

Last login: Tue Apr 28 13:39:01 on ttys000

→ ~ ipython

Python 3.8.2 (default, Mar 11 2020, 00:29:50)

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IPython 7.13.0 -- An enhanced Interactive Python. Type '?' for help.

In [1]: *"""Booleans"""*

Out[1]: 'Booleans'

In [2]: a = "boolean"

In [3]: a[:2]

Out[3]: 'bo'

In [4]: a[1:4]

Out[4]: 'ool'

In [5]: a[1:4:2]

Out[5]: 'ol'

In [6]: clear

In [7]: *"""Booleans"""*

Out[7]: 'Booleans'

In [8]: a = True

In [9]: a

Out[9]: True

In [10]: a = "a"

In [11]: print(bool(a))

True

In [12]: print(bool(""))

False

In [13]: print(bool([]))

False

In [14]: print(bool([1]))

True

```
In [15]: """List"""
```

```
Out[15]: 'List'
```

```
In [16]: help(list)
```

```
In [17]: a = []
```

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

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

```
In [19]: a = [1,2,3,4,5]
```

```
In [20]: a[1]
```

```
Out[20]: 2
```

```
In [21]: """insertion"""
```

```
Out[21]: 'insertion'
```

```
In [22]: a.append(7)
```

```
In [23]: a
```

```
Out[23]: [1, 2, 3, 4, 5, 7]
```

```
In [24]: a.extend([9,10,11])
```

```
In [25]: a
```

```
Out[25]: [1, 2, 3, 4, 5, 7, 9, 10, 11]
```

```
In [26]: a.insert(2,78)
```

```
In [27]: a
```

```
Out[27]: [1, 2, 78, 3, 4, 5, 7, 9, 10, 11]
```

```
In [28]: a.insert(-78,90)
```

```
In [29]: a
```

```
Out[29]: [90, 1, 2, 78, 3, 4, 5, 7, 9, 10, 11]
```

```
In [30]: a.pop()
```

```
Out[30]: 11
```

```
In [31]: a
```

```
Out[31]: [90, 1, 2, 78, 3, 4, 5, 7, 9, 10]
```

```
In [32]: a.pop(0)
```

```
Out[32]: 90
```

```
In [33]: a
```

```
Out[33]: [1, 2, 78, 3, 4, 5, 7, 9, 10]
```

```
In [34]: a.clear()
```

```
In [35]: a
```

```
Out[35]: []
```

```
In [36]: a = [1, 2, 78, 3, 4, 5, 7, 9, 10]
```

```
In [37]: a
```

```
Out[37]: [1, 2, 78, 3, 4, 5, 7, 9, 10]
```

```
In [38]: a.remove(78)
```

```
In [39]: a
```

```
Out[39]: [1, 2, 3, 4, 5, 7, 9, 10]
```

```
In [40]: a.append(2)
```

```
In [41]: a
```

```
Out[41]: [1, 2, 3, 4, 5, 7, 9, 10, 2]
```

```
In [42]: a.remove(2)
```

```
In [43]: a
```

```
Out[43]: [1, 3, 4, 5, 7, 9, 10, 2]
```

```
In [44]: a.remove(2,3)
```

```
-----
TypeError                                Traceback (most recent call last)
<ipython-input-44-9f2229b4e39f> in <module>
----> 1 a.remove(2,3)
```

```
TypeError: remove() takes exactly one argument (2 given)
```

```
In [45]: a.remove(2,3,8)
```

```
-----
TypeError                                Traceback (most recent call last)
<ipython-input-45-9321810a8a3e> in <module>
```

```
----> 1 a.remove(2,3,8)
```

TypeError: remove() takes exactly one argument (3 given)

```
In [46]: dir(list)
```

```
Out[46]:
```

```
['__add__',  
'__class__',  
'__contains__',  
'__delattr__',  
'__delitem__',  
'__dir__',  
'__doc__',  
'__eq__',  
'__format__',  
'__ge__',  
'__getattr__',  
'__getitem__',  
'__gt__',  
'__hash__',  
'__iadd__',  
'__imul__',  
'__init__',  
'__init_subclass__',  
'__iter__',  
'__le__',  
'__len__',  
'__lt__',  
'__mul__',  
'__ne__',  
'__new__',  
'__reduce__',  
'__reduce_ex__',  
'__repr__',  
'__reversed__',  
'__rmul__',  
'__setattr__',  
'__setitem__',  
'__sizeof__',  
'__str__',  
'__subclasshook__',  
'append',  
'clear',  
'copy',  
'count',
```

```
'extend',  
'index',  
'insert',  
'pop',  
'remove',  
'reverse',  
'sort']
```

```
In [47]: q
```

```
-----  
NameError                                Traceback (most recent call last)  
<ipython-input-47-e222fcdf3350> in <module>  
----> 1 q
```

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

```
In [48]: help(a)
```

```
In [49]: a  
Out[49]: [1, 3, 4, 5, 7, 9, 10, 2]
```

```
In [50]: b = a
```

```
In [51]: a  
Out[51]: [1, 3, 4, 5, 7, 9, 10, 2]
```

```
In [52]: b  
Out[52]: [1, 3, 4, 5, 7, 9, 10, 2]
```

```
In [53]: a.pop()  
Out[53]: 2
```

```
In [54]: a  
Out[54]: [1, 3, 4, 5, 7, 9, 10]
```

```
In [55]: b  
Out[55]: [1, 3, 4, 5, 7, 9, 10]
```

```
In [56]: c = a.copy()
```

```
In [57]: c  
Out[57]: [1, 3, 4, 5, 7, 9, 10]
```

```
In [58]: a
```

```
Out[58]: [1, 3, 4, 5, 7, 9, 10]
```

```
In [59]: a.pop()
```

```
Out[59]: 10
```

```
In [60]: a
```

```
Out[60]: [1, 3, 4, 5, 7, 9]
```

```
In [61]: c
```

```
Out[61]: [1, 3, 4, 5, 7, 9, 10]
```

```
In [62]: a = b
```

```
In [63]: len(a)
```

```
Out[63]: 6
```

```
In [64]: max(a)
```

```
Out[64]: 9
```

```
In [65]: a
```

```
Out[65]: [1, 3, 4, 5, 7, 9]
```

```
In [66]: min(a)
```

```
Out[66]: 1
```

```
In [67]: a.sort()
```

```
In [68]: a
```

```
Out[68]: [1, 3, 4, 5, 7, 9]
```

```
In [69]: a.sort(reverse=True)
```

```
In [70]: a
```

```
Out[70]: [9, 7, 5, 4, 3, 1]
```

```
In [71]: a.reverse()
```

```
In [72]: a
```

```
Out[72]: [1, 3, 4, 5, 7, 9]
```

```
In [73]: a = [3] *100
```

```
In [74]: a
```

```
Out[74]:
```

```
[3,
```

[illegible]

[illegible]

3,
3,
3,
3,
3,
3,
3,
3,
3,
3]

```
In [75]: a
```

Out[75]:

[illegible]

[illegible]

[illegible]

```
In [76]: a = [3 for i in range(100)]
```

```
In [77]: a
```

Out[77]:

 $[3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3]$

[illegible]

[illegible]

```
In [78]: a = [1,4,2,6,8,5]
```

```
In [79]: a.reverse()
```

```
In [80]: a
```

```
Out[80]: [5, 8, 6, 2, 4, 1]
```

```
In [81]: a = list(range(100))
```

```
In [82]: a
```

```
Out[82]:
```

```
[0,  
 1,  
 2,  
 3,  
 4,  
 5,  
 6,  
 7,  
 8,  
 9,  
10,  
11,  
12,  
13,  
14,  
15,  
16,  
17,  
18,  
19,  
20,  
21,  
22,  
23,  
24,  
25,  
26,  
27,  
28,  
29,  
30,  
31,  
32,  
33,  
34,  
35,  
36,  
37,  
38,  
39,  
40,
```

41,
42,
43,
44,
45,
46,
47,
48,
49,
50,
51,
52,
53,
54,
55,
56,
57,
58,
59,
60,
61,
62,
63,
64,
65,
66,
67,
68,
69,
70,
71,
72,
73,
74,
75,
76,
77,
78,
79,
80,
81,
82,
83,
84,
85,

86,
87,
88,
89,
90,
91,
92,
93,
94,
95,
96,
97,
98,
99]

In [83]: a= tuple()

In [84]: a
Out[84]: ()

In [85]: type(a)
Out[85]: tuple

In [86]: tuple((1,2,3,4,5))
Out[86]: (1, 2, 3, 4, 5)

In [87]: a = tuple((1,2,3,4,5))

In [88]: a = (1,2,3,4,5)

In [89]: a
Out[89]: (1, 2, 3, 4, 5)

In [90]: type(a)
Out[90]: tuple

In [91]: a = (1)

In [92]: type(a)
Out[92]: int

In [93]: (8*9)/2
Out[93]: 36.0

In [94]: a = (1,)


```
In [95]: a
Out[95]: (1,)
```

```
In [96]: type(a)
Out[96]: tuple
```

```
In [97]: help(tuple)
```

```
In [98]:
```

```
In [98]: a = (1,2,3,4)
```

```
In [99]: a
Out[99]: (1, 2, 3, 4)
```

```
In [100]: a.add(8)
```

```
-----
AttributeError                                Traceback (most recent call last)
<ipython-input-100-989b1b63210a> in <module>
----> 1 a.add(8)
```

```
AttributeError: 'tuple' object has no attribute 'add'
```

```
In [101]: a + 4
```

```
-----
TypeError                                Traceback (most recent call last)
<ipython-input-101-b7d7bdc57aed> in <module>
----> 1 a + 4
```

```
TypeError: can only concatenate tuple (not "int") to tuple
```

```
In [102]: a
Out[102]: (1, 2, 3, 4)
```

```
In [103]: b = (4,5,6)
```

```
In [104]: a + b
Out[104]: (1, 2, 3, 4, 4, 5, 6)
```

```
In [105]: a
Out[105]: (1, 2, 3, 4)
```

```
In [106]: a.count(2)
```

```
Out[106]: 1
```

```
In [107]: a.index(3)
```

```
Out[107]: 2
```

```
In [108]: a
```

```
Out[108]: (1, 2, 3, 4)
```

```
In [109]: a = list(a)
```

```
In [110]: a
```

```
Out[110]: [1, 2, 3, 4]
```

```
In [111]: a.append(5)
```

```
In [112]: a
```

```
Out[112]: [1, 2, 3, 4, 5]
```

```
In [113]: a = tuple(a)
```

```
In [114]: a
```

```
Out[114]: (1, 2, 3, 4, 5)
```

```
In [115]: del a
```

```
In [116]: a
```

```
-----  
NameError                                Traceback (most recent call last)  
<ipython-input-116-3f786850e387> in <module>  
----> 1 a
```

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

```
In [117]: c = a
```

```
-----  
NameError                                Traceback (most recent call last)  
<ipython-input-117-8154ed8d7598> in <module>  
----> 1 c = a
```

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

```
In [118]: a
```

```
-----  
NameError                                Traceback (most recent call last)  
<ipython-input-118-3f786850e387> in <module>
```

```
----> 1 a
```

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

```
In [119]: a = (1,2,3)
```

```
In [120]: a
```

```
Out[120]: (1, 2, 3)
```

```
In [121]: c = a
```

```
In [122]: c
```

```
Out[122]: (1, 2, 3)
```

```
In [123]: a
```

```
Out[123]: (1, 2, 3)
```

```
In [124]: len(a)
```

```
Out[124]: 3
```

```
In [125]: a = set()
```

```
In [126]: type(a)
```

```
Out[126]: set
```

```
In [127]: a = {1,2,3,4}
```

```
In [128]: a
```

```
Out[128]: {1, 2, 3, 4}
```

```
In [129]: type(a)
```

```
Out[129]: set
```

```
In [130]: a.add(8)
```

```
In [131]: a
```

```
Out[131]: {1, 2, 3, 4, 8}
```

```
In [132]: in
```

```
File "<ipython-input-132-9d26586a7869>", line 1
```

```
in
```

```
^
```

```
SyntaxError: invalid syntax
```

```
In [133]: 2 in a
```

```
Out[133]: True
```

```
In [134]: 9 in a
```

```
Out[134]: False
```

```
In [135]: a
```

```
Out[135]: {1, 2, 3, 4, 8}
```

```
In [136]: a
```

```
Out[136]: {1, 2, 3, 4, 8}
```

```
In [137]: a.add(1)
```

```
In [138]: a
```

```
Out[138]: {1, 2, 3, 4, 8}
```

```
In [139]: a.update({3,4,5})
```

```
In [140]: a
```

```
Out[140]: {1, 2, 3, 4, 5, 8}
```

```
In [141]: a.update([3,4,5])
```

```
In [142]: a
```

```
Out[142]: {1, 2, 3, 4, 5, 8}
```

```
In [143]: a.remove(2)
```

```
In [144]: a
```

```
Out[144]: {1, 3, 4, 5, 8}
```

```
In [145]: a.pop()
```

```
Out[145]: 1
```

```
In [146]: a
```

```
Out[146]: {3, 4, 5, 8}
```

```
In [147]: a.remove(9)
```

```
-----  
KeyError                                Traceback (most recent call last)
```

```
<ipython-input-147-172c07d3db5c> in <module>
```

```
----> 1 a.remove(9)
```

```
KeyError: 9
```

```
In [148]: a
Out[148]: {3, 4, 5, 8}
```

```
In [149]: a.discard(9)
```

```
In [150]: a
Out[150]: {3, 4, 5, 8}
```

```
In [151]: a.discard(8)
```

```
In [152]: a
Out[152]: {3, 4, 5}
```

```
In [153]: a.clear()
```

```
In [154]: a
Out[154]: set()
```

```
In [155]: del a
```

```
In [156]: a
```

```
-----
NameError                                Traceback (most recent call last)
<ipython-input-156-3f786850e387> in <module>
----> 1 a
```

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

```
In [157]: a= {1,2,3}
```

```
In [158]: b = {2,3,5,6,7}
```

```
In [159]: a
Out[159]: {1, 2, 3}
```

```
In [160]: a.union(b)
Out[160]: {1, 2, 3, 5, 6, 7}
```

```
In [161]: a.intersection(b)
Out[161]: {2, 3}
```

```
In [162]: help(set)
```

```
In [163]: a = tuple(1)
```

```
-----  
TypeError                                Traceback (most recent call last)  
<ipython-input-163-6cddbff5e26e> in <module>  
----> 1 a = tuple(1)
```

```
TypeError: 'int' object is not iterable
```

```
In [164]: a = tuple((1,))
```

```
In [165]: a  
Out[165]: (1,)
```

```
In [166]: a = {1,2,3}
```

```
In [167]: help(set)
```

```
In [168]: a  
Out[168]: {1, 2, 3}
```

```
In [169]: a.remove(2)_  
File "<ipython-input-169-f1cace2c73e9>", line 1  
    a.remove(2)_  
              ^
```

```
SyntaxError: invalid syntax
```

```
In [170]: a.remove(2)
```

```
In [171]: a  
Out[171]: {1, 3}
```

```
In [172]: a = {}
```

```
In [173]: a  
Out[173]: {}
```

```
In [174]: type(a)  
Out[174]: dict
```

```
In [175]: a = dict()
```

```
In [176]: a = {1:12,2:13,3:14}
```

```
In [177]: a
Out[177]: {1: 12, 2: 13, 3: 14}
```

```
In [178]: a[3]
Out[178]: 14
```

```
In [179]: a[3] = 56
```

```
In [180]: a
Out[180]: {1: 12, 2: 13, 3: 56}
```

```
In [181]: a.update({4:89})
```

```
In [182]: a
Out[182]: {1: 12, 2: 13, 3: 56, 4: 89}
```

```
In [183]: a.keys()
Out[183]: dict_keys([1, 2, 3, 4])
```

```
In [184]: a.values()
Out[184]: dict_values([12, 13, 56, 89])
```

```
In [185]: d.items()
```

```
-----
NameError                                Traceback (most recent call last)
<ipython-input-185-afd632596be8> in <module>
----> 1 d.items()
```

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

```
In [186]: a.items()
Out[186]: dict_items([(1, 12), (2, 13), (3, 56), (4, 89)])
```

```
In [187]: help(dict)
```

```
In [188]: a
Out[188]: {1: 12, 2: 13, 3: 56, 4: 89}
```

```
In [189]: a.pop(a[1])
```

```
-----
KeyError                                Traceback (most recent call last)
<ipython-input-189-28a0a2a74174> in <module>
----> 1 a.pop(a[1])
```

KeyError: 12

In [190]: a.pop(1)

Out[190]: 12

In [191]: a

Out[191]: {2: 13, 3: 56, 4: 89}

In [192]: a = {1:{2:3},4:5}

In [193]: a

Out[193]: {1: {2: 3}, 4: 5}

In [194]: a[1]

Out[194]: {2: 3}

In [195]: help(dict)

In [196]: d

NameError Traceback (most recent call last)
<ipython-input-196-e983f374794d> in <module>
----> 1 d

NameError: name 'd' is not defined

In [197]: a

Out[197]: {1: {2: 3}, 4: 5}

In [198]: a[1]

Out[198]: {2: 3}

In [199]: a[7]

KeyError Traceback (most recent call last)
<ipython-input-199-9cf13ba20553> in <module>
----> 1 a[7]

KeyError: 7

In [200]: a.get(7,9999)

Out[200]: 9999

In [201]: a.get(7,-1)


```
Out[201]: -1
```

```
In [202]: a
```

```
Out[202]: {1: {2: 3}, 4: 5}
```

```
In [203]: a.get(1,0)+1
```

```
-----  
TypeError                                Traceback (most recent call last)  
<ipython-input-203-bcca77bb56ec> in <module>  
----> 1 a.get(1,0)+1
```

```
TypeError: unsupported operand type(s) for +: 'dict' and 'int'
```

```
In [204]: a[4] = a.get(1,0)+1
```

```
-----  
TypeError                                Traceback (most recent call last)  
<ipython-input-204-8e9f1dcf8279> in <module>  
----> 1 a[4] = a.get(1,0)+1
```

```
TypeError: unsupported operand type(s) for +: 'dict' and 'int'
```

```
In [205]: a.get(4,0)+1
```

```
Out[205]: 6
```

```
In [206]: a
```

```
Out[206]: {1: {2: 3}, 4: 5}
```

```
In [207]: a.get(4,0)+1
```

```
Out[207]: 6
```

```
In [208]: a = [1,1,1,1,3,2,2,3,4]
```

```
In [209]: for k,v in
```

```
File "<ipython-input-209-8cb55409013b>", line 1  
    for k,v in  
            ^
```

```
SyntaxError: invalid syntax
```

```
In [210]: d = {}
```

```
In [211]: for i in a:
```

```
    ....:     d[i] = d.get(i,0) + 1  
    ....:
```

```
In [212]: d
Out[212]: {1: 4, 3: 2, 2: 2, 4: 1}
```

```
In [213]: a
Out[213]: [1, 1, 1, 1, 3, 2, 2, 3, 4]
```

```
In [214]: d = {1:2,1:9}
```

```
In [215]: d
Out[215]: {1: 9}
```

```
In [216]: d
Out[216]: {1: 9}
```

```
In [217]: d[1] = [1,2,3]
```

```
In [218]: d
Out[218]: {1: [1, 2, 3]}
```

```
In [219]: d = {1:{1:2,2:3},3:4}
```

```
In [220]: d
Out[220]: {1: {1: 2, 2: 3}, 3: 4}
```

```
In [221]: d[1][1]
Out[221]: 2
```

```
In [222]:
```