Data Structure

List

In [3]:
```
l=[]
l
```

Out[3]: []

In [4]:
```
type(l)
```

Out[4]: list

In [5]:
```
l
```

Out[5]: []

In [6]:
```
l.append(10)
l
```

Out[6]: [10]

In [7]:
```
l.append(20)
l.append(30)
l
```

Out[7]: [10, 20, 30]

In [8]:
```
l.append(2.3)
l
```

Out[8]: [10, 20, 30, 2.3]

In [9]:
```
l.append(1+2j)
l.append(True)
l.append('nit')
l
```

Out[9]: [10, 20, 30, 2.3, (1+2j), True, 'nit']

In [10]:
```
len(l)
```

Out[10]: 7

In [11]:
```
l.append(10)
l
```

Out[11]: [10, 20, 30, 2.3, (1+2j), True, 'nit', 10]

In [12]:
```
l.remove(10)
l
```

Out[12]: [20, 30, 2.3, (1+2j), True, 'nit', 10]

In [13]:
```
l.remove(10)
l
```

Out[13]: [20, 30, 2.3, (1+2j), True, 'nit']

In [14]:
```
l
```

Out[14]: [20, 30, 2.3, (1+2j), True, 'nit']

In [15]:
```
l1=l.copy()
l1
```

Out[15]: [20, 30, 2.3, (1+2j), True, 'nit']

In [16]:
```
l==l1
```

Out[16]: True

In [17]:
```
l
```

Out[17]: [20, 30, 2.3, (1+2j), True, 'nit']

In [18]:
```
l.count(20)
```

Out[18]: 1

In [19]:
```
l.append(20)
l
```

Out[19]: [20, 30, 2.3, (1+2j), True, 'nit', 20]

In [20]:
```
l.count(30)
```

Out[20]: 1

In [21]:
```
l
```

Out[21]: [20, 30, 2.3, (1+2j), True, 'nit', 20]

In [22]:
```
l2=[]
l2
```

Out[22]: []

In [23]:
```
l2.append(1)
l2.append(2.3)
l2.append(True)
l2.append(1+2j)
l2.append('nit')
```

In [24]:
```
l2
```

Out[24]: [1, 2.3, True, (1+2j), 'nit']

In [25]:
```
l3=l2.copy()
l3
```

Out[25]: [1, 2.3, True, (1+2j), 'nit']

In [26]:
```
l2
```

Out[26]: [1, 2.3, True, (1+2j), 'nit']

In [27]:
```
l3
```

Out[27]: [1, 2.3, True, (1+2j), 'nit']

In [28]:
```
len(l3)
```

Out[28]: 5

In [29]:
```
l3.clear()
```

In [30]:
```
len(l3)
```

Out[30]: 0

In [31]:
```
del l3
```

In [32]:
```
l2
```

Out[32]: [1, 2.3, True, (1+2j), 'nit']

In [33]:
```
l2.remove(2.3)
l2
```

Out[33]: [1, True, (1+2j), 'nit']

In [34]:
```
l2.append(1)
l2
```

Out[34]: [1, True, (1+2j), 'nit', 1]

In [35]:
```
l3=[]
l3.append(10)
l3
```

Out[35]: [10]

In [36]:
```
l2
```

Out[36]: [1, True, (1+2j), 'nit', 1]

In [37]:
```
l3.extend(l2)
l3
```

Out[37]: [10, 1, True, (1+2j), 'nit', 1]

In [38]:
```
l3
```

Out[38]: [10, 1, True, (1+2j), 'nit', 1]

In [39]:
```
l3.index(1+2j)
```

Out[39]: 3

In [40]:
```
l2
```

Out[40]: [1, True, (1+2j), 'nit', 1]

In [41]:
```
l3
```

Out[41]: [10, 1, True, (1+2j), 'nit', 1]

In [42]:
```
l2
```

Out[42]: [1, True, (1+2j), 'nit', 1]

In [43]:
```
l2.index('nit')
```

Out[43]: 3

In [44]:
```
l2
```

Out[44]: [1, True, (1+2j), 'nit', 1]

In [45]:
```
l3
```

Out[45]: [10, 1, True, (1+2j), 'nit', 1]

In [46]:
```
l3.insert(5,'technology',)
l3
```

Out[46]: [10, 1, True, (1+2j), 'nit', 'technology', 1]

In [47]:
```
l3.insert(3,False)
l3
```

Out[47]: [10, 1, True, False, (1+2j), 'nit', 'technology', 1]

In [48]:
```
l3.pop()
```

Out[48]: 1

In [49]:
```
l3.pop(4)
```

Out[49]: (1+2j)

In [50]:
```
l3
```

Out[50]: [10, 1, True, False, 'nit', 'technology']

In [51]:
```
l3.pop(1)
```

Out[51]: 1

In [52]:
```
l3
```

Out[52]:
```
[10, True, False, 'nit', 'technology']
```

In [53]:
```
l4=[10,100,3,45,76,24]
l4
```

Out[53]:
```
[10, 100, 3, 45, 76, 24]
```

In [54]:
```
l4.sort()
l4
```

Out[54]:
```
[3, 10, 24, 45, 76, 100]
```

In [55]:
```
l4.sort(reverse=True)
l4
```

Out[55]:
```
[100, 76, 45, 24, 10, 3]
```

In [56]:
```
l5=['z','m','c','w']
l5
```

Out[56]:
```
['z', 'm', 'c', 'w']
```

In [57]:
```
l5.sort()
```

In [58]:
```
l5
```

Out[58]:
```
['c', 'm', 'w', 'z']
```

In [59]:
```
l6=[1,2,3,'a','z','w']
l6
```

Out[59]:
```
[1, 2, 3, 'a', 'z', 'w']
```

In [60]:
```
l2
```

Out[60]:
```
[1, True, (1+2j), 'nit', 1]
```

In [61]:
```
l3
```

Out[61]:
```
[10, True, False, 'nit', 'technology']
```

In [62]:
```
l3.reverse()
```

In [63]:
```
l3
```

Out[63]:
```
['technology', 'nit', False, True, 10]
```

In [64]:
```
l2
```

Out[64]:
```
[1, True, (1+2j), 'nit', 1]
```

In [65]:
```
l2[3]
```

Out[65]: 'nit'

In [66]:
```
print(l2[3][0])
print(l2[3][1])
print(l2[3][2])
```

```
n
i
t
```

In [67]:
```
l3
```

Out[67]: ['technology', 'nit', False, True, 10]

In [68]:
```
l3[2]=0
```

In [69]:
```
l3
```

Out[69]: ['technology', 'nit', 0, True, 10]

In [70]:
```
l3[1]='mit'
l3
```

Out[70]: ['technology', 'mit', 0, True, 10]

In [71]:
```
for i in l3:
    print(i)
```

```
technology
mit
0
True
10
```

In [72]:
```
l6=['sbi','icici']
l7=['hdfc','kotak']
```

In [73]:
```
family_bank=l6+l7
family_bank
```

Out[73]: ['sbi', 'icici', 'hdfc', 'kotak']

In [74]:
```
l3
```

Out[74]: ['technology', 'mit', 0, True, 10]

In [75]:
```
for i in enumerate (l3):
    print(i)
```

```
(0, 'technology')
(1, 'mit')
(2, 0)
(3, True)
(4, 10)
```

In [76]:
```
l
```

Out[76]: [20, 30, 2.3, (1+2j), True, 'nit', 20]

In [77]:
```
l[:]
```

Out[77]: [20, 30, 2.3, (1+2j), True, 'nit', 20]

In [78]:
```
l[::-1]
```

Out[78]: [20, 'nit', True, (1+2j), 2.3, 30, 20]

In [79]:
```
l
```

Out[79]: [20, 30, 2.3, (1+2j), True, 'nit', 20]

In [80]:
```
l[::-2]
```

Out[80]: [20, True, 2.3, 20]

In [81]:
```
l
```

Out[81]: [20, 30, 2.3, (1+2j), True, 'nit', 20]

In [82]:
```
l[2:]
```

Out[82]: [2.3, (1+2j), True, 'nit', 20]

In [83]:
```
l[:7]
```

Out[83]: [20, 30, 2.3, (1+2j), True, 'nit', 20]

In [84]:
```
l[0:7:2]
```

Out[84]: [20, 2.3, True, 20]

List Data Structure Completed

Tuple

In [86]:
```
t=()
t
```

Out[86]: ()

In [87]:
```
type(t)
```

Out[87]: tuple

In [88]:
```
t1=tuple()
type(t1)
```

Out[88]: tuple

In [89]:
```
t=(10,10,20,30)
t
```

Out[89]: (10, 10, 20, 30)

In [90]:
```
icici=(1234,'cizp','4thmar')
icici
```

Out[90]: (1234, 'cizp', '4thmar')

In [91]:
```
t
```

Out[91]: (10, 10, 20, 30)

In [92]:
```
t[0]
```

Out[92]: 10

In [93]:
```
t1=(10,1.2,'nit',1+2j,True)
t1
```

Out[93]: (10, 1.2, 'nit', (1+2j), True)

In [94]:
```
t1.count(10)
```

Out[94]: 1

In [95]:
```
t1.index('nit')
```

Out[95]: 2

In [96]:
```
t1
```

Out[96]: (10, 1.2, 'nit', (1+2j), True)

In [97]:
```
for i in t1:
    print(i)
```

```
10
1.2
nit
(1+2j)
True
```

In [98]:
```
for i in enumerate(t1):
    print(i)
```

```
(0, 10)
(1, 1.2)
(2, 'nit')
(3, (1+2j))
(4, True)
```

In [99]:
```
t
```

Out[99]: (10, 10, 20, 30)

In [100…
```
t[:]
```

Out[100… (10, 10, 20, 30)

In [101…
```
t4=t*4
t4
```

Out[101… (10, 10, 20, 30, 10, 10, 20, 30, 10, 10, 20, 30, 10, 10, 20, 30)

In [102…
```
l
```

Out[102… [20, 30, 2.3, (1+2j), True, 'nit', 20]

In [103…
```
l3
```

Out[103… ['technology', 'mit', 0, True, 10]

In [104…
```
t
```

Out[104… (10, 10, 20, 30)

In [105…
```
print(id(l))
print(id(t))
```

```
2499664531200
2497575409984
```

Tuple Completed

Set

In [107…
```
s={}
s
```

Out[107… {}

In [108…
```
type(s)
```

Out[108… dict

In [109…
```
s1=set()
type(s1)
```

Out[109… set

In [110…
```
s1={100,20,3,15,47}
s1
```

Out[110… {3, 15, 20, 47, 100}

In [111…
```
s2={2.3,4.5,1.3}
s2
```

Out[111… {1.3, 2.3, 4.5}

In [112…
```
s3={'z','m','a','x'}
s3
```

Out[112… {'a', 'm', 'x', 'z'}

In [113…
```
s4={10.,2.3,'a',5,6.7}
s4
```

Out[113…
```
{10.0, 2.3, 5, 6.7, 'a'}
```

In [114…
```
print(s1)
print(s2)
print(s3)
print(s4)
```

```
{3, 100, 20, 47, 15}
{1.3, 2.3, 4.5}
{'x', 'z', 'a', 'm'}
{2.3, 'a', 5, 6.7, 10.0}
```

In [115…
```
for i in enumerate(s1):
    print(i)
```

```
(0, 3)
(1, 100)
(2, 20)
(3, 47)
(4, 15)
```

In [116…
```
s4
```

Out[116…
```
{10.0, 2.3, 5, 6.7, 'a'}
```

In [117…
```
s4.add(10)
s4.add(20)
s4.add(2.3)
s4
```

Out[117…
```
{10.0, 2.3, 20, 5, 6.7, 'a'}
```

In [118…
```
s1.add(4)
s1
```

Out[118…
```
{3, 4, 15, 20, 47, 100}
```

In [119…
```
s1
```

Out[119…
```
{3, 4, 15, 20, 47, 100}
```

In [120…
```
s2
```

Out[120…
```
{1.3, 2.3, 4.5}
```

In [121…
```
s3
```

Out[121…
```
{'a', 'm', 'x', 'z'}
```

In [122…
```
s4
```

Out[122…
```
{10.0, 2.3, 20, 5, 6.7, 'a'}
```

In [123…
```
len(s4)
```

Out[123… 6

In [124…
```
s4.clear()
```

In [125…
```
s4
```

Out[125… set()

In [126…
```
len(s4)
```

Out[126… 0

In [127…
```
del s4
```

In [128…
```
s1
```

Out[128… {3, 4, 15, 20, 47, 100}

In [129…
```
s4=s1.copy()
s4
```

Out[129… {3, 4, 15, 20, 47, 100}

In [130…
```
s1==s4
```

Out[130… True

In [131…
```
s1
```

Out[131… {3, 4, 15, 20, 47, 100}

In [132…
```
s1.remove(100)
s1
```

Out[132… {3, 4, 15, 20, 47}

In [133…
```
s2
```

Out[133… {1.3, 2.3, 4.5}

In [134…
```
s3
```

Out[134… {'a', 'm', 'x', 'z'}

In [135…
```
s3.pop()
```

Out[135… 'x'

In [136…
```
s2
```

Out[136… {1.3, 2.3, 4.5}

In [137…
```
s2.pop()
```

Out[137… 1.3

In [138…
```
s4
```
Out[138… {3, 4, 15, 20, 47, 100}

In [139…
```
s4.pop()
```
Out[139… 3

In [140…
```
s3
```
Out[140… {'a', 'm', 'z'}

In [141…
```
'm' in s3
```
Out[141… True

In [142…
```
a={1,2,3,4,5}
b={4,5,6,7,8}
c={8,9,10}
```

In [143…
```
type(c)
```
Out[143… set

In [144…
```
a.union(b)
```
Out[144… {1, 2, 3, 4, 5, 6, 7, 8}

In [145…
```
print(a)
print(b)
print(c)
```
```
{1, 2, 3, 4, 5}
{4, 5, 6, 7, 8}
{8, 9, 10}
```

In [146…
```
d_union=a.union(b)
d_union
```
Out[146… {1, 2, 3, 4, 5, 6, 7, 8}

In [147…
```
print(a)
print(b)
print(c)
print(d_union)
```
```
{1, 2, 3, 4, 5}
{4, 5, 6, 7, 8}
{8, 9, 10}
{1, 2, 3, 4, 5, 6, 7, 8}
```

In [148…
```
b.union(a,c)
```
Out[148… {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}

In [149…
```
a|b
```

Out[149… {1, 2, 3, 4, 5, 6, 7, 8}

In [150…
```
a|b|c
```

Out[150… {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}

In [151…
```
print(a)
print(b)
print(c)
print(d_union)
```

```
{1, 2, 3, 4, 5}
{4, 5, 6, 7, 8}
{8, 9, 10}
{1, 2, 3, 4, 5, 6, 7, 8}
```

In [152…
```
c.update(b)
```

In [153…
```
print(c)
```

```
{4, 5, 6, 7, 8, 9, 10}
```

In [154…
```
a1={1,2,3,4,5}
b1={4,5,6,7,8}
c1={8,9,10}
```

In [155…
```
a1.intersection(b1)
```

Out[155… {4, 5}

In [156…
```
b1&c1
```

Out[156… {8}

In [157…
```
a2={1,2,3,4,5}
b2={4,5,6,7,8}
c2={8,9,10}
```

In [158…
```
a2-b2
```

Out[158… {1, 2, 3}

In [159…
```
b2-a2
```

Out[159… {6, 7, 8}

In [160…
```
a2-c2
```

Out[160… {1, 2, 3, 4, 5}

In [161…
```
a2={1,2,3,4,5}
b2={4,5,6,7,8}
c2={8,9,10}
```

In [162…
```
b2.difference(c2)
```

Out[162… {4, 5, 6, 7}

In [163…
```
a2.symmetric_difference(b2)
```
Out[163… {1, 2, 3, 6, 7, 8}

In [164…
```
b2.symmetric_difference(c2)
```
Out[164… {4, 5, 6, 7, 9, 10}

In [165…
```
a
```
Out[165… {1, 2, 3, 4, 5}

In [166…
```
for i in enumerate (a):
    print(i)
```
```
(0, 1)
(1, 2)
(2, 3)
(3, 4)
(4, 5)
```

In [167…
```
a5={1,2,3,4,5,6,7,8,9,}
b5={3,4,5,6,7,8}
c5={10,20,30,40}
```

In [168…
```
a5.issubset(b5)
```
Out[168… False

In [169…
```
a5.issuperset(b5)
```
Out[169… True

In [170…
```
a5.isdisjoint(c5)
```
Out[170… True

In [171…
```
b.issubset(a5)
```
Out[171… True

In [172…
```
b5.issubset(a5)
```
Out[172… True

In [173…
```
b5.issubset(c5)
```
Out[173… False

In [174…
```
b5.isdisjoint(c5)
```
Out[174… True

In [175…
```
a6={1,2,3,4}
b6={5,6,7,8}
c6={10,20,30,40}
```

In [176…
```
a6.issuperset(b6)
```
Out[176…
```
False
```
In [177…
```
a
```
Out[177…
```
{1, 2, 3, 4, 5}
```
In [178…
```
sum(a)
```
Out[178…
```
15
```
In [179…
```
max(a)
```
Out[179…
```
5
```
In [180…
```
min(a)
```
Out[180…
```
1
```
In [181…
```
len(a)
```
Out[181…
```
5
```
In [182…
```
list(enumerate(a))
```
Out[182…
```
[(0, 1), (1, 2), (2, 3), (3, 4), (4, 5)]
```
Set Datastructure Completed

Dictionary Dict

In [184…
```
d={}
type(d)
```
Out[184…
```
dict
```
In [185…
```
d={1:'one',2:'two',3:'three',4:'four',5:'five'}
d
```
Out[185…
```
{1: 'one', 2: 'two', 3: 'three', 4: 'four', 5: 'five'}
```
In [186…
```
d1={'six':6,'seven':7,'eight':8,'nine':9,'ten':10}
d1
```
Out[186…
```
{'six': 6, 'seven': 7, 'eight': 8, 'nine': 9, 'ten': 10}
```
In [187…
```
print(len(d))
print(len(d1))
```
```
5
5
```
In [188…
```
d
```

Out[188… {1: 'one', 2: 'two', 3: 'three', 4: 'four', 5: 'five'}

In [189…
```
d[1]
```

Out[189… 'one'

In [190…
```
d1['six']
```

Out[190… 6

In [191…
```
d1
```

Out[191… {'six': 6, 'seven': 7, 'eight': 8, 'nine': 9, 'ten': 10}

In [192…
```
d.keys()
```

Out[192… dict_keys([1, 2, 3, 4, 5])

In [193…
```
d.values()
```

Out[193… dict_values(['one', 'two', 'three', 'four', 'five'])

In [194…
```
d2={1:2,2.3:4.8,'nit':'nit',True:False,1+2j:4+5j}
d2
```

Out[194… {1: False, 2.3: 4.8, 'nit': 'nit', (1+2j): (4+5j)}

In [195…
```
d3={10:'ten',9.0:'nine'}
d3
```

Out[195… {10: 'ten', 9.0: 'nine'}

In [196…
```
d
```

Out[196… {1: 'one', 2: 'two', 3: 'three', 4: 'four', 5: 'five'}

In [197…
```
d.items()
```

Out[197… dict_items([(1, 'one'), (2, 'two'), (3, 'three'), (4, 'four'), (5, 'five')])

In [198…
```
len(d.items())
```

Out[198… 5

In [199…
```
id(d)
```

Out[199… 2497576033088

In [200…
```
a
```

Out[200… {1, 2, 3, 4, 5}

In [201…
```
d
```

Out[201… {1: 'one', 2: 'two', 3: 'three', 4: 'four', 5: 'five'}

In [202…
```
d.pop(1)
```

Out[202…
```
'one'
```

In [203…
```
d[1]='one'
d1
```

Out[203…
```
{'six': 6, 'seven': 7, 'eight': 8, 'nine': 9, 'ten': 10}
```

In [204…
```
d
```

Out[204…
```
{2: 'two', 3: 'three', 4: 'four', 5: 'five', 1: 'one'}
```

In [205…
```
for i in d:
    print(i)
```

```
2
3
4
5
1
```

In [206…
```
for i in d:
    print(i,':',d[i])
```

```
2 : two
3 : three
4 : four
5 : five
1 : one
```

Python Data Structure Completed

In [ ]: