

Python interview questions asked by Top MNC'S

1. What is a metaclass in Python?

A metaclass in Python is also known as class of a class. A class defines the behavior of an instance. A metaclass defines the behavior of a class.

One of the most common metaclass in Python is type. We can subclass type to create our own metaclass.

We can use metaclass as a class-factory to create different types of classes.

2. What is the use of frozenset in Python?

A frozenset is a collection of unique values in Python. In addition to all the properties of set, a frozenset is immutable and hashable.

Once we have set the values in a frozenset, we cannot change. So we cannot use and update methods from set on frozenset.

Being hashable, we can use the objects in frozenset as keys in a Dictionary.

3. What is Python Flask?

Python Flask is a micro-framework based on Python to develop a web application.

It is a very simple application framework that has many extensions to build an enterprise level application.

Flask does not provide a data abstraction layer or form validation by default. We can use external libraries on top of Flask to perform such tasks.

4. What is None in Python?

None is a reserved keyword used in Python for null objects. It is neither a null value nor a null pointer. It is an actual object in Python. But there is only one instance of None in a Python environment.

We can use None as a default argument in a function.

During comparison we have to use “is” operator instead of “==” for None.

5. What is the use of zip() function in Python?

In Python, we have a built-in function zip() that can be used to aggregate all the Iterable objects of an Iterator.

We can use it to aggregate Iterable objects from two iterators as well. E.g.

```
List_1 = ['a', 'b', 'c'] list_2 = ['1', '2', '3'] for a, b in zip(list_1, list_2):
```

```
    Print a, b
```

```
Output:
```

```
A1 b2 c3
```

By using zip() function we can divide our input data from different sources into fixed number of sets.

6. What is the use of // operator in Python?

Python provides // operator to perform floor division of a number by another. The result of // operator is a whole number (without decimal part) quotient that we get by dividing left number with right number.

It can also be used floordiv(a,b). E.g.

```
10// 4 = 2
```

```
-10//4 = -3
```

7. What is a Module in Python?

A Module is a script written in Python with import statements, classes, functions etc. We can use a module in another Python script by importing it or by giving the complete namespace.

With Modules, we can divide the functionality of our application in smaller chunks that can be easily managed.

8. How can we create a dictionary with ordered set of keys in Python?

In a normal dictionary in Python, there is no order maintained between keys. To solve this problem, we can use OrderedDict class in Python. This class is available for use since version 2.7.

It is "similar to a dictionary in Python, but it maintains the insertion order of keys in the dictionary collection.

9. Python is an Object Oriented programming language or a functional programming language?

Python uses most of the Object Oriented programming concepts. But we can also do functional programming in Python. As per the opinion of experts, Python is a multi-paradigm programming language.

We can do functional, procedural, object-oriented and imperative programming with the help of Python.

10. How can we retrieve data from a MySQL database in a Python script?

To retrieve data from a database we have to make use of the module available for that database. For MySQL database, we import MySQLdb module in our Python script.

We have to first connect to a specific database by passing URL, username, password and the name of database.

Once we establish the connection, we can open a cursor with cursor() function. On an open cursor, we can run fetch() function to execute queries and retrieve data from the database tables.

11. What is the difference between append() and extend() functions of a list in Python?

In Python, we get a built-in sequence called list. We can call standard functions like append() and extend() on a list.

We call append() method to add an item to the end of a list.

We call `extend()` method to add another list to the end of a list

In `append()` we have to add items one by one. But in `extend()` multiple items from another list can be added at the same time.

12. How will you handle an error condition in Python code?

We can implement exception handling to handle error conditions in Python code. If we are expecting an error condition that we cannot handle, we can raise an error with appropriate message. E.g.

```
>>> if student_score < 0: raise ValueError("Score can not be negative")
```

If we do not want to stop the program, we can just catch the error condition, print a message and continue with our program.

E.g. In following code snippet we are catching the error and continuing with the default value of age.

```
#!/usr/bin/python try: age=18+'duration'
```

Except:

```
Print("duration has to be a number")
```

```
Age=18
```

```
Print(age)
```

13. What is the difference between `split()` and slicing in Python?

Both `split()` function and slicing work on a String object. By using `split()` function, we can get the list of words from a String.

E.g. `'a b c'.split()` returns `['a', 'b', 'c']`

Slicing is a way of getting substring from a String. It returns another String.

E.g. `>>> 'a b c'[2:3]` returns

14. How will you check in Python, if a class is subclass of another class?

Python provides a useful method `issubclass(a,b)` to check whether class a is a subclass of b.

E.g. `int` is not a subclass of `long`

```
>>> issubclass(int,long) False
```

```
>>> issubclass(bool,int)
```

```
True
```

15. How will you debug a piece of code in Python?

In Python, we can use the debugger `pdb` for debugging the code. To start debugging we have to enter following lines on the top of a Python script.

```
Import pdb
pdb.set_trace()
```

After adding these lines, our code runs in debug mode. Now we can use commands like `breakpoint`, `step through`, `step into` etc for debugging.

16. How do you profile a Python script?

Python provides a profiler called `cProfile` that can be used for profiling Python code.

We can call it from our code as well as from the interpreter.

It gives use the number of function calls as well as the total time taken to run the script.

We can even write the profile results to a file instead of standard out.

17. What is the difference between 'is' and '==' in Python?

We use `'is'` to check an object against its identity.

We use `'=='` to check equality of two objects.

E.g.

```
>>> lst = [10,20, 20]
```

```
>>> lst == lst[:]
```

```
True
```

```
>>> lst is lst[:]
```

```
False
```

18. How will you share variables across modules in Python?

We can create a common module with variables that we want to share.

This common module can be imported in all the modules in which we want to share the variables.

In this way, all the shared variables will be in one module and available for sharing with any new module as well.

19. How can we do Functional programming in Python?

In Functional Programming, we decompose a program into functions. These functions take input and after processing give an output. The function does not maintain any state.

Python provides built-in functions that can be used for Functional programming. Some of these functions are:

- I. Map()
- II. Reduce()
- III. Filter()

Event iterators and generators can be used for Functional programming in Python.

20. What is the improvement in enumerate() function of Python?

In Python, enumerate() function is an improvement over regular iteration.

The enumerate() function returns an iterator that gives (0, item[0]). E.g.

```
>>> thelist=['a','b']
```

```
>>> for I,j in enumerate(thelist):
```

```
... print I,j ...
```

```
0    a
```

1
2 b
3

21. How will you execute a Python script in Unix?

To execute a Python script in Unix, we need to have Python executor in Unix environment.

In addition to that we have to add following line as the first line in a Python script file.

```
#!/usr/local/bin/python
```

This will tell Unix to use Python interpreter to execute the script.

22. What are the popular Python libraries used in Data analysis?

Some of the popular libraries of Python used for Data analysis are:

- I. Pandas: Powerful Python Data Analysis Toolkit
- II. SciKit: This is a machine learning library in Python.
- III. Seaborn: This is a statistical data visualization library in Python.
- IV. SciPy: This is an open source system for science, mathematics and engineering implemented in Python.

23. What is the output of following code in Python?

```
>>> thelist=['a','b']
```

```
>>> print thelist[3:]
```

Ans: The output of this code is following:

```
[]
```

Even though the list has only 2 elements, the call to thelist with index 3 does not give any index error.

24. What is the output of following code in Python?

```
>>>name='John Smith'
```

```
>>>print name[:5] + name[5:]
```

Ans: Output of this will be

John Smith

This is an example of Slicing. Since we are slicing at the same index, the first name[:5] gives the substring name upto 5th location excluding 5th location. The name[5:] gives the rest of the substring of name from the 5th location. So we get the full name as output.

25. If you have data with name of customers and their location, which data type will you use to store it in Python?

In Python, we can use dict data type to store key value pairs. In this example, customer name can be the key and their location can be the value in a dict data type.

Dictionary is an efficient way to store data that can be looked up based on a key.