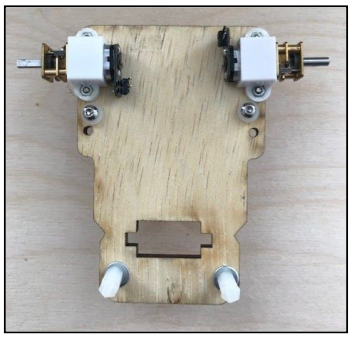
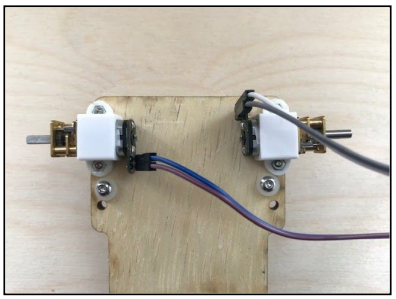
Micro:bit Robot

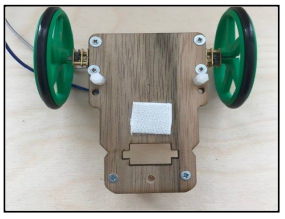
1. Turn the chassis over as shown in the photo. We'll start by attaching the jumper wires - by doing this first, you'll be protected from the sharp pins on the motorsl.



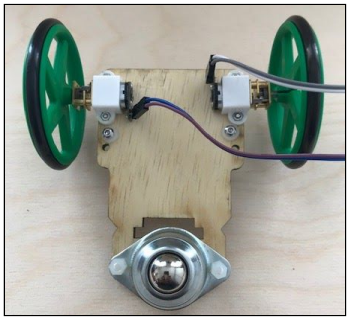


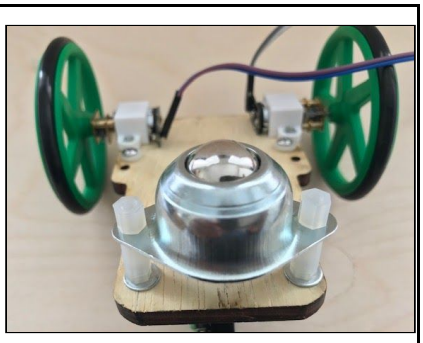
Use this photo to double check your wiring!

2. Attach the wheels to the motor shaft. Align the D - shape in the centre of the wheel with the D-shaped motor axel & push on firmly.

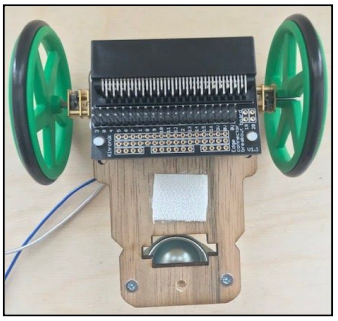


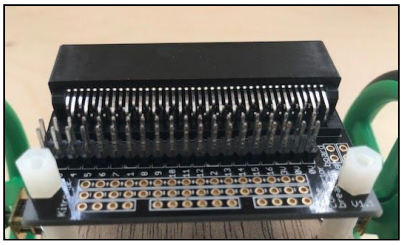
3. Place the castor wheel onto the plastic mounts at the front of the chassis. Then secure using two of the plastic fixings.





4. Turn the chassis over & p lace the edge connector on the standoffs at the rear of the chassis and secure using two of the plastic fixings (As shown in the diagram).

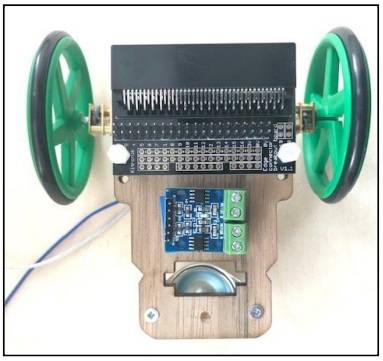


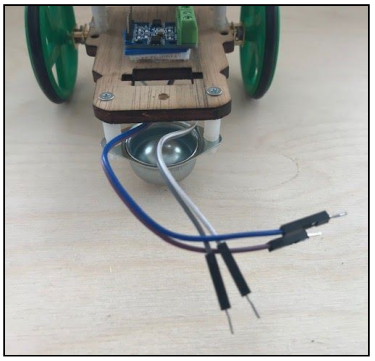


Micro:bit Robot

5. Position the motor driver board

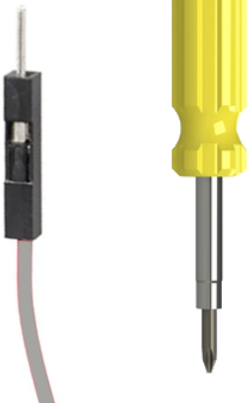
and press down firmly to secure with Velcro and then thread the jumper wires through the gap in the front





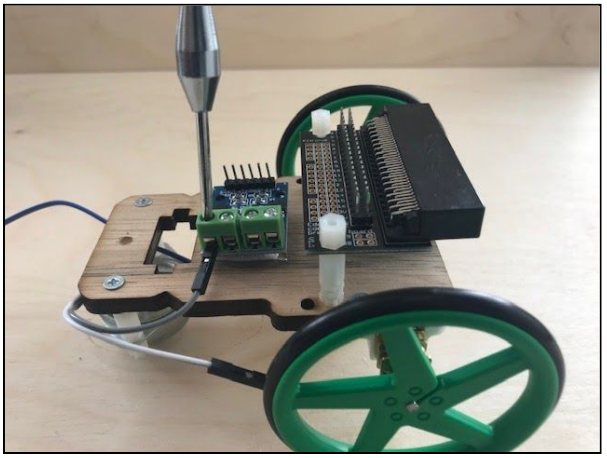
6. Using a screwdriver connect the male end of the motor jumper wires to the terminals on the motor driver board (As shown in the diagram).

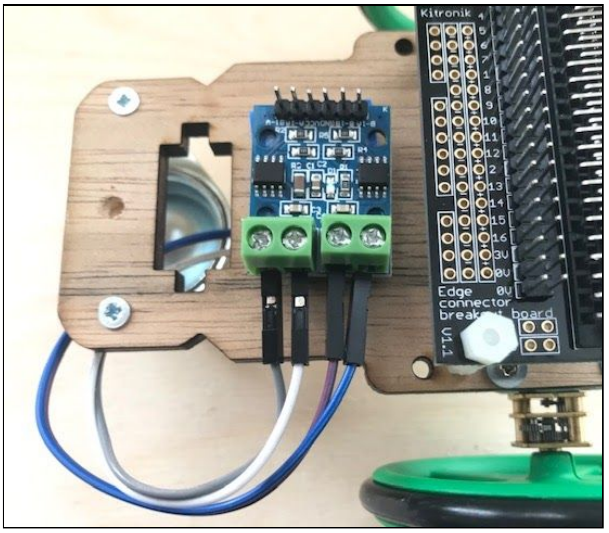
Always double check your wiring before moving onto the next stage!



Male jumper wire

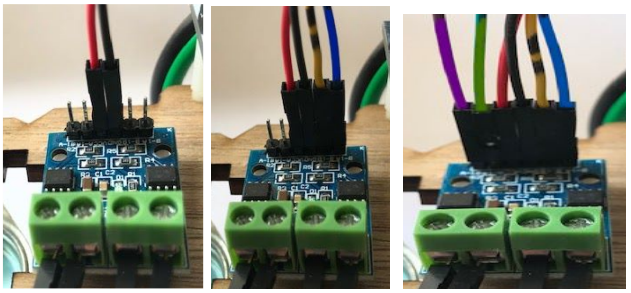
screwdriver





Micro:bit Robot

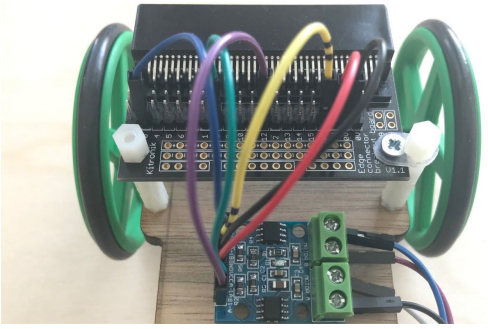
7. Connect the small red, black, yellow, blue, green and purple female jumper wires to the motor driver board as shown in the photograph. **Double check your wiring before moving on to the next stage!**



Double check your wiring before moving on to the next stage!

8. Now attach the other end of the jumper wires to the edge connector as follows: yellow goes to pin 16; blue goes to pin 0; green goes to pin 8; purple goes to pin 12.

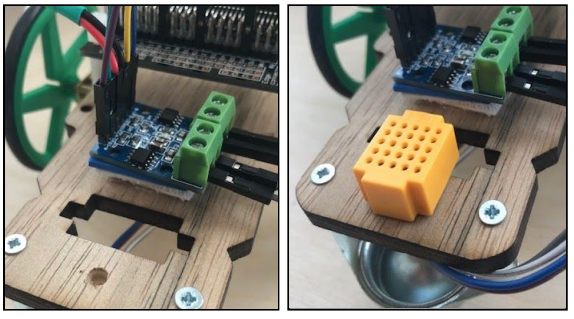
Jumper wire:	Pin number:
yellow	16
blue	0
green	8
purple	12
Black	0v
_red	3v



Double check your wiring

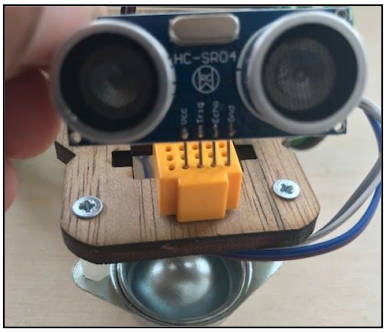
Gentle warning:
it is very easy to mistake pin 3 for pin 0

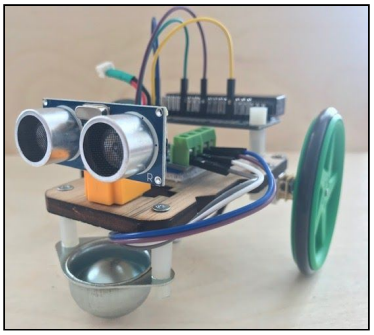
9. Attach the mini breadboard to the hole in the front of the chassis, press down firmly making sure that it is firmly in place.



Micro:bit Robot

10. Insert the sonar sensor into the mini breadboard. **Make sure that the GND pin is on the far right of the breadboard**.

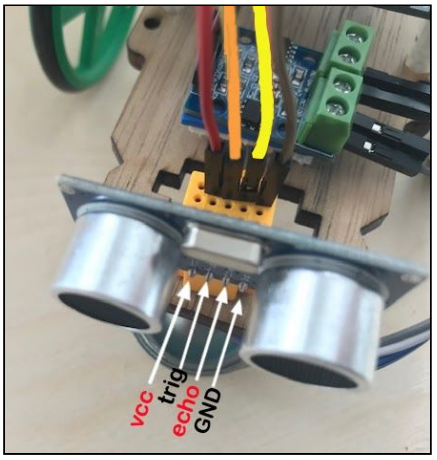




11. We will now wire the sonar sensor to the edge connector. For this we will use the long jumper wires and plug the male ends into the relevant holes in the mini breadboard.

Jumper wire:	Sonar sensor pin:
Brown	GND
yellow	Echo
orange	Trig
red	Vcc

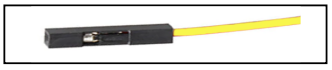
Double check your wiring



12. Now we need to connect the other end of the jumper wires (the female end) to the edge connector.

Jumper wire:	Edge connector pin:
Brown	0V
yellow	14
orange	13
red	3v

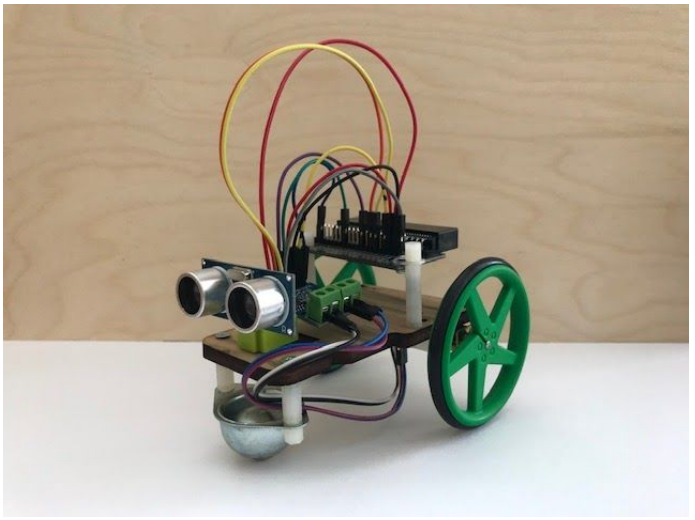
Double check your wiring



Female end of jumper wire

Micro:bit Robot

13. At this stage your robot should be looking like this

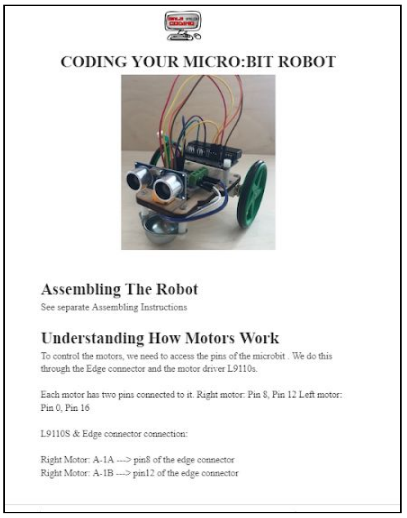


14. **Now go to the coding instruction sheets.**
RETURN TO STEP 15 ONCE YOU'VE DOWNLOADED YOUR CODE

You'll find an overview and 3 tasks that we'll do together (they help explain how to code the motors), followed by two projects.

The first project uses two Micro:bits, one will allow you to control the robot by tilting it forwards, backwards, left & right - it will communicate with the other Micro:bit which will be onboard the robot.

The second project uses the **sonar sensor** to help the robot avoid obstacles.



CODING YOUR MICRO:BIT ROBOT

Assembling The Robot

See separate Assembling Instructions

Understanding How Motors Work

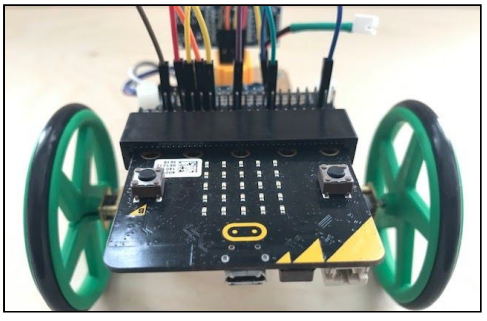
To control the motors, we need to access the pins of the microbit . We do this through the Edge connector and the motor driver L9110s.

Each motor has two pins connected to it. Right motor: Pin 8, Pin 12 Left motor: Pin 0, Pin 16

L9110S & Edge connector connection:

Right Motor: A-1A ---> pin8 of the edge connector
Right Motor: A-1B ---> pin12 of the edge connector

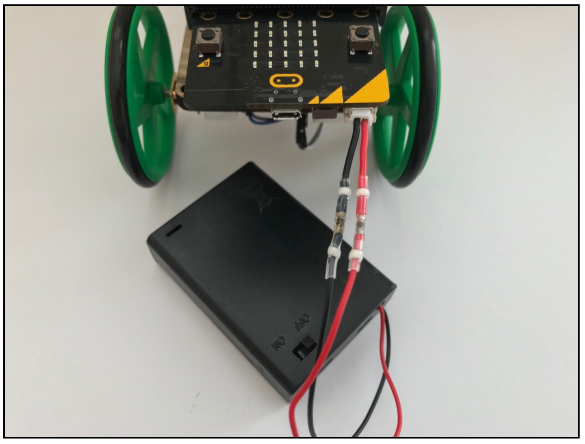
15. Once you have downloaded your code onto the Micro:bit, carefully slot it into the edge connector.



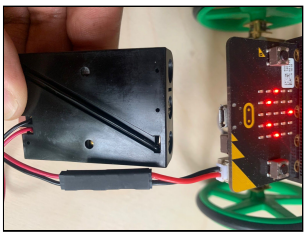
Micro:bit Robot

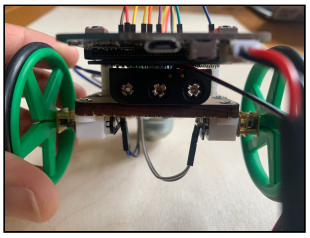
16. To power the micro:bit, we will now attach the 3 x AA battery pack.

    Slide the switch to the on position



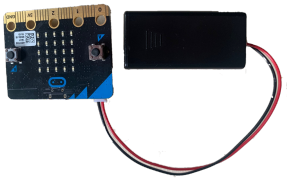
17. Place the battery pack in the space under the micro:bit.





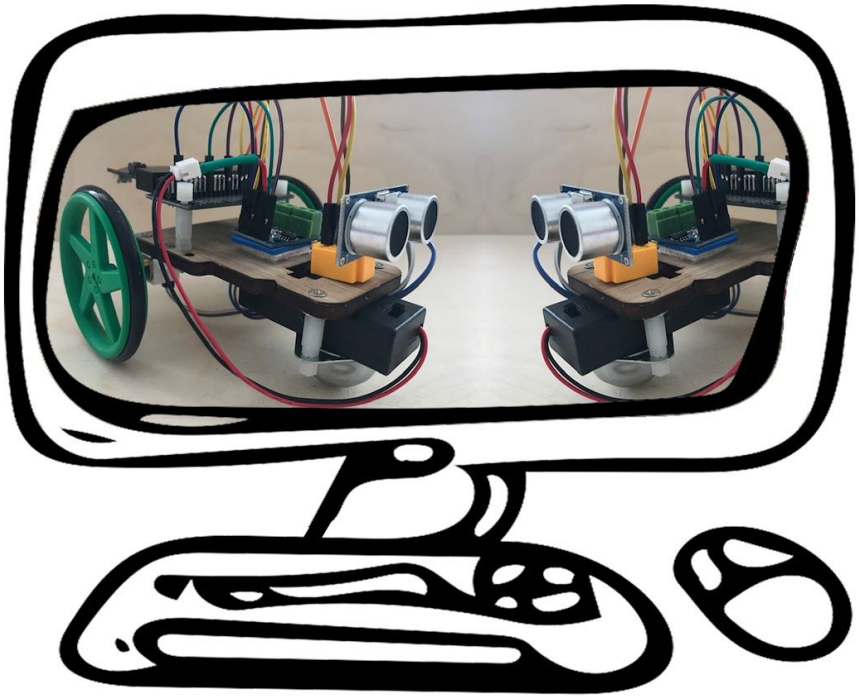
18. After getting the first 3 tasks successfully out of the way, have a go at the other two projects

    The first project uses 2 Micro:bits, so ensure that both are connected to a battery pack.

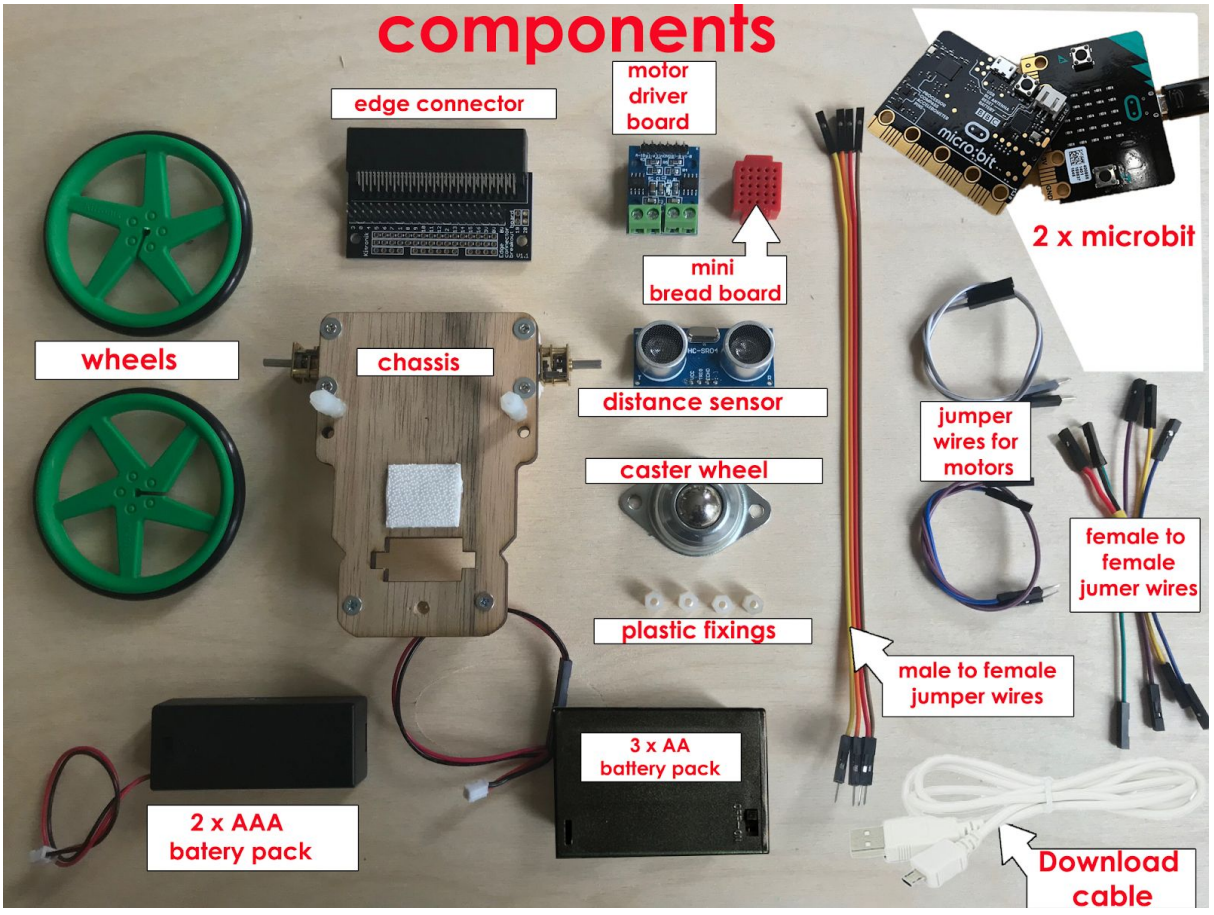


Assembly Instructions

Micro:bit Robot



GIRLS INTO CODING



Micro:bit Robot