

What is Python or Python programming language

Python is an Open source, Free, High-level, Dynamic, and Interpreted programming language. Python was released in December 1989 by Guido van Rossum. Python programming language is one of the cleanest and easy to learn a language in the programming world. Its easy syntax improved the readability of the code and makes it easy to understand.

OR

Python is a high-level, interpreted, and general-purpose dynamic programming language that focuses on code readability. It generally has small programs when compared to Java and C. It was founded in 1991 by developer Guido Van Rossum. Python ranks among the most popular and fastest-growing languages in the world. Python is a powerful, flexible, and easy-to-use language. In addition, the python community is very active. It is used in many organizations as it supports multiple programming paradigms. It also performs automatic memory management.

What is PyCharm

PyCharm is an integrated development environment (IDE) used for programming in Python. It provides code analysis, a graphical debugger, an integrated unit tester, integration with version control systems, and supports web development with Django. PyCharm is developed by the Czech company JetBrains.

What is full form of IDE. Brief IDE

IDE refers as integrated development environment (IDE). An integrated development environment (IDE) is a software application that helps programmers develop software code efficiently.

Features of Python

Free and Open Source: Python language is freely available at the official website and we can download it from the given download link below click on the **Download Python** keyword. Download Python Since it is open-source, this means that source code is also available to the public. So, we can download it, use it as well as share it.

Easy to code: 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 the Python language and anybody can learn Python basics in a few hours or days. It is also a developer-friendly language.

Easy to Read: Learning Python is quite simple and Python's syntax is really straightforward. The code block is defined by the indentations rather than by semicolons or brackets.

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

Large Community Support: Python has gained popularity over the years. Our questions are constantly answered by the enormous StackOverflow community. These websites have already provided answers to many questions about Python, so Python users can consult them as needed.

Easy to Debug: Excellent information for mistake tracing. We will be able to quickly identify and correct the majority of our program's issues once we understand how to interpret Python's error traces. Simply by glancing at the code, we can determine what it is designed to perform.

Python is a 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 an integrated language: Python is also an Integrated language because we can easily integrate 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 that provides a rich set of modules and functions so we do not have to write our own code for every single thing. There are many libraries present in Python such as regular expressions, unit-testing, web browsers, etc.

Dynamically Typed Language: Python is a dynamically-typed language. That means the type (for example- int, double, long, etc.) for a variable is decided at run time not in advance because of this feature we don't need to specify the type of variable.

Advantages of Python

- ✚ Presence of third-party modules
- ✚ Extensive support libraries (NumPy for numerical calculations, Pandas for data analytics, etc.)
- ✚ Open source and large active community base
- ✚ Versatile, Easy to read, learn and write
- ✚ User-friendly data structures
- ✚ High-level language
- ✚ Dynamically typed language (No need to mention data type based on the value assigned, it takes data type)
- ✚ Object-Oriented and Procedural Programming language
- ✚ Portable and Interactive
- ✚ Ideal for prototypes – provide more functionality with less coding
- ✚ Highly Efficient (Python's clean object-oriented design provides enhanced process control, and the language is equipped with excellent text processing and integration capabilities, as well as its own unit testing framework, which makes it more efficient.)
- ✚ Internet of Things (IoT) Opportunities
- ✚ Interpreted Language
- ✚ Portable across Operating systems

Applications of Python

- ✚ GUI-based desktop applications
- ✚ Graphic design, image processing applications, Games, and Scientific/ computational Applications
- ✚ Web frameworks and applications
- ✚ Enterprise and Business applications
- ✚ Operating Systems
- ✚ Education
- ✚ Database Access
- ✚ Language Development
- ✚ Prototyping
- ✚ Software Development
- ✚ Data Science and Machine Learning
- ✚ Scripting

Organizations using Python

- ✚ Google (Components of Google spider and Search Engine)
- ✚ Yahoo (Maps)
- ✚ YouTube
- ✚ Mozilla
- ✚ Dropbox
- ✚ Microsoft
- ✚ Cisco
- ✚ Spotify
- ✚ Quora
- ✚ Facebook

Data types in Python

- ✚ **Numeric data types:** *int, float, complex*
- ✚ **String data types:** *str*
- ✚ **Sequence types:** *list, tuple, range*
- ✚ **Binary types:** *bytes, bytearray, memoryview*

- ✚ Mapping data type: *dict*
- ✚ Boolean type: *bool*
- ✚ Set data types: *set, frozenset*

What is function in Python

A function is a set of code that performs any given task, enabling the programmer to modularize a program. All variables created in function definitions are local variables; they are known only to the function in which they are declared.

Advantages of function in Python

Helps in increasing modularity of code – Functions in python help the user to divide the program into smaller parts and solve them individually, thus making it easier to implement.

Minimizes Redundancy – Python functions help us to save the effort of rewriting the whole code. All we got to do is call the function once it is defined.

Maximizes Code Reusability – Once a function is defined in python, it can be called as many times as needed, thus enhancing code reusability.

Improves Clarity of Code – Since a large program is divided into sections with the help of functions, it helps increase the readability of code while ensuring easy debugging.

What are the types of Functions in Python?

There are two types of functions in python:

Built-in Functions - These are pre-defined functions in python. Examples: `input ()`, `print ()`, `bool ()`, `sum ()`, `max ()`, `min ()` etc.

User-Defined Functions - These functions are defined by a programmer to perform any specific task or to reduce the complexity of big problems and use that function according to their need.

Subtraction of two values

Example:

```
def sub(x, y):  
    return x-y  
  
print(sub(5,2))
```

Output:

3

What is class in Python

A Class is like an object constructor, or a "blueprint" for creating objects. An object is simply a collection of data (variables) and methods (functions).

What is append () function in Python

The **append ()** function adds an item to the end of the list.

What is Fibonacci sequence

In mathematics, the Fibonacci sequence is a sequence in which each number is the sum of the two preceding ones. Numbers that are part of the Fibonacci sequence are known as Fibonacci numbers, commonly denoted F_n . The sequence commonly starts from 0 and 1.



What is Palindrome

A palindrome is a sequence of characters that, when reversed, would result in the exact same sequence of characters

What is len() function in Python

Python len() function is an inbuilt function in Python. The len() function returns the number of items in an object. When the object is a string, the len() function returns the number of characters in the string.

What is Python Interactive Shell

Python Interactive Shell is used for the rapid testing and debugging of code.

What is the Python interpreter?

A python interpreter is a computer program that converts each high-level program statement into machine code. An interpreter translates the command that we write out into code that the computer can understand.

What is input() function in Python

Python input() function is used to get input from the user. It prompts for the user input and reads a line. After reading data, it converts it into a string and returns that.

What is a regular expression in Python?

A Regular Expressions (RegEx) is a special sequence of characters that helps us match or find other strings or sets of strings, using a specialized syntax held in a pattern.

What is findall() function in Python?

The findall() function scans the string from left to right and finds all the matches of the pattern in the string .

What Is a Zip File?

A zip file is a compressed folder that compresses multiple files into a single folder. The main benefit of zip files is to reduce the size of files into smaller ones. Especially when we are transferring these files over the internet, reducing their size means they take up less bandwidth and download faster. Once we have downloaded these zipped files, we need to unzip them so we can access their contents.

What is readlines() function in Python

Readlines () is a function that is used in Python to read a particular file line by line in a single go. It is very useful in reducing the **time complexity** while reading a file using the brute force approach and using loops and different iterations.

Python Inheritance

Inheritance allows us to define a class that **inherits** all the methods and properties from another class. In inheritance, the child class acquires the properties and can access all the data members and functions defined in the parent class. A child class can also provide its specific implementation to the functions of the parent class. Inheritance is an important aspect of the object-oriented paradigm. Inheritance provides code reusability to the program because we can use an existing class to create a new class instead of creating it from scratch.

What is __init__ and self in Python?

The `__init__()` function is called automatically every time the class is being used to create a new object. While giving the definition for an `__init__(self)` method, a default parameter, named 'self' is always passed in its argument. This self represents the object of the class itself.

Polymorphism in Python

The word "polymorphism" means "many forms", and in programming it refers to methods/functions/operators with the same name that can be executed on many objects or classes.

Method Overriding in Python

Method overriding in Python is when we have two methods with the same name that each perform different tasks. This is an important feature of inheritance in Python. In method overriding, the child class can change its functions that are defined by its ancestral classes

XKCD comics

xkcd, sometimes styled XKCD, is a webcomic created in 2005 by American author Randall Munroe. The comic's tagline describes it as "a webcomic of romance, sarcasm, math, and language"

What is bs4 and BeautifulSoup in Python?

Beautiful Soup (bs4) is a python web scraping library for pulling the data from web pages, documents, HTML, and XML files

What do 'rb' and 'wb' mean when opening a file?

To open a file in binary format, add 'b' to the mode parameter. Hence the "rb" mode *opens the file in binary format for reading*, while the "wb" mode *opens the file in binary format for writing*. Unlike text files, binary files are not human-readable. When opened using any text editor, the data is unrecognizable.

What is a .json file and how do I open it?

A JSON file is a file that stores simple data structures and objects in JavaScript Object Notation (JSON) format, which is a standard data interchange format. It is primarily used for transmitting data between a web application and a server. JSON files are lightweight, text-based, human-readable, and can be edited using a text editor.

Because JSON files are plain text files, we can open them in any text editor, including:

- Microsoft Visual Studio Code (multiplatform)
- Microsoft Notepad (Windows)
- Apple TextEdit (Mac)
- Vim (Linux)

We can also open a JSON file in the Google Chrome and Mozilla Firefox web browsers by dragging and dropping the file into our browser window.