

Python



Agenda

- ❑ Introduction
- ❑ Difference between Programming & Scripting
- ❑ Why Python
- ❑ Who Uses Python
- ❑ Applications of Python
- ❑ Set Up & Running Python
- ❑ Difference between Python2 & Python3
- ❑ Language Basics
- ❑ Language Advanced
- ❑ Where Can I Learn More

Introduction

- It is general purpose programming language that is often applied in scripting roles.
- It is Programming as well as Scripting language
- It is Object Oriented language
- It is Interpreted language
- It Focus on readability and productivity

Introduction (2)

Python is developed by “Guido van Rossum”

First Release : Feb 1991

Version 1.0 : Jan 1994

Version 2.0 : Oct 2000

Version 3.0 : Dec 2008

Current Version : Python 3.5, Sep 2015

Official Site : <https://www.python.org/>



Difference between Programming & Scripting

Programming Language	Scripting Language
It is sequence of instructions to perform a particular task.	To write a code to control another software application
A Program is executed / Compiled a) Converts whole code at a time b) It is faster and requires more memory c) Errors are displayed after entire program is checked d) C, C++, Java ...	A Script is interpreted a) Converts code line by line b) It is slower and requires less memory c) Errors are displayed for every instruction interpreted. d) BASIC, Ruby, Python ...

References:

- <https://answers.yahoo.com/question/index?qid=20080716213207AAW6OLf>
- http://www.slideshare.net/oloofrank/scripting-languages-presentationmichelpatrickfrancis?qid=935b0136-0a0d-43ef-a0b6-98c8ceb2cb16&v=&b=&from_search=2

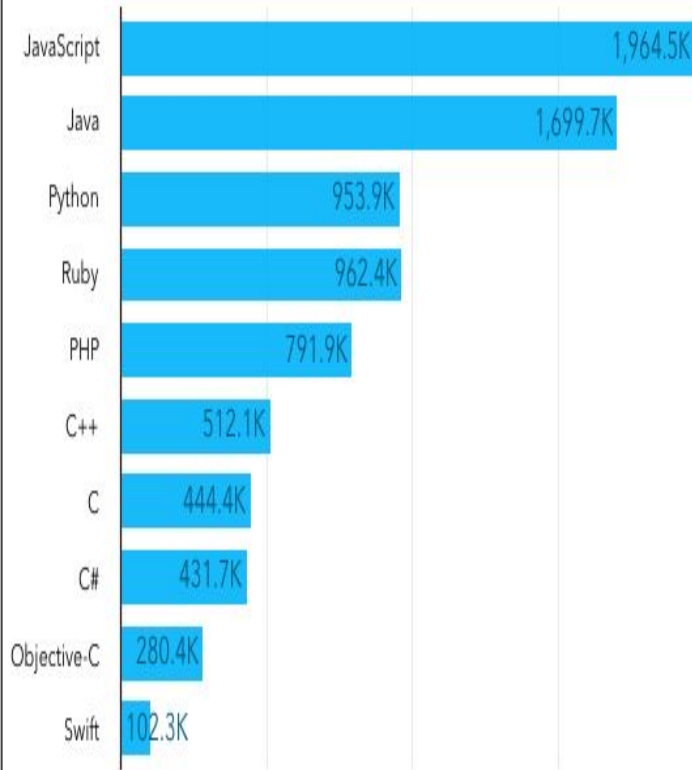
Why Python

- Easy to learn && Easy to use
- Indentation
- It's Powerful
 - Dynamic typing
 - Library utilities
 - Automatic memory management
- It's Portable
 - Runs virtually every major platform used today
- It's mixable
- It is Interactive Shell
- Platform Independent
- It is free and open source
- Reduce Code length

Who Uses Python



Total GitHub Projects (as of February 2016)



Applications of Python

- System management
- Web Programming
- GUI Development
- Scientific and Numeric
- Database Programming
- Testing Scripts : Automation
- System Administration
- Gaming Development and Robotics ...
- Reference
 - <http://www.dummies.com/how-to/content/10-major-uses-of-python.html>
 - <https://www.python.org/about/apps/>

Setup & Running Python

Setup

- Linux (Ubuntu/debian/linuxmint)
 - \$ sudo apt-get install python (2.x)
 - \$ sudo apt-get install python3 (3.x)
 - \$ sudo apt-get install ipython
 - \$ sudo apt-get install ipython3 (<https://ipython.org/>)

```
$ python --version # To check version of python2.x
```

```
$ python3 --version # To check version of python3.x
```

- Mac : <https://www.python.org/downloads/mac-osx/>
- Windows : <https://www.python.org/downloads/windows/>

Setup & Running Python (2)

Running Python

\$ python # start python 2.x version

```
Python 2.7.6 (default, Jun 22 2015, 17:58:13)
[GCC 4.8.2] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

\$ python3 # start python3.x version

```
Python 3.4.3 (default, Oct 14 2015, 20:28:29)
[GCC 4.8.4] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

Note: “>>>” : is called prompt / python interpreter

Setup & Running Python (3)

- Inside python interpreter, type the below

```
Python 2.7.6 (default, Jun 22 2015, 17:58:13)
[GCC 4.8.2] on linux2
Type "help", "copyright", "credits" or "license" for
more information.
```

```
>>> print "Welcome"
```

```
Welcome
```

```
>>> x = 10
```

```
>>> x
```

```
10
```

```
>>> # Use quit() or Ctrl-D (i.e. EOF) to exit
```

```
Python 3.4.3 (default, Oct 14 2015, 20:28:29)
```

```
[GCC 4.8.4] on linux
```

```
Type "help", "copyright", "credits" or "license" for
more information.
```

```
>>> print("Welcome")
```

```
Welcome
```

```
>>> x = 10
```

```
>>> x
```

```
10
```

```
>>> # Use quit() or Ctrl-D (i.e. EOF) to exit
```

- Python shebang/hashbang

```
#!/usr/bin/env python
```

Setup & Running Python (3)

- Python scripts can be written in text files with the suffix **.py**. The scripts can be read into the interpreter in several ways:

1. `$ python script.py` # This will simply execute the script and return to the terminal afterwards
2. `$./script.py` # Run as executable
3. `$ python -i script.py` # The -i flag keeps the interpreter open after the script is finished running
4. `$ python`
`>>> execfile('script.py')` # The execfile command reads in scripts and executes them immediately, as though they had been typed into the interpreter directly
5. `$ python`
`>>> import script` # DO NOT add the .py suffix. Script is a module here.

Difference between Python2 & Python3

Python2	Python3
print is statement	print() is function

References:

- http://python-future.org/compatible_idioms.html
- http://sebastianraschka.com/Articles/2014_python_2_3_key_diff.html

Language Basics

- Help
- Comments, Variables
- Strings
- Operators (Math functions)
- Control Structures
 - Conditional Statements
 - Looping Statements
- Lists, Tuples, Dictionaries
- Functions
- Modules
- File I/O
- Exception Handling

Language Advanced

- OOPS
- Regexpressions
- CGI
- Logging / Debugging
- Database Access
- Networking
- GUI Programming
- Misc (TDD, Data Science ...)

References:

- https://github.com/sivaram143/python_practice/blob/master/toc.md

Where Can I Learn More

- Python Add-on Packages: <http://pypi.python.org/pypi>
- Python Online compilers
 - ◆ <http://www.pythontutor.com/visualize.html#mode=edit>
 - ◆ http://www.tutorialspoint.com/ipython_terminal_online.php
- Python wikipedia : https://en.wikipedia.org/wiki/List_of_Python_software#Applications
- Python Slideshare : <http://www.slideshare.net/MattHarrison4/learn-90>
- Python IDE : <http://stackoverflow.com/questions/81584/what-ide-to-use-for-python>
- Python ebooks
 - ◆ http://ebook-dl.com/item/learning_python_5th_edition_mark_lutz/
 - ◆ <https://it-ebooks.info>
- Python Problems
 - ◆ <https://projecteuler.net/recent>
- Misc
 - ◆ <https://www.pylint.org/>
 - ◆ <http://hasgeek.tv>
 - ◆ <http://opensourceforu.com/>

Thanks for listening ...