Sets:

1. What is the output of the following code?

python

Copy

s1 = {1, 2, 3, 4, 5}

s2 = {4, 5, 6, 7, 8}

print(len(s1 | s2))

a) 5 b) 8 c) 10 d) 3

1. Which method would you use to add multiple elements to a set at once? a) set.add() b) set.update() c) set.extend() d) set.append()
2. What is the time complexity of checking if an element exists in a set? a) O(1) on average b) O(n) c) O(log n) d) O(n^2)
3. What will be the output of the following code?

python

Copy

s = {1, 2, 3}

s.update([3, 4, 5])

print(s)

a) {1, 2, 3, 4, 5} b) {1, 2, 3, [3, 4, 5]} c) {1, 2, 3, 3, 4, 5} d) TypeError

1. Which of the following will create a set of all elements that are in either s1 or s2, but not in both? a) s1.union(s2) b) s1.intersection(s2) c) s1.symmetric\_difference(s2) d) s1.difference(s2)
2. What is the output of the following code?

python

Copy

s = {1, 2, 3, 4, 5}

s.discard(3)

s.remove(3)

print(s)

a) {1, 2, 4, 5} b) {1, 2, 3, 4, 5} c) KeyError d) {1, 2, 4, 5, None}

1. Which of the following is true about sets in Python? a) Sets are ordered b) Sets can contain mutable elements c) Sets can have duplicate elements d) Sets are unordered and can't contain duplicate elements
2. What will be the output of the following code?

python

Copy

s1 = {1, 2, 3}

s2 = {3, 4, 5}

print(s1 - s2)

a) {1, 2} b) {4, 5} c) {1, 2, 4, 5} d) {1, 2, 3, 4, 5}

1. Which method would you use to remove and return an arbitrary element from a set? a) set.remove() b) set.discard() c) set.pop() d) set.get()
2. What is the output of the following code?

python

Copy

s = frozenset([1, 2, 3])

s.add(4)

print(s)

a) {1, 2, 3, 4} b) frozenset({1, 2, 3, 4}) c) AttributeError d) {1, 2, 3}

Sets:

1. Answer: b) 8 Explanation: The union of s1 and s2 is {1, 2, 3, 4, 5, 6, 7, 8}, which has 8 elements.
2. Answer: b) set.update() Explanation: set.update() is used to add multiple elements to a set at once.
3. Answer: a) O(1) on average Explanation: Sets in Python are implemented as hash tables, allowing for constant-time lookups on average.
4. Answer: a) {1, 2, 3, 4, 5} Explanation: set.update() adds new elements to the set without creating duplicates.
5. Answer: c) s1.symmetric\_difference(s2) Explanation: The symmetric difference returns elements that are in either set, but not in both.
6. Answer: c) KeyError Explanation: s.discard(3) removes 3 if present, then s.remove(3) tries to remove 3 again, raising a KeyError.
7. Answer: d) Sets are unordered and can't contain duplicate elements Explanation: This is a fundamental property of sets in Python.
8. Answer: a) {1, 2} Explanation: The - operator performs set difference, returning elements in s1 that are not in s2.
9. Answer: c) set.pop() Explanation: set.pop() removes and returns an arbitrary element from the set.
10. Answer: c) AttributeError Explanation: frozenset is immutable, so it doesn't have an add() method.