

# 01\_PHYTON (01-General Information about Python)

## What is Python?

As you can imagine, Python is a programming language (such as Java, C ++, R, Ruby, and so on). Like other programming languages, it allows you to control the machine in front of you, the computer.

The IT industry is booming with Data science applications using,

- Artificial intelligence,
- Deep learning and
- Machine learning algorithms.

Python is the most widely used technology in this domain. With the new-age applications, demand for a Python developer has also increased.

According to the [Google search trends](#), in 2021, Python is the most popular searched term, among all programming languages.

According to Tiobe.com's index of programming languages, Python is the fastest-growing language.

Python has become the second-most-popular language in GitHub, overtaking Java for the first time, according to GitHub's 2020 State of the [Octoverse report](#) on the usage of the popular code-sharing site.

Programs can be developed very quickly with this language. In addition, the simple and clean syntax of the Python programming language has made it a preferred language by many programmers. It's easy to write programs and read a program written by others. So, it has been widely used - especially in Data Science - and has received lots of demands in recent years.

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Q: What is Python?

A: Python is a programming language. It allows you to control the computer. The benefits of Python are that it is simple and easy, portable, extensible.

## The Programming Language of the Agile Era (Optional)

The contents in this section are developed by making use of the official brochure (Python Brochure Vol.I 2nd Edition, named: Case Studies & Success Stories), which was prepared by the Python Software Foundation (PSF) to introduce Python. You can access all the brochure [here](#).

### Programming with Python

Software quality is a vital ingredient to success in industry and science. Ubiquitous IT systems control the business processes of the global economy. Increasingly powerful computers and sophisticated algorithms provide the platform for new scientific discoveries. And global communication is inconceivable without intelligent software. In the race for customers, the pole position belongs to those who get to market faster than their competitors. Better and more creative solutions combined with the ability to respond instantly to new challenges drive the race. **Writing secure and reliable programs in a fraction of the time normally required gets you first across the finish line.**

The Programming Language of the Agile Era :

**Agility is the hallmark of our times and Python is the programming language of the agile era.** The Python universal programming language is the turbocharger of the IT department. Compared with other modern programming languages such as Java or C, Python achieves superior results in significantly shorter timescales for a number of different reasons.

For example, **Python is a very lean programming language.** Python programs are a great deal shorter than code written in other modern programming languages. **As a result, both development times and maintenance costs are drastically reduced.** Less code means fewer errors, meaning the cost of identifying and eliminating these errors is also reduced.

**A comprehensive standard library and thousands of additional libraries in the Python Package Index provide developers with high-quality solutions that they can easily integrate into their applications to meet virtually any requirement.**

In this way, Python frees up vast resources, which can be earmarked for more productive use elsewhere.

The Master Key for System Integration :

Python offers unique benefits for system integration. On the one hand, **there are huge numbers of Python libraries**, with which virtually any third-party system can be integrated. **On the other hand, the libraries of many other programming languages can also be used in Python.**

Once they have been programmed, Python applications can run on all operating systems for which a Python interpreter exists, significantly reducing the cost of operating-system-specific applications.

The Language that has Changed Everything :

For over 20 years, Python has been used successfully throughout the world as a programming language in industry, in the service sector, and also in research and science to meet a wide range of different requirements. In this time, the language has changed many things.

The Python programming language is easy to learn. It has blurred the boundaries between users and developers. Increasing numbers of scientists, engineers, financial experts, and others with little programming experience are using Python to solve specific complex technical problems.

## Historical Development of Python

This programming language was developed in the early 90s by a **Dutch programmer called Guido van Rossum**. Most people think that this programming language is named after the python snake, assuming its name is Python.

However, contrary to the assumption, the name of this programming language does not come from the python snake. Guido van Rossum named this programming language inspired by the show of Monty Python's Flying Circus from an English comedy group called The Monty Python.

Even though this is the case, the logo of the Python programming language with a serpent type in many places has become almost a tradition.

This language has a huge group of developers around the world. If you have any problem, you can always ask other Python users/developers for help or find a suitable answer on several sites like [stackoverflow.com](https://stackoverflow.com)

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## Review of Tools & Installations

The version of **Python 3.X** was released in 2008. It makes Python more *readable* and *consistent* than previous versions. Throughout this course, we will use the latest versions of Python 3.X (currently Python 3.9.7).

**There are several Integrated Development Environments (IDE) that we can write and run Python codes on them.** We prefer Anaconda Navigator (Anaconda3) package program which includes several IDEs options for you. You can optionally install Anaconda on your computer. Currently, Python 3.8 is available in the Anaconda package.

Among the IDEs in Anaconda, we prefer to use Jupyter Lab to write down the Python codes on it. The Jupyter Lab is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations, and narrative text. Jupyter Notebook can also be used which is very similar to Jupyter Lab.

Apart from Anaconda, of course, **Python Shell (IDLE) can also be used as a basic interpreter tool for Python.**

Throughout this course;

- We will provide you Playground module to write and run your code on each lesson page. Therefore, as we stated before you don't have to install Anaconda Package, it is optional.
- Additionally, we will be using all Jupyter Notebook-based IDEs, including the [Google Colab](#) application, during in-class sessions. Actually, you don't necessarily need to install any tool to run your Python code at all. Google Colab allows you to "plug and play" Python on your browser.
- You will have several Scratch exercises in accordance with Python codes. You can find an explanatory video below about how to solve the Scratch exercises.

Here is an alternative way to run your code. This alternative program is Visual Studio Code (VS Code) which is also available in the Anaconda Package.

Although we prefer to use *Jupyter Lab* in Anaconda Package to run our codes, you can install and use the VS Code program either.

VS Code will be used in the interactive complementary video lessons you will receive throughout the course. You can watch the video below about the installation of Python and VS Code if you want.

## Matter of Quotes

As a Python programmer, you will deal with quotes a lot. As you know, a string text is surrounded by a pair of quotes.

There are basically two types of quotes we use. Single or double quotes. Both are the same but we should use them in the correct way:

- Use double quotes if your string includes the single one:e.g. `"It's my pleasure!"`
- Use single quotes if your string includes the double one:e.g. `'He said: "I am done" and fell down.'`
- Use triple quotes if your string is too long which composed of multiple lines : e.g. :

```
'''
...long string...
..long string..
'''
```

