PYTHON VIVA QUESTIONS

1.How python is different from other language?

Python is an interpreted and dynamically typed language, whereas Java is a compiled and statically typed language. Python code doesn't need to be compiled before being run. Java code, on the other hand, needs to be compiled from code readable by humans to code readable by the machine

2. Why python is called dynamically typed language

Python don't have any problem even if we don't declare the type of variable. It states the kind of variable in the runtime of the program. Python also take cares of the memory management which is crucial in programming. So, Python is a dynamically typed language

3.Why python is called interpreted language?

Python is an interpreted language, which means when we run a python code, it is first compiled and then interpreted line by line. The compile part gets deleted as soon as the code gets executed in Python so that the programmer doesn't get onto unnecessary complexity

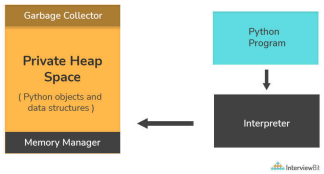
4.How to include a module in python

By importing the module using import command

5.How memory is managed in python

Memory management in Python is handled by the Python Memory Manager. The memory allocated by the manager is in form of a private heap space dedicated to Python. All Python objects are stored in this heap and being private, it is inaccessible to the programmer. Though, python does provide some core API functions to work upon the private heap space.

Additionally, Python has an in-built garbage collection to recycle the unused memory for the private heap space.



6.What is the difference between list and tuple

	Python Lists	Python Tuples
1	List are mutable	Tuples are immutable
2	Iterations are time-consuming	Iterations are comparatively Faster
3	Inserting and deleting items is easier with a list.	Accessing the elements is bes accomplished with a tuple data type.
4	Lists consume more memory	Tuple consumes less than the li
5	Lists have several built-in methods.	A tuple does not have many buil in methods because of immutability
6	A unexpected change or error is more likely to occur in a list.	In a tuple, changes and errors don't usually occur because of immutability.

7.What is Dictionary , explain key and value pair

- **Dictionaries are used to store data values in key:value pairs.**
- **dictionary is a collection which is ordered*, changeable and do not allow duplicates.**
- **Dictionary items are presented in key:value pairs, and can be referred to by using the key name.**

8.What are built in data types in python

Text Type: **str**

Numeric Types: **int, float, complex**

Sequence Types: **list, tuple, range**

Mapping Type: **dict**

Set Types: **set, frozenset**

Boolean Type: **bool**

Binary Types: **bytes, bytearray, memoryview**

None Type: **NoneType**

9.What is slicing, join and split in python

Slice () :

The slice() function returns a slice object.

A slice object is used to specify how to slice a sequence. You can specify where to start the slicing, and where to end. You can also specify the step, which allows you to e.g. slice only every other item.

```
a = ("a", "b", "c", "d", "e", "f", "g", "h")

x = slice(3, 5)

print(a[x]).
```

Output: ('d', 'e')

Join() :The join() method takes all items in an iterable and joins them into one string.

A string must be specified as the separator.

Example:

```
myDict = {"name": "John", "country": "Norway"}

mySeparator = "TEST"

x = mySeparator.join(myDict)

print(x)
```

Output:

nameTESTcountry

Split: The split() method splits a string into a list.

```
txt = "welcome to the jungle"

x = txt.split()

print(x)
```

Output:

welcome', 'to', 'the', 'jungle'

10.What are application of python

Web and Internet Development

Scientific and Numeric

Desktop GUIs

Software Development

Business Applications

11.What is frozen set

Frozen set is just an immutable version of a Python set object. While elements of a set can be modified at any time, elements of the frozen set remain the same after creation. Due to this, frozen sets can be used as keys in Dictionary or as elements of another set.

12. What is data visualization

The process of finding trends and correlations in our data by representing it pictorially is called Data Visualization. To perform data visualization in python, we can use various python data visualization modules such as Matplotlib, Seaborn, Plotly, etc.

13.What are the modules to be included to represent normal graph, bar graph etc, (name the module used for normal graph, module used for bar graph and so on)

Matplotlib	Seaborn
It is used for basic graph plotting like line charts, bar graphs, etc.	It is mainly used for statistics visualization and can perform complex visualizations with fewer commands.
It mainly works with datasets and arrays.	It works with entire datasets.
Seaborn is considerably more organized and functional than Matplotlib and treats the entire dataset as a solitary unit.	Matplotlib acts productively with data arrays and frames. It regards the aces and figures as objects.
Seaborn has more inbuilt themes and is mainly used for statistical analysis.	Matplotlib is more customizable and pairs well with Pandas and Numpy for Exploratory Data Analysis.

Table 1: Matplotlib vs Seaborn

14.Scope of variables (explain local and global variable)

Local Scope

A variable created inside a function belongs to the local scope of that function, and can only be used inside that function.

Global Scope

A variable created in the main body of the Python code is a global variable and belongs to the global scope.

Global variables are available from within any scope, global and local.

15.What is pass in python

The pass keyword represents a null operation in Python. It is generally used for the purpose of filling up empty blocks of code which may execute during runtime but has yet to be written. Without the pass statement in the following code, we may run into some errors during code execution.

16.what is the use of self in python

Self is used to represent the instance of the class. With this keyword, you can access the attributes and methods of the class in python. It binds the attributes with the given arguments. self is used in different places and often thought to be a keyword. But unlike in C++, self is not a keyword in Python.

17.What is init

__init__ is a contructor 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 break continue and pass in python

Break	The break statement terminates the loop immediately and the control flows to the statement after the body of the loop.
Continue	The continue statement terminates the current iteration of the statement, skips the rest of the code in the current iteration and the control flows to the next iteration of the loop.
Pass	As explained above, the pass keyword in Python is generally used to fill up empty blocks and is similar to an empty statement represented by a semi-colon in languages such as Java, C++, Javascript, etc.

19.What is the difference between python arrays and list

- **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.**

20.What is the difference between pass by value and pass by reference in python

- **Pass by value: Copy of the actual object is passed. Changing the value of the copy of the object will not change the value of the original object.**
- **Pass by reference: Reference to the actual object is passed. Changing the value of the new object will change the value of the original object.**

21.What is pickling and unpickling (ans: Picking (pickle.dump()) .. Unpickling:(pickle.load())

Python library offers a feature - serialization out of the box. Serializing an object refers to transforming it into a format that can be stored, so as to be able to deserialize it, later on, to obtain the original object. Here, the pickle module comes into play.

<u>Pickling</u>:

Pickling is the name of the serialization process in Python. Any object in Python can be serialized into a byte stream and dumped as a file in the memory. The process of pickling is compact but pickle objects can be compressed further. Moreover, pickle keeps track of the objects it has serialized and the serialization is portable across versions.

The function used for the above process is pickle.dump().

<u>Unpickling</u>:

Unpickling is the complete inverse of pickling. It deserializes the byte stream to recreate the objects stored in the file and loads the object to memory.

The function used for the above process is pickle.load().

22.What are negative indexes and why are they used?

Negative indexes are the indexes from the end of the list or tuple or string.

Example:

Arr[-1] means the last element of array Arr[]

```
arr = [1, 2, 3, 4, 5, 6]

#get the last element

print(arr[-1])

 #output 6
```

#get the second last element

print(arr[-2])

#output 5

23.How do inheritance work in python

Inheritance gives the power to a class to access all attributes and methods of another class. It aids in code reusability and helps the developer to maintain applications without redundant code. The class inheriting from another class is a child class or also called a derived class. The class from which a child class derives the members are called parent class or superclass.

Different types of inheritance

Single

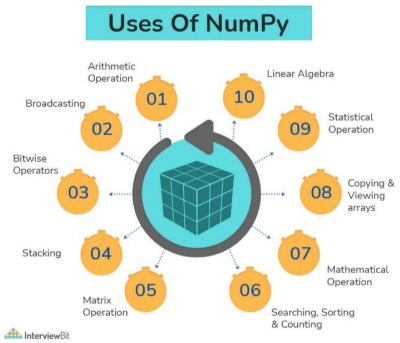
Multilevel

Multiple

Hierarchical

24.What do you understand by numpy module

NumPy is one of the most popular, easy-to-use, versatile, open-source, python-based, general-purpose package that is used for processing arrays. NumPy is short for NUMerical PYthon. This is very famous for its highly optimized tools that result in high performance and powerful N-Dimensional array processing feature that is designed explicitly to work on complex arrays.



25.Common built in modules in python

Python modules are the files having python code which can be functions, variables or classes. These go by .py extension. The most commonly available built-in modules are:

os

math

sys

random

re

datetime

JSON

26.What is pip

PIP stands for Python Installer Package. As the name indicates, it is used for installing different python modules. It is a command-line tool providing a seamless interface for installing different python modules. It searches over the internet for the package and installs them into the working directory without the need for any interaction with the user. The syntax for this is:

Syntax:

pip install <package_name>

27. What does *args and **kwargs mean?

***args**

***args is a special syntax used in the function definition to pass variable-length arguments.**

"*" means variable length and "args" is the name used by convention. You can use any other.

Example:

```
def multiply(a, b, *argv):
  mul = a * b
  for num in argv:
     mul *= num
  return mul
print(multiply(1, 2, 3, 4, 5))
#output: 120
```

****kwargs**

**kwargs is a special syntax used in the function definition to pass variable-length keyworded arguments.

Here, also, “kwargs” is used just by convention. You can use any other name.

Keyworded argument means a variable that has a name when passed to a function.

It is actually a dictionary of the variable names and its value.

Example:

```
def tellArguments(**kwargs):
  for key, value in kwargs.items():
     print(key + ": " + value)
tellArguments(arg1 = "argument 1", arg2 = "argument 2", arg3 = "argument 3"
#output:
# arg1: argument 1
# arg2: argument 2
# arg3: argument 3
```

28. What do you know about pandas?

Pandas is an open-source, python-based library used in data manipulation applications requiring high performance. The name is derived from “Panel Data” having multidimensional data. This was developed in 2008 by Wes McKinney and was developed for data analysis.

Pandas are useful in performing 5 major steps of data analysis - Load the data, clean/manipulate it, prepare it, model it, and analyze the data.

29. Differentiate between a package and a module in python.

The module is a single python file. A module can import other modules (other python files) as objects. Whereas, a package is the folder/directory where different sub-packages and the modules reside.

A python module is created by saving a file with the extension of .py. This file will have classes and functions that are reusable in the code as well as across modules.