

Start Scratching Session 1

Description

Class starts with Scratch website loaded and unique account open on each computer (login etc. covered in later session). Students start a new project, and then have a brief verbal introduction to the interface. Students create a simple program using movement, control loops and events. Strong emphasis is placed on interactive problem solving (in red bold) as an effective method for students to learn programming.

How is it tailored for 5-7 year olds?

- Hands-on programming is introduced with minimal introduction (loading Scratch, logging in etc. is not covered in this session)
- Formal progressions - steps from basic technique to more sophisticated use cases

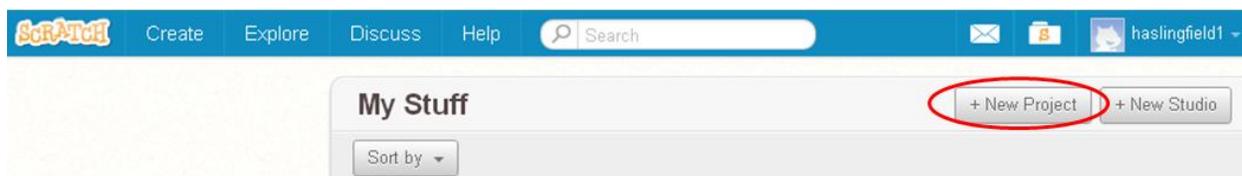
What is covered

- Introduction to Scratch interface
- Basic movement (move, if on edge bounce)
- Basic Control Loops (repeat, forever) and Events

Steps

1. Open a New Project

Students click the 'New Project' button to begin a new project



2. Introduce Scratch Interface and Basic Movement

Introduce the cat as a Sprite - something in Scratch that we can tell to do stuff. Explain that we can control the cat using scripts that make a program. Use the example of a move script. Have the student drag and drop a 'move 10 steps' block into the script area, explain that it now becomes a program, and double click it to see the cat move. Explain that the cat doesn't actually take steps, i.e. his feet do not move. The number 10 refers to how far the cat will move every time you click.

Mention that there are lots of other blocks, and point out categories and color coding. Also show that the '10' can be changed to make the cat move bigger or smaller steps by typing in a new number and pressing 'Enter'.



3. Deleting blocks

Ask the students to click on the 'Looks' category, and then drag out the block that says 'Say "Hello" for 2 seconds'. Click on this block, and the cat will say hello, another example of something we can make the cat do. Now explain that we want to keep the move block, but get rid of the 'Say "Hello" for 2 seconds' block. Demonstrate that to delete the 'Say "Hello" for 2 seconds' block we can simply drag it back into the block palette.

4. Introduce blocks fitting together and Control loops

Mention that having to click every time to get the cat to move is annoying. **Click on the 'Control' scripts and ask if there is any block that could be used to get the cat to move lots of times, even forever?** Point out that the 'forever' block is a very different shape to the 'move' block. It allows other blocks to be snapped inside its 'mouth', so they are repeated again and again. Drag the 'forever' block into the scripting area, and drag the 'move 10 steps' block so that it clips in as shown below. Point out the white line that appears when you bring two blocks beside each other - this shows that you can snap them together to make a bigger program. Now click the 'forever' block and show that the cat now keeps moving. Pretty soon the cat will get stuck at the edge of the stage. Show that to bring him back to the middle, we can click on his tail, drag him back to the middle and let go. Unfortunately he immediately runs to the edge again and gets stuck!



5. Progression from simple move script

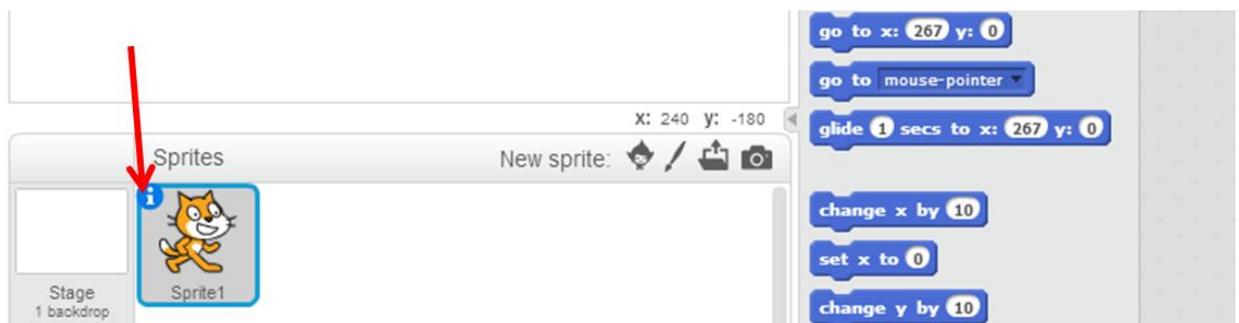
Show that cat will get stuck as soon as he gets to the edge of the screen. **Click on the 'Motion' scripts and ask if there is any block that could be used to help the cat not get stuck at the edge.** Drag the 'if on edge, bounce' block into the scripting area as shown.

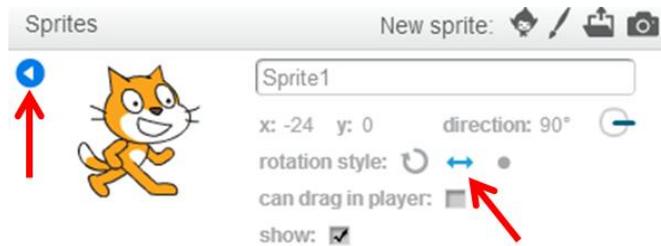


Have students double click on the 'forever' block again, and see that the edge problem is fixed. Also point out that while the program is running, there is a yellow outline around the script. This shows that the program is working. **Ask students to try to make the cat run very slowly across the screen.** Point out that we can stop the cat moving by pressing the 'Stop' button at the top of the stage. Point out that the yellow outline behind the forever loop (that shows when the program is running) disappears when we stop the program.

6. Fix the rotation problem

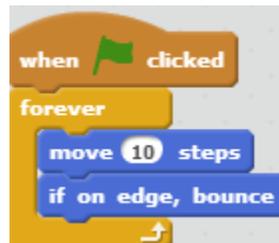
Ask the students if the cat is doing anything odd. When someone points out that the cat turns upside down every time he bounces, show them how to fix this. Start by clicking the 'i' beside the picture of the cat in the Sprites area. Then click on the line with two arrows beside 'rotational style'. Show that this fixes the 'upside down' problem.





7. Introduction to Events

Given that we can stop the program using the red stop button, mention that it would be very nice if we could start it with the green flag. Introduce the 'Events' category of blocks, and **ask students whether any block could be used to make the program run when the green flag is clicked**. Mention that this is a different shape again - it is a 'top hat' block that is snapped on top of other blocks. Snap it to the repeat loop as shown, and again notice the white line that shows that you can snap blocks together. Show that now simply clicking the green flag will cause the program to run.



8. Separating blocks

Demonstrate that to separate blocks, you click and drag the top block that you want to move. Mention that this is particularly useful when you want to delete a block in the middle of your program

9. Saving

Session 2 will start using the program created in session 1. Ask the students to check if the words 'Save Now' are on the top right corner of the screen. If so, ask them to click this to save their program. If it says 'Saved' instead, then their program is already saved.

Extra Challenge (assists understanding of control loops):

Use the 'change color effect by 25' block to make the cat change color ONCE when you click the green flag. Do NOT make him keep changing color as he runs, he should only change once.