HEAD FIRST PYTHON

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HEAD FIRST PYTHON

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Abstract

Python is a widely used for both learning and real world programming and it is high-level object-oriented programming language created by Guido van Rossum and first released in 1991. Python features a dynamic type system and automatic memory management and supports multiple programming paradigms, including object-oriented, imperative, functional programming, and procedural styles. It has a large and comprehensive standard library. In this research journal paper I want to saw you about introduction about python programming, characteristics of python programming and features of python. In this paper we will also discuss about how python growing faster than the other languages in the recent time supported by research done over the articles procured from various magazines, popular websites and popular computer companies. In this paper I also explain python features, applications, types of programming supported by python and its users. Then at last I will saw you future of python.

Keyword: Python, Real world programming, programming languages, future of programming language.

1 INTRODUCTION OF PYTHON

Python is a high-level programming language for general-purpose programming, dynamic and interpreted (bytecode-compiled) which widely used for data structures, algorithms and object-oriented programming. It first appeared in 1991. Python 2.0 was released in the year 2000 and Python 3.0 was released in the year 2008. Its design to philosophy emphasizes code readability, code reliability and its syntax allows programmers to express concepts in fewer lines of code. The most important features in python being it supports multiple programming paradigms, including object-oriented, imperative, functional programming and interpreted or procedural styles. Python is also supports dynamic type system and automatic memory management and has a large and comprehensive collections of standard libraries. Python interpreters are available for many operating systems……

2 CHARACTERISTICS OF PYTHON

Python is a well-designed language and general purpose language that can be used to real world programming. Python is a very high-level, object-oriented, and dynamic that can used for interpreter and also used in domain of applications. Python was designed to be easy to understand and it is very user friendly language and also beginner-friendly language in the recent times. Python has gained popularity for being a beginner-friendly and also it has replaced java as the most popular introductory language. As python is dynamic typed language which is really flexible. Furthermore, python is more forgiving of errors, so you will still able to compile and run your program until you hit the problematic part. Python is simple coding programming language. This language can also support different modules of programming including structural and object-oriented. Other styles and modules can be used too. Python is very flexible and efficient programming because of its ability to use modular components that were designed in other programming languages like you can write

program in C++ and import it to python as a module.

3 FEATURES OF PYTHON

- Python programs can run on any platform, you can carry code created in Windows machine and run it on Mac or Linux.

- Python is an expressive language.

- Python has inbuilt large library with prebuilt and portable functionality, also known as the standard library.

- Python can be both dynamically and strongly typed--dynamically typed means it is a type of variable that is interpreted at runtime, which means, in Python, there is no need to define the type (int or float) of the variable.

- Multiple levels of organizational structure: functions, classes, modules, and Packages. These assist in organizing code. An excellent and large example is the Python standard library.

- Object-oriented Python provides a consistent way to use objects: everything is an object. And, in Python it is easy to implement new object types (called classes in object-oriented programming).

- Compile on the fly to byte code Source code is compiled to byte code without a separate compile step. Source code modules can also be "precompiled" to byte code files.

Some key features of python:-

3.1 Python is simple and lovely

It is very high-level and general purpose language that has many sources for learning. Python supports a wide variety of third party tools which makes it much easier and faster to use and motivates the users to continue with python. Python is much easier to write and read python programs compared to other languages like C++, C, C# and java. Python makes programming fun or enjoy and allows you to focus on the solution rather than syntax.

3.2 Portable Interpreted Language

Python scripts can be used on different operating system such as : Windows, UNIX, Mac OS, Amigo etc……. you can easily move python programs to one platform to another and run it without any changes.

Python is an interpreted language like interpreter executes the code line by line at a time. This makes easy to debugging and thus suitable for beginners.

3.3 Expressive, extensible and embeddable language

Python is the most expressive language it means it is very understandable and also easily readable.

Python implies that other languages such as C++ can be used to compile the code very faster and thus it can be used further in our python code.

Python will give your application high performance, reliable as well as scripting capabilities which other languages may not provide out of the box.

3.4 Object-oriented programming

Everything in a python is an object. Python is multi-level, multi-paradigm programming language: object-oriented, algorithms and data structural programming are fully supported. An important feature of python is dynamic name resolution, which binds methods and variable names during program execution.

3.5 Graphical user interface (GUI)

Tkinter is a standard object-oriented interface that is distributed with the python interpreter and wxPython are the basic interface for designing GUIs in python programming.

4 APPLICATION OF PYTHON

One of the most important and famous platform where python is very extensively used is Youtube. Python is used for many application domain. The python package index lists thousands of third party modules of python.

4.1 Web and Internet Development

We can use python to develop web application and pages. It also provides libraries to handle various internet protocols such as HTML, XML, JSON, and Request, E-mail processing, beautifulSoup etc……..

Some important and mostly used developments are Pocoo, PythonWikiEngines etc…….

Python some standard library supports many internet protocols like HTML, Easy-to-use socket interface, and also supports for FTP, and other internet protocols.

4.2 Scientific and numerical

Python is widely used in scientific and numerical computing. Some useful library, packages and modules are SciPy, Pandas, and IPython etc…..

SciPy is a collection of packages for math's, science and engineering.

Pandas is a data analysis library.

IPython is a powerful interactive shell that features are easy to editing and recording of a work session, and supports visualizations computing.

4.3 Desktop GUIs

Python provides Tk GUI library to develop user interface in python based applications. Some other useful toolkits are Kivy, Pyqt that are used on several platforms.

The Tk GUI library is included with binary distribution of python.

4.4 Business application

Python is used to build and manage the Business application like ERP and E-commerce systems. In python programming Tryton is high-level application platform.

Python is also used to create E-commerce systems like Odoo is an all-in one management software that offers to its range of business applications that form a complete enterprise management application.

4.5 Audio, video and 3D CAD applications

Python is best to perform multiple tasks and it can be used for develop multimedia applications like Cplay, and TimPlayer etc…….

In 3D CAD application of python it is real application which provides full features of CAD.

5 ADVANTAGES OF PYTHON

Python language has diversified supplication in the software development companies such as web-designing, gaming, industrial, and graphical designing, etc…… There are advantages of python are……..

- Extensive Support Libraries It provides large and best standard libraries that include the areas like string operations, Internet, web service tools, operating system interfaces and protocols.

- Productivity With its strong process integration features, unit testing framework and enhanced control capabilities contribute towards the increased speed for applications and productivity of applications.

- Integration Feature Python integrates the Enterprise Application Integration that makes it easier to develop Web services by invoking COM or COBRA components or packages. It has powerful control capabilities and faster as it calls directly through C, C++ or Java via Jython.

- Improved Programmer program's Productivity. The language has extensive support libraries and clean object-oriented designs that increase two to tenfold of programmer's productivity while using the languages like Java, VB, Perl, C++, C#, etc……..

6 PYTHON SHOULD BE PUBLISHED IN LATEST MAGAZINES AND WEBSITES :-)

3rd largest Meetup community

At Meetups, you can generally learn from network and fellow developers. Meetup often offers to mentorship to those who want it as well. There are 1300+ python groups on Meetup.com.

4th Most-used languages at Github

Python is also known to have abundance of libraries that assist with data analysis and scientific computing. In addition, Pygame is a game engine to build a specific type of game with if you want to make simple games as well.

5th latest StackOverflow community

This community is a programming Q&A site you will no doubt become intimate with as a coding beginner. Python has 85.9k+ followers, with over 501K python questions. Python questions are also 3rd most likely to be answered when compared to other popular programming languages.

7 Reasons for python to become faster-growing programming language

Python is a faster-growing programming language is being fuelled by a sharp uptick in its use for data science. The link has been established by a new analysis by StackOverflow, the Q&A hub that is home to the world's largest and famous online developer community.

Jacqueline kazil, board director of python software foundation, predicted python's popularity will continue grow, as the language's accessibility to be attractive to researchers carrying out analytics.

The overriding interest among python developers in data science is reinforced by other data. Among the python questions, the faster and easier to growing tag is related to Pandas, a data analytics software library for python. Only introduced in 2011, it now accounts for almost 1% of StackOverflow question views.

"However, python's growth is spread pretty across industries. In combination this tells a story of data science, machine learning and artificial intelligence becoming more common in many types of companies, and python becoming a common choice for that purpose," says Robinson.

By analyzing visitors by industry, stackOverflow determined that those viewing Python-related questions are most commonly involved in academic, followed by electronics, manufacturing and web industries.

8 Python users

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

- Google is one of the Python users that included this language in its web search system and employed Python's creator, too.
- YouTube video sharing service makes extensive use of Python.
- Popular BitTorrent peer-to-peer file sharing system is written by Python.
- ESRI uses Python as an end-user customization tool for its popular GIS mapping products.
- NASA, Los Alamos, Fermilab, JPL, and others use Python for scientific programming tasks.

- IRobot uses Python to develop commercial robotic vacuum cleaners.

- Intel, Cisco, Hewlett-Packard, Seagate, Qualcomm, and IBM use Python for hardware testing.

- NSA uses Python for cryptography and intelligence analysis.

- IronPort email server product uses more than 1 million lines of Python code to do its job.

- One Laptop per Child (OLPC) project builds its user interface and activity model in Python.
- Industrial Light & Magic, Pixar, and others use Python in the production of movie animation.

- JPMorgan Chase, UBS, Getco, and Citadel apply Python for financial market forecasting.

9 Future of python

As per my opinion Python will be better than PHP. Often, programmers fall for Python because of its minimum compilation time and speedier edit-test-debug cycle. Python is a go programming language that has automated the way programmer's code. This is indeed one of the major reasons developers have switched their interest to Python programming language. It helps you write simple scripts at relatively faster rate compared to Java, C, and C++.

Similarly, availability of built-in data types is another lucrative feature of this language. The built-in data types and functions eliminate the burden of explicitly declare variables and writing several lines of code for function. Instead, you can directly call many Python functions like format(), compile(), callable(), compile() and others. Both enterprises and programmers are passionate about including Python in their software development frameworks so much so that it has shown a great jump on the list of Popular Programming Language (PPYL Programming language Index) across the global market.

10 Conclusion

In this paper, we introduced the Python programming language as a suitable choice for learning, development and real world programming. The paper has discussed the characteristics, applications, features, types of programming support offered by python. According these characteristics we found Python as a fast, powerful, portable, simple and open source language that supports other technologies. Then, different types of programs that can be written by Python were investigated. The paper has also discussed about the latest applications of python by some of the popular corporations. The paper has cited the reasons as to why python language is the fastest growing programming language and general purpose language based on the information obtained from popular and trusted magazines and websites.

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