GO_STP_342

STP Task 2

Q: Is a list mutable?

A: Yes

Q: Does a list need to be homogeneous?

A: No List can be heterogeneous

Q: What is the difference between a list and a tuple?

A: list is mutable, whereas a tuple is immutable.

Q: How to find the number of elements in the list?

A: Given a list 'mylist' number of elements in a list can be found using len(mylist)

Q: How to check whether the list is empty or not?

A: use the len() function to check if the length of a list is equal to zero
OR compare the given list with an empty list

Q: How to find the first and last element of the list?

A: Using indexes. In any list the first element is assigned index value 0 and the last element can be considered as a value -1.

Q: How to find the largest and lowest value in the list?

A: If all the elements in the list are of numerical value then we can use the min and max functions to find the largest and lowest value in the list

Q: How to access elements of the list?

A: Use square brackets [x] to access data at position x

Q: Remove elements in a list before a specific index

A: Using index along with the pop function i.e l.pop(2) will remove the 3rd element in the list l.

Q: Remove elements in a list between 2 indices

A: del a[1:3] removes the items between 1 and 3 from list a.

Q: Return every 2nd element in a list between 2 indices

A: Use the extended slicing syntax list[start:stop:step] to get a new list containing every nth element. Leave start and stop empty, and set step to the desired n.

e.g:

```
a_list = [0, 1, 2, 3]
every_second_element = a_list[::2]
print(every_second_element)
OUTPUT =>   [0, 2]
```

Q: Get the first element from each nested list in a list

A:

```
lst = [[1, 2], [3, 4, 5], [6, 7, 8, 9]]
for item in lst:
  print(item[0])
```

```
OUTPUT =>
1
3
6
```

Q: How to modify elements of the list?

A: A list is a mutable object. We can add (append() or insert()) or remove(pop(),remove() or delete()) elements from a list. Using the list name along with the index, we can change the value at the selected index.

Q: How to concatenate two lists?

A: the ‘+’ operator can be used to concatenate two lists. append() can also be used.

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Q: How to add two lists element-wise in python?

A:

```
list1 = [11, 21, 34, 12, 31]
list2 = [23, 25, 54, 24, 20]
list3 = [sum(i) for i in zip(list1,list2)]
list3
OUTPUT =>   [34, 46, 88, 36, 51]
```

Q: Difference between del and clear?

A: del function deletes the items at suggested position specified by index. In case index is not provided the list itself will be deleted. In case of clear the list construct remains while the items are cleared. Clear will return an empty list

Q: Difference between remove and pop?

A: Remove() deletes the matching element from the list whereas the pop(index) removes the element present at the specified index. Parameter : index (optional) in case of pop()

Q: Difference between append and extend?

A: Python append() method adds an element to a list, and the extend() method concatenates the first list with another list (or another iterable).

Q: Difference between indexing and Slicing?

A: Indexing means referring to an element of an iterable by its position within the iterable.

Slicing means getting a subset of elements from an iterable based on their indices.

Q: Difference between sort and sorted?

A: sort will sort and modify the list and sorted will return a new list containing the sorted version of the list

```
list1 = [11, 21, 34, 12, 31]
list2 = [23, 25, 54, 24, 20]
list3 = sorted(list1)
print(list3,"-sorted")
list2.sort()
print(list1," -sort")
OUTPUT=>
[11, 12, 21, 31, 34] -sorted
[11, 21, 34, 12, 31]  -sort
```

Q: Difference between reverse and reversed?

A: reverse reverses the items within the container whereas reversed will return

```
list1.reverse()
print(list1, "- reverse")
print(list(reversed(list2)), "-reversed")
print(list2,"-no changes saved on reversed()")
OUTPUT=>
[31, 12, 34, 21, 11] - reverse
[20, 24, 54, 25, 23] -reversed
[23, 25, 54, 24, 20] -no changes saved on reversed()
```

Q: Difference between copy and deepcopy?

A: Copy creates a new variable that shares the reference of the original object. Any changes to the original object will also reflect in the new object.

A deep copy creates a new object and recursively adds the copies of nested elements present in the original object. If we make changes to the original object, we'll not see any changes in the new object.

Q: How to remove duplicate elements in the list?

A: Using sets we can remove duplicate elements in the list.

Q: How to find an index of an element in the python list?

A: The index () method returns the index of the specified element in the list .

Q: How to find the occurrences of an element in the python list?

A: count() method helps to find the occurrences of an element in the python list.

Q: How to insert an item at a given position?

A: insert() is an inbuilt function in Python that inserts a given element at a given index

Q: How to check if an item is in the list?

A: Use 'in' to check if an item is in the list. It'll return true or false based on existance

Q: How to flatten a list in python?

A:

Q: How to convert python list to other data structures like set, tuple, dictionary?

A: Typecasting to tuple can be done by simply using tuple(list_name).
Typecasting to set can be done by simply using set(list_name).
To convert two lists into one dictionary, you can use the Python zip() function

Q: How to apply a function to all items in the list?

A:

```
def Square(n):
  return n**2
list1 = [11, 21, 34, 12, 31]
output_list = [Square(i) for i in list1]
print(output_list)
OUTPUT=>
[121, 441, 1156, 144, 961]
```

Q: How to filter the elements based on a function in a python list?

A: filter() method filters the given iterable with the help of a function that tests each element in the iterable to be true or not.

Q: How python lists are stored in memory?

A: The list objects are stored in distinct chunks of memory which are linked together with pointers.