

 Marwadi University Marwadi Chandarana Group 	Marwadi University Faculty of Engineering & Technology Department of Information and Communication Technology	
Subject: Programming With Python (01CT1309)	Aim: Write a program to demonstrate working with tuples in python.	
Experiment No: 05	Date:	Enrollment No:92510133019

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:

```
Output
(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

```
Output
()
(1.0, 9.9, 10)
('Casey', 'Darin', 'Bella', 'Mehdi')
('10', 101, True)
(0, [1, 2, 3], (4, 5, 6), 7.0)
```

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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:

```

Output
Python
Swift
C++

```

Python Tuple Length

```
cars = ('BMW', 'Tesla', 'Ford', 'Toyota')
```

```
print('Total Items:', len(cars))
```

output

```

Output
Total Items: 4

```

Task

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

```
print(a)
```

Output

```

Output
(0, 1, 2, 3, 4)

```

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

```
print(b)
```

Output:

```

Output
(5, 6, 7, 8, 9)

```

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

Output

```
(0, 2, 4, 6, 8)
```

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

Output

```
(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:

Output

```
6
6
6
6
```

Important Functions of the Python Tuple

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

Output

Output

```
14
```

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

Output

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```
Output
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:

```
Output
3
8
```

5. Python min() Method

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

Output

```
Output
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

```
Output
9
```

removing duplicates from a tuple using dictionaries

```
a = (5,6,7,5,5,9,7)
```

```
b = ("a","b","v","b")
```

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```
my_tu_1 = tuple(dict.fromkeys(a))
print(my_tu_1)
my_tu_2 = tuple(dict.fromkeys(b))
print(my_tu_2)
```

Output:

```
Output
(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

```
Output Clear
(('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

```
Output
(1, 2, 3, 4, 5, 6)
```

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Post Lab Exercise:

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

Code:-

a. Count occurrences

```
my_tuple = (1, 2, 3, 2, 4, 2, 5)
```

```
count_2 = my_tuple.count(2) # Count how many times '2' appears
```

```
print("Number of times 2 appears:", count_2)
```

Output:-

```

Output
Number of times 2 appears: 3

```

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

Code:-

b. Check if element exists

```
my_tuple = ('apple', 'banana', 'cherry')
```

```
if 'banana' in my_tuple:
```

```
    print("Yes, 'banana' exists in the tuple")
```

```
else:
```

```
    print("No, 'banana' does not exist in the tuple")
```

Output:-

```

Output
Yes, 'banana' exists in the tuple

```

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

Code:-

```
# c. Convert tuple to string
my_tuple = ('H', 'e', 'l', 'l', 'o')
my_string = ''.join(my_tuple)
print("String:", my_string)
```

Output:-

```
Output
String: Hello
```

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

Code:-

```
# d. Find max and min
numbers = (4, 7, 1, 9, 3)
print("Maximum:", max(numbers))
print("Minimum:", min(numbers))
```

Output:-

```
Output
Maximum: 9
Minimum: 1
```

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

Code:-

```
# e. Tuple of strings to single string
words = ('Python', 'is', 'fun')
sentence = ''.join(words)
print("Sentence:", sentence)
```

Output:-

```
Output
Sentence: Python is fun
```

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

Code:-

```
# f. Sort tuple of integers
numbers = (5, 2, 8, 1, 4)
sorted_tuple = tuple(sorted(numbers))
print("Sorted tuple:", sorted_tuple)
```

Output:-

```
Output
Sorted tuple: (1, 2, 4, 5, 8)
```

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

Code:-

```
# g. First and last elements
my_tuple = ('Prem', '138690', '19', 'Joshi')
print("First element:", my_tuple[0])
print("Last element:", my_tuple[-1])
```

Output:-

```
Output
First element: Prem
Last element: Joshi
```