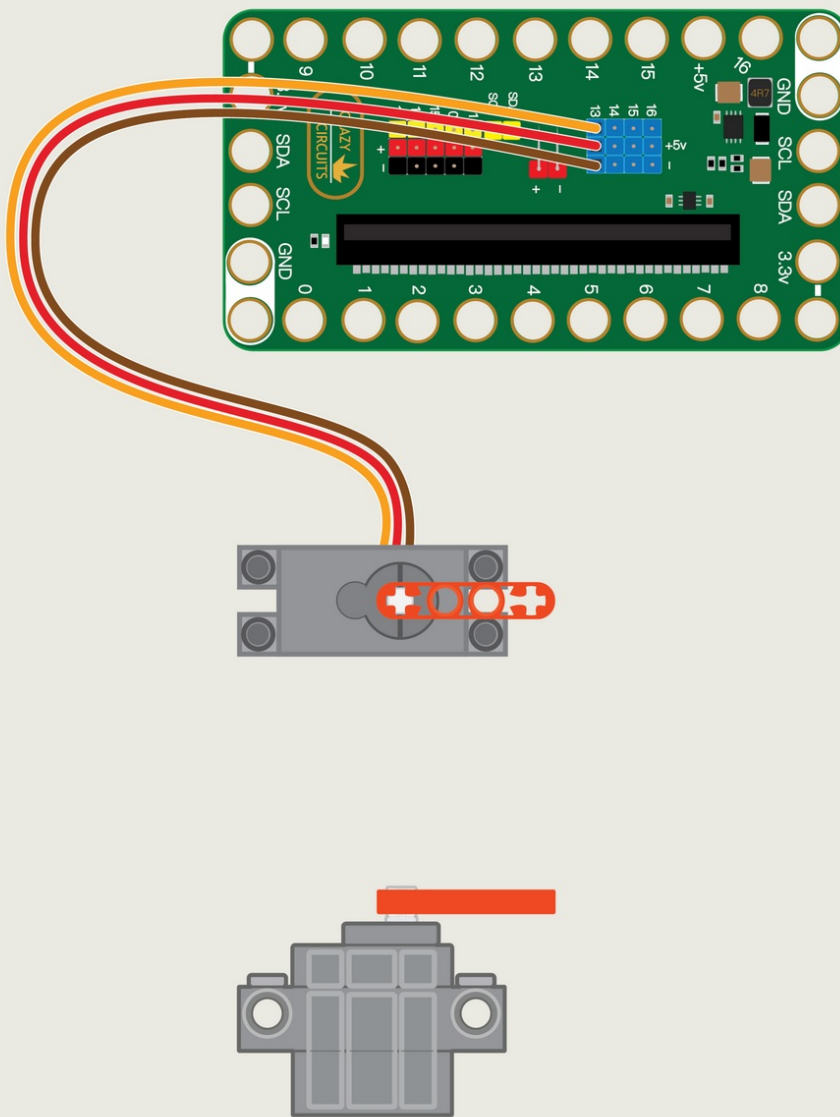




CH24-D - Servo Map Angles

Connect a 270° Servo to a Bit Board and control it with code.

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INTRODUCTION

Connect a 270° Servo to a Bit Board and control it with code.

We'll explore how to control a servo motor.



TOOLS:

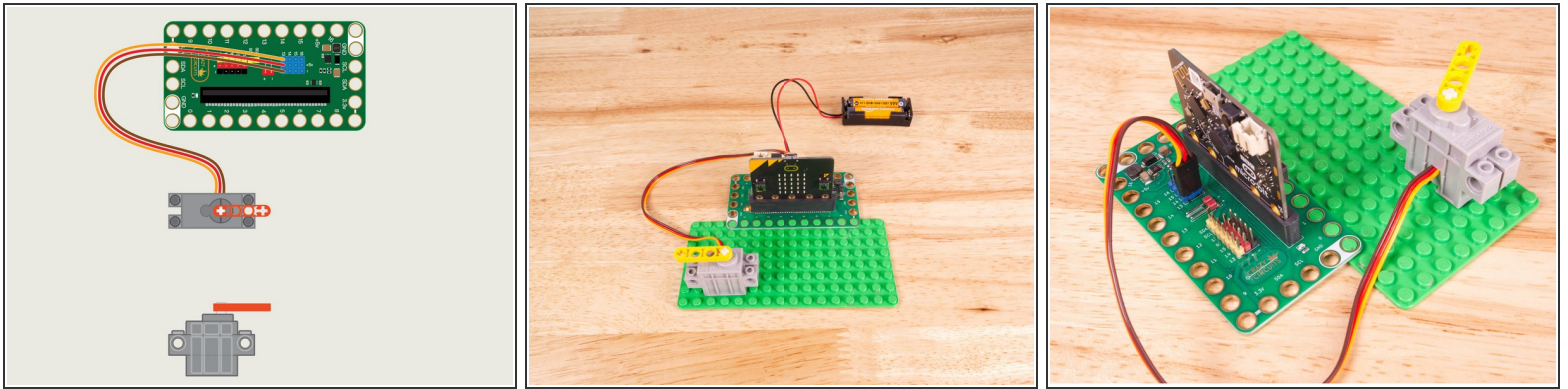
- [Computer](#) (1)



PARTS:

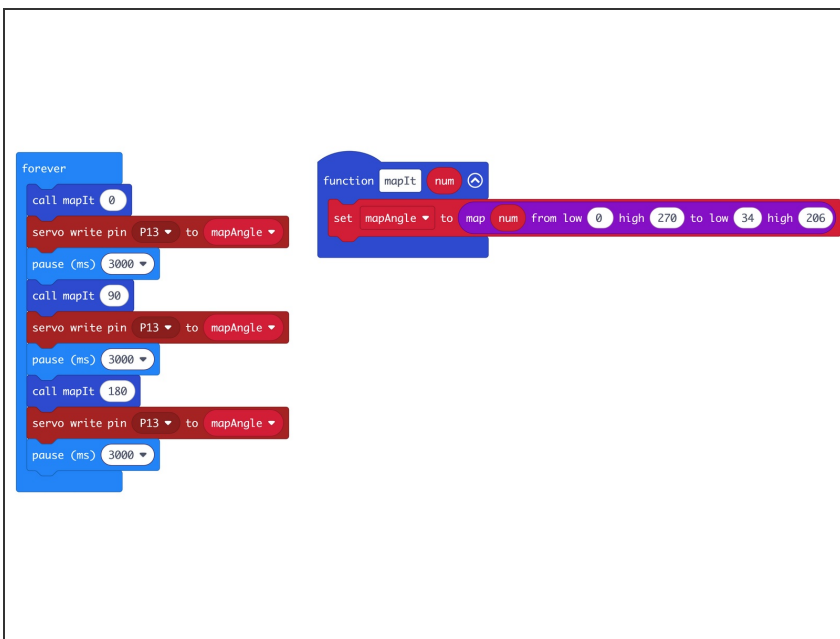
- [Crazy Circuits Bit Board](#) (1)
- [micro:bit](#) (1)
- [Brick Compatible 270 Degree Servo](#) (1)

Step 1 — Connect the 270° Servo



- The **270 Degree Servo Motor** has a 3-wire connector on the end that can plug directly into the pins on the back of the Bit Board.
- Make sure the **Orange Wire** is closest to the number **13** for the **Pin 13** column.
- Then the **Brown Wire** should be closest to the micro:bit (in the - row) and the **Red Wire** will be in the middle (the **+5v** row).

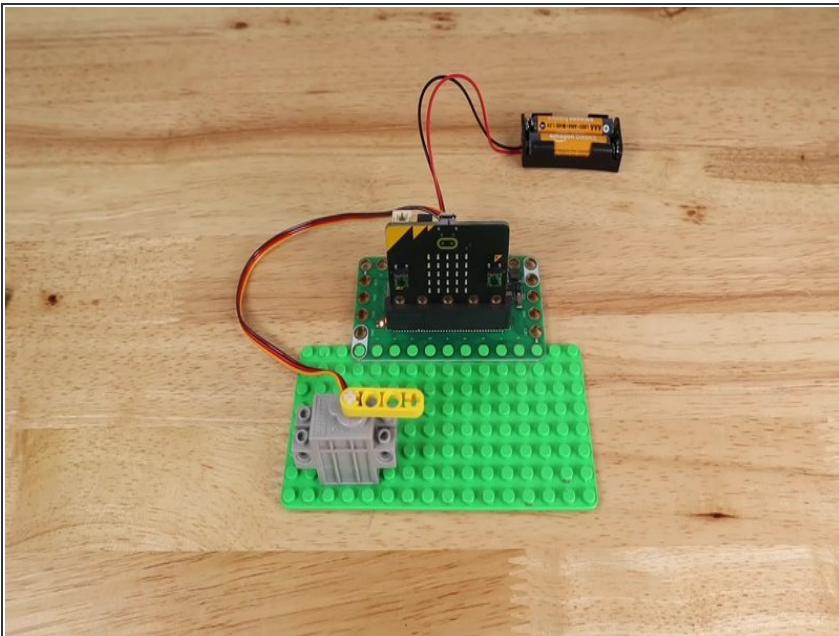
Step 2 — Load the Code



- 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 **Servo Map Angles** program:
https://makecode.microbit.org/_TWzAWxhFa...
- We've written a function so we can get our 270° servo to function like a 180 servo.

- Using the map function we can convert the angles so that calling the mapIt function with **0**, **90** or **180** will move the servo to those **actual** positions.
- How did we get the numbers **34** and **206**? We started by taking $270-180$ for **90**, then divided in half for **45** and tried using **45** and **225** which has a 180 degree range...
- When that didn't quite work we started adjusting the numbers until the angles for **90** and **180** were close to correct. It took a few tries to get right.
- ☒ It may not be exact, and it may not work the same for every servo... but it's close enough for our needs.

Step 3 — Test it Out!



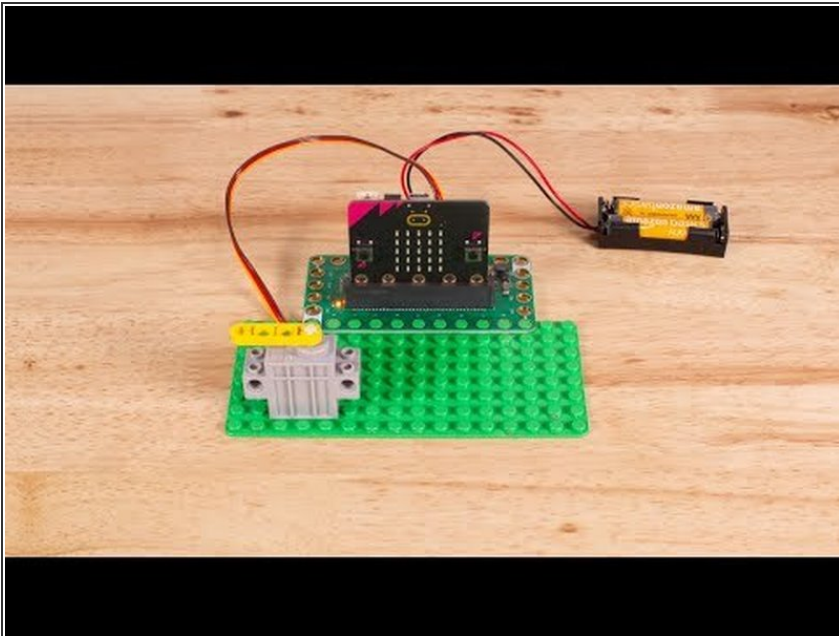
- Once the code is loaded it should start running immediately.
- ① You can power the micro:bit via the USB cable you used to load the code, but now that we are using servos we recommend using a battery pack plugged into the Bit Board.

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- ✦ The [Blue Pins](#) on the Bit Board provide extra power (5 volts instead of 3 volts) by **boosting the voltage** coming from the

battery pack. This helps improve servo performance, especially with multiple servos.

- The servo will start at the **0 position**, move approximately **90 degrees**, and then move another **90 degrees**, approximately.
- These servos are never 100% accurate, but that is the nature of working with **hobby servos**. They are excellent for what they can do, with some limitations of course.

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/T8jrPuhOp_g