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Question: 1188

Your app writes CSV reports with custom quoting for privacy. Using DictWriter, how to set minimal quoting?

A. quoting=csv.QUOTE_MINIMAL
B. extrasaction='ignore'
C. quotechar=None
D. dialect='none'

Answer: A
Explanation: QUOTE_MINIMAL quotes only fields with special chars like delimiter or quotechar, optimizing file size; None for quotechar disables quoting, risking parse issues.

Question: 1189

In a Python application for graph algorithms, nodes are objects with references to neighbors (lists of nodes). To create an independent graph copy, you use deepcopy. Which statements describe the process accurately? (Select all that apply)

A. The 'is' operator will return False for corresponding nodes in original and copy
B. If a node class defines __copy__, it affects deepcopy behavior
C. Deepcopy traverses the object graph, creating new objects for all reachable mutables
D. For immutable attributes like node ids (ints), new copies are always created

Answer: A,C
Explanation: Deepcopy recursively copies the entire object graph, instantiating new objects for mutables to ensure independence, so original_node is not copy_node. Custom __copy__ affects shallow copy, but for deepcopy, __deepcopy__ is used if defined. Immutables like ints may share references via interning for efficiency, not always creating new ones. This ensures graph copies can be modified without affecting originals in algorithms.

Question: 1190

PEP 1 formats: .rst. Scenario Markdown?

A. Rejected
B. TXT
C. HTML

D. Convert

Answer: A
Explanation: reStructuredText mandatory.

Question: 1191

In an event-driven system, you create a class EventHandler with methods like handle_event, and class variables event_types = ['click', 'key']. A subclass ClickHandler inherits and adds 'double_click' to event_types via self.event_types.append in __init__. What is the effect on EventHandler.event_types and other instances?

A. self.event_types creates a new instance list, leaving class unchanged
B. Appending via self.event_types modifies the class variable, affecting all
C. Subclasses cannot modify base class variables via instances
D. You must use EventHandler.event_types to modify the class variable

Answer: B
Explanation: Since event_types is a class variable (mutable list), accessing it via self.event_types refers to the shared class variable unless shadowed, so appending via self.event_types modifies the class variable, affecting all instances and subclasses. To create an instance-specific list, you'd assign self.event_types = [...] anew. Class variables can be accessed and modified via instances if not shadowed. Subclasses inherit and can modify shared mutables.

Question: 1192

In a typical client-server application, which of the following statements about ports is true?

A. Ports are optional and not required for socket communication.
B. Ports are used to identify the type of service offered by a server.
C. Ports can only be used by one application at a time.
D. Ports are always numeric and cannot be represented as strings.

Answer: B,C
Explanation: Ports are numeric identifiers used to differentiate between multiple applications running on the same server. Each port can only be used by one application at a time, ensuring that data is directed to the correct service.

Question: 1193

In a multi-threaded Python application for data synchronization, an exception occurs in one thread during database connection, and you need to propagate it with context to the main thread. Analyze the following code where an exception is caught and re-raised without 'from'. What will be the values of __cause__ and __context__ in the re-raised exception?

```
try:
connect_to_db()
except ConnectionError as conn_err:
try:
log_error(conn_err)
except LogError as log_err:
raise log_err
```

A. __cause__ is None, __context__ is conn_err
B. __cause__ is set to log_err itself, __context__ is conn_err
C. __cause__ is conn_err, __context__ is None
D. __cause__ is None, __context__ is None

Answer: A
Explanation: In this nested exception scenario without using 'raise from', Python implicitly chains the exceptions by setting the __context__ attribute of the re-raised exception (log_err) to the original exception (conn_err). The __cause__ attribute remains None because no explicit chaining was specified. This implicit chaining preserves the context of the original error during propagation, which is useful in multi-threaded environments for debugging synchronization issues without losing the root cause.

Question: 1194

Client-server model in Python for a notification system: servers push to clients? (Select two)

A. Use multicast UDP for connectionless group notifications
B. Typically clients poll, but for push, servers need client sockets or WebSockets
C. REST unsuitable for push, favors pull
D. Connection-oriented for persistent, allowing server-initiated sends

Answer: C,D
Explanation: Persistent TCP enables bidirectional. REST is request-response, not push. Multicast UDP for broadcasts.

Question: 1195

Consider a multi-threaded application where a Config class holds shared configuration data as class

variables, and you need methods to load config from a file (not requiring instance) and another to validate the config after loading (also class-level). Which of the following are valid reasons to use @staticmethod for the load method and @classmethod for the validate method? (Select all that apply)

A. @classmethod for load is unnecessary if no instantiation is involved, making @staticmethod sufficient
B. @staticmethod for load allows it to be called without an instance or class reference beyond the namespace
C. @staticmethod for validate would prevent access to cls, which might be needed for subclass-specific validation
D. @classmethod for validate allows using cls to access and potentially modify class variables in an inheritable way

Answer: B,C,D
Explanation: For the load method, @staticmethod is appropriate since it performs a utility operation on class variables without needing cls for instantiation or polymorphic behavior. For validate, @classmethod is better if it might need to be overridden in subclasses or use cls for class-specific actions. @staticmethod for load keeps it unbound, callable directly on the class.

Question: 1196

In a financial app, your REST client removes transactions with DELETE and analyzes responses. Code: response = requests.delete('https://api.transactions/12345', headers={'Auth': 'key'}). If 404, it means not found; if 403, forbidden. To improve, add try-except for RequestException. What does this show about designing secure REST clients?

A. Handling status codes like 404 Not Found and 403 Forbidden prevents crashes and informs user, with exceptions for network issues
B. DELETE always succeeds with 200, ignoring auth
C. Response analysis is optional for DELETE
D. No need for headers, as DELETE doesn't require auth

Answer: A
Explanation: The delete() method sends DELETE to remove the resource at the URI, with headers for authentication; response status like 404 indicates the transaction doesn't exist, 403 means permission denied, requiring client-side checks to handle gracefully; wrapping in try-except RequestsException catches network errors, enhancing client design for security and reliability in financial contexts.

Question: 1197

Developers in a microservices architecture are overusing blank lines, making the code hard to scan. What are PEP 8's guidelines for vertical whitespace? (Select All that Apply)

A. Use blank lines sparingly within functions to separate logical sections
B. Require three blank lines between all import groups
C. Surround methods inside classes with one blank line
D. Surround top-level functions and classes with two blank lines

Answer: A,C,D
Explanation: PEP 8 uses blank lines to group related code: two blank lines around top-level functions/classes for separation; single blank lines around class methods; and judicious use inside functions for logical breaks, preventing excessive whitespace in modular code like microservices.

Question: 1198

In a database ORM, class Record(dict): def __getitem__(self, key): return super().__getitem__(key.upper()). For r = Record(); r['id']=1, r['ID'] returns 1. What syntax does this extend?

A. Iteration
B. Numeric operations
C. Container access with key transformation
D. Length query

Answer: C
Explanation: __getitem__ customizes [] access, here uppercasing keys for case-insensitive dicts. This integrates custom containers with slicing/iteration syntax in ORM scenarios.

Question: 1199

In SQLite, which command is used to remove a table from the database?

A. DELETE TABLE employees;
B. REMOVE TABLE employees;
C. DROP TABLE employees;
D. CLEAR TABLE employees;

Answer: C
Explanation: The `DROP TABLE` command is used to completely remove a table from the database, including all its data and structure.

Question: 1200

Which of the following describes a "chained exception"?

A. A sequence of exceptions where one exception is linked to a previous one as its cause or context.
B. An exception that occurs inside a loop and repeats multiple times.
C. A custom exception that inherits from multiple base classes.
D. An exception that is caught by multiple `except` blocks simultaneously.

Answer: A
Explanation: Exception chaining is the mechanism in Python 3 that allows the traceback to maintain a history of exceptions. By using the `__context__` and `__cause__` attributes, Python "chains" the current error to the error that preceded it.

Question: 1201

What is the main benefit of using type hints as specified in PEP 484?

A. They enforce stricter syntax rules.
B. They make the code compatible with older versions of Python.
C. They increase the execution speed of the program.
D. They allow for better readability and maintainability of code.

Answer: D
Explanation: Type hints improve code readability and maintainability by providing clear indications of what types are expected for function arguments and return values, helping developers understand code without needing to infer types.

Question: 1202

MRO calculation: class A: pass; class B(A): pass; class C(A): pass; class D(B,C): pass. MRO of D? (Select All that Apply)

A. Duck typing irrelevant
B. Single inheritance would be D,B,A
C. Resolves merge of B+A and C+A to B,C,A
D. D, B, C, A, object

Answer: C,D
Explanation: D, B, C, A, object linearization. Resolves merge of B+A and C+A to B,C,A C3 algorithm.

Question: 1203

In XML, what is the purpose of a "namespace"?

A. To define the character encoding (like UTF-8) of the document.
B. To speed up the parsing process by grouping similar tags.
C. To provide a unique name for the XML file on the server.
D. To avoid element name conflicts when combining XML documents from different sources.

Answer: D
Explanation: XML Namespaces are used for providing uniquely named elements and attributes in an XML document. They prevent naming collisions when documents from different XML applications are mixed, identifying which "tags" belong to which vocabulary using a URI.

Question: 1204

In the context of the `copy` module, how does `deepcopy()` handle circular references (an object containing a reference to itself)?

A. It uses a "memo" dictionary to keep track of already copied objects to maintain the same structure.
B. It raises a `copy.Error` immediately upon detecting the cycle.
C. It automatically converts the circular reference into a shallow copy.
D. It enters an infinite recursion until a `RecursionError` is raised.

Answer: A
Explanation: The `deepcopy()` function maintains a `memo` dictionary during the copying process. This dictionary stores the IDs of objects that have already been processed. If it encounters the same object again, it retrieves the reference from the memo instead of attempting to copy it again, effectively preserving circular or shared references without infinite loops.

Question: 1205

Which of the following statements correctly describes event-driven programming?

A. It relies on user actions or events to trigger specific code execution.
B. It does not allow for asynchronous operations.
C. It is primarily used for computational tasks rather than GUI applications.
D. It is based on executing a sequence of statements in a pre-defined order.

Answer: A
Explanation: Event-driven programming is a paradigm where the flow of the program is determined by

events such as user actions (like clicks or key presses), allowing for dynamic and interactive applications, particularly in GUI programming.

Question: 1206

In a mock framework, class Mock(type): def __getattr__(cls, name): return lambda *a,**k: None. M = Mock('M',(),{}); print(M.foo(1)) is None. Dynamic methods via?

A. Metaclass getattr
B. init
C. Instance getattr
D. call

Answer: A
Explanation: Class-level __getattr__ in metaclass handles missing class attributes, returning callables for mocking.

Question: 1207

You are building a testing environment for a REST client that interacts with a user database API, simulating CRUD operations. Using requests to test POST for adding a user: response = requests.post('http://test.api/users', json={'name': 'Bob', 'age': 30}). Then, to verify, you GET the user and DELETE it. What HTTP methods are used here, and why is this setup important for development? (Select all that apply)

A. All methods are idempotent, but POST is not, so testing handles non-idempotent cases
B. If response.status_code == 201 for POST, it confirms creation, aiding in response analysis
C. POST for create, GET for read, DELETE for delete, covering CRUD except update
D. Testing environment allows isolated operations without affecting production, using mock servers or local instances

Answer: B,C,D
Explanation: The POST method creates a new user resource with JSON payload, typically expecting 201 Created on success; GET retrieves the user for verification; DELETE removes it, completing a CRUD cycle (Create, Read, Update—not shown, Delete); a dedicated testing environment, like a local server or mocked API, ensures development and debugging of the client without real data risks, while checking status codes like 201 validates operations.

Question: 1208

nested = [,]; s_copy = copy.copy(nested); s_copy.append(99); print(nested) shows mutation because?

A. id(nested) == id(s_copy)
B. Deep shared outer
C. Shallow shares inners
D. All above

Answer: D
Explanation: Shallow copy.copy new list, but elements reference same mutable inners; s_copy[0] is nested[0] True, so append mutates shared object. Deepcopy would recurse copy inners too.

Question: 1209

In a networked application, you have a base class Connection with an __init__ that takes host and port, setting them as instance variables. A subclass SecureConnection inherits and adds a certificate parameter in its __init__, calling super().__init__(host, port). Which statements are true about accessing attributes and using issubclass? (Select all that apply)

A. A SecureConnection instance has host, port, and certificate as attributes
B. issubclass(SecureConnection, Connection) returns True
C. The certificate is accessible on Connection instances
D. issubclass(Connection, SecureConnection) returns True

Answer: A,B
Explanation: The issubclass function checks if the first class is a subclass of the second, so issubclass(SecureConnection, Connection) returns True due to inheritance. Reversing the arguments, issubclass(Connection, SecureConnection) returns False, as the base is not a subclass of the derived. By calling super().__init__, the base attributes are set, and the subclass adds its own, so a SecureConnection instance has host, port, and certificate as attributes. The certificate is specific to the subclass and not accessible on Connection instances.

Question: 1210

Your system uses logging to track performance metrics at INFO, but filters sensitive data. How to adjust level dynamically based on env?

A. Use os.environ to set level before basicConfig
B. logger.level = int(value)
C. basicConfig can't be called twice
D. Use addLevelName for custom

Answer: A
Explanation: Reading from environment variables and passing to basicConfig(level=getattr(logging, os.environ.get('LOG_LEVEL', 'INFO'))) allows runtime configuration; direct assignment isn't supported, and basicConfig is one-time.

Question: 1211

For a game engine, entity positions are encapsulated with validation for 3D coordinates. Code:
class Entity:
def __init__(self, x=0, y=0, z=0):
self._pos = (x, y, z)
@property
def pos(self):
return self._pos
@pos.setter
def pos(self, value):
if not (isinstance(value, tuple) and len(value) == 3 and all(isinstance(c, (int, float)) for c in value)):
raise ValueError("Position must be a 3-tuple of numbers")
self._pos = value
If ent = Entity(), ent.pos = (1, 2, 3.5), ent.pos = (1, 2), what errors and final pos?

A. Setter ignores invalid, keeps initial (0,0,0)
B. First raises ValueError for non-int, second ignored
C. First set succeeds, second raises ValueError for length, final pos (1,2,3.5)
D. Both sets succeed, final pos (1,2)

Answer: C
Explanation: The setter validates the value as a 3-tuple of numbers, allowing (1,2,3.5) with mixed int/float, but raises ValueError for (1,2) due to length 2, leaving pos as (1,2,3.5).

Question: 1212

For a stock trading GUI in Python, an event like 'key press' updates filters. What defines events? (Select all that apply)

A. Asynchronous signals from inputs.
B. Handled by registered functions.
C. Synchronous function calls.
D. Queued in the event loop.

Answer: A,B,D

Explanation: Events are input-triggered, processed via callbacks in queues.

Question: 1213

When implementing a custom container class, you want to support the syntax 'value in container'. Which special method is primarily responsible for this operation, and what should it return?

A. __search__, returning the object
B. __exists__, returning a Boolean
C. __getitem__, returning the index
D. __contains__, returning a Boolean

Answer: D
Explanation: The __contains__ method implements the 'in' operator. It should return True if the item is in the container and False otherwise. If __contains__ is not defined, Python will attempt to iterate through the container using __iter__ or __getitem__ to find the element, but __contains__ is the direct and most efficient way to support this.

Question: 1214

In Python, which exception is raised when a socket operation times out?

A. `OSError`
B. `socket.timeout`
C. `ConnectionResetError`
D. `socket.error`

Answer: B
Explanation: The `socket.timeout` exception is raised when a socket operation exceeds the specified timeout period. This is useful for handling scenarios where a response is not received in a timely manner.

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