Assignment 2

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1. Is a list mutable?

Ans: Yes lists are mutable

```
#list creation
list1 = [1, 1.5, 'Hello', 10]

print(f"List before changing the element: {list1}")
list1[0] = 5
print(f"List after changing the element: {list1}")
```

```
    List before changing the element: [1, 1.5, 'Hello', 10]
    List after changing the element: [5, 1.5, 'Hello', 10]
```

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2. Does a list need to be homogeneous?

Ans: Lists can be either homogeneous or heterogeneous in Python

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

Ans:

List	
Lists are mutable	Tuples are im
The list is better for performing operations, such as insertion and deletion.	Tuple data type is appropriate for accessing the e
Implication of iterations is Time-consuming	The implication of iterations is comparativel
Lists consume more memory	Tuple consume less memory as compared t

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

Ans: We can find the length of the list using a built-in function len()

```
print(f"List1 : {list1}")
print(f"Length of above list: {len(list1)}")
```

```
    List1 : [5, 1.5, 'Hello', 10]
    Length of above list: 4
```

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```
'''

list2=[]
if not list2:
    print("The list is empty")
else:
    print("The list is not empty")

     The list is empty


'''
Approach 2
Using len()
'''

list2=[]
if len(list2)==0:
    print("The list is empty")
else:
    print("The list is not empty")

     The list is empty


'''
Approach 3
Using bool()
'''

list2=[]
if bool(list2)==False:
    print("The list is empty")
else:
    print("The list is not empty")

     The list is empty
```

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

Ans: We can find first and last element using 3 approaches mentioned below

```
'''
Approach 1: list indexing
'''
```

```
print(f"List1 : {list1}")
result=list1[::len(list1)-1]
print(f"First element: {result[0]} \nLast element : {result[1]}")
```

```
    List1 : [5, 1.5, 'Hello', 10]
    First element: 5
    Last element : 10
```

```
'''
Approach 3: list comprehension
'''
```

```
print(f"List1 : {list1}")
result=[list1[index] for index in (0,-1)]
print(f"First element: {result[0]} \nLast element : {result[1]}")
```

```
    List1 : [5, 1.5, 'Hello', 10]
    First element: 5
    Last element : 10
```

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

Ans: We can find the lowest and largest valu in a list using builtin functions min() and max()

```
list3 = [10, 6, 15, 9, 12]
print(f"List: {list3}")
print(f"Lowest value: {min(list3)} \nLargest Value: {max(list3)}")
```

```
    List: [10, 6, 15, 9, 12]
    Lowest value: 6
    Largest Value: 15
```

---

8. How to access elements of the list?

Ans: We can select particualar element based on its index values

- Positive indexing Index values are from 0 to length-1

```
# Positive range
list3[1:5]
```

```
    [6, 15, 9, 12]
```

```
# Negative range
list3[-4:-1]
```

```
    [6, 15, 9]
```

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9. Remove elements in a list before a specific index

Ans: We can use pop() and send the index as a parameter to remove elements

```
list4 = ['Jonh', 100, 20.5]
print(f"Original list : {list4}")
list4.pop(1)
print(f"List after removing element : {list4}")
```

```
    Original list : ['Jonh', 100, 20.5]
    List after removing element : ['Jonh', 20.5]
```

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10. Remove elements in a list between 2 indices

Ans: We can use del statement for removing items by index or slice

```
list5 = list(range(10))
print(f"Before removing: {list5}")
del list5[4:8]
print(f"After removing: {list5}")
```

```
[1, 3, 6]
```

13. How to modify elements of the list?

Ans:

```
lst = ['Jonh', 100, 20.5]
print(f"Before modification: {lst}")
lst[0] = 10
print(f"After modification: {lst}")
```

```
Before modification: ['Jonh', 100, 20.5]
After modification: [10, 100, 20.5]
```

14. How to concatenate two lists?

Ans:

```
list_1 = [1, 2, 3]
list_2 = [1, 10, 5]
print(f"List1: {list_1}")
print(f"List2: {list_2}")
print(f"Concatenated list: {list_1 + list_2}")
```

```
List1: [1, 2, 3]
List2: [1, 10, 5]
Concatenated list: [1, 2, 3, 1, 10, 5]
```

To delete value this method uses the value as a parameter	This method also uses the index as a parameter to delete
The remove() method doesn't return any value	pop() returns deleted value
It throws value error in case of value doesn't exist in the list	It throws index error in case of an index doesn't exist in the list

18. Difference between append and extend?

Ans:

append()	**extend()**
Adds its argument as a single element to the end of a list	Iterates over its argument and adding each element to the list and
The length of the list increases by one	The length of the list increases by number of elements in it's argur

19. Difference between indexing and Slicing?

Ans:

Indexing	**Slicing**
It means referring to an element of an iterable by its position within the iterable	It means getting a subset of elements from a

20. Difference between sort and sorted?

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

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

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

Ans: Python *in* is the most conventional way to check if an element exists in list or not. This particular way returns True if element exists in list and False if the element does not exists in list.

28. How to flatten a list in python?

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

Ans:

```
def square(x):
    return x**2

list1 = [1, 5, 10, 13]
```