Drawing

Introduction

Scratch is a visual programming language suitable for children and teens to create their own interactive stories, games and animations. Projects can also be uploaded and shared with the Scratch community via the Scratch website for others to enjoy.

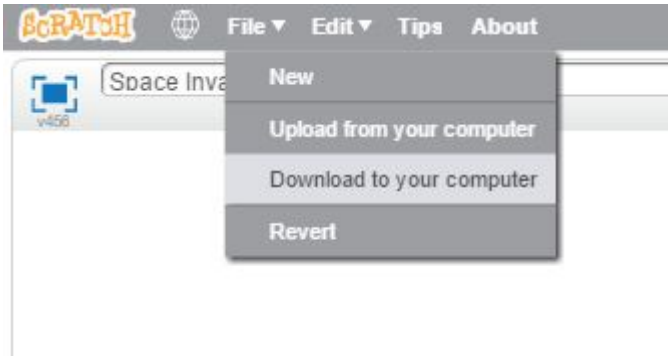
In this exercise we'll be look at controlling the Scratch turtle, passing it directional instructions and getting it to draw lines along its journey that will hopefully start to form shapes and patterns.

Let's get started by first loading Scratch. You can either install Scratch on your computer or load it via your web browser by navigating to https://scratch.mit.edu/

Top Tip

Don't forget to save your work regularly. It's good practice to get in the habit of saving any progress you've made. So when you're feeling great after solving a coding problem, save it, save it, save it!

The save options may differ slightly between Scratch versions but head on up to the File option in the top left and you'll find it.

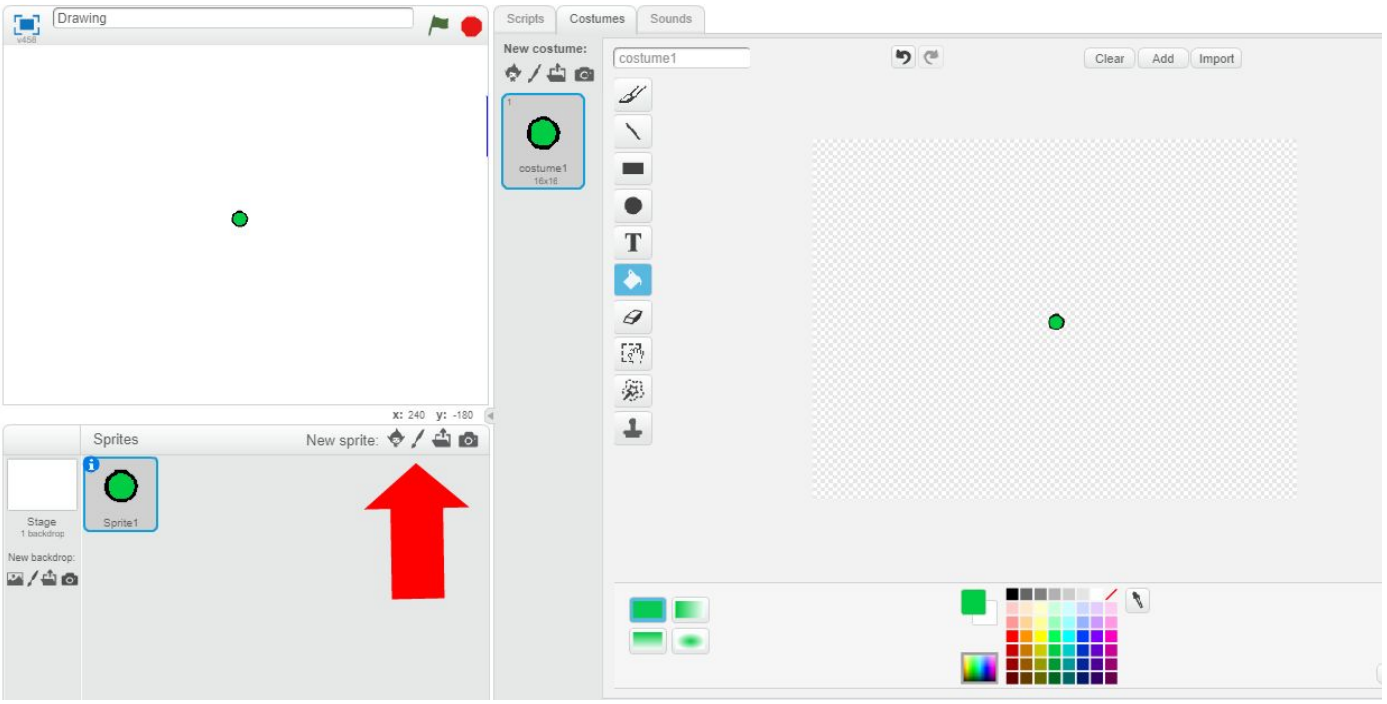


Let's get started

Step one: Paint new sprite

In this exercise we're going to be directing a sprite around the screen using our command blocks. The sprite will draw a line behind it as it goes, allowing us to draw shapes on the canvas.

The first thing we need to do is draw our sprite by selecting the arrowed 'New Sprite' option as shown below. The sprite editor on the right will allow the new sprite to be designed. For the purpose of this exercise, keep it nice and simple.

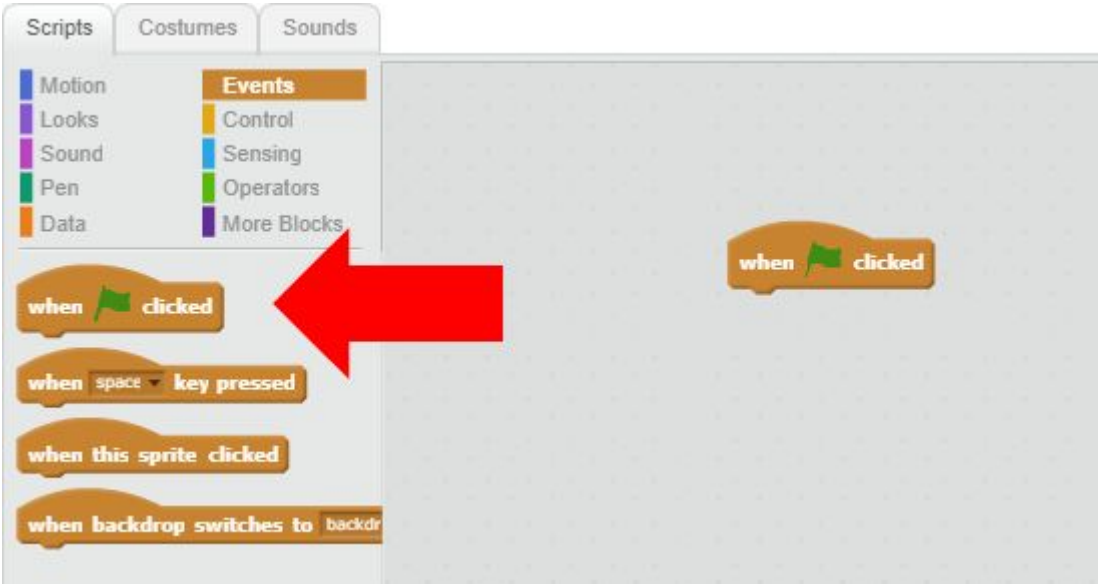


Step Two: Programming

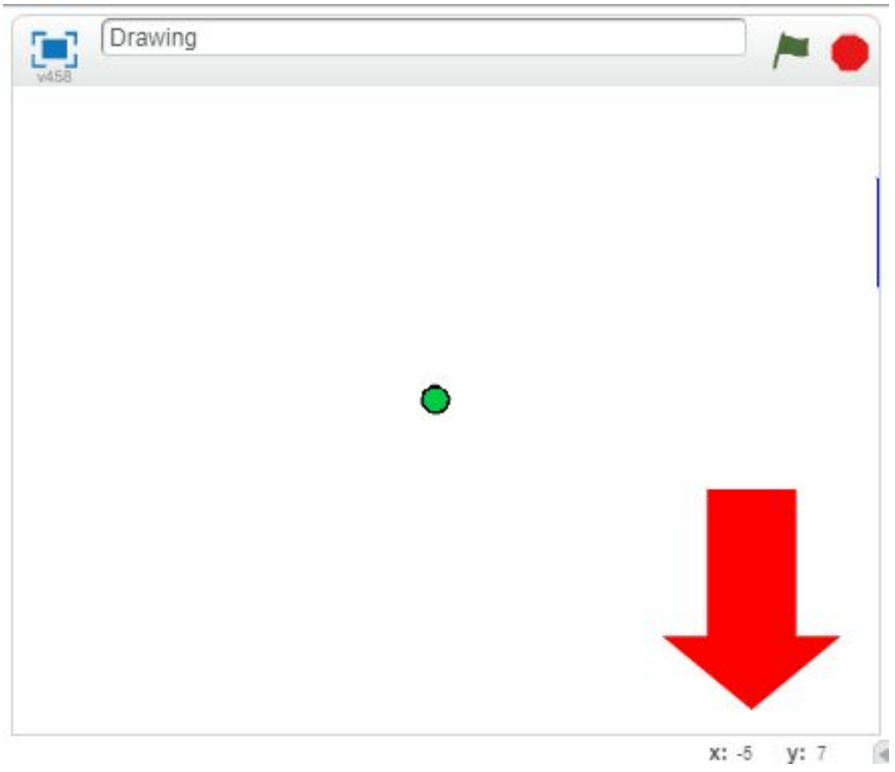
The Scripts tab allows us to program the new sprite we've created. Click on the Scripts tab and click into the Events section.

The program we are building in this exercise will start with the click of the green flag, as this will tell the computer that it can go ahead and run our program of instructions. So this is what we need to start everything off with, the When Green Flag is Clicked block.

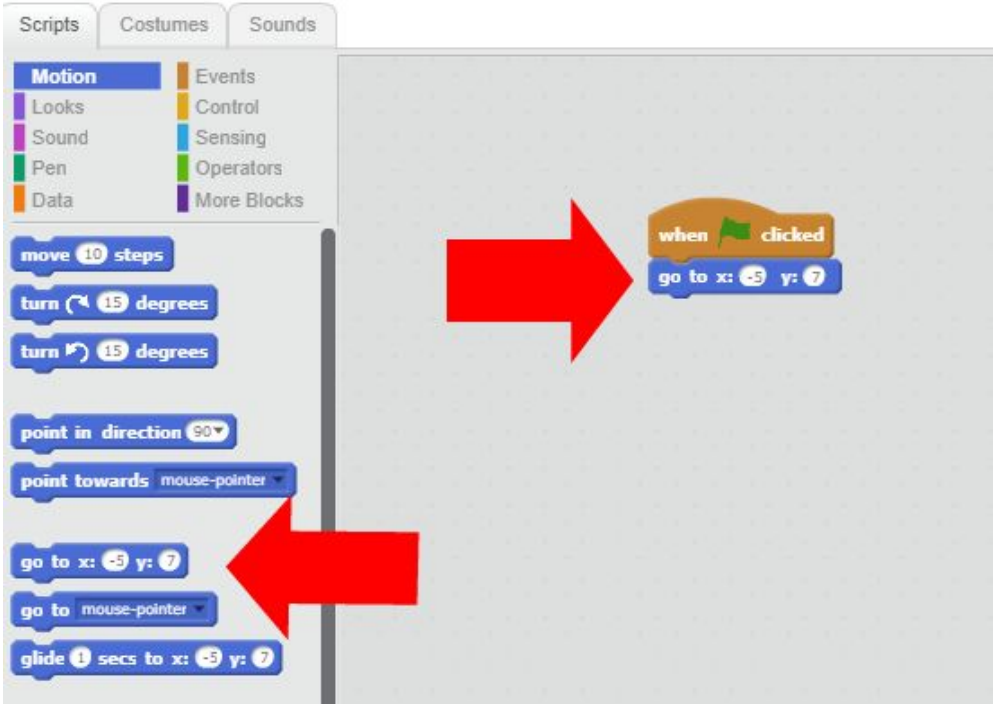
Select the Green Flag block and drag it into the working area of the right.



With every element placed within our work area, there is a coordinate that tells us its current position, rather like a grid reference on a map. The coordinates of a selected sprite, in this case our circle can be found in the bottom right hand corner of the working area.

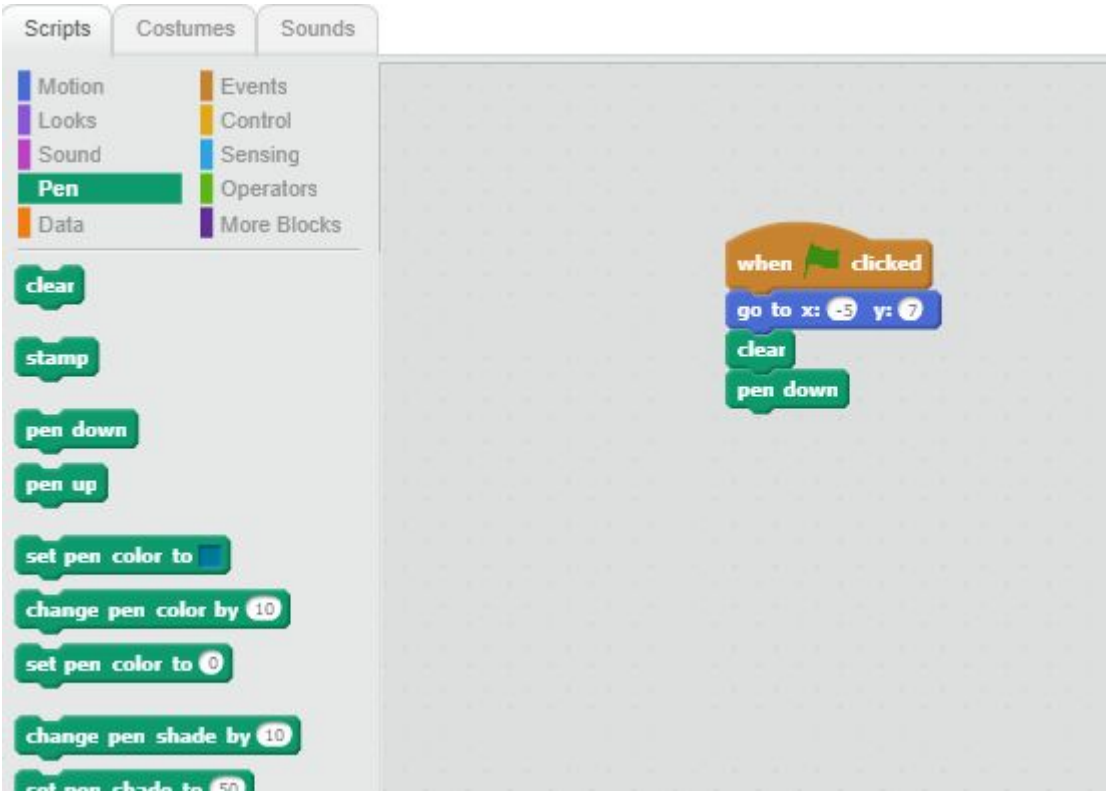


These are the coordinates that we'll use for our starting position. To ensure we start from the same position everything the green flag is ticked we need to first select the 'Go To' block, drag it into our work area as shown and fill in our starting coordinates.



Now every time the green flag icon is clicked on to start our program, our sprite will always start drawing from the same point on the canvas. We also need to ensure that should we run our program again that we need to clear any drawings from the previous run.

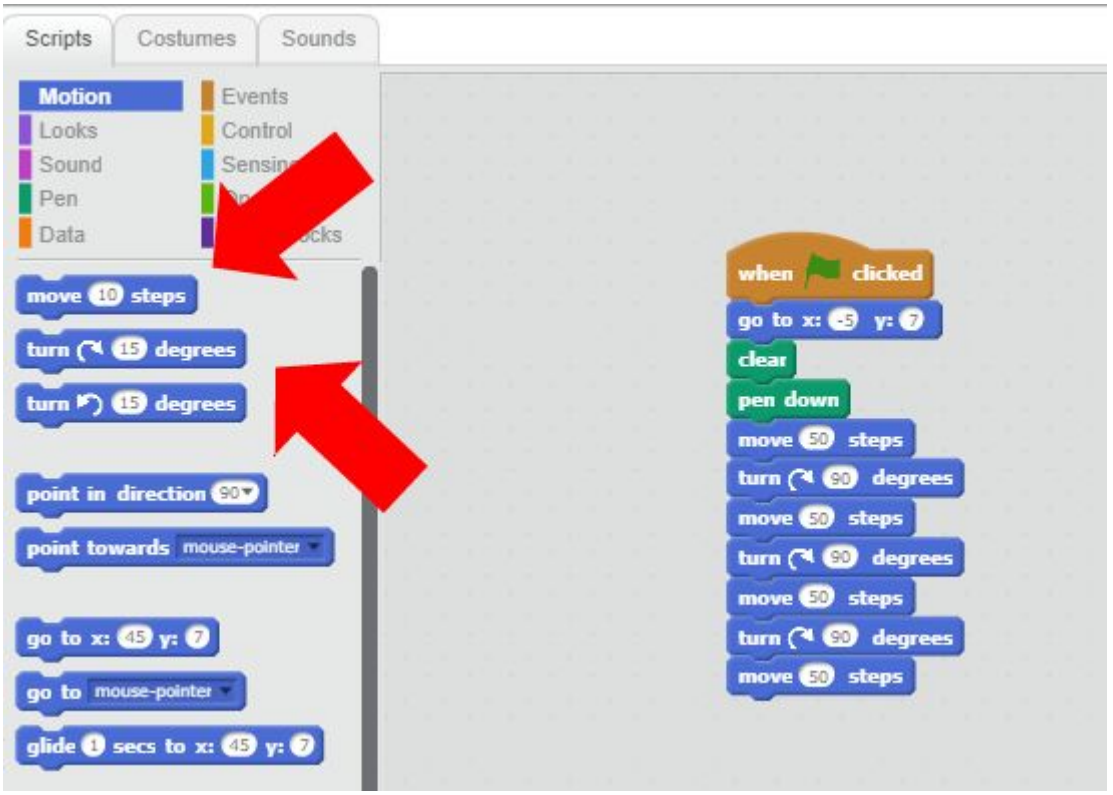
The Pen section is where all the drawing happens. The first thing to do is move the Clear block over to the working area to ensure the canvas is cleared of any previous drawings and then place the pen down ready to draw again.



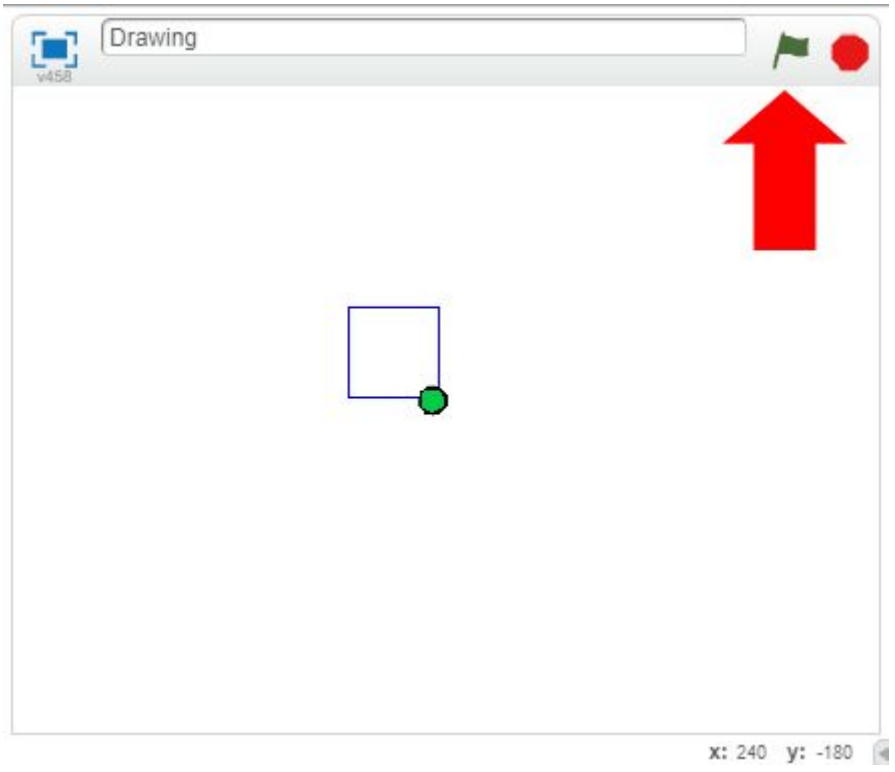
With the pen down on the canvas, if we now move our sprite it will draw a trail behind it. So let's get drawing…

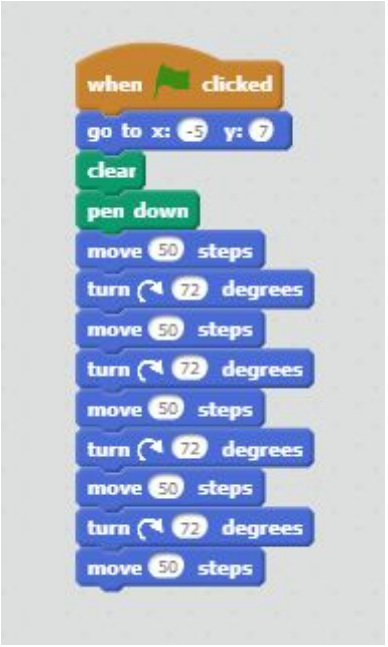
To draw a square we first want to think about the stages involved. First we want to draw a single line, rotate our sprite 90 degrees before drawing another line and repeat this process until our square is complete.

These instructions are all found within the Motion section and the instructions to draw a square stack up as per the image below.



Once we think we have the process correct, hit the green flag icon to give it a test. If all goes well, our sprite draws a square.



Something to think about...

What shapes will these programs draw?