

Learn to Code

**EDULiTO**

## Scratch Games

### Underwater Adventure



**Photocopiable Resources**

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This resource has been produced to teach children from 8 – 13 years of age about programming concepts by creating fun games using the visual programming language Scratch. The activities and challenges have been designed to provide a stimulating, engaging and effective way of improving students' knowledge of core programming concepts.

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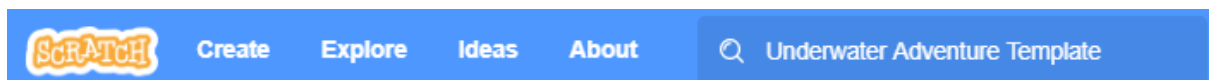
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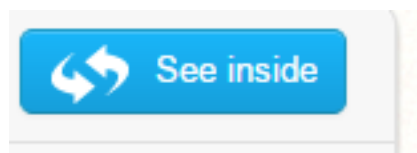
## Underwater Adventure

You are going to make a game in which a starfish scores points by splodging a jellyfish, but watch out, if the jellyfish reaches the starfish the game is up!

For this game you will need a computer that is connected to the Internet. Type Scratch into a search engine e.g. Google and then select the Scratch website. Once you have opened the Scratch website search for the **Underwater Adventure Template** and open it.



Now click on **See inside**.

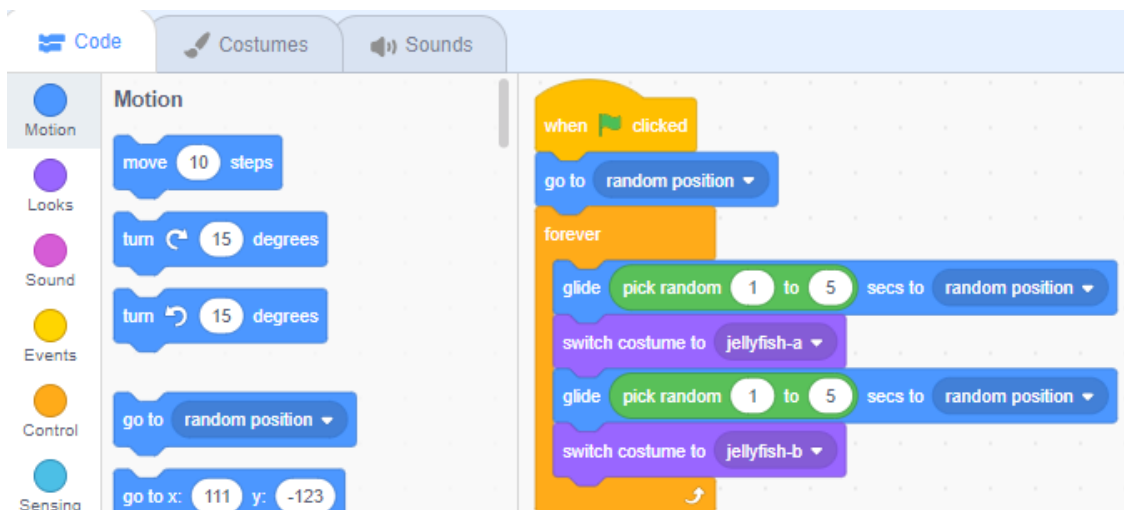


You start off with three sprites, the jellyfish, the starfish and the splodge.



### Making the Jellyfish move

You want the jellyfish to move in a fairly random way so that it is difficult to hit. Start by selecting the Jellyfish sprite and make sure that you have chosen the Code tab. Create this code in the code window.

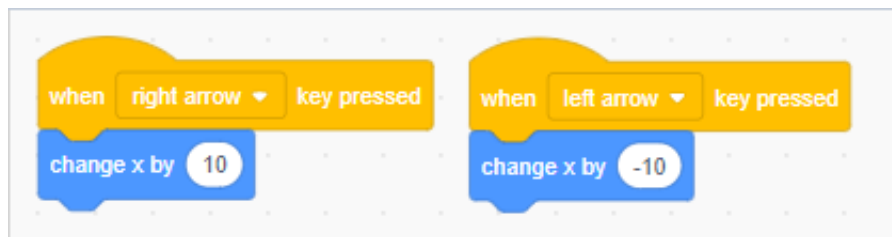


## How does the code work?

When you click on the **Green Flag** the code starts and the Jellyfish goes to a random location. The **Forever** block is then used to make sure that the Jellyfish keeps moving. The **Glide** block is useful if you want smooth movement. By choosing random numbers for where it is moving to and how long it is moving for, helps make sure that the movements are impossible to predict. To make it a bit more fun each time there is a glide, the Jellyfish changes colour (this is called switch costume).

## Making the Starfish move

We are going to use the arrow keys to move the star fish. When you press the left arrow the star fish goes left and when you press the right arrow the star fish goes right. First select the starfish sprite and then make sure that the code tab is selected. Add the code blocks shown below.



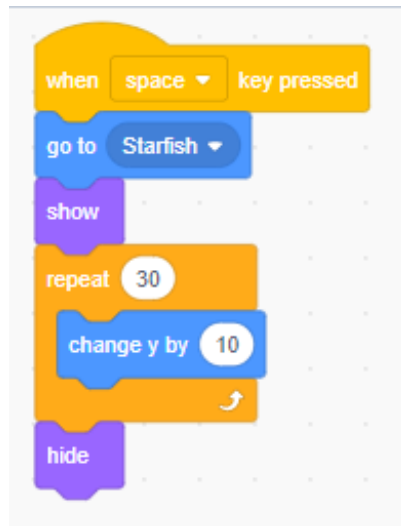
Once you have added these blocks then try pressing the left and right arrows to see what happens. X is used for movement across the stage from left to right and right to left.



## Making the Splodge fire from the starfish

Each time the space bar is pressed we want to fire the splodge from the starfish upwards towards the jellyfish. As the splodge is going upwards, we want to use Y (movement up and down). We also want the splodge to always start from wherever the starfish is.

Select the splodge sprite and the code tab and add these blocks.



Now press the space bar on your keyboard and the splodge will appear from the location of the starfish and move upward.

## Keeping the score for hitting the jellyfish

Each time the splodge hits the jellyfish you score a point. To make this work you need to use a variable called **Score**. A variable is a block that can store one item of data (in this case the score). The score variable has already been made for you. Select the jellyfish sprite and the code tab and create this code.



## How does the code work?

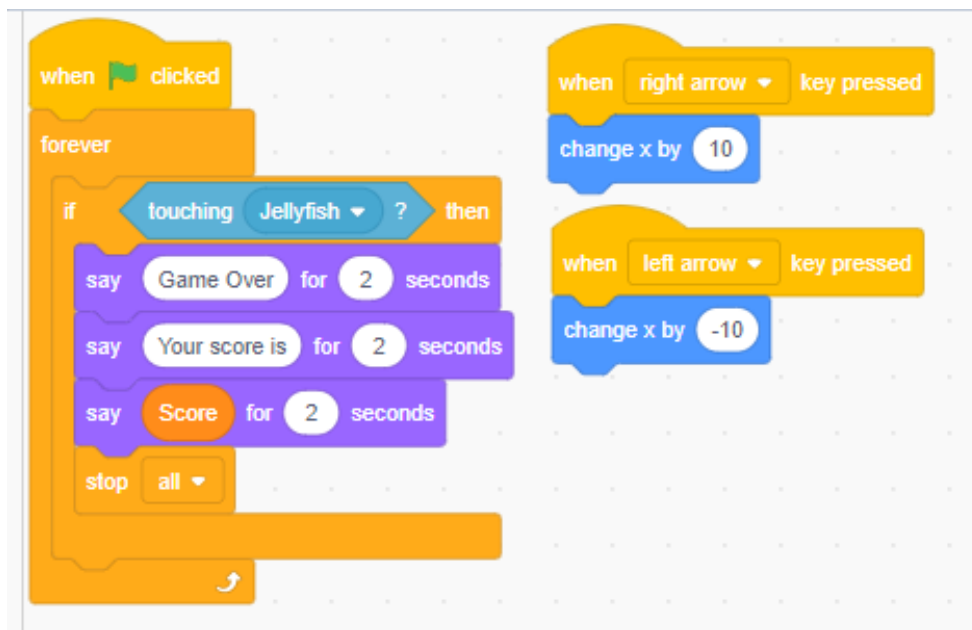
At the beginning of the game you need to set the score to zero.

If the jellyfish and splodge touch then the score increases by 1. The jellyfish also makes a “bubbles” sound and changes colour (it switches costume to jellyfish-c).

## What happens when the jellyfish catches the starfish?

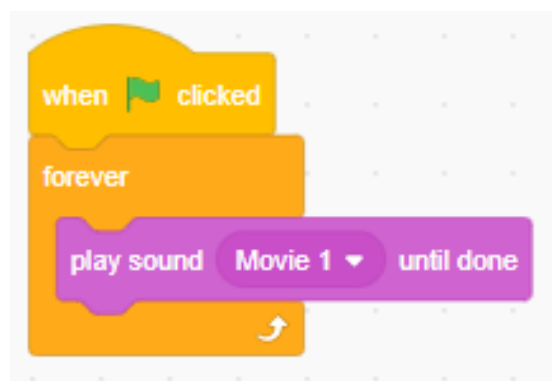
To make the game more exciting, if the jellyfish catches the starfish the game is over. At the end of the game the player will want to know their score.

Make sure that the starfish is selected and click on the code tab. Add the following code blocks.




## Adding Music

To make the game even more fun you could also add music. Select the splodge sprite and the code tab. Add the following code.



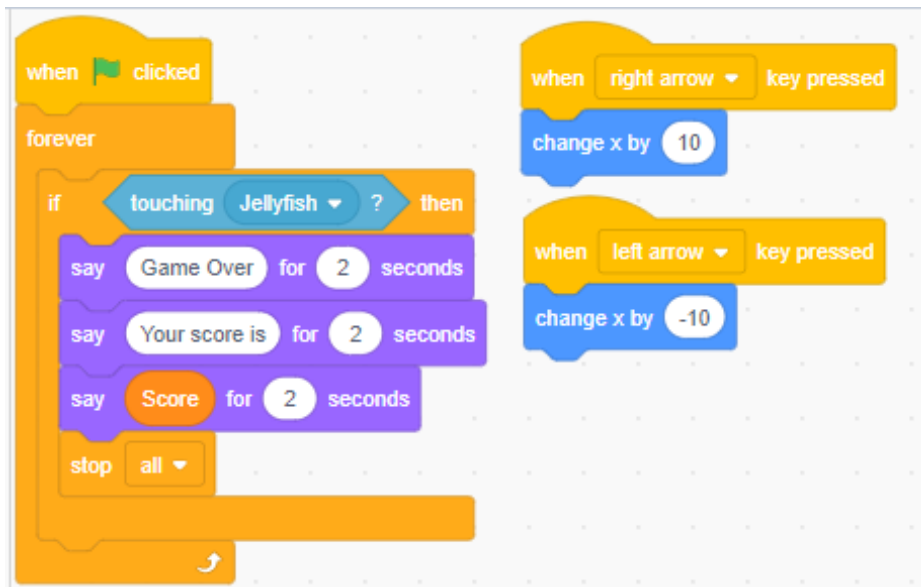
Your game is now complete – see how many points you can score!

### Jellyfish Code



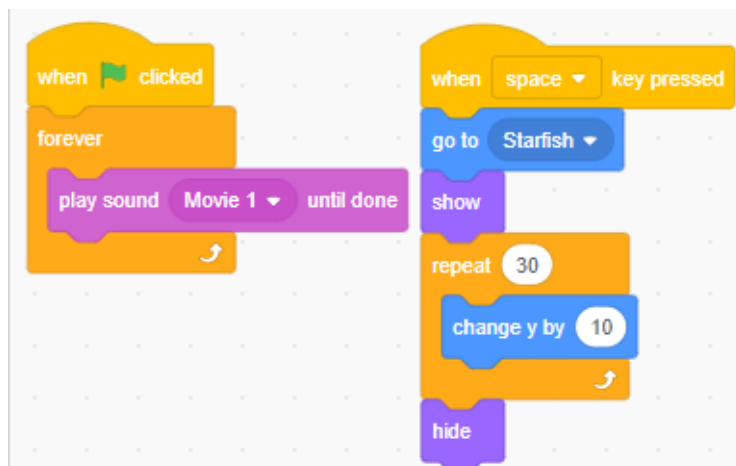
The image shows two Scratch code blocks for the Jellyfish. The first block starts with 'when green flag clicked', followed by 'set Score to 0'. A 'forever' loop contains an 'if touching Splodge?' block. If true, it switches costume to 'jellyfish-c', plays the 'bubbles' sound, and changes the score by 1. The second block starts with 'when green flag clicked', followed by 'go to random position'. A 'forever' loop contains two 'glide' blocks (each for 1-5 seconds to a random position) and two 'switch costume' blocks (to 'jellyfish-a' and 'jellyfish-b').

### Starfish Code



The image shows two Scratch code blocks for the Starfish. The first block starts with 'when green flag clicked', followed by a 'forever' loop. Inside the loop is an 'if touching Jellyfish?' block. If true, it says 'Game Over', 'Your score is', and 'Score' for 2 seconds each, then stops all. The second block starts with 'when right arrow key pressed' and 'change x by 10'. The third block starts with 'when left arrow key pressed' and 'change x by -10'.

### Splodge Code



The image shows two Scratch code blocks for the Splodge. The first block starts with 'when green flag clicked', followed by a 'forever' loop containing 'play sound Movie 1 until done'. The second block starts with 'when space key pressed', followed by 'go to Starfish', 'show', a 'repeat 30' loop containing 'change y by 10', and finally 'hide'.



## Challenges

- Change the code for the jellyfish so that it moves faster and is more difficult to hit.
- To make the game even harder add more jellyfish sprites.
- Why not add a shark to the game. The shark likes to eat starfish!
- Why not add another type of sea creature that moves even faster – if you hit it you could get 5 points!
- Why not change the game so that each time you score a point the jellyfish moves faster?