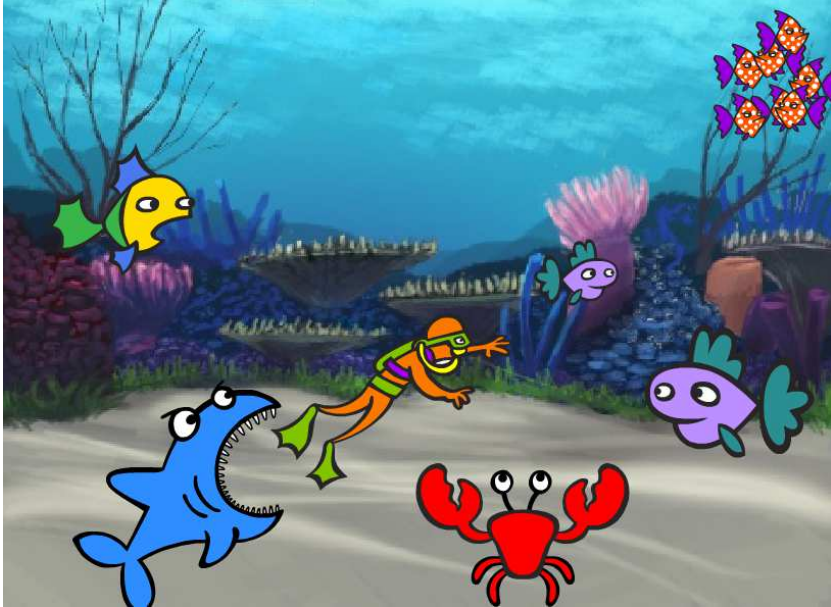# AQUARIUM

Project Tutorial

Step 1: Animating a fish

Let's make a fish that swims back and forth across the aquarium

- Start a new Scratch project, and delete the cat sprite so that your project is empty. You can find the online Scratch editor at jumpto.cc/scratch-new.

- Add one of the fish sprites to your stage. You should also add an underwater backdrop to your stage. This is how your stage should look:
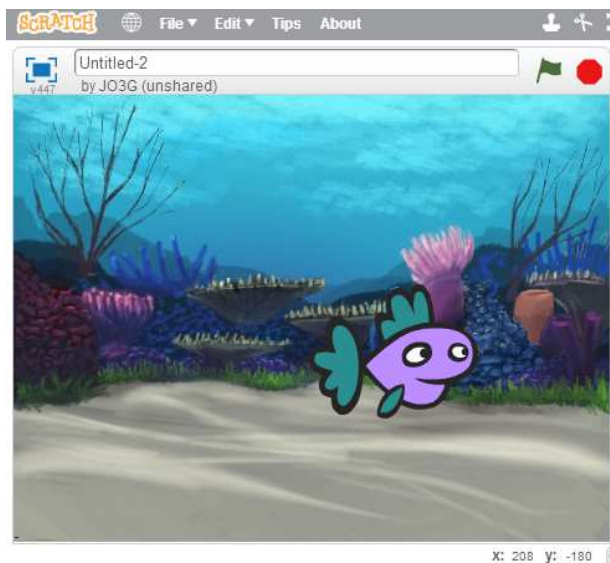
- Add this code to your Fish sprite:
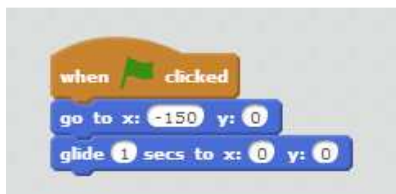
Change the numbers in the code blocks, so that the code is exactly the same as in the image above.

- If you click on the code blocks to run the code, your fish should swim towards the centre of the stage

- Try out your animation, by clicking on the green flag just above the stage.

Save your project

Challenge: Improving your animation

Can you change the numbers in your animation code, so that the fish moves more slowly and moves all the way across the tank?

You'll need to change the numbers in this block:

glide **1** secs to x: **0** y: **0**

| Save your project |
| --- |

Step 2: Animating using loops

Another way of animating the fish is to tell it to move a small amount, lots of times.

- Delete the **glide** block from your code, by right-clicking on the block and clicking 'delete'. You can also delete code by dragging it off the script area, back into the code blocks area.

- Once you've removed your code, add this code instead:

The **repeat** block is used to repeat something lots of times, and is also known as a loop.

- If you click the flag to try out this new code, you'll see that it does pretty much the same thing as before.
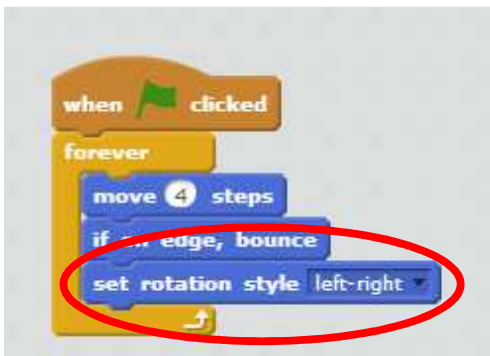
- Now change your code as below:
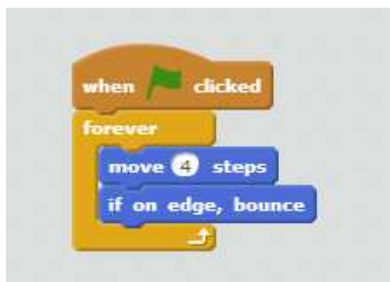
The **forever** block is another loop, but this time one that never ends.

- Click the flag to test your fish. You'll have to click the stop button (next to the flag) to end this animation.

Can you see the problem?

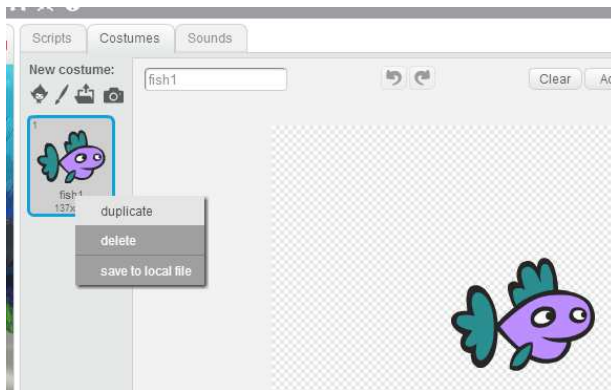On its Way back, the fish flips upside down. To put this right, you need to add another code block:

- Click the flag to test your fish again.

Step 3: Add a new costume

Let's give your fish some bubbles

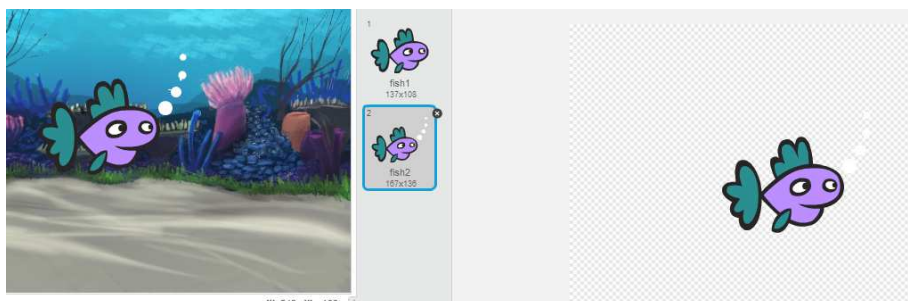- Start by duplicating your fish costume.

- Right-click 'fish1' and click duplicate.

- You will now have a new costume called 'fish2'.

- Select the ellipse tool:

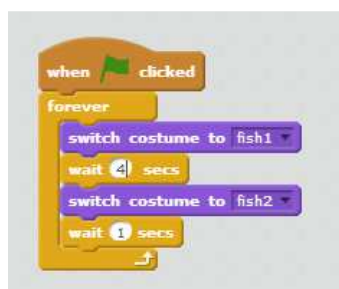- Select a filled ellipse and change the colour to white:

- Holding the shift key while you draw the ellipse will create a circle

- Draw three or four small circles to look like bubbles coming from the fish's mouth:

As you draw your circles in the drawing area, you will see them appear in your stage area.

- Now we need to add some code to animate the bubbles:

- Click the green flag to see your new animation.

You can play around with the <mark>wait</mark> times to suit your preference.

- Click the flag to test your fish. You'll have to click the stop button (next to the flag) to end this animation.
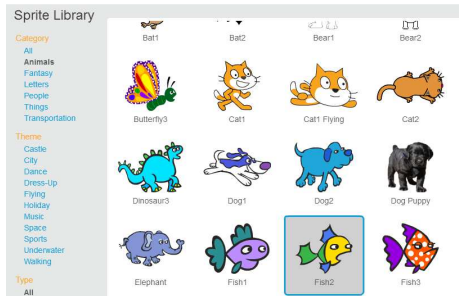
Challenge: Change the fish's speed

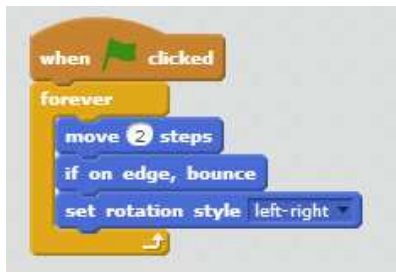Can you make your fish swim slower?

Can you make it smaller?

Save your project

Step 4: Add another fish

Let's add another fish to your animation.

- Add the following code to your new fish (sprite)

- Click the flag to test your new fish

You will notice your new fish moves back and forth at the same speed as your first fish.

To make your animation more realistic, set the fishes to different speeds

- Click the flag to see your new animation.

Challenge: Add more fish

Add some more fish with different properties (speed and size).
(Perhaps a school of fish?)

Maybe use some of the skills you learned in the 'Animate the Crab' project?
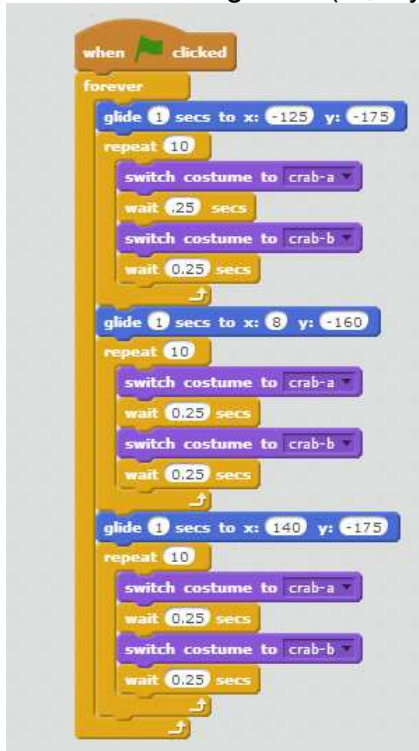
Save your project

Step 5: Add another sprite

Let's add another character to our animation. How about a dancing crab?

- Select another suitable underwater sprite from the library:
  (Remember the crab?)

- Add the following code (or, if you are confident, make up your own):

Save your project

Step 6: Add some excitement

Let's add a diver to our animation. And how about a hungry shark?

- Select a diver and the shark from the sprite library

- Move the diver down to the bottom left of the stage area – so that it is almost totally out if view:

- Add some code to animate the diver:


```
when [flag] clicked
go to x: (-272) y: (-205)
wait 4 secs
repeat 100
    point in direction (60▼)
    move 3 steps
wait 4 secs
```

- Do the same for the shark and add this, slightly different code:


```
when [flag] clicked
go to x: (-272) y: (-205)
wait 10 secs
repeat 50
    point in direction (60▼)
    move 3 steps
```
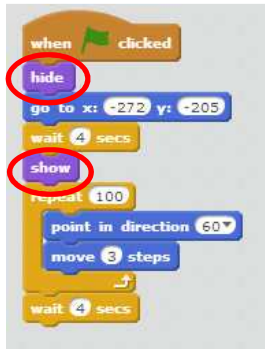
- Click the flag to see how the diver and the shark move

If you have got the code right, the diver will swim out of the corner a short distance, then stop. A couple of seconds later, the shark should follow – not quite reaching the diver.

Before the diver and the shark animations begin, both sprites are just visible at the bottom-left of the stage. We can hide both sprites until their animations begin.
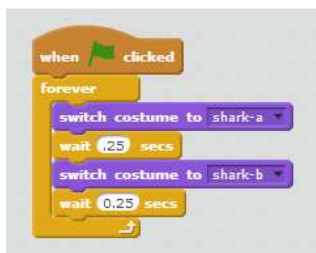
- Add these blocks to the diver's code:

- Do the same to the shark's code:

- Click the flag to test your code
- Let's add another block of code to make the shark snap its jaws:

- Click the flag to test your code

Save your project

Now the diver sees the shark, it's time he got out of there!

We can easily add some code to make him move, but we can also make him get smaller as he moves, so he looks like he is getting further away:

- Add this code to the diver:

- Click the flag to test your code
- Click the flag once more…

Can you see what has gone wrong? The diver starts the new animation the size he finished the last one. He is now tiny. To remedy this we need to add one more piece of code to the start of our block:
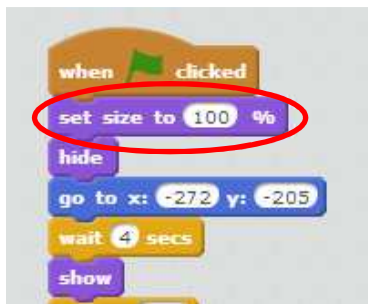
- Now we need to add similar code to make the shark give chase:

Save your project

Challenge: Make your own animation

Stop your space animation, and click 'File' and then 'New', to start a new project.

Use what you've learnt in this project to make your own animation. It can be anything you like, but try to make your animation match the setting. Here are some examples: