Python Interview Questions with Answers

## What is init keyword?

\_\_init\_\_ is a special method in Python classes (a constructor) that initializes an object’s attributes when it is created.

## What is self keyword?

self represents the instance of the class. It is used to access variables and methods associated with the object.

## What is lambda function?

A lambda function is an anonymous function defined with the keyword lambda. Example: lambda x: x\*2.

## Difference between lambda and normal function?

Lambda: single-line, anonymous, used for short operations. Normal function: defined with def, can have multiple statements, better readability.

## What are generators? When to use? share one example

Generators are functions that use 'yield' to return values one at a time, instead of returning all at once. Used when working with large datasets or streams of data.  
Example:  
def count\_up(n):  
 for i in range(n):  
 yield i

## Python is compiled or interpreted language? what does it mean?

Python is interpreted. Code is executed line by line by the Python interpreter, not compiled into machine code beforehand.

## What is the difference between list and tuples in Python?

List: mutable, defined with []. Tuple: immutable, defined with (). Tuples are faster and memory efficient.

## What is the difference between list and set in Python?

List: allows duplicates, maintains order. Set: unordered, unique elements only.

## When to use dictionary?

Use dictionary when you need key-value mapping for fast lookups, insertions, and updates.

## What are decorators? When to use? share one example

Decorators modify the behavior of functions or classes. Useful for logging, authentication, caching.  
Example:  
def decorator(func):  
 def wrapper():  
 print('Before')  
 func()  
 print('After')  
 return wrapper  
  
@decorator  
def hello():  
 print('Hello')

## What are Iterators?

Objects that implement \_\_iter\_\_() and \_\_next\_\_() methods. Used to iterate over elements one by one.

## What is slicing?

Extracting a part of a sequence using syntax [start:stop:step]. Example: list[1:5].

## What is mutable and immutable?

Mutable: can be changed (list, dict, set). Immutable: cannot be changed (tuple, string, int).

## Python is single thread or multithread?

Python supports multithreading but due to GIL, only one thread executes Python bytecode at a time. For CPU-bound tasks use multiprocessing.

## What is GIL

Global Interpreter Lock. A mutex in Python that allows only one thread to execute bytecode at a time.

## What you don’t like about python?

Slow execution speed compared to compiled languages, high memory usage, GIL limitations.

## What is list Comprehension?

A concise way to create lists using a single line.  
Example: [x\*x for x in range(5)].

## What are Dunder methods? Give examples

Special methods with double underscores. Examples: \_\_init\_\_, \_\_str\_\_, \_\_len\_\_, \_\_add\_\_. They define object behavior.

## What does \_\_init\_\_ method do?

Initializes object attributes when a class is instantiated.

## Difference between array and numpy library.

Python array: supports only basic arrays. NumPy: powerful library with multi-dimensional arrays, mathematical operations, vectorization, broadcasting.

## What are higher order functions

Functions that take other functions as arguments or return a function. Example: map(), filter(), reduce().