

Brief Introduction in Python Programming

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Outline

- ▶ Introduction to Computers
- ▶ Python Introduction



Introduction to Computers



What's programming language

- ▶ A programming language is a vocabulary and set of grammatical rules for instructing a computer to perform specific tasks



Category in programming language

▶ Low-level language

- ▶ Language syntax is more like a machine logic
- ▶ machine code, assembly

▶ High-level language

- ▶ Language syntax is more like a human logic
- ▶ C, C++, SQL, JAVA, Python,

```
10101001111100
10101000001000
.....
.....
10101000001000
```

Low-level language

```
if a > b:
    print('a is greater than b')
else:
    print('b is greater than b')
```

High-level language

Computer System

Applications

Email

Web

Database

Office

Operating System

Windows

Linux

Mac OS

Hardware

CPU

Memory

Storage

I/O

Other device

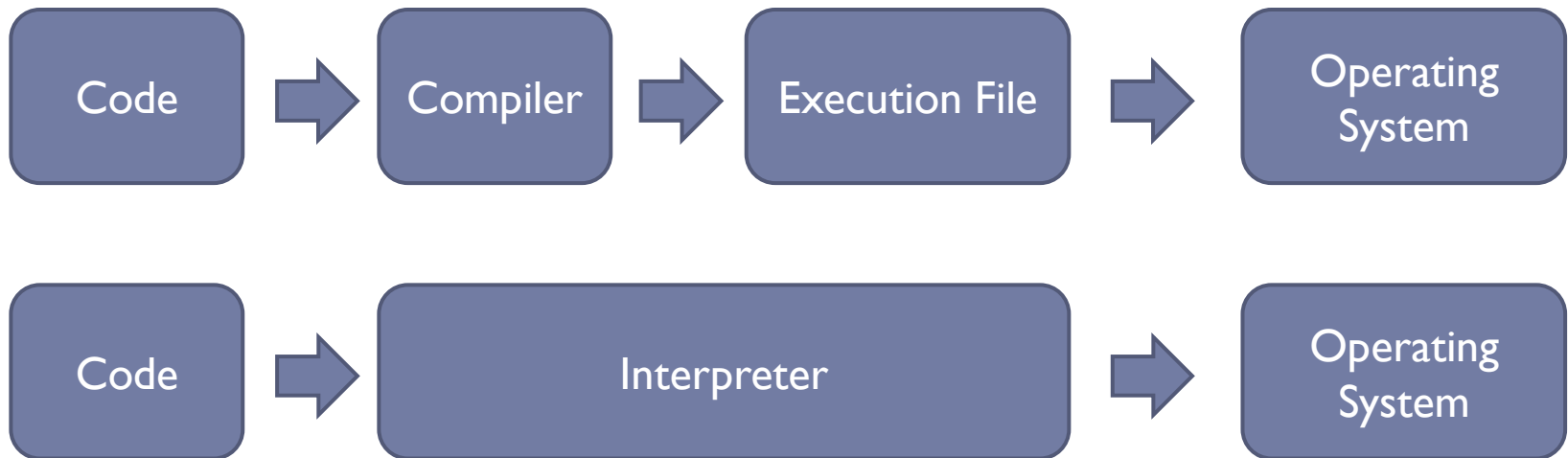
Compiled language V.S. Interpreted language

- ▶ **Compiled language**

- ▶ C/C++

- ▶ **Interpreted language**

- ▶ Python, Linux shell, php,



Python Introduction



What's Python

- ▶ Python is an interpreted, high-level, general-purpose programming language
 - ▶ elegant programming language
 - ▶ one of the most important language in data analysis
- ▶ Python can be executed on almost every platform
- ▶ Original design by Guido van Rossum



The zen of Python

► import “this” in python

The Zen of Python, by Tim Peters

```
Beautiful is better than ugly.  
Explicit is better than implicit.  
Simple is better than complex.  
Complex is better than complicated.  
Flat is better than nested.  
Sparse is better than dense.  
Readability counts.  
Special cases aren't special enough to break the rules.  
Although practicality beats purity.  
Errors should never pass silently.  
Unless explicitly silenced.  
In the face of ambiguity, refuse the temptation to guess.  
There should be one-- and preferably only one --obvious way to do it.  
Although that way may not be obvious at first unless you're Dutch.  
Now is better than never.  
Although never is often better than *right* now.  
If the implementation is hard to explain, it's a bad idea.  
If the implementation is easy to explain, it may be a good idea.  
Namespaces are one honking great idea -- let's do more of those!
```

TIOBE Index























► TIOBE Index

- <https://www.tiobe.com/tiobe-index/programming-languages-definition/>

Sep 2019	Sep 2018	Change	Programming Language	Ratings	Change
1	1		Java	16.661%	-0.78%
2	2		C	15.205%	-0.24%
3	3		Python	9.874%	+2.22%
4	4		C++	5.635%	-1.76%
5	6	▲	C#	3.399%	+0.10%
6	5	▼	Visual Basic .NET	3.291%	-2.02%
7	8	▲	JavaScript	2.128%	-0.00%
8	9	▲	SQL	1.944%	-0.12%
9	7	▼	PHP	1.863%	-0.91%
10	10		Objective-C	1.840%	+0.33%
11	34	▲	Groovy	1.502%	+1.20%
12	14	▲	Assembly language	1.378%	+0.15%
13	11	▼	Delphi/Object Pascal	1.335%	+0.04%
14	16	▲	Go	1.220%	+0.14%
15	12	▼	Ruby	1.211%	-0.08%
16	15	▼	Swift	1.100%	-0.12%
17	20	▲	Visual Basic	1.084%	+0.40%
18	13	▼	MATLAB	1.062%	-0.21%
19	18	▼	R	1.049%	+0.03%
20	17	▼	Perl	1.049%	-0.02%

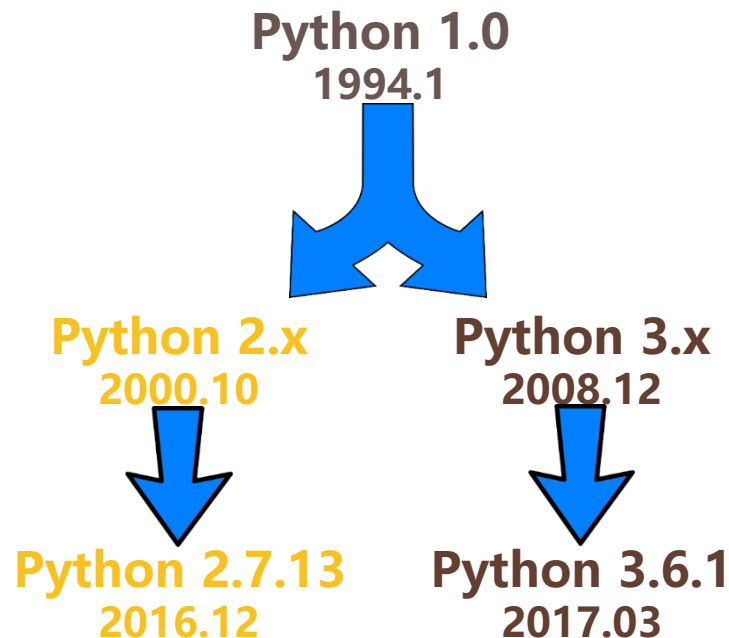
IEEE Spectrum Top Programming Languages

The **2018** Top Programming Languages

Language Rank	Types	Spectrum Ranking
1. Python	  	100.0
2. C++	  	99.7
3. Java	  	97.5
4. C	  	96.7
5. C#	  	89.4
6. PHP		84.9
7. R		82.9
8. JavaScript	 	82.6
9. Go	 	76.4
10. Assembly		74.1

Python 2.x V.S. Python 3.x

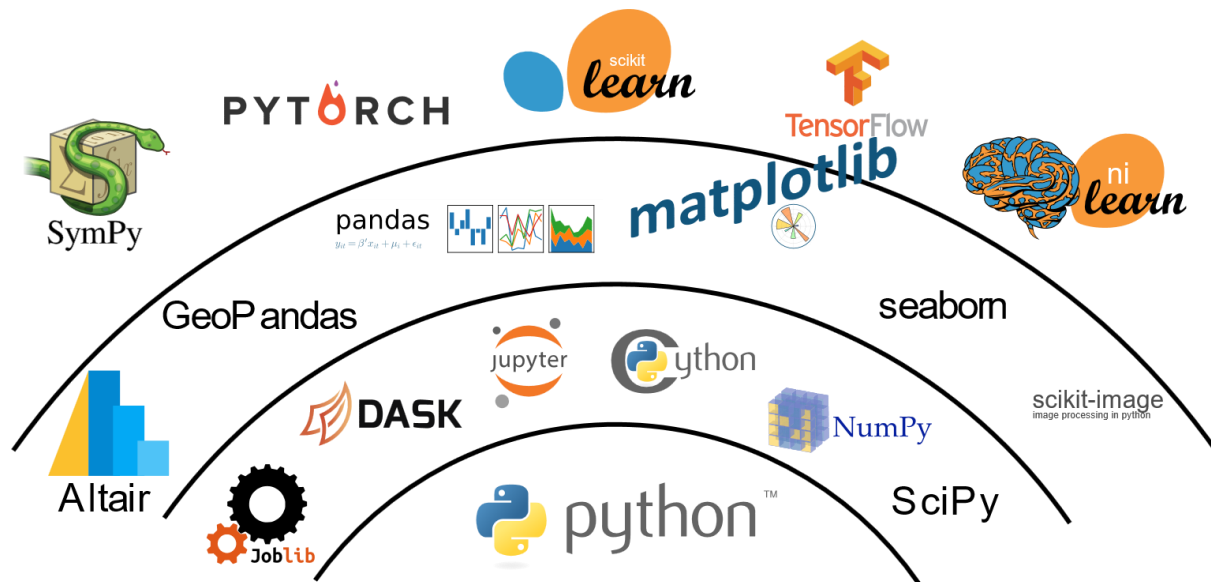
- ▶ Highly recommend to use Python3.X now
 - ▶ Python 2.x are not support anymore
 - ▶ <https://pythonclock.org/>
 - ▶ Python 3.x is not compatible to Python 2.x



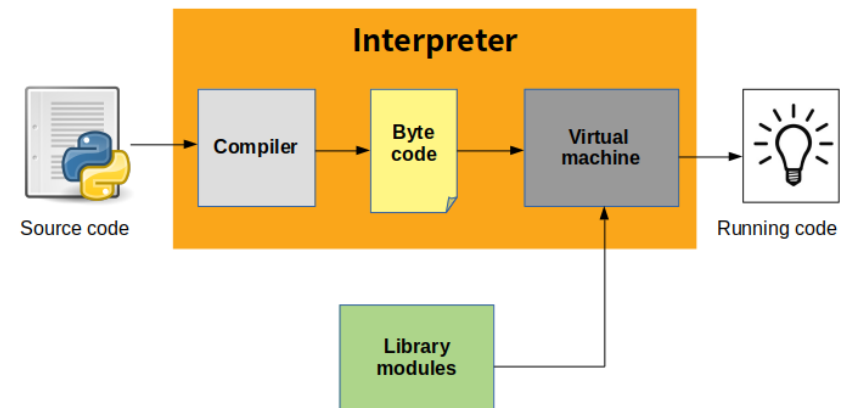
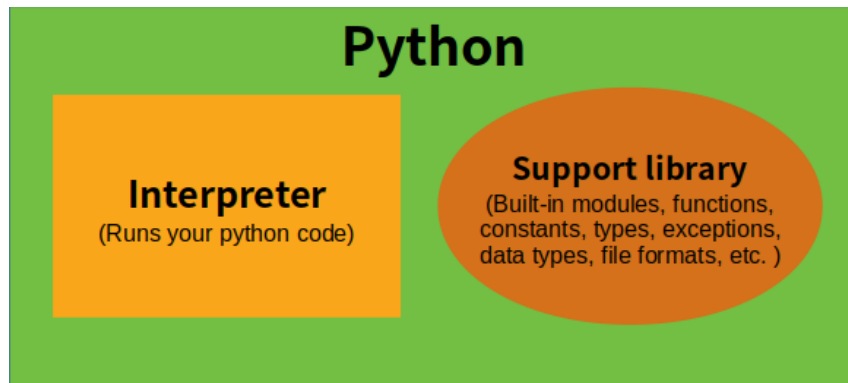
Python Language features

- ▶ Readability
 - ▶ Use indentation to determine coding block
- ▶ Cross-platform
- ▶ Rich third-party package
 - ▶ <https://pypi.org/>
- ▶ Interpreter
- ▶ script language
- ▶ glue language
 - ▶ can be interact with other language

Python Ecosystem



How Python execute program



Python Coding Guide

- ▶ PEP 8 -- Style Guide for Python Code

- ▶ <https://www.python.org/dev/peps/pep-0008/>

- ▶ PEP(Python Enhancement Proposals)

- ▶ A PEP is a design document providing information to the Python community, or describing a new feature for Python or its processes or environment

- ▶ The PEP should provide a concise technical specification of the feature and a rationale for the feature

- ▶ <https://www.python.org/dev/peps/>

- ▶ Deprecated Google Python Style Guide

- ▶ <https://google.github.io/styleguide/pyguide.html>

Python Applications

- ▶ Gaming
- ▶ GUI(graphical user interface)
- ▶ Web
- ▶ Database
- ▶ Data analysis
- ▶ Artificial intelligence
- ▶ crawl

Python interactive mode

CA Command Prompt - python

Microsoft Windows [Version 10.0.17763.1039]

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C:\Users\isaac>python

Python 3.6.8 (tags/v3.6.8:3c6b436a57, Dec 24 2018, 00:16:47) [MSC v.1916 64 bit (AMD64)] on win32

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

>>> print('hello python')

hello python

>>>

Company which use Python



facebook



NETFLIX

Python Reference Book

