# Introduction To Python

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## Session Plan

The following topics will be discussed in this four days.

- Introduction to Python's Data Types.
- Object Oriented Programming in Python.
- File and Data I/O.
- Scientific Computing using Numpy.
- Pandas for Data Analysis.
- Data Visualization using Matlplotlib.
- Introduction to Data Structures and Algorithms.
- Building Abstract Data Structures using Python.
- Searching and Sorting Algorithms.
- Creating Tree Data Structures using Python.
- Where to go from here.

# Introduction To Python

- Python is a general-purpose, open-source, high-level, dynamically typed, interpreted language.
- It has a very easy to understand Syntax and easy prototyping ability.
- It has a gentle learning curve that helps a programmer productive at a very early stage.
- It is relatively terse compared to other languages and requires comparatively a few lines of code that could take more number of lines of code in other languages to solve a problem.
- Python is currently being used in various areas of computer science such as Web Development, Machine Learning, Neural Networks and also in Quantum Computing.

# Python Versus Other Languages

- Python is generally slower compared to C, C++ for computationally intensive applications.
- Where it lacks in speed relatively, it gains in speed of development which helps a programmer experiment more.
- The Standard Python Interpreter is implemented in C and this implementation is called "CPython".
- Python interpreters are becoming faster and newer implementations such as "PyPy" are faster than the CPython implementation.

# Python 2 Versus Python 3

- Python 2 has been around for so long and comes as part of Linux and Apple machines.
- Python 3 is an improvement over Python 2, that has overcome many drawbacks of the language and is currently being widely adopted.
- The last version of Python 2, 2.7 is still supported and will be in general usage. But it is the last of the series.
- Some of the most prominent changes see in Python 3 is the print statement, string formatting and use of the Unicode Standard for text data.

## Let's Write Our First Python Program

Now that we have learned what Python is about, let's go ahead and write our first Python program.

- Open a file in your machine using either using notepad or a text editor of your choice.
- Type "print("Hello World!!")" and save the file.
- Name the file as *first_program.py* and save it.
- Open the terminal/command prompt and navigate to the path where the *.py* file has been saved.
- Type the following command:
  python file_name.py and hit enter and wait for the magic to happen.
- We have performed the first ritual of saying "Hello World!!" to our fellow programmers.

# We Begin Now

Hope you enjoyed the Introduction. There is more to come and we hope you all enjoy 4 days of learning with us.

Thank you.