

# Basic python interview question

## 1.What is python?

Python is one of the most widely-used and popular programming languages, was developed by Guido van Rossum and released first on February 20, 1991. Python is a free and open-source language with a very simple and clean syntax which makes it easy for developers to learn Python. It supports object-oriented programming and is most commonly used to perform general-purpose programming. Python is used in several domains like Data Science, Machine Learning, Deep Learning, Artificial Intelligence, Scientific Computing Scripting, Networking, Game Development Web Development, Web Scraping, and various other domains.

## 2. Is Python a compiled language or an interpreted language?

Python is both a compiled and interpreted language. When executing Python code, it undergoes compilation into bytecode, which is then interpreted by the Python virtual machine (PVM) to execute instructions based on the underlying platform, encompassing both the machine and operating system.

## 3. What does the '#' symbol do in Python?

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

## 5. What does the '""" """' symbol do in Python?

In Python, the `""" """` symbol is used to represent a multi-line string, allowing you to write strings that span across multiple lines without needing to use escape characters or concatenate multiple strings together.

## 6.What are Python Literals?

Types of Python Literals

Python provides following literals which will be explained this tutorial:

Python - Integer Literal

Python - Float Literal

Python - Complex Literal

Python - String Literal

Python - List Literal

Python - Tuple Literal

Python - Dictionary Literal

#### 4. Data Types in Python

Python Data Types are used to define the type of a variable. It defines what type of data we are going to store in a variable. The data stored in memory can be of many types. For example, a person's age is stored as a numeric value and his or her address is stored as alphanumeric characters

Types of Python Data Types

Python has the following built-in data types which we will discuss in this tutorial:

Data Type	Examples
Numeric	int, float, complex
String	str
Sequence	list, tuple, range
Binary	bytes, bytearray, memoryview
Mapping	dict
Boolean	bool
Set	set, frozenset
None	NoneType

#### 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. E.g. – List, Dictionary, etc.

Immutable data types cannot be edited i.e., they can not change at runtime. E.g. – String, Tuple, etc.

#### 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 Dictionary Comprehension? Give an Example**

Dictionary Comprehension is a syntax construction to ease the creation of a dictionary based on the existing iterable.

For Example: `my_dict = {i:1+7 for i in range(1, 10)}`

## **10. Differentiate between List and Tuple?**

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

## **11. What is the difference between a shallow copy and a deep copy?**

Shallow copy is used when a new instance type gets created and it keeps values that are copied whereas deep copy stores values that are already copied.

A shallow copy has faster program execution where as a deep copy makes it slow.

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

**The 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** 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** 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.

## **13.What are \*args and \*kwargs?**

To pass a variable number of arguments to a function in Python, use the special syntax \*args and \*\*kwargs in the function specification. It is used to pass a variable-length, keyword-free argument list. By using the \*, the variable we associate with the \* becomes iterable, allowing you to do operations on it such as iterating over it and using higher-order operations like map and filter.

## **14.What are Decorators?**

Decorators are a very powerful and useful tool in Python as they are the specific change that we make in Python syntax to alter functions easily.

## **15.What is the difference between Python Arrays and lists?**

Arrays in python can only contain elements of same data types i.e., data type of array should be homogeneous. It is a thin wrapper around C language arrays and consumes far less memory than lists.

Lists in python can contain elements of different data types i.e., data type of lists can be heterogeneous. It has the disadvantage of consuming large memory.

## **16.What is slicing in Python?**

As the name suggests, 'slicing' is taking parts of.

Syntax for slicing is [start: stop: step]

start is the starting index from where to slice a list or tuple

stop is the ending index or where to stop.

step is the number of steps to jump.

Default value for start is 0, stop is number of items, step is 1.

Slicing can be done on strings, arrays, lists, and tuples.

### **17.What is \_\_init\_\_?**

`__init__` is a constructor method in Python and is automatically called to allocate memory when a new object/instance is created. All classes have a `__init__` method associated with them. It helps in distinguishing methods and attributes of a class from local variables.

### **18. What is the use of help() and dir() functions?**

The `help()` function provides documentation and information about modules, classes, functions, keywords, etc., while the `dir()` function lists attributes and methods of objects, aiding in exploring available functionality within Python.

### **19. What is the difference between modules and libraries?**

In Python, modules are like standalone files that house specific code components such as functions and variables. On the other hand, libraries are essentially vast collections of modules, and they come with pre-built functions and tools tailored for specific tasks or domains. These libraries not only simplify the development process but also enhance Python's capabilities by providing readily available solutions for various programming challenges.

### **20.What is the difference between print and return?**

The `print` does not store any value. It simply prints the value, whereas `return` gives the value as an output that can be stored in a variable or a data structure