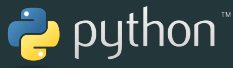


Programming in Python

Python 101 : Introduction



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🏢 IBM Systems | Singapore



1. Python as a programming language
2. Setting the environment
3. Learning Path



URL: <https://www.python.org/>  @ThePSF

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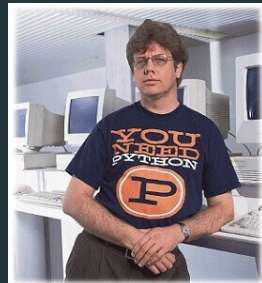
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1. Python as a programming language

- First developed by Guido van Rossum at National Research Institute for Mathematics and Computer Science (CWI) in Amsterdam. Later some 20 odd developers joined.
- Named after BBC Channel 1 famous comedy series "Monty Python Flying Circus" aired during 1969-74. The 6 main characters were famously called the Pythons.
- The CWI team has actively working with a language based on ALGOL and created **ABC**.
- Guido worked on Unix function `glob()` with Lambert Meertens, and which was used in ABC and also with **Amoeba project** with Andrew Tenebaum for UNIX kernel as MINIX.
- Guido has been using C, Awk, Tcl/Tk and recently invented multi-purpose language Perl, but mainly scripting languages.
- This lead his interest to work during Christmas of 1990's, and created a interpreted language based on C, ABC, Awk, Perl and named in after "the Pythons" as **python** and evolved as *Language of Computer Programming for Everybody*.

Is Python interpreted or compiled language? What is interpreted language?



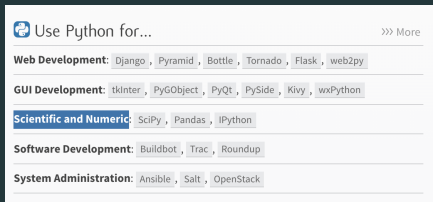
Centrum Wiskunde en Informatica (CWI) <https://www.cwi.nl/>

Traditional Programming or System Programming (Fortran, C, C++, Java, *etc.*)

- building (usually large, monolithic) applications
- takes longer time to write
- very fast

Scripting (Python, Perl, MATLAB, *etc.*)

- scripting means programming at a high and flexible abstraction level
- simple and clean syntax of the command languages
- tight integration of simulation and visualization
- this style is better if the most important resource is programmer's time



Use Python for... >>> More

Web Development: Django, Pyramid, Bottle, Tornado, Flask, web2py

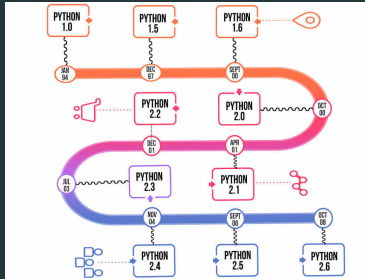
GUI Development: tkinter, PyGObject, PyQt, PySide, Kivy, wxPython

Scientific and Numeric: SciPy, Pandas, IPython

Software Development: Buildbot, Trac, Roundup

System Administration: Ansible, Salt, OpenStack

Evolution of Python : python 2.x vs python 3.x



e.g.

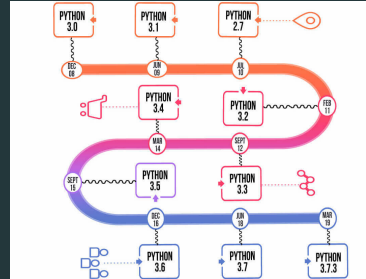
```
>>> print "Hello World!"
```

```
>>> 2/3
```

```
0
```

```
>>> 3/2
```

```
1
```



e.g.

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

```
>>> 2/3
```

```
0.6666666666666666
```

```
>>> 3/2
```

```
1.5
```

Some minor differences in python2 and python3 versions are: function print and integer divisions. lib **2to3** helps port py2 codes in py3. For more refer to: <https://www.guru99.com/python-2-vs-python-3.html>

Courtesy: Infographic images from www.GeeksforGeeks.com

2. Setting the environment

- \$ python2

```
> python2
```

```
WARNING: Python 2.7 is not recommended.  
This version is included in macOS for compatibility with legacy software.  
Future versions of macOS will not include Python 2.7.  
Instead, it is recommended that you transition to using 'python3' from within Terminal.
```

```
Python 2.7.16 (default, Feb 29 2020, 01:55:37)  
[GCC 4.2.1 Compatible Apple LLVM 11.0.3 (clang-1103.0.29.20)] (-macos10.15-objc- on darwin  
Type "help", "copyright", "credits" or "license" for more information.  
>>> █
```

- \$ python3

```
> python3
```

```
Python 3.7.6 (default, Dec 30 2019, 19:38:26)  
[Clang 11.0.0 (clang-1100.0.33.16)] on darwin  
Type "help", "copyright", "credits" or "license" for more information.  
>>> █
```

- python usage



Use Python for...

[>>> More](#)

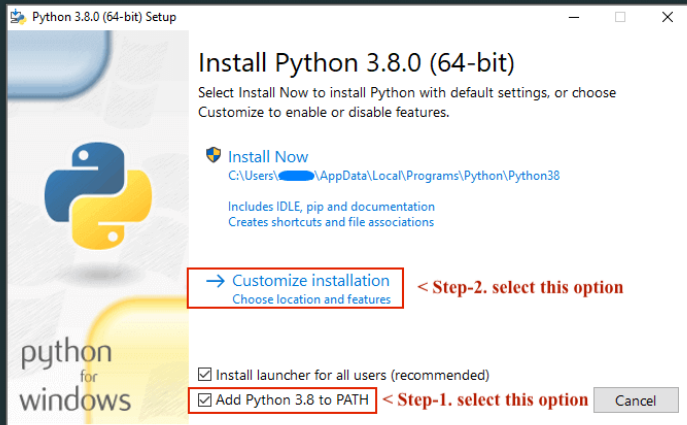
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System Administration: Ansible , Salt , OpenStack



- Download Python from www.python.org/download

- PyPI : Python Package Installer

```
$ pip install pylint
```

- Checking if a package is installed

```
$ python -c "import math"
```

```
$ echo $?
```

```
0      # return '0' means math module exists in system
```

- Checking if a package is installed

```
$ python -c "import numpy"
```

```
$ echo $?
```

```
1      # return '1' means numpy module does not exists in system
```

```
$ pip install numpy
```

```
$ python -c "import math"
```

```
$ echo $?
```

```
0
```

```
# math module exists in system
```

```
$ python -c "import numpy"
```

```
Traceback (most recent call last):
```

```
  File "<string>", line 1, in <module>
```

```
ImportError: No module named numpy
```

```
$ echo $?
```

```
1
```

```
# numpy module does not exist in system
```

3. Learning Path

Module # py101.1

- Python atomic data types
- Python data structures
- Conditional statements and loops
- Comprehensions
- Functions

Module # py101.2

- NumPy
- Python for data analysis using pandas

Module # py101.3

- Object-oriented programming (use of classes, objects, etc.)
- Data visualization (matplotlib, ggplot)
- Generator expressions

1. If you are using Python Software Foundation shipped Python, use
`pip3 install jupyter`
2. If you are using Continuum Software Anaconda version of Python
`conda install jupyter`

To launch the notebook, issue the following command

```
jupyter notebook
```

1. PyPI: Python Package Index
<https://pypi.org/>
2. PyCham IDE
<https://www.jetbrains.com/pycharm/>
3. The History of Programming Languages
<https://visual.ly/community/Infographics/computers/history-programming-languages>
4. Interview of Guido van Rossum: “I had rather write code than papers”
<https://www.cwi.nl/news/blogs/interview-guido-van-rossum-201cid-rather-write-code-than-papers.201d>

Thank You !

for your patience 😊



hemant, k.



<https://github.com/khemanta/python4MLAI/tree/master/Python101>