

20 - ADVANCED QUESTIONS:

Question:

What is the main difference between a list and a tuple in Python?

- A) A tuple is ordered, while a list is not.
- B) A tuple can contain duplicate items, while a list cannot.
- C) A tuple is immutable, while a list is mutable.

Answer: C

Question:

What does the @staticmethod decorator mean in a class definition?

- A) It means the method can alter the state of the object.
- B) It means the method can be called on the class itself, without creating an instance.
- C) It means the method requires an instance to be executed.

Answer: B

Question:

Which one is not a valid way to create an empty set in Python?

- A) set()
- B) {}
- C) set{}

Answer: C

Question:

What will `print(2 * 3 ** 3 * 2)` display?

- A) 216
- B) 108
- C) 54

Answer: A

Question:

In Python's NumPy, which of the following would you use to compute the dot product of two vectors `a` and `b`?

- A) `a.dot(b)`
- B) `a * b`
- C) `dot(a, b)`

Answer: A

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Question:

What is the purpose of the `__slots__` attribute in a Python class?

- A) To specify which attributes are allowed in an instance of the class.
- B) To speed up attribute access.
- C) To define private attributes.

Answer: A

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Question:

What is the main use case of Python's `contextlib` module?

- A) Managing resources like files or network connections.
- B) Providing utilities for common math operations.
- C) Handling multi-threading and concurrency.

Answer: A

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Question:

How would you define a metaclass in Python?

- A) A class that subclasses from another class.
- B) A class that defines the behavior of other classes.
- C) A class that can't be instantiated.

Answer: B

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Question:

What does the `map` function do in Python?

- A) Maps a function over an iterable.
- B) Searches for an element in a list.
- C) Converts one data type into another.

Answer: A

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Question:

What does the term "duck typing" refer to in Python?

- A) Checking the type of a variable before performing operations on it.
- B) A technique where the type or the class of an object is less important than the methods it defines.
- C) Using comments to define variable types.

Answer: B

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Question:

What will print(all([True, 1, {3}])) display?

- A) True
- B) False
- C) Error

Answer: A

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Question:

In Python's Pandas, how do you drop all missing values from a DataFrame df?

- A) df.dropna()
- B) df.drop_all()
- C) df.delete()

Answer: A

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Question:

How can you prevent a Python script from being run when it is imported as a module in another script?

- A) By using the `__name__ == "__main__"` construct.
- B) By renaming the script.
- C) By using the `@module` decorator.

Answer: A

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Question:

What is the GIL in the context of Python?

- A) Global Interpreter Library
- B) General Inline Lexer
- C) Global Interpreter Lock

Answer: C

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Question:

In a Python class, how would you define a method that should not be overridden by subclasses?

- A) Mark the method as final.
- B) Prefix the method name with a single underscore.
- C) Use the `@staticmethod` decorator.

Answer: B

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Question:

In Python's Flask, which decorator is commonly used to route URL patterns to functions?

- A) @route('/')
- B) @url('/')
- C) @path('/')

Answer: A

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Question:

What is the main characteristic of a decorator in Python?

- A) It's a type of function that takes another function or class and extends or modifies its behavior.
- B) It's a special syntax for declaring variables.
- C) It's a construct used to document code.

Answer: A

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Question:

What is a descriptor in Python?

- A) A string that describes an object.
- B) A comment added for documentation purposes.
- C) An object attribute with "binding behavior", one whose attribute access has been overridden by methods in the descriptor protocol.

Answer: C

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Question:

In the asyncio module, what is the main purpose of the await keyword?

- A) To start a new thread.
- B) To pause the execution of a coroutine and wait for a result.
- C) To declare a variable as asynchronous.

Answer: B

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Question:

What will the expression `[1, 2, 3] * 2` produce in Python?

- A) `[1, 2, 3, 1, 2, 3]`
- B) `[2, 4, 6]`
- C) Error

Answer: A

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