

Lesson 1

Teaching Your Kids Programming with

SCRATCH

About me

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- BDP – Hotels.com
- Computer Science – King's College London



About you

- Name
- Role
- Why you chose to do this (short) course



Coming up

- Why knowing how to program is important for kids
- What programming is
- Code examples
- What it's like to be a programmer
- Introduction to Scratch
- Making a flying cat



Why is this important?

- Creativity
- Confidence
- Resilience / persistence
- Communication and collaboration
- Improve understanding of abstract concepts (like Maths)
- Opens up many career options



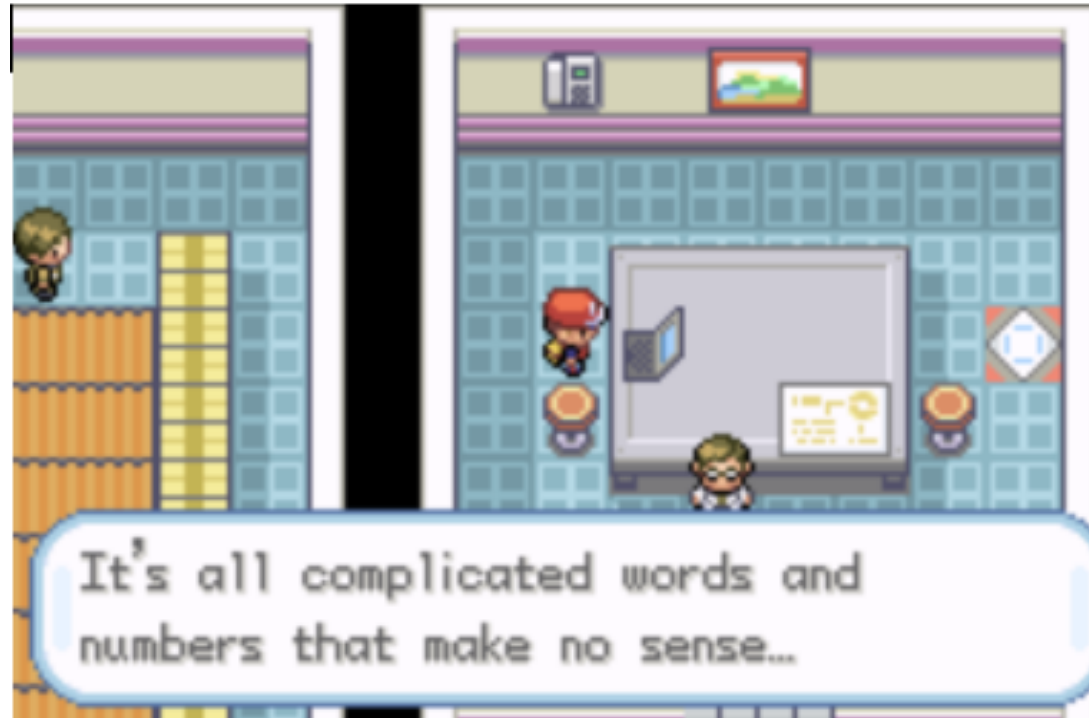
Notes

- A lot of topics may not make sense the first time around. So, refrain from negative self-thoughts
 - No practice = little to no improvement (just like a foreign language)
 - Need to strike the balance of what you tell the computer to do and what you think you told it to do
 - It's important to not give the whole answer away when teaching someone else (hard to do sometimes)
-
- If at any point you don't understand something, please **stop me and let me know**



What is programming?

When you start programming for the first time



Source: [reddit.com/r/programminghumor](https://www.reddit.com/r/programminghumor)



Code examples (with popularity according to GitHub)

JavaScript (#1)

```
var x = 1;

if (x > 0) {
  console.log("x is positive");
} else if (x == 0) {
  console.log("x is 0");
} else {
  console.log("x is negative");
}
```

Python (#2)

```
x = 1

if x > 0:
  print("x is positive")
elif x == 0:
  print("x is 0")
else:
  print("x is negative")
```

Java (#3)

```
int x = 1;

if (x > 0) {
  System.out.print("x is positive");
} else if (x == 0) {
  System.out.print("x is 0");
} else {
  System.out.print("x is negative");
}
```

Ruby (#4)

```
x = 1

if x > 0
  puts "x is positive"
elsif x == 0
  puts "x is 0"
else
  puts "x is negative"
end
```



Software developers google stuff all the time

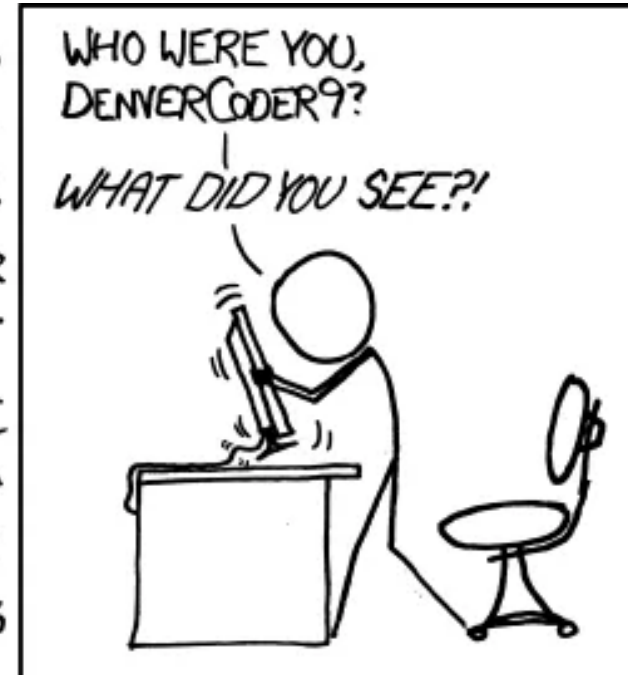


Source: reddit.com/r/programminghumor



From **xkcd** comics: Wisdom of the ancients

NEVER HAVE I FELT SO
CLOSE TO ANOTHER SOUL
AND YET SO HELPLESSLY ALONE
AS WHEN I GOOGLE AN ERROR
AND THERE'S ONE RESULT
A THREAD BY SOMEONE
WITH THE SAME PROBLEM
AND NO ANSWER
LAST POSTED TO IN 2003



It's not always easy, but when you make it work, it's very satisfying















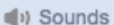


Introduction to Scratch:

- Scratch helps young people learn to:
 - think creatively
 - reason systematically
 - work collaboratively
- Lets you program your own interactive stories, games, and animations
- https://www.youtube.com/watch?v=AiYO_unP67w



<https://scratch.mit.edu>

- Make an account (it's free)
-      click on create to start your project
-  Sprite = character – you can choose your own
-  Backdrop = background
-   – how to start and stop the program
-    – allow you to control what the *sprite* does (after you click on the *sprite* image)
-    – allow you to control what the *backdrop* does (after you click on the *backdrop* image)



Scratch

FileEditTutorials

Untitled

Share

See Project Page

Save Now

ananamj

CodeCostumesSounds

Motion

Motion

move 10 steps

turn 15 degrees

turn 15 degrees

go to random position

glide 1 secs to random position

point in direction 90

point towards mouse-pointer

change x by 10

set x to 0

change y by 10

set y to 0

Looks

Sound

Events

Control

Sensing

Operators

Variables

My Blocks

Scripts area

Stage

x: -240 y: 180x: 240 y: 180

x: -240 y: -180x: 240 y: -180

Sprite1

x0y0

ShowSize100Direction90

Backdrops1

List of sprites

Backpack

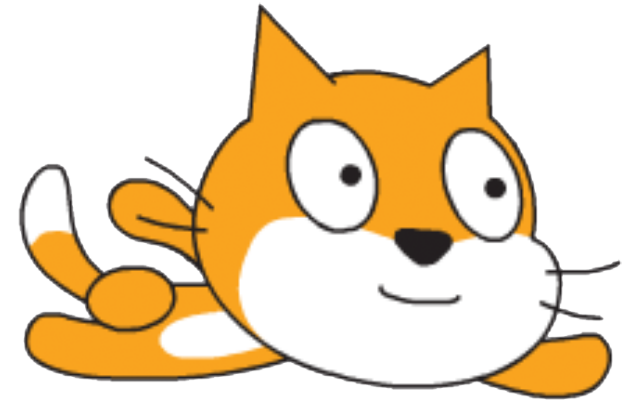
Quick intro

- We can drag a block in the script area and **click it to run it**
- Other kinds of blocks are in categories
- Blocks of code can be **snapped** on each other to run **sequentially**
- We can add an **event** block to decide when the blocks should run
- Blocks can be reordered, duplicated and deleted
- You can have as many characters as you want to your project and **code each one**

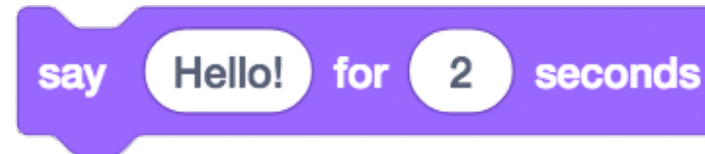
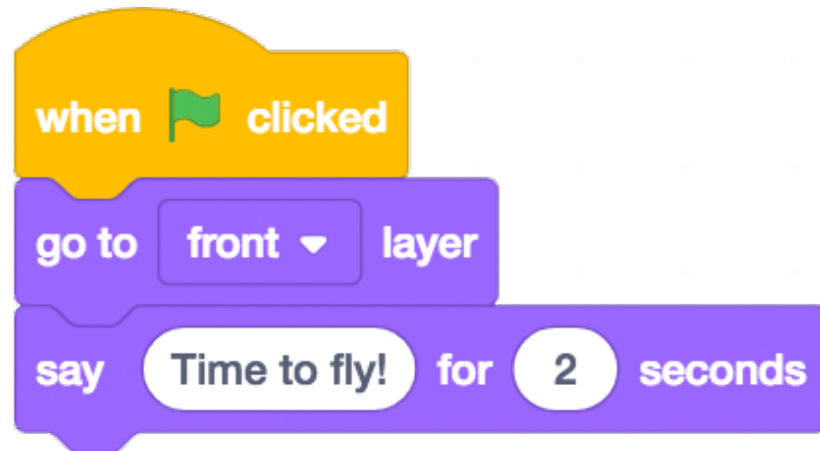
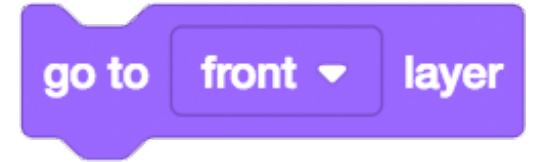


Let's make a flying cat

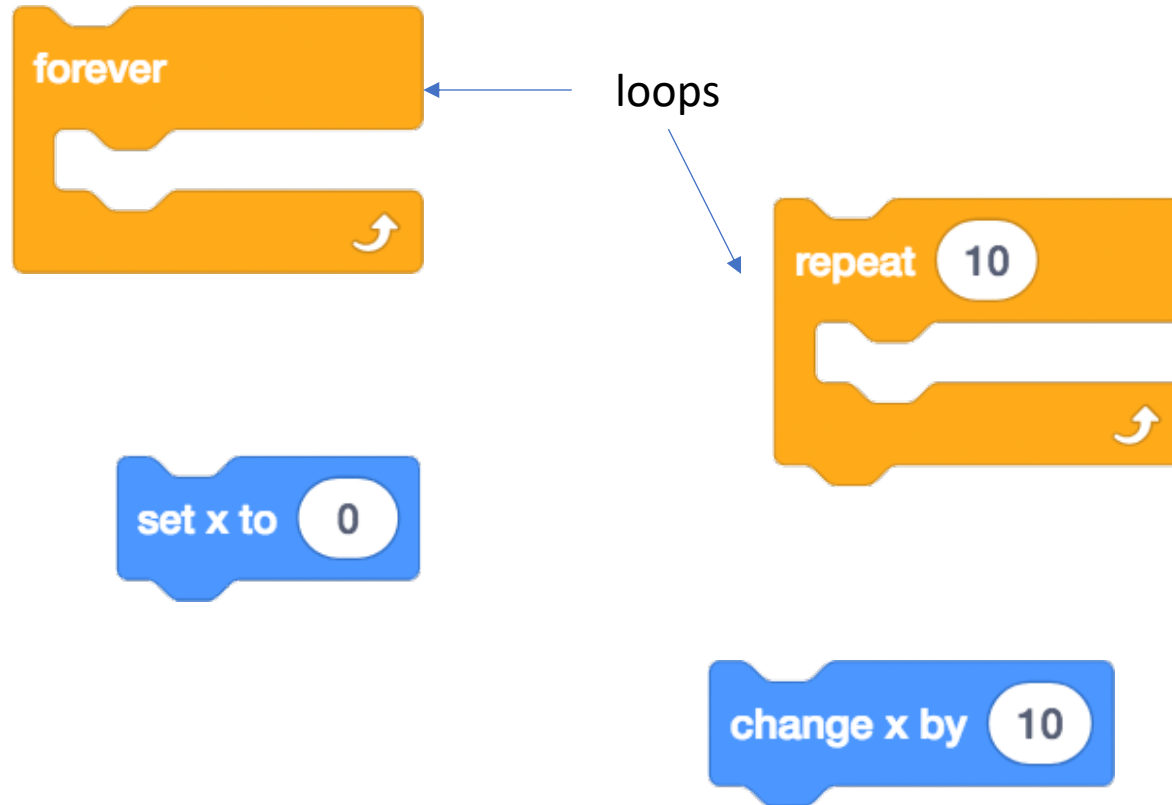
By using the “Make It Fly” tutorial



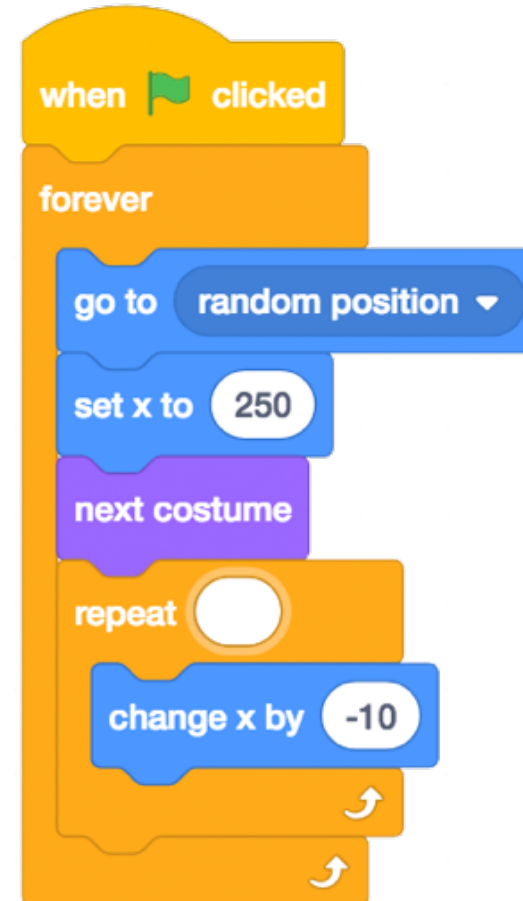
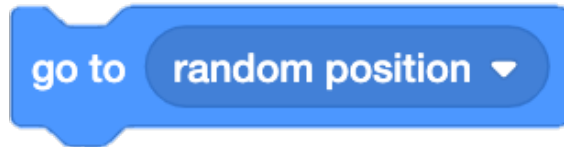
Prepare to fly



Making the scenery move



Painting the sky



Next time

- Making a game in Scratch

