# Tuple

An immutable datatype

```python
In [1]: t = ()
```

```python
In [3]: type(t)
```

```
Out[3]: tuple
```

```python
In [4]: t1 = (23, 4.5, ' hello', True, 6+2j)
        t1
```

```
Out[4]: (23, 4.5, ' hello', True, (6+2j))
```

```python
In [5]: t2 = (54,48.1,('Asif', 56),('Anu',45))
        t2
```

```
Out[5]: (54, 48.1, ('Asif', 56), ('Anu', 45))
```

```python
In [6]: t2[2][2]
```

```
---------------------------------------------------------------------------
IndexError                                Traceback (most recent call last)
Cell In[6], line 1
----> 1 t2[2][2]

IndexError: tuple index out of range
```

```python
In [7]: t2[2][1]
```

```
Out[7]: 56
```

```python
In [9]: t3 = (65,{'Asif',20},[2.3,45.5], (56,False))
        t3
```

```
Out[9]: (65, {20, 'Asif'}, [2.3, 45.5], (56, False))
```

```python
In [11]: print(len(t1))
```

```
5
```

```python
In [13]: print(len(t2))
         print(len(t3))
```

```
4
4
```

```python
In [15]: t1[-2]
```

```
Out[15]: True
```

```
In [17]: t3[2][1]
```

```
Out[17]: 45.5
```

```
In [20]: t1
```

```
Out[20]: (23, 4.5, ' hello', True, (6+2j))
```

```
In [22]: t2
```

```
Out[22]: (54, 48.1, ('Asif', 56), ('Anu', 45))
```

```
In [24]: t3
```

```
Out[24]: (65, {20, 'Asif'}, [2.3, 45.5], (56, False))
```

```
In [26]: t
```

```
Out[26]: ()
```

```
In [30]: t3[1:5]
```

```
Out[30]: ({20, 'Asif'}, [2.3, 45.5], (56, False))
```

```
In [32]: t3[0:2]
```

```
Out[32]: (65, {20, 'Asif'})
```

```
In [34]: t3[2:3]
```

```
Out[34]: ([2.3, 45.5],)
```

```
In [36]: t3[-2]
```

```
Out[36]: [2.3, 45.5]
```

```
In [38]: t3[2] = 9
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[38], line 1
----> 1 t3[2] = 9

TypeError: 'tuple' object does not support item assignment
```

```
In [40]: for i in t3:
             print(i)

65
{'Asif', 20}
[2.3, 45.5]
(56, False)
```

```
In [42]: for i in enumerate(t3):
             print(i)

(0, 65)
(1, {'Asif', 20})
(2, [2.3, 45.5])
(3, (56, False))
```

```
In [44]: t3.count(56)
```

```
Out[44]: 0
```

```
In [59]: t3.index(20)
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
Cell In[59], line 1
----> 1 t3.index(20)

ValueError: tuple.index(x): x not in tuple
```

```
In [57]: t3.index(65)
```

```
Out[57]: 0
```

```
In [53]: t4 = (23,42.4,56.12,78)
         t4
```

```
Out[53]: (23, 42.4, 56.12, 78)
```

```
In [55]: t4.index(56.12)
```

```
Out[55]: 2
```

```
In [61]: sorted(t4)
```

```
Out[61]: [23, 42.4, 56.12, 78]
```

```
In [63]: sorted(t4, reverse = True)
```

```
Out[63]: [78, 56.12, 42.4, 23]
```

# Sets

```
In [68]: s = {21,45,36,27,63}
         s
```

```
Out[68]: {21, 27, 36, 45, 63}
```

```
In [70]: s.add(45)
         s
```

Out[70]:   {21, 27, 36, 45, 63}

In [72]:  `s.add(9)`

In [74]:  `s`

Out[74]:   {9, 21, 27, 36, 45, 63}

In [76]:  `s.add(0,85)`

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[76], line 1
----> 1 s.add(0,85)

TypeError: set.add() takes exactly one argument (2 given)
```

In [78]:  `len(s)`

Out[78]:   6

In [80]:  `s.add(9)`

In [82]:  `s`

Out[82]:   {9, 21, 27, 36, 45, 63}

In [84]:  `s1 = {10,20, "Hola", [11, 22, 32]}`
          `s1`

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[84], line 1
----> 1 s1 = {10,20, "Hola", [11, 22, 32]}
      2 s1

TypeError: unhashable type: 'list'
```

In [86]:  `type(s1)`

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[86], line 1
----> 1 type(s1)

NameError: name 's1' is not defined
```

In [88]:  `type(s)`

Out[88]:   set

In [90]:  `for i in s:`
          `    print(i)`

```
36
21
9
27
45
63
```

In [92]: 
```python
s.add(9)
```

In [94]: 
```python
s
```

Out[94]: 
```
{9, 21, 27, 36, 45, 63}
```

In [96]: 
```python
s.add(55)
s
```

Out[96]: 
```
{9, 21, 27, 36, 45, 55, 63}
```

In [98]: 
```python
s1 = {'a','b','c',}
```

In [112… 
```python
s2 = {23,21,'d','e',43}
```

In [106… 
```python
s | s1
```

Out[106… 
```
{21, 27, 36, 45, 55, 63, 9, 'a', 'b', 'c'}
```

In [108… 
```python
s & s1
```

Out[108… 
```
set()
```

In [110… 
```python
s.intersection(s1)
```

Out[110… 
```
set()
```

In [114… 
```python
s.intersection(s2)
```

Out[114… 
```
{21}
```

In [116… 
```python
s.issuperset(s1)
```

Out[116… 
```
False
```

In [118… 
```python
s.isdisjoint(s1)
```

Out[118… 
```
True
```

In [120… 
```python
s.symmetric_difference(s1)
```

Out[120… 
```
{21, 27, 36, 45, 55, 63, 9, 'a', 'b', 'c'}
```

In [122… 
```python
s.symmetric_difference(s2)
```

Out[122…    {23, 27, 36, 43, 45, 55, 63, 9, 'd', 'e'}

# other builtin function

In [125…
```python
max(s)
```

Out[125…    63

In [127…
```python
min(s)
```

Out[127…    9

In [129…
```python
max(s1)
```

Out[129…    'c'

In [131…
```python
s4 = {'a','z','c','d'}
```

In [133…
```python
max(s4)
```

Out[133…    'z'

In [135…
```python
s4
```

Out[135…    {'a', 'c', 'd', 'z'}

In [137…
```python
enumerate(s1)
```

Out[137…    <enumerate at 0x524ee653f0>

In [139…
```python
list(enumerate(s1))
```

Out[139…    [(0, 'a'), (1, 'b'), (2, 'c')]

In [141…
```python
len(s1)
```

Out[141…    3

In [143…
```python
sorted(s1)
```

Out[143…    ['a', 'b', 'c']

In [145…
```python
s.sorted(reverse = True)
```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
Cell In[145], line 1
----> 1 s.sorted(reverse = True)

AttributeError: 'set' object has no attribute 'sorted'
```

In [147…  `sorted(s, reverse = True)`

Out[147…  [63, 55, 45, 36, 27, 21, 9]

In [ ]: