

Key Stage 2 — Session 3

Follow-on and extension work on multiple repeat loops and nested repeats



Objectives

- Understand and use simple repetition
- Use the repeat instruction several times in a program
- Use a repeat within a repeat loop (extension)

Resources

- Levels 23 to 25 in Rapid Router
- Resource sheets KS2-S2-3, KS2-S3-1 and KS2-S3-2

Vocabulary

- Repeat, repetition

Let's get started

The **repeat** loop is a key concept in computer programming.

This session consolidates understanding of the '**repeat**' loop, giving students a chance to work through levels 23 to 25. Several of these levels require more than one **repeat** loop. It also gives a chance for the more advanced students to look at the more complex '**repeat** within a **repeat**'.

Recap on level 22 [fig S3.1] with the class.

Can you spot parts of the route where blocks of code are repeated?

This route includes up to six **repeat** loops for the forward instructions.



fig S3.1

Main activity

Give out resource sheet KS2-S2-3 [fig S3.2] to those who have not tackled level 22 independently, and ask students in pairs to mark out the sections of the road where **repeat** could be used, recording their code.

Others will be able to tackle levels 23 and 24 using several **repeat** loops.

For gifted and talented pupils, look at level 23, where they can 'nest' a **repeat** loop within a **repeat** loop.

Ask them to look resource sheet KS2-S3-1 [fig S3.3] and work out their algorithm using **repeat**.

They will probably come up with:

```

repeat 5 times
do move forwards ↑
repeat 2 times
do turn left ↶
repeat 5 times
do move forwards ↑
repeat 2 times
do turn right ↷
repeat 5 times
do move forwards ↑
repeat 2 times
do turn left ↶
repeat 5 times
do move forwards ↑
repeat 2 times
do turn right ↷
    
```



fig S3.2



fig S3.3

Can they see another **repeat** pattern here? They may see that it is repeated twice, so you could put that sequence inside a repeat loop.

```

repeat 2 times
do
  repeat 5 times
  do
    move forwards ↑
  repeat 2 times
  do
    turn left ↶
  repeat 5 times
  do
    move forwards ↑
  repeat 2 times
  do
    turn right ↷
  
```

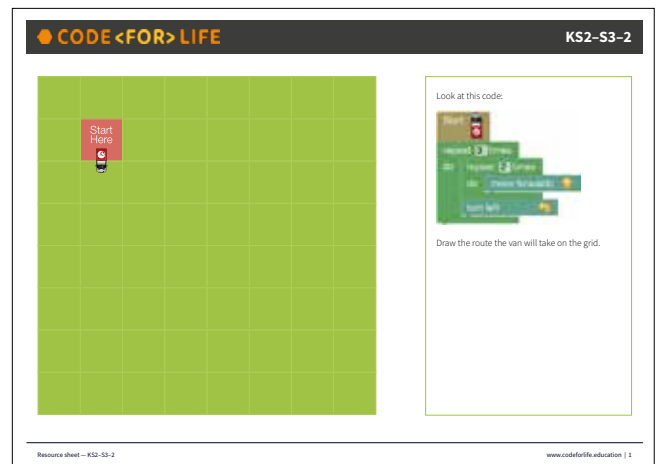


fig S3.4

Unplugged activity for gifted and talented pupils

Give gifted and talented students resource sheet KS2-S3-2 [fig S3.4] on nested repeat, with this code, and ask them to draw the route.

```

Start
repeat 3 times
do
  repeat 2 times
  do
    move forwards ↑
  turn left ↶
  
```

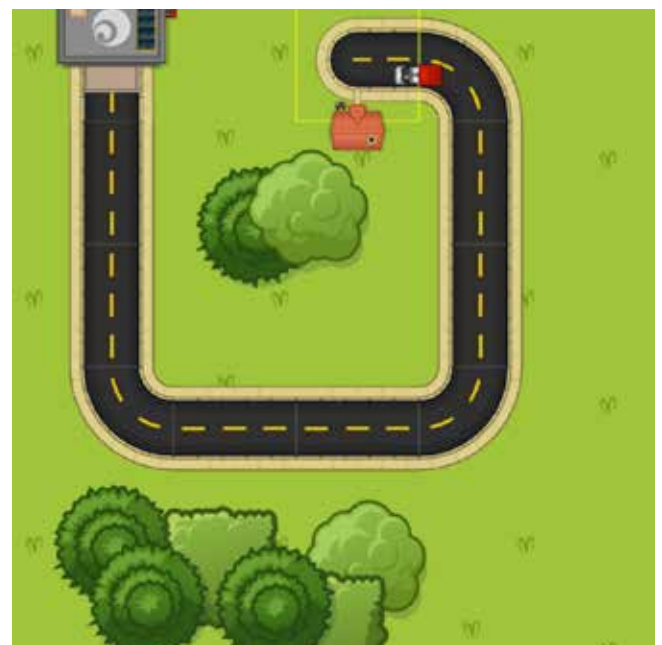


fig S3.5

This is the solution [fig S3.5].