# 11. Python Programming - Apllication and Future

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**Abstract**

Python is a suitable language for fast learning and real-world programming. Python is a powerful high-level programming language created by a programmer named Guido van Rossum. In the review paper, we first introduce you to the python programming characteristics. This paper also discusses the reasons behind python being awarded as the fastest-growing programming language in recent times supported by research done worldwide. This paper also features important information and tools with reference to the python programming language & data analysis i.e comparison between other language and python.

**Introduction**

In this review paper, we are going to introduce the features ,applications and tools of Python. Python is a general-purpose programming language that is highly used in the current times. Code and reducing the line of code reading is an important aspect of it. The language constructs help enable the user to write clear programs on all scales be it small or large. The most important feature in Python being; it supports multiple programming paradigms including imperative, object-oriented, and functional programming or procedural. Python is dynamically typed. Automatic memory management is enabled by default. Python interpreters are available for many operating systems, Now a days python is mostly used on large scale for machine learning concept where dealing with large amount of data is manipulated .

**Career Opportunities**

On job portals, Python is the most demanded skill and also with the higher than the average salary offered. With the introduction of Hadoop, demand of python developers has increased since it is a skill which goes hand on hand with the data science and Machine Learning field.

**Features in Python**

**Easytocode :** Python is a high-level programming language. Python is very easy to learn the language as compared to other languages like C, C#, Javascript, Java, etc. It is very

easy to code in python language and anybody can learn python basics in a few hours or days. It is also a developer-friendly language

**Free and Open Source :** Python language is freely available at the official website and you can download it from the given download link below click on the Download Python keyword.

Since it is open-source, this means that source code is also available to the public.

**Object-Oriented Language :** One of the key features of python is Object-Oriented programming. Python supports object-oriented language and concepts of classes, objects encapsulation, etc.

**GUI Programming Support :** Graphical User interfaces can be made using a module such as PyQt5, PyQt4, wxPython, or Tk in python.

PyQt5 is the most popular option for creating graphical apps with Python.

**High-Level Language :** Python is a high-level language. When we write programs in python, we do not need to remember the system architecture, nor do we need to manage the memory.

**Extensible Feature :** Python is a **Extensible** language. We can write us some Python code into C or C++ language and also we can compile that code in C/C++ language.

**Python is Portable Language :** Python language is also a portable language. For example, if we have python code for windows and if we want to run this code on other platforms such as Linux, Unix, and Mac then we do not need to change it, we can run this code on any platform.

**Python is Integrated Language :** Python is also an Integrated language because we can easily integrated python with other languages like c, c++, etc.

**Interpreted Language :** Python is an Interpreted Language because Python code is executed line by line at a time. like other languages C, C++, Java, etc. there is no need to compile python code this makes it easier to debug our code. The source code of python is converted into an immediate form called **bytecode**.

**Large Standard Library :** Python has a large standard library which provides a rich set of module and functions so you do not have to write your own code for every single thing. There are many libraries present in python for such as regular expressions, unit-testing, web browsers, etc.

**Future of Python**

Python is the most popular programming language out of many ones. With the rise of jQuery and more recently Node.js, Python's usage as the main language for backend web development has increased, especially since it has a fragmented MVC ecosystem.

**Python Users**

Many organizations have used and been using this tool for different functions. Some of them are enlisted:

1. YouTube is an extensive user of Python.
2. The Bit Torrent peer-to-peer file-sharing system uTorrent is written in Python.
3. Google uses Python as a customization tool for its popular GIS mapping products.
4. NASA and others use Python for complex scientific programming tasks.
5. Media Tek use Python for hardware coding and test.
6. National Security Agency uses Python for cryptography and intelligence- related programs.
7. One Laptop Per Child project builds its UI and activity model in Python.

**Python Libraries for Data Science**

TensorFlow, NumPy, SciPy , Pandas, Matplotlib ,Keras,SciKit-Learn, PyTorch, Scrapy, BeautifulSoup

**Developing Tools**

**1. PyQt** : PyQt is a Python bounding toolkit that you can use for GUI development. It's a very comprehensive library that houses many tools and widgets to create your UX. You can use elements such as buttons, labels, progress bars, and dialog boxes. It also has an XML parser and SVG support. PyQt is divided into different components. Core module houses non-GUI libraries that work with files or directories.

**2. Kivy** : Kivy is a GUI Python library for enhancing the user experience. It's an open-source framework, and developers can use it to develop multi-touch apps. This library is cross-platform, and developers can use it on Windows, iOS, Android, and Linux. Kivy can take input from a variety of sources and use it for rapid UX development. It's business-friendly and event-driven, making it useful for game development. The API is well documented and offers online community support.

**3. wxPython :** This is a cross-platform GUI library for Python development. It has an extensive toolkit, and the programs created through this framework are robust and high functioning. wxPython is open-source and uses Python code with wxwidgets.It also has other features like 2D drawing API and multi-file support. There are many demo bundles available for users, such as drag, MDI, and replace, among others.

**Python Frameworks**

**1. Django:** Django, a free and open-source Python framework, enables developers to develop complex code and apps quickly. Django framework assists in developing quality web applications.

**2. CherryPy:** CherryPy, almost ten years old now, has proved to be exceptionally quick and stable. It is an open-source Python web development framework that embeds its own multi-hung server. It can run on any working framework that supports Python.

**3. Pyramid:** Pyramid's popularity is progressively growing. Most of the experienced developers are embracing it. Pyramid frameworks run on Python 3. This framework is flexible and allows users to develop basic web apps via a minimalistic approach.

**4. TurboGears:** TurboGears is a data-driven full-stack web application Python framework. It is designed to overcome the inadequacies of various extensively used web and mobile app development frameworks.

**Future of Python**

Python is the most popular programming language out of many ones. With the rise of jQuery and more recently Node.js, Python's usage as the main language for backend web development has increased, especially since it has a fragmented MVC ecosystem.

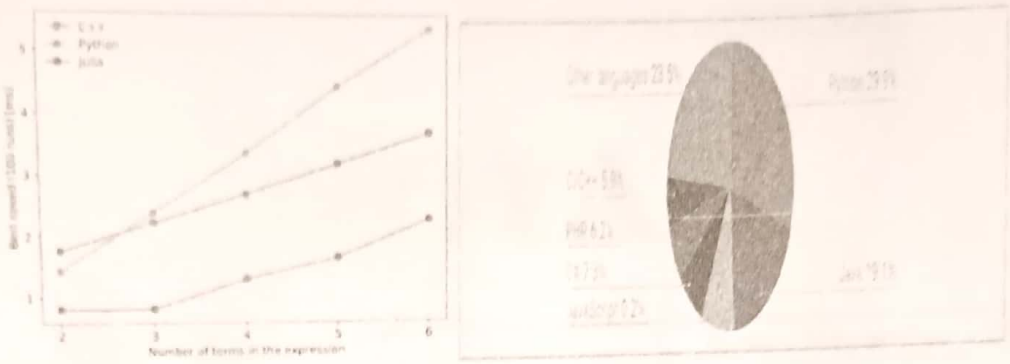
However, with big data becoming more and more popular, Python has become a skill that is more in demand than it has ever been, especially it can be integrated into almost all web apps.

Python is actively worked on with a quick update cycle, pushing out new iterations every year or so to make sure it remains relevant. In terms of search volume for interest in learning Python, it has skyrocketed to the 1st place when compared to others.

**Data Analysis**

In this analysis, we have taken data from websites where pyhton is working rapidly .the dataset was downloaded from google .For this study ,we are mainly focused on the comparison . Python Features.

Pyhton comparison data upto 2018



Pie chart showing growth of python as compared to other programming language upto 2020 .

**Conclusion**

In this paper, we briefly introduced the Python programming language as a suitable choice for learning coding and real-world programming. In this paper we discussed about front end and back end tools of python in which applications is being design The paper referenced the reasons why python language is the fastest growing coding language as compared to other languages based on the information obtained from popular and trusted internet blogs and websites. The paper has also discussed the latest applications of python by some of the popular organizations . The paper referenced the reasons why python language is the fastest growing coding language based on the information obtained from popular and trusted internet blogs and websites. According to these features, we found Python as a faster, power-packed, portable, simple, and open-source coding language that supports other technologies flexibly.

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