List

In [3]:
```
list1 = [] # empty list
```

In [4]:
```
print(type(list1))
```

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

In [6]:
```
list2 = [10,20,30] # list of integer numbers
```

In [7]:
```
list3 = [10.77,30.66,60.89] # list of float numbers
```

In [8]:
```
list4 = ['one','two','three'] # list of strings
```

In [9]:
```
list5 = ['Asif',25,[50,100],[150,90]] # nested list
```

In [10]:
```
list6 = [100,'Asif',17.765] # list of mixed data types
```

In [11]:
```
list7 = ['Asif',25,[50,100],[150,90],{'John','David'}]
```

In [12]:
```
len(list6) # length of list
```

Out[12]:
```
3
```

List Indexing

In [13]:
```
list2[0]
```

Out[13]:
```
10
```

In [14]:
```
list4[0]
```

Out[14]:
```
'one'
```

In [15]:
```
list4[0][0]
```

Out[15]:
```
'o'
```

In [16]:
```
list4[-1]
```

Out[16]:
```
'three'
```

In [18]:
```
list5[-1]
```

Out[18]:
```
[150, 90]
```

List Slicing

In [56]:
```
mylist = ['one' , 'two' , 'three' , 'four' , 'five' , 'six' , 'seven' , 'eight']
```

In [57]:
```
mylist
```

Out[57]:
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']
```

In [58]:
```
mylist[0:3]
```

Out[58]:
```
['one', 'two', 'three']
```

In [59]:
```
mylist[2:5]
```

Out[59]:
```
['three', 'four', 'five']
```

In [60]:
```
mylist[:3] # Return first three items
```

Out[60]:
```
['one', 'two', 'three']
```

In [61]:
```
mylist[:2] # Return first two items
```

Out[61]:
```
['one', 'two']
```

In [62]:
```
mylist[-3:] # Return last three items
```

Out[62]:
```
['six', 'seven', 'eight']
```

In [63]:
```
mylist[-2:] # Return last two items
```

Out[63]:
```
['seven', 'eight']
```

In [64]:
```
mylist[-1] # return last item of list
```

Out[64]:
```
'eight'
```

In [65]:
```
mylist[:] # return whole list
```

Out[65]:
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']
```

Add,Remove & Change Items

In [66]:
```
mylist
```

Out[66]:
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']
```

In [67]:
```
mylist.append('nine') # add an item to the end of the list
mylist
```

Out[67]:
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']
```

In [68]:
```
mylist.insert(9, 'ten')# add item at index location 9
```

In [69]:
```
mylist.insert(1,'ONE') # add item at index location 1
mylist
```

Out[69]:
```
['one',
 'ONE',
 'two',
 'three',
 'four',
 'five',
 'six',
 'seven',
 'eight',
 'nine',
 'ten']
```

In [70]:
```
mylist.remove('ONE')
mylist
```

Out[70]:
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine', 'ten']
```

In [71]:
```
mylist.pop() # Remove last item of  the list
mylist
```

Out[71]:
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']
```

In [72]:
```
mylist.pop(8) # Remove item at index location 8
mylist
```

Out[72]:
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']
```

In [73]:
```
del mylist[7] # Remove item at index location 7
mylist
```

Out[73]:
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven']
```

In [74]:
```
# change value of the string
mylist[0] = 1
mylist[1] = 2
mylist[2] = 3
mylist
```

Out[74]:
```
[1, 2, 3, 'four', 'five', 'six', 'seven']
```

In [75]:
```
mylist.clear() # Empty list / Delete all items in the list
mylist
```

Out[75]:
```
[]
```

In [76]:
```
del mylist # Delete the whole list
mylist
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[76], line 2
      1 del mylist # Delete the whole list
----> 2 mylist

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

copy list

In [77]:
```
mylist = ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine'
```

In [78]:
```
mylist
```

Out[78]:
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']
```

In [79]:
```
mylist1 = mylist # create a new reference "mylist1"
```

In [80]:
```
id(mylist) , id(mylist1) # The address of both mylist & mylist1 will be the same
```

Out[80]:
```
(2004803041792, 2004803041792)
```

In [81]:
```
mylist2 = mylist.copy() # create a copy of the list
```

In [82]:
```
id(mylist2)
```

Out[82]:
```
2004803414784
```

In [83]:
```
mylist[0] = 1
```

In [84]:
```
mylist
```

Out[84]:
```
[1, 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']
```

In [87]:
```
mylist1 # mylist1 will be also impacted as it is pointing to the same list
```

Out[87]:
```
[1, 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']
```

In [88]:
```
mylist2 # Copy of list won't be impacted due to changes made on the original lis
```

Out[88]:
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']
```

Join List

In [89]:
```
list1 = ['one', 'two', 'three', 'four']
list2 = ['five', 'six', 'seven', 'eight']
```

In [90]:
```
list3 = list1 + list2 # join two lists by '+' operator
list3
```

Out[90]:
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']
```

In [91]:
```
list1.extend(list2) # add list2 with list1
list1
```

Out[91]:
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']
```

List Membership

In [92]:
```
list1
```

Out[92]:
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']
```

In [93]:
```
'one' in list1 # check if 'one' exist in the list
```

Out[93]: True

In [94]:
```
'ten' in list1 # check if 'ten' exist in the list
```

Out[94]: False

In [96]:
```
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 [97]:
```
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 [98]:
```
list1
```

Out[98]: ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']

In [99]:
```
list1.reverse() # reverse the list
list1
```

Out[99]: ['eight', 'seven', 'six', 'five', 'four', 'three', 'two', 'one']

In [100…
```
list1 = list1[::-1] # reverse the list
list1
```

Out[100… ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']

In [108…
```
mylist3 = [9,5,2,99,12,88,34]
```

In [109…
```
mylist3
```

Out[109… [9, 5, 2, 99, 12, 88, 34]

In [111…
```
mylist3 = [9,5,2,99,12,88,34]
mylist3.sort() # sort list in ascending order
mylist3
```

Out[111… [2, 5, 9, 12, 34, 88, 99]

In [112…
```
mylist3 = [9,5,2,99,12,88,34]
mylist3.sort(reverse=True) # Sort list in descending order
mylist3
```

Out[112… [99, 88, 34, 12, 9, 5, 2]

In [113…
```
mylist4 = [88,65,33,21,11,98]
sorted(mylist4)
```

Out[113…
```
[11, 21, 33, 65, 88, 98]
```

In [115…
```
mylist4
```

Out[115…
```
[88, 65, 33, 21, 11, 98]
```

Loop through a list

In [116…
```
list1
```

Out[116…
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']
```

In [117…
```
for i in list1:
    print(i)
```

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

In [118…
```
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 [119…
```
list10 = ['one','two','three','four','one','one','two','three']
```

In [120…
```
list10.count('one')
```

Out[120…
```
3
```

In [121…
```
list10.count('two')
```

Out[121…
```
2
```

In [122…
```
list10.count('four')
```

Out[122…
```
1
```

All / Any

In [123…
```
l1 = [1,2,3,4,0]
```

In [125…
```
all(l1) # will return false as one value is false (value 0)
```

Out[125… False

In [126…
```
any(l1) # Will Return True as we have items in the list with True value
```

Out[126… True

In [127…
```
l2 = [1,2,3,4,True,False]
```

In [128…
```
all(l2)
```

Out[128… False

In [ ]:
```
any(l2)
```