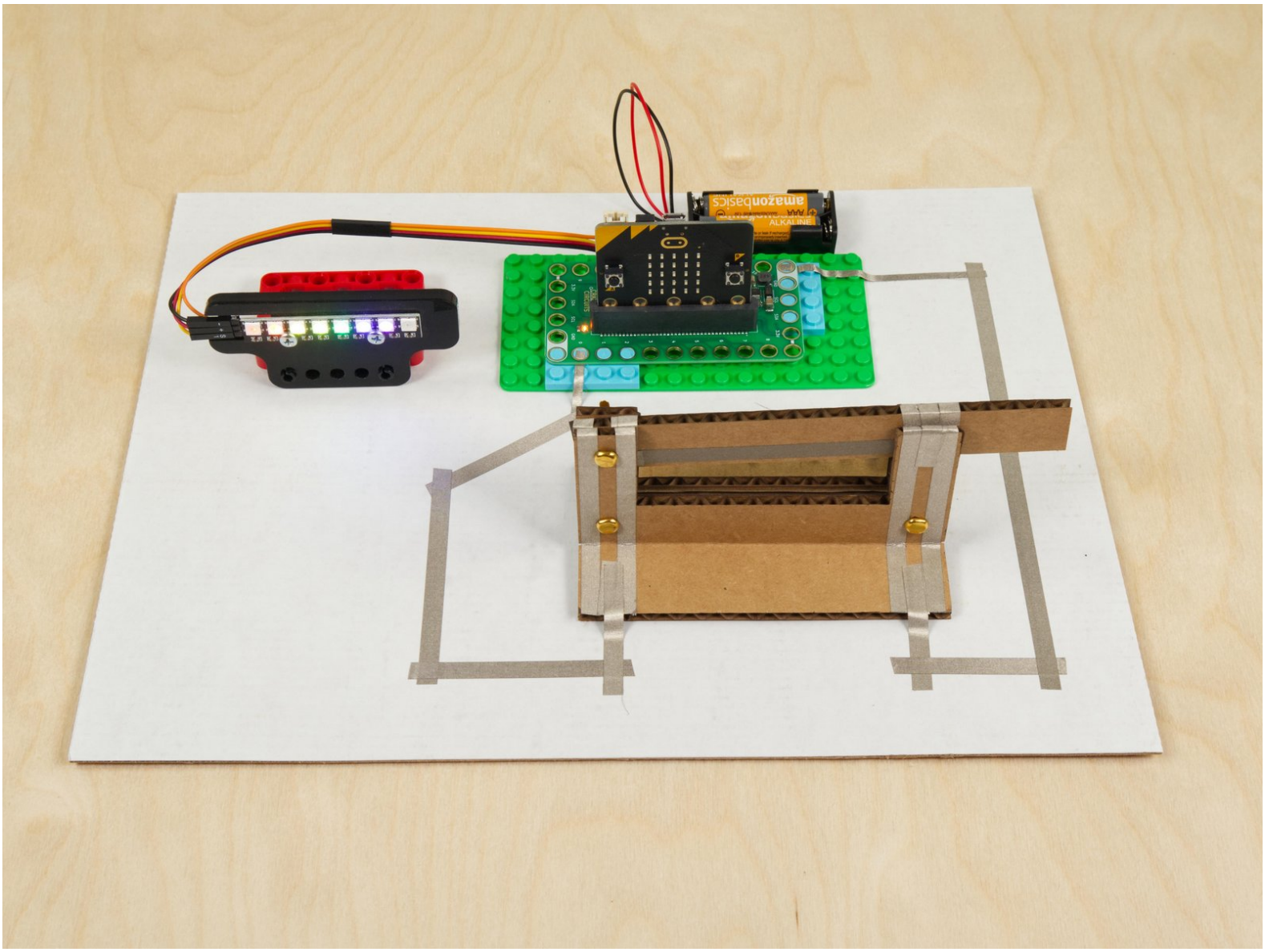
Knife Switch with NeoPixels

Connect a Cardboard Knife Switch to a micro:bit and NeoPixel strip to control the circuit.

Written By: Amanda Etim



INTRODUCTION

Connect a Cardboard Knife Switch to a micro:bit and NeoPixel strip to control the circuit.

TOOLS:

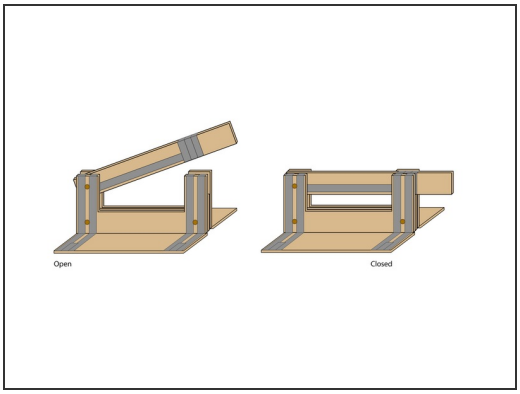
- Computer (1)

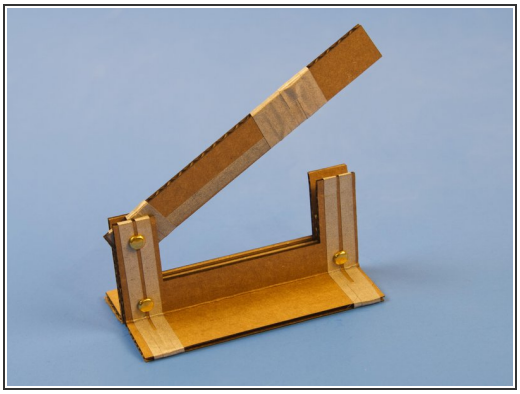
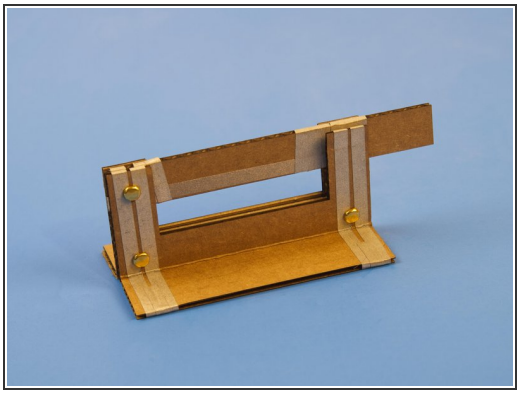
PARTS:

- Cardboard (1)
- Maker Tape (1)
- Crazy Circuits Bit Board (1)
- micro:bit (1)
- Addressable RGB LED Strip (1)
- LEGO Baseplate (1)
- Masking Tape (1)

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Step 1 — Create a Knife Switch



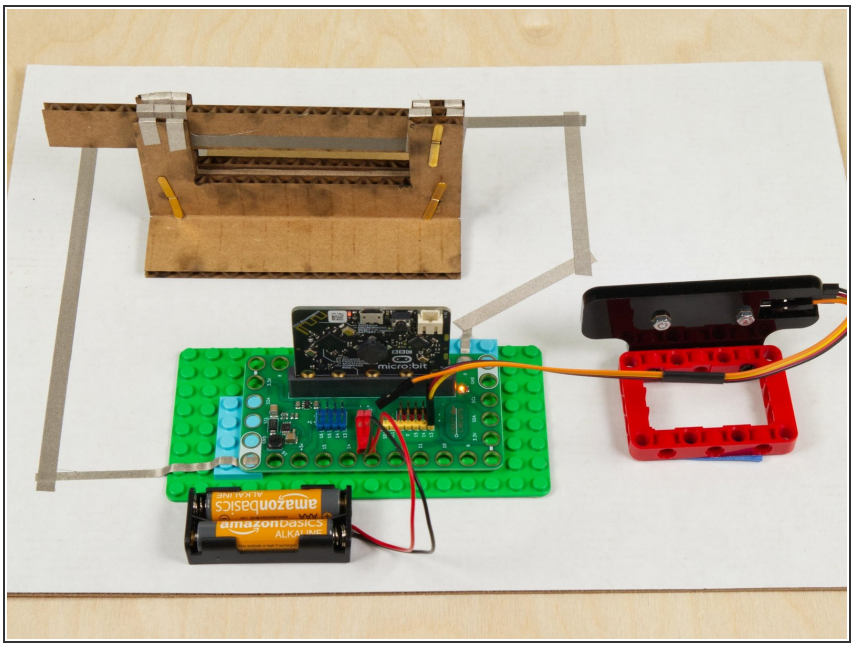



- Create a Cardboard Knife Switch by following the steps in this guide: Switch - Cardboard Knife Switch

ⓘ Alternatively, you could create this same project using a different variation of the cardboard switch:

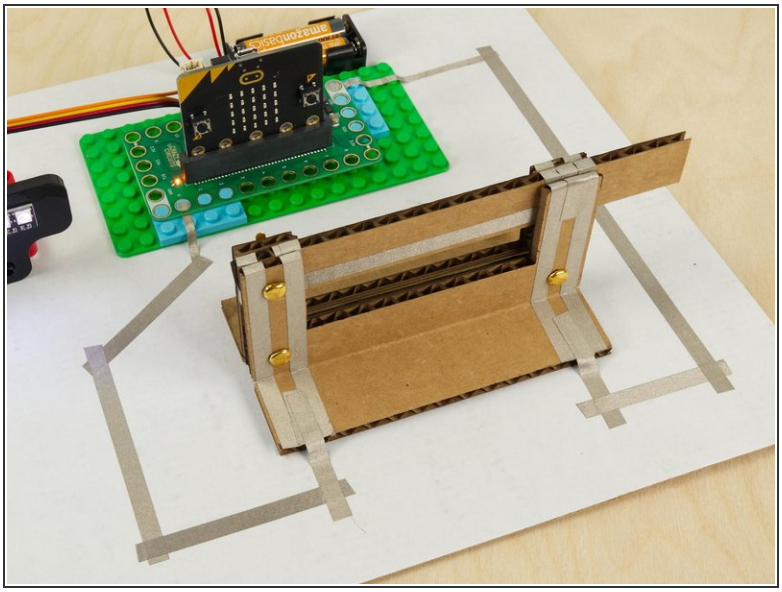
- Cardboard Push Button
- Cardboard Slide Switch

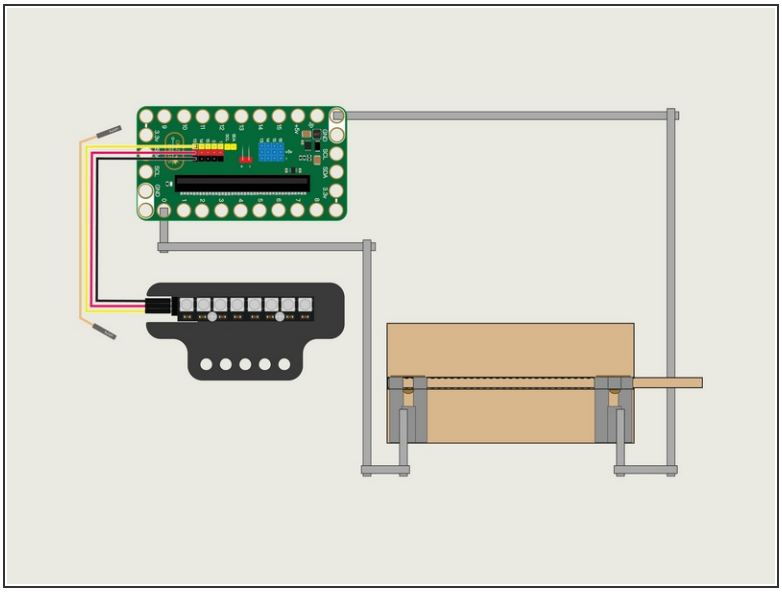
Step 2 — Attach Parts to Cardboard Base



- When connecting Crazy Circuits projects to paper circuits-style projects we usually stick everything down to a piece of scrap cardboard.
- Attach the Knife Switch and a LEGO baseplate to the cardboard using regular tape.
- The NeoPixel Strip can be connected to some LEGO technic parts and then taped down to the cardboard base to hold it in place.

Step 3 — Add Maker Tape

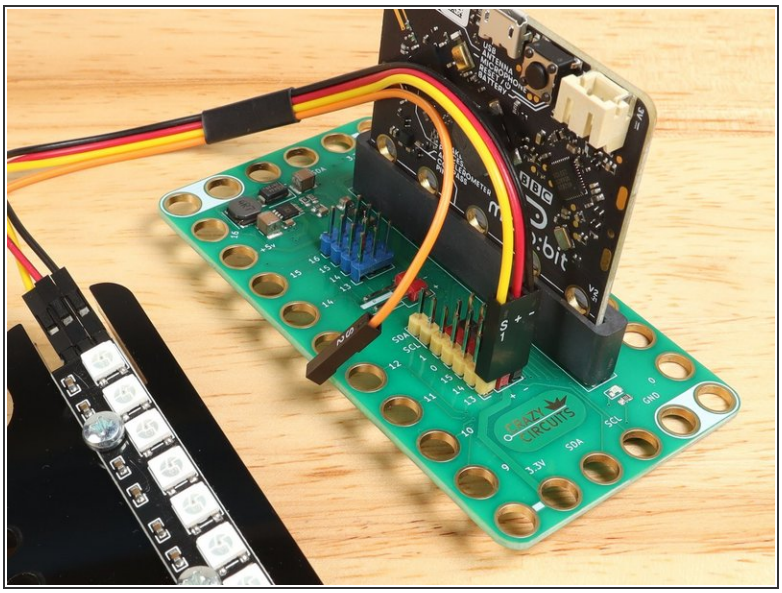


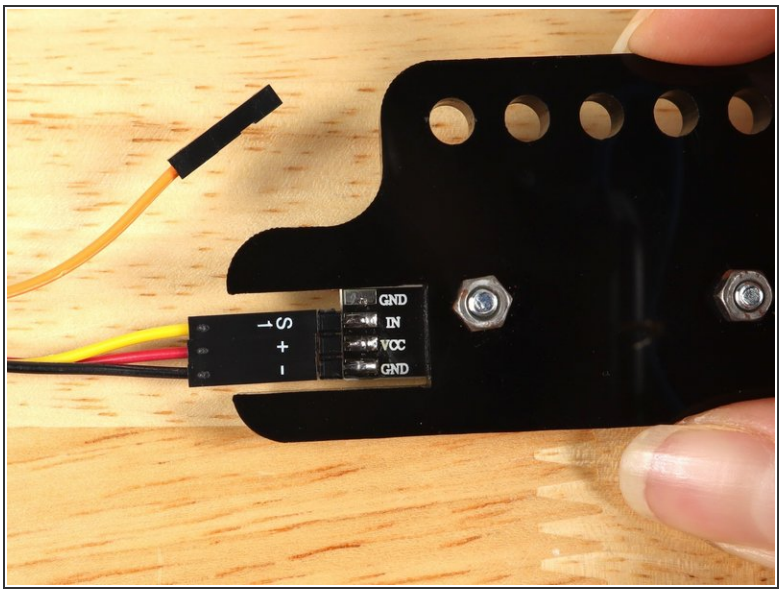


- Use **Maker Tape** to connect one side of the Knife Switch to **Pin 0** and the other side of the Knife Switch to **ground**.

ⓘ We also mixed 1/4" and 1/8" Maker Tape for our connections, but if you only have 1/8" Maker Tape that should work just fine.

Step 4 — Connecting the NeoPixel Strip

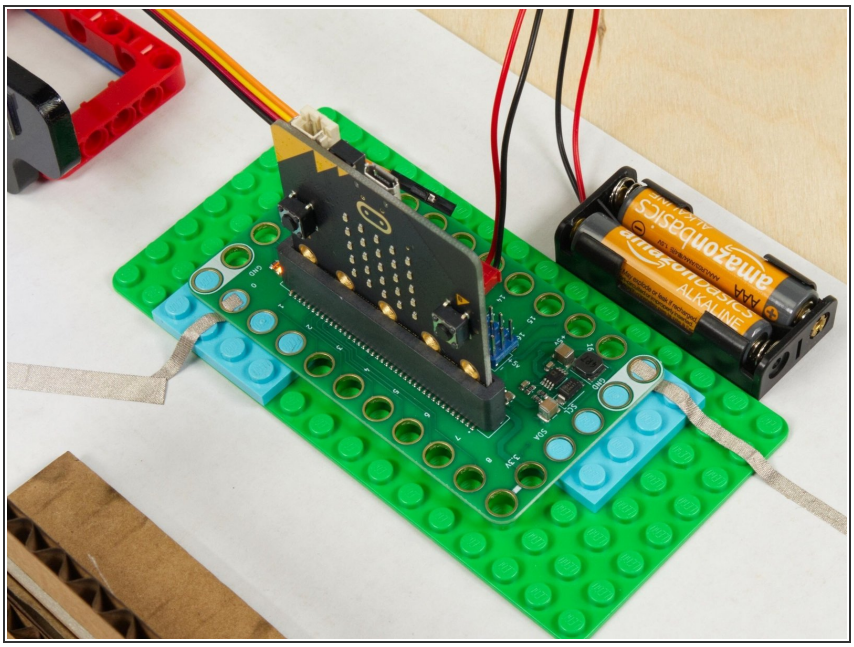




- The magical thing about these “Individually Addressable” LEDs is that you don’t have to connect each LED to an individual pin on your micro:bit, you just need **one signal wire** along with power (**Positive** and **Negative**) to light things up.
- So let's get connected! If you turn the **NeoPixel Strip** over you'll see labels for the three pins. You should see **IN**, **VCC**, and **GND**.
- Use the Crazy Circuits Ribbon Cable to connect the **NeoPixel Strip** to the **Bit Board**.
- The end with **S1**, **+**, and **-** can plug directly into the **Pin 13 row** (make sure S1 goes into 13) and the other end should plug into the **NeoPixel Strip** as shown.

ⓘ We only need three wires for the **NeoPixel Strip** so you can leave **S2** (the Orange wire) unconnected.

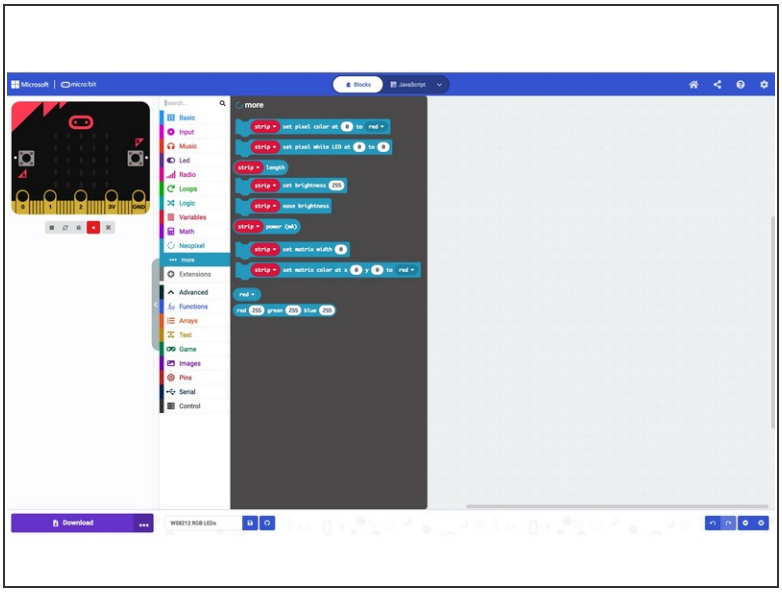
Step 5 — Connect Bit Board to Baseplate



- **Connect the Bit Board** to the LEGO baseplate making sure that the Maker Tape paths connect to **Pin 0** and **Ground**.

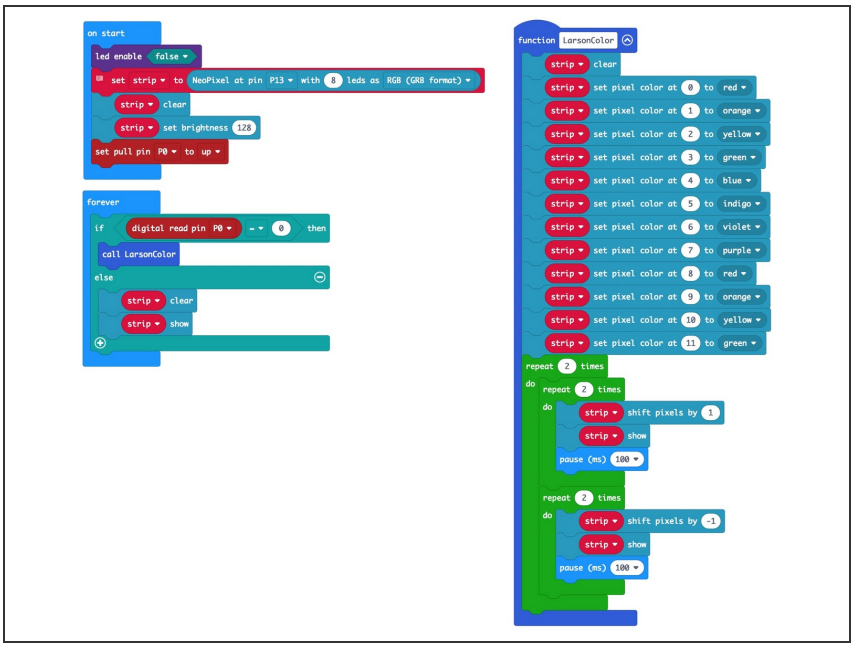
Step 6 — Extending the Code





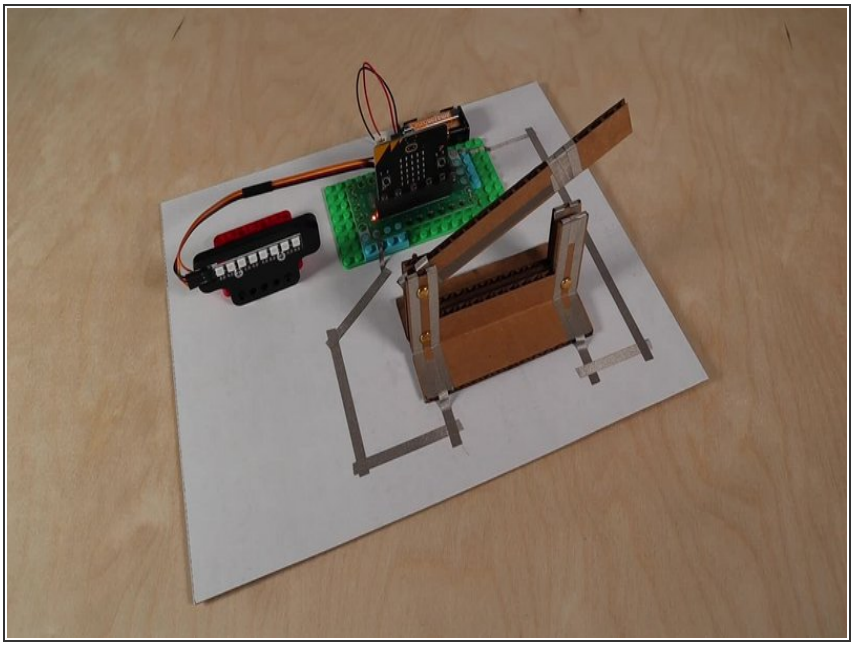
- In the next step we're going to provide a link to the code for this project, but first let's look at the [NeoPixel Extension for MakeCode.]
- The Extension has the basic blocks you'll need to set up the **NeoPixel Addressable RGB LEDs** and to control them with a micro:bit, and the **Bit Board** makes it very easy to connect things!

Step 7 — 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 **Knife Switch NeoPixel** program: https://makecode.microbit.org/S58486-627...

Step 8 — Light It Up!



- Here's the result of adding our knife switch to a Bit Board project.
- Now we can throw the big switch to get those NeoPixels going.
- What ideas can you come up with to connect a knife switch to a Crazy Circuits project?