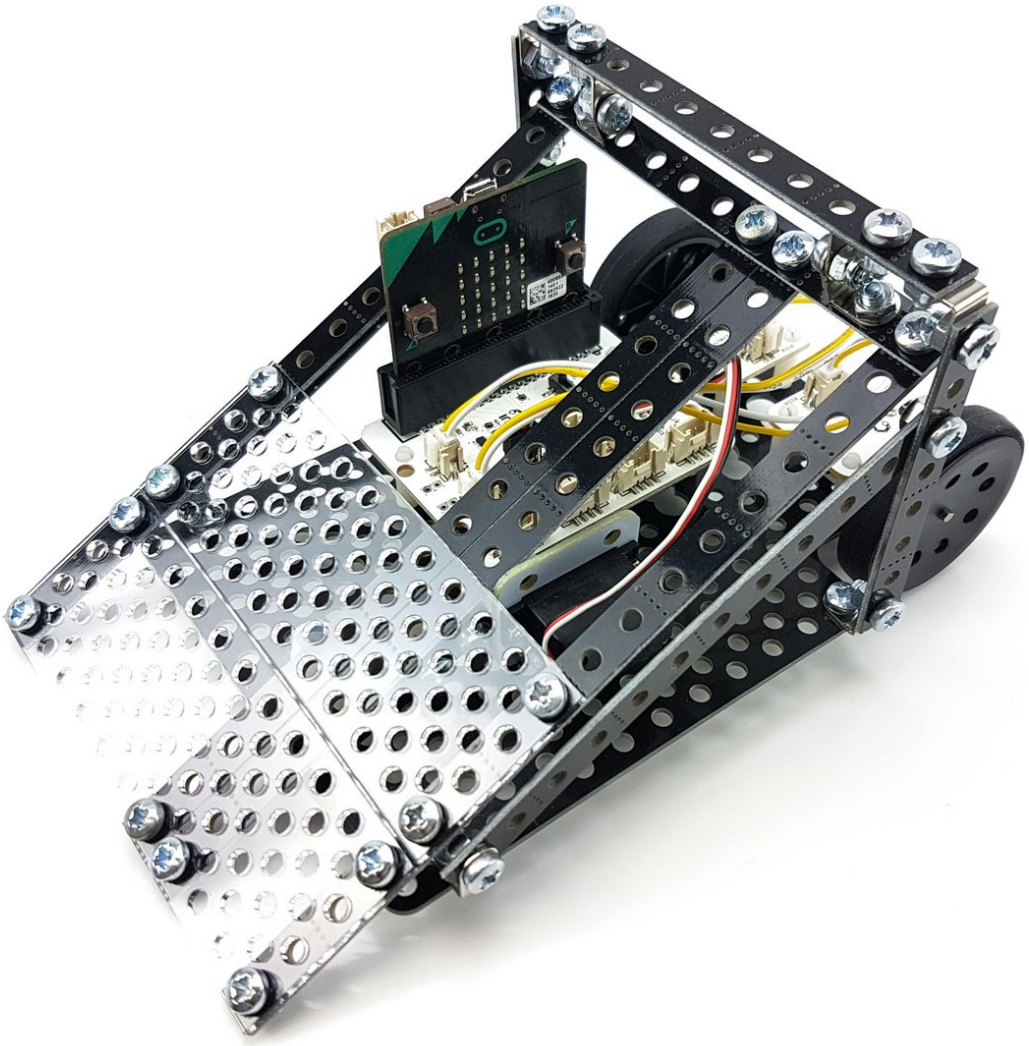
Flipper Robot

See how to use your kit to build a basic flipper robot, which you can customise into your very own robot fighting machine!



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INTRODUCTION

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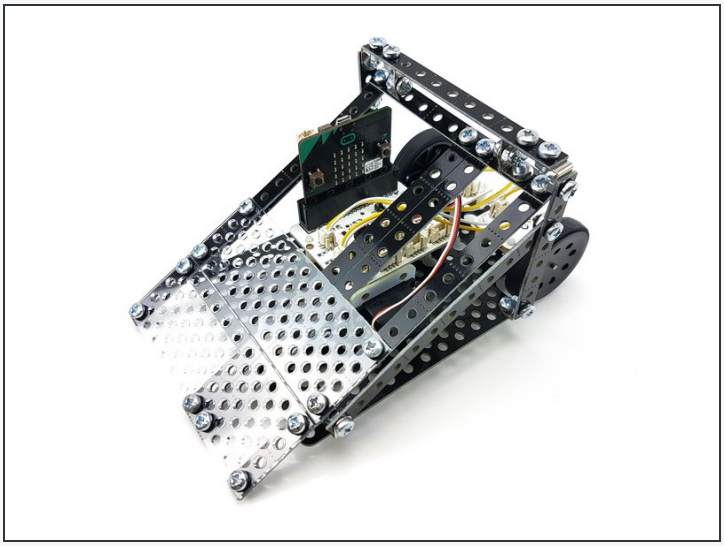
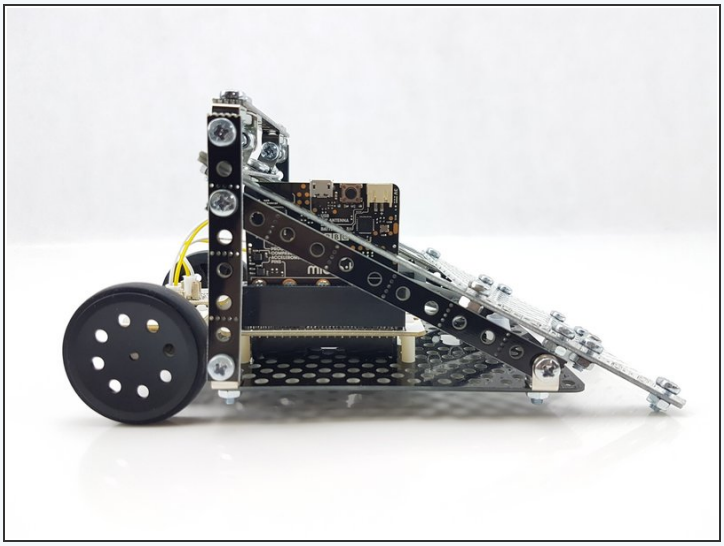
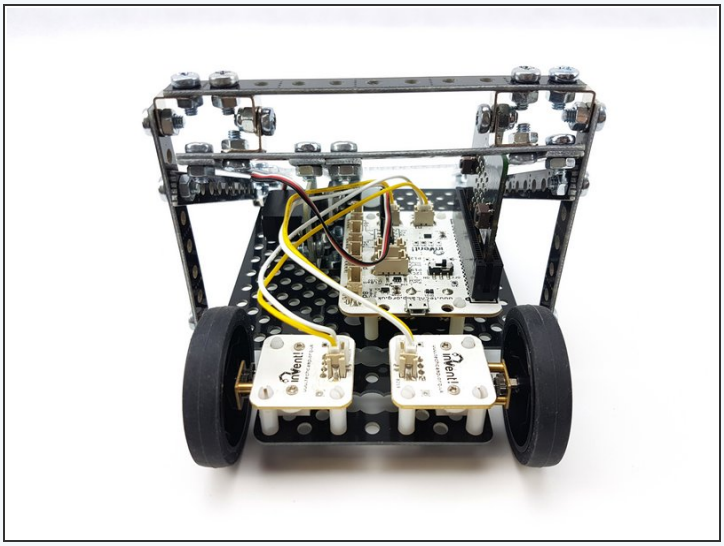
Step 1

Robot Design





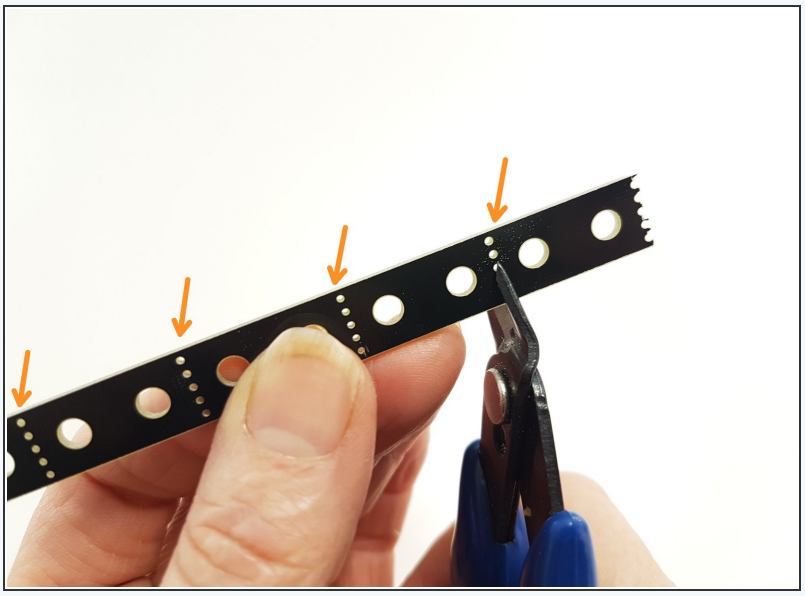


- It's easy to build a basic flipper robot using the Robowars kit - we'll point out some of the main ideas but the details are up to you!
- Make sure you have built your **controller and servo module** (https://courses.techcamp.org.uk/Guide/1+-+Kit+Assembly/257) before you start this guide.

Step 2

Construction Kit

- You can use the **construction kit** parts to make almost anything you can dream of to add to your robot!
- The beams can be snapped or cut to any length you like, using scissors or **side cutters** if you have them. You can cut or snap them by hand along the join with small holes, and you can also get the material **anywhere you like.**

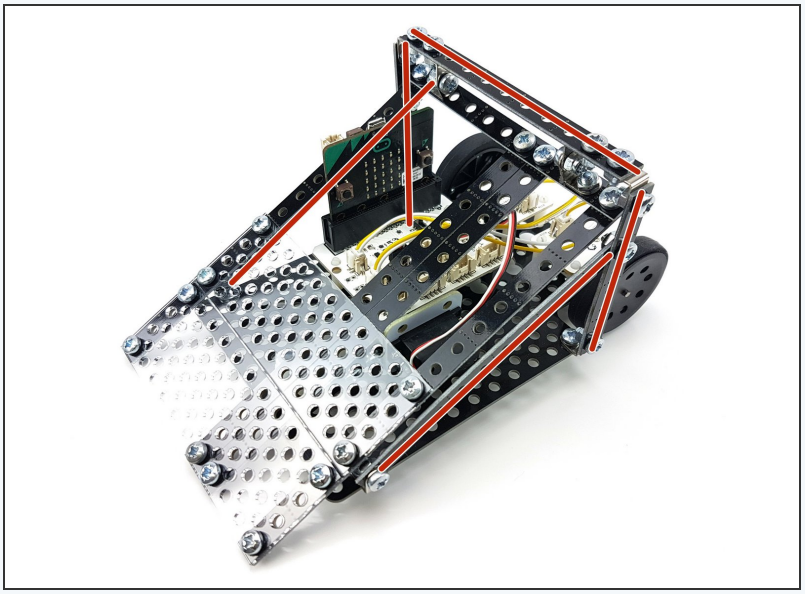


Step 3

Frame

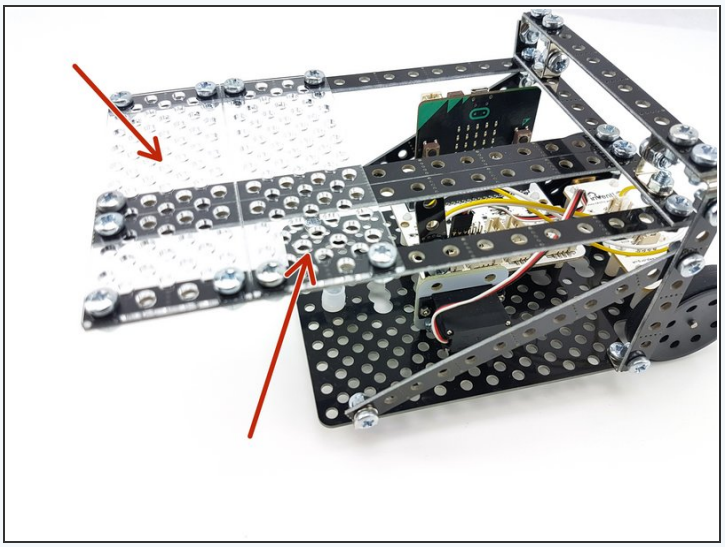
- The most important part is a **sturdy frame** to hold the flipper up, which can support the forces from flipping other robots!
- A simple setup of two vertical pieces and a horizontal piece is good, but not very strong - try to use a **diagonal piece** to make the structure really tough.

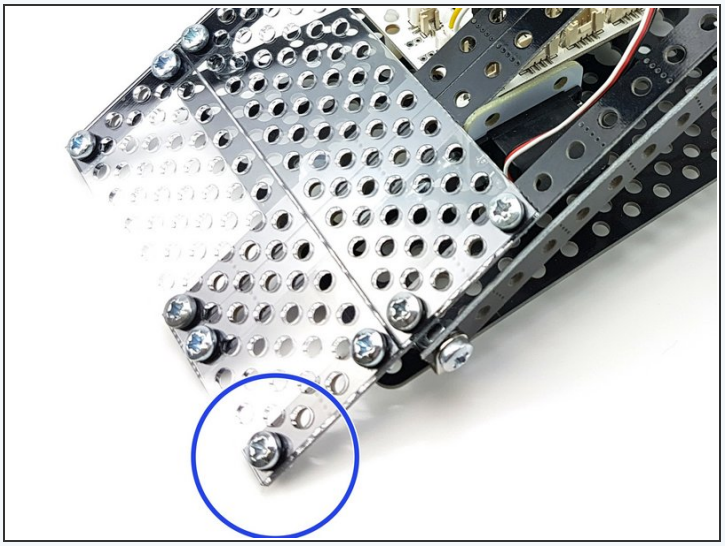
Try to do up all the nuts and bolts nice and tight - you don't want anything to come loose during battle!



Step 4

Flipper

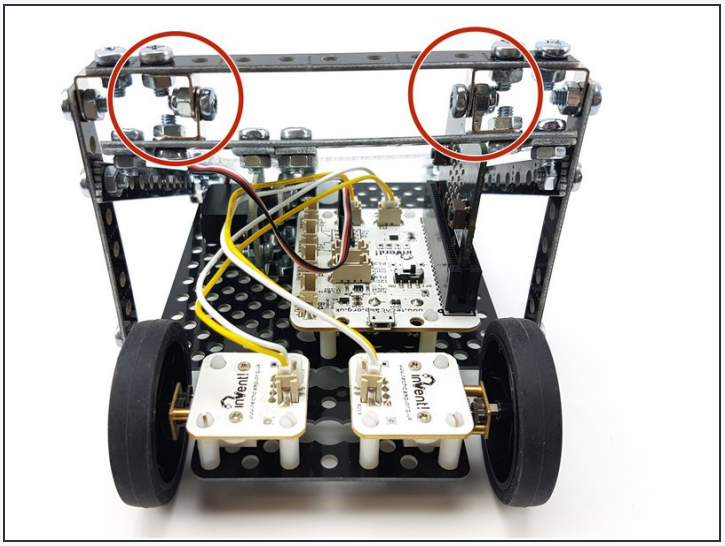


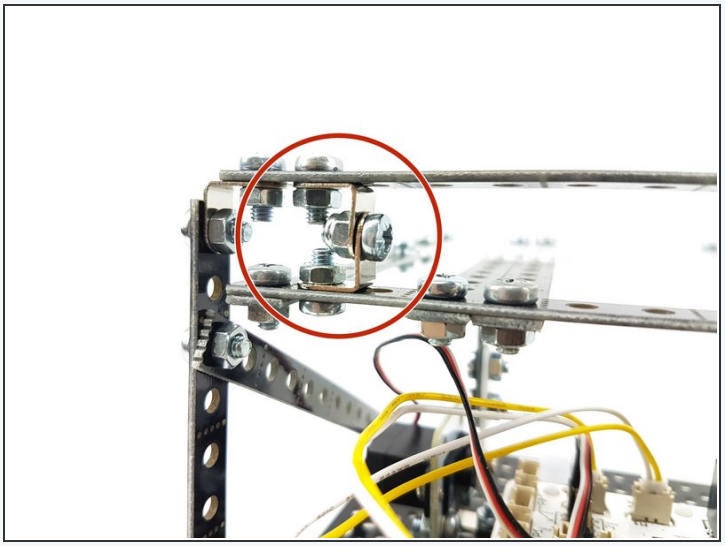


- You can use the **large plates** and some more beams to make a really good flipper - try and keep it as flat as possible so you can drive under other robots easily.
- Try to make your flipper such that the front is **very close to the ground** (but not touching). This makes it easy to get underneath and flip the other robots.

Step 5

Hinges

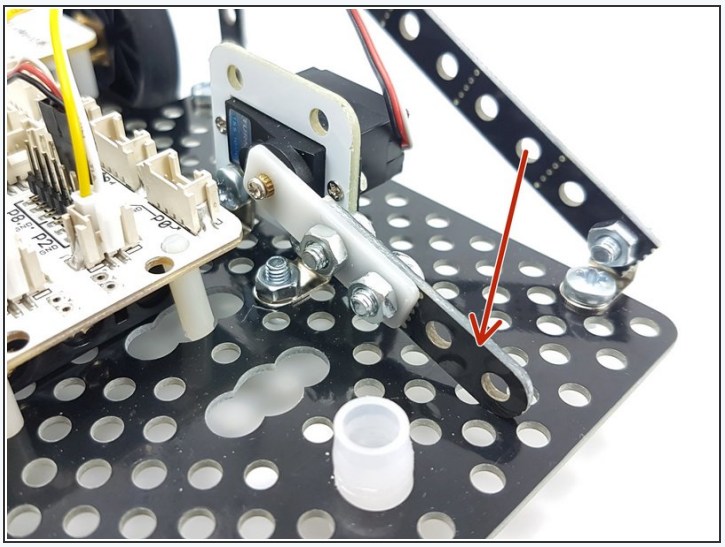


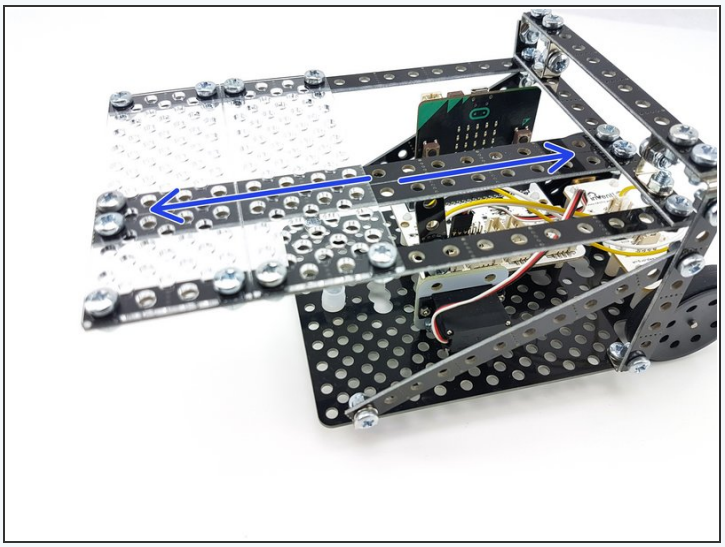


- You will need **2 hinges** to fix the flipper to the frame - you can use two silver brackets together like in the picture to make them.
- Instead of normal nuts, use the special **Nyloc Nuts** (with the blue ring) for the hinges - these nuts grip onto the bolt so that they can be left loose (so the hinge can rotate), but won't work their way off of the bolt during battle.

Step 6

Servo



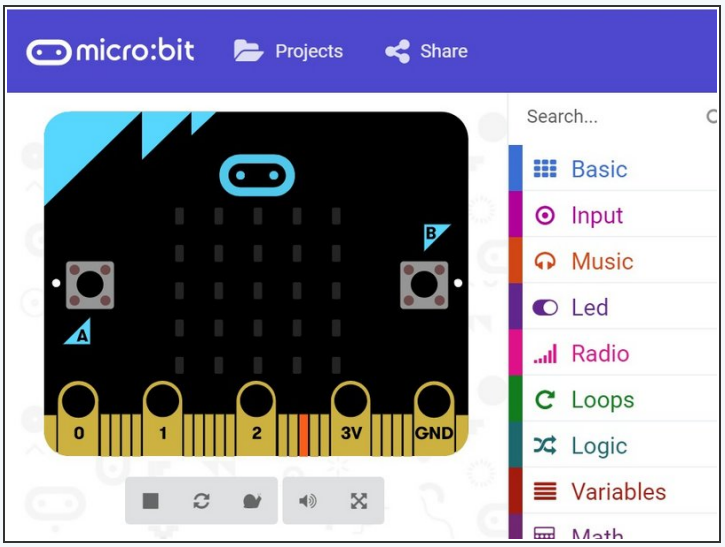


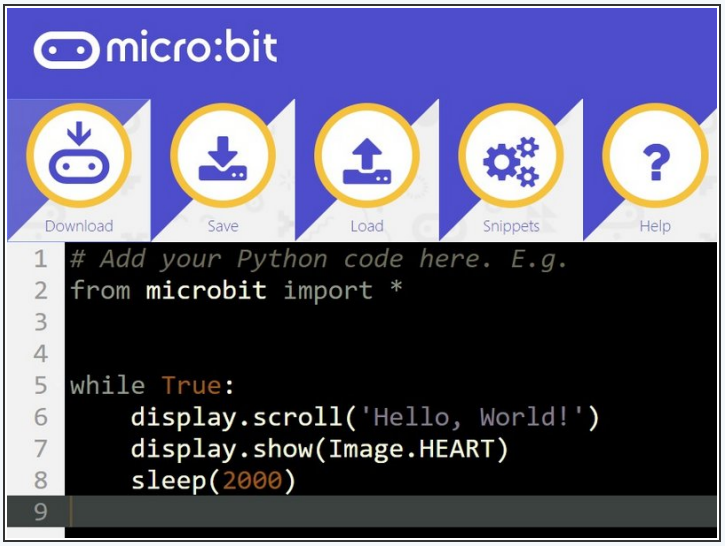
- **The servo works best for activating the flipper if it isn't attached directly** - connect a small arm to the white plastic part like in the picture, and round of the end with a file.
- This rounded end can then **rub up against the underside of the flipper** to push it up and down - make sure there is a flat surface for it to push on on the underside of the flipper!

⚠ However you use the servo, make sure it hasn't got **lots of force pushing on it** in the up or down position. You will probably hear the servo **buzzing** all the time if this is the case - if you leave it like this for too long, it might **burn out** - it will also drain your battery!

Step 7

Sample Code





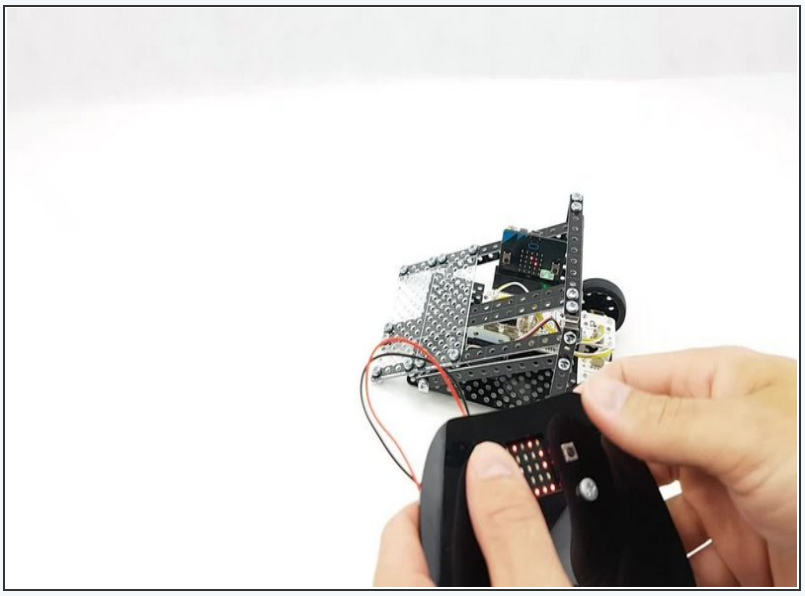
- If you're using **drag and drop programming**, please see this guide (https://courses.techcamp.org.uk/Guide/A+-+Getting+Started/198) for instructions on how to load, save and transfer programs to your robot.
- If you're using **python textual programming**, please see this guide (https://courses.techcamp.org.uk/Guide/Getting+Started/199) for instructions on how to load, save and transfer programs to your robot.
- Download Sample Code (https://drive.google.com/drive/folders/1UlQSDgGe_6UH4ERSedZx_d7R-tLl5GJN?usp=sharing)

⚠ Be sure to upload the transmitter program to your controller, and the receiver program to the robot!

Step 8

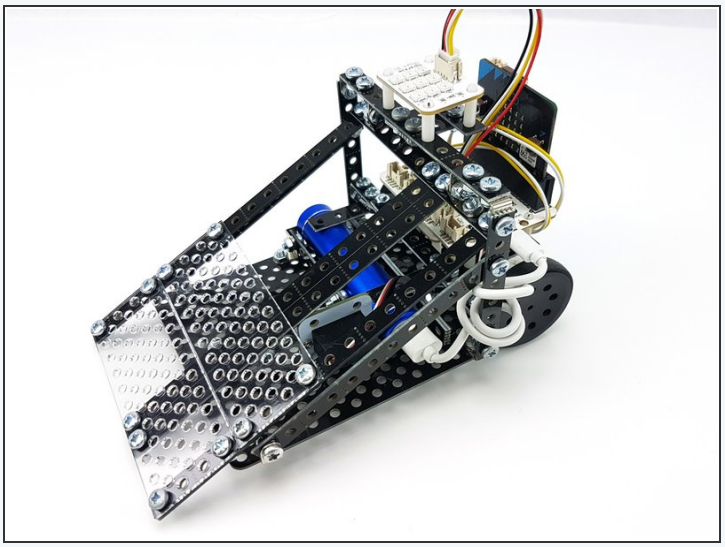
Done!

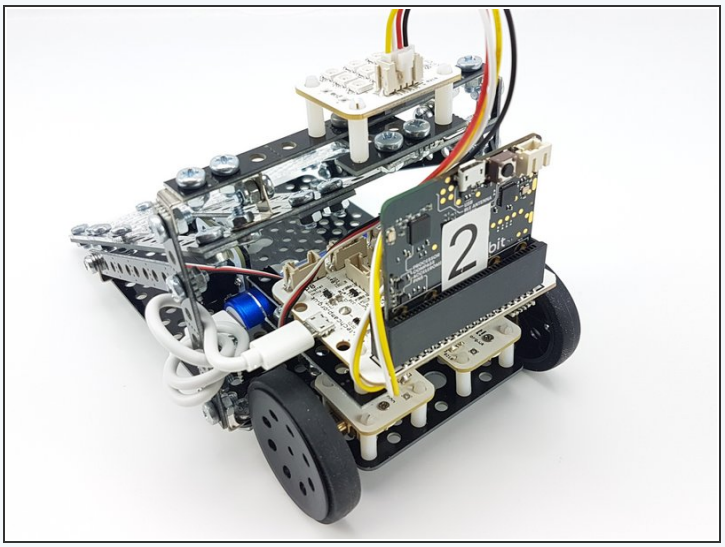
- Hopefully your robot should work something like the video!



Step 9

Extras





- There's no limit to the things you can add to your design! Some ideas:
- A rechargeable **USB power bank** for extra running time
- Centre mount above the wheels for the main board
- Sparkle module on top for team colours (sold separately as part of the Explorer Modules kit)
- Custom body panels and armour - you can use any material you like and simply make holes in it to attach to your robot