Python Interview Questions For Intermediate

1. How the string does get converted to a number?

To convert the string into a number the built-in functions are used like int() constructor. int() is a data type that is used like int (‘1’) ==1. float() is also used to show the number in the format as float(‘1’)=1.

In this the int(string,base) function takes the parameter to convert string to number in this the process will be like int(‘0x1’,16)==16. If the base parameter is defined as 0 then it is indicated by an octal and 0x indicates it as hexadecimal number. eval() is used to convert string into number

2. What is a lambda function? How are these written in Python?

lambda function is the anonymous function which can have any number of parameters but can have just one statement.

Example

```
v = lambda p,q : p+q

print(v(6, 5))
```

Output: 12

3. How to reverse lists in Python using slicing?

[::-1] is used to reverse the order of an array or a sequence.

For example

```
import array as arr

a=arr.array('i',[1,2,3,4])

a[::-1]
```

Output: array(‘i’, [4, 3, 2, 1])

[::-1] reprints the array as a reversed copy of ordered data structures such as an array or a list. The original array or list remains unchanged.

l = ['a','b','c','d']

l[::-1]

Output: [‘d’, ‘c’, ‘b’, ‘a’]

4. What is the function of negative index?

The sequences in python are indexed and it consists of the positive as well as negative numbers. The numbers that are positive uses ‘0’ that is uses as first index and ‘1’ as the second index and the process goes on like that.

The index for the negative number starts from ‘-1’ that represents the last index in the sequence and ‘-2’ as the penultimate index and the sequence carries forward like the positive number. The negative index is used to

1. To remove any new-line spaces from the string and allow the string to except the last character that is given as S[:-1].

2. To show the index to represent the string in correct order.

5. How can one create classes in Python?

To create a class in Python, we use the keyword "class", as shown in the example below:

```
class Employee:
  def __init__(self, employee_name):
    self.name = employee_name
```

To instantiate or create the object from the class created above, we do the following:

```
employee = Employee("John")
```

To access the name attribute, we call the attribute using the dot operator as shown below:

```
print(employee.name)
# Prints -> John
```

6. How are access specifiers used in Python?

Python does not use access specifiers precisely like private, public, protected, etc. However. It has the concept of imitating variables' behaviour using a single (protected) or double underscore (private) as prefixed to variable names. By default, variables without prefixed underscores are public.

Example:

```
# to demonstrate access specifiers

class Employee:

    # protected members

    _name = None

    _age = None


    # private members

    __department = None

    # constructor

    def __init__(self, emp_name, age, department):

        self._name = emp_name

        self._age = age

        self.__department = department

    # public member

    def display():

        print(self._name + " "+ self._age + " " + self.__department)
```

7. How can parent members be accessed inside a child class?

By using the name of the Parent class: use name of the parent class to access attributes as shown in the example below:

Example:

```
class Parent(object):
  # Constructor
  def __init__(self, name):
    self.name = name
class Child(Parent):
  # Constructor
  def __init__(self, name, age)
    Parent.name = name
    self.age = age
def display(self):
    print(Parent.name, self.age)
# Driver Code
obj = Child("ChildClassInstance", 9)
obj.display()
```

8. How does global value mutation used for thread-safety?

The global interpreter lock is used to allow the running of the thread one at a time. This is internal to the program only and used to distribute the functionality along all the virtual machines that are used. Python allows the switching between the threads to be performed by using the byte code instructions that are used to provide platform-independence.

The sys.setcheckinterval() method is used that allow the switching to occur during the implementation of the program and the instruction. This provides the understanding in the field of accounting to use the byte code implementation that makes it portable to use.

9. What is the 'main' function in Python? How do you invoke it?

The 'main' function is considered as an entry point for the execution for a program. But in Python, this is known that the interpreter serially interprets the file line-by-line. This means that Python does not provide the 'main()' function explicitly. But this doesn't mean that it a cannot simulate the execution of 'main'.

It can do this by defining the user-defined 'main()' function and using the python file's '__name__' property. This '__name__' variable is a particular built-in variable that points to the current module's name. This can be done as shown below:

```
def main():
  print("Hi!")
if __name__ == "__main__":
  main()
```

Output :

```
Hi!
```


10. Write a program to read and write the binary data using python?

The module that is used to write and read the binary data is known as struct. This module allows the functionality and with it many functionalities to be used that consists of the string class. This class contains the binary data that is in the form of numbers that gets converted in python objects for use and vice versa. The program can read or write the binary data is:

```
import struct
f = open(file-name, "rb")
# This Open() method allows the file to get opened in binary mode to make it portable for # use.
s = f.read(8)
x, y, z = struct.unpack(">hhl", s)
```

The '>" is used to show the format string that allows the string to be converted in big-endian data form. For homogenous list of data the array module can be used that will allow the data to be kept more organized fashion.

11. Explain the use of subn(), sub(), and split() in the "re" module.

Re is a Python module developers use to execute operations that involve expression matching. In particular, it contains three modules to allow editing strings – subn(), sub(), and split().

Here are the differences between these methods:

Method name	**Application**
subn()	Defines all strings with a matching regex pattern, replaces them with a new one, and returns the number of replacements.
sub()	Defines all strings with a matching regex pattern and replaces them with a new one.
split()	Splits strings into lists using regex patterns

12. How does Python approach multithreading?

Python has the following multi-threading tools:

- A designated multi-threading package. It's not widely used as it slows code execution down.

- GIL (Global Interpreter Lock) constructor. It helps ensure that only one string is executed at a time. After GIL executes a string, it'll get passed over to the next one.

13. What is inheritance? Name the main types of Python inheritance.

Inheritance is a way for a class to pass its members (e.g. methods or attributes) to a new class. In this case, a class that contains the original data is called a super-class. The inheriting class is called a child or derived class.

There are four inheritance types in Python:

- Single inheritance – a child class inherits the data passed down by one super-class.

- Multiple inheritance – a child class inherits the members of several super-classes.

- Multi-level inheritance – a derived class d1 inherits the members of a super-class b1; a child class d2 inherits the data from a base class b2.

- Hierarchical inheritance – a high number of child classes can inherit the members of one superclass.

14. Are there any tools for identifying bugs and performing static analysis in Python?

Yes, tools like PyChecker and Pylint are used as a static analysis and linting tools, respectively. PyChecker helps find bugs in a python source code file and raises alerts for code issues and complexity. Pylint checks for a module's coding standards and supports different plugins to enable custom features to meet this requirement.

15.What are Python packages?

Python packages are namespaces containing multiple modules such as “os”, “sys”, “json”, “pandas” etc.

16. How can you randomise the items of a list in place in Python?

```
from random import shuffle

x = ['This', 'sentence', 'will', 'be', 'shuffled', 'now']

shuffle(x)

print(x)
```

Output: ['sentence', 'This', 'will', 'shuffled', 'be', 'now']

Every time output can be random.

17,what is the difference between range & ‘xrange’?

'xrange' and 'range' provide a way to generate a list of integers to use. The only difference is that 'range' returns a Python list object while 'xrange' returns an 'xrange' object.'xrange' doesn't generate a static list at run-time as 'range' does. It creates the values as you need them with a unique technique called yielding.

This technique is used with a type of object known as generators. That means that if you have a vast range, you'd like to generate a list for, say, one billion, 'xrange' is the function to use.

18.What are modules and packages in Python?

Modules are simply Python files with a '.py' extension and can have a set of functions, classes and variables defined. They can be imported and initialised using import statements if partial functionality is required to import the requisite classes or processes.

Packages provide for hierarchical structuring of the module namespace using a '.' dot notation. As modules help avoid clashes between global and local variable names, similarly, packages can help prevent conflicts between module names.

Creating a package is easy since it also uses the system's inherent file structure that exists.

Modules combined into a folder are known as packages. Importing a module or its contents from a package requires the package name as a prefix to the module's name joined by a dot.

19.What does '*args' and 'kwargs' stand for in Python?**

args is a particular parameter used in the function definition to pass arguments with a variable number of items."" means variable length, and "args" is a name used as a convention.

**kwargs is a special syntax used as the function definition to pass a variable-length keyword argument. It can be used just as a convention. It can also use any other name to represent "kwargs" here.

20.Is it possible to call parent class without its instance creation?

Yes, it is possible if other child classes instantiate the base class or if the base class is a static method.