list data structure

In [14]:
```
x = ' hello world '
x
```

Out[14]:
```
' hello world '
```

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

Out[16]:
```
[]
```

In [18]:
```
type(l)
```

Out[18]:
```
list
```

In [19]:
```
len(l)
```

Out[19]:
```
0
```

In [20]:
```
len()
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[20], line 1
----> 1 len()

TypeError: len() takes exactly one argument (0 given)
```

In [21]:
```
l.append(10)
l
```

Out[21]:
```
[10]
```

In [22]:
```
l.append(1)
l
```

Out[22]:
```
[10, 1]
```

In [23]:
```
l.append(10,20,30,40)
l
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[23], line 1
----> 1 l.append(10,20,30,40)
      2 l

TypeError: list.append() takes exactly one argument (4 given)
```

In [29]:
```
l.append(10)
l.append(20)
l.append(30)
l.append(40)
l
```

Out[29]: [10, 1, 10, 20, 30, 40]

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [24]:
```
l1 = []
l1
```

Out[24]: []

In [27]:
```
l1.append(25)
l1.append(2.5)
l1.append(True)
l1.append("str")
l1.append(10 + 20j)
l1.append([50,60])
l1
```

Out[27]: [25, 2.5, True, 'str', (10+20j), [50, 60]]

In [30]:
```
l
```

Out[30]: [10, 1, 10, 20, 30, 40]

In [32]:
```
l1
```

Out[32]: [25, 2.5, True, 'str', (10+20j), [50, 60]]

In [33]:
```
print(id(l1))
```

```
2326411302208
```

In [34]:
```
print(id(l))
```

```
2326398101504
```

In [35]:
```
print(len(l1))
```

```
6
```

In [36]:
```
print(len(l))
```

```
6
```

In [39]:
```
l = l1.copy()
```

In [40]:
```
l1
```

Out[40]:
```
[25, 2.5, True, 'str', (10+20j), [50, 60]]
```

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

In [41]:
```
l
```

Out[41]:
```
[25, 2.5, True, 'str', (10+20j), [50, 60]]
```

In [42]:
```
l == l1
```

Out[42]:
```
True
```

In [43]:
```
l != l1
```

Out[43]:
```
False
```

In [47]:
```
l1 ==1
```

Out[47]:
```
False
```

In [48]:
```
l1 == 0
```

Out[48]:
```
False
```

In [49]:
```
print(id(l)) == print(id(l1))
```

```
2326411907840
2326411302208
```

Out[49]:
```
True
```

In [50]:
```
l
```

Out[50]:
```
[25, 2.5, True, 'str', (10+20j), [50, 60]]
```

In [62]:
```
l
```

Out[62]:
```
['str', (10+20j), [50, 60]]
```

In [ ]:
```
l.remove( 'str')
```

In [63]:
```
l
```

Out[63]:
```
['str', (10+20j), [50, 60]]
```

In [64]:
```
l.remove(10+20j)
l
```

Out[64]:
```
['str', [50, 60]]
```

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

Out[74]:
```
[]
```

In [75]:
```
l3 = [10,20,30,40,50,60,70,80]
l3
```

Out[75]:
```
[10, 20, 30, 40, 50, 60, 70, 80]
```

In [80]:
```
l3.remove(10)
l3
```

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

In [81]:
```
l3.remove(30)
l3
```

Out[81]:
```
[20, 50, 60, 70, 80]
```

In [82]:
```
l3.remove(80)
l3
```

Out[82]:
```
[20, 50, 60, 70]
```

In [ ]:
```

```

In [70]:
```
l.remove('str')
l
```

Out[70]:
```
[[50, 60]]
```

In [73]:
```
l.remove(50)
l
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
Cell In[73], line 1
----> 1 l.remove(50)
      2 l

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

In [83]:
```
l4 = []
l4
```

Out[83]:
```
[]
```

In [85]:
```
l4.append(10)
l4
```

Out[85]: [10]

In [86]:
```
l5 =  []
l5
```

Out[86]: []

In [88]:
```
l5 = [10,20,30,40,50,60,80,900]
l5
```

Out[88]: [10, 20, 30, 40, 50, 60, 80, 900]

In [92]:
```
l5.remove(60)
l5
```

Out[92]: [10, 20, 40, 50, 80]

In [93]:
```
l5
```

Out[93]: [10, 20, 40, 50, 80]

In [ ]:
```

```

string indexing

In [95]:
```
str = 'vamsi reddy'
str
```

Out[95]: 'vamsi reddy'

In [96]:
```
print(len(str))
```

```
11
```

In [97]:
```
print(type(str))
```

```
<class 'str'>
```

In [98]:
```
print(id(str))
```

```
2326411666544
```

In [99]:
```
str[7]
```

Out[99]: 'e'

In [91]:
```
l5.remove(900)
l5
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
Cell In[91], line 1
----> 1 l5.remove(900)
      2 l5

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

In [100…
```
str[0]
```
Out[100…
```
'v'
```

In [101…
```
str[4]
```
Out[101…
```
'i'
```

In [102…
```
str[5]
```
Out[102…
```
' '
```

In [103…
```
str[-4]
```
Out[103…
```
'e'
```

In [104…
```
str[-1]
```
Out[104…
```
'y'
```

In [105…
```
str[-2]
```
Out[105…
```
'd'
```

In [106…
```
str
```
Out[106…
```
'vamsi reddy'
```

In [108…
```
for i in str:
    print(i)
```
```
v
a
m
s
i

r
e
d
d
y
```

In [109…
```
str
```

Out[109… 'vamsi reddy'

In [111…
```
s = 'abcdefghijklm'
s
```

Out[111… 'abcdefghijklm'

In [112…
```
print(len(s))
```

```
13
```

In [113…
```
print(id(s))
```

```
2326411729968
```

In [114…
```
print(type(s))
```

```
<class 'str'>
```

In [120…
```
s[2:9]
```

Out[120… 'cdefghi'

In [126…
```
s [-3 : -9:-1]
```

Out[126… 'kjihgf'

In [127…
```
s[1:-4]
```

Out[127… 'bcdefghi'

In [128…
```
s[0:-5]
```

Out[128… 'abcdefgh'

In [131…
```
step_indexing = [1,2,3,4,5,6,7,8,9,10]
step_indexing
```

Out[131… [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

In [138…
```
step_indexing[1:10:2]
```

Out[138… [2, 4, 6, 8, 10]

In [134…

Out[134… [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

In [143…
```
step_indexing[1:10:3]
```

Out[143… [2, 5, 8]

In [145…
```
step_indexing[3:10:2]
```

Out[145… [4, 6, 8, 10]

In [146…
```
step_indexing[0:10:2]
```

Out[146… [1, 3, 5, 7, 9]

In [148…
```
step_indexing[0:10:4]
```

Out[148… [1, 5, 9]

In [149…
```
step_indexin[0:]
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[149], line 1
----> 1 step_indexin[0:]

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

In [150…
```
step_indexing[:]
```

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

In [152…
```
l = [10,20,30,40]
l
```

Out[152… [10, 20, 30, 40]

In [153…
```
l.reverse()
l
```

Out[153… [40, 30, 20, 10]

In [155…
```
l3 = l.reverse()
l3
```

In [156…
```
l
```

Out[156… [40, 30, 20, 10]

In [157…
```
l3
```

In [158…
```
l=[10,20,30,40]l3 =l.reverse()l3
l=[40,30,30,20,10]
```

```
  Cell In[158], line 1
    l=[10,20,30,40]l3 =l.reverse()l3
                      ^
SyntaxError: invalid syntax
```

In [159…
```
l = [10,20,30,40,50]
l
```

Out[159… [10, 20, 30, 40, 50]

In [160…
```
l2 = l[::-1}
print(l)
print(l2)
```

```
  Cell In[160], line 1
    l2 = l[::-1}
               ^
SyntaxError: closing parenthesis '}' does not match opening parenthesis '['
```

list functions

In [161…
```
l = [] #empty list
l
```

Out[161… []

In [162…
```
l = [40,30,20,10,40,30,20]
l
```

Out[162… [40, 30, 20, 10, 40, 30, 20]

In [164…
```
l1 = [70,2.3,True,'10+20j',[1,2,3]]
```

In [165…
```
l1
```

Out[165… [70, 2.3, True, '10+20j', [1, 2, 3]]

In [166…
```
l2 = l1.copy()
l2
```

Out[166… [70, 2.3, True, '10+20j', [1, 2, 3]]

In [169…
```
l2.count(70)
l2
```

Out[169… [70, 2.3, True, '10+20j', [1, 2, 3]]

In [170…
```
l2.count(70)
l2
```

Out[170… [70, 2.3, True, '10+20j', [1, 2, 3]]

In [171…
```
l
```

Out[171… [40, 30, 20, 10, 40, 30, 20]

In [172…
```
l2.pop(-1)
l2
```

Out[172… [70, 2.3, True, '10+20j']

In [173…
```
l2.pop(3)
l2
```
Out[173… [70, 2.3, True]

In [174…
```
l2.pop(2)
l2
```
Out[174… [70, 2.3]

In [175…
```
l2.pop(0)
l2
```
Out[175… [2.3]

In [176…
```
l2.count(70)
l2
```
Out[176… [2.3]

In [178…
```
l3 =[25,20,45,60,79,30,50]
l3
```
Out[178… [25, 20, 45, 60, 79, 30, 50]

In [179…
```
l3[:5]
```
Out[179… [25, 20, 45, 60, 79]

In [180…
```
l3[0:]
l3
```
Out[180… [25, 20, 45, 60, 79, 30, 50]

In [182…
```
l3[0:4:6]
l3
```
Out[182… [25, 20, 45, 60, 79, 30, 50]

In [185…
```
l3 [:5]
```
Out[185… [25, 20, 45, 60, 79]

In [186…
```
l
```
Out[186… [40, 30, 20, 10, 40, 30, 20]

In [187…
```
l[::-1]
```
Out[187… [20, 30, 40, 10, 20, 30, 40]

In [188…
```
l[::-2]
```

Out[188… [20, 40, 20, 40]

In [189…
```
l.index(20)
```

Out[189… 2

In [193…
```
id(l)
```

Out[193… 2326413797312

In [194…
```
type(l)
```

Out[194… list

In [195…
```
len(l)
```

Out[195… 7

In [198…
```
l.clear()
l
```

Out[198… []

In [201…
```
id(l)
```

Out[201… 2326413797312

In [206…
```
l3 = []
l3
```

Out[206… []

In [219…
```
l3 = [70,70,2.3,True ,10+20j,[1,2,3]]
l3
```

Out[219… [70, 70, 2.3, True, (10+20j), [1, 2, 3]]

In [210…
```
l3 = l1.copy()
l1
```

Out[210… [70, 2.3, True, '10+20j', [1, 2, 3]]

In [212…
```
l3.pop(-1)
l3
```

Out[212… [70, 2.3, True, '10+20j']

In [214…
```
l3 = [l3.pop(-1)]
      l3
```

```
  Cell In[214], line 2
    l3
    ^
IndentationError: unexpected indent
```

In [215…
```
l3.pop(3)
```

Out[215…
```
'10+20j'
```

In [216…
```
l3
```

Out[216…
```
[70, 2.3, True]
```

In [217…
```
l3.count(70)
l3
```

Out[217…
```
[70, 2.3, True]
```

In [218…
```
l3.count(70)
```

Out[218…
```
1
```

In [220…
```
l3.count(70)
```

Out[220…
```
2
```

In [221…
```
l3[:]
```

Out[221…
```
[70, 70, 2.3, True, (10+20j), [1, 2, 3]]
```

In [222…
```
l3[:4]
```

Out[222…
```
[70, 70, 2.3, True]
```

In [223…
```
l2.insert(2,34)
l2
```

Out[223…
```
[34]
```

In [224…
```
l3
```

Out[224…
```
[70, 70, 2.3, True, (10+20j), [1, 2, 3]]
```

In [226…
```
l3.insert(5,34)
l3
```

Out[226…
```
[70, 70, 34, 2.3, True, 34, (10+20j), [1, 2, 3]]
```

In [227…
```
l
```

Out[227…
```
[]
```

In [228…
```
l2
```
Out[228… [34]

In [229…
```
l3
```
Out[229… [70, 70, 34, 2.3, True, 34, (10+20j), [1, 2, 3]]

In [231…
```
l3[0]
```
Out[231… 70

In [232…
```
l3[5]
```
Out[232… 34

In [233…
```
l3[0] = 400
l3
```
Out[233… [400, 70, 34, 2.3, True, 34, (10+20j), [1, 2, 3]]

In [236…
```
print(len(l3))
```
```
8
```

In [237…
```
for i in l3:
   print(l3)
```
```
[400, 70, 34, 2.3, True, 34, (10+20j), [1, 2, 3]]
[400, 70, 34, 2.3, True, 34, (10+20j), [1, 2, 3]]
[400, 70, 34, 2.3, True, 34, (10+20j), [1, 2, 3]]
[400, 70, 34, 2.3, True, 34, (10+20j), [1, 2, 3]]
[400, 70, 34, 2.3, True, 34, (10+20j), [1, 2, 3]]
[400, 70, 34, 2.3, True, 34, (10+20j), [1, 2, 3]]
[400, 70, 34, 2.3, True, 34, (10+20j), [1, 2, 3]]
[400, 70, 34, 2.3, True, 34, (10+20j), [1, 2, 3]]
```

In [241…
```
l5 = [ 20,30,40,50,60,70,80,90, 2+3j]
for  i in l5:
    print(l5)
```
```
[20, 30, 40, 50, 60, 70, 80, 90, (2+3j)]
[20, 30, 40, 50, 60, 70, 80, 90, (2+3j)]
[20, 30, 40, 50, 60, 70, 80, 90, (2+3j)]
[20, 30, 40, 50, 60, 70, 80, 90, (2+3j)]
[20, 30, 40, 50, 60, 70, 80, 90, (2+3j)]
[20, 30, 40, 50, 60, 70, 80, 90, (2+3j)]
[20, 30, 40, 50, 60, 70, 80, 90, (2+3j)]
[20, 30, 40, 50, 60, 70, 80, 90, (2+3j)]
[20, 30, 40, 50, 60, 70, 80, 90, (2+3j)]
```

In [244…
```
for i in enumerate(l2):
    print(i)# The enumarate object yields pairs containining a count from index and
```
```
(0, 34)
```

In [246…
```
l2
```

Out[246… [34]

In [247…
```
for i in enumerate(l5):
    print(i)
```

```
(0, 20)
(1, 30)
(2, 40)
(3, 50)
(4, 60)
(5, 70)
(6, 80)
(7, 90)
(8, (2+3j))
```

In [ ]:
```

```