Marwadi University Marwadi Chandarana Group NAAC A+	**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: 92510133025**

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:

```
(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

```
(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:

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```
Python
```

Python Tuple Length

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

output

```
Total Items: 4
```

Task

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

output

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

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

Output:

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

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

output:

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

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

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:

```
6
```

Important Functions of the Python Tuple

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

output

```
14
```

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

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:

```
3
8
```

5. Python min() Method

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

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

```
9
```

```
# 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:

```
(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

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

Post Lab Exercise:

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

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```
def count_occurrences(tup, element):
    return tup.count(element)

my_tuple = (1, 2, 3, 4, 2, 2, 5, 6, 2)
element_to_count = 2
occurrences = count_occurrences(my_tuple, element_to_count)
print(f"Number of occurrences of {element_to_count}:", occurrences)
```

```
Number of occurrences of 2: 4
```

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

```
def check_element_exists(tup, element):
    return element in tup
my_tuple = (1, 2, 3, 4, 5)
element_to_check = 3
exists = check_element_exists(my_tuple, element_to_check)
print(f"Element {element_to_check} exists in tuple:", exists)
```

```
Element 3 exists in tuple: True
```

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

```
def tuple_to_string(tup):
    return ''.join(map(str, tup))
my_tuple = (1, 2, 3, 4, 5)
result_string = tuple_to_string(my_tuple)
print("Tuple converted to string:", result_string)
```

```
Tuple converted to string: 12345
```

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

```
def find_max_min(tup):
    return max(tup), min(tup)
my_tuple = (5, 2, 9, 24, 10, 2, 90, 34)
max_element, min_element = find_max_min(my_tuple)
print("Maximum element:", max_element)
print("Minimum element:", min_element)
```

```
Maximum element: 90
Minimum element: 2
```

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

```
def tuple_to_single_string(tup):
    return ''.join(tup)
my_tuple = ('Hello', ' ', 'world', '!')
result_string = tuple_to_single_string(my_tuple)
print("Tuple converted to single string:", result_string)
```

```
Tuple converted to single string: Hello world!
```

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

```
def sort_tuple(tup):
    return tuple(sorted(tup))
my_tuple = (5, 2, 9, 24, 10, 2, 90, 34)
sorted_tuple = sort_tuple(my_tuple)
print("Sorted tuple:", sorted_tuple)
```

```
Sorted tuple: (2, 2, 5, 9, 10, 24, 34, 90)
```

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

```
def first_last_elements(tup):
    first_element = tup[0]
    last_element = tup[-1]
    return first_element, last_element
my_tuple = (1, 2, 3, 4, 5)
first, last = first_last_elements(my_tuple)
print("First element:", first)
print("Last element:", last)
```

```
First element: 1
Last element: 5
```

Github link: https://github.com/JenishDesai5115/PWP_postlabs

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