Laboratory: Iteration Control Blocks - 1

In this laboratory, you will learn about iteration (looping) control blocks. Scratch provides four types of iteration control blocks: [**forever**], [**repeat**], [**repeat until**], and [**forever if**]. The iteration blocks are used to repeat a set of statements.

The iteration blocks used in part 1 of the lab are shown below:

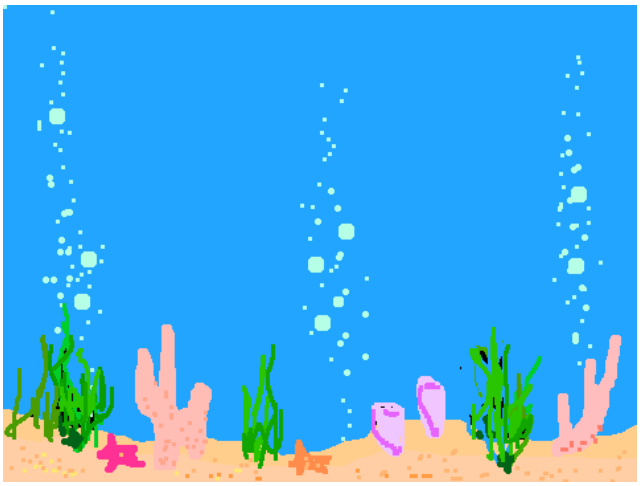
Iteration Control Blocks	Explanation
	The [**forever] block** repeats a set of statements indefinitely; until the program ends or the script is stopped.
	The [**repeat] block** creates a count-controlled loop. It is used to repeat a set of statements for a specified number of times. The number of repetitions must be given. In the figure shown, the number of repetitions is set to 7.

Objectives

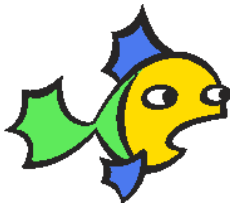
1. Learn how to use each of the four iteration control blocks in Scratch.

Setup

Open a new project in Scratch, and load the stage background (underwater) shown below. It can be found in the *nature* folder. Delete the *cat* sprite.



Now, add a new sprite. Select one of the fish (*fish2*, *fish3*, or *fish4*) from the *animals* folder. For example, the following fish:

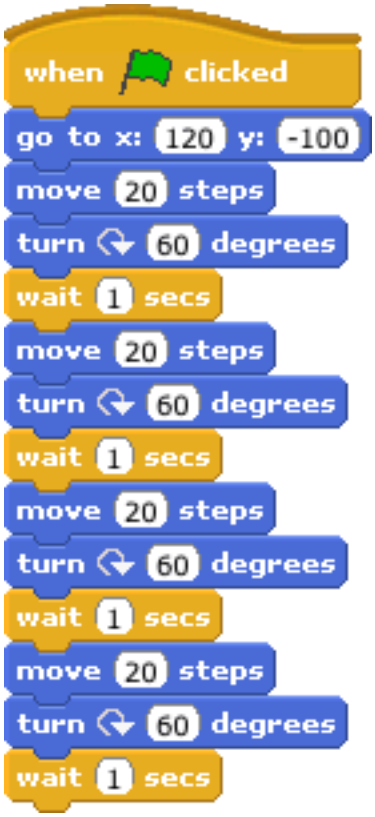


Sprite 1

Once the sprite is selected, resize the sprite so that it is quite small. Also, select the rotation button that restricts the sprite's costume to face only left or right.

Using the [repeat] and [forever] blocks

1. Enter the following script:



Question: **What does the script do?**

2. Modify the script to use a [**repeat**] block, but still behave exactly the same. **Write the new, much shorter, script below:**

3. Now delete the [**repeat**] block and replace it with a [**forever**] block. **Question: What does sprite1 do now? How do you stop it?**

Nested Loops

Iteration control blocks can be nested; that is, an iteration control block can be contained within another iteration control block. The control blocks do not have to be the same type to be nested; any type of iteration block can be contained within any other type of iteration block.

4. Suppose the fish wanted to swim around for a little time on the right side of the ocean floor and then swim over to the left side of the ocean floor and swim around a little time over there, before swimming back to the right, and then swimming around a little bit again there, and back to the left, and so on, back and forth, forever.
   Modify the script, using nested iteration blocks, to make the fish move around in this pattern.