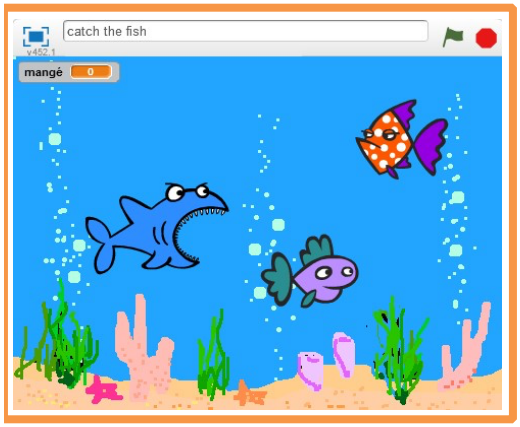
TechWomen Mentorship Event

DURATION	LEVEL	PUBLIC	ACTIVITIES
45 min		Children – teeneger – adult	Game Programming

"Catch the fish"

SCRATCH ACTIVITIES MATERIALS



Objectives :

We are going to program a game in which we have to make a shark eat as many fish as possible.

To program this game, we will use the Scratch platform which has the advantage of using visual code: no need to learn a programming language to build your own video games!

Skills worked:

- Buckles
- Sensors
- Variables
- Random
- Conditions

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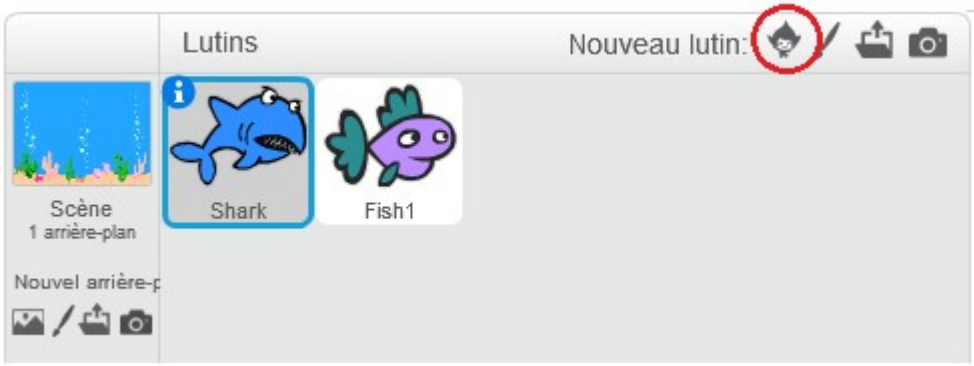
Step 1: Create a background

1. Go to scene and import a background. For example "underwater" in "nature".

Step 2: Add your sprites

1. Add a goblin shark "shark" and a goblin fish "fish 1" which you can find in "underwater". Rename them to "shark" and "fish".



Step 3: Animate the shark

1. We are going to write a script to guide the shark using the mouse. To do this, write the following script in the shark script:

When the green flag is clicked, the shark will point to the mouse cursor and then follow it continuously.

You can increase the speed of the shark by changing the glide time.

Step 4: Move the fish and create a point counter

1. Go to the fish script. We are going to create a new variable to count the number of fish eaten. To do this go to "Data",
"Create a variable" and call it "ate". It applies to all elves.

2. To return your score to “0” at the start of the game, add this block:

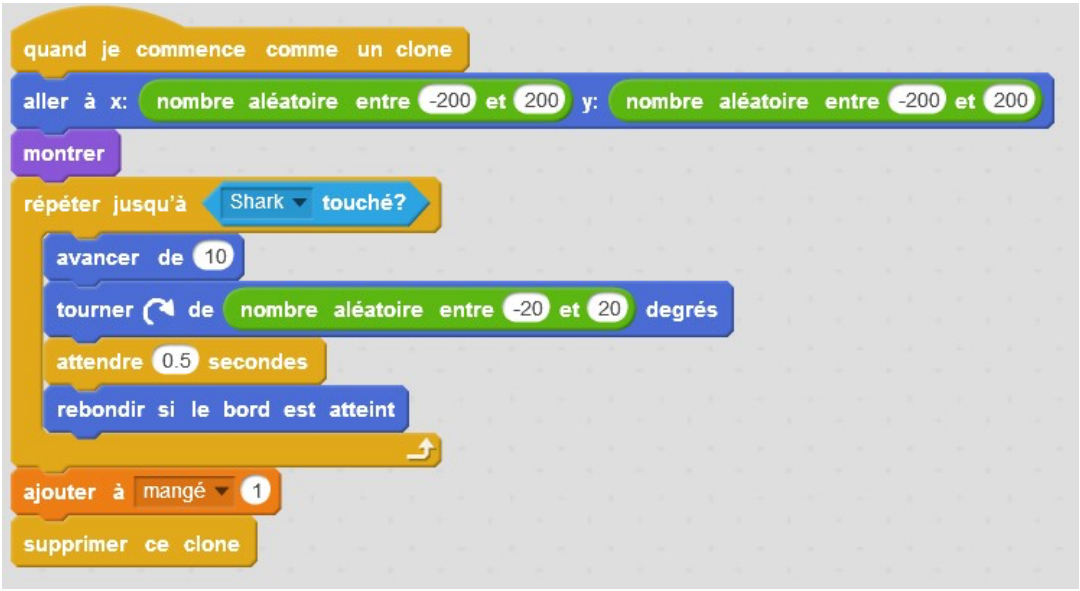
When the green flag is clicked, the variable "eaten" takes the value 0.

1. Now we are going to write a script to make the fish move and make it disappear as soon as it is hit by the shark. To be able to create a large number of fish easily, we are going to use the notion of clones. A clone is a copy of a sprite that has its own actions. To start, write the following block:

When the green flag is clicked, the fish will hide, wait between 1 and 8 seconds, then create a clone of itself. This action is repeated over and over, until the whole program stops.

This code randomly creates a fish every one to eight seconds.

1. To be able to interact with the clone, you must use a "When I start as a clone" block. In our example, this results in the following code that animates the fish:



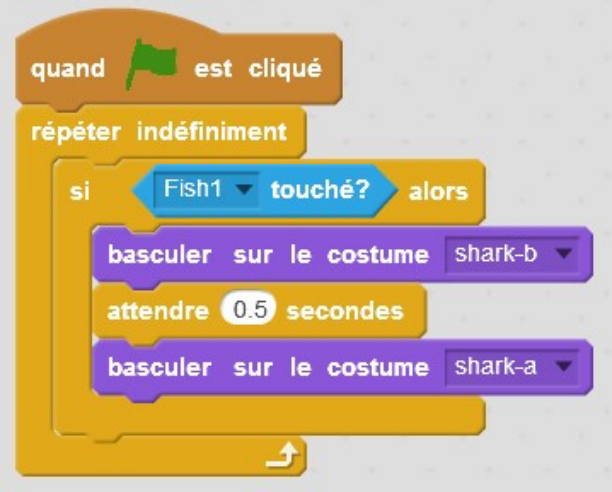
When it is created, the clone will be placed randomly on the stage (randomly over the entire X axis horizontal and on the entire vertical Y axis), then it appears. Until the shark hits it, it moves forward, turns randomly from -20 to 20 degrees, waits 0.5 to slow down its course a bit and give the player time to react, and then starts again on the other side. it reaches an edge. When the shark reaches it, it is destroyed and the variable "eaten" increases by 1.

Thanks to this code the fish will appear randomly somewhere on the screen and will move around everywhere, if it is eaten, the score increases.

1. **Your fish and shark** can move in all directions and sometimes end up upside down. **Click on "left-right flip only"** in the opened window by **clicking on the blue "i"** at the bottom left next to the sprite. Click on **the double arrow as in the image**:

Step 5: Change the shark costume

You must have **two costumes for your shark**. To have him open his mouth before eating the fish, **write the following block**:



When the green flag is clicked, the program continuously checks whether if the shark is touching the fish. If this condition is true, the shark switches to its "shark-b" costume, waits 0.5 seconds to give the animation time to be read, then switches back to its first "shark-a" costume.

Warning: if you add other types of fish, you will have to copy this block but changing "fish1" to the name of the goblin.

Step 6: Challenges! Add other types of fish

1. **Add a new sprite**. For example "octopus". To make the game a bit more difficult, **this new sprite will make you lose 5 points** if you eat it.

Before entering the following script, be sure to rewrite the clone creation script. Then type the following code:

When it is created, the clone will place itself randomly on the stage (randomly over the entire horizontal X axis and over the entire vertical Y axis), then it appears. Until the shark hits it, it moves forward, turns randomly from -20 to 20 degrees, waits 0.5 to slow down its course a bit

and give the player time to react, and then starts again on the other side. it reaches an edge. When the shark reaches it, it is destroyed and the variable "eaten" loses 5 points.

Bonus

Now that Scratch and the underwater world have no secrets for you, try improving your game!

- Create more bonus / penalty fish, and why not levels?
- Add a stopwatch to be able to determine a time during which the player can collect points.

- At the moment there is no animation when the shark accidentally eats an octopus. If you look in the costumes, you will see a disgusted shark in the third costume. Try to make the shark feel bad after eating an octopus.

- Set up a life point system. Not only will the octopus lose points (maybe less) but in addition, if the shark eats three octopuses then it will go to sleep with the fish ...