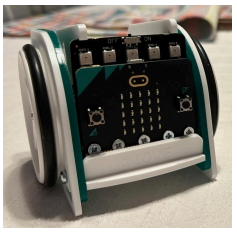
Robot Buggies
Driving the robot

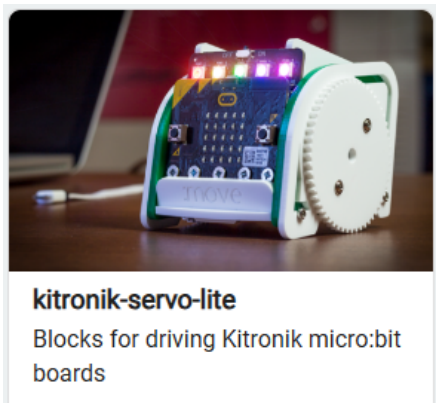


You're going to programme the micro:bit to drive the white and green buggy around a route that you choose. You'll need to keep tweaking the code until you get it the way you want it. Once you've done this activity, try playing with the LEDS's, the 5 small lights just behind the micro:bit!

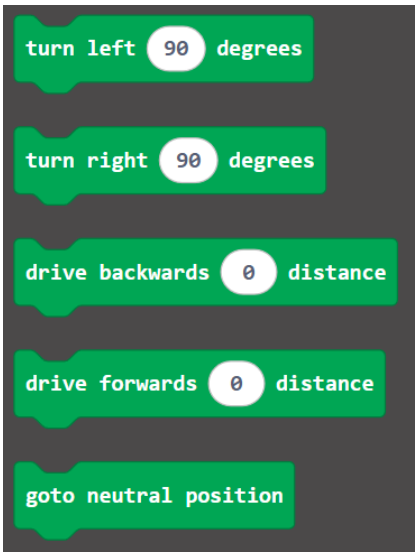
Adding the Servo:Lite blocks

- Before we start building the code, we need to install some special blocks for our robot buggy.
- In a web browser, go to makecode.micobit.org and start a new project.
- Look for the grey extensions button.

- In the search bar, type "servo lite", click on the card titled kitronik-servo-lite

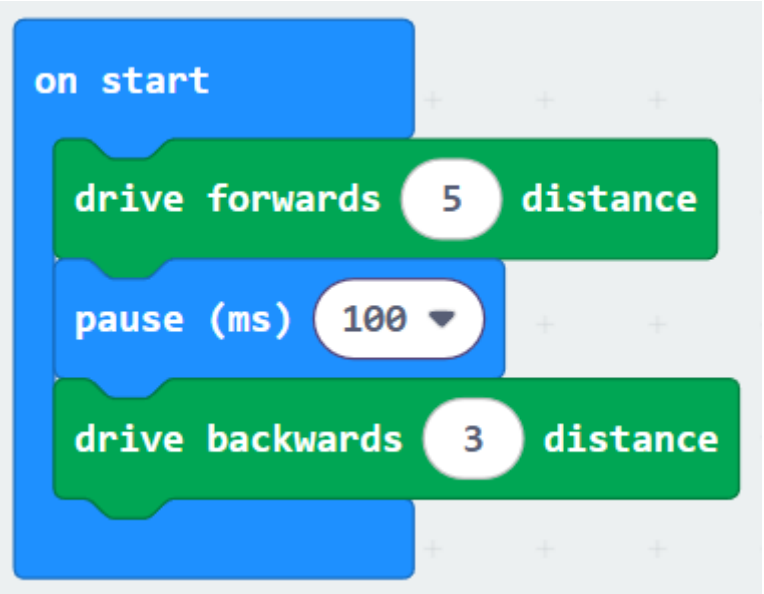


- You should now see a new green group called Servo:Lite. Take a look at these blocks.



Taking your first steps!

- Delete the forever block.
- From the Servo:Lite group, drag a ‘drive forwards 0 distance’ block into the on start block.
- Change the 0 to a 5.
- From the Basic group, add a ‘pause (ms) 100’ under the drive forwards block.
- From the Servo:Lite group, drag a ‘drive backwards 0 distance’ block under the pause block.
- Change the 0 to a 3.



- Make sure the small switch on the top of the buggy is switched to off.
- Plug the micro:bit into the computer, don’t remove the micro:bit from the buggy.
- Download your code to the micro:bit
- Unplug the micro:bit from the computer, and place it on the floor in a clear space.
- Flick the switch on top of the micro:bit to on and see what happens!

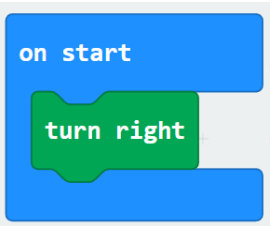
Tweak your code

- You probably found that the robot moved, but it didn’t move very far!
- How will you change your code so your robot travels further?
- Give it a try, download your code again, and see what happens!

Other driving blocks

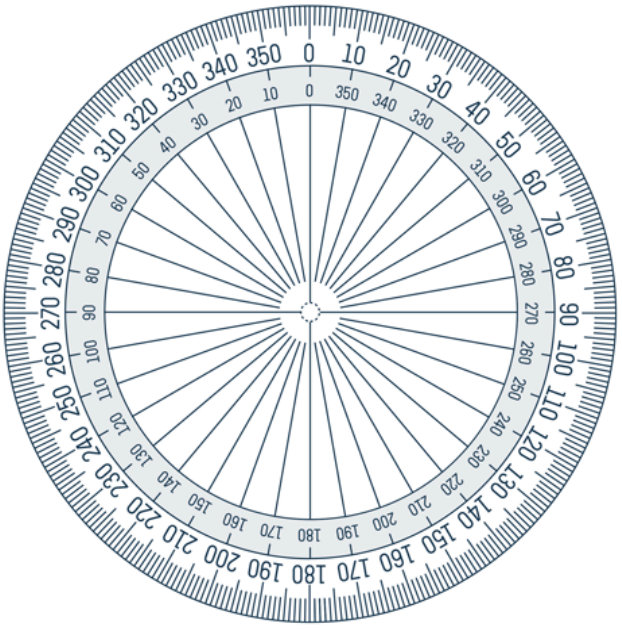
- You should see there is also a ‘drive backward’ and ‘drive forward’ block. What do you think is different about these blocks?
- Here’s a clue, if you’re going to use these blocks, you’ll also need to use the ‘stop’ block!

Going around the bend!



- For now, take the code you've already written and take it out of the 'on start' block.
- Go into the Servo:Lite group and find 'turn left' or 'turn right'.
- Drag one of these blocks into your 'on start' block.
- Make sure the small switch on the top of the buggy is switched to off.
- Reconnect the micro:bit, and download the code again.
- Unplug the micro:bit from the computer, and place it on the floor in a clear space.
- Flick the switch on top of the micro:bit to on and see what happens!
- Did you get dizzy watching what happened? If your robot was a human they might have done!
- The turn right or turn left block on its own isn't too helpful. What other blocks do you need to use with it to make it more useful?
- Try using another block from Servo:Lite and a block from 'Basic' to make your robot only turn a little bit.

Thinking like a boat or a plane!



- Boats, aeroplanes, and other robots don't understand how to 'just turn left' or 'just turn right', you have to tell them how far to turn.
- We use degrees to measure how far to turn. Degrees start at 0, and go up to 360.
- Imagine this circle was flat on the floor. Straight ahead is 0, behind you is 180, right is 90, and left is 270.
- Delete your turn block and try one of the turn left or right 90 degrees blocks instead.
- Change the number 90 to any number between 0 and 360.

Putting it all together

- You now know how to make the robot go forwards and backwards, and how to turn.
- Now you can put your own code together and make the robot drive around your route.
- Remember to use loops to control your programme and save you having to repeat yourself.
- You can still use the LEDs to show information on the micro:bits display.
- Get really clever and use logic blocks to make a countdown timer to automatically stop your robot!