


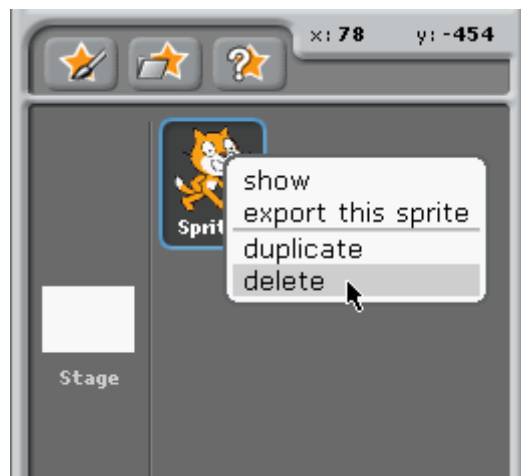
Fish Eating Game

Objectives:

1. Control the main character which is a shark with the mouse to move around the aquarium eating fish.
2. Eating a yellow fish may score 1 mark while eating a red fish will reset the total score to zero.



Stage 1: Creating the Shark Sprite

1. Start **Scratch** to create a new project.
2. Save the new project as **fish-01**.
3. Right-click **Sprite1** to delete it.
4. Click the  button, and then select the **shark1-a** sprite from the **Animals** folder.






5. Rename the sprite as **shark**.

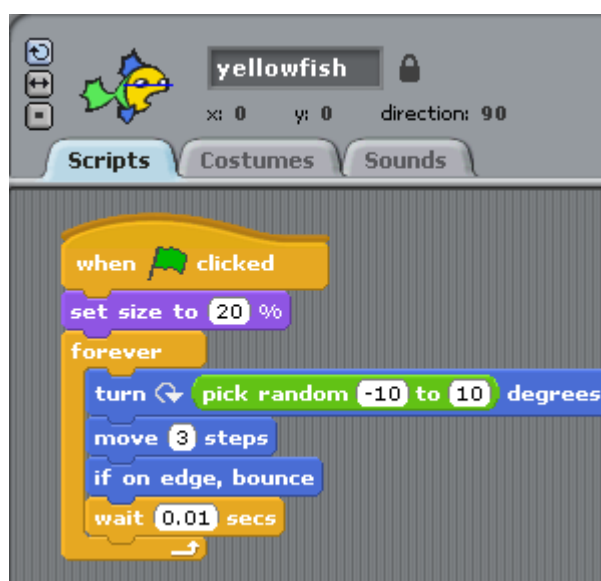


6. Create the scripts for the **shark** sprite.
7. Save **fish-01** again.
8. Click the  icon to start the program.
9. Use the mouse to guide the **shark** moving around.
10. Click the  icon to stop the program.



Stage 2: Creating the Yellowfish Sprite



1. Save the project as **fish-02**.
2. Click the  button, and then select the **fish3** sprite from the **Animals** folder.
3. Rename the sprite as **yellowfish**.
4. Create the scripts for the **yellowfish** sprite.
5. Save **fish-02** again.
6. Click the  icon to start the program.
(The **yellowfish** sprite moves randomly while the **shark** sprite follows the mouse.)
7. Click the  icon to stop the program.

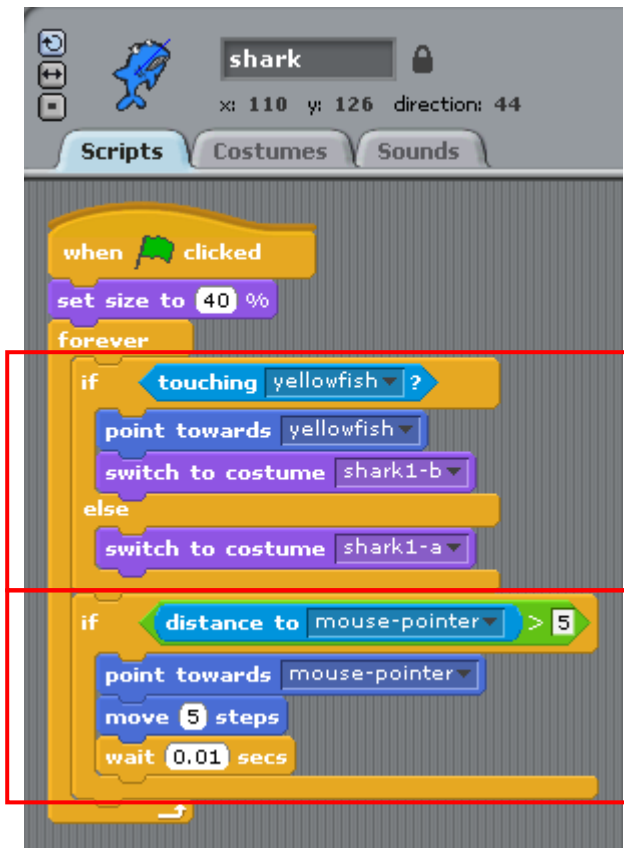


Stage 3: Eating the Yellowfish Sprite

1. Save the project as **fish-03**.
2. Select the **shark** sprite and then click the **Costumes** tab.
3. Click the **Import** button to import the **shark1-b** image from the **Animals** folder.
4. Click the **Scripts** tab.

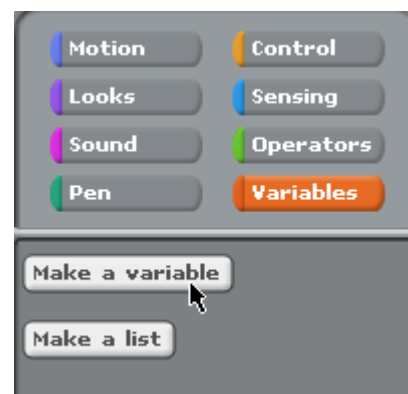




5. Modify the scripts for the **shark** sprite by adding an **if-else** control block and an **if** control block.
6. Save **fish-03** again.
7. Click the  icon to start the program.
(The **shark** opens its mouth as it touches the **yellowfish**.)
8. Click the  icon to stop the program.

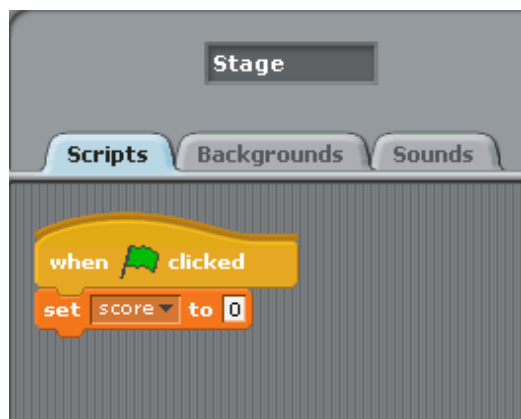


Stage 4: Setting Up the Counter

1. Save the project as **fish-04**.
2. Click the **Make a variable** button to create a variable.
3. Name the variable **score**. (Make sure that the **For all sprites** option is checked.)
4. Click the **Stage** to select it.





5. Create the scripts for the **Stage**.
6. Save **fish-04** again.
7. Click the  icon to start the program.
(Note that the counter **score** does not work yet.)
8. Click the  icon to stop the program.

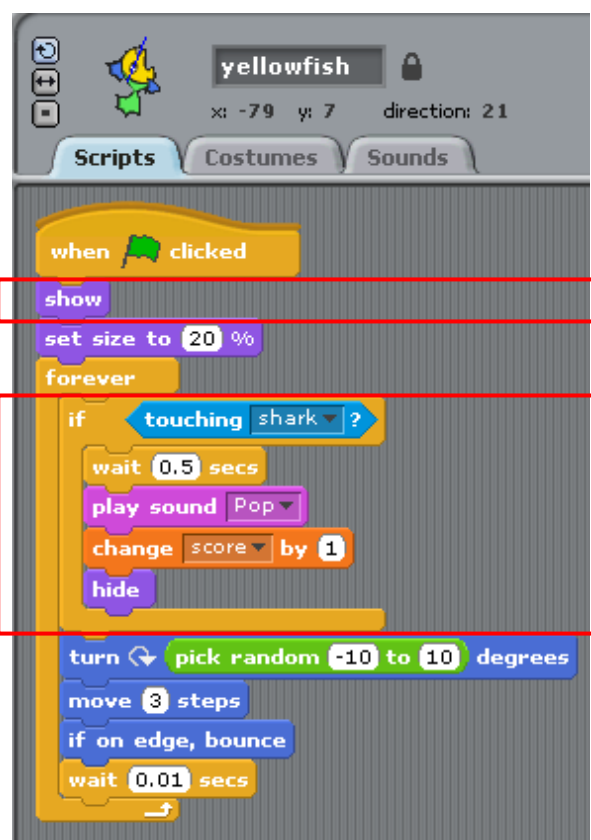


Stage 5: Eating and Scoring

1. Save the project as **fish-05**.
2. Modify the scripts for the **yellowfish** sprite by adding an if control block.


Note:

- The **Show** control just added ensures that the fish appears again at the beginning of each new game.
 - The **Pop** sound can be imported from the **Effects** folder.
3. Save **fish-05** again.
 4. Click the  icon to start the program.
(As the **shark** opens its mouth to eat the **yellowfish**, a **pop** sound is played and the counter **score** is increased by 1. However, the **yellowfish** sprite is no longer seen again.)
 5. Click the  icon to stop the program.



Stage 6: Adding More Fish

1. Save the project as **fish-06**.
2. Select the **yellowfish** sprite.
3. Add the following block of scripts

just after the  control.

```

hide
wait pick random 1 to 5 secs
if pick random 1 to 2 = 1
  set x to -240
  point in direction 90
else
  set x to 240
  point in direction -90
set y to pick random -180 to 180
  
```



4. Add the following block of scripts within the original if control block.

```

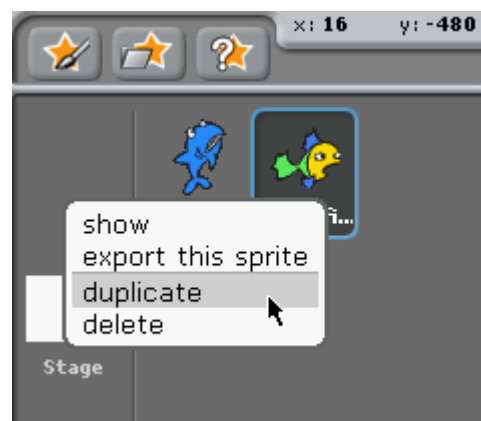
wait pick random 1 to 5 secs
if pick random 1 to 2 = 1
  set x to -240
  point in direction 90
else
  set x to 240
  point in direction -90
set y to pick random -180 to 180
show
  
```



```

when clicked
hide
wait pick random 1 to 5 secs
if pick random 1 to 2 = 1
  set x to -240
  point in direction 90
else
  set x to 240
  point in direction -90
set y to pick random -180 to 180
show
set size to 20 %
forever
  if touching shark ?
    wait 0.5 secs
    play sound Pop
    change score by 1
    hide
    wait pick random 1 to 5 secs
    if pick random 1 to 2 = 1
      set x to -240
      point in direction 90
    else
      set x to 240
      point in direction -90
    set y to pick random -180 to 180
    show
  turn pick random -10 to 10 degrees
  move 3 steps
  if on edge, bounce
  wait 0.01 secs
  
```

5. Click the  icon to start the program.
(The **yellowfish** sprite appears randomly from the left or the right of the screen when the game starts and also when it has just been eaten.)
6. Click the  icon to stop the program.

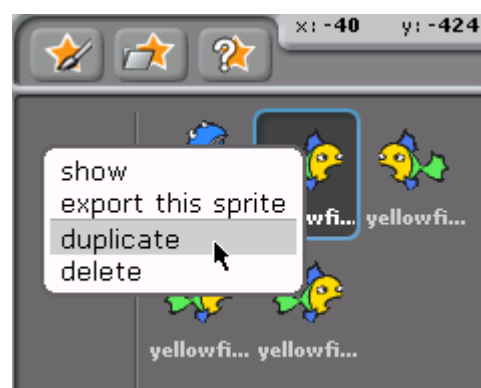
7. Right-click the **yellowfish** sprite to make a duplicate of it.
8. Repeat similar procedures to make two more duplicates.
9. Rename the duplicates as **yellowfish2**, **yellowfish3**, and **yellowfish4**.
10. Save **fish-06** again.



11. Click the  icon to start the program.
(Fish appears one by one after the program has started, and reappears after having been eaten. The counter also increases by 1 whenever a fish has been eaten.)
12. Click the  icon to stop the program.

Stage 7: Creating the Redfish Sprite

1. Save the project as **fish-07**.
2. Right-click the **yellowfish** sprite again to make a duplicate of it.
3. Rename the newly created sprite as **redfish**.
4. Click the **Import** button to import the **fish4** image from the **Animals** folder. (Note that the image name becomes **fish2** after the import.)



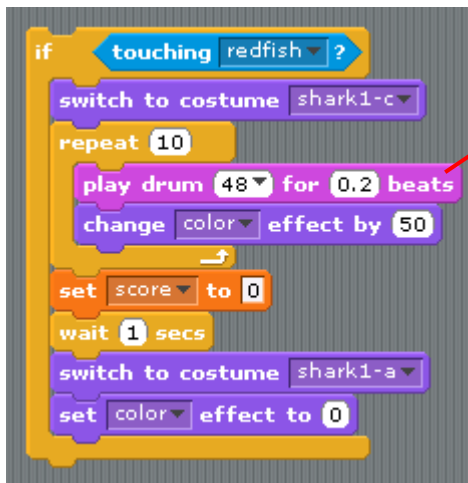
5. Delete the **fish1** image.





6. Select the **shark** sprite and then click the **Costumes** tab if necessary.
7. Click the **Import** button to import the **shark1-c** image from the **Animals** folder.



8. Click the **Scripts** tab.
9. Add the following **if** control block within the **forever** loop.





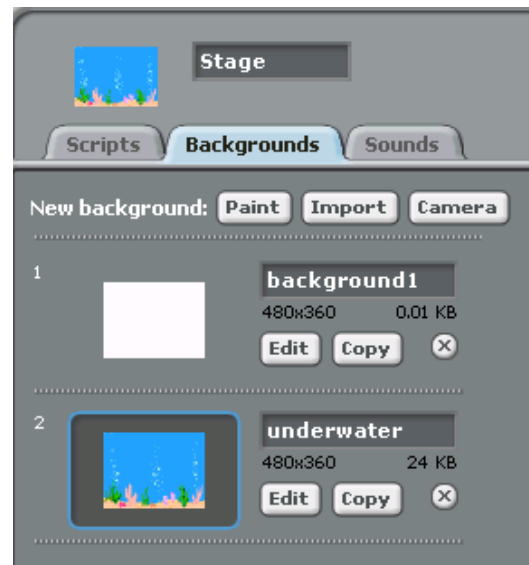
10. Save **fish-07** again.
11. Click the  icon to start the program.
(When the **shark** eats the **redfish** by mistake, the total score is reset to 0.)
12. Click the  icon to stop the program.

Stage 8: Changing the Background

1. Save the project as **fish-08**.
2. Click the **Stage** to select it.



3. Click the **Backgrounds** tab if necessary.
4. Click the **Import** button to import the **underwater** image from the **Nature** folder as the background.
5. Save **fish-08** again.
6. Click the  icon to start the program.
(The **shark** and the other **fishes** move in front of the new background.)
7. Click the  icon to stop the program.



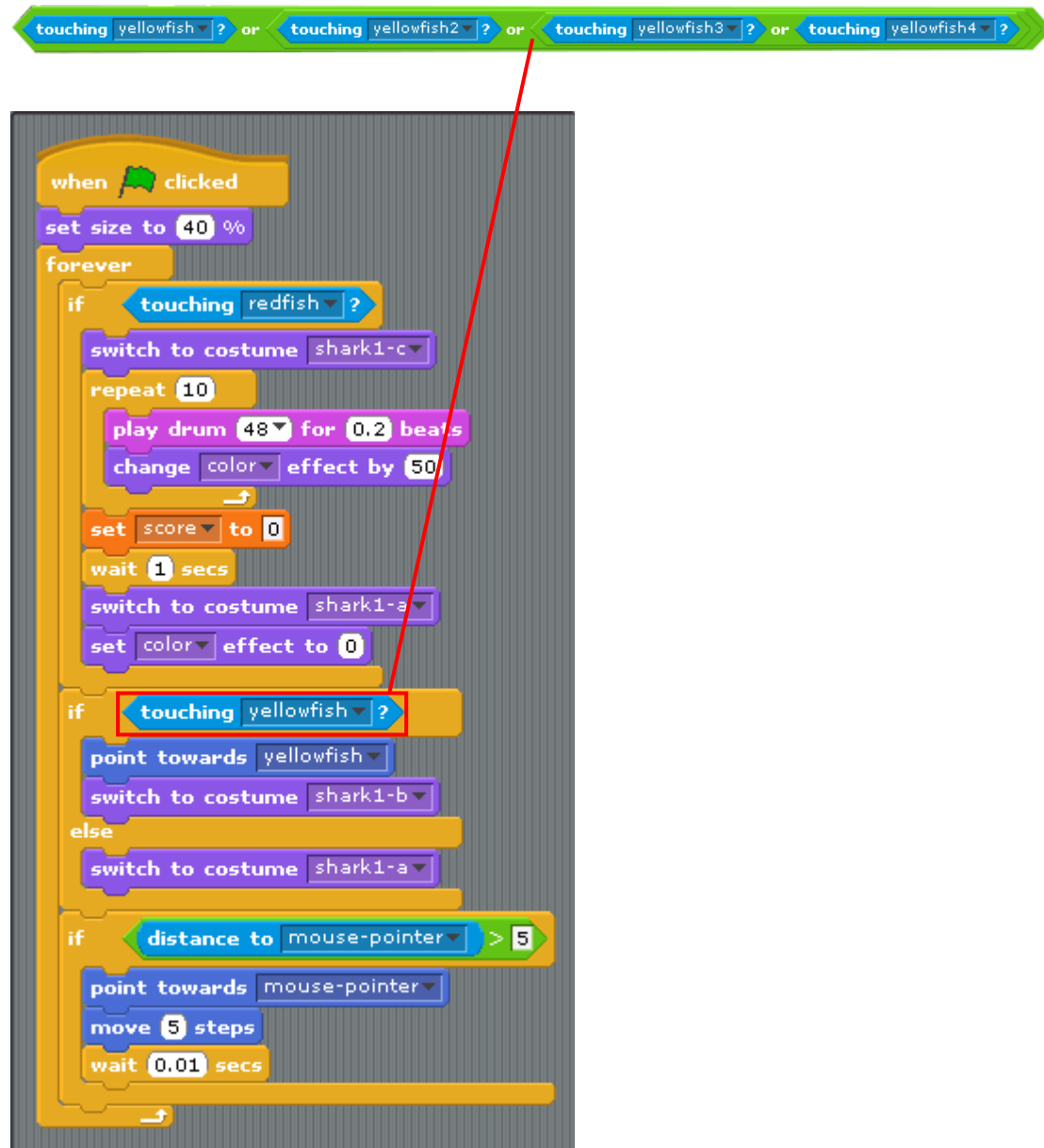
Remarks: This project is modified from the Fish! Game tutorial
(<http://www.redware.com/scratch/fish.html>)
produced by Redware Research Limited.

Further Discussions:

1. The **shark** sprite only opens its mouth to eat when it meets the original **yellowfish** sprite, and its mouth remains closed even when it eats the other yellowfish sprites (i.e., **yellowfish2**, **yellowfish3**, and **yellowfish4**).
Try to modify the source codes so that this problem can be solved.
2. Try to introduce a timer so that the game will be over after a certain period of time (e.g., 30 seconds) has passed.

Solution to Q.1

One of the solutions is to replace `touching yellowfish ?` in the `if` control block of the `shark` sprite with the following nested `or` block (see `fish-09`).



Solution to Q.2

One of the solutions is to create another variable (e.g., **timeleft**) as a counter to keep track on the time passed (see **fish-10**).

Procedures:

1. Create another variable called **timeleft**.



2. Add the corresponding scripts to the **Stage**.

Explanation:

When the Green Flag is clicked

Set the total score to 0

Set the game time to 30 seconds

Repeat

 For every 1 second passed by

 Decrease game time by 1 second

Until game time is over (i.e., **timeleft** = 0)

End game

