Python (programming language)

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Python is an interpreted, high-level, general-purpose, programming language Created by Guido van Rossum and first released in 1991, Python's design philosophy emphasizes code readability with its notable use ofwith its notable use of significant whitespace. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects.[27]

Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including procedural, object-oriented, and functional programming. Python is often described as a "batteries included" language due to its comprehensive standard library.[28]

Python was conceived in the late 1980s as a successor to the ABC language. Python 2.0, released 2000, introduced features like list comprehensions and a garbage collection system capable of collecting reference cycles. Python 3.0, released 2008, was a major revision of the language that is not completely backward-compatible, and much Python 2 code does not run unmodified on Python 3. Due to concern about the amount of code written for Python 2, support for Python 2.7 (the last release in the 2.x series) was extended to 2020. Language developer Guido van Rossum shouldered sole responsibility for the project until July 2018 but now shares his leadership as a member of a five-person steering council.[29][30][31]

Python interpreters are available for many operating systems. A global community of programmers develops and maintains CPython, an open source[32] reference implementation. A non-profit organization, the Python Software Foundation, manages and directs resources for Python and CPython development.

Property	Value
Paradigm	Multi-paradigm, functional, imperative, object-oriented, reflective
Designed by	Guido van Rossum
Developer	Python Software Foundation
First appeared	1990; 29 years ago
Stable release	3.7.4 / 8 July 2019 2.7.16 / 4 March 2019
Typing discipline	Duck, dynamic gradual (since 3.5)
License	Python Software Foundation License
Filename extensions	.py, .pyc, .pyd, .pyo

Contents

History

Python was conceived in the late 1980s[33] by Guido van Rossum at Centrum Wiskunde & Informatica (CWI) in the Netherlands as a successor to the ABC language (itself inspired by SETL),[34] capable of exception handling and interfacing with the Amoeba operating system.[8] Its implementation began in December 1989.[35] Van Rossum continued as Python's lead developer until July 12, 2018, when he announced his "permanent vacation" from his responsibilities as Python's Benevolent Dictator For Life, a title the Python community bestowed upon him to reflect his long-term commitment as the project's chief decision-maker.[36] In January, 2019, active Python core developers elected Brett Cannon, Nick Coghlan, Barry Warsaw, Carol Willing and Van Rossum to a five-member "Steering Council" to lead the project.[37]

Python 2.0 was released on 16 October 2000 with many major new features, including a cycle-detecting garbage collector and support for Unicode.[38]

Python 3.0 was released on 3 December 2008. It was a major revision of the language that is not completely backward-compatible.[39] Many of its major features were backported to Python 2.6.x[40] and 2.7.x version series. Releases of Python 3 include the 2to3 utility, which automates (at least partially) the translation of Python 2 code to

Python 3.[41]

Python 2.7's end-of-life date was initially set at 2015 then postponed to 2020 out of concern that a large body of existing code could not easily be forward-ported to Python 3.[42][43] In January 2017, Google announced work on a Python 2.7 to Go transcompiler to improve performance under concurrent workloads.[44]

Libraries

Python's large standard library, commonly cited as one of its greatest strengths,[97] provides tools suited to many tasks. For Internet-facing applications, many standard formats and protocols such as MIME and HTTP are supported. It includes modules for creating graphical user interfaces, connecting to relational databases, generating pseudorandom numbers, arithmetic with arbitrary precision decimals,[98] manipulating regular expressions, and unit testing.

Some parts of the standard library are covered by specifications (for example, the Web Server Gateway Interface (WSGI) implementation wsgiref follows PEP 333[99]), but most modules are not. They are specified by their code, internal documentation, and test suites (if supplied). However, because most of the standard library is cross-platform Python code, only a few modules need altering or rewriting for variant implementations.

As of March 2018, the Python Package Index (PyPI), the official repository for third-party Python software, contains over 130,000[100] packages with a wide range of functionality, including:

- Graphical user interfaces
- Web frameworks
- Multimedia
- Databases
- Networking
- Test frameworks
- Automation
- Web scraping[101]
- Documentation
- System administration
- Scientific computing
- Text processing
- Image processing