Top 30 Python Interview Questions & Answers

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1. What is Python?

Python is an interpreted, high-level, and general-purpose programming language known for its simplicity and readability.

2. What are Python's key features?

Python is easy to learn, dynamically typed, interpreted, object-oriented, and supports extensive libraries.

3. What is PEP 8?

PEP 8 is a Python Enhancement Proposal that provides guidelines for writing readable and consistent Python code.

4. What are Python's data types?

Common data types include int, float, complex, str, list, tuple, set, and dict.

5. What is the difference between lists and tuples?

Lists are mutable (can be changed), while tuples are immutable (cannot be changed).

6. What are Python?s built-in data structures?

Lists, tuples, sets, and dictionaries.

7. How is memory managed in Python?

Python uses automatic garbage collection to manage memory.

8. What is a Python namespace?

A namespace is a container that holds names and references to objects.

9. What is the difference between deep copy and shallow copy?

A shallow copy copies references, while a deep copy creates an entirely new object.

10. What is the difference between == and is?

?==? checks value equality, while ?is? checks object identity (memory location).

11. What are Python modules and packages?

A module is a file containing Python code, and a package is a collection of modules.

12. What are Python decorators?

Decorators are functions that modify the behavior of another function without changing its code.

13. What is the difference between a generator and an iterator?
Iterators use __iter__() and __next__(), while generators use yield to produce values lazily.

14. How do you handle exceptions in Python?
Using try-except blocks.

15. What is the difference between range() and xrange()?
In Python 2, xrange() returns a generator, while range() creates a list. In Python 3, xrange() is removed.

16. What is lambda in Python?
A lambda function is an anonymous function defined using the lambda keyword.

17. What is the difference between map(), filter(), and reduce()?
map() applies a function to all elements, filter() filters elements based on a condition, and reduce() performs a cumulative computation.

18. How do you work with files in Python?
Using open() with modes like ?r?, ?w?, ?a?, ?rb?, etc.

19. What is the difference between Python 2 and Python 3?
Python 3 has better Unicode support, print() as a function, integer division changes, etc.

20. What are Python?s built-in functions?
Examples include len(), type(), id(), input(), sum(), min(), max(), etc.

21. What is list comprehension?
A concise way to create lists using a single line of code.

22. What are *args and **kwargs?
*args allows passing variable-length arguments, **kwargs allows keyword arguments.

23. What is the difference between mutable and immutable types?
Mutable objects can be changed (list, dict), immutable objects cannot (int, str, tuple).

24. How can you remove duplicates from a list?
Using set(): list(set(my_list))

25. What is the difference between static and class methods?
Static methods don?t access class attributes, while class methods use cls as the first parameter.

26. What is duck typing in Python?

Duck typing allows dynamic typing based on behavior rather than explicit types.

27. What is multithreading in Python?

Executing multiple threads concurrently using the threading module.

28. What is the Global Interpreter Lock (GIL)?

GIL prevents multiple native threads from executing Python bytecode simultaneously.

29. What is a metaclass in Python?

A metaclass defines the behavior of classes themselves, allowing modification of class creation.

30. What are Python's standard libraries?

Popular libraries include os, sys, math, datetime, re, json, and collections.