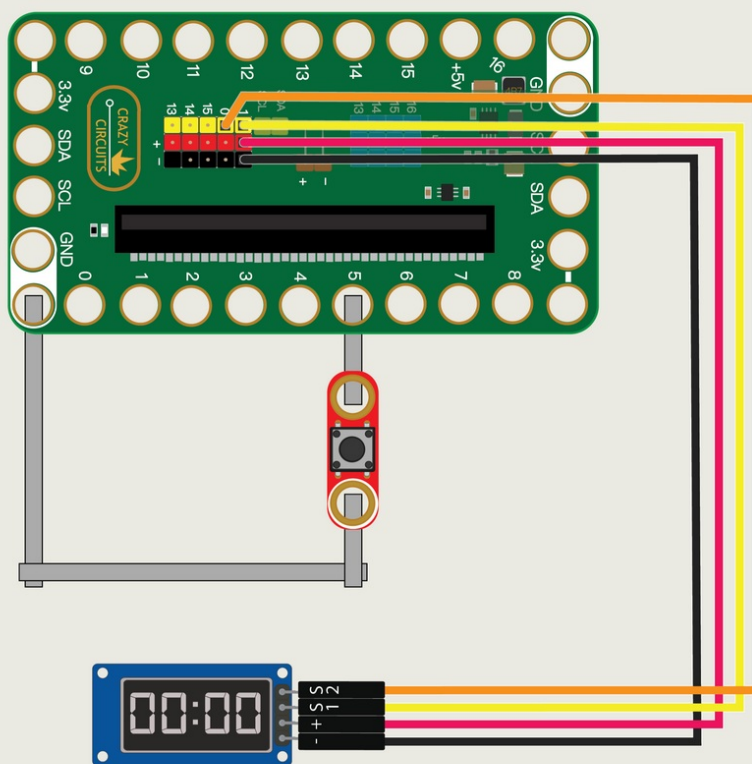




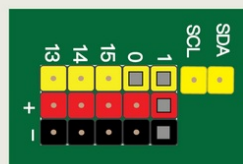
CH31-B - 7 Segment Count Pause

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:

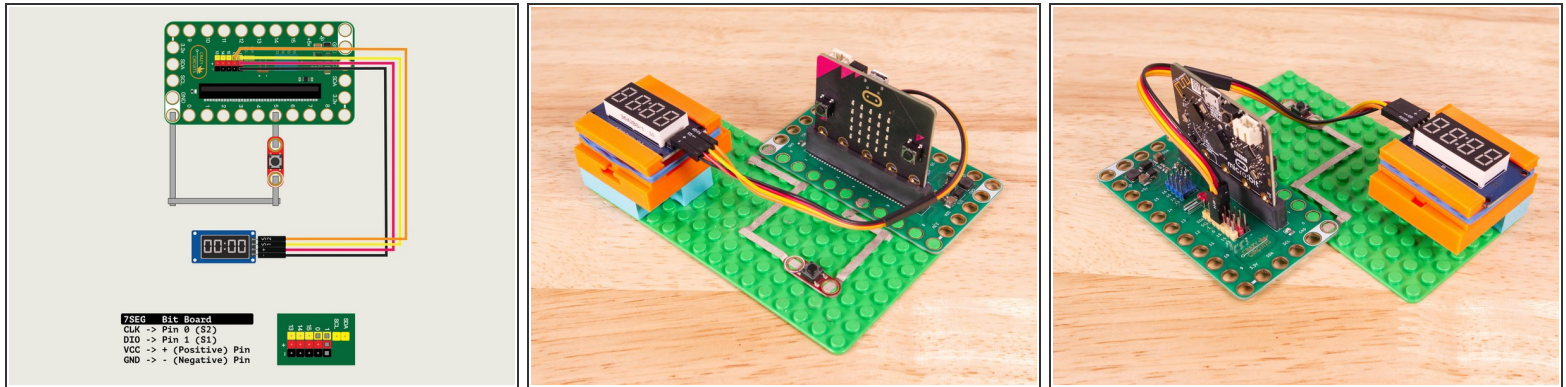
- [Computer](#) (1)
- [Scissors](#) (1)



PARTS:

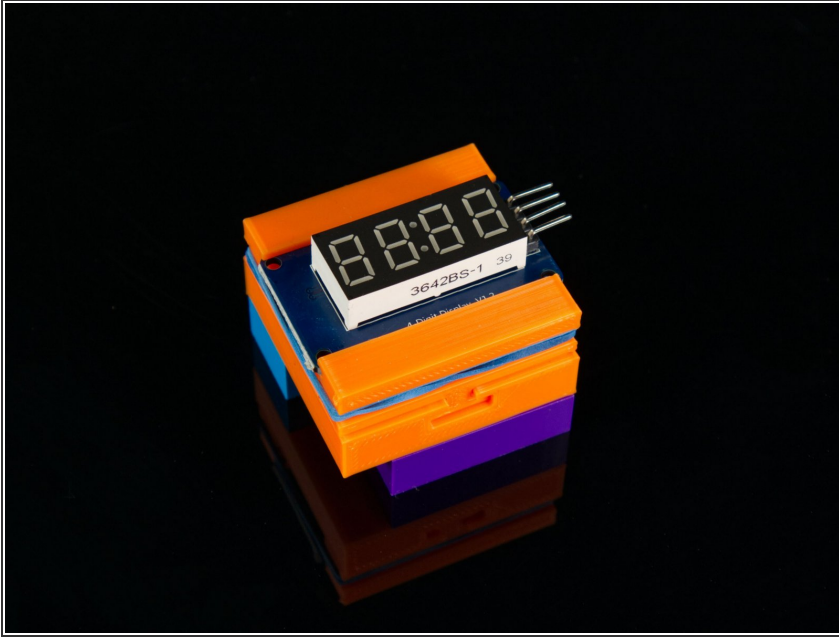
- [Crazy Circuits Bit Board](#) (1)
 - [micro:bit](#) (1)
 - [7 Segment Display](#) (1)
 - [Standard Pushbutton Chip](#) (1)
 - [Crazy Circuits Ribbon Cable](#) (1)
 - [Maker Tape](#) (1)
- 1/8" Wide

Step 1 — Connect the 7 Segment Display and Button



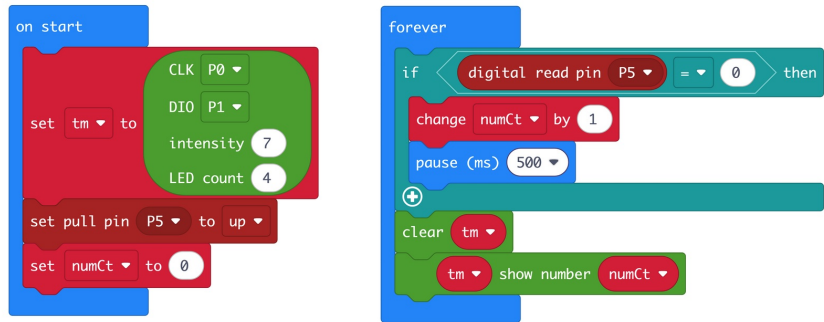
- We'll connect the **7 Segment Display** with a **Crazy Circuits Ribbon Cable** using all four wires.
- Start by plugging the connector with the three wires in it (Black, Red, Yellow) into the **Pin 1** row of the Bit Board. (Make sure the Black wire is in - and the Yellow wire labeled **S1** is closest 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



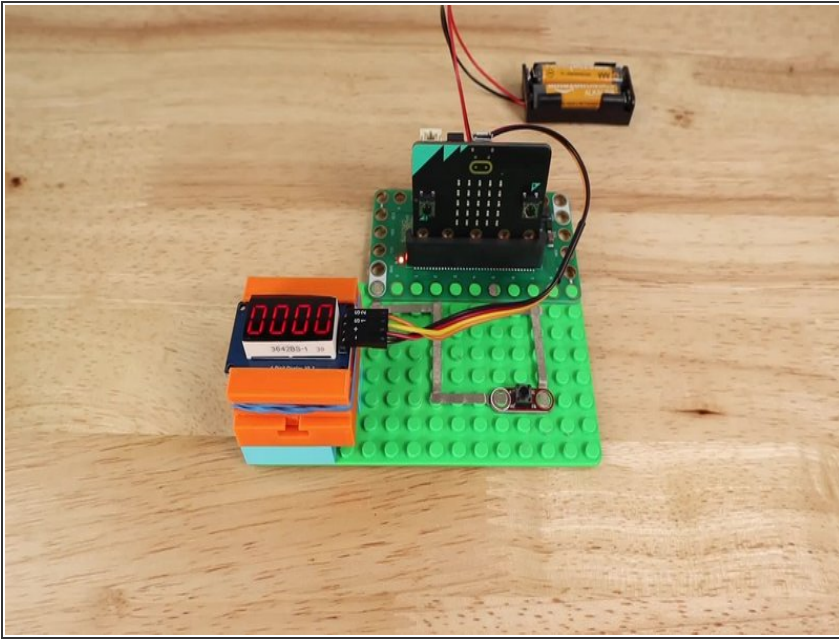
- We used a 3D printed holder we designed to hold the 7 Segment Display in place on the LEGO baseplate.
- You can find the guide for the holder here: [7 Segment Display Holder](#)
- Alternately you can use some LEGO bricks and a rubber band or tape to hold the display in place.

Step 3 — Load the Code



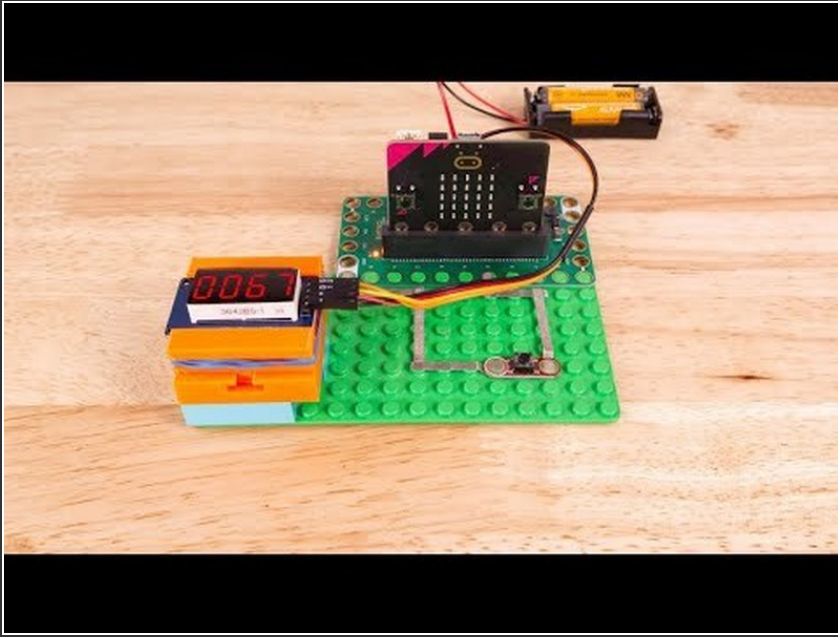
- If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use](#)
- We're going to load the following code for our **7 Segment Count Pause** program:
https://makecode.microbit.org/_328Wof16i...
- In the on start block we'll set up our display using the pins 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.
- This time we've added a 500 millisecond pause in the *if* statement for the button press. This will help prevent the numbers from increasing too quickly.

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?
- If we hold the button for *fewer than* 500 milliseconds and then release it the number should increase by only one.
- But this code still has some problems. If we press and release the button **twice** *within* 500 milliseconds it will only increase the number by one.
- If we hold down the button *more than* 500 milliseconds it will continue to increase by one, every 500 milliseconds.

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