

# Games in Scratch

2 Minute Intro – What is coder Dojo

2 Minutes what is Scratch

- Games / Computer / Phones/
- Lot of stuff on the web (see links at Bottom)
- Point out people in the room that can help
- These are some notes to get you started; There are lots of experimenting and poking around you will need to do yourself!

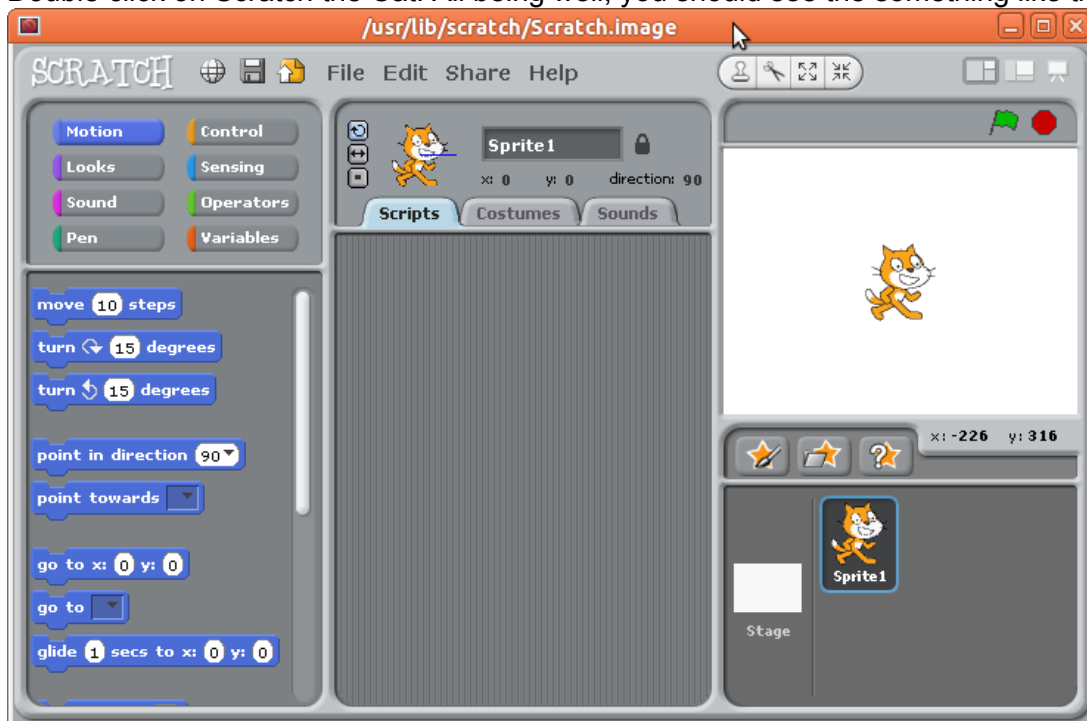
## 1. Getting a copy of Scratch to play with

- Get from Web: [http://info.scratch.mit.edu/Scratch\\_1.4\\_Download](http://info.scratch.mit.edu/Scratch_1.4_Download) (Or Google 'MIT Scratch Download'). Or ask somebody if they have a copy on USB Key.
- Double click to start the Install (put the program on your computer).
- If all goes well, you should see the Scratch the Cat icon somewhere on your desktop



## 2. Starting it up

Double click on Scratch the Cat. All being well, you should see the something like the picture.



***Try it out!*** Take a look around. Try pushing buttons and click on things. Find out what they do. Tell your friends to see who has found the coolest.

### **Tour of the Screen**

- On the top left , in tabs top left, programming blocks like lego middle block menu, click on the tabs see how the options change).
- Menus with some commands (Save Project, New Project) are on the top middle
- Middle Section (scratch the cat with 'Sprite 1') is the work area - we drag and drop the blocks from the left and create a programs in this middle area
- On Top right is the sprite / costume editing area where we can change how the Sprite (scratch the cat) looks)

***Try it out!*** Can you find out how to ....

- *Edit the picture of Scratch the cat to make him look different*
- *Record a sound and play it back*
- *Drag blocks from the left to the middle and make them 'Stick' together?*
- *Find out all the 8 different types of blocks (colours) that are available to play with*
- *Save your work (project)?*

### 3. Making Scratch Say Hello



- Drag and drop the blocks from the left to the middle until your screen looks like the picture on the left
- Hint; you may need to click on the different coloured tabs to find all the blocks.
- When you press the 'Space' key scratch will say Hello!

#### **Try it out!**

- Can you make scratch say your name instead?
- Can you make the program run when you press a different key (like 'S' for start)?

### 4. Making Scratch Move (Motion)



- Drag and drop the blocks from the left until your screen looks like the picture.
- Hint; you may need click on the dropdown boxes (down arrows) on some of the boxes
- Hint; To get rid of a block, just drag it away from the centre of the screen (and drop it somewhere else)
- When you press the right arrow Key -> scratch should move 10 steps to the right.

#### **Try it out!**

- Now make Scratch turn left / right / up / down when you press an arrow key.
- Add another step make Scratch move 10 steps in each direction.
- Make Scratch say 'I am moving left' or 'right' as he moves
- Find a new Picture on the web / on disk. Use that instead of Scratch the cat.
- Get Scratch to play a sound as he moves.

*Hint; Use four different code blocks, one for each key.*

## 5. Getting Help - STFW (Search the fantastic Web)

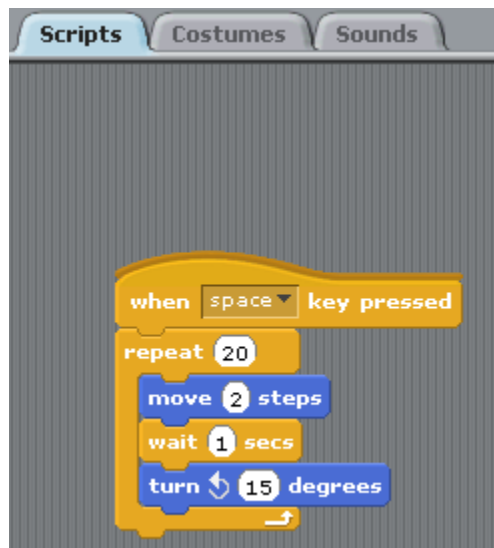
Ok , you're bumping into a problem or you want to know more?

- Ask the people sitting beside you.
- Ask the nice people at coder-dojos (but we won't always be there)
- Look at the Help that comes with Scratch (it's under the Help Menu at the top middle to screen)
- On the web, look at the links , video at the end of the guide.
- Google for it . A phrase like 'MIT Scratch Howto play sounds' will bring up plenty of results.

### **Try it out!**

- Find out how to change the background ('Stage' in Scratch). Make it look as good, weird , funny or Gothic as you can.
- Find out out to give Scratch the cat a different costume. Find out how to press a key to switch between the two.

## 6. Do it again. And Again . And Again ...



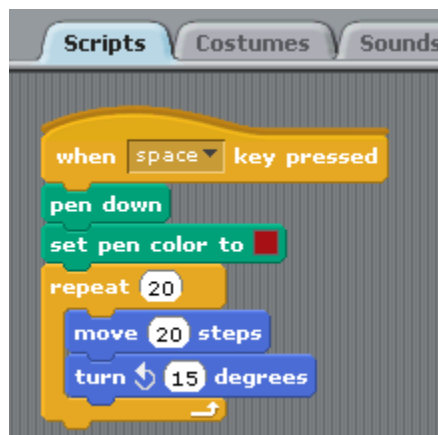
- Drag and drop the blocks until your screen looks like the picture.
- When you press the space key ... scratch will move two steps, turn a bit ... and do this 20 times.
- Hint: you may need to Hit the big red button (top right of screen) to stop the script

**What's a loop? Anything that you want Scratch to do again, and again, and again!**

### **Try it out!**

- Make Scratch turn in a loop 100 times instead of 20.
- As he turns, make scratch a little bigger each time.

## 7. Get Scratch to draw a line...

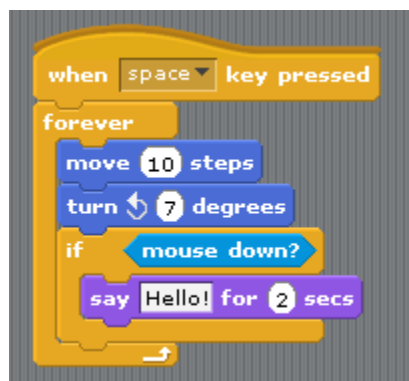


- Drag and drop the blocks until your screen looks like the picture.
- Hint; This one is very similar to the previous one, so you may want to use it again.
- Hint; to 'break' apart the code blocks, drag the bottom one downwards.
- When you press the space button, Scratch moves and loops like before, only this time leaving a line behind him

### Try it out!

- Make the pen colour change as scratch moves. You should end up with a multi-colour line.
- What other visual and sound effects can you add?
- Find out how to clear the colours you've drawn. Make it clear when you press the 'C' key.

## 8. IF ... Deciding what to do



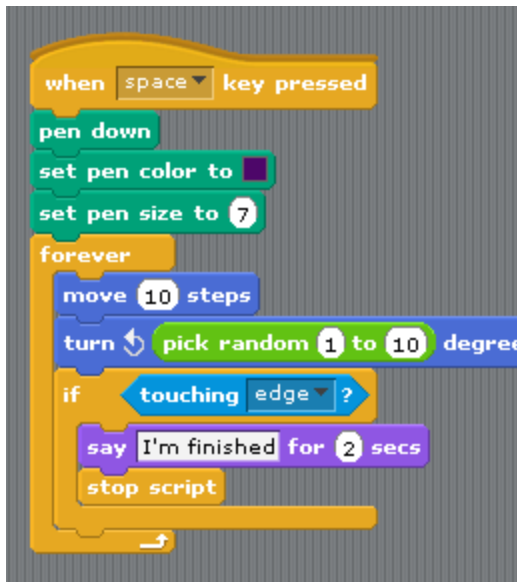
- Drag and drop the blocks until your screen looks like the picture.
- Hint; In this one, you may need to drag some blocks to fill the spaces inside other blocks
- When you press the space ... scratch will move in a loop .... forever!
- When you click the mouse, Scratch will stop and say hello.
- To stop, click the red button on the top right of the screen.

IF and WHEN allow you to make a decision. IF it is 12 O'clock I will eat Pizza ELSE I will play with Scratch

### Try it out!

- Add another IF to check 'P' key has been pressed, put pen down.
- Add another IF to check 'U' key has been pressed, take the pen up.

## 9. Finding out when you hit things



- Drag and drop the blocks until your screen looks like the picture.
- When you press the spacebar Scratch will move about at random.
- When Scratch bumps into the edge, Scratch will stop and say 'I'm Finished'

Seeing if you've bumped in to something is pretty important. How much fun would your game be if you never noticed that you've hit a wall?

### Try it out!

- Draw a maze on screen. Get Scratch to bounce around the maze.
- Hint: this is probably easier if you draw the maze in black, then get scratch to see if he is touching a colour.
- Hint: Remove the bit that stops the program when you hit something.

### Try it out!

- Make loads of copies of Scratch the cat. Get them moving. Get them to say 'ouch' when they hit each other

## 10. Give Scratch a memory

What are variables? They're a box that you can store a number, word, or pretty much anything else in. Variables give Scratch the Cat a memory.



- Create a variable (box) called counter to store the number
- To do this, go to the 'Variables' Panel on the top left. Click on 'make a variable'. In the Popup box that appears, give the variable a name 'counter', and make sure ('for all sprites') has a circle next to it.
- Click OK. It should now look like the picture on the right.
- Notice that the 'variable' (box) *counter* appears in orange,
- Notice the new blocks allowing you view and change what is in the variable / box?
- The word 'counter' should also appear in the top left of the stage (on other side of the screen).



- Drag and drop the blocks from the left to the middle of the screen so they look like the picture on the left.
- When you press the space bar... scratch should count from 1 to 10.

### **Try it out!**

- Change the program to get it to count backwards. Add a loud noise when it gets to 0
- Make another variable called Name. Get scratch to ask you your name, then say 'Hello [yourname]'.

Well done, now you have all the bits you need to program Games!.

The words may be different in other computer languages, but the ideas are the same.

## What are you going to do next?

*Pick one of the following projects, (or come up with a better one). See how far you get*

- 1. Bouncing ball. Draw a Ball. When you press a key, get it to move. When it hits a wall, make it bounce back the opposite direction.*
- 2. Bouncing Ball and Bat game. Same as above, but with a bat. If you miss the ball you lose the game.*
- 3. Breakout game. Like the Bouncing ball game, only with bricks at the top of the screen when you hit them.*
- 4. Scratch Guesses a number between 1 and 100.*
- 5. Piano. Draw a piano on screen (hint use a new sprite for each of the keys). When the key is pressed play a note.*
- 6. Draw a race track. Drive a car around it.*
- 7. Cartoon; Tell a story in scratch. Use different characters, costumes, sounds and speech bubbles. Show it to your friends and see who has the best one.*
- 8. Pool / Snooker game*

**Take a look at <http://scratch.ie/competition>**

Things to ask (or maybe playaround with, guess what they do. Hint; Google for help!)

- Sprite Tools (top right); Copy , Paste, make larger, make smaller
- Ask what all the blocks you haven't played with yet do. Better still try them out.

Really Advanced stuff. Ask somebody about it if you dare

- Operators
- Global and local Variables
- Broadcasting

If you want to find out more (and thanks to)

- Main Scratch Help book [http://info.scratch.mit.edu/Support/Reference\\_Guide\\_1.4](http://info.scratch.mit.edu/Support/Reference_Guide_1.4)
- Videos showing how to do stuff in scratch; <http://learnscratch.org/video-courses/scratch-1>
- Scratch Web page <http://scratch.mit.edu/>
- <http://scratched.media.mit.edu/resources>
- More learning stuff (for students) <http://www.scratch.ie/module1>