

8. TUPLES

Tuples are used to store value of any type

Each item is separated by comma

Tuples are immutable (elements in a tuples can not be changed)

()	Empty tuples
(1, 2, 3)	Integer tuples
('a', 'b', 'c')	Tuples of Characters
(10.5, 20, 13)	Tuples of numbers
('cat', 'big', 'city')	Tuple of String

Creating Tuples

```
T = tuples( )           # Empty tuple
T = (100)               # Single element type
T = 1000,               # Single element type
```

Nested Tuples

```
t1 = (1, 2, (3, 4))    # 3 elements are 1, 2 and (3,4)
t1 = ("Hello")
>>t1                  # ('H', 'e', 'l', 'l', 'o')

L = ['G', 'A', 'M', 'E']
t2 = tuple(L)
t2                    # ('G', 'A', 'M', 'E')
```

Value during run time

```
T3 = tuple(input('Enter tuple element')) #Enter tuple element 1234
>>T3                                     # ('1', '2', '3', '4')

t1 = ('a', 'e', 'i', 'o', 'u')
t1[0]                                     # a
t1[-1]                                    # u
```

Tuples & List

List are Mutable and tuples are immutable

```
L1[2] = 55          # valid in lists
T1[2] = 55          # invalid in tuples
```

Tuples in loop

```
T = ('A', 'B', 'C', 'D')
for x in T
    print(T[x])      A
                    B
                    C
                    D
```

Joining Tuples

```
tp1 = (1, 3, 5)
tp2 = (6, 7, 8)
tp1 + tp2          # (1, 3, 5, 6, 7, 8)

tp1 + (100)        # Error
tp1 + (100, )      # (1, 3, 5, 100)

tp1 * 3            # (1, 3, 5, 1, 3, 5, 1, 3, 5)
```

Slicing Tuples

```
tp1 = ( 10, 12, 14, 20, 22, 24, 30, 32, 34)
seq = tp1(3, -3)
>> seq              # (20, 22, 24)
tp1( 4: 50)          # out of range
```

Comparing Tuples

```
a = (2, 3)
b = (2, 3)
>> a == b           # true

c = ('2', '3')
>> a == c           # false

d = (2.0, 3.0)
a == d               # false

e = (2, 3, 4)
a < 3                # true
```

Unpacking Tuples

Packing : Create tuple from a set of values
Unpacking : Creating individual values from tuple

```
t = (1, 2, 'a', 'b')
```

```
to unpack
```

```
w, x, y, z = t
```

```
print(w)           # 1
print(x)           # 2
print(y)           # 'a'
print(z)           # 'b'
```

Deleting Tuples

del Keyword is used to delete tuples

```
del <tuple-name>
tup1 = (1, 2, 3, 4, 5)
tup1          # (1, 2, 3, 4, 5)
del tup1
tup1          # Error
```

TUPLE FUNCTIONS & METHODS

a. **len()**

this function is count the number of element in a tuple

```
stud = (1001, 'kushal', 24, 'Science')
```

```
len(stud)          # 4
```

b. **max()**

Function returns the element from tuple having maximum value

```
tp1 = (9, 26, 2, 3, 4, 17, 12)
```

```
max(tp1)          # 26
```

```
tp2 = ('Kamal', 'Raman', 'Arav', 'Zubin')
```

```
max(tp2)          # Zubin
```

c. **min()**

Function returns the element from tuple having minimum value

```
tp1 = (9, 26, 2, 3, 4, 17, 12)
```

```
min(tp1)          # 2
```

```
tp2 = ('Kamal', 'Raman', 'Arav', 'Zubin')
```

```
min(tp2)          # Arav
```

d. **index()**

Function returns the index of any element in a tuple

```
tp1 = (100, 200, 300, 500, 900)
```

```
tp1.index(500)    # 3
```

if element is not available in tuple, valueErrorException occur.

e. **count()**

Function is used to count the number of times any element present in any tuple.

```
tp1 = (2, 4, 2, 5, 7, 4, 8, 9, 9, 11, 7, 2)
```

```
tp1.count(2)      # 3
```

```
tp1.count(7)      # 2
```

```
tp1.count(11)     # 1
```

```
tp1.count(100)    # 0
```