Introduction to Python

Python is an easy-to-learn and powerful Object-Oriented Programming language. It is a very high-level programming language.

Why Python?

1. **Easy to Use:** Python is comparatively an easier-to-use language as compared to other programming languages.
2. **Expressive Language:** The syntax of Python is closer to how you would write pseudocode. Which makes it capable of expressing the code's purpose better than many other languages.
3. **Interpreted Language:** Python is an interpreted language; this means that the Python installation interprets and executes the code a line-at-a-time.
4. Python is one of the most popular programming languages to be used in Web Development owing to the variety of Web Development platforms built over it like Django, Flask, etc.

It is used for:

- web development (server-side),
- software development,
- mathematics,
- system scripting.

Why Python?

- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).
- Python has a simple syntax similar to the English language.
- Python has a syntax that allows developers to write programs with fewer lines than some other programming languages.
- Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.
- Python can be treated in a procedural way, an object-oriented way or a functional way.

Good to know

1.

- The most recent major version of Python is Python 3, which we shall be using in this tutorial. However, Python 2, although not being updated with anything other than security updates, is still quite popular.
- In this tutorial, Python will be written in a text editor. It is possible to write Python in an Integrated Development Environment, such as Thonny, Pycharm, Netbeans, or Eclipse which are particularly useful when managing larger collections of Python files.

Python Syntax compared to other programming languages

- Python was designed for readability and has some similarities to the English language with influence from mathematics.
- Python uses new lines to complete a command, as opposed to other programming languages which often use semicolons or parentheses.
- Python relies on indentation, using whitespace, to define scope; such as the scope of loops, functions, and classes. Other programming languages often use curly-brackets for this purpose.

Python Download

Many PCs and Macs will have python already installed.

To check if you have python installed on a Windows PC, search in the start bar for Python or run the following on the Command Line (cmd.exe):

```
C:\Users\Your Name>python --version
```

To check if you have python installed on a Linux or Mac, then on Linux open the command line or on Mac open the Terminal, and type:

```
python --version
```

In case you have not found:-

The very first step towards Python Programming would be to download the tools required to run the Python language. We will be using Python 3 for the course. You can download the latest version of Python 3 from https://www.python.org/downloads/

Note:- If you are using Windows OS, then while installing Python make sure that “Add Python to PATH“ is checked.

2.

Getting an IDE for writing programs:
You can use any IDE of your choice, however, you are recommended to use Jupyter Notebook. You can download it from https://jupyter.org/install.

Python Quickstart

Python is an interpreted programming language, this means that as a developer you write Python (.py) files in a text editor and then put those files into the python interpreter to be executed.

The way to run a python file is like this on the command line:

```
C:\Users\Your Name>python helloworld.py
```

Where "helloworld.py" is the name of your python file.
Let's write our first Python file, called helloworld.py, which can be done in any text editor.

```
print("Hello, World!")
```

Simple as that. Save your file. Open your command line, navigate to the directory where you saved your file, and run:

```
C:\Users\Your Name>python helloworld.py
```

The output should read:

```
Hello, World!
```

The Python Command Line

To test a short amount of code in python sometimes it is quickest and easiest not to write the code in a file. This is made possible because Python can be run as a command-line itself.

3.

Type the following on the Windows, Mac, or Linux command line:

```
C:\Users\Your Name>python
```

Or, if the "python" command did not work, you can try "py":

```
C:\Users\Your Name>py
```

From there you can write any python, including our hello world example from earlier in the tutorial:

```
C:\Users\Your Name>python
Python 3.6.4 (v3.6.4:d48eceb, Dec 19 2017, 06:04:45) [MSC v.1900 32 bit
(Intel)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> print("Hello, World!")
```

Which will write "Hello, World!" in the command line:

```
C:\Users\Your Name>python
Python 3.6.4 (v3.6.4:d48eceb, Dec 19 2017, 06:04:45) [MSC v.1900 32 bit
(Intel)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> print("Hello, World!")
```

```
Hello, World!
```

Python Comments

1. Comments can be used to explain Python code.
2. Comments can be used to make the code more readable.
3. Comments can be used to prevent execution when testing code.

Creating a Comment

Comments start with a #, and Python will ignore them:

```
#This is a comment
print("Hello, World!")
```

4.

Multi-Line Comments

Python does not really have a syntax for multi-line comments.
To add a multiline comment you could insert a # for each line:

```
#This is a comment
#written in
#more than just one line
print("Hello, World!")
```

Or, not quite as intended, you can use a multiline string.
Since Python will ignore string literals that are not assigned to a variable, you can add a multiline string (triple quotes) in your code, and place your comment inside it:

```
"""
This is a comment
written in
more than just one line
"""
print("Hello, World!")
```

Note: We can achieve multi-line comments by using single triple quotes or by double triple quotes.

5.

MCQ:

1. Who developed the Python language?

A. Azim Den
B. Guido van Rossum
C. Niene Stom
D. Wick van Rossum

Answer: (B) Guido van Rossum
Explanation: Python language was developed by Guido van Rossum in the Netherlands.

2. Which one of the following is the correct extension of the Python file?

A. .py
B. .python
C. .p
D. None of these

Answer: (A) .py
Explanation: ".py" is the correct extension of the Python file.

3. Which character is used in Python to make a single line comment?

A. /
B. //
C. #
D. !

Answer: (A) /
Explanation: "#" character is used in Python to make a single-line comment.

4. Which function is used for the print statements?

A. printf()
B. print()
C. console.log()
D. cout

Answer: (B) print()
Explanation: print() is used for printing any statement or value of the variable.

5. In which was the python language developed?

A. 1995
B. 1972
C. 1981
D. 1989

Answer: (D) 1989
Explanation: Python language was developed by Guido van Rossum in 1989.

6.