1. Difference between a module and a package

A module is a single file with python code whereas a package is a directory with different modules and \_\_init\_\_.py

1. Is python a compiled language or an interpreted language

Python is primarily an interpreted language

This means python executes code line by line by an interpreter at runtime rather than being compiled into machine code beforehand like in compiled languages

1. What is bytecode

Bytecode is an intermediate low level representation of your code that is more abstract then machine code but not human readable. The source code is first compiled into byte code , then the interpreter executes the bytecode. The interpreter reads and executes the byte code line by line, converting it into machine code that the computes can understand and process

1. What are the benefits of using python lang as a tool

Its simplicity, versatility, open source, strong community support, extensive libraries and frameworks like Django, flask and tensorflow, environment independent

1. What are global, protected and private attributes in python

Global variables are public variables defined in public scope. To use a global variable inside a function, the global keyword is used

Protected attributes are marked with a single underscore(\_sapna). While they can still be accessed and modified from outside the class its better to avoid doing so

Private attributes are marked with double underscore(\_\_sapna). These cannot be accessed or modified directly from outside the class, and any such attempt will result in attribute error

1. Is python case sensitive

Yes python is case sensitive

This means that the language distinguishes between uppercase and lowercase letters

1. What is pandas

Pandas is an open source python library which supports data structures for data based operations associated with data analyzing and data manipulation.

1. How is exceptional handling done in python

In python the main keywords for handling exceptions are try, except and finally block

The try block contains the code that is monitored for errors

If an error occurs, the except block is executed to handle the exception

The finally block has a unique feature of executing code after the try block regardless of whether an error occurred or not

1. What is the diff between for loop and while loop in python

For loop is used to iterate through elements when we know both the start and end condition

While loop is used when they only have the ending condition

1. Is indentation required in python

Yes, python interpreter uses indentation to determine which statements belong to a specific block of code. Indentation also helps in code readability

1. What is the use of self in python

Self is used to represent an instance of a class.

With this keyword you can access the attributes, and methods of the class

1. How does python manage memory. Explain the role of reference counting and garbage collection

Python uses reference counting to track object references and automatically deallocates objects with zero references. It also has a garbage collector to handle cyclic references

1. Does python support multiple inheritance

Python does support multiple inheritance

This means that a class can be derived from more than one parent

1. How is memory management done in python

Python manages memory using a private heap space where all objects and data structures are stored. Programmers cannot directly access this private heap. It is managed by the python interpreter. Additionally python has a built in garbage collector that automatically recycles unused memory, freeing it up and making it available for future use

1. How to delete a file in python

We can delete a file using os.remove() or os.unlink()

1. Which sorting technique is used by sort() and sorted() functions in python

Python uses the tim sort algorithm for sorting which is a stable sorting method with a worst case complexity of O(N Log N).

1. Difference bw list and tuple

Lists are mutable whereas tuples are immutable

Lists consume more memory, have slower insertion and deletion due to dynamic allocation

Whereas tuples are more memory efficient, faster iteration but do not support insertion or deletion

1. What is slicing in python

Slicing is an operation used to extract a portion of a string or a list

By specifying the start, stop and step you can determine the exact segment to extract

1. How is multi threading achieved in python

Multithreading in python is achieved using the threading module

Which enables the concurrent execution of multiple threads within a single process

Each thread can run its own code and perform tasks simultaneously. However due to python’s global interpreter lock only one thread can be executed at a time

1. Which is faster python lists or numpy arrays

Numpy arrays are faster than python lists for numerical calculations and operations involving large datasets. This is because numpy are implemented in c and optimized for performance whereas lists are more flexible but slower due to dynamic nature

1. Explain inheritance in python

Inheritance in python allows a class(child class) to inherit attributes and methods from another class(parent class) without the need to rewrite themx

1. How are classes created in python

Syntax

1. Write fibonacci series in python
2. What is the diff bw deep and shallow copy

shallow copy creates a new object but copies references to the objects like nested lists

whereas deep copy copied all references including nested loops ensuring no dependencies are left out

code for shallow copy – import copy , a = b.copy()

code for deep copy – a = b.deepcopy()

1. What is the process of compiling and linking in python

Compilation – the process of compilation involves converting the source code written by the programmer into a form that can be executed by the python interpreter

Linking – in python the process of linking is not as explicit and complex as in compiled languages like C, C++. However it involves several steps related to import and usage of modules and packages