



Scratch Smoking Car Puzzle Game

Computer Science Concepts

- Using a keyboard input to control a aspects of the game
- Simple Sequence of code

Maths Concepts

- Up, Down, Left & Right link to degrees
- Move distances

Game Aim Designed as a simple introductory game for initial Scratch use. Pupils create a car that travels round a roadway emitting smoke as it goes. Can the user keep the smoke trail on the road way?

Differentiation and Assessment for Learning This planning should be used alongside the *catch-up cards* supporting SEN pupils and the *extension cards* supporting the more able. At the beginning of each session the *learning intention sheet* is shared and the learning journey expanded through success criteria. Pupils feed their progress back to the teacher through annotating this sheet with smiley faces at the end of the lesson. Teachers can also annotate the sheet to indicate those who need more or less help in future lessons. These extra resources can be found on the code-it.co.uk website.

Computing NC POS

write and debug programs that accomplish specific goals, solve problems by decomposing them into smaller parts use sequence in programs

Extension

- 1, Decomposing or algorithm
- 2, Moving Block
- 2a, Move Further
- 3, Point up, down right & left
- 4, Roads
- 4a, More Roads
- 4b, Change Roads
- 5, Smoke Trail
- 5a, Smoke Colour
- 6, Clear Line
- 6a, Instructions
- 7, Sequence

Learning Path

1, Decomposing or thinking through the algorithm

Either navigate to <http://scratch.mit.edu/projects/13165886/> Play the game without looking at the code Ask pupils to work in pairs to identify (decompose) all the features of the game (background, car, direction keys, move key, pen up and down key, clear key) As you create the game with your pupils refer back to the class decomposed solution.

Or import the car and then ask pupils to think what they would like the car to do. They could write these ideas on a whiteboard. Collect in some of these ideas which will include moving and steering before moving on.

2a, Move Further Extension

Ask pupils to create more blocks where 2 key moves 20 3 key 30 etc 0 key moves backwards (move -1)

2, Create a moving block where if the number 1 key is pressed the car moves 10 steps





Scratch Smoking Car Puzzle Game Page 2

3, Point Car Up Down Right & Left

```

when down arrow key pressed
  point in direction 180

when up arrow key pressed
  point in direction 0

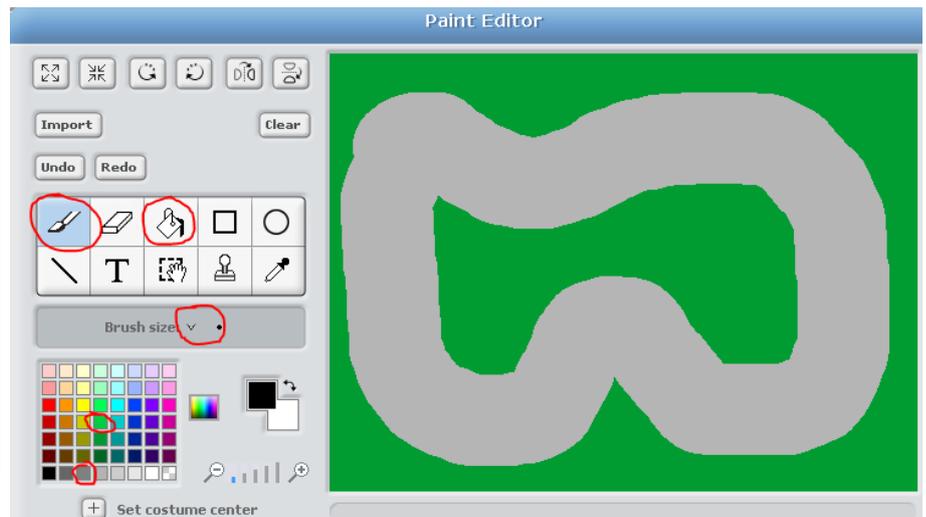
when right arrow key pressed
  point in direction 90

when left arrow key pressed
  point in direction -90
  
```

4, Road Creation

Click on Stage
Click on Backgrounds
Click Edit on Background1

Use the paintbrush tool and a grey to draw a road. Use the fill tool and a green to fill in the background.



4a, More Roads Show pupils how to create more roadways

4b, Change Roads Show pupils next background block can they link a key input to change background? In stage area

next background

5, Create a smoke trail using Pen Up & Pen Down

```

when u key pressed
  pen up

when d key pressed
  pen down
  
```

5a, Smoke Colour

Can pupils link keyboard inputs to change line colour size and colour (Show pen block)

6, Clear the screen

```

when c key pressed
  clear
  
```



6a, Can they write a key to their game? Demo paint sprite and start them off

1=move 10 etc

Can they find a way that instructions pop up for 10 seconds and then hide. Show hide and show blocks. Will need to show them green flag to hide block as that is less obvious.

```

when i key pressed
  show
  wait 10 secs
  hide

when green flag clicked
  hide
  
```



Junior

omputer



code-it.co.uk

cience

Scratch Smoking Car Puzzle Game Page 3

7, Sequence

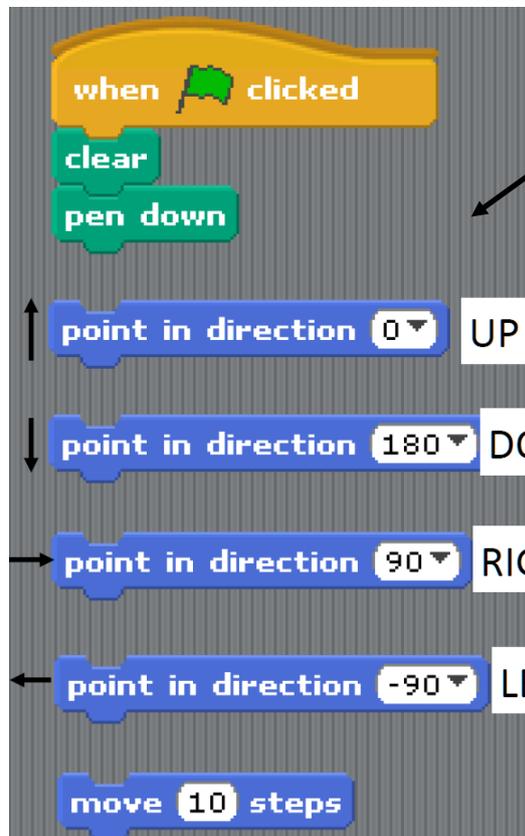
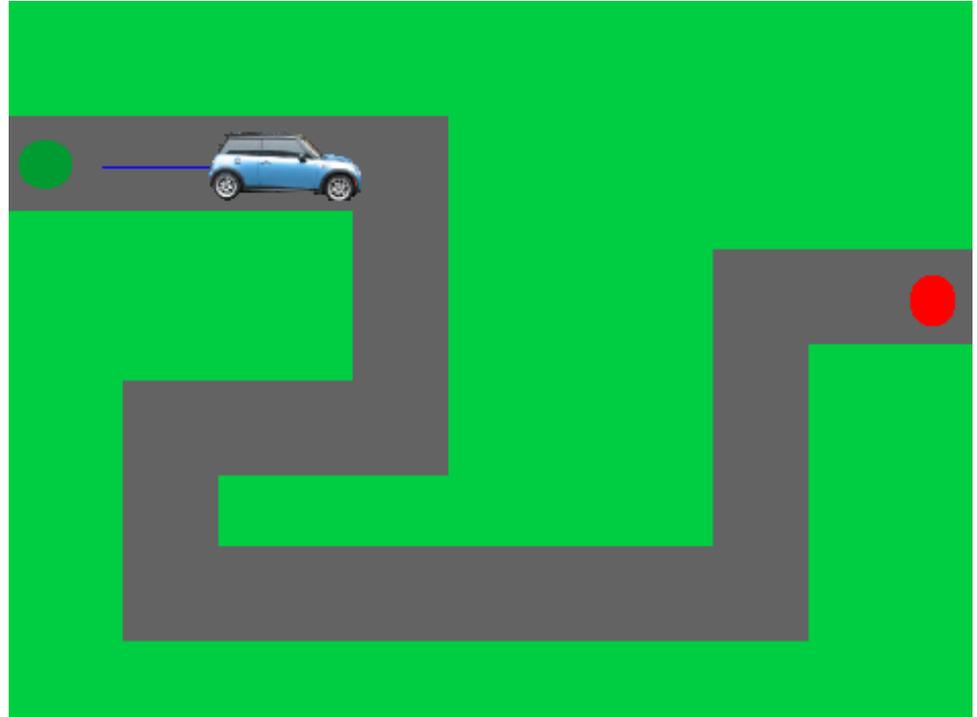
Show pupils how to create a roadway that uses only right angles using the line drawing tool. Encourage them to include a start and finish colour.

Hand out the sequence help cards to those who need them and challenge pupils to write a sequence of instructions that takes the car from start to finish when green flag is pressed

They can use the blocks already programmed to help them plan their route or draw arrows on a whiteboard to create an algorithm first.

HINT

It is worth showing pupils how to use the existing commands they have created to work out what distances they need and which turns.



Sequence Help Cards