

# Lesson 2: Different loops

Year 4 – Programming – Repetition in games



## Lesson 2: Different loops

To explain that in programming there are infinite loops and count-controlled loops

- I can modify loops to produce a given outcome
- I can choose when to use a count-controlled and an infinite loop
- I can recognise that some programming languages enable more than one process to be run at once

## The word ‘infinite’

What does ‘infinite’ mean? Discuss with a partner.

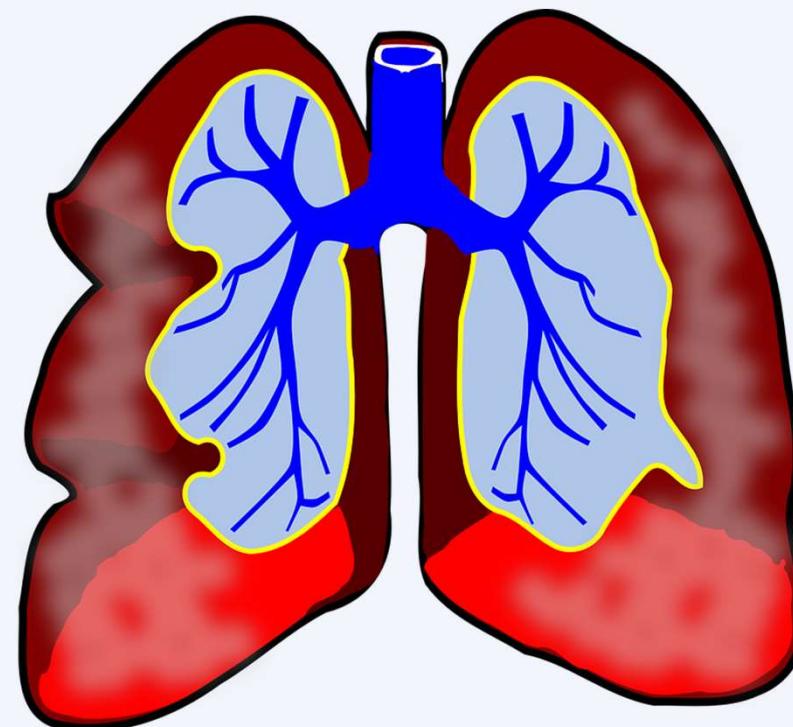
Something that is infinite has no limit or end.

Let’s think of some examples of things that are infinite.

## Sunrise and sunset



# Breathing



# Time



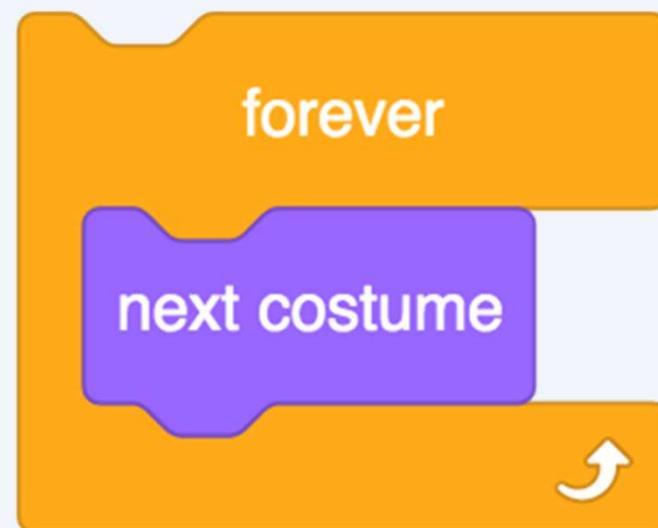
Can you think of any more examples of things that are infinite?

## Infinite loops in programming

Programmers can use an ‘infinite loop’.

In an infinite loop, commands are repeated over and over again, without an end point. In Scratch, this is called the **repeat forever** block.

In this example, the sprite will keep changing to the next costume continually. This means it will keep changing the way it looks.



## Dancing dinosaurs

Look at the three dancing dinosaurs in the Scratch project: [ncce.io/46dino](https://ncce.io/46dino)

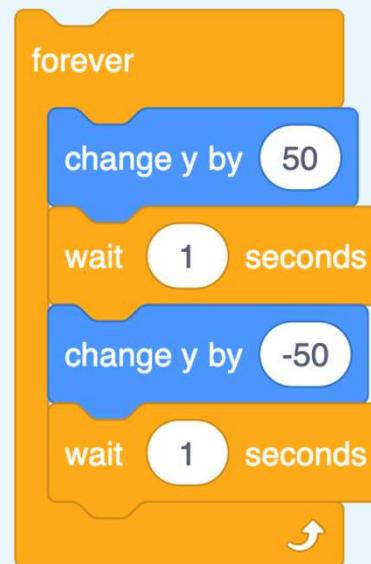
What actions are they doing?

How many times do they repeat these actions?

Complete the ‘Dancing dinosaurs’ worksheet.



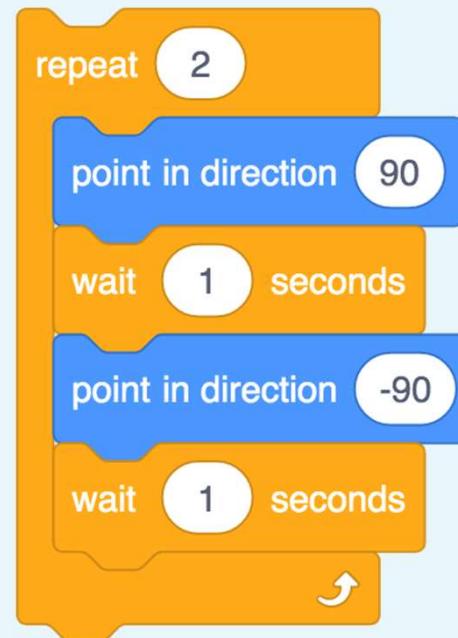
## Different kinds of repetition



What kind of repetition loop does the red dinosaur sprite use?

How many times will the blocks inside be repeated?

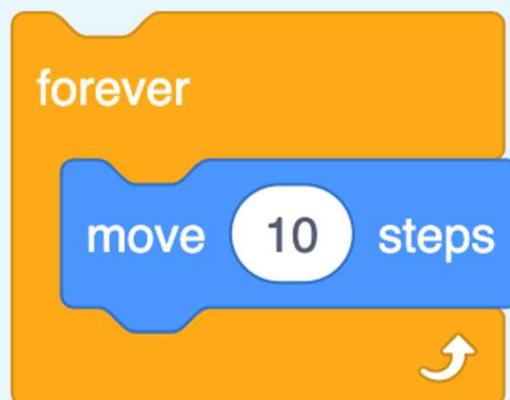
## Different kinds of repetition



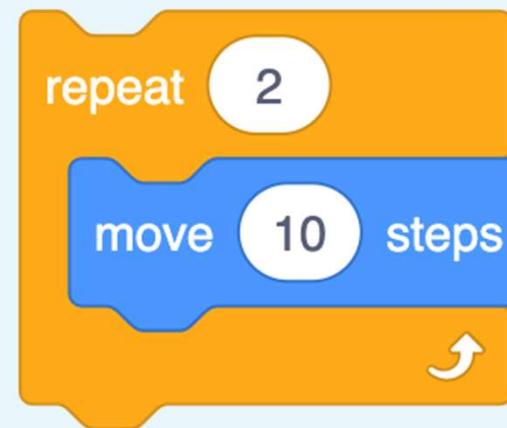
What kind of repetition loop does the green dinosaur sprite use?

How many times will the blocks inside the loop be repeated?

## Different kinds of repetition



Infinite loop



Count-controlled loop

## Dancing dinosaurs – modifying code

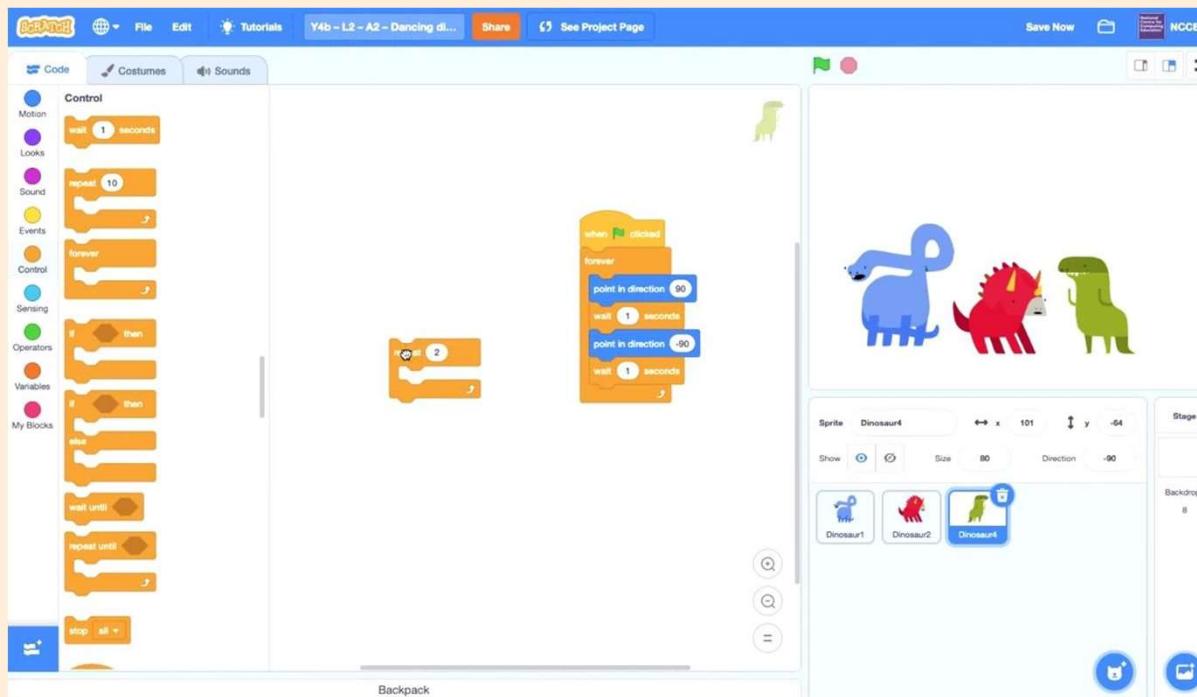
I want all three dinosaurs to keep moving, but the green one stops after a few moves.

Why does it stop moving?

Can you change the Scratch project so that it never stops moving?



## Modifying code – different kinds of loops



## Dancing dinosaurs – modifying code

Can you modify the code for the other two dinosaurs?

Use the ‘Modifying code’ worksheet to write down the algorithms, and then modify the Scratch code.



## Which loop would you use?

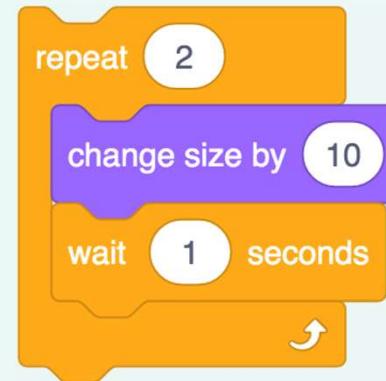
I want to make my dinosaur sprite grow a bit bigger and pause before it starts dancing.

loop

Infinite loop



Count-controlled



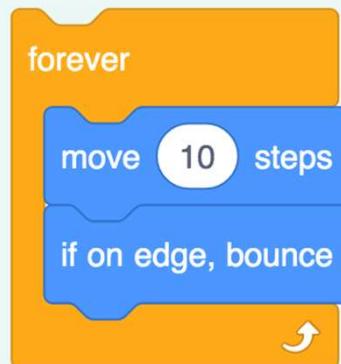
With a partner, discuss which type of loop would you use. Can you explain why?

## Which loop would you use?

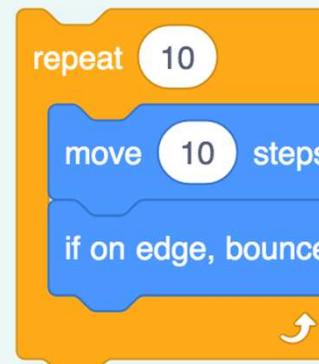
I want to make my bird sprite fly backwards and forwards across the top of the screen.

loop

Infinite loop

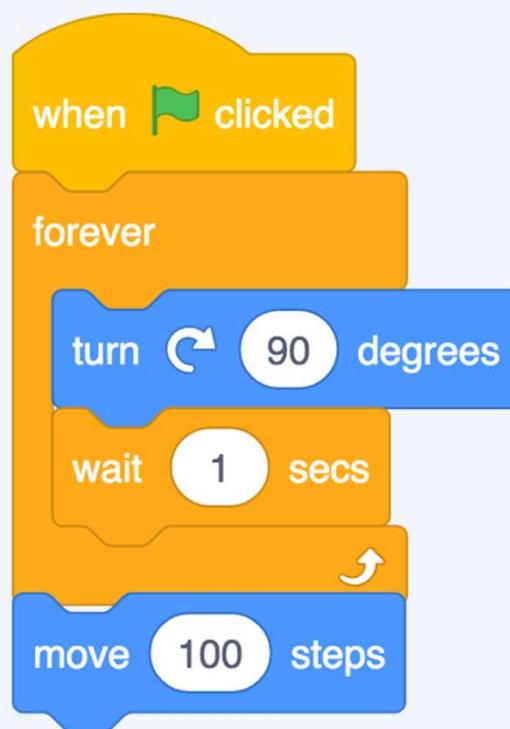


Count-controlled



With a partner, discuss which type of loop would you use. Can you explain why?

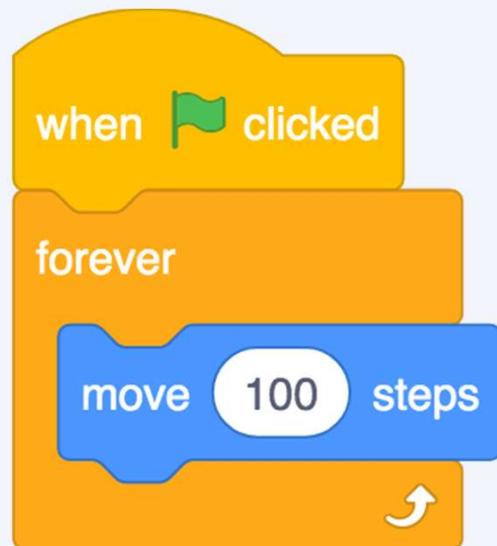
## What is the problem with this code?



## What would it do now?



What would happen if you pressed the green flag now?



## How confident are you? (1-3)

- I can modify loops to produce a given outcome
- I can choose when to use a count-controlled and an infinite loop
- I can recognise that some programming languages enable more than one process to be run at once

3 - Very confident



2 - Unsure



1 - Not confident



## Next lesson

### In this lesson, you...

Used infinite loops to keep something happening over and over again until the program stops, and modified code using count-controlled and infinite loops

### Next lesson, you will...

Design and create an animation using two or more loops.