

Ques. What is Python and its characteristics?

- Python is a high level general purpose programming language. It is dynamically typed and garbage collected.
- It supports multiple programming paradigms, object oriented and functional programming.
- It was created by Guido van Rossum and released in 1991.
- Python is one of the easiest which is widely used in the software industry.
- Python is a set of instructions that we give in the form of a programme to our computer to perform any specific task.
- Due to its beginner friendly syntax, it became a clear choice for beginners to start their programming journey.
- It is easier for developers to read and understand, also reducing the lines of code.

Syntax →

Print ("Hello World").

Output → Hello world.

* Characteristics of Python -

- 1) Free and open source - Python is freely available at the official website and you can download it. Since it is open source this means that source code is available to the public.
- 2) Easy to code - Python is high level programming language. Python is very easy to learn the language as compared to other. It is a developer friendly language.
- 3) Object oriented - Python supports object oriented language and concepts of classes, object encapsulation etc.
- 4) GUI programming - GUI can be made using a module such as PyQt5.
- 5) 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 we do not need to manage the memory.
- 6) Large community support - Python has gained popularity over the years.
- 7) Easy to debug - In python, one will be able to quickly identify and correct the issues.
- 8) Portable language - Python is a portable language if we have python code for windows & if we

want to run this code on other platforms such as Linux, Unix and Mac. Then we need to change it, we can run this code on any platform.

- 9.) Integrated language - Python is an integrated language because we can easily integrate Python with other languages like C, C++ etc.
- 10.) Interpreted language - Python is an interpreted language because python code is executed line by line at a time like other languages (C++, Java etc.) there is no need to compile. Python code thus makes it easier to debug our code. The source code of Python is converted into an immediate form called bytecode.
- 11.) Standard library - Python has large std lib. that provides a rich set of modules and functions so you do not have to write your own code for every single thing. There are many libraries present in python such as regular expressions, unit testing, web browser etc.
- 12.) Dynamically typed language - that means the type (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 that type of variable.

13) Frontend and backend development - we can run and write python codes in html with the help of some tags. <py-script>, <py-env> etc. This will help you do frontend development work in python like Javascript.

- Backend is the strong forte of Python. It is extensively used for this purpose work cause of its frameworks like Django & flask.

14) Allocating memory Dynamically - In python, the variable data type does not need to be specified. The memory is automatically allocated to a variable at a runtime when it is given a value.

Ques - What is difference b/w Python 2 & Python 3.

Python 2

Year of release - Released in 2000

Python 3

Released in 2008.

Print keywords - Print is statement
v/s function

Print is function and not a statement.

String storage - Strings are stored as ASCII by default

Strings are stored as Unicode.

Division - The division of two integers resulted in an integral value.

Division of two integers results in floating point value.

Exceptions - exception are used to enclose the notations

Paranthesis are used to enclose the exceptions.

Variable If global variables are leakage used inside a loop their values do change

The value of variables never change.

Iteration - xrange() function has been found for iteration

To perform iteration, the new range() function is introduced.

Ex of Syntax complicated

Easy to understand.

Libraries Not forward compatible.

Python 3 library for future.

Usage in today's time Outdated

Still use by developers & more popular than Python 2.

Backward compatibility Possible to port 2 to Python 3 but lot of efforts

It is not backward compatible.

Application to become devops engineer But No longer in use after 2020.

Ques Difference between call by value v/s call by reference.

- The parameters passed to the function are called actual parameters whereas, the parameters received by the function are called formal parameters.

Call by Value -

In this method, the value of actual parameters is copied into formal parameters. We can say that value of the variable is used in the function call in the call by value method.

- we cannot modify the value of the actual parameter by the formal parameter.
- different memory is allocated for actual & formal parameters since the value of actual parameter is copied into the formal parameter.
- the actual parameter is the argument which is used in the function call whereas formal parameter is the argument which is used in the function definition.

Call By Reference -

- In this method, the address of the variable is passed into the function call as the actual parameter.
- The value of actual parameters can be modified by changing the formal parameters since the address of the actual parameters is passed.

In call by reference, the memory allocation is similar for both parameters. All the operations in the functions are performed on the value stored at the address of the actual parameters & modified value get stored at same address.