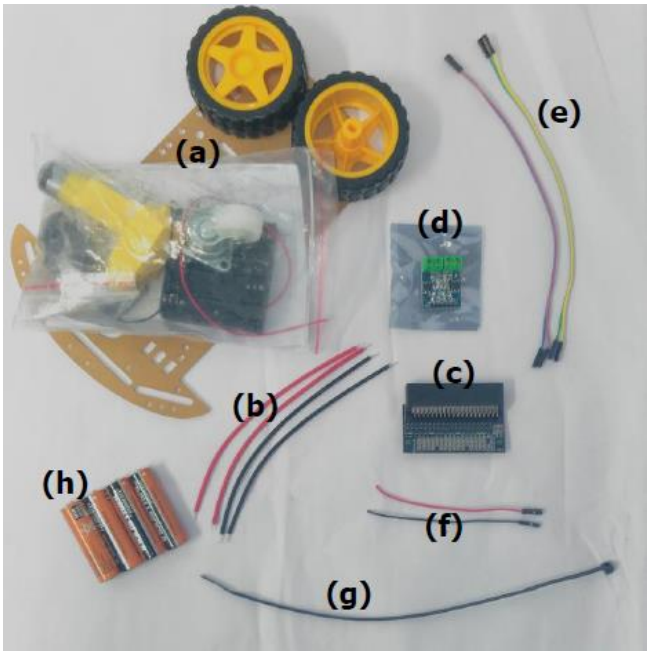
Robot Buggy – Build Instructions

Parts List



1 x buggy pack including instructions leaflet (check parts in pack against leaflet) **(a)**

1 x micro:bit edge connector **(c)**

1 x L9110s motor driver **(d)**

Jumper leads **(e)**

4 x AA batteries **(h)**

Lasercut chassis

Wire cutters

Screwdriver

Green wire (shared)

Soldering iron (shared)

Tape / glue / cable ties for holding down components (shared)

A. Preparation

Step 1: Peel plastic backing from robot chassis.

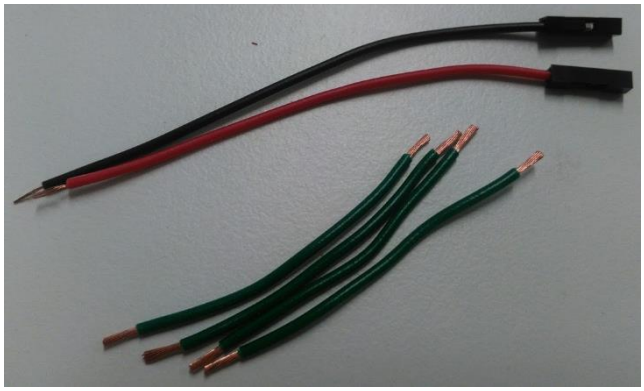
Step 2: Take out the instructions from the buggy pack and scan through the pictures, so you know which part attaches where.

Step 3: Use your wire cutters to cut four pieces of green wire.

Step 4: Strip the insulation from both ends of all your new pieces of wire.

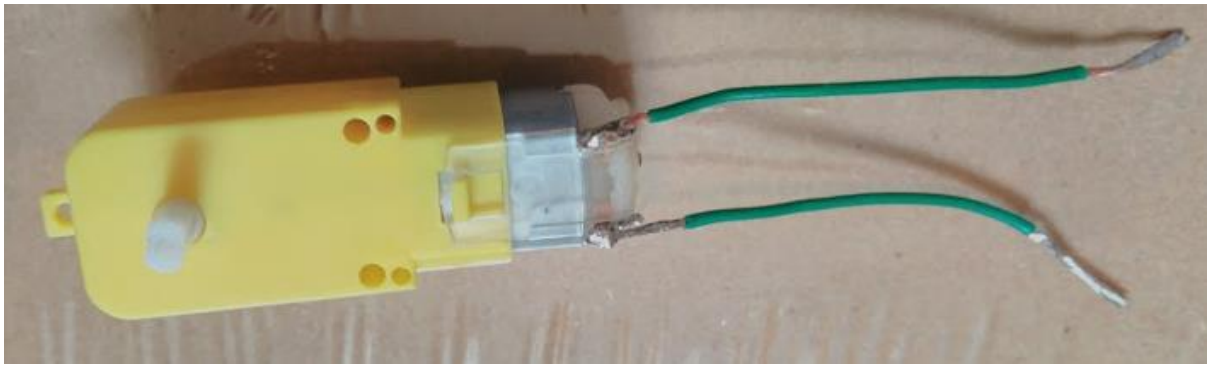
Step 5: Take one red and one black jumper lead, and use your wire cutters to cut them in half.

Step 6: Strip the insulation from the end of one red and one black piece.



B. Soldering

Step 1: Solder the green wires to the motors.



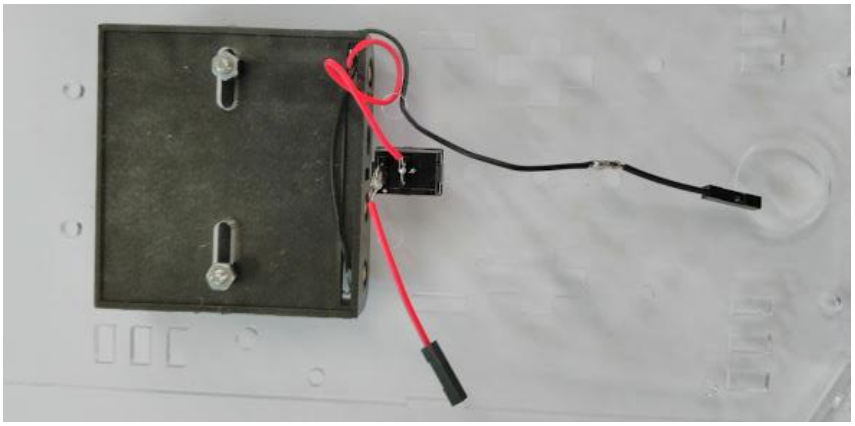
Step 2: Push the switch into the chassis.

Step 3: Follow the buggy leaflet's instructions to screw the battery pack onto the chassis.

Step 4: Solder the red battery pack wire to the switch, to the leg that is in the middle of the plastic.

Step 5: Solder the red half-jumper lead to the other leg of the switch.

Step 6: Solder the black half-jumper lead to the black battery pack wire.



Step 7: Cover the join in the black wire with tape.

C. Testing

Step 1: Plug the black lead onto the pin labelled GND on the motor driver.

Step 2: Plug the red lead onto the pin labelled Vcc on the motor driver.

Step 3: Put the AA batteries into the battery holder and flip the switch to the on position.

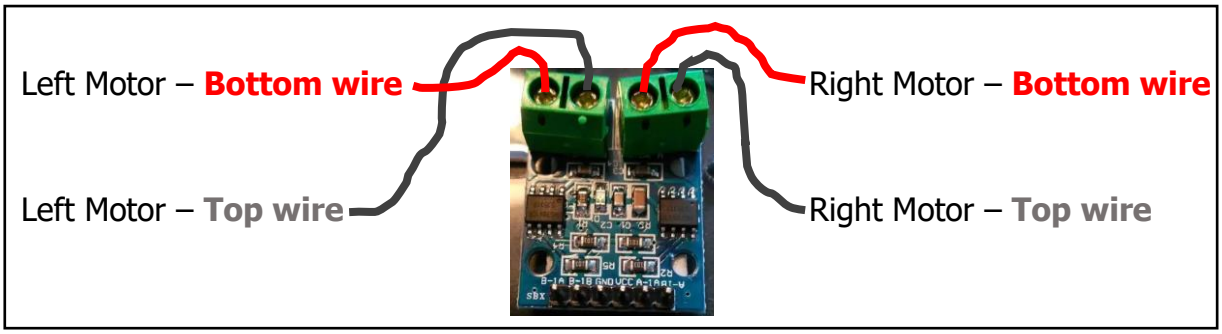
CHECK: Does a red light come on on the motor driver? If not, check your connections.

Step 4: Stick the motor driver onto your chassis.

D. Wiring

Step 1: Follow the buggy leaflet's instructions to attach the motors – make sure that the wires are on the INSIDE. Don't attach the wheels yet.

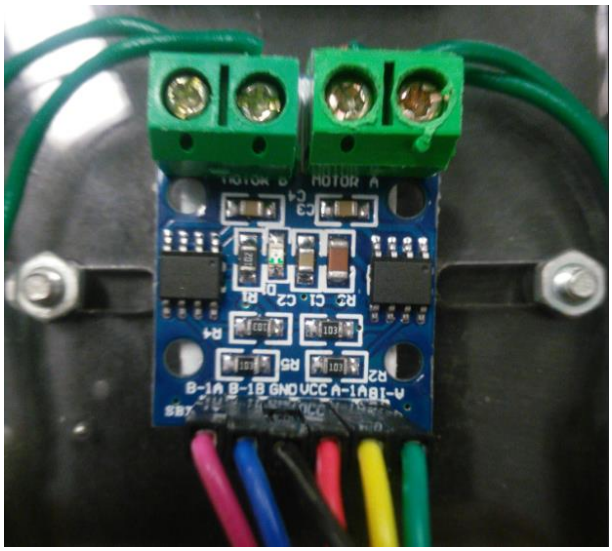
Step 2: Screw the motor wires into the motor driver in the following configuration:



Step 3: Plug jumper leads onto the motor driver pins in the following configuration (if you use different colours, make a note of them here):

B-1A	B-1B	GND	Vcc	A-1A	A-1B
Burgundy	Blue			Yellow	Green

PTO for picture of the completed motor driver connections.



Step 5: Attach the edge connector to the chassis.

Step 6: Plug the jumper leads into the edge connector in the following configuration (if you used different colours, make sure they match!):

Pin 13	Pin 14	Pin 15	Pin 12
Green	Yellow	Blue	Burgundy

E. Final Touches

Step 1: Make sure everything is securely attached to your chassis – using glue, tape or cable ties. Tape down any loose wires that could get in the way of the wheels.

Step 2: Follow the buggy leaflet's instructions to attach the front castor wheel – this can be fiddly, so don't fully tighten the screws until they are all in place.

Step 3: Carefully push the wheels onto the motors.

Step 4: Flash one of your robot programs to your micro:bit.

CHECK: Does your micro:bit show its initial image? If not, flash again.

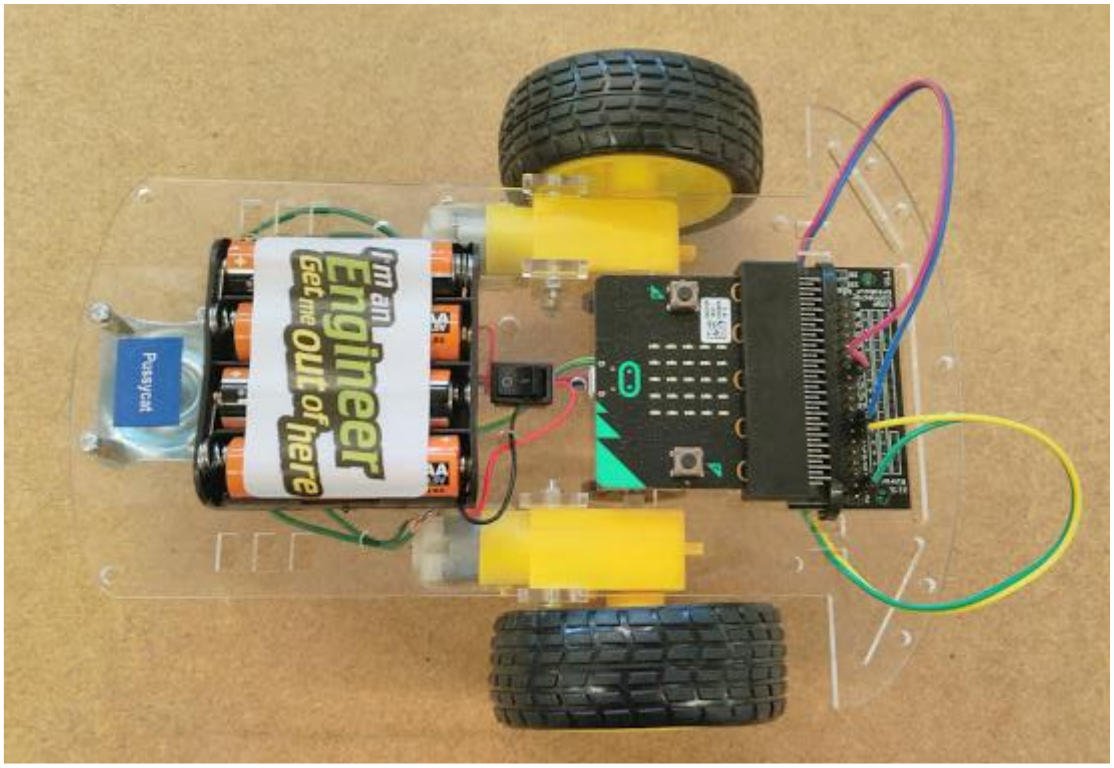
Step 5: Unplug your micro:bit from the computer, and attach the battery pack.

Step 6: Slot your micro:bit into the edge connector.

F. Final Test

Step 1: Place your finished robot buggy on the floor with plenty of space around it.

Step 2: Run your program and watch it go!



TROUBLESHOOTING – Is your buggy not working as expected?

Your buggy is not moving at all!

Check that your micro:bit is showing its initial image -- **Go back to E**.

Check that your motor driver is showing a red light -- **Go back to C**.

Check that all the wires are still connected -- **Go back to D**.

Your buggy is moving in the wrong direction!

Check that the jumper leads are connected to the right pins -- **Go back to D**.

Your motors appear to have a mind of their own!

Check that all the wires are connected correctly -- **Go back to D**.

OPTIONAL: Once you are sure your buggy works as intended, use a hot glue gun to cover any sharp solder connections e.g. on the motors.