ABSTRACT

Python is a scripting language that's high-positioned, interpreted, interactive, and object-oriented. Python is intended to be a veritably accessible programming language. It generally uses English terms rather than punctuation, and it has smaller syntactical structures than other languages.

Python is a must-have skill for scholars and working professionals who want to become exceptional software masterminds, especially if they work in the web development field. It's a freshman-friendly scripting language. Some of the crucial features of Python programming language are - It supports OOP as well as functional and structured programming methodologies. It can be used as a scripting language or collected into bytecode for large-scale operations. It allows dynamic type verification and provides veritably high-position dynamic data types. It facilitates scrap collection by itself.

Numerous different programming languages have been impacted by Python's design and gospel. Some of those languages are Boo, Cobra, CoffeeScript, Go, Swift, Ruby, etc.

Some of the advantages of Python programming language are straightforward, free, simple to use, and largely compatible, object-acquainted, has multitudinous libraries, has erected in data structures, has a wide range of uses, boosts productivity and speed, and simple to understand.

One of the most extensively used programming languages is Python. It's an open-source language. Python’s demand is growing, and its operations are expanding in virtually every assiduity. It’s abundant in every way. It has a wide range of capabilities. Python is a popular programming language. It's also developing a strong request in the IT sector. Python is in high demand across the globe.

Python helps you negotiate more in lower time. Python has a large community that supports and meets the requirements of inventors. Python is therefore one of the most popular programming languages. It’s a veritably reliable and effective programming language. Python programmers are in high demand because Python is being used in a variety of sectors.

Python is an extensively used computer language that was created nearly 25 years ago. Python is useful in a variety of fields, including web development, desktop app development, machine literacy, big data, data analysis, and robotics. Clean syntax, extremely clear law, a wide range of uses, packages that help apply features, and a cool community that helps grow this excellent language are just a many of the reasons why people like this language and why it's well suited for different tasks. The Python programming language has a bright future. The advanced technologies like Artificial Intelligence, Machine Learning, Big Data, Cloud Computing, Data Science, etc and world-notorious companies similar as Amazon, Google, Apple, Deloitte, Microsoft, Netflix, and Accenture have the Python programming language as their backbone which states that Python is in demand and AN APPETITE FOR THE SOFTWARE INDUSTRY!

A standard and scientific procedure of an Empirical Exploration Methodology (Survey) was conducted to check the statement stated by the author where 900 repliers from colourful corridors of the globe shared

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their thoughts. From the check, it was concluded that 99.8% of the respondents feel that Python is one of the in-demand programming languages for the digital assiduity in the present time.

KEYWORDS

Python, Object-Oriented, High-level language, Portable, Advanced Technologies.

1. INTRODUCTION

Python is a general-purpose interpreted, interactive, object-oriented, and high-level programming language. Its design philosophy prioritises code readability through extensive indentation. Python is garbage-collected and dynamically typed programming language. It works with a variety of programming paradigms, including structured (especially procedural), object-oriented, and functional programming. Because of its extensive standard library, it is often referred to as a "batteries included" language.

Python Programming language was created by Guido van Rossum during 1985-1990. Like Perl, Python source code is also available under the GNU General Public License (GPL). Guido van Rossum started working on Python in the late 1980s as a replacement for the ABC programming language, and Python 0.9.0 was launched in 1991. List comprehensions, cycle-detecting garbage collection, reference counting, and Unicode support were all included in Python 2.0, which was published in 2000. Python 3.0, introduced in 2008, was a significant update that was not fully backwards compatible with previous versions. Python 2 was retired in 2020 with version 2.7.18. Python is a relatively simple and straightforward programming language. It features a simple and intuitive syntax. Python's syntax makes coding very simple. It has a grammar that is comparable to the English language. Its syntax is not as difficult as those of other languages. One can code in Python without having a deep understanding of the language too. It doesn't even need brackets; instead, it relies on indentation.

Python is Interpreted - Python is handled by the interpreter during runtime. Before running your software, you do not need to compile it. Python is interactive, in the sense that one can sit at a Python prompt and write their programmes by interacting directly with the interpreter. Python supports the Object-Oriented programming style or approach, which encapsulates code inside objects. Python is an excellent language for beginners because it allows one to create a wide range of programmes, from simple text processing to web browsers and games, Wikipedia, Google to crawl web pages, Yahoo!, CERN, NASA, Facebook, Amazon, Instagram, Spotify to recommend songs, Netflix to deliver content and several smaller organisations like ILM and ITA are all Python users for various purposes. Reddit, a social news network, was built primarily in Python. Many businesses choose python as their primary programming language.

Python is one of the most widely used programming languages over the web. Some of the applications of Python programming language being: Web Development, Data Science, Machine Learning, Artificial Intelligence, Audio and Visual Applications, Developing Games, CAD, Software platforms like Google, Netflix, Spotify, GUI for Desktop, Business Applications like Website Databases, Data Visualisation, Data Analytics, Search Engine Optimisation, Designing Software, and many more.

Across a wide range of fields, Python developers are in demand. It could lead to a well-paid career. There will be many job opportunities. Python can be used in many emerging technologies, such as Artificial Intelligence, Machine Learning, and Data Analytics, it is likely that it is a future-proof skill. Learning Python could benefit one across their career.
Python's future seems bright. Python has previously been in demand for web development, software development, and system administration but now, Python's popularity is expanding due to the advent of Data Science and Python scientific tools like NumPy, Pandas, and Matplotlib. However, in addition to the Python standard library, there are a number of other libraries that influence Python development and are equally significant. Everything is fantastic here: new frameworks and libraries are being developed, and existing ones are being upgraded. Data Science is one of the newest fields that is gaining traction in which Python is a rock-star.

Python has also influenced many other programming languages due to its design and philosophy such as: Boo, Cobra, CoffeeScript, GDScript, Groovy, Swift, Ruby, and many more.

2. **Perception of Few Professionals**

“Python is an experiment in how much freedom programmers need. Too much freedom and nobody can read another's code; too little and expressiveness is endangered.”
~ Guido van Rossum, Dutch programmer, California

"Python has been an important part of Google since the beginning, and remains so as the system grows and evolves. Today dozens of Google engineers use Python, and we're looking for more people with skills in this language.”
~ Peter Norvig, Director of Search Quality at Google, Inc.

“My favourite language for maintainability is Python. It has simple, clean syntax, object encapsulation, good library support, and optional named parameters.”
~ Bram Cohen, American computer programmer, BitTorrent protocol, US

“In many ways, it's a dull language, borrowing solid old concepts from many other languages & styles: boring syntax, unsurprising semantics, few automatic coercions, etc. But that's one of the things I like about Python.”
~ Tim Peters, Software Engineer, America

"Python is fast enough for our site and allows us to produce maintainable features in record times, with a minimum of developers,"
~ Cuong Do, Software Architect, YouTube.com

"Now, it's my belief that Python is a lot easier than to teach to students programming and teach them C or C++ or Java at the same time because all the details of the languages are so much harder. Other scripting languages really don't work very well there either."
~ Guido van Rossum, Dutch programmer, California

“The canonical, "Python is a great first language", elicited, "Python is a great last language!"”
~ Noah Spurrier, Linux software engineer, San Francisco, California, United States

“Python is the "most powerful language you can still read".”
~ Paul Dubois, Lead Developer for Numerical Python and Pyfort

"Python is everywhere at ILM. It's used to extend the capabilities of our applications, as well as providing the glue between them. Every CG image we create has involved Python somewhere in the process;"
~ Philip Peterson, Principal Engineer, Research & Development, Industrial Light & Magic
“The joy of coding Python should be in seeing short, concise, readable classes that express a lot of action in a small amount of clear code -- not in reams of trivial code that bores the reader to death.”

~ Guido van Rossum, Dutch programmer, California

3. REVIEW OF LITERATURE

Python is a popular and rapidly expanding programming language. It's a high-level, general-purpose, object-oriented scripting language which is interpreted by default.

Python is a programming language that is simple to learn. Python is simple to read and understand since its syntax is similar to English. Python is an easy-to-read and grasp language for programmers who have never written code before. Because of its simple layout, one can easily figure out what each line of code does. Python’s easy and simple syntax attracts newcomers who desire to learn this scripting language. From some angles, it may appear logical and predetermined that Python will become the lingua franca of coding language, rendering all of its competitors obsolete. Its code is simple to understand, distribute, and update. There is no overuse of words, and the language is simple to pick up which makes it a simple and easy-to-learn, easy-to-read, easy-to-maintain programming language. Python is said to be simple to use by programmers. Python makes it easier to create server-side apps, automate build processes, and collect test data. Python is versatile.

Python is a free and open-source programming language. Python is an open-source language that is free to use and distribute, including for commercial reasons, thanks to an OSI-approved open-source licence. It will lower your maintenance costs. The developers, on the other hand, can share, copy, and modify it.

Python is highly compatible with a variety of hardware platforms and has the same user interface across all the platforms. It's one of the most typical problems that developers have while working with different languages. It is a platform-independent language. Python code written on one platform can also be run on another. Its programmes run on any modern computer operating system. Python scripts are interpreted because of the high-level nature of the language; therefore, they may be written for further interpretation on Linux, Windows, Mac OS, and UNIX without requiring any changes. Python also allow implementing portable GUIs. Python's portability is one of the reasons for its popularity.

One of Python's major advantages is the large number of libraries and frameworks available. A Python developer's efficiency is boosted by having a large library with memory management and blank designs.

The Python Library, which includes everything from NumPy to TensorFlow, is used for Data Visualisation, Machine Learning, Data Science, Natural Language Processing, and Complicated Data Analysis. As a result, developers are able to handle databases, documentation, and web browsers, as well as do unit testing and other tasks. NumPy, Pandas, Selenium, SciPy, PyTorch, Bokeh, and other Python tools and frameworks like Pyramid, Django, Palcon, Flask cater to certain fields. These libraries and frameworks make coding much easier for developers because they eliminate the need to code manually. These can assist a developer in simplifying and speeding up the process. Python can be used to create a variety of jobs, including web and desktop programmes, complicated computation systems, life support management systems, the Internet of Things (IoT), and games and many more.
Python is based on simple structures that are later translated into a low-level language, which is the actual code that runs on the central processor unit of a computer (CPU). A programmer will utilise a high-level language, and the produced code will be interpreted into a low-level language. Python, like C++ or Java, must be processed before it can run. Python's portability is enabled by this: it can operate on a variety of systems with minimal changes.

Python enables object-oriented programming. This programming paradigm provides a general framework for scripting and code organisation. The challenges in terms of classes and objects are possible with this object-oriented approach. The objects are then put together to form complicated computer programmes. Python also enables procedural programming in addition to object-oriented programming. You can make Python programming more advanced by using an object-oriented programming method, which is just one of the alternatives. Developers can reuse code patterns, reducing the amount of redundancy in development initiatives.

At runtime, an interpreter examines the lines of code one by one and executes the commands. Python, like Perl and PHP, does not require to compile the programme before running it. As a result, there is no such need to use a compiler. One can just run a .py file instead of the compiler that aids in the conversion of source files to compiled class files. Python's byte code compilation is completely automated.

Python has a huge community. In terms of the Python community, it allows junior specialists to contribute their skills. As a result, the Python user community is constantly expanding and increasing. Python has a constantly rising user base and is an excellent example of a vibrant community. Python's formidable toolkit has hundreds of contributors — Pythonists. Users have already contributed around 2,00,000 custom-built software programmes to an online repository. All of this means that the large supportive community is both the cause and the result of the language's popularity.

Python's built-in list and dictionary data structures can be used to create quick data structures at runtime. Furthermore, Python's dynamic high-level data type option reduces the length of support code required. All major commercial databases provide Python interfaces.

Python's object-oriented design allows for more precise process control. Python has powerful integration and text processing features, which let it run faster and more efficiently. This Python functionality is thought to be a feasible choice for creating multi-protocol network applications. Python is a dynamic scripting language, which means it's not designed for developing applications from the ground up, but rather for connecting components. The interfaces between components and scripts are well-defined, and components are designed to be reusable. It all helps to speed up software development by making Python a highly concise and productive language.

Python features an interactive mode that enables interactive testing and debugging of code snippets. Low-level modules can be introduced to the Python interpreter, allowing programmers to improve their tools by adding to or customising them. For large programmes, Python has a better structure and support than shell scripting. Python is capable of automating its tasks. Writing and executing code of Python takes less time. It has dynamic coding and does not need to be compiled. This saves both time and energy.

Python still maintains flexibility, despite emphasising code simplicity and readability over flexibility. Python can be used in a variety of projects. It lets programmers select between procedural and object-oriented programming paradigms. Python is also versatile when it comes to data types. Number- three built-in numeric data types: integers, floating-point numbers, and complex numbers; String- arrays of bytes representing Unicode characters; List- a ordered collection of data; Tuple- ordered collection of Python objects; and Dictionary- unordered
collection of data values - are the five root types, and each sub-data type corresponds to one of them. As a result of Python’s versatility, conducting exploratory data analysis becomes easier.

Python programmes are text files that include interpreter instructions and are written in a text editor or integrated development environment (IDE). Text editors do not generally include IDE functions, but they can be altered. IDEs are full-featured and include in-built tools such as syntax checks, debuggers, and code browsers. Python also comes with a large number of third-party packages, libraries, and frameworks to help with development. Python is therefore ideal for large-scale applications due to its optimization capabilities.

Python has a bright future ahead of it. It is now used in practically every industry. Everyone can find a job that they enjoy. Python developers will have no trouble finding work because there is such a high demand for them. Python is an excellent language to learn. Python's wage component is one of the reasons for its popularity. Python programmers benefit from a lucrative package. Python programmers are the highest-paid workers in the IT industry. Although the amount varies depending on their abilities, education, and experience.

The Python programming language has a wide range of applications. Scientists, Engineers, and Mathematicians use it extensively for a variety of purposes. Python may also be used to prototype a variety of experiments. It's employed in a variety of ground-breaking industries, including Movie Animation, Desktop GUI Development, Scientific and Computational Applications, Machine Learning, Image Processing, and Graphic Design applications. Games, Web Frameworks and Web Apps, Enterprise and Corporate Applications, Operating Systems, Language Development, and Prototyping are all examples of Python applications.

The TIOBE (The Importance of Being Earnest) Programming Community index is an indicator of the popularity of programming languages. The index is updated once a month. The ratings are based on the number of skilled engineers world-wide, courses and third-party vendors. Popular search engines such as Google, Bing, Yahoo!, Wikipedia, Amazon, YouTube and Baidu are used to calculate the ratings. The index can be used to check whether one’s programming skills are still up to date or to make a strategic decision about what programming language should be adopted when starting to build a new software system.
Many additional programming languages have been impacted by Python’s design and philosophy: Indentation, a comparable syntax, and an object model are all used by Boo. Indentation and a comparable syntax are used by Cobra. CoffeeScript is a Python-inspired programming language that cross-compiles to JavaScript. Python iterators and generators were borrowed by JavaScript. The Godot game engine includes GDScript, a scripting language that is extremely similar to Python. Julia was created with the goal of being "as useful for general programming as Python." Indentation and related syntax are used by Nim. Swift, an Apple programming language, features some Python-inspired syntax.
The Python Package Index (PyPI), the official repository for third-party Python software, contains over 3,29,000 packages with a wide range of functionality, including: Data science; Scripting; Database programming; Quick prototyping; Web development; Data analysis; Machine learning; Web parsing, scraping, and crawling; System administration/automation scripts/DevOps.

Python's user base is continuously expanding since it is employed in a variety of computer languages. Quick automation, cross-platform shell scripting, simple Web Development, Data Science, Artificial Intelligence, Machine Learning, Data Analysis, Visualisation, and many other programming styles are among them.

### 3.1. Data Science

Data science is all about coping with massive amounts of data (Big Data). Python has thus become the most promising option to handle it due to its ease of use and a big variety of unique modules and frameworks that are very useful in the Data Science sector. One of the major reasons is PyBrain, PyMySQL, and NumPy - A library that makes a variety of mathematical and statistical operations easier; it is also the basis for many features of the Pandas library. Python’s easy interface with other programming languages is another step forward, making it more scalable and future-oriented. Python makes data visualisation and analysis easier. Data processing is possible because of the extensive and efficient libraries. It aids data scientists in doing difficult numerical computations. NumPy, Pandas, SciPy, Selenium, OpenCV, Librosa, Madmom, TensorFlow, Seaborn, Pillow, and other libraries and frameworks are among them.
3.2. Artificial Intelligence

When it comes to Artificial Intelligence, Python is practically unbeatable! Python creates high-level abstractions that let you handle everything as an object without having to deal about memory management or CUDA programming quirks. Python is incredibly valuable these days, and one of the most important reasons is because it is supported by all existing APIs. From TensorFlow, Torch, Keras, and other deep learning frameworks to distributed computation frameworks like Spark, Storm, Flink, and Pub/Sub streaming frameworks like Kafkas. Python is now supported by every production-ready system available.

3.3. Machine Learning

Python is an interpreted language, which means it may be interpreted by a virtual machine against any other machine language that the hardware recognizes. It can also be utilised in complex scenarios using variables, objects, complex arithmetic or Boolean expressions, and other concepts to exponentially expand its demand and usability. Machine learning's growth has been amazing in recent years, and it is swiftly transforming everything around us. Every day, algorithms become more complex. Both Google's and Uber's search algorithms are totally automated. In comparison to Java, machine learning libraries found more information around Python, as the developer community currently prefers Python to anything else for machine learning.

3.4. Web Development

Two out of three developers who previously worked with PHP have switched to Python for backend development. Python's popularity has risen dramatically in the last two years as it has proven to be a superior choice. It has a lot of useful libraries and frameworks, such as Flask and Django, that make web development simple. Some of the most well-known product-based platforms have embraced Python, including YouTube, Instagram, Facebook, Google, Netflix, and Spotify. In web development, Python provides more robust code that may be used to form flexible use cases, despite the prevalent view of Python. Python is simpler than languages such as PHP. Its application in Web development is simple and effective. Python has some libraries and frameworks Django, Flask, CubixWeb, TurboGears, Dash, Hug, Falcon, Bottle, etc that helps web developers to complete their tasks quicker and with fewer lines of code. According to BuildWith, there are 2,46,163 websites that use Python as of February 2021. Among world-famous companies that use this language are - Instagram, Google, Netflix, Reddit, IBM, Facebook, Spotify, Quora, and Dropbox.

3.5. Google and YouTube

Python and C++ are used to develop Google's search engine. Python is the backbone of YouTube. Python is used to power Google's engineering platform, code.google.com. Google has used Python to create code review and system administration tools, as well as a binary data pusher. Google has recently made significant investments in Python-based Artificial Intelligence, Machine Learning, Data Analysis, and Robotics initiatives. Google has a number of open-source projects based on Python, such as the Google Data Python Client Library, the Google AdWords API Python Client Library, and the Google APIs Client Library for Python.
3.6. Netflix

One of the world’s leading entertainment media service providers, Netflix has been using Python as the main technology from the beginning. They use Python across all of their processes, combining in-house software libraries with well-known Python packages.

To build and operate, a content delivery network (CDN) delivering Netflix movies and TV shows to subscribers across the globe; To create in-house tools for capacity operations, regional failovers, traffic distribution, and fleet efficiency of the Netflix cloud for the Demand Engineering team; Statistical analytics and alerting; Automation tasks, Visualization, and Data Exploration and Cleaning; Monitoring, Diagnostics, Alerting, and auto-remediation inside the Insight Engineering team; Security automation, vulnerability identification, and risk classification.

In addition to the use cases mentioned above, Netflix relies on Python for Machine Learning. The algorithms they apply include: Recommendation algorithms to understand exactly what their users are in the mood for; Artwork personalization algorithms – Since user preferences differ, Netflix realized it’s better to find the best image for each user by pointing out the aspects of a title that are directly related to the user’s interests; Marketing algorithms to save time on marketing – With algorithms, Netflix has automated their paid marketing campaign.

3.7. Spotify

Backend services and data analysis are the two main areas where Python is used at Spotify. Spotify places a premium on speed. Python fits well into this approach since it allows to achieve significant development speed gains. Also make extensive use of Python async frameworks are made to aid IO-bound services. The Python community is one of the things that makes it so unique. Spotify contributes to the community in a variety of ways.

3.8. Reddit

Python hasn't always been a core component of Reddit. Reddit was originally built in Common Lisp, but six months later it switched to Python. Reddit CEO Steve Huffman discussed the company's move to Python at the Python Conference in 2009, for which there were two key reasons. The first was that Python came with a larger library. The second advantage was the code's writability, expressiveness, and readability. Reddit is the sixth most visited website in the United States, with over 330 million monthly active users, over 21 billion monthly screen views, and over 1,30,000 active communities. Reddit employs Python to handle huge loads and ensure efficient and speedy performance.

4. LITERATURE SURVEY

A standard and scientific procedure, an Empirical Research Methodology is used to conduct the survey on the chosen topic. Demographically, the total number of respondents were 900 among which 650 were Male and 250 were Female of all the age groups above 18. The tools used in performing this survey were: Direct Interaction, Emailing, social media, etc. The respondents were from various parts of the globe like India, USA, UK, China, Singapore, Australia, New Zealand, UAE, Germany, Japan, etc. The survey reports are as follows:
4.1. Question 1

Did you learn Python Programming Language?

Figure 3. Survey of Question 1.

4.2. Question 2

From your study of Python Programming language, do you think it to be an easy and simple programming language for a new bee to learn?

Figure 4. Survey of Question 2.

The survey for the second question, shows that 86.7% of the respondents feel that Python programming language is an easy and simple programming language for a new bee to learn, in comparison for 13.3% of the respondents did not feel it.

4.3. Question 3

Do you use the Python Programming Language frequently?
The survey for the third question shows that 68.6% of the respondents use the Python Programming Language frequently while 31.4% of the respondents do not.

4.4. Question 4

Do you think that studying Python is important for a person dreaming to become a techie as it can be used in a wide range of coding scenarios?

The survey for the fourth question, shows that 98% of the respondents agree that studying Python is important for a person dreaming to become a techie as it can be used in a wide range of coding scenarios while 2% of the respondents did not agree with this point.

4.5. Question 5

Do you agree that Python is one of the in-demand programming languages for the world’s digital industry in the present time?
The survey for the fifth question, concludes that 99.8% of the respondents feel that the Python programming language is one of the in-demand programming languages for the digital industry in the present time, while 0.2% of the respondents did not feel that.

5. CONCLUSION

The goal of programming languages is to help one create well-coded computer code that will make their business operations run more smoothly. Python could be a good language for writing computer programmes in that regard. Python has all of the features that make for a wonderful computer language - a real language that’s appreciated and accepted across the globe.

One of the most widely used programming languages is Python. It is an open-source language that is very user-friendly. Python's popularity is growing, and its applications are expanding in practically every industry. It is abundant in every way. It has a wide range of capabilities. Python is a popular programming language. It is also developing a strong market in the IT sector. Python is in high demand across the board.

Everyone is all aware of the advantages of studying Python in today's work environment. Learning Python can help one advance their career. Python has all of the attributes that make it universally recognised and appreciated as a powerful programming language with easy code line usage. It can also be readily maintained and debugged. One of the main reasons why Google made Python an official programming language is because of this.

With each passing second, one can see that Artificial Intelligence, Machine Learning, Big Data, Cloud Computing, Data Science are shining brightly in the eyes of every developer. As a result, everyone, beginner or expert, is driving "popularity traffic" to Python. Python demand has increased as a result of this. Also, world-famous companies such as Amazon, Google, Apple, Deloitte, Microsoft, Netflix, and Accenture are among those companies with the most Python developer job postings.

Python is a widely used computer language that was created almost 25 years ago. Python is useful in a variety of fields, including Web Development, Desktop App Development, Machine Learning, Big Data, Data Analysis, and Robotics. Clean syntax, extremely clear code, a wide range of uses, packages that assist implement features, and a cool community that helps grow this
excellent language are just a few of the reasons why people like and prefer this language and why it’s well suited for different tasks. The Python programming language has a bright future.

Hence, it can be concluded that PYTHON–AN APPETITE FOR THE SOFTWARE INDUSTRY!

6. CONTRIBUTION

The contributions for this paper are done entirely by the author herself.

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