Assignment 5B - Python

In [1]:
```
txt = " abc def ghi "
print(txt.strip())
```

```
abc def ghi
```

Using Escape Character

In [2]:
```
#Using double quotes in the string is not allowed.
mystr = "My favourite TV Series is "Game of Thrones""
```

```
  Cell In[2], line 2
    mystr = "My favourite TV Series is "Game of Thrones""
                                       ^
SyntaxError: invalid syntax
```

In [3]:
```
#Using escape character to allow illegal characters
mystr = "My favourite series is \"Game of Thrones\"" print(mystr)
```

```
  Cell In[3], line 2
    mystr = "My favourite series is \"Game of Thrones\"" print(mystr)
                                                         ^
SyntaxError: invalid syntax
```

List Data Structure

In [5]:
```
list1 = [] # Empty List
print(type(list1))
```

```
<class 'list'>
```

In [12]:
```
list2 = [10,30,60] # List of integers numbers
list3 = [10.77,30.66,60.89] # List of float numbers
list4 = ['one','two' , "three"] # List of strings
list5 = ['Asif', 25 ,[50, 100],[150, 90]] # Nested Lists
list6 = [100, 'Asif', 17.765] # List of mixed data types
list7 = ['Asif', 25 ,[50, 100],[150, 90] , {'John' , 'David'}]
```

In [13]:
```
print(len(list6)) #Length of list
```

```
3
```

List Indexing

In [14]:
```
list2[0] # Retreive first element of the list
```

Out[14]: 10

In [15]:
```
list4[0] # Retreive first element of the list
```

Out[15]: 'one'

In [16]:
```
list4[0][0] # Nested indexing - Access the first character of the first list
```

Out[16]: 'o'

In [17]:
```
list4[-1] # Last item of the list
```

Out[17]: 'three'

In [18]:
```
list5[-1] # Last item of the list
```

Out[18]: [150, 90]

List Slicing

In [19]:
```
mylist = ['one' , 'two' , 'three' , 'four' , 'five' , 'six' , 'seven' , 'eight']
mylist[0:3] # Return all items from 0th to 3rd index location excluding the item
```

Out[19]: ['one', 'two', 'three']

In [20]:
```
mylist[2:5] # List all items from 2nd to 5th index location excluding the item
```

Out[20]: ['three', 'four', 'five']

In [21]:
```
mylist[:3] # Return first three items
```

Out[21]: ['one', 'two', 'three']

In [22]:
```
mylist[:2] # Return first two items
```

Out[22]: ['one', 'two']

In [23]:
```
mylist[-3:] # Return last three items
```

Out[23]: ['six', 'seven', 'eight']

In [24]:
```
mylist[-2:] # Return last two items
```

Out[24]: ['seven', 'eight']

In [25]:
```
mylist[-1] # Return last item of the list
```

Out[25]: 'eight'

In [26]:
```
mylist[:] # Return whole list
```

Out[26]: ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']

Add , Remove & Change Items

In [27]:
```
mylist
```

Out[27]: ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']

In [28]:
```
mylist.append('nine') # Add an item to the end of the list
mylist
```

Out[28]: ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']

In [29]:
```
mylist.insert(9,'ten') # Add item at index location 9
mylist
```

Out[29]: ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine', 'ten']

In [30]:
```
mylist.insert(1,'ONE') # Add item at index location 1
mylist
```

Out[30]:
```
['one',
 'ONE',
 'two',
 'three',
 'four',
 'five',
 'six',
 'seven',
 'eight',
 'nine',
 'ten']
```

In [31]:
```
mylist.remove('ONE') # Remove item "ONE"
mylist
```

Out[31]: ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine', 'ten']

In [32]:
```
mylist.pop() # Remove last item of the list
mylist
```

Out[32]: ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']

In [33]:
```
mylist.pop(8) # Remove item at index location 8
mylist
```

Out[33]: ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']

In [34]:
```
del mylist[7] # Remove item at index location 7
mylist
```

Out[34]: ['one', 'two', 'three', 'four', 'five', 'six', 'seven']

In [35]:
```
# Change the value of the string
mylist[0] = 1
mylist[1] = 2
mylist[2] = 3
mylist
```

Out[35]: [1, 2, 3, 'four', 'five', 'six', 'seven']

In [36]:
```
mylist.clear() # Empty List / Delete all items in the list
mylist
```

Out[36]: []

In [37]:
```
del mylist # Delete the whole list
mylist
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[37], line 2
      1 del mylist # Delete the whole list
----> 2 mylist

NameError: name 'mylist' is not defined
```

Copy List

In [39]:
```
mylist = ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']
mylist1 = mylist # Create a new reference "mylist1"
print(mylist1)
```

```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']
```

In [41]:
```
print(id(mylist),id(mylist1)) # The address of both mylist & mylist1 will be the sa
```

```
2575121196352 2575121196352
```

In [42]:
```
mylist2 = mylist.copy() # Create a copy of the list
id(mylist2) # The address of mylist2 will be different from mylist because mylist
```

Out[42]: 2575121180672

In [44]:
```
mylist[0] = 1
print(mylist)
```

```
[1, 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']
```

In [45]:
```
print(mylist1) # mylist1 will be also impacted as it is pointing to the same list
print(mylist2) # Copy of list won't be impacted due to changes made on the original
```

```
[1, 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']
```

Join Lists

In [46]:
```
list1 = ['one', 'two', 'three', 'four']
list2 = ['five', 'six', 'seven', 'eight']
list3 = list1 + list2 # Join two lists by '+' operator
print(list3)
```

```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']
```

In [47]:
```
list1.extend(list2) #Append list2 with list1
list1
```

Out[47]: ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']

List Membership

In [48]:
```
print(list1)
```

```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']
```

In [49]:
```
'one' in list1 # Check if 'one' exist in the list
```

Out[49]: True

In [50]:
```
'ten' in list1 # Check if 'ten' exist in the list
```

Out[50]: False

In [52]:
```
if 'three' in list1: # Check if 'three' exist in the list
    print('Three is present in the list')
else:
    print('Three is not present in the list')
```

```
Three is present in the list
```

In [53]:
```
if 'eleven' in list1: # Check if 'eleven' exist in the list
    print('eleven is present in the list')
else:
    print('eleven is not present in the list')
```

```
eleven is not present in the list
```

Reverse & Sort List

In [54]:
```
print(list1)
```

```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']
```

In [55]:
```
list1.reverse() # Reverse the list
list1
```

Out[55]: ['eight', 'seven', 'six', 'five', 'four', 'three', 'two', 'one']

In [56]:
```
list1 = list1[::-1] # Reverse the list
list1
```

Out[56]: ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']

In [57]:
```
mylist3 = [9,5,2,99,12,88,34]
mylist3.sort() # Sort list in ascending order
print(mylist3)
```

Out[57]: [2, 5, 9, 12, 34, 88, 99]

In [58]:
```
mylist3 = [9,5,2,99,12,88,34]
mylist3.sort(reverse=True) # Sort list in descending order
print(mylist3)
```

```
[99, 88, 34, 12, 9, 5, 2]
```

In [59]:
```
mylist4 = [88,65,33,21,11,98]
sorted(mylist4)
# Returns a new sorted list and doesn't change original
```

Out[59]: [11, 21, 33, 65, 88, 98]

In [60]:
```
mylist4
```

Out[60]: [88, 65, 33, 21, 11, 98]

Loop through a list

In [62]:
```
print(list1)
```

```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']
```

In [63]:
```
for i in list1:
    print(i)
```

```
one
two
three
four
five
six
seven
eight
```

In [64]:
```
for i in enumerate(list1):
    print(i)
```

```
(0, 'one')
(1, 'two')
(2, 'three')
(3, 'four')
(4, 'five')
(5, 'six')
(6, 'seven')
(7, 'eight')
```

Count

In [65]:
```
list10 =['one', 'two', 'three', 'four', 'one', 'one', 'two', 'three']
print(list10)
```

```
['one', 'two', 'three', 'four', 'one', 'one', 'two', 'three']
```

In [66]:
```
list10.count('one') # Number of times item "one" occurred in the list.
```

Out[66]: 3

In [67]:
```
list10.count('two') # Occurence of item 'two' in the list
```

Out[67]: 2

In [68]:
```
list10.count('four') #Occurence of item 'four' in the list
```

Out[68]: 1

All/Any

In [70]:
```
L1 = [1,2,3,4,0]
print(all(L1)) # Will Return false as one value is false (Value 0)
print(any(L1)) # Will Return True as we have items in the list with True value
```

```
False
True
```

In [71]:
```
L2 = [1,2,3,4,True,False]
print(all(L2)) # Returns false as one value is false
print(any(L2)) # Will Return True as we have items in the list with True value
```

```
False
True
```

In [72]:
```
L3 = [1,2,3,True]
print(all(L3)) # Will return True as all items in the list are True
```

```
True
```