

### Advance Level Questions:

- Metaclass in Python [[Answer](#)]
- Static Typing in Python
- Data Classes
- Walrus Operator
- Else clause in try/except & for loop
- Descriptors
- Abstract Base Class (ABC) in Python [[Answer](#)]
- Have used any design pattern?
- Factory design pattern
- Adapter design pattern
- Singleton design pattern
- How does Python's garbage collection work? [[Answer](#)]
- How does Python list.sort work at a high level? Is it stable? What is the runtime? [[TimSort](#)]
- What is MRO (Method Resolution Order), method resolution order?
- How to restrict class variable creation in a class? - [[Answer](#)] [[Answer](#)]
- What are destructors in python? `__del__()` method
- Use of nonlocal scope
- How to package code in Python? What package managers do you know?
- What is the process of compilation and linking in Python?
- What are the wheels and eggs? What is the difference?
- How to speed up existing Python code?
- How can you access a module written in Python from C? Vice versa?
- fstrings? fstrings are faster or. format or the old string formatting?
- Hashable Objects (dict keys, set elements)
- Why do we need GIL (Global Interpreter Lock) in Python
- Multithreading vs multiprocessing. When to use which one?
- Fundamental Difference between Multithreading & Asyncio
- How does context switch differ between Multithreading and Asyncio
- How do you share data between different process in case of multi-processing
- Difference between thread & process
- What is thread safety
- Use of `__slot__` in python
- Use of `__call__` in python
- Python Arrays (are they faster than list)
- How is dictionary implemented in Python (talk about key collision etc.)
- Del keyword (when to use it, give an example)
- Garbage collection (reference counting, cyclic reference)
- Type Hints (Any, Union, Optional, Iterable etc.)
- Parameterized decorators
- Abstract Classes and subclassing an ABC
- Mixin Classes
- Metaprogramming
- Functional programming
- What are closure in python?
- What is composition in python and example
- How to use Property getter and setter
- Dependency Injection [[Answer](#)]

Complexity of Python Operations:

<https://www.ics.uci.edu/~pattis/ICS-33/lectures/complexitypython.txt>

<https://wiki.python.org/moin/TimeComplexity>

[https://www.ics.uci.edu/~brgallar/week8\\_2.html](https://www.ics.uci.edu/~brgallar/week8_2.html)

<https://towardsdatascience.com/understanding-time-complexity-with-python-examples-2bda6e8158a7>

Medium Level Questions:

- Generators
- Decorators
- Defaultdict & ordereddict
- What is \_\_new\_\_ and \_\_init\_\_ method why do we need both these methods
- Copy, deep copy, and shallow copy of objects in Python - [\[Answer\]](#)
- How to write a custom context manager, give a use case
- What is monkey patching? How can you do it in Python? [\[Answer\]](#)
- How to implement a Queue, Stack & LinkedList in Python?
- Packing and unpacking of arguments in python - [\[Answer\]](#)
- What are profilers in Python?
- How to restrict object creation of a class once first object is created? - Create Singleton class
- WHAT ARE ITERATORS IN PYTHON?
- How would you define and access private variables in Python? - [\[Answer\]](#)
- Example of how \_\_name\_\_ == \_\_main\_\_ works? [\[Answer\]](#)
- What is generator expression and when to use them in comparison to list comprehension? [\[Answer\]](#)
- How will you use lazy functions to read excessively big files in Python?
- Multiple inheritance: if supported by python, and how method is resolved(MRO)
- Example of polymorphism - Operator Overloading
- Example of how Python is call by reference
- Context managers implementation
- Use of .pyc files in python - bytecode - [Read this blog to understand the usage and creation](#)
- Static method and Class method decorator
- List.sort() vs sorted(list) difference
- Data classes
- Difference between "is" and "=="
- Why do we need "finally". (Actual Use in function call stack)
- Use of class method, static method and instance method
- String slicing eg: "hello world" find "row" (using 1 slicing without split.)
- Memory management in python
- Global vs nonlocal
- What is Enum? How to create it in python

### Basic Level Questions:

- What is the difference between range and xrange? How has this changed over time?
- What does this list comprehension do?
- packing and unpacking of arguments in python - [\[Answer\]](#)
- Merge two dictionaries in Python? - looping through another dictionary is not preferred. Use update() method
- How to sort a dictionary by key or value
- Method Overloading & Overriding
- How self keyword works in Python?
- How to use Super method in Python?
- How enumerate works?
- How zip function works?
- Magic Methods, Dunder Methods in Python
- Difference between a module, package, and script
- Serialization and Deserialization
- Explain map, reduce, and filter functions
- Difference between args and kwargs
- Reverse a string or a list without using in built python method
- Explain diff and implementation of list.sort() and sorted(list)
- How to sort a dictionary and how do you iterate over a dictionary?
- Assert statement