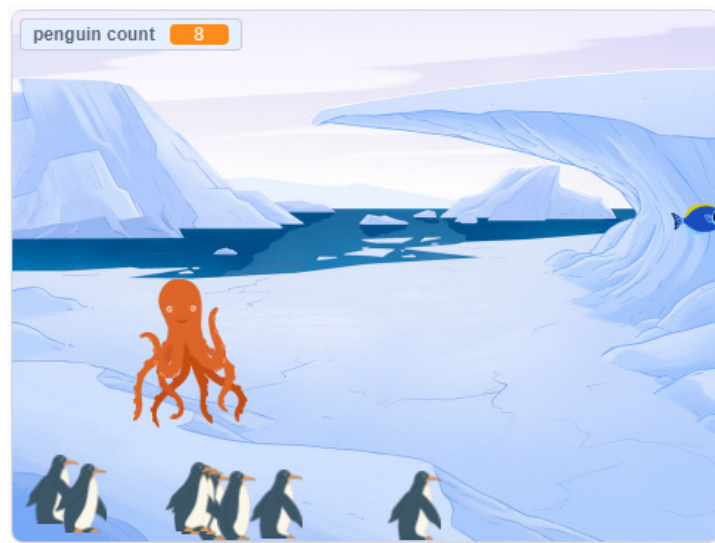


Penguin swarm!

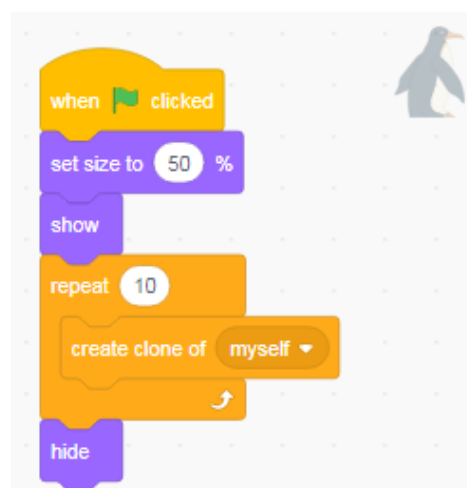
Can you help the penguins catch fish and avoid the octopus? This project introduces clones (copies of the same sprite).



Finished project at <https://scratch.mit.edu/projects/1132982922/>, and full instructions at <https://projects.raspberrypi.org/en/projects/swarms-schools-flocks/>.

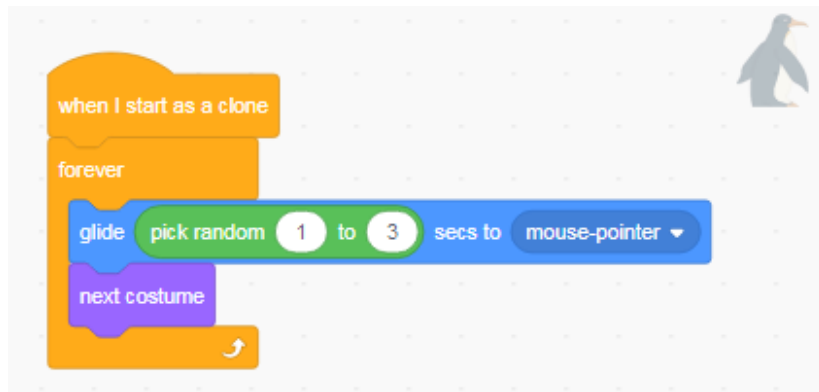
Step 1: Creating clones

- Choose your sprites – you will need one that is a predator (my octopus), one that is both predator and prey (my penguin), and one that is just prey (my fish). You can be as sensible or as silly as you like!
- Choose (or draw) a background for the game.
- Add the code below to your penguin sprite (the one that eats and is eaten):



If you run your code it looks like nothing is happening, because we haven't told the clone penguins to do anything yet.

- Add this code to tell the clones what to do:



- Test it out! The penguin clones should move about, heading for the mouse pointer. Some will be faster than others, because we used the 'pick random' block.

Save your project

Step 2: Feed those clones!

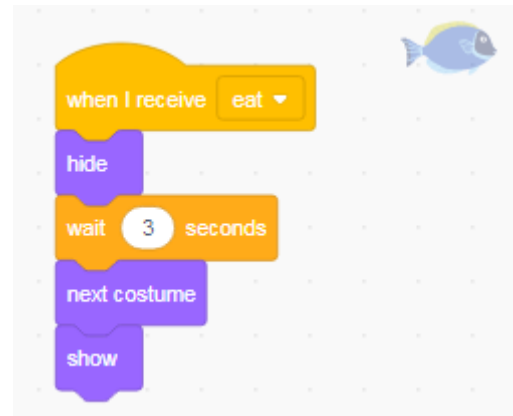
- Next we want the prey (fish) to appear, and move about randomly – the penguins will have to chase it!
- Add the code below to your fish sprite. Make sure you choose to glide to 'random position' and not 'mouse pointer'!



- Test the fish movement, then see if you can guess how we will tell the fish that it has been eaten...

Save your project

- We will use messages! Use a new 'when I start as a clone block':

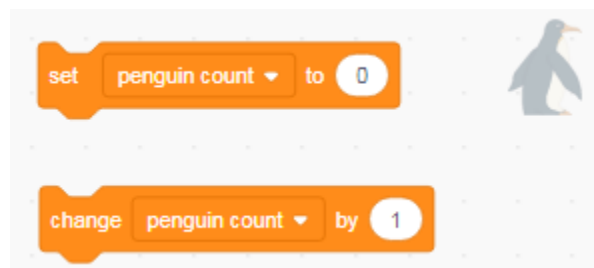


- The penguin clone sends a message when it touches a fish, and the fish receives the message, and disappears.
- And we get an extra penguin every time we eat a fish!
- Test it out – can you eat the fish?

Save your project

Step 3: Counting penguins

- It would be nice to know how many clones we have created. Make a variable (I called mine 'penguin count' but just 'count' would do) and use these blocks to count the penguins as you make the clones:

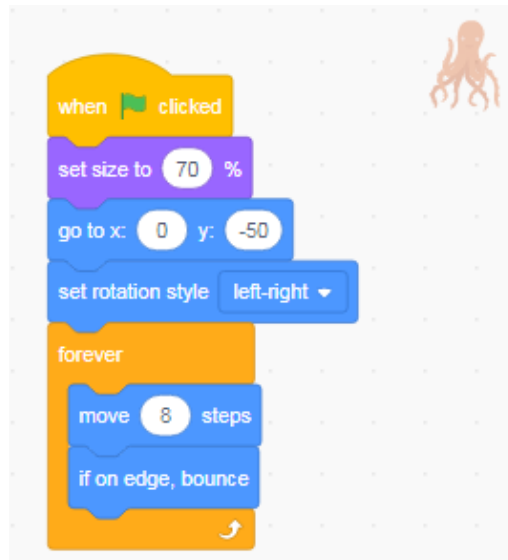


- You need to set the count to 0 once (at the 'green flag'), and change the count by 1 twice – when you create the first clones, and when you eat a fish.
- Tick the box next to your variable, so it shows on the screen.

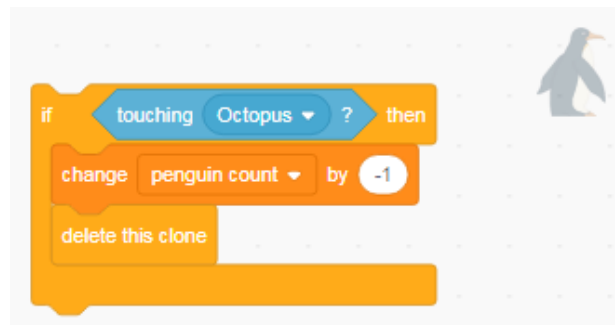
Save your project

Step 4: Run away from the octopus!

- Finally, we need the sprite that preys on the penguins – the octopus. All it does is go back and forth, so the code is quite simple:



- You can change the size or number of steps to make the game harder or easier.
- Add the code below inside the 'forever' loop, after 'if touching Fish' so that penguin clones disappear when the octopus touches them:



- And finally, add the code below to the end of the 'green flag' block, to stop the game when all clones are gone:



Save your project