



INTRODUCTION

Self-driving vehicles driven using code are on the horizon. In the future, cars and vehicles will have more in common with programmable robots and drivers will be more like passengers. Using your micro:bit programming skills, help drive our prototype robo-vehicles around Auto City, our testing environment.

CAN YOU PROGRAMME A SIEMENS ROBO BUGGY?

In the following classroom tasks you will be programming a three-wheeled micro:bit buggy to travel autonomously around the map of Auto City (on page 2). Each buggy is steered using the left and right motors, with the front wheel turning on a pivot (see the diagram below). You may have used similar robots in Design & Technology or Computing lessons at your school.

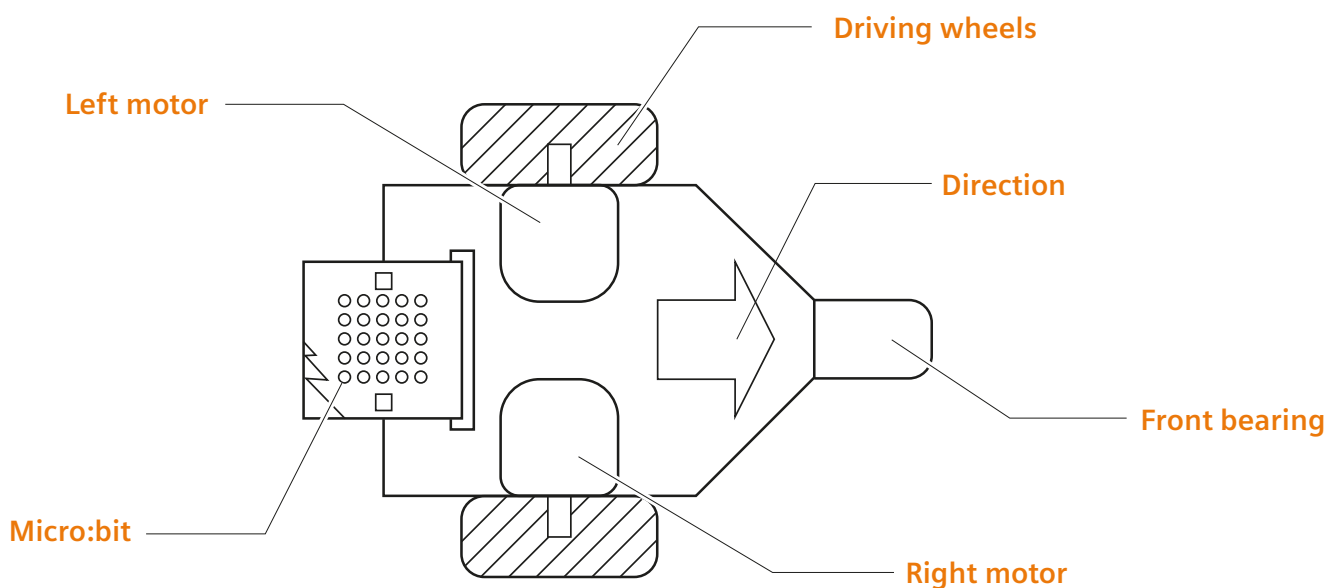


Diagram 1: Siemens Robo Buggy



STEERING TIPS

Steering on these buggies is different to the cars you may be familiar with. These hints will help you to code your Siemens Robo Buggy (summarised in Table 1).

- To drive forward, both motors must be set to forward.
- To turn left, the right motor should be set forward and the left motor should be off or in reverse.
- To turn right, the left motor should be set forward and the right motor should be off or in reverse.
- The buggy can also be driven in reverse.

STEERING TIPS - TABLE 1

| Direction of Siemens Robo Buggy travel | Left Motor | Right Motor |
|--|----------------|----------------|
| Forward | Forward | Forward |
| Left | Off or Reverse | Forward |
| Right | Forward | Off or Reverse |
| Reverse | Reverse | Reverse |

USING YOUR OWN BUGGIES

You are welcome to use your own buggies throughout this activity, however due to the differences in motors, wheel sizes and power, you will have to adjust the motor speed of '310' that we have used in the codes supplied. Ask your teacher for the correct speed for your robot buggy, or use trial and error on route A to find this out for yourself!

AUTO CITY - A TESTING ROAD MAP

This is our testing environment for Siemens's Robo Buggies. Each street is the width of one buggy. Use this map to help you write code for the following activities, following routes A, B and C. A full sized printable version is available from Siemens Education (www.siemens.co.uk/education) for use with your own buggies. You may need to adjust the motor speeds for your own buggies, and similar codes could be created in programming environments like Crumble.

