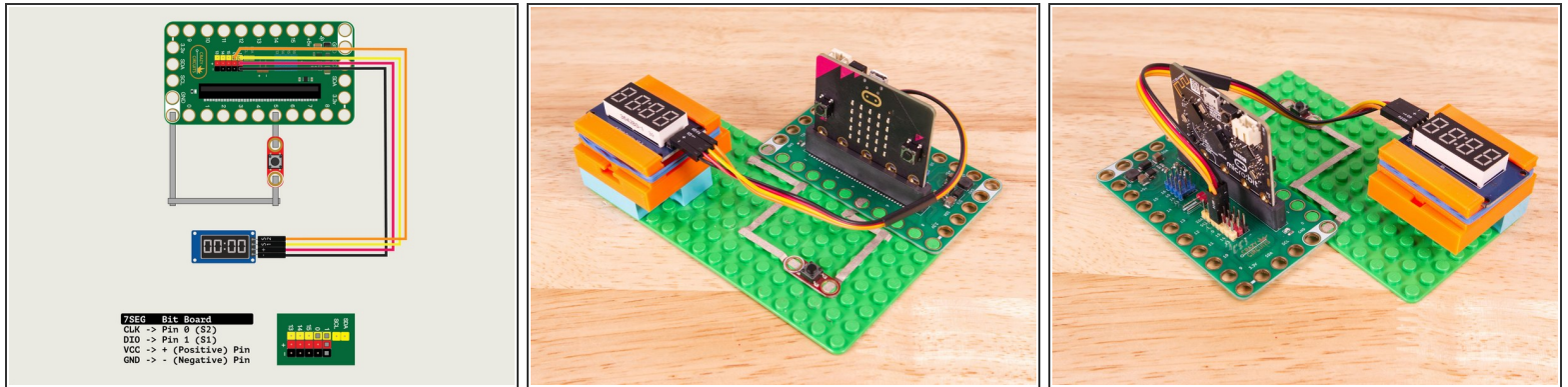
- [Computer](#) (1)
- [Scissors](#) (1)



PARTS:

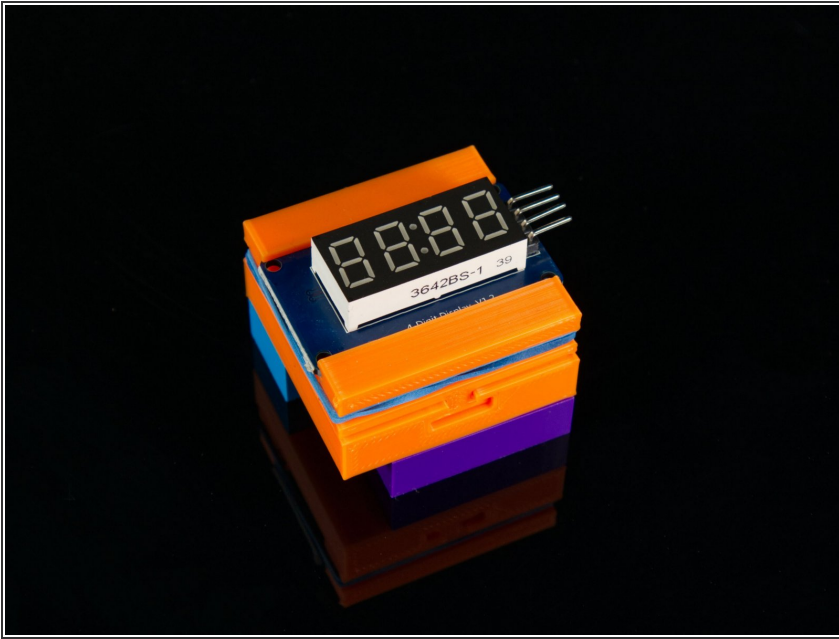
- [Crazy Circuits Bit Board](#) (1)
 - [micro:bit](#) (1)
 - [7 Segment Display](#) (1)
 - [Standard Pushbutton Chip](#) (1)
 - [Crazy Circuits Ribbon Cable](#) (1)
 - [Maker Tape](#) (1)
- 1/8" Wide

Step 1 — Connect the 7 Segment Display and Button



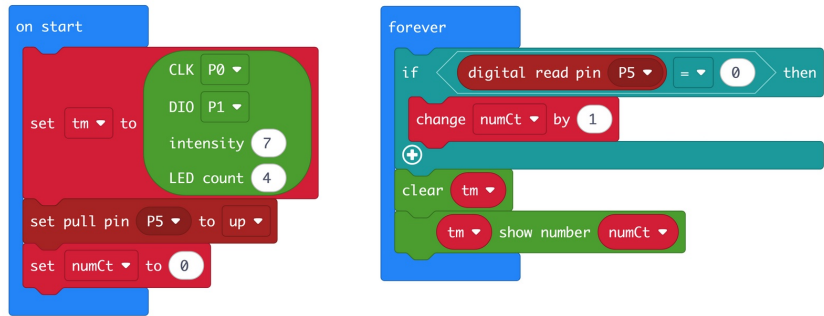
- We'll connect the **7 Segment Display** with a **Crazy Circuits Ribbon Cable** using all four wires.
- Start by plugging the connector with the three wires in it (Black, Red, Yellow) into the **Pin 1** row of the Bit Board. (Make sure the Black wire is in - and the Yellow wire labeled **S1** is closest to the number **1** on the Bit Board.) We can then plug the Orange wire labeled **S2** into **Pin 0** on the Bit Board.
- Now we'll connect the other end of the Ribbon Cable to the **7 Segment Display**. The pin labels are on the back of the 7 Segment Display PCB. From top to bottom it's **CLK**, **DIO**, **VCC**, **GND**.
 - **CLK** stands for **Clock** and **DIO** stands for **Data Input/Output**. **VCC** is the **Positive (+)** and **GND** is the **Ground (-)** or **Negative**.
- **S2** (Orange) goes to **CLK**, **S1** (Yellow) goes to **DIO**, and then **+** (Positive) goes to **VCC** and **-** (Ground or Negative) goes to **GND**.
- ☑ Make sure every wire is connected in the correct place, or our display will not work!
- We'll use **Maker Tape** to connect the Button to the Bit Board on a LEGO baseplate. Connect the **Button** to **Pin 5** and to **Ground (GND)**.

Step 2 — Mounting the Display



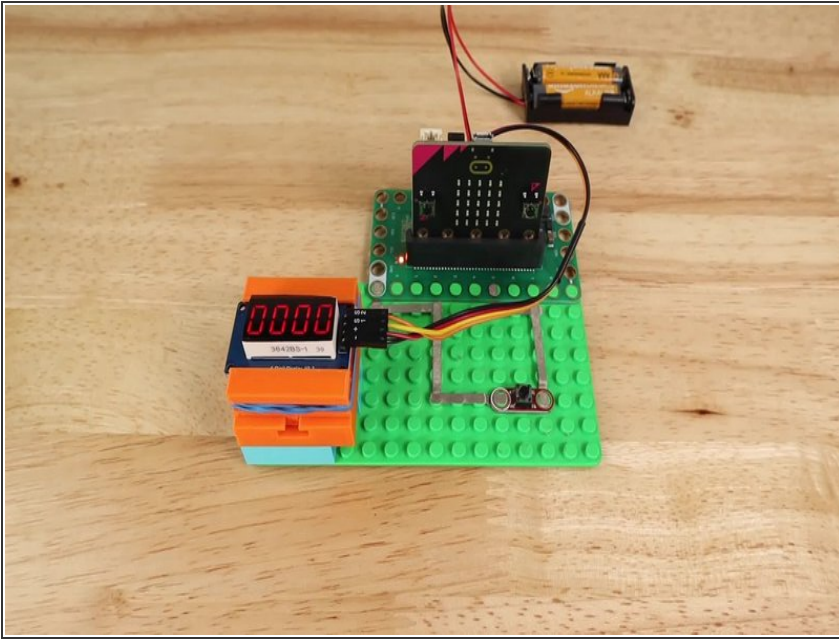
- We used a 3D printed holder we designed to hold the 7 Segment Display in place on the LEGO baseplate.
- You can find the guide for the holder here: [7 Segment Display Holder](#)
- Alternately you can use some LEGO bricks and a rubber band or tape to hold the display in place.

Step 3 — Load the Code



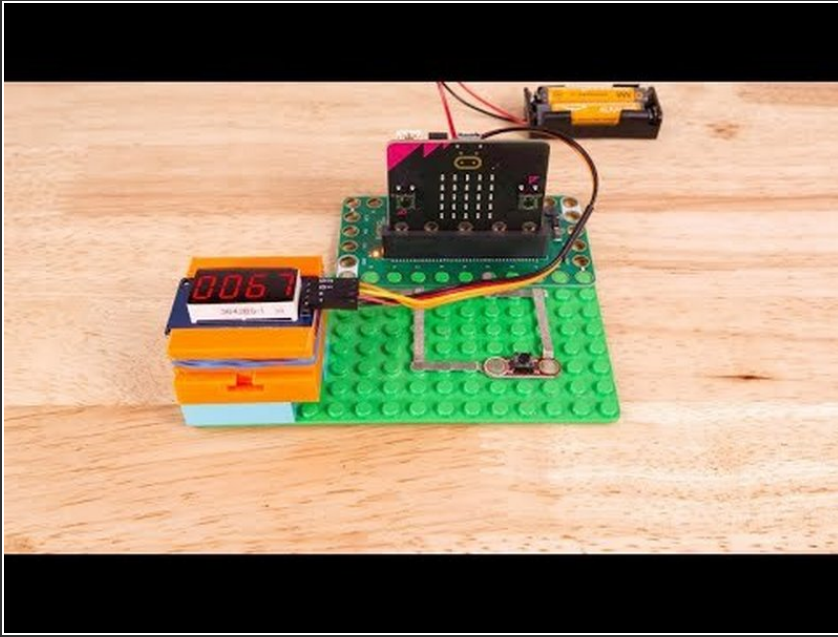
- If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use](#)
- We're going to load the following code for our **7 Segment Count Fast** program:
https://makecode.microbit.org/_dE94Mh2Ya...
- In the on start block we'll set up our display using the pins we've connected. **CLK to Pin 0** and **DIO to Pin 1**.
- In our forever loop we'll check for the button to be pressed (which will **pull Pin 5 down to zero**) and then we'll change the **numCt** by **1** so we can display our number.
- Looking at this code it's easy to guess that the number shown on the display will go up by one when the button is pressed... but we'll see what happens in the next step!

Step 4 — Test it Out!



- Once the code is loaded it should start running immediately and the 7 Segment Display should show 0000.
- ⓘ 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 and release the button quickly... what happens? Did the number increase?
- The number probably increased by more than one...
- Since we told the code to increase the number when the button is *held down* (**when Pin 5 is pulled down**) it will do that, loop around again, very quickly, and increase it again, and again, until you release the button.
- Because the code runs so fast, and the 7 Segment Display runs so fast, you may not be able to release the button fast enough to increase by just one. (But give it a try!)

Step 5 — 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/Hi5u_Rk5xBU