SCRATCH

With Scratch, you can program your own interactive stories, games, and animations — and share your creations with others in the online community.

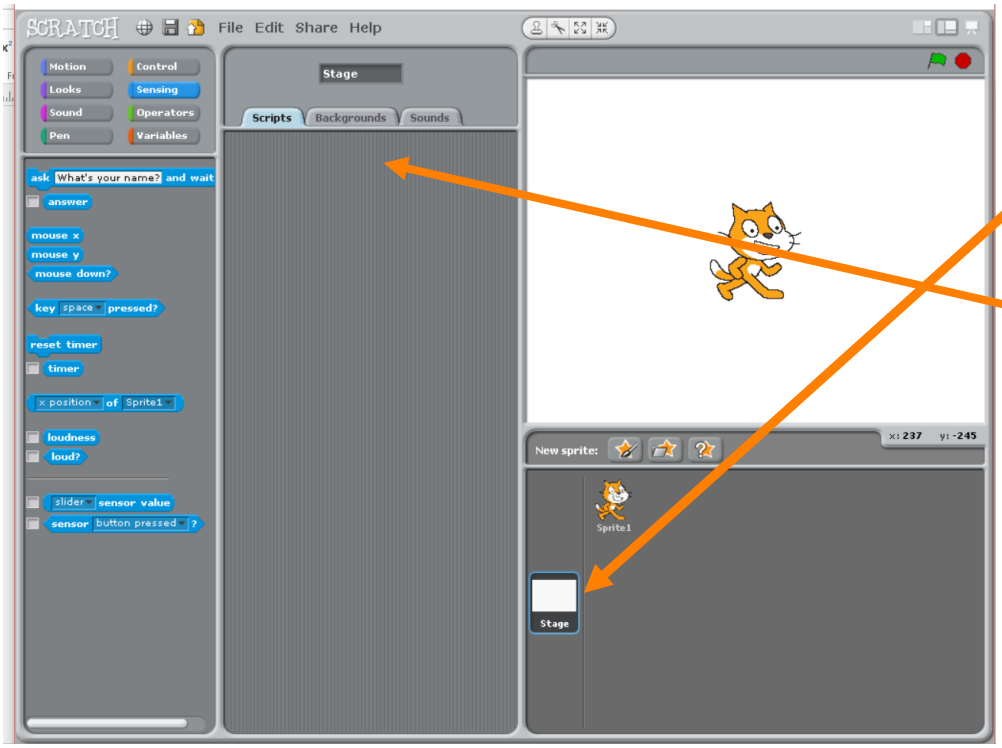
Scratch helps young people learn to think creatively, reason systematically, and work collaboratively — essential skills for life in the 21st century.

Scratch is a project of the Lifelong Kindergarten Group at the MIT Media Lab. It is available free of charge.

Follow the instructions to program a short animation.
Use the labelled image of the interface below as a reference.
When you're done, close Scratch for the next group.

1. To start, click on the Scratch Icon on the desktop to open up the program. The first thing you'll see is Scratchy the cat on a white background. This is a brand new project, so Scratchy doesn't do anything yet.

2. Let's set the stage! The stage is the background of your program



In order to do anything to the **stage**, first you have to select it, by clicking on it.

Now in the Scripts area, click on Backgrounds.

Click on "Import"

Double-click the xy-Grid. Now you can see how Scratch positions objects. We'll be using coordinates on the xy axis to movie Scratchy.

Characters in a video game are called SPRITES

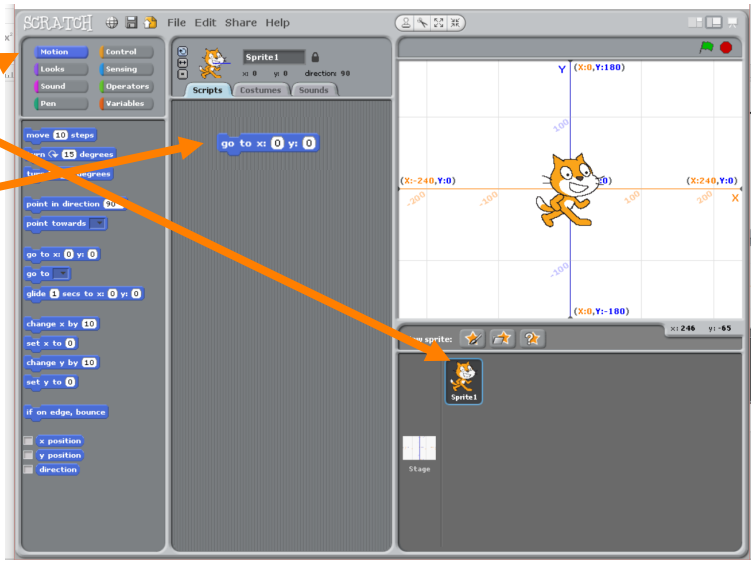
3. Now we can program movements for Scratchy the Cat!

We want to be sure we're giving instructions to Scratchy so click on Scratchy in the **Sprite List**.

Now we're going to play with some script building. First, click on the **Motion Palette**.

Click and drag out the **Go to x:0 y:0** to the scripts area.

You can change how much Scratchy moves by changing the numbers in the coordinates and clicking on the block. Set the coordinates to **x:0 y:125**, then click the block to see where Scratchy moves.

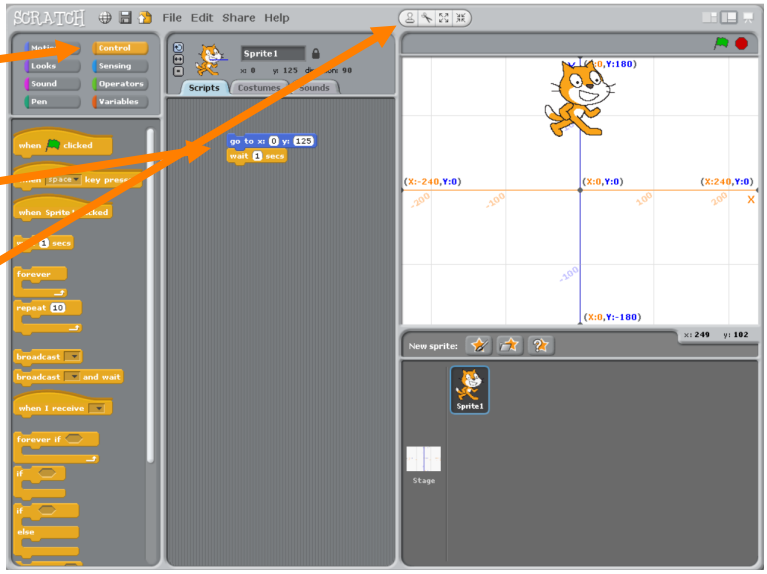


4. Too darn fast! We want Scratchy to move around, but right now he's moving too fast for us to see.

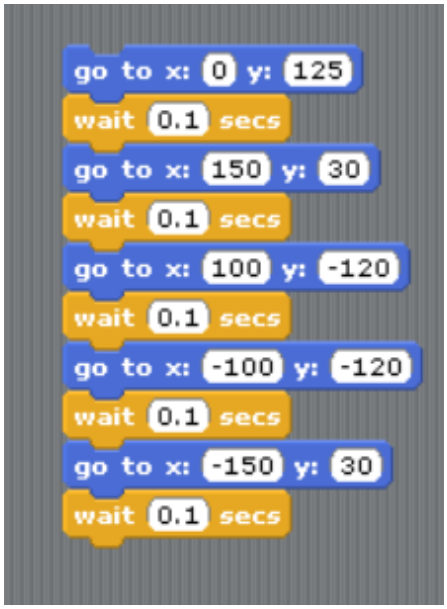
To slow him down, click on the **Control** Palette.

Then drag out **Wait 1 secs** and connect it to the bottom of the Motion script. Once they're connected, change the time to **0.1 secs**.

Rather than dragging out the same blocks of code several times, you're going to use the **duplicate button**, to copy and paste these two script blocks 5 times. (Click **duplicate**, click the code, then click in the scripts area.)



5. Scratchy has a point (or 5)!

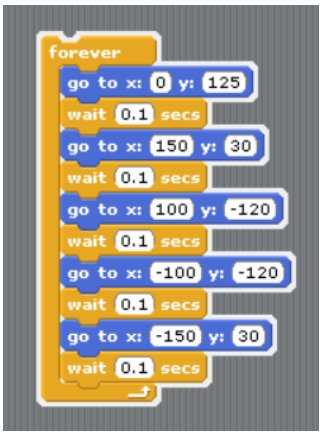


Insert the coordinates shown into the programming blocks.

When you've finished, click the whole command block to see Scratchy move.

Challenge: Make Scratchy move Forever. Click on the Control Palette and find the Forever Command. Attach it to your block and run the command. Try the challenge before continuing to the next page to see the answer.

6. Scratchy Forever

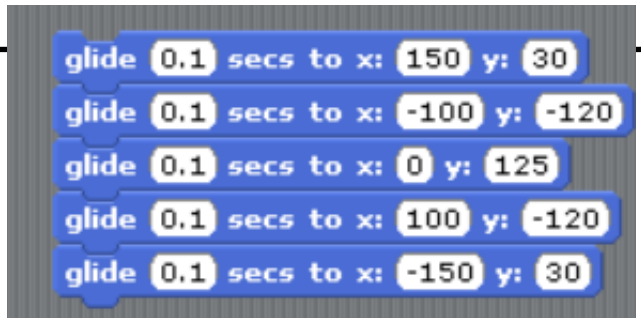


7. So smooth, Scratchy.

We're going to add to Scratchy's movements with some gliding. Click on the **Motion** Palette and find the command.

Glide 1 secs to x:0 y:0

Then copy the command 5 times, change the amount of time, and enter these coordinates.



8. Put it together and what have you got?

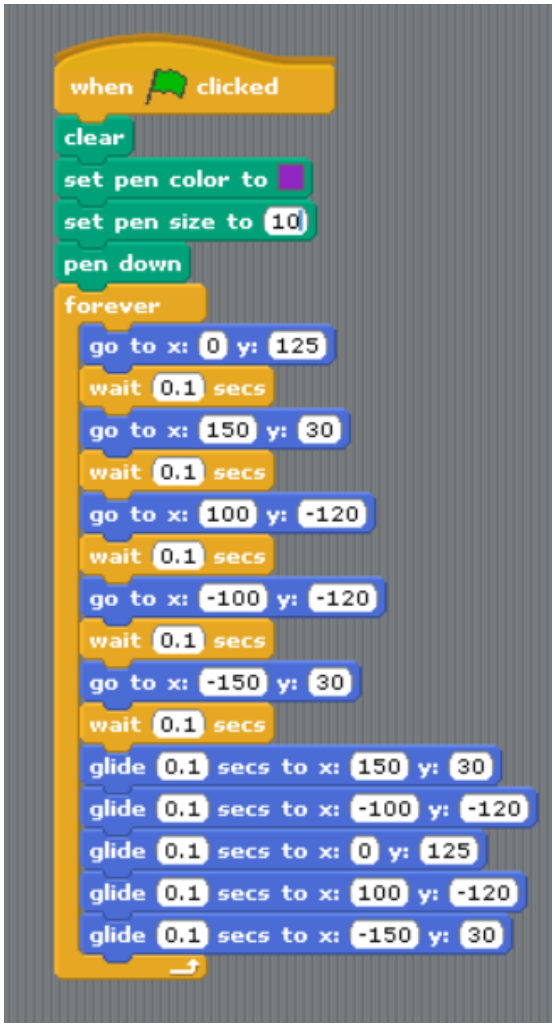
Put your codes together in the **Forever** command just like you see at left. Then go to the **Control** Palette and drag out the When (green flag) clicked command and put it at the top.

Now you can click the green flag on the top right of the screen to start your program. And you can click the red dot to stop it.

9. One final touch

Click on the **Pen** Palette and drag out the commands you see in the picture on the right.

Now click the green flag and see what happens!



Wait! There's a bug in the code! Do you see the extra line that Scratchy is drawing? (*If not, stop your code, drag Scratchy somewhere else on the stage, then restart your code.)* Learning to code means learning how to problem solve. Bugs are not only inevitable, they're great learning opportunities.

Challenge: Fix the code

(Hint: the command you need is in the Motion palette)

For more fun:

- Change the coordinates to draw a different picture.
- Change the pen color and size or add other effects.
- Change the timing of Scratchy's movement.
- Look through the palettes and drag out more commands and continue programming Scratchy.