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: 92400133055**

GITHUB

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

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
(1, 2, -5)
PS E:\SEM 3\PWP>
```

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)

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output:

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

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
(0, [1, 2, 3], (4, 5, 6), 7.0)
PS E:\SEM 3\PWP>
```

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:

```
7   languages = ('Python', 'Swift', 'C++')
8   print(languages[0])
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
Python
PS E:\SEM 3\PWP>
```

Python Tuple Length

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

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

output:

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

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
Total Items: 4
PS E:\SEM 3\PWP>
```

Task
a = tuple(range(5))
print(a)
output

```
13    a = tuple(range(5))
14    print(a)
15
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
(0, 1, 2, 3, 4)
PS E:\SEM 3\PWP>
```

b = tuple(range(5,10))
print(b)
Output:

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

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  Code

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\tempCodeRunnerFile.py"
(5, 6, 7, 8, 9)
PS E:\SEM 3\PWP>
```

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

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output:

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

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
(0, 2, 4, 6, 8)
PS E:\SEM 3\PWP>
```

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

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

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
(10, 8, 6, 4, 2)
PS E:\SEM 3\PWP>
```

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

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

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
14
PS E:\SEM 3\PWP>
```

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

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

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
4
PS E:\SEM 3\PWP>
```

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:

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```
31    t3 = (3,4,4,2,2,3,6,7,4,4)
32    print(t3.index(2))
33    print(t3.index(4,3,9))
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
3
8
PS E:\SEM 3\PWP>
```

5. Python min() Method

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

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

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
2
PS E:\SEM 3\PWP>
```

6. Python max() Method
Calculates the maximum of all the elements of the tuple.
numbers = (7, 2, 8, 5, 9)
print(max(numbers))
output:

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```
39    numbers = (7, 2, 8, 5, 9)
40    print(max(numbers))
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
9
PS E:\SEM 3\PWP>
```

# 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:

```
42    a = (5,6,7,5,5,9,7)
43    b = ("a","b","v","b")
44    my_tu_1 = tuple(dict.fromkeys(a))
45    print(my_tu_1)
46    my_tu_2 = tuple(dict.fromkeys(b))
47    print(my_tu_2)
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
(5, 6, 7, 9)
('a', 'b', 'v')
PS E:\SEM 3\PWP>
```

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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:

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

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
(('Simon', 'Sinek', 49), ('Sarah', 'Smith', 55), ('Mehdi', 'Lotfinejad', 39), ('Fatime', 'Lopes', 33))
PS E:\SEM 3\PWP>
```

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:

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

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_5.py"
(1, 2, 3, 4, 5, 6)
PS E:\SEM 3\PWP>
```

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Post Lab Exercise:

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

```
1   #Question 1
2   t = (1, 2, 3, 2, 4, 2, 5)
3   print("Count of 2:", t.count(2))
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_5.py"
Count of 2: 3
PS E:\SEM 3\PWP>
```

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

```
5   #Question 2
6   t = (10, 20, 30, 40)
7   num = int(input("Enter a number:"))
8   if num in t:
9       print("Found")
10  else:
11      print("Not found")
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_5.py"
Enter a number:30
Found
PS E:\SEM 3\PWP>
```

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

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```
13  #Question 3
14  t = ('I', 'C', 'T')
15  s = ''.join(t)
16  print("String:", s)
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_5.py"
String: ICT
PS E:\SEM 3\PWP>
```

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

```
18  #Question 4
19  t = (12,13,14,15,16)
20  print("Maximum:", max(t))
21  print("Minimum:", min(t))
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_5.py"
Maximum: 16
Minimum: 12
PS E:\SEM 3\PWP>
```

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

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```
23  #Question 5
24  t = ("Python","Labs")
25  s = " ".join(t)
26  print("Single String:", s)
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_5.py"
Single String: Python Labs
PS E:\SEM 3\PWP>
```

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

```
28  #Question 6
29  t = (9,1,5,23,17)
30  sort = tuple(sorted(t))
31  print("Sorted tuple:", sort)
32
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_5.py"
Sorted tuple: (1, 5, 9, 17, 23)
PS E:\SEM 3\PWP>
```

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

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```
33  #Question 7
34  t = (1,2,3,4,5)
35  print("First element:", t[0])
36  print("Last element:", t[-1])
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_5.py"
First element: 1
Last element: 5
PS E:\SEM 3\PWP>
```