Tuples:

1. What is the output of the following code?

python

Copy

t = (1, 2, 3, 4, 5)

print(t[1:4:2])

a) (2, 4) b) (2, 3, 4) c) (1, 3, 5) d) (2,)

1. Which of the following is true about tuples in Python? a) Tuples are mutable b) Tuples can contain mutable elements c) Tuples cannot be nested d) Tuples cannot contain duplicate elements
2. What is the time complexity of accessing an element in a tuple by its index? a) O(1) b) O(n) c) O(log n) d) O(n^2)
3. What will be the output of the following code?

python

Copy

t1 = (1, 2, 3)

t2 = (4, 5, 6)

print(t1 + t2 \* 2)

a) (1, 2, 3, 4, 5, 6, 4, 5, 6) b) (1, 2, 3, 8, 10, 12) c) (5, 7, 9) d) TypeError

1. Which of the following will unpack a tuple of unknown length? a) a, b, c = tuple b) \*a, = tuple c) a, \*b = tuple d) Both b and c
2. What is the output of the following code?

python

Copy

t = ([1, 2], [3, 4])

t[0].append(5)

print(t)

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

1. Which method would you use to count the occurrences of an element in a tuple? a) tuple.index() b) tuple.count() c) tuple.find() d) len(tuple)
2. What will be the output of the following code?

python

Copy

t = (1, 2, 3, 4, 5)

print(t[::-2])

a) (5, 3, 1) b) (1, 3, 5) c) (5, 4, 3, 2, 1) d) (1, 2, 3, 4, 5)

1. Which of the following will create a tuple of even numbers from 0 to 10 (inclusive)? a) tuple(range(0, 11, 2)) b) tuple([x for x in range(11) if x % 2 == 0]) c) tuple(filter(lambda x: x % 2 == 0, range(11))) d) All of the above
2. What is the output of the following code?

python

Copy

t = (1, 2, 3)

a, b, c = t \* 2

print(b)

a) 2 b) (2,) c) ValueError d) None

Tuples:

1. Answer: a) (2, 4) Explanation: t[1:4:2] starts at index 1, goes up to (but not including) index 4, with a step of 2.
2. Answer: b) Tuples can contain mutable elements Explanation: While tuples themselves are immutable, they can contain mutable objects like lists.
3. Answer: a) O(1) Explanation: Tuples allow direct indexing, providing constant-time access.
4. Answer: a) (1, 2, 3, 4, 5, 6, 4, 5, 6) Explanation: t1 + t2 \* 2 concatenates t1 with two copies of t2.
5. Answer: d) Both b and c Explanation: Both \*a, = tuple and a, \*b = tuple can unpack a tuple of unknown length.
6. Answer: b) ([1, 2, 5], [3, 4]) Explanation: Although the tuple is immutable, its elements (lists) are mutable.
7. Answer: b) tuple.count() Explanation: count() returns the number of times a specified value occurs in a tuple.
8. Answer: a) (5, 3, 1) Explanation: t[::-2] reverses the tuple and takes every second element.
9. Answer: d) All of the above Explanation: All these methods create a tuple of even numbers from 0 to 10.
10. Answer: c) ValueError Explanation: t \* 2 creates (1, 2, 3, 1, 2, 3), which can't be unpacked into three variables.