

1. Python → Python is a general purpose high level programming language which has written set of instructions (algorithm), implementation of algorithm, helps to interact with hardware and also medium of communication with hardware:

→ It is high level language which shows behavior from both compiled as well as interpreted language developed by Guido Rossum in Feb 1991

↳

→ It takes all programming features from different languages.

1. functional programming features from LISP  
2. OOPS from C → it organizes software design around data and objects rather than function and logic.

3. scripting language features from perl and shell scripting

4. modular programming features from modular 3  
most syntax in python derived from C and ABC languages

- Q. What is Python? Name some features of Python and explain how it is different than Java or any other language.
- Python is general purpose, object-oriented, high-level programming language.
  - Object-oriented programming is a computer programming model that organizes software design around data and objects rather than functions and logic.
  - An object can be defined as a data field that have unique attributes and behavior.

features →

1. Free and open source
2. Easy to code
3. High level language
4. Platform dependent
5. Interpreted language (execute line by line)
6. Dynamically typed language (type for a variable decided at runtime)

Difference between Python and Java

Runtime → Python program runs slower than Java runs faster than Python

development time → takes less time takes more time.

length of code → 3-5 times shorter code than Java code is longer than Python

Type → Python is dynamically typed it is not dynamically typed

Q. supported data types in python?

1. Numeric → int  
float  
complex

2. set

3. Dictionary

4. sequence type → list  
tuple

5. Boolean

Q. What is the difference between list, tuple and Dictionary? Is array in C is same as list in python.

list	tuple	Dictionary
[ ]	( )	{ }
mutable	immutable	mutable
stores diff values	stores diff values	stores key-value pair

→ Array in C is not same as list in python as array stores same data type variable whereas list can stores different types of variable

How to convert list of unique element from given list

Q. convert list into tuple in python

- traversing of list by using for loop
- type casting list to set()
- using numpy.unique
- using collections.Counter()

Q. How can you get list of unique element from a given list convert list into tuple in python

→ 1. tuple(list) → built in function

2. Using a loop (for...in) → tuple([for i in list])

3. Using unique list inside the parenthesis (\*list)  
(\*list\*)

Q. How to handle exception in python?

1. In python exceptions can be handled by using a try statement
2. the critical operations which can raise an exception is placed inside try class
3. The code that handles exception is written in the except clause.
4. for catching specific exceptions, you need to declare specific except clause.
5. And also generic except block, this block is optional, If present, this must be present as the last except block.
6. we can use try - finally about this is optional.

Q. How to implement abstraction and encapsulation in python?

→ Abstraction

1. In python abstraction can be achieved by using abstract classes and method in our programs.
2. Abstract method does not contain their implementation
3. An abstract method in a base class identifies the functionality that should be implemented by all its subclasses

→ Encapsulation

1. In python, encapsulation can be achieved by declaring the data members of class either as private or protected.
2. In python, private and protected are called access modifiers which declared as double underscore (--) and single underscore (-) respectively
3. It is a process of wrapping up variables and methods into single entity for ex class.
4. We can hide objects internal representation from the outside.

Q. Name the few libraries in python used for data analysis and scientific computation?

- 1. Pandas → Data Analysis and Data Handling
- 2. Numpy → Numerical computing
- 3. scipy → Scientific Computing
- 4. scikit → ML Coding
- 5. TensorFlow → open source platform for AI
- 6. keras
- 7. Scrapy
- 8. BeautifulSoup
- 9. matplotlib, seaborn, plotly and Ggplot + Data visualization

Q. What is Numpy and How it is better than list in python?

- 1. Numpy stands for numerical python
- 2. It is python library used for working with array
- 3. It has functions for working in domain of linear algebra, Fourier transform and matrices
- 4. It is created by Travis Oliphant

How it is better than list →

- 1. Numpy requires smaller memory consumption than list
- 2. Numpy stores elements in sequential manner (at one continuous place) in memory so we can access and manipulate very efficiently but in list stores randomly
- 3. It is optimized to work with latest GPU Architecture
- 4. It is faster compared list

Q which python frameworks are used for frontend ?  
 what do you know about flask and django ?

→ 1. pyScript → It is frontend framework that allows users to use python on the web using standard HTML

2. flask → It is a backend framework that is used to build web applications

3. A framework is a foundation for developing applications and it contains several built-in functions / modules and libraries which makes

the process easier for developer

3. it is lightweight and its modular design makes it easily adopted to developer's needs

4. some features -

- Built-in development server

- A fast debugger.

- Secure - Cookies, session

- HTTP request handling

- Unicode - based

- Ability to plug any ORM (Object-Relational mapping)

3. Django →

1. It is a backend framework / server side web framework

2. It is free, open source and written in python

3. Django makes it easier to build web pages using python

4. It follows the DRY principle, which says don't repeat yourself.

5. some features :

- Authentication

- URL routing

- Template engine

- ORM (Object-Relational mapping)

- Database Schema migrations

Q. How to connect mysql from python?

→ In python, we can use modules to communicate with MySQL.

1. MySQL connector python
2. PyMySQL
3. MySQLDB
4. MySQL client
5. CMySQL

Following are the arguments required to connect:

1. Username → Default username is a root
2. Password → won't need password while using root
3. Host name → If running localhost, you can use localhost or it is IP 127.0.0.0

Database name →

1) Install mysql connector module → use the pip command to install mysql connector python  
pip install mysql-connector-python

2) Import MySQL connector module →

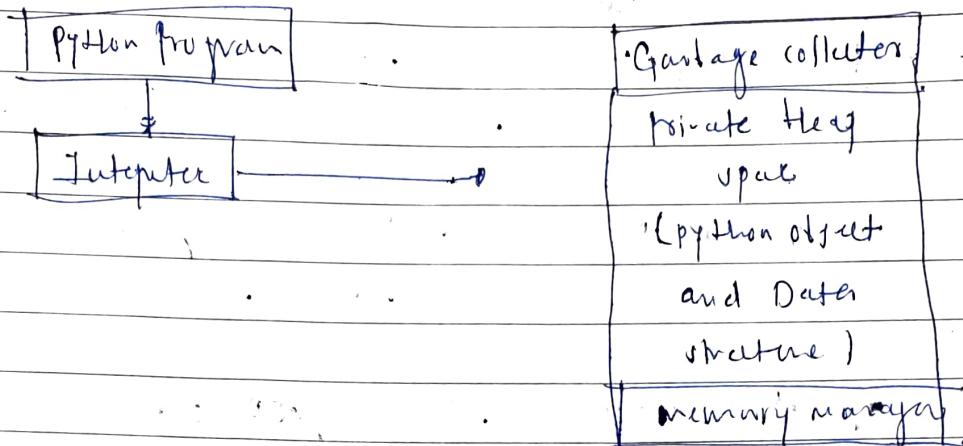
Import using a import mysql.connector statement as you can use this module's method to communicate with the mysql Database

3) Use the connect() method →

use the connect() method of the mysql connector class with the required argument to connect mysql. It would return a MySQL connection object if the connection established successfully

- Q. How to connect MongoDB from Python?
- 1) Install Python Driver → pymongo →  
pymongo contains tools for working with MongoDB
  - 2) Import MongoClient from pymongo →  
from pymongo import MongoClient
  - 3) Create a connection to MongoDB Daemon server  
using MongoClient →  
client = MongoClient(URL)
- URL is where the MongoDB instance runs  
ex. mongo://192.168.1.154:27017
- 4) MongoClient is ready
  - 5) Close connection to MongoDB →  
client.close()
- Q. How memory is managed in Python?
- 1. The Python memory is primarily managed by Python private heap space
  - 2. All Python objects and data structures are located in a private heap.
  - 3. The programmer does not have access to the primary heap and interpreter takes care of the Python heap. Object is done by Python memory manager
  - 4. The allocation of Python heap space for Python object is done by Python memory manager.
  - 5. The core API gives access to some tools for the programmer to code...

- 6. Python has an inbuilt garbage collector that recycle all the unused memory and frees the memory makes available to heap space.



Q. How to read/write files in python?

→ Writing to a file

i. `write()` → inserts the string str in a single line in text file object write(str)

a. `writelines()` → for a list of string elements each string is inserted in the text file. used to insert multiple strings at a single time.  
File-object. writelines(l) for l = [str1, str2, str3]

Reading from a file →

i. `read()` → return the read bytes in form of string  
Read n bytes if no n specified, reads the entire file. file object `read([n])`

ii. `readline()` → reads a line of the file and return in front of a string. for specifying n, reads at most n bytes. However, does not read more than one line even if n exceeds the length of the line.  
file object `readline([n])`

iii) readlines() → Read all the lines and return them as  
each line a string element in a list  
file\_obj.readlines()

Q. write a one-liner that will count the number of  
capital letters in a file?

→ count = sum [1 for line in file\_obj for letter in  
line if letter.isupper()]