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50 Python Interview Q/A

PYTHON



1. What is Python?

- Python is a high-level, interpreted programming language with dynamic semantics, known for its ease of learning and readability.

2. What are the key features of Python?

- Python's key features include easy-to-read syntax, dynamic typing, memory management, and a comprehensive standard library.

3. How is memory managed in Python?

- Memory in Python is managed by the Python memory manager. Objects and data structures are stored in a private heap, and the garbage collector recycles unused memory.

4. What are decorators in Python?

- Decorators are a design pattern in Python that allows users to modify the behavior of a function or class.

5. What is PEP 8?

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- PEP 8 is the Python Enhancement Proposal that provides guidelines and best practices on how to write Python code.

6. What is a lambda function in Python?

- A lambda function is a small anonymous function that can take any number of arguments but can only have one expression.

7. What is the difference between list and tuple?

- The main difference is that lists are mutable while tuples are immutable.

8. How does Python handle the memory deallocation?

- Python has a built-in garbage collector, which recycles all the unused memory so that it can be made available for heap space.

9. What is slicing in Python?

- Slicing in Python is a mechanism to select a range of items from sequence types like list, tuple, strings etc.

10. What are Python modules?

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- Python modules are .py files that consist of Python code. Any Python file can be referenced as a module.

11. What is the difference between Python Arrays and lists?

- Arrays can only contain elements of the same data type, while lists can contain elements of different data types.

12. What is the difference between deepcopy and copy?

- deepcopy creates a new compound object and then, recursively, inserts copies into it of the objects found in the original. copy creates a new compound object and then inserts references into it to the objects found in the original.

13. What is a namespace in Python?

- A namespace is a naming system used to ensure that names are unique to avoid naming conflicts.

14. What is a dictionary in Python?

- A dictionary in Python is an unordered collection of data values used to store data values like a map.

15. What is the difference between xrange and range?

- xrange returns the xrange object while range returns the list, and xrange uses the same memory location.

16. What is pickling and unpickling?

- Pickling is the process whereby a Python object hierarchy is converted into a byte stream, and unpickling is the inverse operation.

17. What are Python's generators?

- Generators are a simple way of creating iterators. They return a lazy iterator that can be looped through.

18. What is `__init__`?

- `__init__` is a method or constructor in Python. This method is automatically called to allocate memory when a new object/instance of a class is created.

19. What is `self` in Python?

- `self` represents the instance of the class and binds the attributes with the given arguments.

20. What is `__str__`?

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- `__str__` is a built-in function in Python that is called when the following functions are invoked on the object: `print()` or `str()`.

21. What is the difference between `append()` and `extend()` methods?

- `append()` adds its argument as a single element to the end of a list while `extend()` adds each element of its argument to the list.

22. What is a docstring in Python?

- A docstring is a string literal that occurs as the first statement in a module, function, class, or method definition.

23. What is the difference between global and local variables?

- Global variables are accessible throughout the program, and local variables are accessible only within the scope of the function where they are declared.

24. What is the `pass` statement in Python?

- The `pass` statement is a null operation; nothing happens when it executes.

25. What is the difference between `==` and `is`?

- `==` checks for equality, while `is` checks for identity.

26. What is a session in Python?

- A session allows you to persist certain parameters across requests.

27. What is the difference between `break`, `continue`, and `pass`?

- `break` terminates the loop, `continue` skips the current iteration, and `pass` does nothing and acts as a placeholder.

28. What is `*args` and `**kwargs`?

- `*args` is used to pass a variable number of arguments to a function, `**kwargs` allows you to pass keyworded variable length of arguments to a function.

29. What is the difference between `isinstance()` and `type()`?

- `isinstance()` checks if an object is an instance of a class or a subclass thereof, `type()` returns the type of the object.

30. What is the difference between `.py` and `.pyc` files?

- `.py` files contain the source code of a program, whereas `.pyc` files contain the bytecode which can be executed by the Python virtual machine.

31. What is `__name__` in Python?

- `__name__` is a built-in variable which evaluates to the name of the current module.

32. What are metaclasses in Python?

- Metaclasses are classes of classes that define how a class behaves.

33. What is monkey patching in Python?

- Monkey patching is a technique to add, modify, or suppress the default behavior of a piece of code at runtime.

34. What is the with statement in Python?

- The with statement simplifies exception handling by encapsulating common preparation and cleanup tasks in so-called context managers.

35. What is the difference between staticmethod and classmethod?

- staticmethod does not receive an implicit first argument, while classmethod receives the class as an implicit first argument.

36. What is the difference between .py files and .pyw files?

- .py files are Python source files. .pyw files are Python script files meant to be run on the Windows platform without opening a command prompt window.

37. What is the difference between assert and raise?

- assert is used for debugging purposes while raise is used to raise exceptions.

38. What is the enumerate function in Python?

- enumerate is a built-in function that adds a counter to an iterable and returns it in a form of enumerate object.

39. What is the difference between @staticmethod and @classmethod?

- @staticmethod defines a static method which does not receive an implicit first argument, while @classmethod defines a class method which receives the class as an implicit first argument.

40. What is the difference between __new__ and __init__?

- __new__ is a static method that is called to create an instance, while __init__ is the constructor that is called to initialize the instance.

41. What is the difference between __getattr__ and __getattribute__?

- __getattr__ is called when an attribute lookup has not found the attribute in the usual places, __getattribute__ is called before looking at the actual attributes on the object.

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42. What is the global keyword in Python?

- The global keyword is used to declare that a variable inside the function is global (outside the function).

43. What is the difference between `__call__` and `__init__`?

- `__call__` allows an instance of a class to be called as a function, `__init__` is the constructor method for a class.

44. What is the difference between `__dict__` and `__dir__`?

- `__dict__` is a dictionary or other mapping object used to store an object's (writable) attributes, `__dir__` is used to list the attributes of the object.

45. What is the super function in Python?

- `super` is used to give access to methods and properties of a parent or sibling class.

46. What is the difference between `__str__` and `__repr__`?

- `__str__` is used for creating output for end user while `__repr__` is used for debugging and development. `repr` is more precise than `str`.

47. What is the zip function in Python?

- `zip` is a built-in function that returns an iterator of tuples based on the iterable objects.

48. What are unit tests in Python?

- Unit tests are tests written to check the functionality of a specific section of code, usually at the function level.

49. What is the Global Interpreter Lock (GIL) in Python?

- The GIL is a mutex that protects access to Python objects, preventing multiple threads from executing Python bytecodes at once.

50. What are function annotations in Python?

- Function annotations provide a way of associating various parts of a function with arbitrary python expressions at compile time.