Teacher Training Notes

Introduction  
What and Why we have started this.

Session 1 – Jake to do until Coding Section A

Slide 1 – What is programming?

* Programming is a way to instruct the computer to perform various tasks.

Slide 2 – What is Python

* Python is a popular programming language that can be used to program computer scripts. It is easier to learn and read. Though it was created in the 90s, it is becoming more and more popular. In this course we will be using Python 3.

Slide 3 - What's it used for?

* Python is often used for software applications, data science, pages within a web browser, games and many other things.

Slide 4 - Who uses it?

* Instagram
* Spotify
* Amazon
* SurveyMonkey
* Facebook
* Uber
* Netflix
* Dropbox
* Google

Slide 6 - Naming Python Files

* When you name your python files, make sure they always end with .py

Slide 7 - Naming Python Files

* When naming your file, try to name it with what the script actually does

Slide 8- Naming Python Files

* Here are some examples of naming Python files, each one describes exactly what the file does.

Slide 9 - Naming Python Files

* The rules to naming your Python file is that they should always be; lowercase, use underscores instead of spaces and include no punctuation. This makes it easier when you want to run your python script.

Slide 10 - Running a Python Script

* When you have created your script, you then run it, to check that it works.

Slide 11 - Running a Python Script

* When using Repl.it, you just type your code and click Run.

Slide 12 - Running a Python Script

* So if you run the below script, it will print “Hello World”.

Slide 13 - Text Editor

* A text editor is a piece of software we use to write our programs. During this course we will be using Repl.it.

Slide 14 – Repl.it

* Your URL is unique to you. If you have created an account with repl.it, each week you can create a new repl for your new code.

Slide 15 - Hello, world!

* Hello World is often the first program written by people learning to code.
* So let’s try this now.
* Go to your repl.it
* Within the code type print(“Hello World”) and save again.
* Then click run.
* This should run your first program!

Slide 16 – Variables

* A variable is a container for a value.

Slide 17 – Variables

* The equals sign assigns your value to the variable you have just created.

Slide 18 – Variables

* These are all examples of variables;
* the variable name holds the value Charlie,
* the variable age holds the value 27
* the variable left\_to\_pay holds the value 29.99
* the variable has\_paid holds the value False

Slide 19 – Variables

* When creating your variable, you can:
* Use any mix of letters, numbers and some special characters
* It must start with a letter
* Keep lowercase
* Use underscore where there are spaces

Slide 20 - Data Types

* In Python, there are many data types to become familiar with.

Slide 21- Strings

* Strings are letters, numbers or phrases that are surrounded by quotes.

Slide 22- Strings

* On the screen are all examples of strings, as they are all characters surrounded by quotes.

Slide 23– Escaping

* Escaping is a way to use backslash and letters to manipulate the strings

Slide 24 – Escaping

* For example: putting \n next to your string will give a new line, \t will tab a line, and \" will include a double quote within your string

Slide 25 - Escaping

* These two examples show escaping in use
* The first - favourite\_food = "Pizza from \"Dough N' Sauce\"" – will include quotes around the name within the string
* The second - shopping\_list = "Apples\nBread\nMilk\nEggs" – will have each item of the shopping list ton a new line

Slide 26 – Coding Time - Section A

* Now, we’re going to code through some examples and pause for you to have a go at a couple of the questions.

Slide 27– Coding Time - Section A

* I’ll leave these up for 5 minutes and the videos are live for 2 weeks if you want to come back to them later.

Slide 28 – Integer – Saf does from here

* Another data type is integer or int. This is a whole number.

Slide 29 – Integer

* Here are some examples, as you can see they have no quote marks, so an integer is simply a whole number without quotes.

Slide 30 – Float

* A float is a decimal number, again without quotes.

Slide 31 - Float

* Here are some examples, as you can see like integers, they have no quote marks, so a float is any decimal number without quotes.

Slide 32 – Boolean

* A Boolean is a data type that has one of two possible values. This can be True or False.

Slide 33 - Boolean

* The syntax is important here, it is either True or False, with the first letter capitalised and no quotes.
* As these are known definitions in Python, when you type these into the text editor, they should turn blue.

Slide 34 – None

* The last data type we will look at is None.
* This is the absence of a value, if you think of an excel spreadsheet, when a box is blank, it has No value rather than a zero value.

Slide 35 - None

* These can be useful if you want to know that a shopping basket is empty for example.

Slide 36 - Numerical Operators

* These are similar to the ones you may have learnt previously in maths lessons with a few new additions.

Slide 37 - Numerical Operators

* Read through the box, working out each example.
* Exponent is the same as the power to, 4\*\*2 is 4 \*4 so 16.
* Modulus gives you the remainder, so when 10 is divided by 3 the remainder is 1

Slide 38 - Numerical Operators

* You can use the numerical operators in your scripts.

Slide 39 - Numerical Operators

* You can assign integers or floats to variables and then and then use the numerical operators on them, as shown in this example.

Slide 40 – Concatenation

* Concatenation merges two strings together by using the + symbol.
* It can only merge strings together, it cannot merge an integer and string.

Slide 41 - Concatenation

* This example shows that when merging the string “Hello” and the variable first\_name, it will print Hello Bob.
* The second example shows that when merging the string “Good morning” and the variable full\_name it will print Good morning Bob Jones as the full name was concatenated earlier in the variable full\_name.

Slide 42 - Order of Operations

* When utilising the operators, there is an order in which they are used.

Slide 43 - Order of Operations

* Read out the order of operations from the slides.

Slide 44 - Order of Operations

* There are two sums here, that show the important of order of operations. In the first question , you will get the answer 14, with the brackets it changes the value to 18.

Slide 45 - Coding Time - Section B

* Now, it’s your time to try some coding, please refer to Section B on your worksheets.
* You’ll have 20 minutes on this.

Slide 46 – Questions

* If you have any questions during the week, please go to sli.do and type the code ihfcode.
* Here you can ask us any questions and on Thursday we will be going through the answer to the questions from today and answering your questions.