
 <b>Marwadi University</b> Marwadi Chandarana Group 	<b>Marwadi University</b> <b>Faculty of Engineering &amp; Technology</b> <b>Department of Information and Communication Technology</b>	
<b>Subject: Programming With Python (01CT1309)</b>	<b>Aim:</b> Write a program to demonstrate working with tuples in python.	
<b>Experiment No: 05</b>	<b>Date:</b>	<b>Enrollment No:</b>

**Aim:** Write a program to demonstrate working with tuples in python.

### **IDE:**

#### Python Tuple

A tuple is a collection similar to a Python list. The primary difference is that we cannot modify a tuple once it is created.

A tuple represents a sequence of any objects separated by commas and enclosed in parentheses. A tuple is an immutable object, which means it cannot be changed, and we use it to represent fixed collections of items.

#### Create a Python Tuple

```
numbers = (1, 2, -5)
```

```
print(numbers)
```

Output:

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
(1, 2, -5)
```

Let's take a look at some examples of Python tuples:

() — an empty tuple

(1.0, 9.9, 10) — a tuple containing three numeric objects

('Casey', 'Darin', 'Bella', 'Mehdi') — a tuple containing four string objects

('10', 101, True) — a tuple containing a string, an integer, and a Boolean object

Also, other objects like lists and tuples can comprise a tuple, like this:

```
a_tuple = (0, [1, 2, 3], (4, 5, 6), 7.0)
```

```
print(a_tuple)
```

output:

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
(0, [1, 2, 3], (4, 5, 6), 7.0)
```

#### Access Tuple Items

Each item in a tuple is associated with a number, known as a index.



```
languages = ('Python', 'Swift', 'C++')
```

```
languages = ('Python', 'Swift', 'C++')
```

# access the first item

```
print(languages[0]) # Python
```

Output:

 <b>Marwadi University</b> Marwadi Chandarana Group 	<b>Marwadi University</b> <b>Faculty of Engineering &amp; Technology</b> <b>Department of Information and Communication Technology</b>	
<b>Subject: Programming With Python (01CT1309)</b>	<b>Aim:</b> Write a program to demonstrate working with tuples in python.	
<b>Experiment No: 05</b>	<b>Date:</b>	<b>Enrollment No:</b>

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
Python
```

### Python Tuple Length

```
cars = ('BMW', 'Tesla', 'Ford', 'Toyota')
print("Total Items:", len(cars))
```

output:

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
Total Items: 4
```

### Task

```
a = tuple(range(5))
```

output

```
b = tuple(range(5,10))
print(b)
```

Output:

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
(5, 6, 7, 8, 9)
```

```
c = tuple(range(0,10,2))
print(c)
```

output:

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
(0, 2, 4, 6, 8)
```

```
d = tuple(range(10,0,-2))
print(d)
```

output:

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
(10, 8, 6, 4, 2)
```



### Task:

```
d = (3,[5,6,7],(4,5,6),[5,6,7,(6,7,8)],9,10)
```

Extract 6

### Syntax:

### Important Functions of the Python Tuple

 <b>Marwadi University</b> Marwadi Chandarana Group 	<b>Marwadi University</b> <b>Faculty of Engineering &amp; Technology</b> <b>Department of Information and Communication Technology</b>	
<b>Subject: Programming With Python (01CT1309)</b>	<b>Aim:</b> Write a program to demonstrate working with tuples in python.	
<b>Experiment No: 05</b>	<b>Date:</b>	<b>Enrollment No:</b>

```
t1 = (2,3,4,5)
print(sum(t1))
output:
```

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
14
```

```
t3 = (3,4,4,2,2,3,6,7,4,4)
print(t3.count(4))
output:
```

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
4
```

#### 4. Python index() Method

```
t3 = (3,4,4,2,2,3,6,7,4,4)
print(t3.index(2))
print(t3.index(4,3,9))
Output:
```

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
3
8
```

#### 5. Python min() Method

```
t3 = (3,4,4,2,2,3,6,7,4,4)
print(min(t3))
output:
```



```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
2
```

#### 6. Python max() Method

Calculates the maximum of all the elements of the tuple.

```
numbers = (7, 2, 8, 5, 9)
print(max(numbers))
output:
```

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
9
```

 <b>Marwadi University</b> Marwadi Chandarana Group 	<b>Marwadi University</b> <b>Faculty of Engineering &amp; Technology</b> <b>Department of Information and Communication Technology</b>	
<b>Subject: Programming With Python (01CT1309)</b>	<b>Aim:</b> Write a program to demonstrate working with tuples in python.	
<b>Experiment No: 05</b>	<b>Date:</b>	<b>Enrollment No:</b>

# removing duplicates from a tuple using dictionaries

```
a = (5,6,7,5,5,9,7)
b = ("a","b","v","b")
my_tu_1 = tuple(dict.fromkeys(a))
print(my_tu_1)
my_tu_2 = tuple(dict.fromkeys(b))
print(my_tu_2)
```

Output:

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
(5, 6, 7, 9)
('a', 'b', 'v')
```

Combining tuples

```
first_names = ('Simon', 'Sarah', 'Mehdi', 'Fatime')
last_names = ('Sinek', 'Smith', 'Lotfinejad', 'Lopes')
ages = (49, 55, 39, 33)
zipped = tuple(zip(first_names, last_names, ages))
print(zipped)
```

output:


```
(('Simon', 'Sinek', 49), ('Sarah', 'Smith', 55), ('Mehdi', 'Lotfinejad', 39), ('Fatime', 'Lopes', 33))
```

Flatten a tuple of tuples

```
b = ((1,2),(3,4),(5,6))
my = tuple(item for l in b for item in l)
print(my)
```

output:

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
(1, 2, 3, 4, 5, 6)
```

 <b>Marwadi University</b> Marwadi Chandarana Group	<b>Marwadi University</b> <b>Faculty of Engineering &amp; Technology</b> <b>Department of Information and Communication Technology</b>	
<b>Subject: Programming With Python (01CT1309)</b>	<b>Aim:</b> Write a program to demonstrate working with tuples in python.	
<b>Experiment No: 05</b>	<b>Date:</b>	<b>Enrollment No:</b>

### Post Lab Exercise:

- a. Write a Python program to Count the occurrences of an element in a tuple.

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
Count of 2: 3
```

- b. Write a Python program to Check if an element exists in a tuple.

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
20 exists in tuple
```

- c. Write a Python program to Convert a tuple to a string.

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
String: Python
```

- d. Write a Python program to Find the maximum and minimum elements in a tuple.

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
Maximum: 15
Minimum: 1
```

- e. Write a Python program to convert a tuple of strings to a single string.

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
Single string: Hello World Python
```

- f. Write a Python program to sort a tuple of integers.

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
Sorted tuple: (1, 2, 3, 5, 7, 9)
```

- g. Write a python program to find the first and last elements of a tuple.

```
PS C:\Users\trupa\OneDrive\Documents\PWP> & C:/Users/trupa/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/trupa/OneDrive/Document
s/PWP/PWP EXP 5"
First element: 100
Last element: 500
```