- Python is a simple, general purpose, high level, and object-oriented programming language.
- Python is an interpreted scripting language also. *Guido Van Rossum* is known as the founder of Python programming.

What is Python?

- ✓ Python is a **general purpose**, **dynamic**, **high-level**, and **interpreted programming language**. It supports Object Oriented programming approach to develop applications. It is simple and easy to learn and provides lots of high-level data structures.
- ✓ Python is easy to learn yet powerful and versatile scripting language, which makes it attractive for Application Development.
- ✓ Python's syntax and dynamic typing with its interpreted nature make it an ideal language for **scripting** and **rapid application development**.
- ✓ Python supports **multiple programming patterns**, including object-oriented, imperative, and functional or procedural programming styles.
- ✓ Python is not intended to work in a particular area, such as web programming. That is why it is known as multipurpose programming language because it can be used with web, enterprise, 3D CAD etc.
- ✓ Python makes the development and debugging fast because there is no compilation step included in Python development, and edit-test-debug cycle is very fast.

Python 2 vs. Python 3 -

A list of differences between Python 2 and Python 3 are given below:

1. 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.
2. Python 2 uses the function **raw_input()** to accept the user's input. It returns the string representing the value, which is typed by the user. To convert it into the integer, we need to use the int() function in Python. On the other hand, Python 3 uses **input()** function which automatically interpreted the type of input entered by the user. However, we can cast this value to any type by using primitive functions (int(), str(), etc.).
3. In Python 2, the implicit string type is **ASCII**, whereas, in Python 3, the implicit string type is **Unicode**.

4. 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. The **range()** returns a list for example the function range(0,3) contains 0, 1, 2.
5. 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 Features –

Python provides lots of features that are listed below.

- **Easy to Learn and Use:** Python is easy to learn and use. It is developer-friendly and high level programming language.
- **Expressive Language:** Python language is more expressive means that it is more understandable and readable.
- **Interpreted Language:** Python is an interpreted language i.e. interpreter executes the code line by line at a time. This makes debugging easy and thus suitable for beginners.
- **Cross-platform Language:** Python can run equally on different platforms such as Windows, Linux, UNIX and Macintosh etc. So, we can say that Python is a portable language.
- **Free and Open Source:** Python language is freely available at official web address.The source-code is also available. Therefore, it is open source.
- **Object-Oriented Language:** Python supports object oriented language and concepts of classes and objects come into existence.
- **Extensible:** It implies that other languages such as C/C++ can be used to compile the code and thus it can be used further in our python code.
- **Large Standard Library:** Python has a large and broad library and provides rich set of module and functions for rapid application development.
- **GUI Programming Support:** Graphical user interfaces can be developed using Python.
- **Integrated:** It can be easily integrated with languages like C, C++ and JAVA etc.

Python History and Versions –

- Python laid its foundation in the late 1980s.
- The implementation of Python was started in the December 1989 by Guido Van Rossum at CWI in Netherland.
- In February 1991, 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 like: list comprehensions, garbage collection system.
- On December 3, 2008, Python 3.0 (also called "Py3K") was released. It was designed to rectify 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 Amoeba Operating System.
- Python is influenced by following programming languages-
  - ABC language
  - Modula-3

Python Version List -

Python programming language is being updated regularly with new features and supports. There are lots of updations in python versions, started from 1994 to current release.A list of python versions with its released date is given below.

Python Version	Released Date
Python 1.0	January 1994
Python 1.5	December 31, 1997
Python 1.6	September 5, 2000
Python 2.0	October 16, 2000
Python 2.1	April 17, 2001
Python 2.2	December 21, 2001
Python 2.3	July 29, 2003
Python 2.4	November 30, 2004
Python 2.5	September 19, 2006
Python 2.6	October 1, 2008
Python 2.7	July 3, 2008
Python 3.0	December 3, 2008
Python 3.1	June 27, 2009
Python 3.2	February 20, 2011
Python 3.3	September 29, 2012
Python 3.4	March 16, 2014
Python 3.5	September 13, 2015
Python 3.6	December 23, 2016
Python 3.7	June 27, 2018

Python Applications -

Python is known for its general purpose nature that makes it applicable in almost each domain of software development. Python as a whole can be used in any sphere of development.Here, we are specifying applications areas where python can be applied.

- **Web Applications -**We can use Python to develop web applications. It provides libraries to handle internet protocols such as HTML and XML, JSON, Email processing, request, beautifulSoup, Feedparser etc. It also provides Frameworks such as Django, Pyramid, Flask etc to design and develop web based applications. Some important developments are: PythonWikiEngines, Pocoo, PythonBlogSoftware etc.
- **Desktop GUI Applications -** Python provides Tk GUI library to develop user interface in python based application. Some other useful toolkits wxWidgets, Kivy, pyqt that are useable on several platforms. The Kivy is popular for writing multitouch applications.
- **Software Development -** Python is helpful for software development process. It works as a support language and can be used for build control and management, testing etc.
- **Scientific and Numeric -** Python is popular and widely used in scientific and numeric computing. Some useful library and package are SciPy, Pandas, IPython etc. SciPy is group of packages of engineering, science and mathematics.
- **Business Applications -** Python is used to build Bussiness applications like ERP and e-commerce systems. Tryton is a high level application platform.
- **Console Based Application -** We can use Python to develop console based applications. For example: IPython.
- **Audio or Video based Applications -** Python is awesome to perform multiple tasks and can be used to develop multimedia applications. Some of real applications are: TimPlayer, cplay etc.
- **3D CAD Applications -** To create CAD application Fandango is a real application which provides full features of CAD.
- **Enterprise Applications -** Python can be used to create applications which can be used within an Enterprise or an Organization. Some real time applications are: OpenErp, Tryton, Picalo etc.
- **Applications for Images -** Using Python several application can be developed for image. Applications developed are: VPython, Gogh, imgSeek etc.