1. What exactly is []?

Ans. [] is an empty list. The square brackets denotes that it is a list but since there is no item in it, it is an empty list.

2. In a list of values stored in a variable called spam, how would you assign the value 'hello' as the third value? (Assume [2, 4, 6, 8, 10] are in spam.)

Ans.

spam = [2, 4, 6, 8, 10]

spam[2] = 'hello'

Let's pretend the spam includes the list ['a', 'b', 'c', 'd'] for the next three queries.

3. What is the value of spam[int(int('3' \* 2) / 11)]?

Ans. '3' \* 2 = '33'.

int('33') converts the string to an integer, resulting in the value 33.

33 / 11 = 3.

spam[3] = 'd'.

4. What is the value of spam[-1]?

spam[-1]=d

5. What is the value of spam[:2]?

spam[:2]=['a','b']

Let's pretend bacon has the list [3.14, 'cat,' 11, 'cat,' True] for the next three questions.

6. What is the value of bacon.index('cat')?

bacon.index('cat')= 1

7. How does bacon.append(99) change the look of the list value in bacon?

bacon=[3.14, 'cat', 11, 'cat', True, 99]

8. How does bacon.remove('cat') change the look of the list in bacon?

becon=[3.14, 11, 'cat', True]

Only the first occurrence of 'cat' will be removed, the second one will stay.

9. What are the list concatenation and list replication operators?

For the list concatenation we use the plus symbol i.e., + and for the replication we use multiply symbol, \*.

10. What is difference between the list methods append() and insert()?

Ans. Both methods are use to add elements to a list. However the append() method is used to add an element to the end of a list and the with the insert() method we can add an element at a specific position in the list.

11. What are the two methods for removing items from a list?

Ans. The two methods for removing items from a list in Python are remove() and pop().

12. Describe how list values and string values are identical.

List values and string values are identical in the sense that both can be accessed using indexing and slicing. They are ordered sequences of elements and support common operations such as concatenation (+), replication (\*), and membership (in or not in) operations.

13. What's the difference between tuples and lists?

The main difference between tuples and lists is that tuples are immutable, while lists are mutable. Once a tuple is created, its elements cannot be modified, added, or removed. In contrast, lists allow modification of elements, addition of new elements, and removal of existing elements.

14. How do you type a tuple value that only contains the integer 42?

To create a tuple value with only one integer we can use just a comma, like (42,).

my\_tuple = (42,)

15. How do you get a list value's tuple form? How do you get a tuple value's list form?

To convert a list value into a tuple, you can use the tuple() function, passing the list as an argument. To convert a tuple value into a list, you can use the list() function, passing the tuple as an argument.

16. Variables that "contain" list values are not necessarily lists themselves. Instead, what do they contain?

Variables that contain list values are not necessarily lists themselves. The variable holds the reference to the memory location where the list is stored.

17. How do you distinguish between copy.copy() and copy.deepcopy()?

The copy.copy() function creates a shallow copy of a list, which means it creates a new list object but copies the references of the original list's elements. If the original list contains mutable objects (like nested lists), changes made to those objects will be reflected in both the original and copied lists. On the other hand, the copy.deepcopy() function creates a deep copy of a list, which means it recursively copies all the objects contained within the list, including nested lists and their elements. The deep copy creates entirely independent copies of the original list and its elements, ensuring that modifications made to one list do not affect the other.