Brown Shell Challenge Cards

Teachers Notes:

This set of Challenge cards is designed to be used with the Blockly Turtle resources. The full collection of resources for teachers is found in the **Turtle** area on bebras.uk..

This set of cards is for pupils who have achieved their Brown Shell Programmer award and are now working towards their Red award.

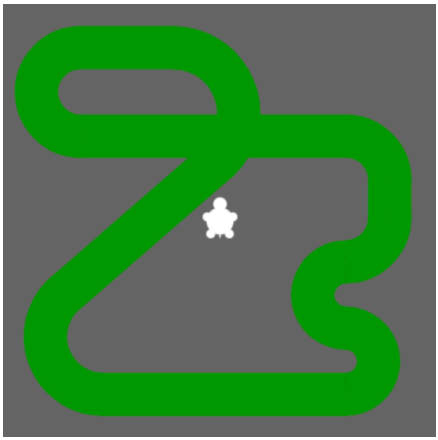
This is a special set of challenges that allows pupils to program a simple robotic turtle.

Preparation:

1. When the pupils login to their computers they should head to the ***Turtle Playground - Brown***. They should be directed to: bebras.uk -> Turtle -> click on the Brown turtle.
2. These cards should be printed out (size to:100% on A4 card, or "fill the paper" on A5 card) and laminated. Each pupil also needs their own Yellow Shell Record Card (which should not be laminated as they have to be written on). When a pupil completes a Challenge Card, its number can be written in their Record Card (in one of the clip boards).
3. In the first lesson, the teacher should show the students how to access ***Turtle Playground - Brown*** and the Introduction video on Card 0. Note ***Card 0*** is for the teacher to use with the class. Pupils can start with ***Card 1***.
4. Students should complete the first three cards. Card 4 provides some ideas for students to use in their own projects.

Brown Shell Challenge Cards

This is a special playground that introduces some simple robotics and sensing. It has its own special background and a white turtle:



Code Blocks introduced in **Turtle Playground - Brown**:

There are five new blocks in the ***Turtle*** folder in the toolbox:

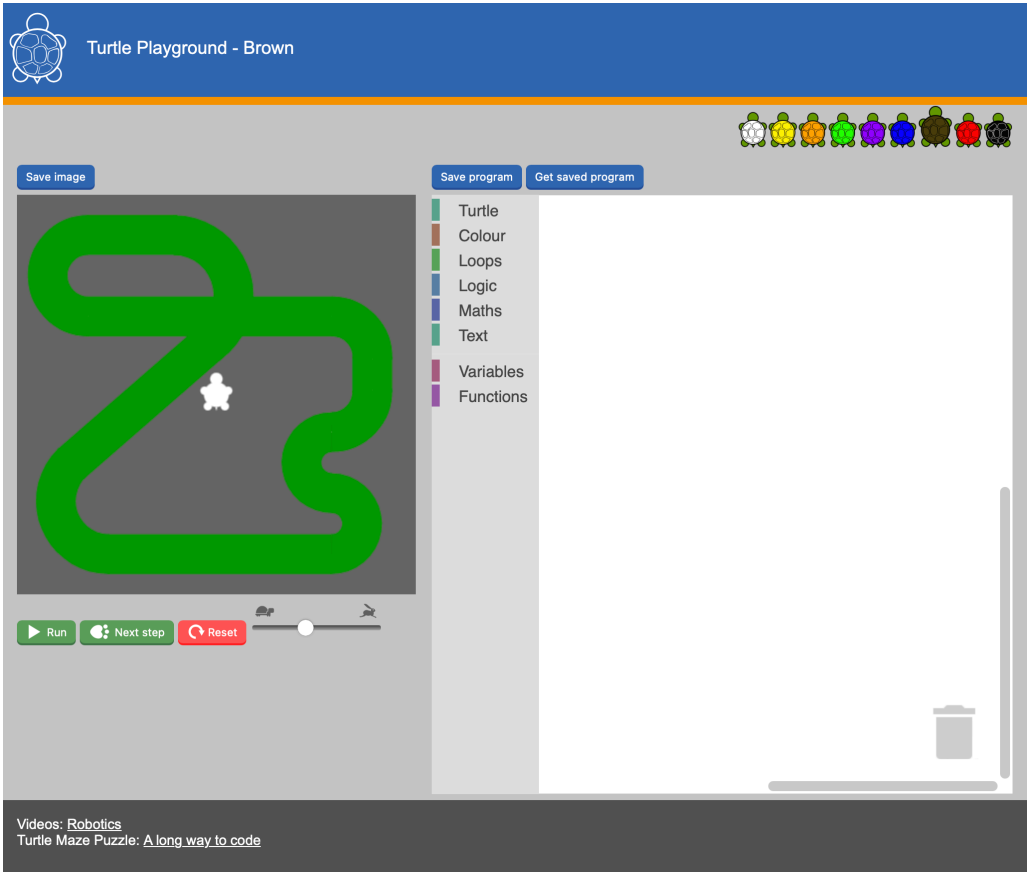
For pupils working towards their Red Shell Turtle Programmer award using Turtle Playground - Brown

This Card is for teachers!

Brown Shell Challenge Cards

0

1. Show your pupils how to go to ***Turtle Playground - Brown***



2. Show your class the video introduction found at the bottom left of the Playground.
3. Provide each pupil who has achieved their Brown Shell award with their new Record Card.
4. Distribute the pupil's Challenge Cards.

For the teacher of pupils working towards their Red Shell Turtle Programmer award using Turtle Playground - Brown

Brown Shell Challenge Cards

1

Challenge:

Make a function that looks to the right.

1. Create a new function called *look right* that takes no inputs but returns *True* or *False*.

2. Add code to your function, so that it makes the turtle turn 45º to the right, finds out of if it 'sees' green, 30 pixels ahead, and turns back again.

3. Make sure that your function returns *True* if your turtle sees green and *False* if it does not.

4. Test your function to check it works. (If it doesn't you may have selected the wrong green.)

Extra:

Make another function that looks left.

Save your code to your computer or tablet.

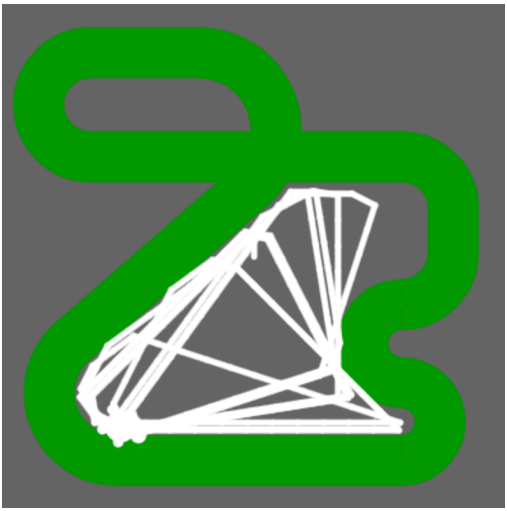
Brown Shell Challenge Cards

2

Challenge:

Make a wall sensing robot.

Write a program that makes the robot move around in the area shown here:



Hint:

To make your robot move forever, put your code in a while loop like this:

Extra:

Amend your program so that it does not draw a line behind it as it journeys

Brown Shell Challenge Cards

3

Challenge:

Write a program that makes the robot move around the track better than the one shown below!

Extra:

1. Amend your program so that it does not draw a line behind it.
2. Try to make sure the robot stays nearer the middle of the track and goes as smoothly as possible.

Brown Shell Challenge Cards

4

Ideas for your own projects:

1. Use the drawing blocks to create your own track and then get your robot to drive around it.

2. Use the drawing blocks to create a new scene with a coloured object that your turtle has to go to.

3. Draw a scene with an area of dark green lawn. Write a program to turn your turtle into a robotic lawn-mower – making the mown lawn a lighter green.