
Python Essentials

What is Python?

- **Python** is a general purpose, dynamic, high-level, and interpreted programming language.
- Python supports *multiple programming pattern*, including object-oriented, imperative, and functional or procedural programming styles.
- It is simple and easy to learn and provides lots of high-level data structures.
- It can be used as a scripting language or can be compiled to byte-code for building large applications.
- It supports automatic garbage collection.
- It can be easily integrated with C, C++, COM, ActiveX, CORBA, and Java.

Features

- **Easy-to-learn** − Python has few keywords, simple structure, and a clearly defined syntax. This allows the student to pick up the language quickly.
- **Easy-to-read** − Python code is more clearly defined and visible to the eyes.
- **Easy-to-maintain** − Python's source code is fairly easy-to-maintain.
- **A broad standard library** − Python's bulk of the library is very portable and cross-platform compatible on UNIX, Windows, and Macintosh.
- **Interactive Mode** − Python has support for an interactive mode which allows interactive testing and debugging of snippets of code.
- **Portable** − Python can run on a wide variety of hardware platforms and has the same interface on all platforms.
- **Extendable** − You can add low-level modules to the Python interpreter. These modules enable programmers to add to or customize their tools to be more efficient.
- **Databases** − Python provides interfaces to all major commercial databases.
- **GUI Programming** − Python supports GUI applications that can be created and ported to many system calls, libraries and windows systems, such as Windows MFC, Macintosh, and the X Window system of Unix.
- **Scalable** − Python provides a better structure and support for large programs than shell scripting.

Python History and Versions

- Python laid its foundation in the late 1980s.
- The implementation of Python was started in December 1989 by Guido Van Rossum at CWI in Netherland.
- In February 1991, Guido Van Rossum published the code (labeled version 0.9.0) to alt.sources.
- In 1994, Python 1.0 was released with new features like lambda, map, filter, and reduce.
- Python 2.0 added new features such as list comprehensions, garbage collection systems.
- On December 3, 2008, Python 3.0 (also called "Py3K") was released. It was designed to rectify the fundamental flaw of the language.
- ABC programming language is said to be the predecessor of Python language, which was capable of Exception Handling and interfacing with the Amoeba Operating System.
- The following programming languages influence Python:

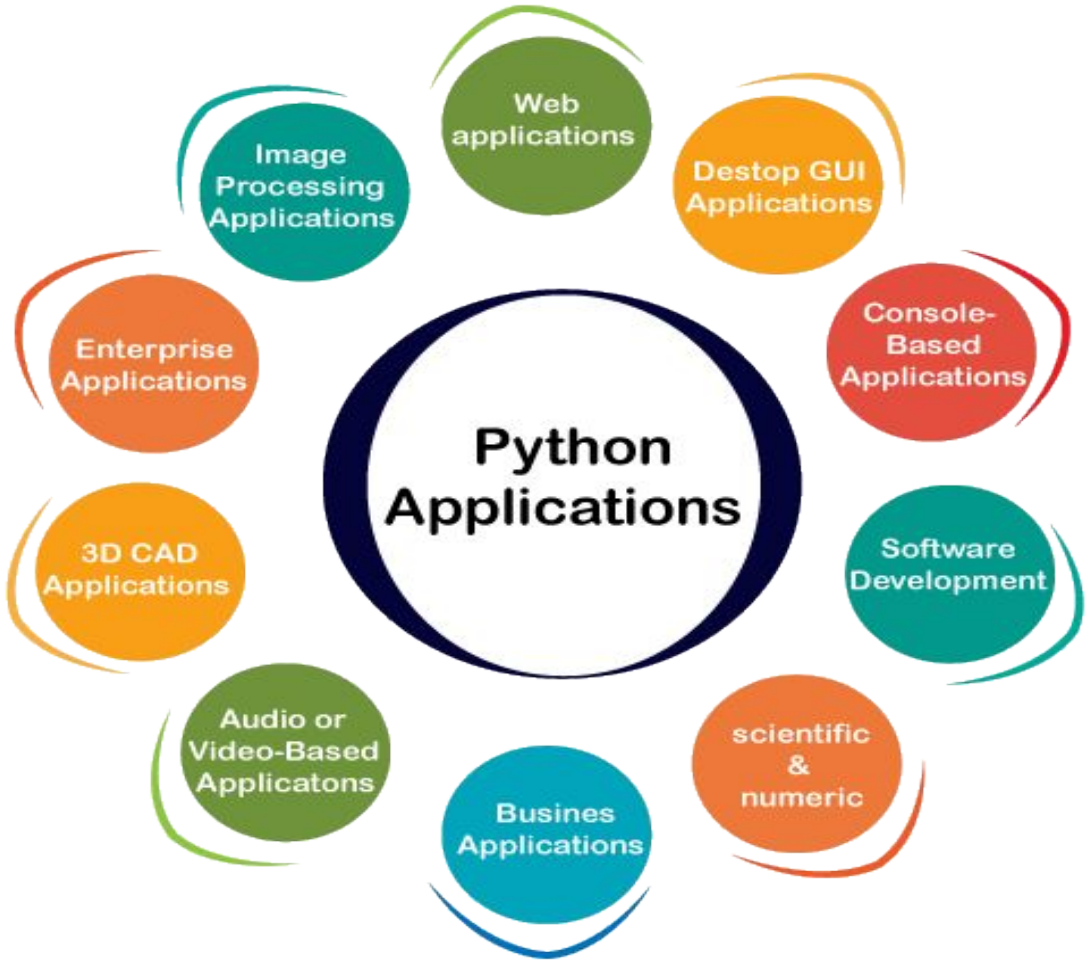
  ABC language.

  Modula-3

Python 2 vs. Python 3

- Python 2 uses print as a statement and used as print "something" to print some string on the console. On the other hand, Python 3 uses print as a function and used as print("something") to print something on the console.
- Python 2 uses the function raw_input() to accept the user's input. Python 3 uses input() function which automatically interpreted the type of input entered by the user.
- In Python 2, the implicit string type is ASCII, whereas, in Python 3, the implicit string type is Unicode.
- Python 3 doesn't contain the xrange() function of Python 2. The xrange() is the variant of range() function which returns a xrange object that works similar to Java iterator.
- There is also a small change made in Exception handling in Python 3. It defines a keyword as which is necessary to be used.

Python Applications



Getting Python

- The most up-to-date and current source code, binaries, documentation, news, etc., is available on the official website of Python https://www.python.org/
- You can download Python documentation from https://www.python.org/doc/. The documentation is available in HTML, PDF, and PostScript formats.

Installing Python

- Python distribution is available for a wide variety of platforms. You need to download only the binary code applicable for your platform and install Python.