PYTHON ASSIGNMENT 4

1. **What exactly is []?**

   [] is an empty list in python.Declaring an empty list can be achieved in two ways i.e. either by using square brackets[] or using the list() constructor.

   Eg: a = []

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.)**

   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)]?**

   'd' because '3' * 2 is the string '33', which is passed to int() before being divided by 11.

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

   'd' because negative indexes start from the end.

5. **What is the value of 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')?**

   Value of bacon.index('cat') is 1.

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

   99 will get added to the list at the end as follows:

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

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

   The first 'cat' word will be removed from the list.

   [3.14, 11, 'cat', True]

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

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

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.

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()?

The difference between the two methods is that .append() adds an item to the end of a list, whereas .insert() inserts and item in a specified position in the list.

If you don't want to just add items to the end of a list, you can specify the position you want to add them with .insert().

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

- Python removes () method is a built-in method available with the list. It helps to remove the given very first element matching from the list. You can remove items from a list in Python using the 'remove()' method.

- The pop() method removes an element from the list based on the index given.

   Syntax: list.pop(index)

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

The similarity between Lists and Strings in Python is that both are sequences. The differences between them are that firstly, Lists are mutable but Strings are immutable. Secondly, elements of a list can be of different types whereas a String only contains characters that are all of String type.

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

Sno	LIST	TUPLE
1	Lists are mutable	Tuples are immutable
2	The implication of iterations is Time-consuming	The implication of iterations is comparatively Faster
3	The list is better for performing operations, such as insertion and	A Tuple data type is appropriate for accessing the elements

Sno	LIST	TUPLE
	deletion.	
4	Lists consume more memory	Tuple consumes less memory as compared to the list
5	Lists have several built-in methods	Tuple does not have many built-in methods.
6	Unexpected changes and errors are more likely to occur	In a tuple, it is hard to take place.

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

(42,)

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

Using the tuple() built-in function, you can get a list value in tuple form

An iterable can be passed as an input to the tuple () function, which will convert it to a tuple object. If you want to convert a Python list to a tuple, you can use the tuple() function to pass the full list as an argument, and it will return the tuple data type as an output.tuple() and list() functions.

To convert a tuple into list in Python, call list() builtin function and pass the tuple as argument to the function. list() returns a new list generated from the items of the given tuple.

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

They contain references to list values.

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

A deep copy creates a new compound object before inserting copies of the items found in the original into it in a recursive manner. It means first constructing a new collection object and then recursively populating it with copies of the child objects found in the original. In the case of deep

copy, a copy of the object is copied into another object. It means that any changes made to a copy of the object do not reflect in the original object.

A shallow copy creates a new compound object and then references the objects contained in the original within it, which means it constructs a new collection object and then populates it with references to the child objects found in the original. The copying process does not recurs and therefore won't create copies of the child objects themselves. In the case of shallow copy, a reference of an object is copied into another object. It means that any changes made to a copy of an object do reflect in the original object. In python, this is implemented using the "copy()" function.