List creation

In [1]:
```
list1 = []
```

In [2]:
```
print(type(list1))
```

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

In [3]:
```
list2 = [10, 20, 30] # list of integer numbers
```

In [4]:
```
list3 = [10.11, 20.22, 30.33] # list of float numbers
```

In [5]:
```
list4 =['one', 'two', 'three'] # list of strings
```

In [6]:
```
list5 =['Nisarg', 25, [50, 100], [15, 30]] # Nested lists
```

In [ ]:
```
list6 = [50, 75.5, True, 'Vivek', 1+2j] # List of mixed data types
```

In [7]:
```
list7 = ['Nisarg', 25, [50, 100], [15, 30], {'John', 'David'}]
```

In [8]:
```
len(list7)
```

Out[8]:
```
5
```

List Indexing

In [10]:
```
list2[0] # Retreive first element of the list
```

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

In [11]:
```
list4[0] # Retreive first element of the list
```

Out[11]:
```
'one'
```

In [12]:
```
list4[0][0]  # Nested indexing - Access the first character of the first list eleme
```

Out[12]:
```
'o'
```

In [13]:
```
list4[-1] # Last element of list
```

Out[13]:
```
'three'
```

In [14]:
```
list5[-1] # Last item of list
```

Out[14]:
```
[15, 30]
```

List Slicing

In [17]:
```
mylist = [10, 20, 30, 40, 50, 60, 70, 80]
```

In [18]:
```
mylist[0:3] # Return all item from 0th t0 3rd index (n-1) n = 0, 1, 2, 3...
            # Here n = 3 there for 3-1 = 2
```

Out[18]: [10, 20, 30]

In [19]:
```
mylist[2:5] # Return all item from 2nd to 5th index location
            # excluding the item at index location 5
```

Out[19]: [30, 40, 50]

In [20]:
```
mylist[:5] # Return first five items
```

Out[20]: [10, 20, 30, 40, 50]

In [22]:
```
mylist[-5:] # Return last first five items
```

Out[22]: [40, 50, 60, 70, 80]

In [23]:
```
mylist[-1] # return last item of list
```

Out[23]: 80

In [24]:
```
mylist[:] #Return whole list
```

Out[24]: [10, 20, 30, 40, 50, 60, 70, 80]

Add, Remove & Change items

In [25]:
```
mylist
```

Out[25]: [10, 20, 30, 40, 50, 60, 70, 80]

In [29]:
```
mylist.append(90) # Add an item to the end of list
```

In [32]:
```
mylist
```

Out[32]: [10, 20, 30, 40, 50, 60, 70, 80, 90]

In [33]:
```
mylist.insert(9, 10) # Add item at index location 9
mylist
```

Out[33]: [10, 20, 30, 40, 50, 60, 70, 80, 90, 10]

In [34]:
```
mylist.insert(2, -20) # Add item at index location 2
mylist
```

Out[34]:
```
[10, 20, -20, 30, 40, 50, 60, 70, 80, 90, 10]
```

In [35]:
```
mylist.remove(-20) # Remove item '-20'
mylist
```

Out[35]:
```
[10, 20, 30, 40, 50, 60, 70, 80, 90, 10]
```

In [36]:
```
mylist.pop() # Remove last item of the list
mylist
```

Out[36]:
```
[10, 20, 30, 40, 50, 60, 70, 80, 90]
```

In [37]:
```
mylist.pop(8) # remove item at index 8
mylist
```

Out[37]:
```
[10, 20, 30, 40, 50, 60, 70, 80]
```

In [39]:
```
del mylist[7] # remove item at index 7
mylist
```

Out[39]:
```
[10, 20, 30, 40, 50, 60, 70]
```

In [40]:
```
# Change value of the index
mylist[0] = 'ten'
mylist[1] = 'twenty'
mylist[2] = 'thirty'
mylist
```

Out[40]:
```
['ten', 'twenty', 'thirty', 40, 50, 60, 70]
```

In [41]:
```
mylist.clear() # Empty list / Delete all item in the list
mylist
```

Out[41]:
```
[]
```

In [42]:
```
del mylist # Delete the whole list
mylist
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[42], line 2
      1 del mylist # Delete the whole list
----> 2 mylist

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

Copy list

In [43]:
```
mylist = [1,2,3,4,5,6,7,8,9,10]
```

In [44]:
```
mylist1 = mylist
```

In [45]:
```
id(mylist), id(mylist1) # The add. of mylist & mylist1 will be same
```

Out[45]: (2064375401984, 2064375401984)

In [46]:
```
mylist2 = mylist.copy()
```

In [47]:
```
id(mylist2) # the add. of mylist2 will be different from mylist
```

Out[47]: 2064375428928

In [49]:
```
mylist[0] = 'one'
```

In [50]:
```
mylist
```

Out[50]: ['one', 2, 3, 4, 5, 6, 7, 8, 9, 10]

In [51]:
```
mylist1 # because mylist and mylist1 has same id
```

Out[51]: ['one', 2, 3, 4, 5, 6, 7, 8, 9, 10]

In [52]:
```
mylist2 # diff. id
```

Out[52]: [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

Join Lists

In [53]:
```
list1 = [1,2,3,4]
list2 = [5,6,7,8]
```

In [54]:
```
list3 = list1 + list2 # Join two lists by '+' operator
```

In [55]:
```
list3
```

Out[55]: [1, 2, 3, 4, 5, 6, 7, 8]

In [56]:
```
list1.extend(list2) # Append list2 with list1
list1
```

Out[56]: [1, 2, 3, 4, 5, 6, 7, 8]

List Membership

In [57]:
```
list1
```

Out[57]: [1, 2, 3, 4, 5, 6, 7, 8]

In [58]:
```
1 in list1
```

Out[58]: True

In [59]:
```
10 in list1
```

Out[59]: False

In [60]:
```
if 3 in list1:
    print("3 is present in list1")
else:
    print("3 is not present in list1")
```

```
3 is present in list1
```

In [61]:
```
if 10 in list1:
    print("10 is present in list1")
else:
    print("10 is not present in list1")
```

```
10 is not present in list1
```

Reverse & Sort list

In [62]:
```
list1
```

Out[62]: [1, 2, 3, 4, 5, 6, 7, 8]

In [63]:
```
list1.reverse() # Reverse the list
list1
```

Out[63]: [8, 7, 6, 5, 4, 3, 2, 1]

In [70]:
```
list1[::-1]
```

Out[70]: [1, 2, 3, 4, 5, 6, 7, 8]

In [72]:
```
mylist3 = [3,2,4,1,7,5,8,6]
mylist3.sort() # Sort list in ascending order
mylist3
```

Out[72]: [1, 2, 3, 4, 5, 6, 7, 8]

In [73]:
```
mylist3 = [3,2,4,1,7,5,8,6]
mylist3.sort(reverse=True) # Sort list in descending order
mylist3
```

Out[73]: [8, 7, 6, 5, 4, 3, 2, 1]

In [74]:
```
mylist4 = [11,32,6,567,34,80]
sorted(mylist4) # Returns a new sorted list and dosen't change original list
```

Out[74]:
```
[6, 11, 32, 34, 80, 567]
```

In [75]:
```
mylist4
```

Out[75]:
```
[11, 32, 6, 567, 34, 80]
```

Loop Through a List

In [76]:
```
list1
```

Out[76]:
```
[8, 7, 6, 5, 4, 3, 2, 1]
```

In [77]:
```
for i in list1:
    print(i)
```

```
8
7
6
5
4
3
2
1
```

In [78]:
```
for i in enumerate(list1):
    print(i)
```

```
(0, 8)
(1, 7)
(2, 6)
(3, 5)
(4, 4)
(5, 3)
(6, 2)
(7, 1)
```

Count

In [79]:
```
mylist5 = [1,2,3,1,4,2,4,5,5,7,4,8,4]
mylist5
```

Out[79]:
```
[1, 2, 3, 1, 4, 2, 4, 5, 5, 7, 4, 8, 4]
```

In [80]:
```
mylist5.count(4) # Number of times item 4 ocurred in the list
```

Out[80]:
```
4
```

In [81]:
```
mylist5.count(1)
```

Out[81]: 2

In [82]:
```
mylist5.count(10)
```

Out[82]: 0

In [84]:
```
mylist5.count(8)
```

Out[84]: 1

All / Any

In [85]:
```
L1 = [1,2,3,4,0]
```

In [86]:
```
all(L1) # Will return false as one value is false (Value 0)
```

Out[86]: False

In [87]:
```
any(L1) # Will return True as we have items in the list with True value
```

Out[87]: True

In [88]:
```
L2 = [1,2,3,4,True, False]
```

In [89]:
```
all(L2) # Will return false as one value is false
```

Out[89]: False

In [90]:
```
any(L2) # Will Return True as we have items in the list with True value
```

Out[90]: True

In [91]:
```
L3 = [1,2,3,True]
```

In [92]:
```
all(L3) # Will return True as all items in the list are True
```

Out[92]: True

In [ ]:
```

```