

Built-in Functions for Tuples and Tuple Methods

Programming and Algorithms

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```
n = 3  
for i in range(1,n+1):  
    print("Hello World!")
```

Hello World!
Hello World!
Hello World!

What will we Cover?

- Using the tuple data structure
- Applying built-in functions to tuples
- Using tuple methods

Built-in Functions for Tuples I

- `min(tuple_name)` – used to find an element with the smallest value in the tuple
- `max(tuple_name)` – used to find an element with the largest value in the tuple

Example	Result
<pre>tuple1 = (1, 2, 3) min(tuple1)</pre>	1
<pre>tuple2 = (1, 2, 3) max(tuple2)</pre>	3

Built-in Functions for Tuples II

- `len(tuple_name)` – used to find the length (number of elements) of a tuple
- `sum(list_name)` – used to find the sum of all elements in a list (add together their values)

Example	Result
<pre>tuple3 = (1, 2, 3) len(tuple3)</pre>	3
<pre>tuple4 = (1, 2, 3) sum(tuple4)</pre>	6

Examples I

Minimum value

```
tuple1 = ("a", "b", "c", "d")  
print(min(tuple1))
```

a

Maximum value

```
tuple2 = ("a", "b", "c", "d")  
print(max(tuple2))
```

d

Length of a tuple

```
tuple3 = ("a", "b", "c", "d")  
print(len(tuple3))
```

4

Sum of the tuple

```
tuple4 = (1, 2, 3, 4, 5)  
print(sum(tuple4))
```

15

Tuple Methods

- `count(value)` – used to count the number of times a value appears in a tuple
- `index(value)` – used to find the index of a value in a tuple

Example	Result
<pre>tuple5 = (1, 2, 3) tuple5.count(2)</pre>	1
<pre>tuple6 = (1, 2, 3) tuple6.index(1)</pre>	0

Making a Tuple from a List

- `tuple()` – used to convert a sequence to a tuple

Example	Result
<pre>list1 = [1, 2, 3] tuple(list1)</pre>	<pre>(1, 2, 3)</pre>

Examples II

Index of the largest value String to tuple

```
tuple7 = (3, 5, 1, 6, 2)
print(tuple7.index(max(tuple7)))
```

3

```
str1 = "tuple"
print(tuple(str1))
```

('t', 'u', 'p', 'l', 'e')

Average value of the tuple

```
tuple8 = (3, 5, 1, 6, 2)
print(sum(tuple8)/len(tuple8))
```

3.4

Examples III

Number of instances

```
tuple5 = (1, 2, 3, 2, 1)
print(tuple5.count(2))
```

2

Finding the index

```
tuple6 = (1, 2, 3, 4, 5)
print(tuple6.index(4))
```

3

List to tuple

```
list1 = [1, 2, 3, 4, 5]
print(tuple(list1))
```

(1, 2, 3, 4, 5)

Try It Yourself

Enter and run the following statements in the python environment:

```
list1 = [1.5, 2, 14]
tuple1 = tuple(list1)
print(min(tuple1))
```

```
tuple4 = ([3, 4], [2, 28])
print(max(tuple4))
```

```
tuple2 = (1, "b", True)
tuple3 = (tuple2, 1)
print(tuple3.index(1))
```

```
tuple5 = (1, 2, (1, 2))
tuple6 = (1, 2)
print(tuple5.count(tuple6))
```