**Basic Python Interview Questions**

**1. What is Python? List some popular applications of Python in the world of technology.**

Python is a widely-used general-purpose, high-level programming language. It was created by Guido van Rossum in 1991. Its syntax allows programmers to express their concepts in fewer lines of code.  
It is used for:

* System Scripting
* Web Development
* Game Development
* Software Development
* Complex Mathematics

**2. What are the benefits of using Python language as a tool in the present scenario?**

The following are the benefits of using Python language:

* Object-Oriented Language
* High-Level Language
* Dynamically Typed language
* Extensive support Libraries
* Presence of third-party modules
* Open source and community development
* Portable and Interactive
* Portable across Operating systems

**3. Is Python a compiled language or an interpreted language?**

Actually, Python is an interpreted language.

**4. What does the ‘#’ symbol do in Python?**

‘#’ is used to comment on everything that comes after on the line.

**5. What is the difference between a Mutable datatype and an Immutable data type?**

Mutable data types can be edited i.e., they can change at runtime. Eg – List, Dictionary, etc.  
Immutable data types can not be edited i.e., they can not change at runtime. Eg – String, Tuple, etc.

**6. How are arguments passed by value or by reference in Python?**

Everything in Python is an object and all variables hold references to the objects. The reference values are according to the functions; as a result, you cannot change the value of the references. However, you can change the objects if it is mutable.

**7. What is the difference between a Set and Dictionary?**

The set is an unordered collection of data types that is iterable, mutable and has no duplicate elements.  
A dictionary in Python is an ordered collection of data values, used to store data values like a map.

**8. What is List Comprehension? Give an Example.**

List comprehension is a syntax construction to ease the creation of a list based on existing iterable.

For Example:

my\_list = [i for i in range(1, 10)]

**9. What is a lambda function?**

A lambda function is an anonymous function. This function can have any number of parameters but, can have just one statement. For Example:

a = lambda x, y : x\*y

print(a(7, 19))

**10. What is a pass in Python?**

Pass means performing no operation or in other words, it is a placeholder in the compound statement, where there should be a blank left and nothing has to be written there.

**11. What is the difference between / and // in Python?**

// represents floor division whereas / represents precise division. For Example:

5//2 = 2

5/2 = 2.5

**14. Difference between for loop and while loop in Python**

The “for” Loop is generally used to iterate through the elements of various collection types such as [List](https://www.geeksforgeeks.org/python-lists/), [Tuple](https://www.geeksforgeeks.org/python-tuples/), [Set](https://www.geeksforgeeks.org/sets-in-python/), and [Dictionary](https://www.geeksforgeeks.org/python-dictionary/). Developers use a “for” loop where they have both the conditions start and the end. Whereas, the “while” loop is the actual looping feature that is used in any other programming language. Programmers use a Python while loop where they just have the end conditions.

**15. Can we Pass a function as an argument in Python?**

Yes, Several arguments can be passed to a function, including objects, variables (of the same or distinct data types), and functions. Functions can be passed as parameters to other functions because they are objects. Higher-order functions are functions that can take other functions as arguments.

To read more, refer to the article: [Passing function as an argument in Python](https://www.geeksforgeeks.org/passing-function-as-an-argument-in-python/)

**17. Is Indentation Required in Python?**

Yes, [indentation](https://www.geeksforgeeks.org/indentation-in-python/) is required in Python. A [Python](https://www.geeksforgeeks.org/python-programming-language/) interpreter can be informed that a group of statements belongs to a specific block of code by using Python indentation. Indentations make the code easy to read for developers in all programming languages but in Python, it is very important to indent the code in a specific order.

**19. What is docstring in Python?**

Python documentation strings (or docstrings) provide a convenient way of associating documentation with Python modules, functions, classes, and methods.

* **Declaring Docstrings:** The docstrings are declared using ”’triple single quotes”’ or “””triple double quotes””” just below the class, method, or function declaration. All functions should have a docstring.
* **Accessing Docstrings:** The docstrings can be accessed using the \_\_doc\_\_ method of the object or using the help function.

**20. What is a dynamically typed language?**

[Typed languages](https://www.geeksforgeeks.org/what-is-a-typed-language/) are the languages in which we define the type of data type and it will be known by the machine at the compile-time or at runtime. Typed languages can be classified into two categories:

* **Statically typed languages:**In this type of language, the data type of a variable is known at the compile time which means the programmer has to specify the data type of a variable at the time of its declaration.
* **Dynamically typed languages:**These are the languages that do not require any pre-defined data type for any variable as it is interpreted at runtime by the machine itself. In these languages, interpreters assign the data type to a variable at runtime depending on its value.

**21. What is a break, continue, and pass in Python?**

The [break statement](https://www.geeksforgeeks.org/python-break-statement/) is used to terminate the loop or statement in which it is present. After that, the control will pass to the statements that are present after the break statement, if available.

[Continue](https://www.geeksforgeeks.org/python-continue-statement/) is also a loop control statement just like the break statement. continue statement is opposite to that of the break statement, instead of terminating the loop, it forces to execute the next iteration of the loop.

[Pass](https://www.geeksforgeeks.org/python-pass-statement/)means performing no operation or in other words, it is a placeholder in the compound statement, where there should be a blank left and nothing has to be written there.

**22. What are Built-in data types in Python?**

The following are the standard or built-in data types in Python:

* **Numeric:**The numeric data type in Python represents the data that has a numeric value. A numeric value can be an integer, a floating number, a Boolean**,**or even a complex number.
* **Sequence Type: T**he sequence Data Type in Python is the ordered collection of similar or different data types. There are several sequence types in Python:
  + [Python String](https://www.geeksforgeeks.org/python-string/)
  + [Python List](https://www.geeksforgeeks.org/python-lists/)
  + [Python Tuple](https://www.geeksforgeeks.org/python-tuples/)
  + [Python range](https://www.geeksforgeeks.org/python-range-function/)
* **Mapping Types:**In Python, hashable data can be mapped to random objects using a mapping object. There is currently only one common mapping type, the dictionary, and mapping objects are mutable.
  + [Python Dictionary](https://www.geeksforgeeks.org/python-dictionary/)
* **Set Types:**In Python, a [Set](https://www.geeksforgeeks.org/sets-in-python/) is an unordered collection of data types that is iterable, mutable, and has no duplicate elements. The order of elements in a set is undefined though it may consist of various elements.

**23. How do you floor a number in Python?**

The Python math module includes a method that can be used to calculate the floor of a number.

* [floor()](https://www.geeksforgeeks.org/floor-ceil-function-python/)method in Python returns the floor of x i.e., the largest integer not greater than x.
* Also, The method ceil(x) in Python returns a ceiling value of x i.e., the smallest integer greater than or equal to x.

**27. Differentiate between List and Tuple?**

Let’s analyze the differences between List and Tuple:

**List**

* Lists are Mutable datatype.
* Lists consume more memory
* The list is better for performing operations, such as insertion and deletion.
* The implication of iterations is Time-consuming

**Tuple**

* Tuples are Immutable datatype.
* Tuple consumes less memory as compared to the list
* A Tuple data type is appropriate for accessing the elements
* The implication of iterations is comparatively Faster

**34. Does Python supports multiple Inheritance?**

Python does support multiple inheritances, unlike Java. Multiple inheritances mean that a class can be derived from more than one parent class.

**35. What is Polymorphism in Python?**

Polymorphism means the ability to take multiple forms. So, for instance, if the parent class has a method named ABC then the child class also can have a method with the same name ABC having its own parameters and variables. Python allows polymorphism.

**36. Define encapsulation in Python?**

Encapsulation means binding the code and the data together. A Python class is an example of encapsulation.

**37. How do you do data abstraction in Python?**

Data Abstraction is providing only the required details and hides the implementation from the world. It can be achieved in Python by using interfaces and abstract classes.

**38. How is memory management done in Python?**

Python uses its private heap space to manage the memory. Basically, all the objects and data structures are stored in the private heap space. Even the programmer can not access this private space as the interpreter takes care of this space. Python also has an inbuilt garbage collector, which recycles all the unused memory and frees the memory and makes it available to the heap space.

**40. What is slicing in Python?**

[Python Slicing](https://www.geeksforgeeks.org/python-slice-function/) is a string operation for extracting a part of the string, or some part of a list. With this operator, one can specify where to start the slicing, where to end, and specify the step. List slicing returns a new list from the existing list.

Syntax: Lst[ Initial : End : IndexJump ]

**42. What is PIP?**

PIP is an acronym for Python Installer Package which provides a seamless interface to install various Python modules. It is a command-line tool that can search for packages over the internet and install them without any user interaction.

**46. What is \_\_init\_\_() in Python?**

Equivalent to constructors in OOP terminology, \_\_init\_\_ is a reserved method in Python classes. The \_\_init\_\_ method is called automatically whenever a new object is initiated. This method allocates memory to the new object as soon as it is created. This method can also be used to initialize variables.