Assignment-4

1.What exactly is []?

Ans1-The symbol "[]" represents an empty or blank list in many programming languages, including Python, JavaScript, and some others. A list is a data structure that can hold a collection of elements, and when it's empty, it means there are no elements in the 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.)

Ans2- by using indexing method we can replace 3rd value . indexing starts from 0 so 3rd value will be at 2nd index therefore we can use it in following manner

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

Spam[2]= “Hello”

So the output will be spam=[2,4,hello,8,10]

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)]?

Ans3-this expression will be solved as

Int(‘3’\*2)=int(33)

Int(33/11)=int(3),so the value of third index is

Spam[3]=d

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

Ans4-it will be spam[-1]=d, backward indexing concept

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

Ans5- Given the list spam = ['a', 'b', 'c', 'd'], spam[:2] would give you ['a', 'b'], which is a sublist containing the first two elements of the **spam** list.

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')?

Ans6-it will give the first occurence index number of the string so the value of bacon.index('cat') will be 1.

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

Ans7- [3.14, 'cat', 11, 'cat', True, 99] the list will look like this after performing given operation.

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

Ans8- removes the first occurrence of the value from the list

The list will look like= [3.14, 11, 'cat', True, 99]

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

Ans9-As with strings, we can use the operators + and \* to concatenate and replicate lists.

1-When + appears between two lists, the expression will be evaluated as a new list that contains the elements from both lists. The elements in the list on the left of + will appear first, and the elements on the right will appear last.

2-When \* appears between a list and an integer, the expression will be evaluated as a new list that consists of several copies of the original list concatenated together. The number of copies is set by the integer.

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

Ans10- append()=The element passed as an argument is appended to the end of the list

Insert()=The element passed as the argument can be inserted at any desired position by passing the index along with it as a parameter

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

Ans11- a)list.remove(item)= it removes the first occurrence of desired value or element.

b)list.pop(index)=it removes the value at specific index and returns the list.

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

Ans12-a) Both lists and strings are sequential data types. Lists are sequences of elements, and strings are sequences of characters.

b) You can use indexing to access specific elements or characters within both lists and strings

c) Both lists and strings support slicing, which allows you to create sub-sequences by specifying a range of indices

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

Ans13-

|  |  |
| --- | --- |
| LIST | TUPLE |
| List are mutable | Tuple are immutable |
| The list is better for performing operations, such as insertion and deletion. | A Tuple data type is appropriate for accessing the elements |
| Lists consume more memory | Tuple consumes less memory as compared to the list |

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

Ans14- my\_tuple = (42,) , this is how you can type a tuple value that only contains the integer 42

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

Ans15- a)From list to tuple

my\_list = [1, 2, 3, 4, 5]

my\_tuple = tuple(my\_list)

b)From tuple to list

my\_tuple = (1, 2, 3, 4, 5)

my\_list = list(my\_tuple)

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

Ans16- Variables that "contain" list values in Python actually contain references or pointers to the list objects in memory. In Python, variables are essentially labels or names that are associated with objects in memory. When you assign a list to a variable, the variable does not store the entire list's data but rather stores a reference to the memory location where the list is stored

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

Ans17-the key difference is that copy.copy() creates a shallow copy with shared references to nested objects, while copy.deepcopy() creates a deep copy with completely independent copies of nested objects. Your choice between them depends on your specific use case and whether you want to maintain the independence of nested objects in the copied structure.