Day 06 – Tuples in Python

Learn about tuple data structure in Python: creation, indexing, slicing, membership, and built-in functions.

What is a Tuple?

A **tuple** is an immutable, ordered collection of items. It is similar to a list but cannot be modified after creation.

- Defined using parentheses `()`
- Can contain mixed data types
- Supports indexing, slicing, and iteration
- Tuples are useful when you want to ensure data remains constant

Tuple Creation

In [2]:
```
tup1 = () # Empty tuple
tup2 = (10,30,60) # tuple of integers number
tup3 = (10.77,30.66,60.89) # tuple of float numbers
tup4 = ('one', 'two', "three") # tuple of string
tup5 = ('Asif', 25, (50,100),(150,90)) # Nested tuples
tup6 = (100, 'Asif', 25, [50,100],[150,90], {'John', 'David'}, (99,22,33))
len(tup6)
```

Out[2]:
```
7
```

In [4]:
```
print('tup1 :',tup1)
print('tup2 :',tup2)
print('tup3 :',tup3)
print('tup4 :',tup4)
print('tup5 :',tup5)
print('tup6 :',tup6)
```

```
tup1 : ()
tup2 : (10, 30, 60)
tup3 : (10.77, 30.66, 60.89)
tup4 : ('one', 'two', 'three')
tup5 : ('Asif', 25, (50, 100), (150, 90))
tup6 : (100, 'Asif', 25, [50, 100], [150, 90], {'David', 'John'}, (99, 22, 33))
```

Tuple Indexing

In [5]:
```
print(tup2[0])
print(tup4[0])
print(tup4[0][0])
print(tup4[-1])
print(tup5[-1])
```

```
10
one
o
three
(150, 90)
```

Tuple Slicing

In [6]:
```
mytuple = ('one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight')
```

In [7]:
```
print(mytuple[0:3])
```

```
('one', 'two', 'three')
```

In [8]:
```
print(mytuple[2:5])
```

```
('three', 'four', 'five')
```

In [9]:
```
print(mytuple[:3])
```

```
('one', 'two', 'three')
```

In [10]:
```
print(mytuple[:2])
```

```
('one', 'two')
```

In [11]:
```
print(mytuple[-3:])
```

```
('six', 'seven', 'eight')
```

In [12]:
```
print(mytuple[-2:])
```

```
('seven', 'eight')
```

In [13]:
```
print(mytuple[-1:])
```

```
('eight',)
```

In [14]:
```
print(mytuple[:])
```

```
('one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight')
```

Remove & Change Items

In [15]:
```
mytuple
```

Out[15]:
```
('one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight')
```

In [16]:
```
del mytuple[0]
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[16], line 1
----> 1 del mytuple[0]

TypeError: 'tuple' object doesn't support item deletion
```

In [17]:
```
mytuple[0]
```

Out[17]:
```
'one'
```

In [19]:
```
del mytuple
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[19], line 1
----> 1 del mytuple

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

Looping Through a Tuple

In [21]:
```
mytuple = ('one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight')
```

In [22]:
```
for i in mytuple:
    print(i)
```

```
one
two
three
four
five
six
seven
eight
```

In [23]:
```
for i in enumerate(mytuple):
    print(i)
```

```
(0, 'one')
(1, 'two')
(2, 'three')
(3, 'four')
(4, 'five')
(5, 'six')
(6, 'seven')
(7, 'eight')
```

Tuple Membership

In [24]:
```
'one' in mytuple
```

Out[24]: True

In [25]:
```
'ten' in mytuple
```

Out[25]: False

In [26]:
```
if 'three' in mytuple:
    print('Three is present in the tuple')
else:
    print('Three is not present in the tuple')
```

```
Three is present in the tuple
```

In [27]:
```
if 'eleven' in mytuple:
    print('Eleven is present in the tuple')
else:
    print('Eleven is not present in the tuple')
```

```
Eleven is not present in the tuple
```

Index Position

In [29]:
```
mytuple.index('one')
```

Out[29]: 0

In [30]:
```
mytuple.index('five')
```

Out[30]: 4

Sorting Tuples

In [31]:
```
mytuple2 = (43, 67, 99, 12, 6, 90, 67)
```

In [32]:
```
print(sorted(mytuple2))
```

```
[6, 12, 43, 67, 67, 90, 99]
```

In [33]:
```
print(sorted(mytuple2, reverse=True))
```

```
[99, 90, 67, 67, 43, 12, 6]
```