

List

- Group of elements of different types
- Lists are mutable
- Lists are dynamic i.e. size is not fixed

In [1]:

```
1 lst=[1,2,3,4]
```

In [2]:

```
1 print(lst)
```

```
[1, 2, 3, 4]
```

In [3]:

```
1 print(type(lst))
```

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

In [4]:

```
1 lst1=[]
```

In [5]:

```
1 print(lst1)
```

```
[]
```

In [5]:

```
1 lst2=list([1,2,3,True])
```

In [9]:

```
1 print(lst2)
```

```
[1, 2, 3, True]
```

In [11]:

```
1 print(len(lst2))
```

```
4
```

Accessing list elements

In [14]:

```
1 print(lst2[3])
```

True

In [16]:

```
1 for i in range(len(lst)):
2     print(lst[i])
```

1
2
3
4

In [17]:

```
1 lst2
```

Out[17]:

[1, 2, 3, True]

In [18]:

```
1 print(lst2[-1])
```

True

In [19]:

```
1 print(lst2[-3])
```

2

In [22]:

```
1 print(lst[-5])
```

```
-----
IndexError                                Traceback (most recent call last)
<ipython-input-22-c440a57def1c> in <module>()
----> 1 print(lst[-5])
```

IndexError: list index out of range

In [23]:

```
1 lst2
```

Out[23]:

[1, 2, 3, True]

In [25]:

```
1 print(lst[1:3])
```

[2, 3]

In [26]:

```
1 print(lst2[0:3]) #slicing
```

[1, 2, 3]

In [30]:

```
1 print(lst2[1:])
```

[2, 3, True]

In [31]:

```
1 print(lst2[:])
```

[1, 2, 3, True]

In [32]:

```
1 print(lst2[-1:-3])
```

[]

In [34]:

```
1 print(lst2[:-1])
```

[1, 2, 3]

In [35]:

```
1 print(lst2[1:-1:2])
```

[2]

In [37]:

```
1 print(lst2[::2])
```

[1, 3]

In [38]:

```
1 for index,element in enumerate(lst2):  
2     print(index,element)
```

0 1
1 2
2 3
3 True

In [39]:

```
1 for index,element in enumerate(lst2,start=1):
2     print(index,element)
```

```
1 1
2 2
3 3
4 True
```

In [40]:

```
1 lst2[2]='python'
```

In [4]:

```
1 lst2
```

```
-----
NameError                                Traceback (most recent call last)
<ipython-input-4-a6198233248f> in <module>()
----> 1 lst2
```

NameError: name 'lst2' is not defined

In []:

```
1 lst2.append()
```

In [42]:

```
1 lst2.append(2.5)
```

In [43]:

```
1 lst2
```

Out[43]:

```
[1, 2, 'python', True, 2.5]
```

In [45]:

```
1 lst2.append(3.5)
```

In [46]:

```
1 lst2.append([False,'java',5.5])
```

In [47]:

```
1 lst2
```

Out[47]:

```
[1, 2, 'python', True, 2.5, 3.5, [False, 'java', 5.5]]
```

In [50]:

```
1 lst2[6]
```

Out[50]:

```
[False, 'java', 5.5]
```

In [52]:

```
1 lst2[6][0:2]
```

Out[52]:

```
[False, 'java']
```

In [56]:

```
1 lst2.count(2)
```

Out[56]:

```
2
```

In [54]:

```
1 lst2.append(2)
```

In [55]:

```
1 lst2
```

Out[55]:

```
[1, 2, 'python', True, 2.5, 3.5, [False, 'java', 5.5], 2]
```

In [58]:

```
1 lst2.extend(['C++', 'CNS', 'IP'])
```

In [6]:

```
1 lst2.extend(3)
```

```
-----  
TypeError                                Traceback (most recent call last)  
<ipython-input-6-23590288b0ca> in <module>()  
----> 1 lst2.extend(3)
```

TypeError: 'int' object is not iterable

In [59]:

```
1 lst2
```

Out[59]:

```
[1, 2, 'python', True, 2.5, 3.5, [False, 'java', 5.5], 2, 'C++', 'CNS', 'I  
P']
```

In [60]:

```
1 lst2.index(2)
```

Out[60]:

```
1
```

In [61]:

```
1 lst2.insert(3,7+8j)
```

In [63]:

```
1 print(lst2)
```

```
[1, 2, 'python', (7+8j), True, 2.5, 3.5, [False, 'java', 5.5], 2, 'C++', 'CN  
S', 'IP']
```

In [71]:

```
1 lst2.pop(12)
```

```
-----  
IndexError                                Traceback (most recent call last)  
<ipython-input-71-488344b10554> in <module>()  
----> 1 lst2.pop(12)
```

IndexError: pop index out of range

In [67]:

```
1 lst2
```

Out[67]:

```
[1, 2, 'python', (7+8j), True, 2.5, 3.5, [False, 'java', 5.5], 2, 'CNS']
```

In [66]:

```
1 lst2.pop(9)
```

Out[66]:

```
'C++'
```

In [70]:

```
1 lst2.remove(10)
```

```
-----  
ValueError                                Traceback (most recent call last)  
<ipython-input-70-d34efa2e5625> in <module>()  
----> 1 lst2.remove(10)
```

ValueError: list.remove(x): x not in list

In [69]:

```
1 lst2
```

Out[69]:

```
[1, 'python', (7+8j), True, 2.5, 3.5, [False, 'java', 5.5], 2, 'CNS']
```

In [72]:

```
1 lst2.reverse()
```

In [73]:

```
1 lst2
```

Out[73]:

```
['CNS', 2, [False, 'java', 5.5], 3.5, 2.5, True, (7+8j), 'python', 1]
```

In [79]:

```
1 lst.sort(reverse=True)
```

In [80]:

```
1 lst
```

Out[80]:

```
[4, 3, 2, 1]
```

In [81]:

```
1 lst3 = lst2.copy()
```

In [82]:

```
1 lst3
```

Out[82]:

```
['CNS', 2, [False, 'java', 5.5], 3.5, 2.5, True, (7+8j), 'python', 1]
```

In [83]:

```
1 lst2[1]=10
```

In [84]:

```
1 lst2
```

Out[84]:

```
['CNS', 10, [False, 'java', 5.5], 3.5, 2.5, True, (7+8j), 'python', 1]
```

In [85]:

```
1 lst3
```

Out[85]:

```
['CNS', 2, [False, 'java', 5.5], 3.5, 2.5, True, (7+8j), 'python', 1]
```

In [86]:

```
1 import copy
```

In [87]:

```
1 lst4 = copy.deepcopy(lst2)
```

In [88]:

```
1 lst4
```

Out[88]:

```
['CNS', 10, [False, 'java', 5.5], 3.5, 2.5, True, (7+8j), 'python', 1]
```


In [89]:

```
1 lst2[1]=20
```

In [90]:

```
1 lst2
```

Out[90]:

```
['CNS', 20, [False, 'java', 5.5], 3.5, 2.5, True, (7+8j), 'python', 1]
```

In [91]:

```
1 lst4
```

Out[91]:

```
['CNS', 10, [False, 'java', 5.5], 3.5, 2.5, True, (7+8j), 'python', 1]
```

In [92]:

```
1 lst4=lst2
```

In [93]:

```
1 lst4
```

Out[93]:

```
['CNS', 20, [False, 'java', 5.5], 3.5, 2.5, True, (7+8j), 'python', 1]
```

In [94]:

```
1 lst2.clear()
```

In [95]:

```
1 lst2
```

Out[95]:

```
[]
```

In [96]:

```
1 print(dir(list))
```

```
['__add__', '__class__', '__contains__', '__delattr__', '__delitem__', '__di  
r__', '__doc__', '__eq__', '__format__', '__ge__', '__getattribute__', '__ge  
titem__', '__gt__', '__hash__', '__iadd__', '__imul__', '__init__', '__init_  
subclass__', '__iter__', '__le__', '__len__', '__lt__', '__mul__', '__ne__',  
 '__new__', '__reduce__', '__reduce_ex__', '__repr__', '__reversed__', '__rmu  
l__', '__setattr__', '__setitem__', '__sizeof__', '__str__', '__subclasshook  
__', 'append', 'clear', 'copy', 'count', 'extend', 'index', 'insert', 'pop',  
 'remove', 'reverse', 'sort']
```

In [97]:

```
1 len(lst)
```

Out[97]:

4

In [98]:

```
1 lst.__len__()
```

Out[98]:

4

In [99]:

```
1 print(lst)
```

[4, 3, 2, 1]