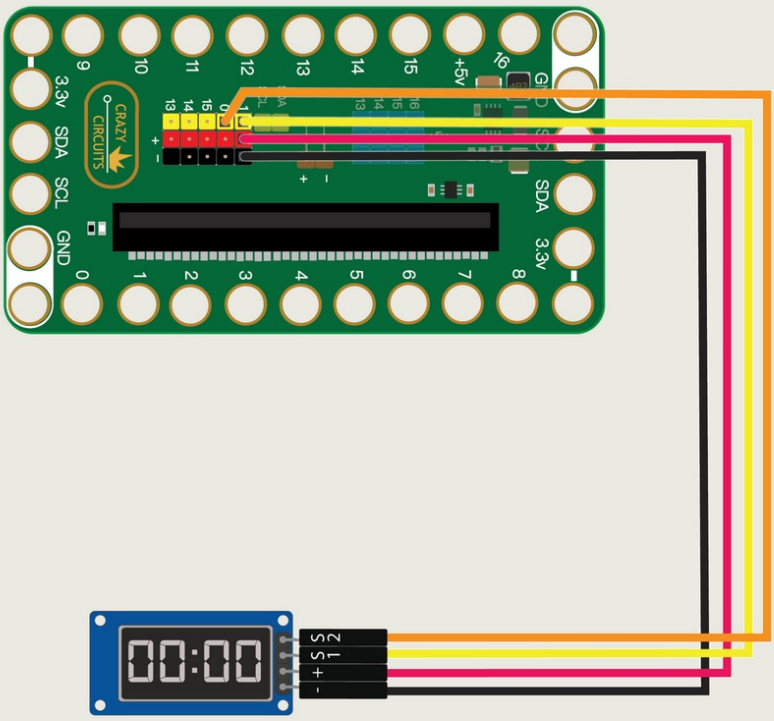
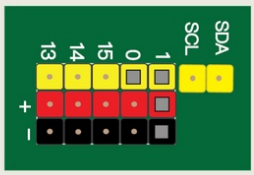
CH30-A - 7 Segment Count

Connect a 7 Segment Display to a Bit Board and control it 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 to a Bit Board and control it with code.

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

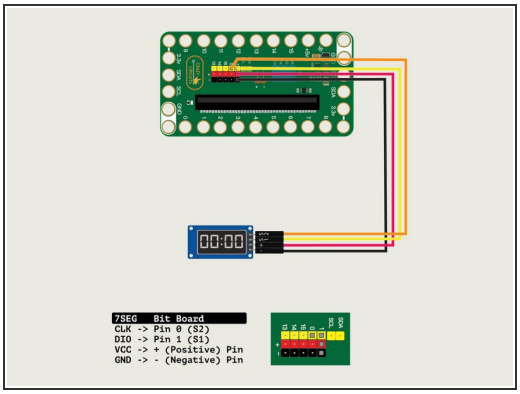
TOOLS:

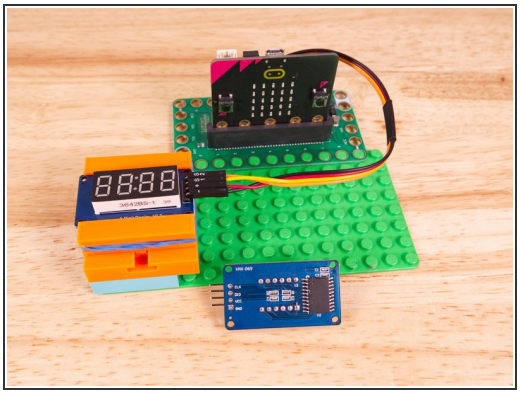
- Computer (1)

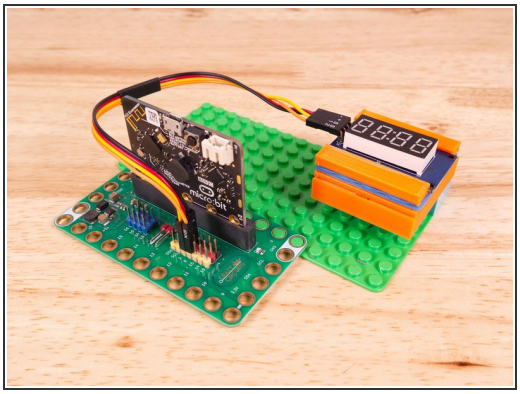
PARTS:

- Crazy Circuits Bit Board (1)
- micro:bit (1)
- 7 Segment Display (1)
- Crazy Circuits Ribbon Cable (1)

Step 1 — Connect the 7 Segment Display



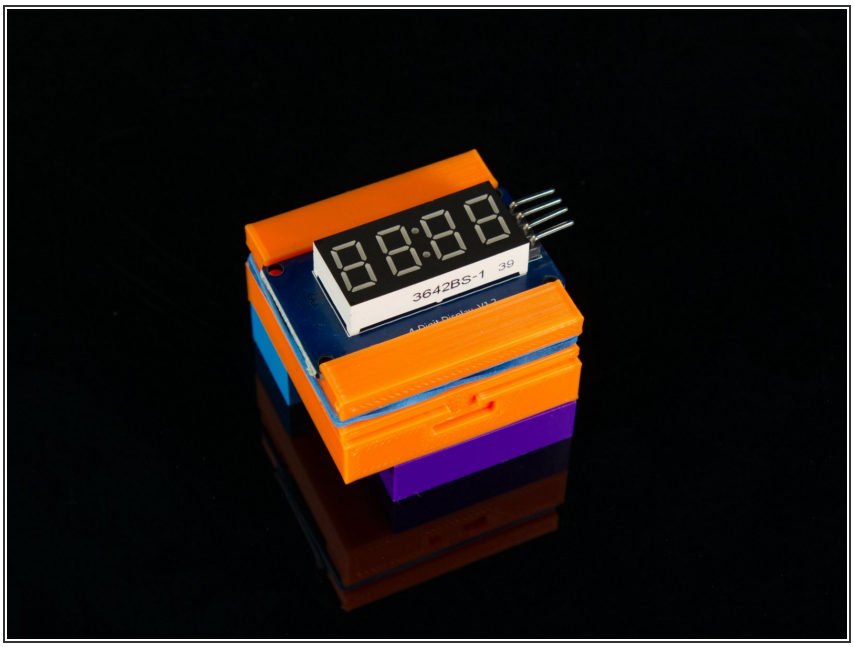




- We'll connect the **7 Segment Display** with a **Crazy Circuits Ribbon Cable** using all four wires.
- Start by plugging the connector with the three wires in it (Black, Red, Yellow) into the **Pin 1** row of the Bit Board. (Make sure the Black wire is in **-** and the Yellow wire labeled **S1** is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

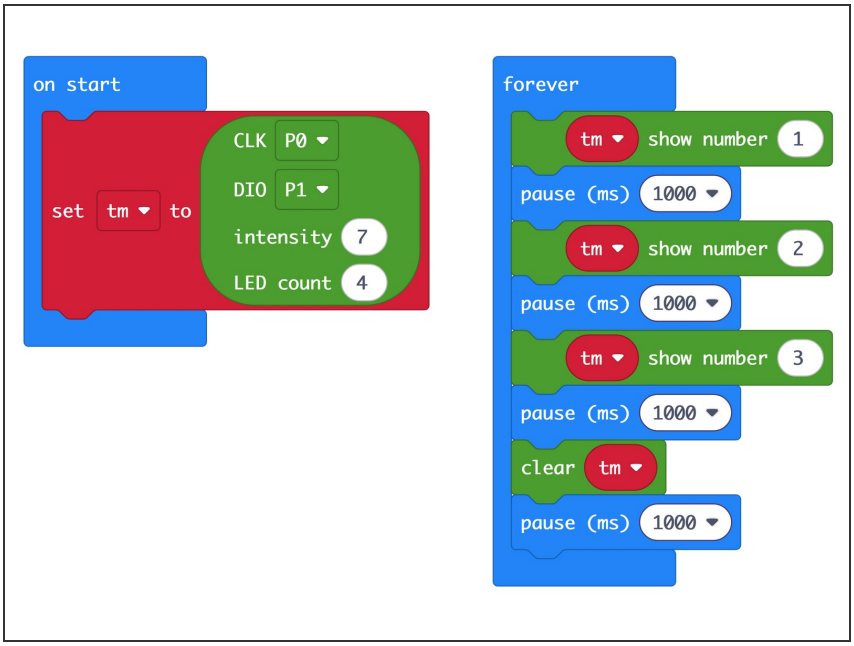
Make sure every wire is connected in the correct place, or our display will not work!

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

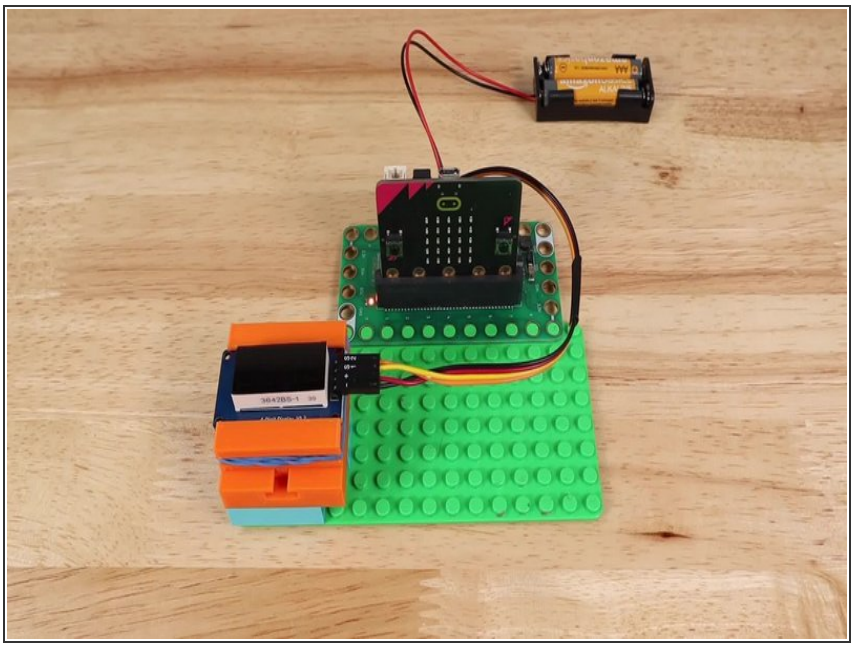


- If you've never used a micro:bit before you'll want to check out this guide: Bit Board V2 Setup and Use
- We're going to load the following code for our **7 Segment Count** program: https://makecode.microbit.org/_fX0KVyK07...
- In the on start block we'll set up our display using the pins we've connected. **CLK** to **Pin 0** and **DIO** to **Pin 1**.

- We'll also set the **intensity** (or "brightness") to 7, which is the brightest setting, and specify how many digits our display has, which is 4.
- In our forever loop we're just going to use the show number statement to show some numbers. Simple!
- We'll pause between each number so you have time to see it. (Without the pauses it would just run super-fast and you'd never get a chance to see a number!)
- Near the end of our code we'll use the clear statement to clear out any numbers showing on the display. *It is possible to show weird and conflicting data if you do not use clear.*

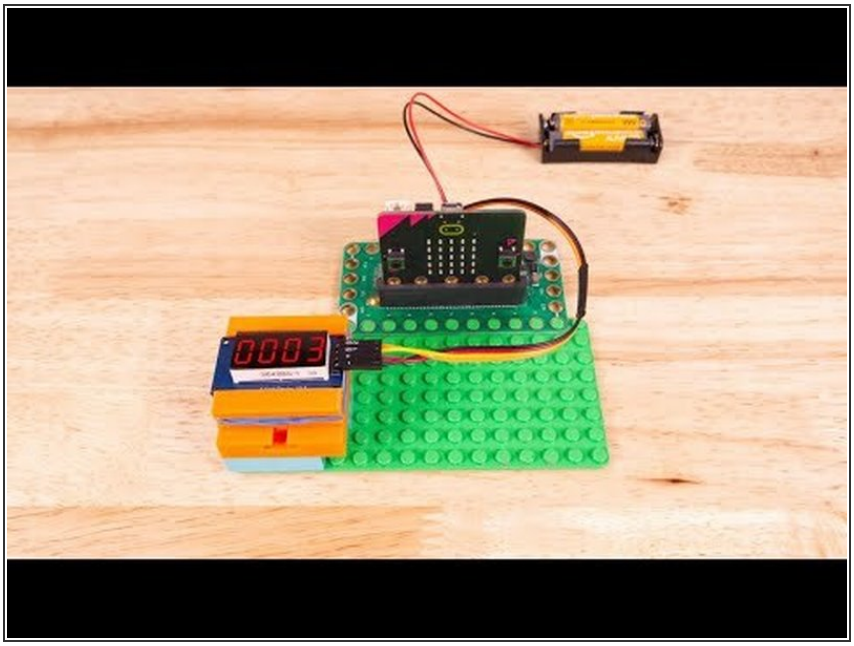
ⓘ We've already loaded the TM1637 Extension for this code. If you start a new blank program you will need to load it.

Step 4 — 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.
- The display will count up from 1 to 3 and then the display will go blank, and repeat the process.

Step 5 — 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://youtube.com/live/DI-rLHZK86g