

Using a microcomputer known as a Raspberry Pi, students learn how to code in Python over the course of 10 structured lessons, resulting in the creation of a video game. At the end of the course, students can take home their microcomputer in order to continue their learning.

LESSON 1: THE COMPUTER & PROGRAMMING

Aims: To teach the basic components of a computer, what programming is and how to think like a programmer.

Outcomes: To be able to name the four basic parts of a computer and be able to make a 'Hello, World!' program and a simple adder in Scratch (programming language).

LESSON 2: IFS – CONDITIONAL PROGRAMMING

Aims: To learn how to use 'ifs' in programming, and how programs make decisions.

Outcomes: To be able to make a simple program using if statements and to understand how 'ifs' are used in programming.

LESSON 3: LOOPS

Aims: Learn what loops are, how to use them and what they are useful for.

Outcomes: Be able to use two different types of loop, 'repeat' and 'repeat until' (equivalent to 'for and while' loops) and combine these with what the class have learned already to begin making their first complicated programs.



LESSON 4: EVENTS & MOVEMENT

Aims: Learn what events are and how to make 'sprites' move in Scratch.

Outcomes: Be able to make an event based game where a player avoids objects by moving around with the arrow keys.

LESSON 5: LISTS

Aims: Learn what 'lists' are, what they are useful for and how to use them.

Outcomes: Be able to write programs using lists and add score saving to a computer game.

LESSON 6: SORTING

Aims: Learn how to do sorting in Scratch and how sorting is useful for programming.

Outcomes: Be able to make an 'insertion sort' algorithm and begin finishing the computer game with a sorted score table.

LESSON 7: PYTHON

Aims: Learn what a programming language is and how to write a program in Python.

Outcomes: Be able to make a few simple Python programs.



LESSON 8: METHODS

Aims: Learn what 'methods' are, what they are useful for and how to use them.

Outcomes: Be able to write method versions of algorithms used in the previous lesson and write a new recursive algorithm called 'binary search'.



LESSON 9: GAME TESTING

In the penultimate lesson, students will test out their creation, fixing any bugs in the process.

LESSON 10: COURSE REVIEW

The final lesson will act as a revision of the previous two weeks' work, drawing conclusions based on experiences, and how to continue learning beyond the end of the course.