

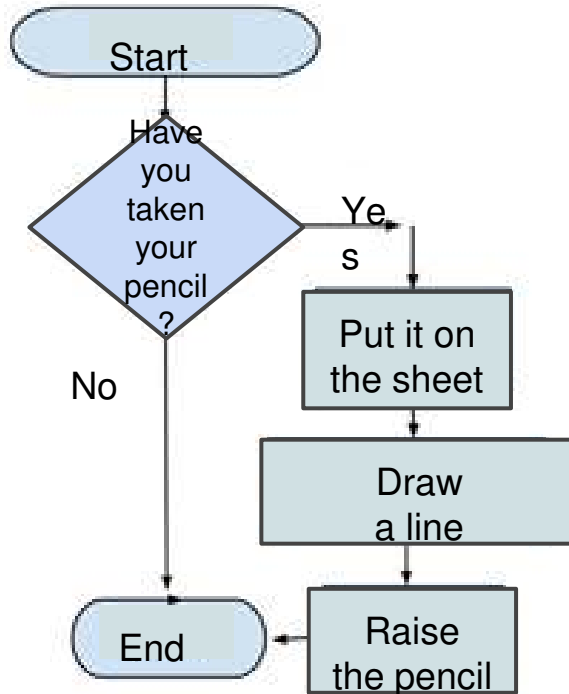
D·BIC

Code Their Dreams

Unit 1: Our First Game



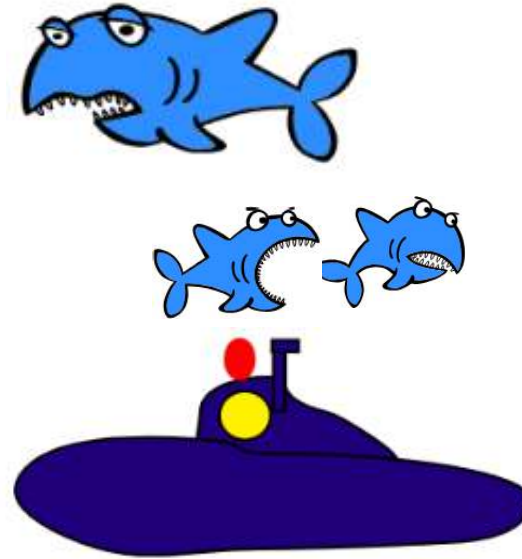
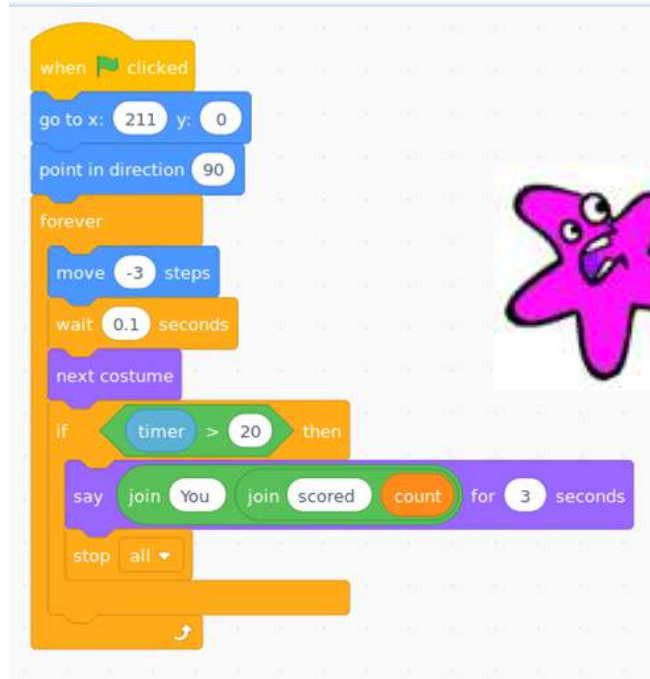
Algorithm and Program (Code)



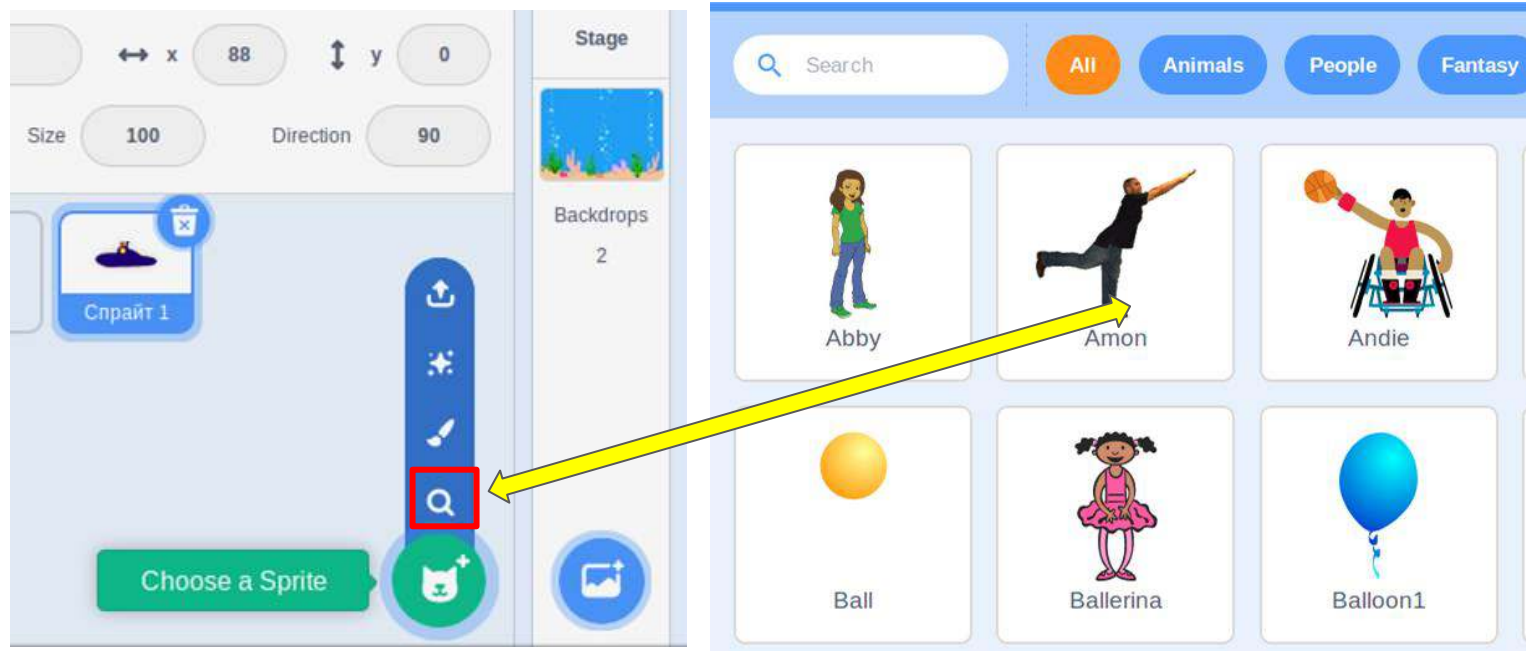
```
char incomingByte; // 1
int LED = 13; // 1
void setup() {
  Serial.begin(9600); // INITIALIZE
  pinMode(LED, OUTPUT); // SET LED
}
void loop() {
  if (Serial.available() > 0)
    incomingByte = Serial.read();
  if(incomingByte == '0')
    digitalWrite(LED, LOW);
  if(incomingByte == '1')
    digitalWrite(LED, HIGH);
}
```



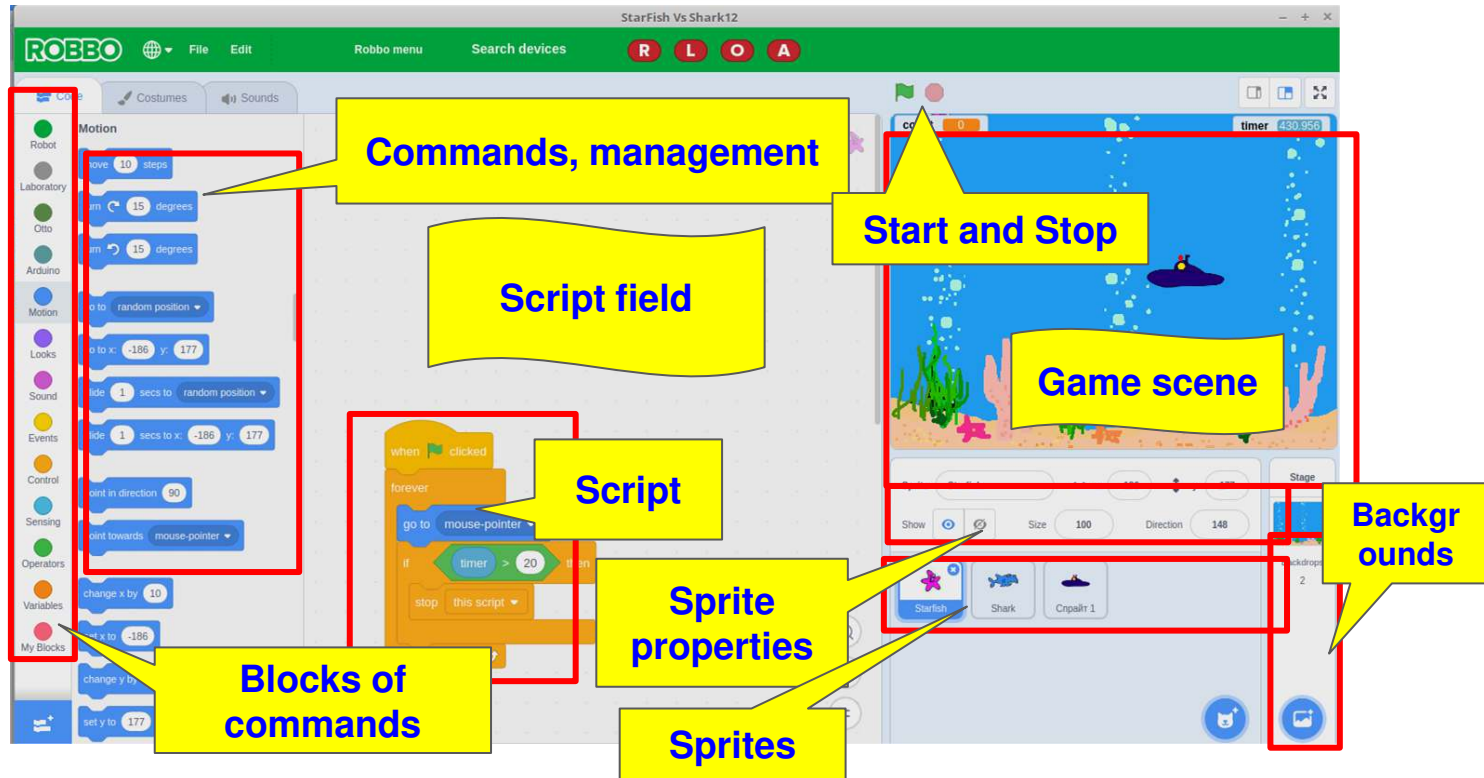
Sprite and Script (Code)



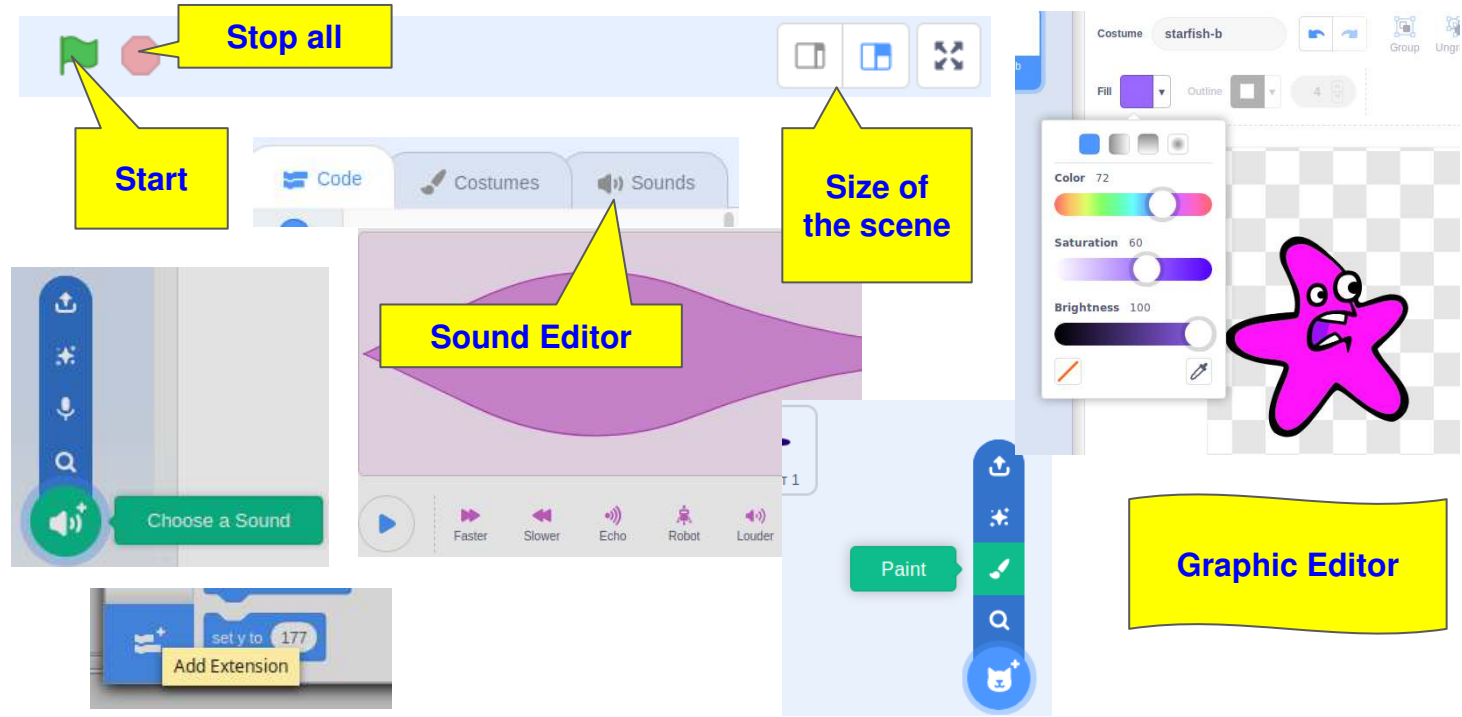
Choose Sprite



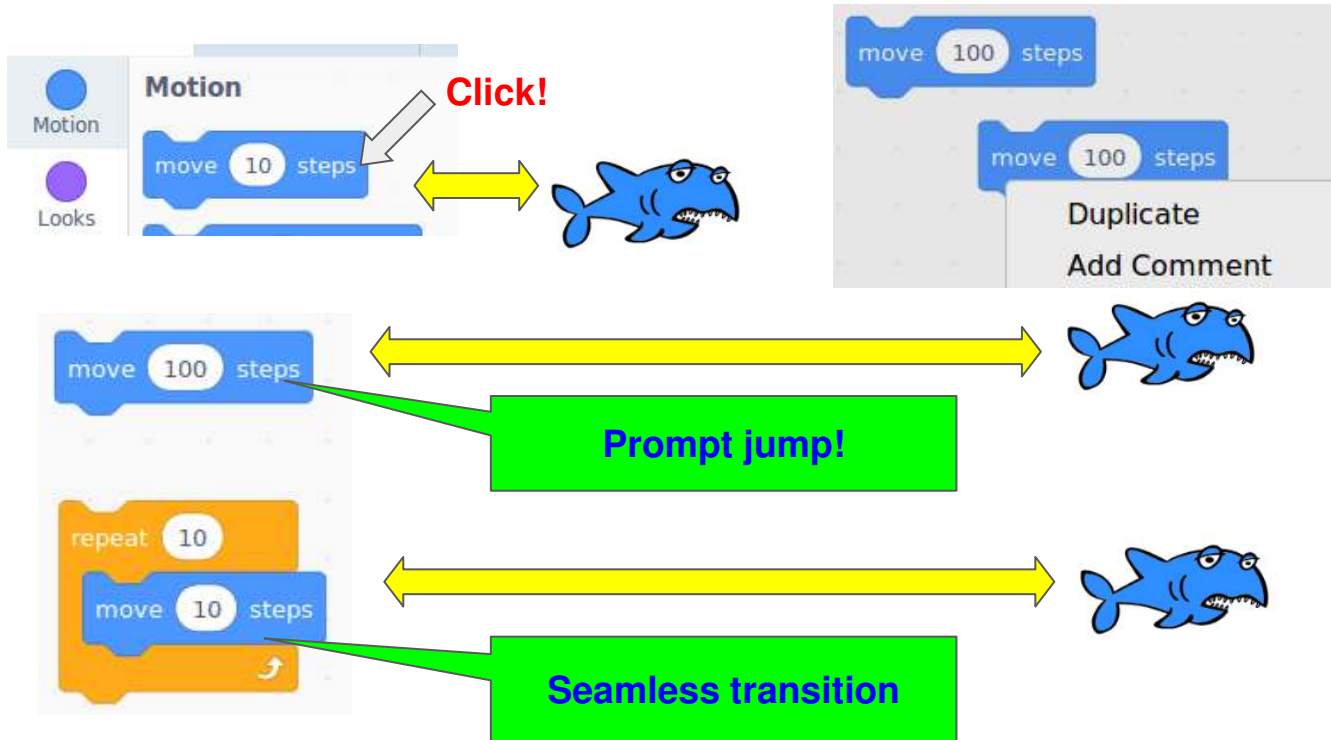
Scratch Interface (RobboScratch3)



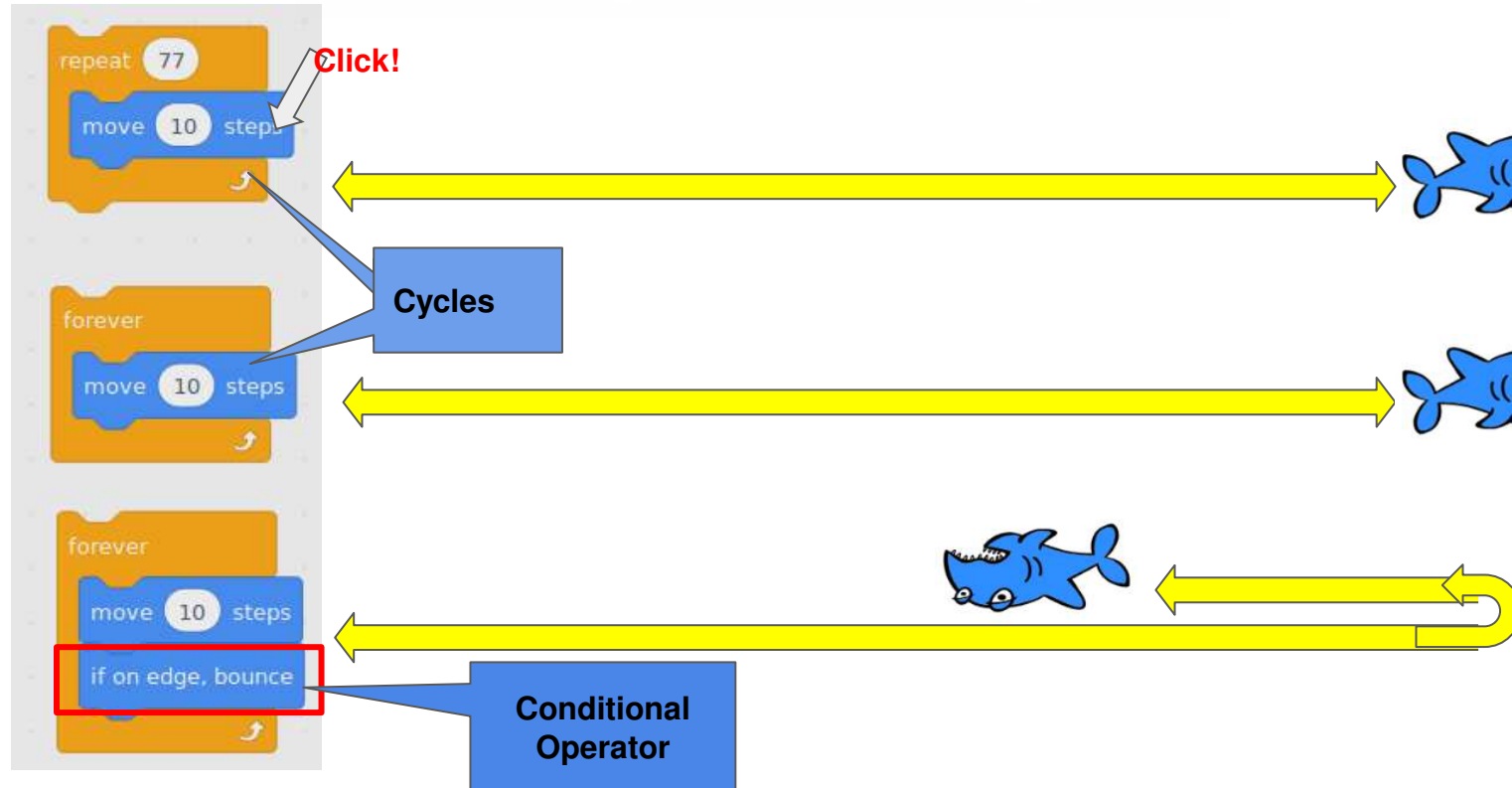
Scratch Interface (RobboScratch3)



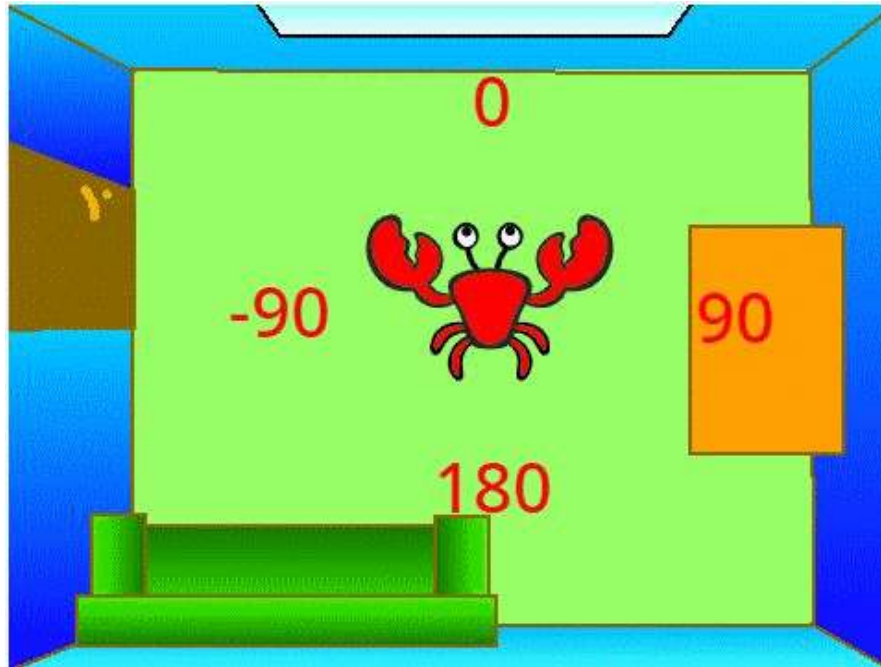
Commands. Motions. Cycle.



Commands. Cycles. Conditional Operator.



Commands. Direction in degrees



0-up

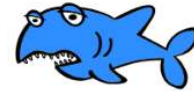
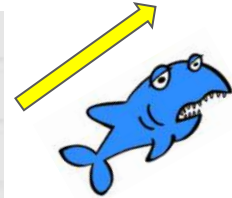
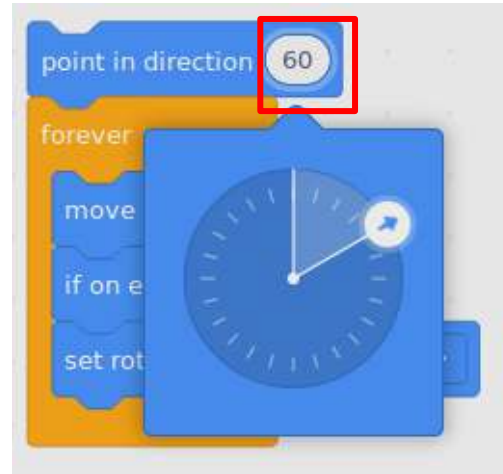
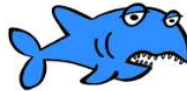
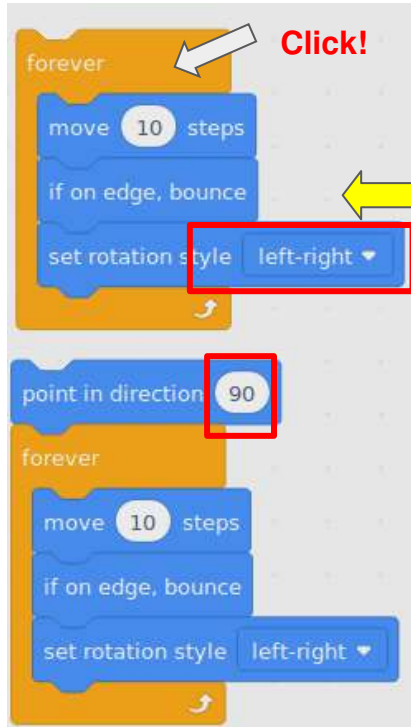
90-right

180-down

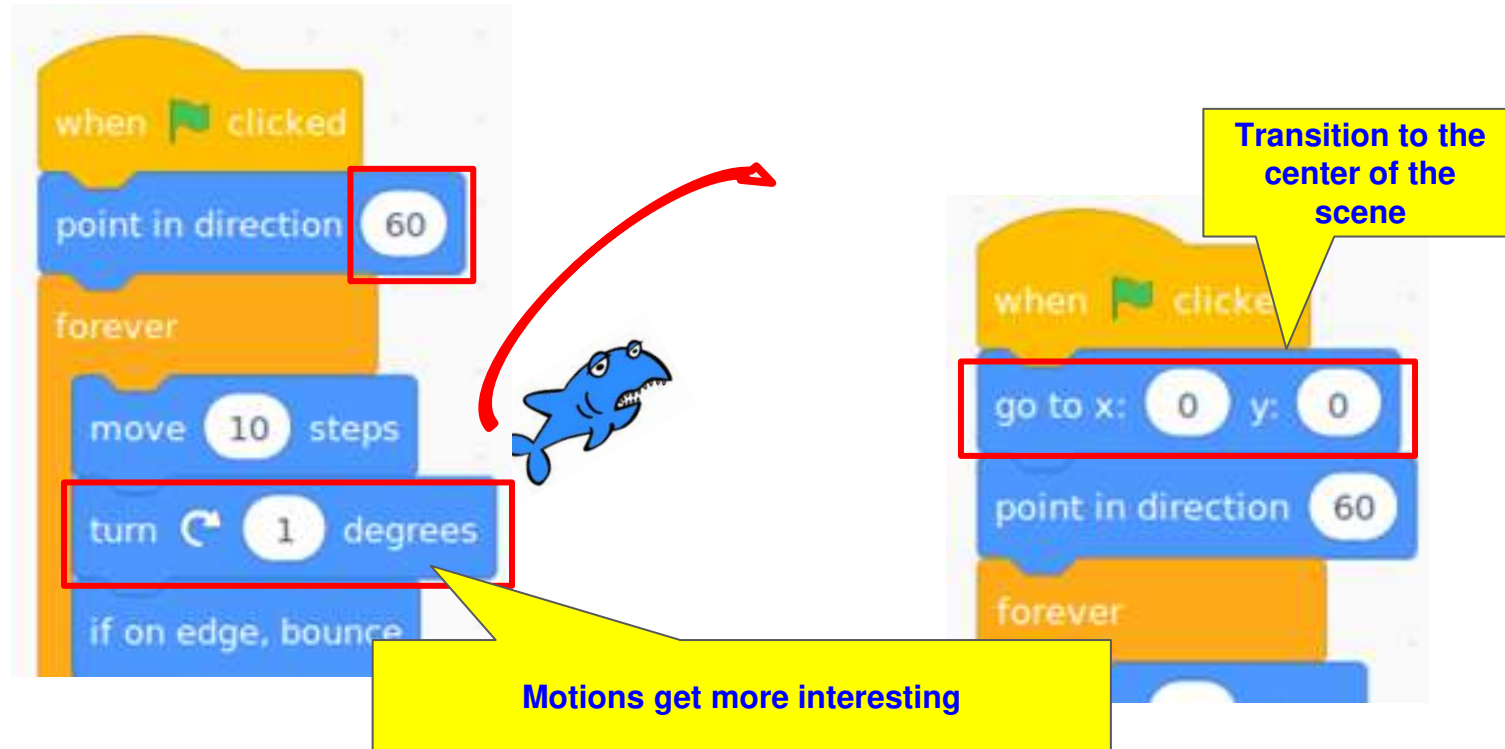
-90-left



Commands. Direction. Scoping



Commands. Rotation. Center, X and Y.



The image displays two Scratch code snippets. The left snippet starts with a 'when green flag clicked' event block, followed by a 'point in direction' block with the value '60' highlighted by a red box. Below this is a 'forever' loop containing a 'move 10 steps' block and a 'turn 1 degrees' block, both highlighted by red boxes. A blue cartoon shark is positioned between the two code blocks, with a red curved arrow pointing from the 'turn 1 degrees' block to the 'go to x: 0 y: 0' block in the right snippet. A yellow callout bubble points to the 'turn 1 degrees' block with the text 'Motions get more interesting'. The right snippet also starts with a 'when green flag clicked' event block, followed by a 'go to x: 0 y: 0' block with both '0' values highlighted by a red box. Below this is a 'point in direction' block with the value '60' and a 'forever' loop. A yellow callout bubble points to the 'go to x: 0 y: 0' block with the text 'Transition to the center of the scene'.

when green flag clicked

point in direction 60

forever

move 10 steps

turn 1 degrees

if on edge, bounce

Transition to the center of the scene

when green flag clicked

go to x: 0 y: 0

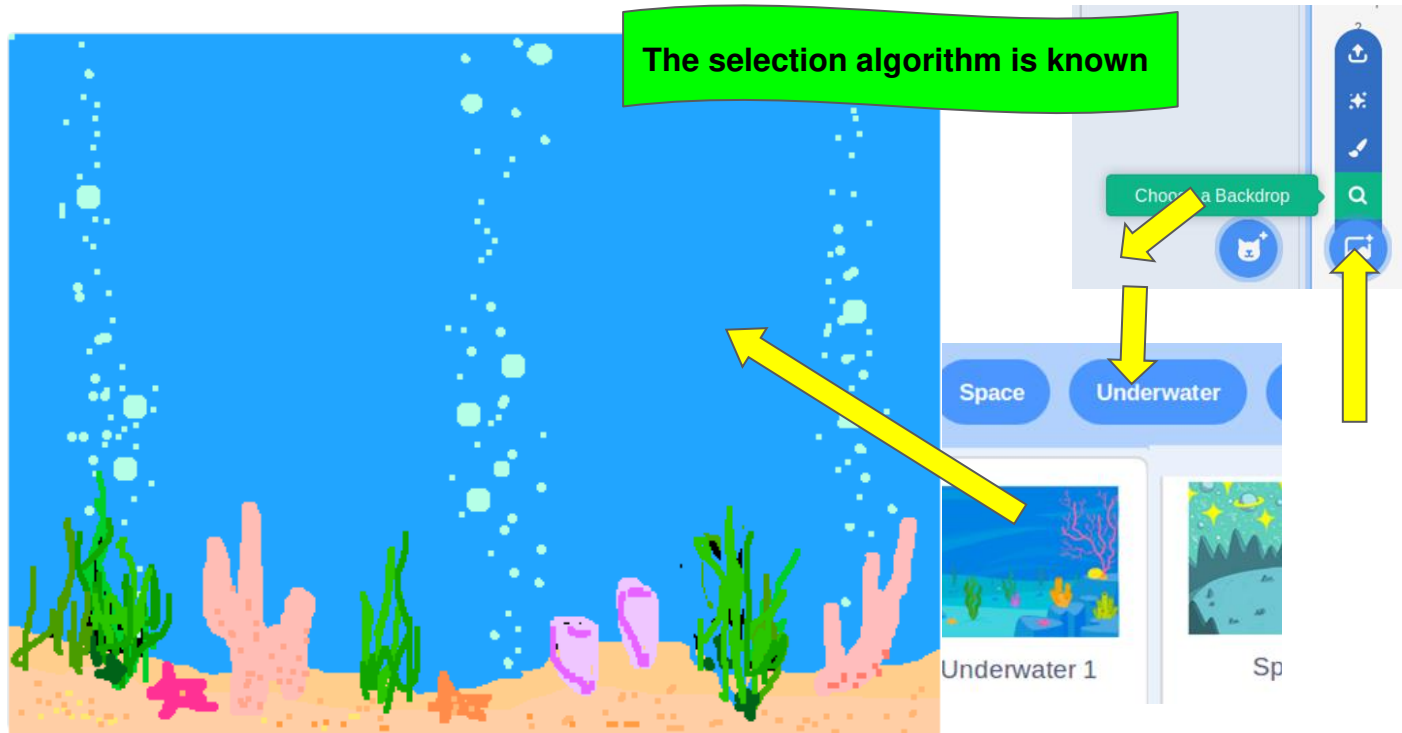
point in direction 60

forever

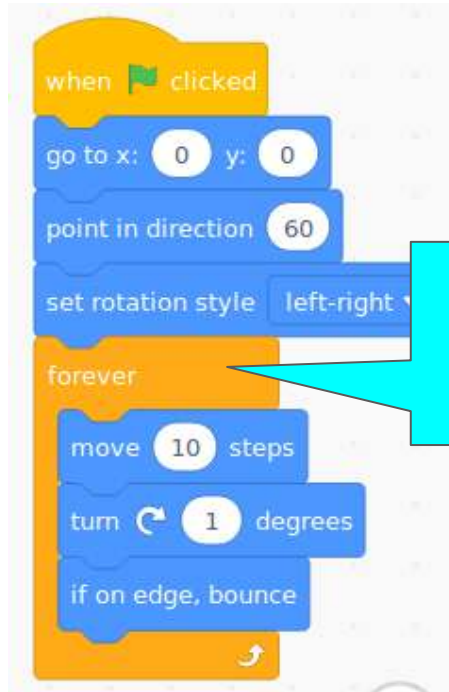
Motions get more interesting



Background

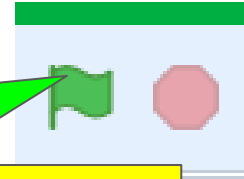


The program works!

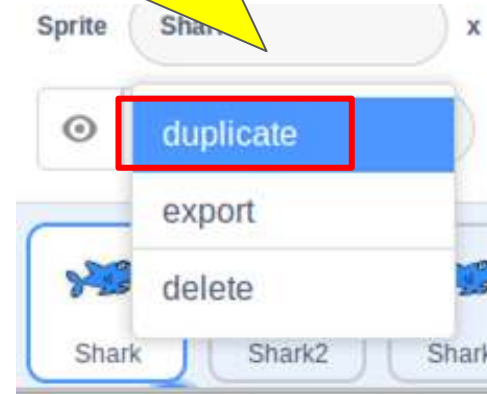


You first
program that
fully works


Launch of all sprites
with check marks



Let's make a whole shiver of Sharks.



Commands. Any movement depends on others.



The image illustrates a Scratch script for a starfish sprite. The script consists of two identical blocks:

- when green flag clicked** (yellow block)
- forever loop** (orange block) containing:
 - move 5 steps** (blue block)
 - point towards mouse-pointer** (blue block)

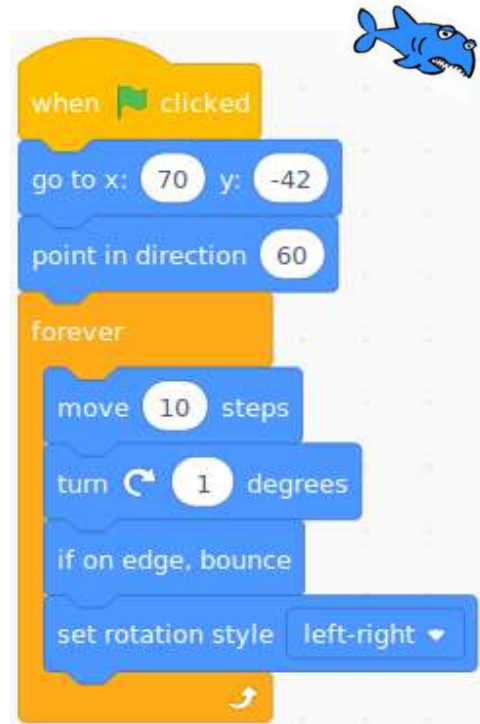
Two callouts explain the script's behavior:

- A green callout pointing to the 'point towards mouse-pointer' block says: **'Glued' to the mouse**.
- A green callout pointing to the 'move 5 steps' block says: **Falling behind the mouse**.

A yellow callout pointing to the starfish sprite in the bottom right corner says: **Sprite in operation**.



Interactive cartoon



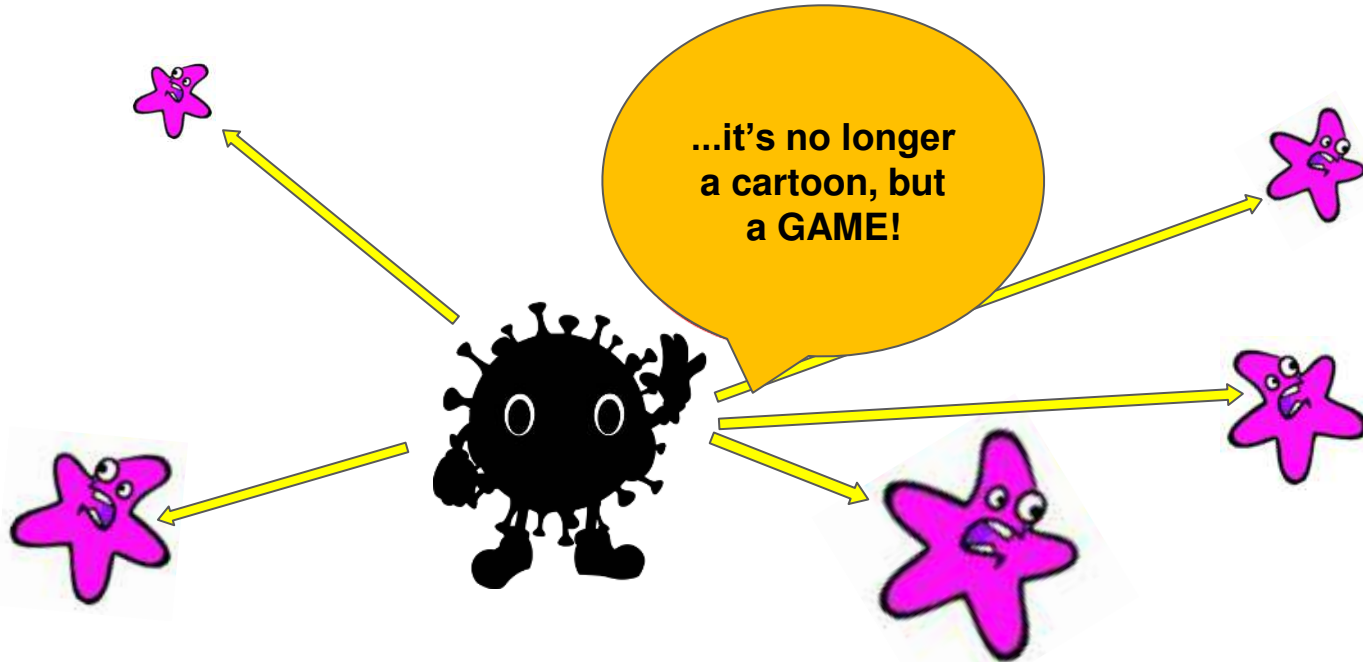
One sprite. Managed by a gamer with the mouse

Sprites don't see each other!

A lot of identical sprites. Managed by the computer



If you have an influence on the characters of the cartoon...



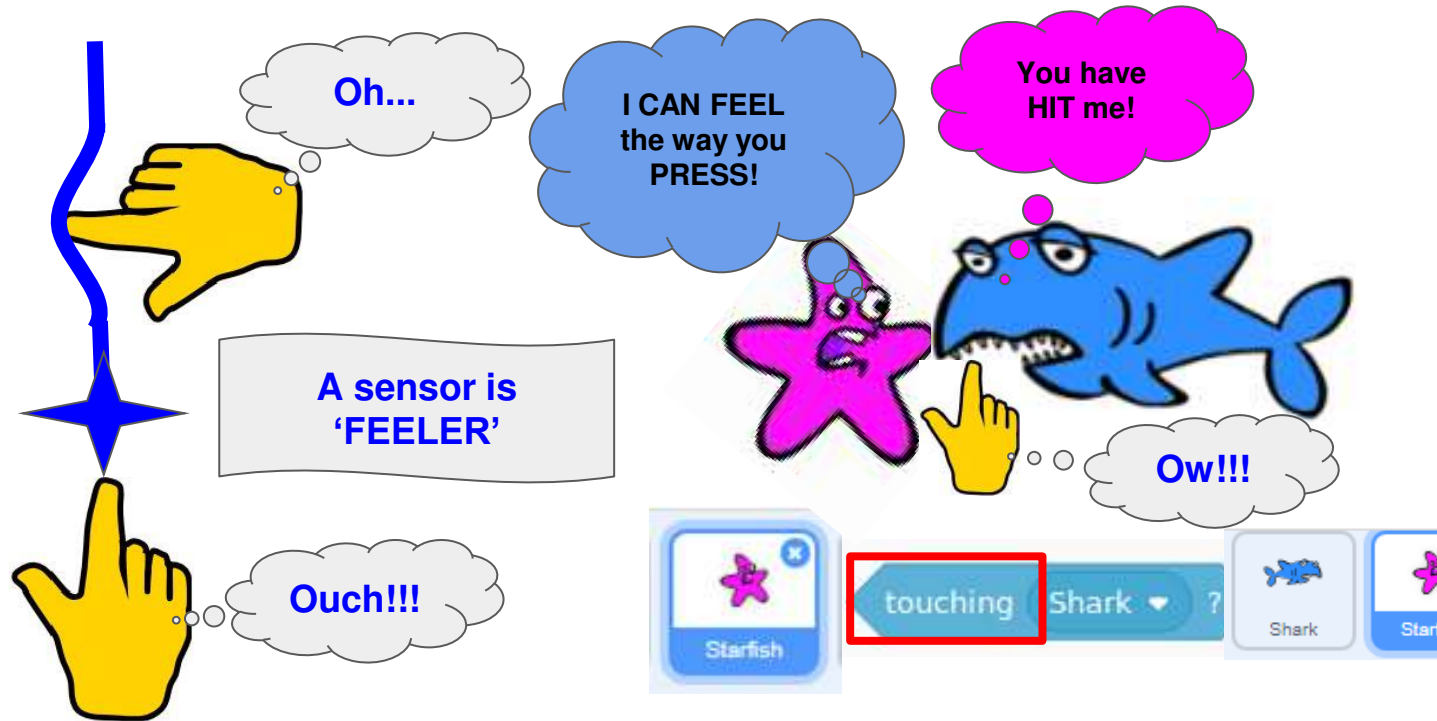
In Scratch, the characters are sprites



In the game, sprites make their own decisions. They see other sprites and surroundings, they can hold, push, catch. But for all this, the sprite needs senses. Then the sprite becomes a virtual robot.

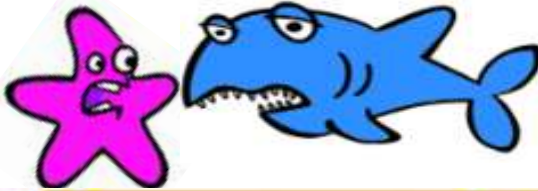


Sprite Sensors.



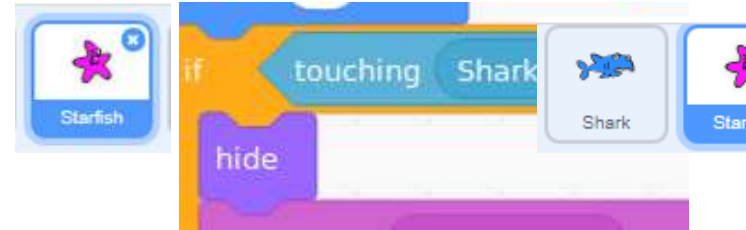
Who has sensors?

**Sprites touch.
Who touches whom? Does
it matter? Yes!**

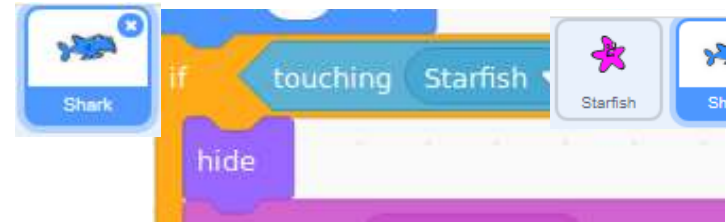


Be careful!

1. The Starfish will disappear



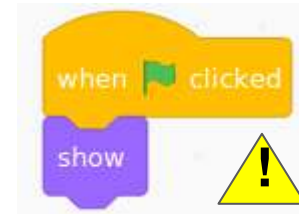
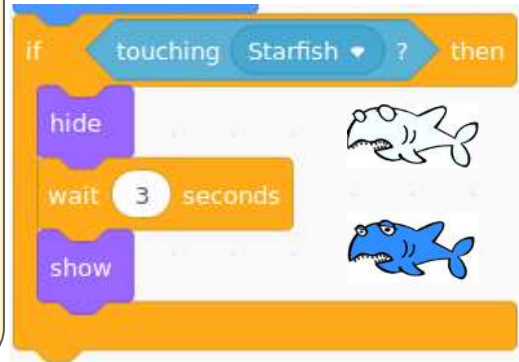
2. The Shark will disappear



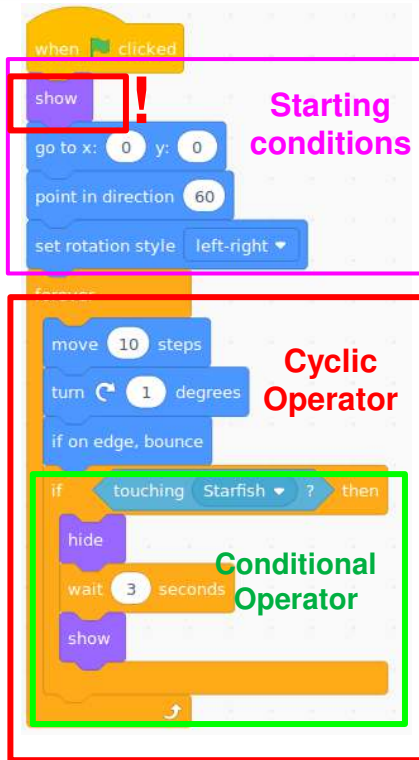
Create YOUR world!

LAW
of MY game:
if a Starfish and a Shark
meet, the Shark will go
away.

I said so

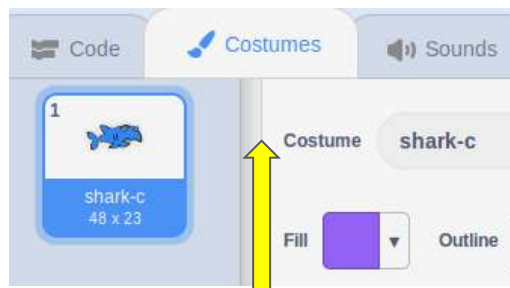


The Program for the Shark is Getting More Complicated.

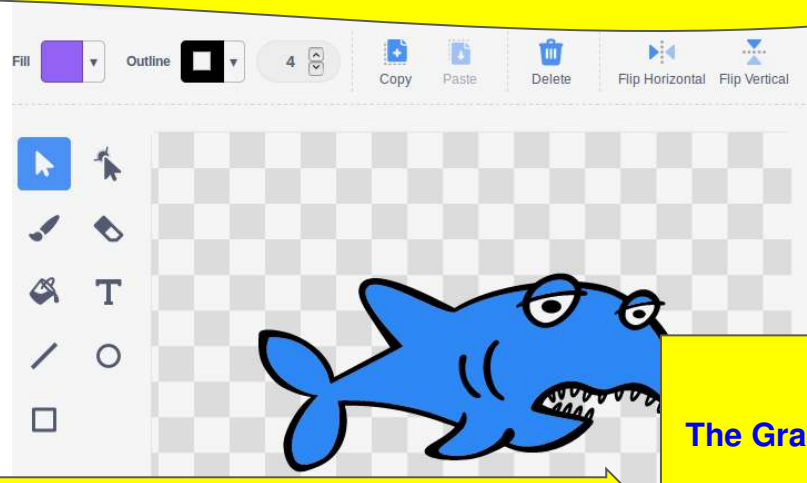


Graphic editor

We have a lot of sharks, but everyone is the same.
Let everyone have their own color.



Go to Costumes

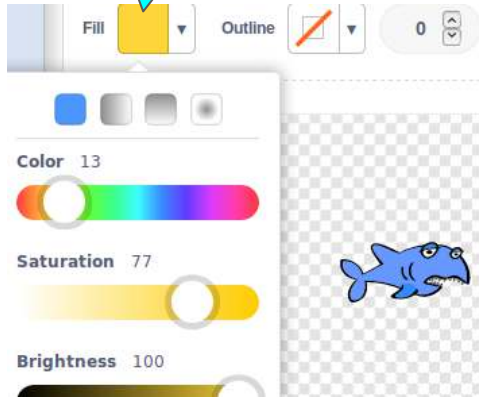


The Graphic Editor will open

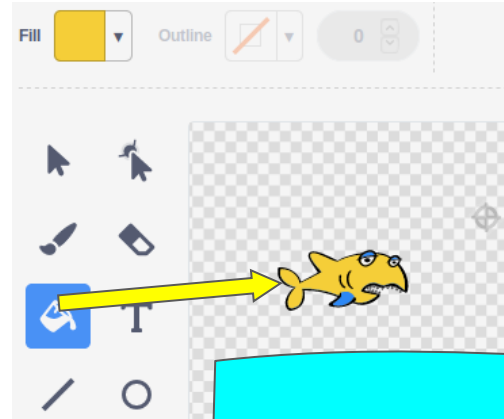


Introduction to the Graphic Editor

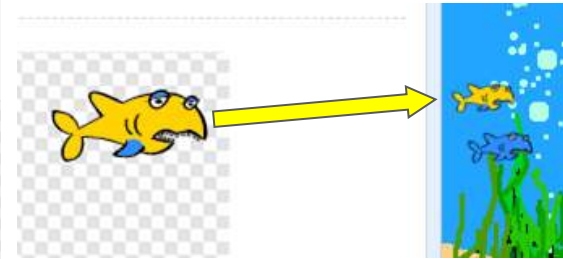
Choose a color



Fill in color



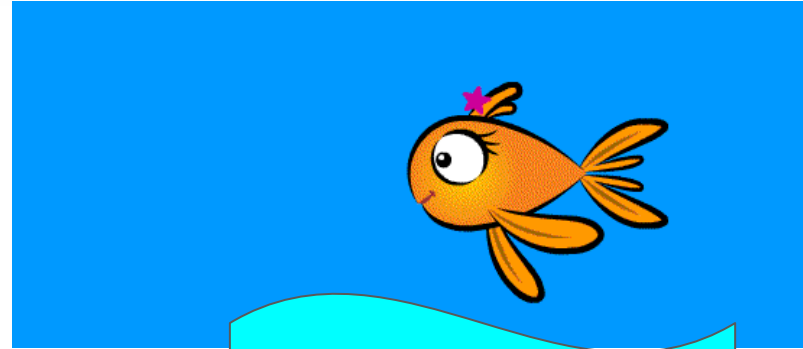
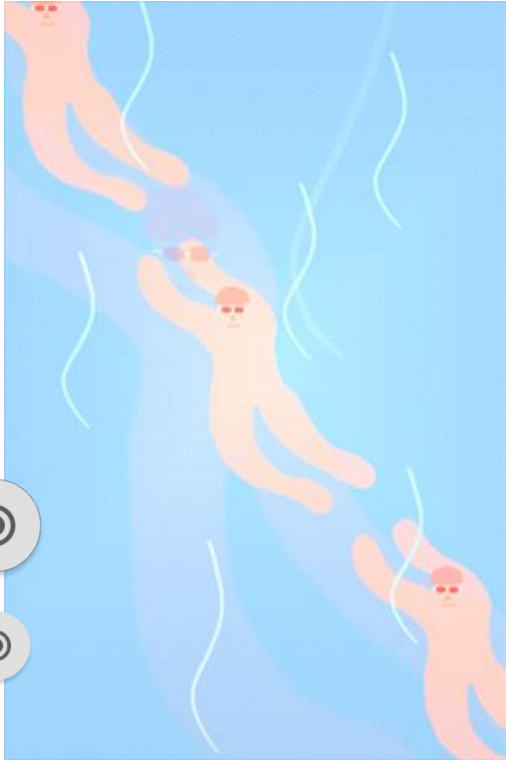
It's ready!



Repaint other sharks in different colors



Physical Activity Breaks



There is a great strength
in water

