Sprite, our new friend!

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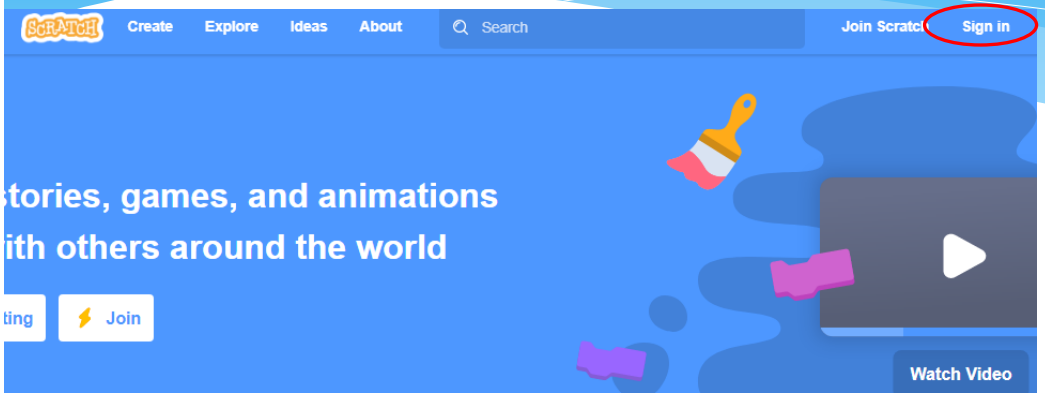
In this lesson, we will …

* Learn to launch scratch.
* Meet our new friend the 'cat' sprite.
* Learn how we can make cat sprite move around.
* Learn how we can make cat sprite draw.

Note:

Much of what we cover is similar to the following Youtube video:
https://www.youtube.com/watch?v=VIpmkeqJhmQ

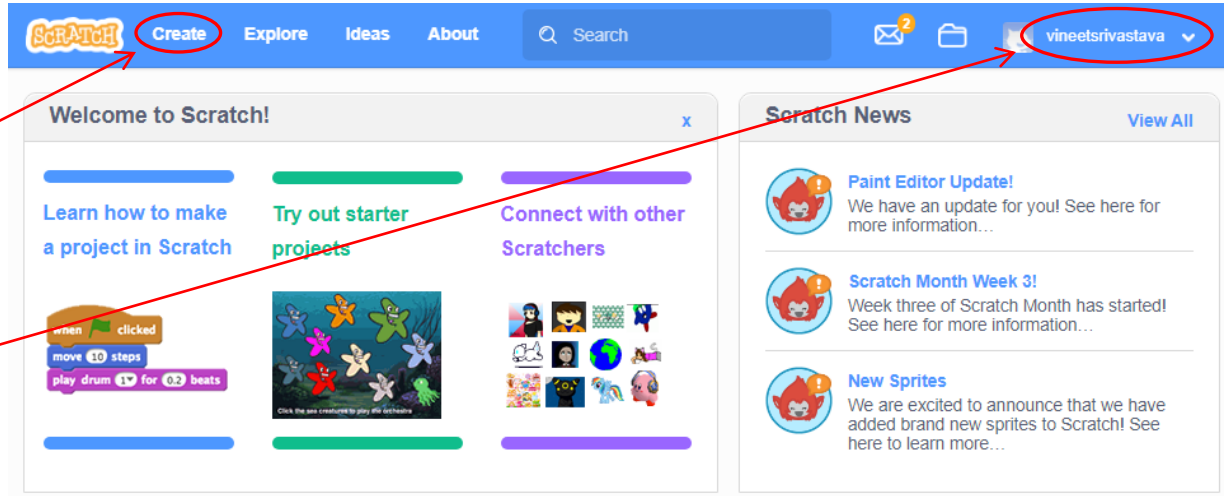
Sign in and click create



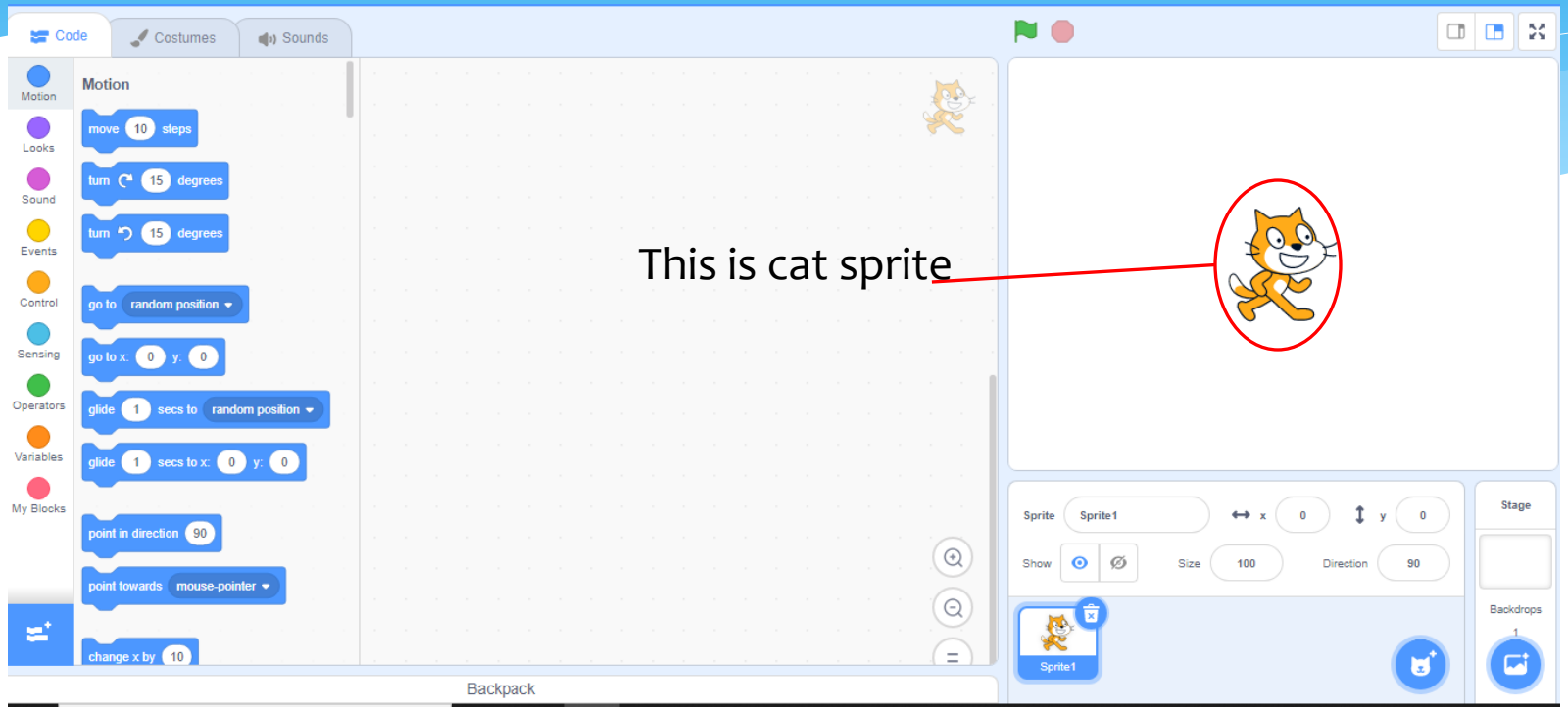
← sign in at scratch.mit.edu

Click create after signing in.

Make sure your username is visible here



Here is our friend, cat sprite!



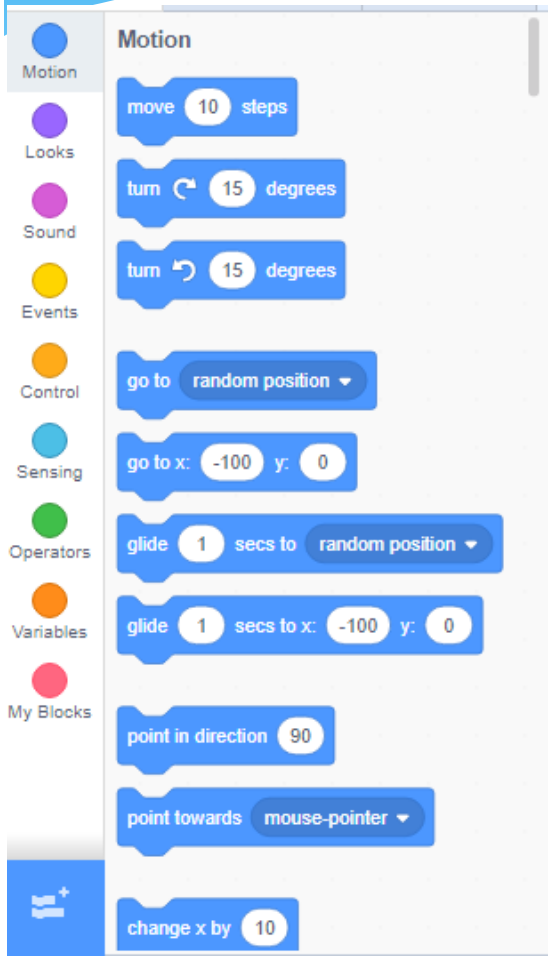
BLOCKS
(like LEGO)

SCRIPT AREA

STAGE

We drag code from the **blocks pallate** to the **script area** to tell sprite what to do. Sprite performs these actions on the **stage**.

Making sprite move: Motion block



Notice the small 'blue' circle on the top left.

Click it to open the commands for making sprite move.

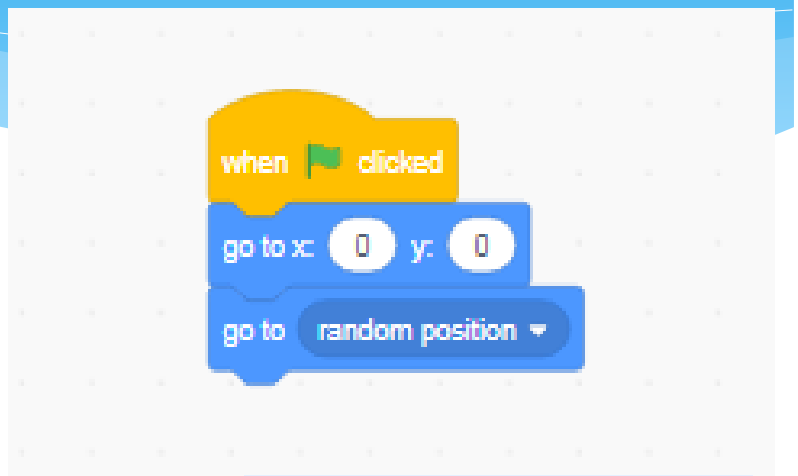
Most of the blocks are quite self explanatory, but let's see a few examples.

Move to a random point!

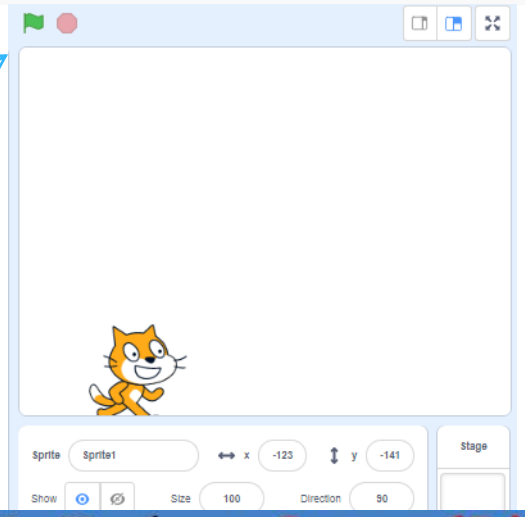
* Try this very simple code:

When you click the 'Flag' icon, the sprite will first go to (0, 0) – the center -- and then to a random position.

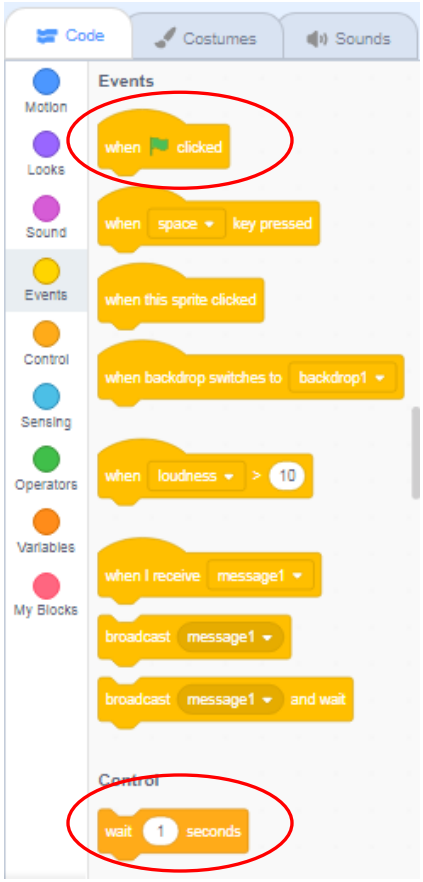
is a very important block, in the 'EVENTS' section (see next slide).



Click to run the code



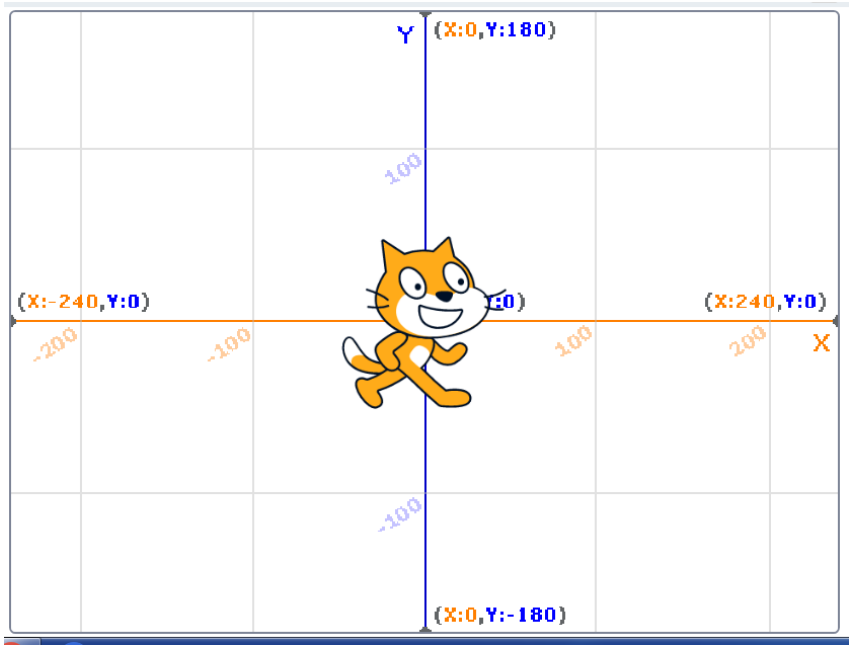
Use WAIT to see sprite move



* Sprite is fast! it is sometimes useful to insert the 'wait' command from the 'Control' section to see things clearly.

Sprite will wait at (0, 0) for 1 sec before moving to a random position

Sprite's position: (X, Y) co-ordinates



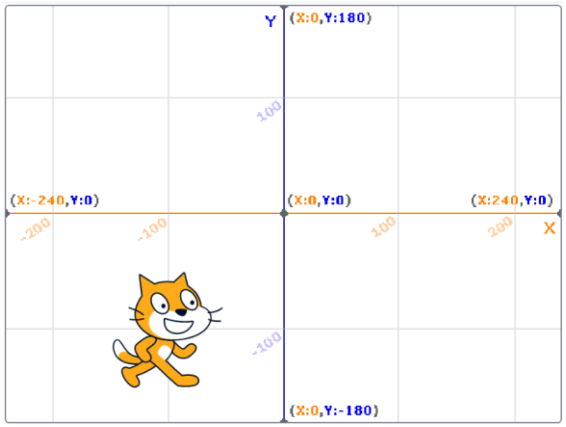
Sprite's position on the stage is given by two numbers, called (x, y) co-ordinates.

The red (horizontal line) represents the x co-ordinates.

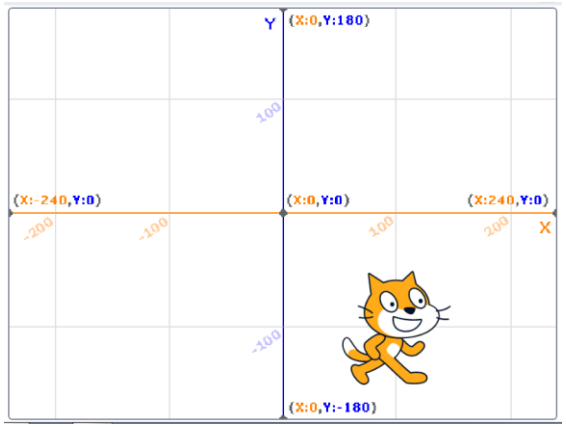
The blue (vertical line) represents the y co-ordinates.

In this diagram, sprite is at (0, 0).

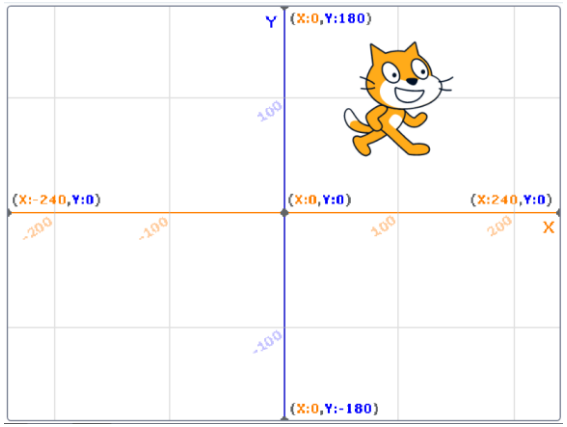
Sprite moving around the stage



sprite at
x=-100, y=-100



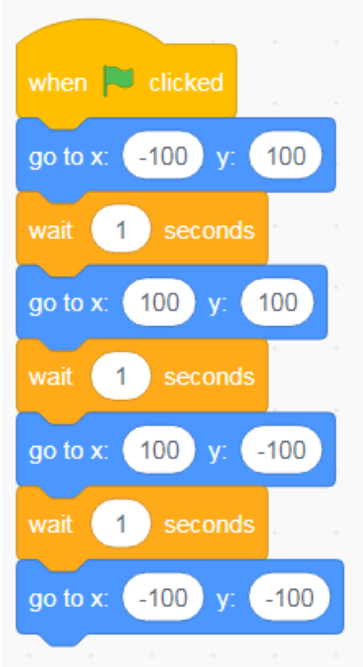
sprite at
x=100 , y=-100



sprite at
x=100, y=100

Sprite walking on a square path

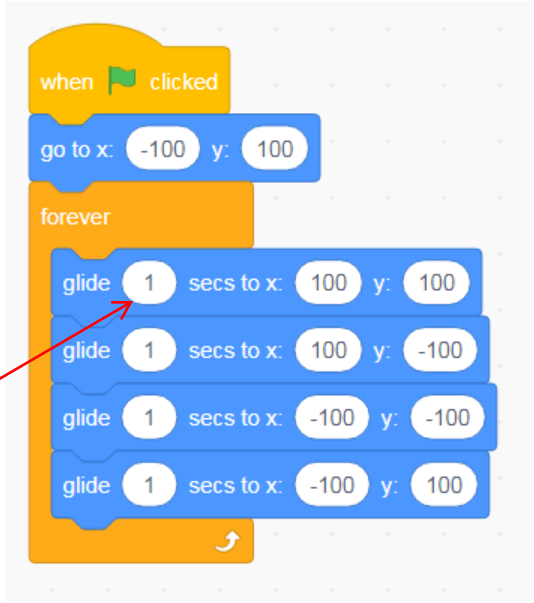
Try the following code, sprite goes on a square path.



Add 'FOREVER' block from CONTROL and enjoy!

Glide!

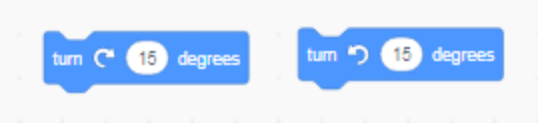
* Instead of ‘Go to’, we can use ‘GLIDE’ for smooth movements. Try:



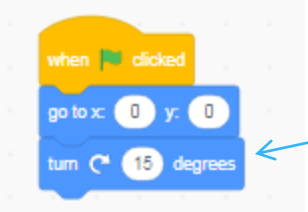
This allows to control the speed

Sprite's steering wheel!

* Two important blocks are like the steering wheel for the sprite – they make it turn.



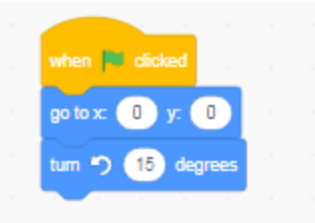
* To see these in action, run the following code again and again. See what happens!



Every time the 'flag' is clicked, the sprite turns 'clockwise' by 15 degrees.

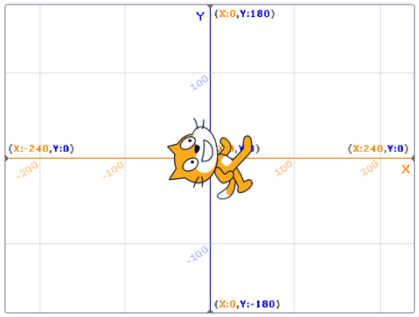
Don't worry if you don't know degree means, but try different values and see what the sprite does.

* Now, try

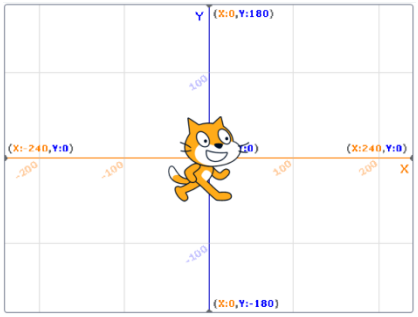


Direction of the sprite

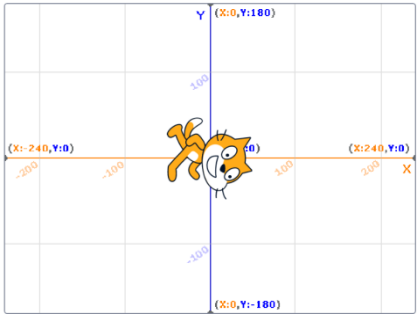
* In simple words, upward direction is 0, right direction is 90 and downward direction is 180.
* The concept of direction can be a bit tricky, so just move on if you are getting confused. It will get clear as you go on.



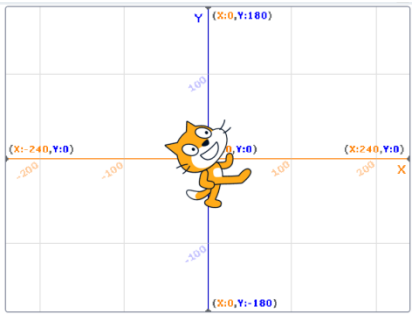
sprite pointing in dir 0



sprite pointing in dir 90



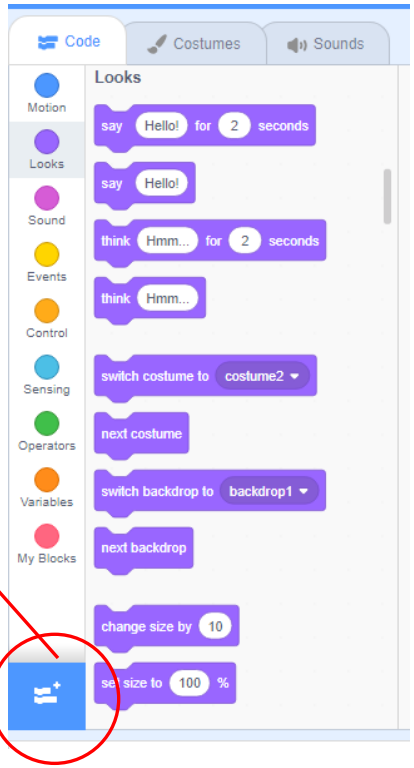
sprite pointing in dir 180



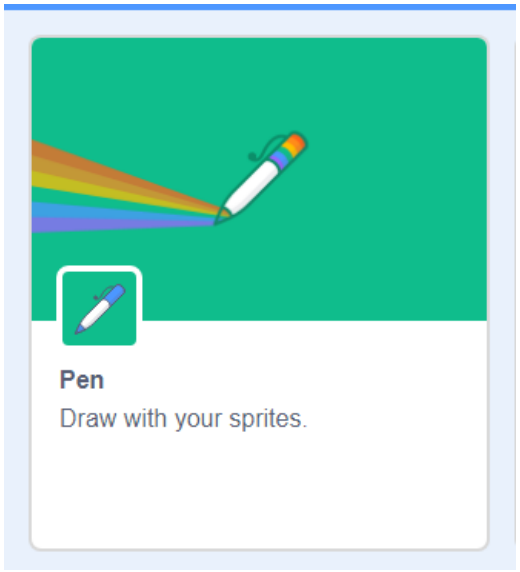
sprite pointing in dir 45

Getting sprite to draw things

* Let's add the 'PEN' extension.

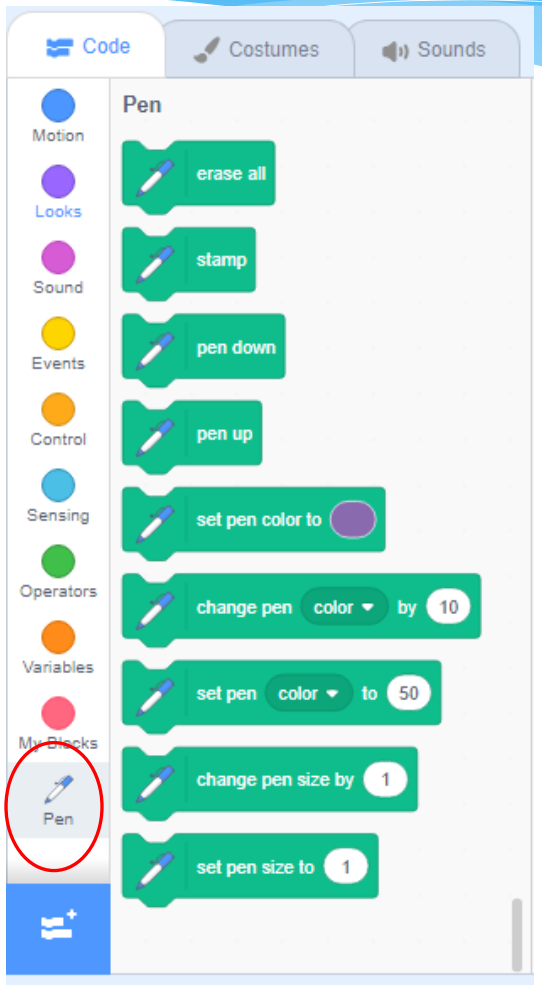


Click here



Select PEN extension

Items in the pen block



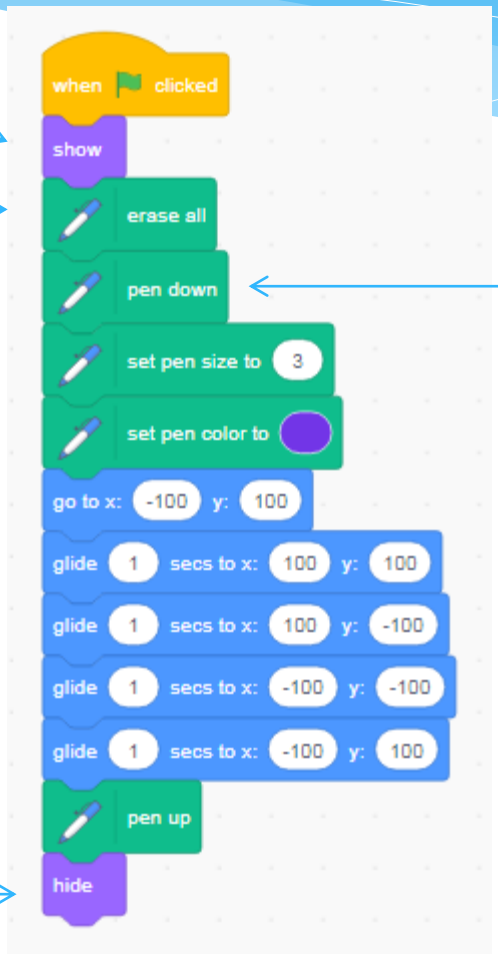
Pen blocks allow us to control the pen width, colors and so on.

Now, we will combine the motion blocks with the pen block and get sprite to draw stuff!

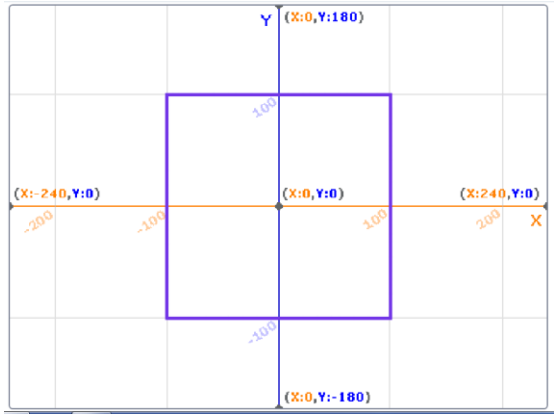
Try this – A square!

To show the sprite in the beginning

To clear the stage at the start



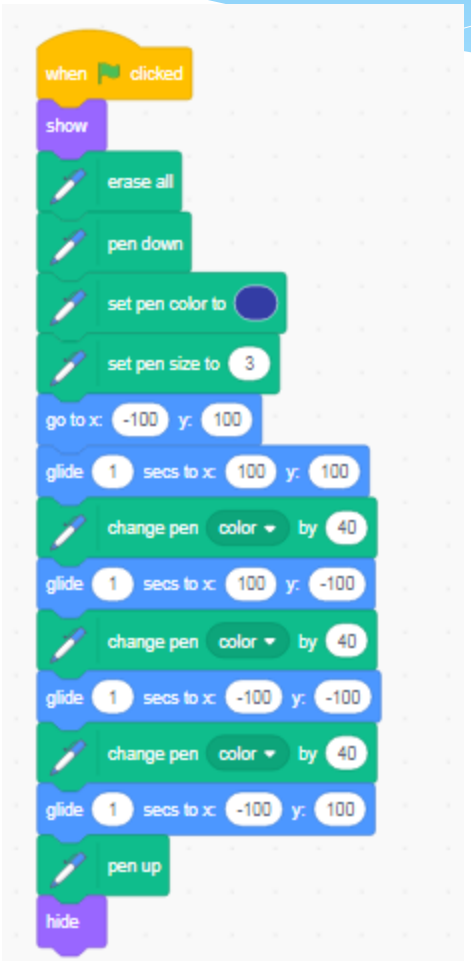
Use the pen down block to make the sprite draw

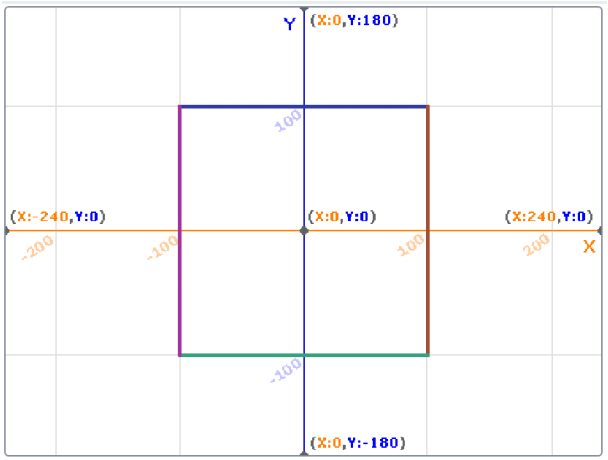


To hide the sprite in the end

Let's add some colour to the square

Notice the change of colour





And you are all set …

* At this point, you are all set for the Independent activity 1 -- DRAW.
* Enjoy, be creative, explore, learn. Happy scratching!