Python Programming Basics

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Contents

Introduction to Python

History of Python

- Python is one of the achievements of free software

- Python is purely free software and both its source code and interpreter comply with the GNU General Public License (GPL) protocol

Founder	Guido van Rossum
When and Where	Created in Amsterdam during Christmas in 1989
Meaning of Name	A big fan of Monty Python's Flying Circus
Origin	Influenced by Modula-3, Python is a descendant of ABC that would appeal to Unix/C hackers.

Guido Van Rossum, 2006

Origin of Python
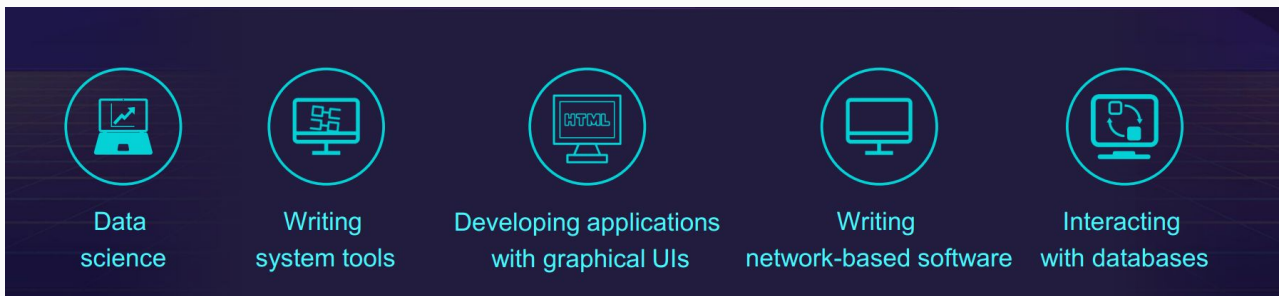
Philosophy of Python:

- There should be one, and preferably only one, obvious way to do it.
- Simple is better than complex, and explicit is better than implicit.

What is Python?

- Python is a programming language.
- Python is a general-purpose and advanced programming language.
- Python applies to programming in many fields:

Data science | Writing system tools | Developing applications with graphical UIs | Writing network-based software | Interacting with databases

Python VS Other Languages

- ## Python VS C:
    - Python is dynamic while C is static.
    - Memory is managed by the developer in C but by the interpreter in Python.
    - Python cannot be used to write a kernel but C can.
    - C or C++ extends Python functions based on the Python APIs.
- ## Python VS SHELL:
    - Python has simple syntax and is easy to transplant.
    - Shell has a longer script.
    - Python can reuse code and embraces simple code design, advanced data structure, and modular components.
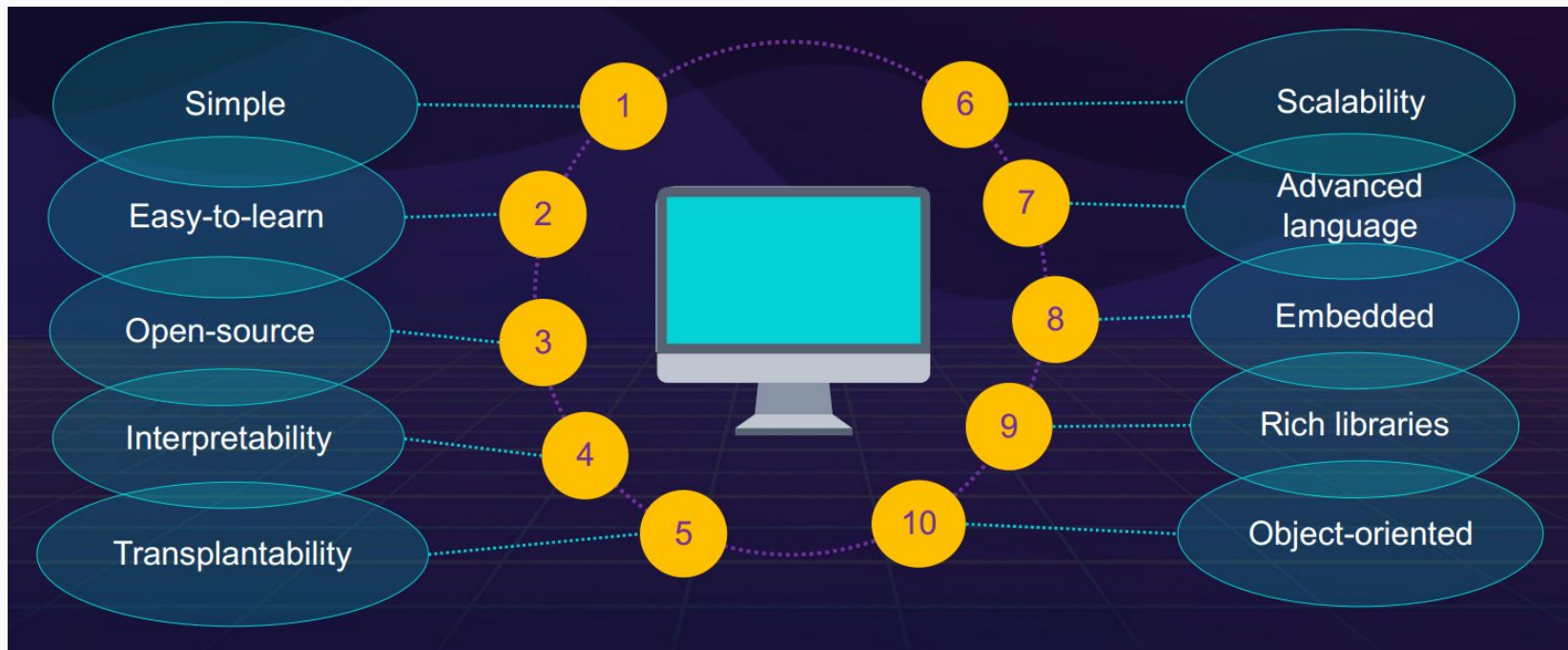
Python VS Other Languages

- Python VS Java:
  - Python is dynamic while Java is static.
  - Python supports object-oriented and function-based programming while Java supports object-oriented programming only.
  - Python is simpler than Java, and typically applies to quick prototyping.
  - Python and Java enable multiple programmers to develop a large project together step by step.
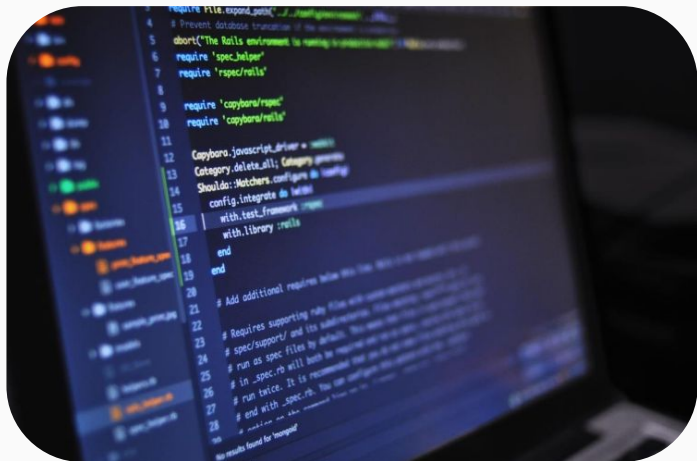
Advantages of Python

Simple — 1
Easy-to-learn — 2
Open-source — 3
Interpretability — 4
Transplantability — 5

6 — Scalability
7 — Advanced language
8 — Embedded
9 — Rich libraries
10 — Object-oriented

IDEs for Python

- VI: mainly for Linux

- IDLE: integrated development environment

- Sublime Text: a lightweight editing tool

- Eclipse: chargeable

- Eric4: powerful, based on PyQT4

- Boa: similar to IDE (wxPython) of Delphi

- WingIDE: shared software

- Other editors: notepad++, editplus...

Features of Python Statements

- Dynamic: Objects (like attributes and methods) can be changed during execution.
- Python uses indentation instead of a pair of curly braces {} to divide a block of statements.
- Multiple statements on one line are separated by ";".
- The symbol used for commenting out a line is #
- Variables do not need type definitions.
- Functional Programming (FP) is available.

Differences Between Python 2 and Python 3

- Python 3 cannot be backwards compatible with Python 2, which requires people to decide which version of the language is to be used.
- Many libraries are only for Python 2, but the development team behind Python 3 has reaffirmed the end of support for Python 2, prompting more libraries to be ported to Python 3.
- Judging from the number of Python packages that are supported by Python 3, Python 3 has become increasingly popular.

Differences Between Python 2 and Python 3

Installing Python

For **Linux** users:

Download the Python package and install it.

      $tar –zxf python3.x.x.tar.gz

      $cd Python3.x.x

      $./configure

      $make && make install

Create soft connections.

      $mv /usr/bin/python /usr/bin/python.bak
      $ln -s /usr/local/bin/python3.x.x
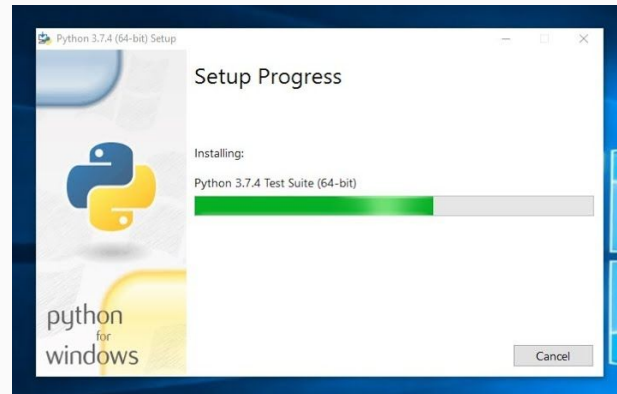   /usr/bin/python

Verify installation.

      $python –V

Installing Python

For **Windows** users:

Download the official Python setup program.

Double-click the setup program, Python-3.x.exe.

Starting Python
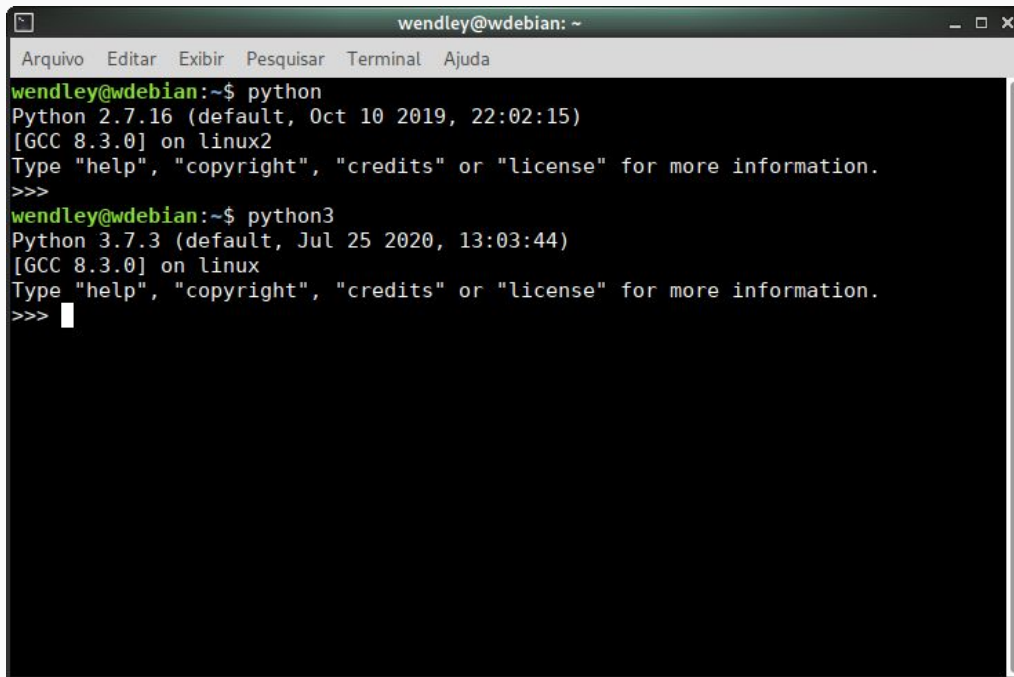
Linux:

$ python

$ python3

Windows:

python

Obrigado pela atenção