

6. Tuple

October 18, 2022

1 Introduction

- Tuple is a collection which allows us to put many objects in a single object.
- Same definition as List.
- Difference between Tuple and List is
 - Lists are mutable
 - Tuples are immutable

```
[1]: movies = ( "Tenet", "Ice Age", "Gravity", "Joker", "Spiderman", "Avengers: Endgame")
```

```
[2]: movies
```

```
[2]: ('Tenet', 'Ice Age', 'Gravity', 'Joker', 'Spiderman', 'Avengers: Endgame')
```

```
[3]: type(movies)
```

```
[3]: tuple
```

```
[4]: len(movies)
```

```
[4]: 6
```

```
[5]: mixed_tuple = ( "BLR", 36.5, "HYD", 42.5, True, 45.2, None )
```

2 Accessing elements of a tuple

```
[6]: movies
```

```
[6]: ('Tenet', 'Ice Age', 'Gravity', 'Joker', 'Spiderman', 'Avengers: Endgame')
```

```
[7]: movies[2]
```

```
[7]: 'Gravity'
```

```
[8]: movies[-1]
```

```
[8]: 'Avengers: Endgame'
```

```
[9]: movies[6]
```

```
-----  
IndexError                                Traceback (most recent call last)  
Cell In [9], line 1  
----> 1 movies[6]  
  
IndexError: tuple index out of range
```

3 Slicing

```
[10]: movies
```

```
[10]: ('Tenet', 'Ice Age', 'Gravity', 'Joker', 'Spiderman', 'Avengers: Endgame')
```

```
[11]: movies[1:4]
```

```
[11]: ('Ice Age', 'Gravity', 'Joker')
```

```
[12]: movies[:3]
```

```
[12]: ('Tenet', 'Ice Age', 'Gravity')
```

```
[13]: movies[4:]
```

```
[13]: ('Spiderman', 'Avengers: Endgame')
```

```
[14]: movies[-4:-2]
```

```
[14]: ('Gravity', 'Joker')
```

4 Modifying a Tuple

```
[15]: movies
```

```
[15]: ('Tenet', 'Ice Age', 'Gravity', 'Joker', 'Spiderman', 'Avengers: Endgame')
```

```
[16]: movies[4]
```

```
[16]: 'Spiderman'
```

```
[17]: movies[4] = "Ant Man"
```

```

-----
TypeError                                Traceback (most recent call last)
Cell In [17], line 1
----> 1 movies[4] = "Ant Man"

TypeError: 'tuple' object does not support item assignment

```

5 Methods of Tuple

1. index(elem)
2. count(elem)

5.1 index(elem)

- Return index of the first occurrence of elem

```
[18]: a = (2, 6, 8, 3, 5, 9, 1, 0, 2, 8, 6, 6)
```

```
[19]: len(a)
```

```
[19]: 12
```

```
[20]: movies = ( "Tenet", "Ice Age", "Gravity", "Joker", "Spiderman", "Avengers:␣
↳Endgame")
```

```
[21]: len(movies)
```

```
[21]: 6
```

```
[22]: movies.index("Joker")
```

```
[22]: 3
```

```
[23]: movies.index("Joker2")
```

```

-----
ValueError                                Traceback (most recent call last)
Cell In [23], line 1
----> 1 movies.index("Joker2")

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

```

```
[25]: a
```

```
[25]: (2, 6, 8, 3, 5, 9, 1, 0, 2, 8, 6, 6)
```

```
[27]: a.index(8,5)
```

```
[27]: 9
```

```
[28]: movies
```

```
[28]: ('Tenet', 'Ice Age', 'Gravity', 'Joker', 'Spiderman', 'Avengers: Endgame')
```

```
[32]: movies.index("Joker", 2, 5)
```

```
[32]: 3
```

5.2 count(elem)

- Return the number of `elem` items present in it

```
[33]: movies.count("Joker")
```

```
[33]: 1
```

```
[34]: a
```

```
[34]: (2, 6, 8, 3, 5, 9, 1, 0, 2, 8, 6, 6)
```

```
[35]: a.count(6)
```

```
[35]: 3
```

6 Deleting a Tuple

```
[36]: movies
```

```
[36]: ('Tenet', 'Ice Age', 'Gravity', 'Joker', 'Spiderman', 'Avengers: Endgame')
```

```
[37]: del movies
```

```
[38]: movies
```

```
-----
NameError                                Traceback (most recent call last)
Cell In [38], line 1
----> 1 movies

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

7 Operators on Tuple

1. Membership
2. Arithmetic

7.1 Membership

- in
- not in

```
[39]: a
```

```
[39]: (2, 6, 8, 3, 5, 9, 1, 0, 2, 8, 6, 6)
```

```
[40]: 5 in a
```

```
[40]: True
```

```
[41]: 4 not in a
```

```
[41]: True
```

7.2 Arithmetic

- +
- *

```
[42]: a
```

```
[42]: (2, 6, 8, 3, 5, 9, 1, 0, 2, 8, 6, 6)
```

```
[43]: b = ("A", "B")
```

```
[44]: a + b
```

```
[44]: (2, 6, 8, 3, 5, 9, 1, 0, 2, 8, 6, 6, 'A', 'B')
```

```
[45]: b * 5
```

```
[45]: ('A', 'B', 'A', 'B', 'A', 'B', 'A', 'B', 'A', 'B')
```

8 Nested Tuples

```
[47]: nest1 = ("Monday", "Today", (1, 2, 3))
```

```
[48]: nest1[2]
```

```
[48]: (1, 2, 3)
```

```
[49]: nest1[2][0]
```

```
[49]: 1
```

A matrix can be represented using a nested list

```
[50]: mx = ((1, 2, 3), (4, 5, 6), (7, 8, 9))
```

```
[51]: mx
```

```
[51]: ((1, 2, 3), (4, 5, 6), (7, 8, 9))
```

```
[52]: mx[0][2]
```

```
[52]: 3
```

9 For Loop on Tuple

```
[53]: movies = ( "Tenet", "Ice Age", "Gravity", "Joker", "Spiderman", "Avengers:␣  
↳Endgame")
```

```
[54]: for i in movies:  
    print(i.lower())  
    print('.'*10)
```

```
tenet  
...  
ice age  
...  
gravity  
...  
joker  
...  
spiderman  
...  
avengers: endgame  
...
```