Logo

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Python summary for website:

**Page 1**

**All you need to know about python: (Title)**

Python is an interpreted, object-oriented [1], high-level programming language with dynamic semantics. Its high-level built-in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together [2].

**In a nutshell: (subtitle + list unordered)**

* Interpreted: This means that python, compared to compiled languages, doesn’t need to compile a program into machine instructions to run it [3]. The instructions are not directly executed by the target machine, instead, they are executed and read by another program [4].

Table

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Figure 1 difference between compiled and interpreted language

* Object- oriented: Also abbreviated as OOP is a way of organizing software design around data or objects. This programming model focuses on data or objects instead of functions and logic. In this case, we can think of an object as a data field that has unique attributes and behaviours. This type of organization can be better for large, complex, and frequently updated projects, this includes manufacturing, design, and even mobile applications [5].
* High-level programming language: To better understand this we can start by explaining its opposite first; a low-level programming language must focus on communicating or explaining information to the machine itself. Hence, these are the parts of a coded system that are written in a more complex language. Since this communication is directly with the machine, the language used is almost incomprehensible to human logic (binary languages, et al). Hence, a high-level programming language has the main objective or purpose of solving a problem. This part of the code doesn’t have to worry about how the computer will interpret this information. This other part of the job is done by an interpreter, and we can communicate the same code with different levels of abstraction. These levels will specify different parts of the machine how it must execute or process them [6].
* Dynamic semantics: Python uses dynamic semantics, meaning that its variables are dynamic objects. Essentially, it’s just another aspect of Python being a high-level language. In other words, Python lets you assign variables in a way that makes more sense to you than it does to the computer. It’s just another way that Python programming is intuitive. It also gives you the ability to do something like creating a list where different elements have different types like the list [1, 2, “three”, “four”]. Defining that in a language like C would be a nightmare, but in Python, that’s all there is to it [7].

**Some history: (Subtitle)**

Summary: Python was created by Guido van Rossum at Centrum Wiskunde & Informatica (CWI) in the Netherlands as a successor to the ABC programming language, which was inspired by SETL. It was first released on February 20, 1991.

Full story: We will start this journey by going back in time to the late 1980s, history was about to be written. Guido Van Rossum began doing its application-based work in December of 1989 at Centrum Wiskunde & Informatica (CWI) which is situated in the Netherlands. The “python project” started as a hobby to keep Rossum occupied during Christmas. The programming language in which Python is said to have succeeded is ABC Programming Language. Rossum had already helped to create ABC earlier in his career and he had seen some issues with it but liked most of the features [8].

After that, what he did was very clever. He took the syntax of ABC, and some of its good features, he fixed the parts that he didn’t like and finally he created a good scripting language that had removed all the flaws in ABC. The inspiration for the name came from BBC’s TV Show – ‘Monty Python’s Flying Circus’, as he was a big fan of the TV show and, he wanted a short, unique, and slightly mysterious name for his invention. That’s how the name Python was invented.

Rossum was the “Benevolent dictator for life” (BDFL) until he stepped down from the position as the leader on 12th July 2018. For quite some time he used to work for Google, but currently, he is working at Dropbox.

It’s important to mention that, rather than building all its functionality into its core, Python was designed to be highly extensible via modules. This compact modularity has made it particularly popular as a means of adding programmable interfaces to existing applications. Van Rossum's vision of a small core language with a large standard library and easily extensible interpreter stemmed from his frustrations with ABC, which espoused the opposite approach.

Python strives for a simpler, less-cluttered syntax and grammar while giving developers a choice in their coding methodology. In contrast to Perl's "there is more than one way to do it" motto, Python embraces a "there should be one—and preferably only one—obvious way to do it" philosophy. Alex Martelli, a Fellow at the Python Software Foundation and Python book author, wrote: "To describe something as 'clever' is not considered a compliment in the Python culture."

Python's developers strive to avoid premature optimization and reject patches to non-critical parts of the CPython reference implementation that would offer marginal increases in speed at the cost of clarity.

The language was finally released in 1991. When it was released, it used a lot fewer codes to express the concepts, when we compare it with Java, C++ & C. Its design philosophy was quite good too. Its main objective is to provide code readability and advanced developer productivity. When it was released, it had more than enough capability to provide classes with inheritance, several core data type exception handling, and functions.

Following are the illustrations of different versions of Python along with the timeline:

Diagram, schematic

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One of the amazing features of Python is the fact that it is one person’s work. Usually, new programming languages are developed and published by large companies employing lots of professionals, and due to copyright rules, it is very hard to name any of the people involved in the project. Python is an exception.

Of course, Guido van Rossum did not develop and evolve all the Python components himself. The speed with which Python has spread around the world is a result of the continuous work of thousands (very often anonymous) programmers, testers, users (many of them aren’t IT specialists) and enthusiasts, but it must be said that the very first idea (the seed from which Python sprouted) came to one head – Guido’s.

Python is maintained by the Python Software Foundation, a non-profit membership organization and a community devoted to developing, improving, expanding, and popularizing the Python language and its environment.

**Python goals: (Subtitle)**

It’s very interesting to mention that certain python goals have been accomplished since its release in 1991[9].

In In 1999, Guido van Rossum defined his goals for Python:

* an easy and intuitive language just as powerful as those of the major competitors.
* open source, so anyone can contribute to its development.
* code that is as understandable as plain English.
* suitable for everyday tasks, allowing for short development times.

20+ years later, all these intentions have been fulfilled. Some sources say that Python is the first-most popular programming language in the world, while others claim it’s the third.

Either way, it occupies the first position in the top ten of the TIOBE Programming Community and PYPL Popularity of Programming Language Indexes. (February 2022)

Python isn’t a young language. It is mature and trustworthy. It’s not a one-hit wonder. It’s a bright star in the programming firmament, and time spent learning Python is a very good investment.

A screenshot of a computer

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**What can we use python for?** (Subtitle)

Here are 7 common and practical uses for python [10]:

1. AI & Machine Learning

Python is widely believed to be the programming language of choice for artificial intelligence (AI) due to its easy syntax and quick learning curve. When it comes to machine learning, according to Towards Data Science's idea sharing platform, 57% of his data scientists and machine learning developers use Python, with 33% making it a priority for development.

2. Data Analytics

Many of the most popular data mining and analysis tools are written in Python. The result is a great tool for data science. Python's tools allow developers to separate important and relevant data. Big data not only helps retain customers, but it also helps businesses learn more about themselves. This kind of information can show you where your company's vulnerabilities lie so that you can act on them once they are identified.

3. Web Development

Python as a backend language is surprisingly versatile. Its simplicity is the key factor here. The simple syntax is very similar to English, so the web developers who use this will save a lot of time and energy. Python is used for backend web development, including processing data, interacting with databases, and sending information between servers. Due to its widespread use, there are many Python frameworks available for backend development, such as Django.

4. Search Engine Optimisation (SEO)

Python helps SEO professionals automate tasks and help extract and analyse large amounts of data. You can use Python to analyse large datasets and identify website issues such as: B. Broken links. You can automate those solutions to minimize tedious work and eliminate human error.

5. Blockchain

There are several popular languages ​​for blockchain development, such as JavaScript, Java, and C++, but Python has proven to be a powerful language. Like any application, Python is highly recommended for blockchain development as it is highly flexible, functional and security-enhanced.

6. Game Development

Although Python is not the top programming language used in game development, it is still very popular, especially for simple games. Also, the speed at which games can be created in Python is more flexible and the process is faster than other alternatives, so its simplicity makes it a great choice for prototyping and developing ideas in the gaming industry. It is mainly looked like an option that can be implemented if needed.

7. Automation

Besides the previously mentioned uses for python, it can also be useful for anyone who interacts with big data sets, in or out of work. It can automate tedious tasks, including checking information in databases, data visualizations, financial analysis and much, much more. Learning Python will allow you to save time throughout your life, and it has the bonus of being one of the easier programming languages to learn!

**Page 2**

**How did python impact the world of programming? : (Title)**

We can start by saying that Python is arguably the most popular and fastest- developing programming language out there. Boasting a 27% year over year growth rate, Python has quickly become the preferred language of programmers, serving trending applications such as machine learning and data science [11].

**Why is Python in demand compared to other languages?** (subtitle)

Unlike C++ and Java, the syntax for navigating, compiling, and solving problems is not overly complicated. Python uses English keywords, making it simple, readable, and maintainable. It integrates easily with other programming languages ​​and supports functional, structural, and object-oriented programming (OOP). Not to mention a thriving ecosystem:

Open-source libraries, frameworks, and a community of experts make every problem temporary. The language's versatility also speaks for Python. Sometimes referred to as the "Swiss Army knife" of programming, Python isn't tied to just one domain, but can support many domains such as data analysis, web applications, games, and automation. Many of today's major technology platforms utilize Python.

Instagram, YouTube, Dropbox, Spotify, Reddit, Pinterest, Instacart and more. Netflix's ability to predict what content users will be interested in is based on Python. 21% of Facebook's infrastructure is made of Python. Some of Google's early engineers are said to have said, "Python where you can, C++ where you need to."

With today's explosive trends towards smart devices, connectivity, and artificial intelligence, the need for Python experts is also exploding. In 2018, LinkedIn reported that the company was short for more than 150,000 experts in data science, software development, and machine.

**Demand for python** (subtitle)

Today, demand continues to outstrip supply, making Python developers one of the highest paid tech jobs. Additionally, for entrepreneurs and anyone wanting to learn to code, Python continues to be a great skill to learn. It is considered the best and most versatile beginner's language due to its simple, easy-to-understand structure and wide range of applications.

Familiarity with Python can advance (or start) many professionals' careers. Python is recognized as one of the most important languages ​​to learn and has the added advantage of being compatible with existing languages, which is why every programmer or analyst is desperate to add it to their resume. It's a skill anyone in the tech industry should be able to have.

Python has become of such impact that it is now being taught at most universities. When it comes to coding jobs, Python is the programming language Brits most intend to learn, followed by SQL. This happens because both universities and self-taught developers know that python is a great language to add into ones portfolio for applying to work at any company [12].

From an analysis of the technical jobs currently available across Europe, software and systems engineers appear to be in great demand.

Software engineering is currently the most sought-after technical job in Austria, Belgium, Czech Republic, Ireland, Netherlands, and Norway. The same applies to systems engineering in Finland, France, Sweden, Switzerland, Turkey, and the UK.

Interestingly, Poland and Russia have the most job openings for Java developers specializing in programming.

Elsewhere, AI Engineering (Italy and Romania) and Data Engineering (Denmark and Luxembourg) are the technology positions that offer the highest number of employment opportunities for qualified candidates.

All these jobs will be filed out by relatively unexperienced programmers, and the language that has proven to be easy for developers to learn is python. Some say Python is intuitive as compared to other programming languages. While others believe, it is due to the number of libraries Python offers that makes it suitable for all developers to use [13].

Within the past years, Python has managed to grow its community worldwide. You can find multiple platforms and forums where machine learning solutions are shared. For every problem, you’ve faced you’ll always find there’s already someone who has been through with the same problem. Thus, it is easy to find solutions and guidance through this community.

Python also has the advantage of being platform independent, this simply means that a programming language or framework allows a developer to implement something in one machine learning and use the same in another without further modification. The best thing about Python is that it is a platform independent language supported by several other platforms such as Windows, macOS and Linux. Meaning that a Python code itself can create self-contained programs that run on most operating systems without requiring a Python interpreter.

**Conclusion** (Subtitle)

Python’s power and ease of use has catapulted it to become one of the core languages to provide machine learning solutions. As demand for technological jobs rises there is a linear correlation between the rise in programmers learning to use python. Not only because of the advantages in speedy learning and simplicity python has to offer, but also, because companies in general like standardizing work environments. Meaning that if internal processes within a company are done in the same language, the business can thrive as everyone can understand each other better. Companies are absolutely relying on python to do this, the same way (to put things into perspective) the globalized world has relied on English to become the international language that boosts international relationships and economies. The same thing happens in the tech industry, there is base of communication that helps everyone be on the same page, and python has been indirectly given this role. Hence, why learning it is so important, as it has impacted the course of developing technological projects worldwide.

**Page 3**

**Is python still relevant? : (Title)**

Although python is well known for its flexibility and beginner friendly usage, many people question whether it is still a good language to learn with the long term in mind. This article will hopefully help solve that question and offer a perspective towards the programming languages of the future.

We must first ask ourselves, who is using python?

According to the latest STACKOVERFLOW SURVEY 2021, Python was ranked third among the most commonly used programming languages. Considering the number of choices, the survey shows that Python is a very popular language [17].

Chart

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Tech giants, start-ups, government agencies, financial firms, and many other organizations across all sectors and industries are turning to Python. By 2022, some of the world's top companies will have this language in their stacks, and many have been using it for years. Some of the biggest companies' most famous products are written in Python [14].

Table

Amazon

Dropbox

Facebook

Google

IBM

Industrial Light and Magic

Instagram

JP Morgan Chase

Lyft

NASA

Netflix

PayPal

Pinterest

Pixar

Quora

Shopify

Spotify

Stripe

Uber

These are just a few examples of companies, large and small, using Python around the world. Given the huge community of developers and engineers surrounding Python, it's safe to say that people in all industries and disciplines use the language for both professional and recreational purposes.

Where is python currently standing?

On October 4, 2021, Python 3.10.0 was released. The new version offers several features and optimizations compared with the 3.9 release. According to the Python website, they include syntax features, library features, interpreter improvements, and typing features, along with some additional removals and restrictions.

Python version 3.10.4 is the current stable release, the fourth maintenance release of Python 3.10, published on March 24, 2022. Among other additions and improvements, this version offers precise line numbers for debugging and other tools, explicit type aliases, parameter specification variables, and much more.

What is the future of python?

Python is often in the news, and with good reason. Python's professional future also looks very promising. Over 40,000 jobs worldwide are reserved for experienced Python software developers [15]. Python still has some work to do, including the improvement of:

* speed
* compatibility with native environments
* runtime errors
* browser integrations

If python manages to completely fix these issues, the language would be the top programming language out there. Currently, even with these minor flaws, the benefits outweigh the drawbacks, making Python one of the most popular programming languages world-wide. Additionally, Python is used in data analytics, big data, machine learning, artificial intelligence, and other innovative technologies. Its importance is expected to increase in the near future. Python can help brighten the future of software developers if they can function and use it properly. It also tops the list of the most used and popular programming languages ​​in the world [16].

It’s hard to stay in the positive side of this debate, considering that there are always rumours lingering in the air about once-popular programming languages losing their appeal. So, we can state facts because Python is most certainly not going away any time soon.

For starters it has been around for decades, during which time it has grown in popularity and has become a staple of top companies around the world.

Also, python has proven to be implemented in many universities or colleges worldwide because of its easy-to-understand syntax and fast learning curve. Hence, this increases the number of people that know the language and promote its usage in start-up projects or in businesses once employed.

Finally, machine learning and data science are growing and gaining attention. Python plays an important role in these areas. It will likely continue to be the language of choice for these key areas to help developers automate, scale, and improve their products.

It's impossible to call Python completely future proof, but the language is definitely long-lived and will stand up to modern conditions. It's also a tool that will reliably keep organization on the stack for years, even decades.

Watch these videos:

<https://www.youtube.com/watch?v=zIwLWfaAg-8>

<https://www.youtube.com/watch?v=J0Aq44Pze-w>

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