ASSIGNMENT / TASK 2

1. Is a list mutable?

Answer: Yes, lists are mutable

2. Does a list need to be homogeneous?

Answer: No list can be heterogeneous also.

3. What is the difference between a list and a tuple.

Answer: a. list are mutable but tuples are immutable b. list are defined by [] and tuple are defined by ()

4. How to find the number of elements in the list?

Answer: By using len() function

5. How to check whether the list is empty or not?

Answer: if length function return 0 ie; no element is present in list.

6. How to find the first and last element of the list?

Answer: for first element for eg list is l=[1,2,3,4], we can write l[0], for last element we can write l[-1]

7. How to find the largest and lowest value in the list?

Answer: by using max and min functions we can find largest and lowest value in the list.

8. How to access elements of the list?

Answer: a. directly access by for loop, b. also we can access by slicing operations.

9. Remove elements in a list before a specific index

Answer: by using pop() function.

10. Remove elements in a list between 2 indices

Answer: in pop() function using slicing operation for eg l[1,2,3,4,5] and we want to remove 2,3,4 then we can do pop(1:4)

11. Return every 2nd element in a list between 2 indices

```
list_2=[1,2,3,4,5,6,7,8,9,10]
```

```
print(list_2[::2])
```

```
[1, 3, 5, 7, 9]
```

12. Get the first element from each nested list in a list

```
list_3=[["abc","def","ghi"],[1,2,3],["fruits","vegetables","cars"]]
for i in list_3:
  print(i[0])
```

```
abc
1
fruits
```

13. How to modify elements of the list?

Answer: by using update() function.

14. How to concatenate two lists?

Answer: by using + operator between two lists.

15. How to add two lists element-wise in python?

```
l1=[1,2,3]
l2=[5,6,7]
l3=list(zip(l1,l2))
l4=[]
for (i,j) in l3:
  l4.append(i+j)
print(l4)
```

```
[6, 8, 10]
```

16. Difference between del and clear?

Answer: del() fucntion is used to delete a particular element but clear() fucntion is used to delete all the elements

17. Difference between remove and pop?

Answer: remove() function is used to remove or delete an element after matching it, pop() is used to delete any element from a particular index.

18. Difference between append and extend?

Answer: append() fucntion is used to add elements in append we have to specify the element, extend() function is means to extend the space of particular datatype so as to add more values after certain time.

19. Difference between indexing and Slicing?

Answer: Indexing only can be applied at a particular index and slicing means to select from one index to another, in slicing we can froup various indexes.

20. Difference between sort and sorted?

Answer: sort() function will sort the list on which it is applied but sorted() function creates a new list and containing all the sorted values of the list.

21. Difference between reverse and reversed?

Answer: reverse() actually reverses the elements in the container. reversed() doesn't actually reverse anything, it merely returns an object that can be used to iterate over the container's elements in reverse order.

22. Difference between copy and deepcopy?

Answer: A shallow copy/ copy constructs a new compound object and then (to the extent possible) inserts references into it to the objects found in the original. A deep copy constructs a new compound object and then, recursively, inserts copies into it of the objects found in the original.

23. How to remove duplicate elements in the list?

```
mylist = ["a", "b", "a", "c", "c"]
print(mylist," List before removing duplicate values")
mylist = list(dict.fromkeys(mylist))
print(mylist,"  List after removing dupliacte values")
```

```
['a', 'b', 'a', 'c', 'c']  List before removing duplicate values
['a', 'b', 'c']   List after removing dupliacte values
```

24. How to find an index of an element in the python list?

```
list_1=[33,44,1,2,4]
a=int(input("Input the element for which index has to be found out"))
list_1.index(a)
```

```
Input the element for which index has to be found out44
```

```
1
```

25. How to find the occurrences of an element in the python list?

```
l=[1,2,3,4,1,2,3,4,1,1,1,1,1]
c=0
a=int(input("enter the element for which you have to find occurence"))
for i in l:
  if i == a:
    c=c+1
print("element ",a," is found ",c," times")
```

```
enter the element for which you have to find occurence2
element  2  is found  2  times
```

26. How to insert an item at a given position?

Answer: by using insert(value, position)

27. How to check if an item is in the list?

Answer: by using "in" operator

28. How to flatten a list in python?

Answer: Flattening a list of lists entails converting a 2D list into a 1D list by un-nesting each list item stored in the list of lists - i.e., converting [[1, 2, 3], [4, 5, 6], [7, 8, 9]] into [1, 2, 3, 4, 5, 6, 7, 8, 9].

The process of flattening can be performed using nested for loops, list comprehensions, recursion, built-in functions or by importing libraries in Python depending on the regularity and depth of the nested lists.

29. How to convert python list to other data structures like set, tuple, dictionary?

```
l1=[1,2,3,4,5,0]
print(l1," This is list")
l2=set(l1)
print(l2,"this is list to set converted")
l3=tuple(l1)
print(l3," This is list to tuple converted")
keys=[11,22,33,44,55,66]
l4=dict(zip(keys,l1))
print(l4," this is list to dictionary conversion")
```

```
[1, 2, 3, 4, 5, 0]  This is list
{0, 1, 2, 3, 4, 5} this is list to set converted
```

```
(1, 2, 3, 4, 5, 0)  This is list to tuple converted
{11: 1, 22: 2, 33: 3, 44: 4, 55: 5, 66: 0}  this is list to dictionary conversion
```

30. How to apply a function to all items in the list?

Answer: By using map() function

31. How to filter the elements based on a function in a python list?

Answer: Python has a built-in function called filter() that allows you to filter a list (or a tuple) in a more beautiful way. The filter() function iterates over the elements of the list and applies the fn() function to each element. It returns an iterator for the elements where the fn() returns True .

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