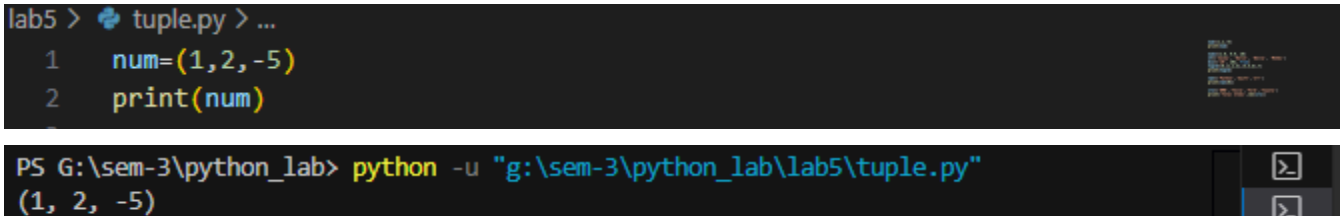
Marwadi University Marwadi Chandarana Group NAAC A+	**Marwadi University** **Faculty of Engineering & Technology** **Department of Information and Communication Technology**	
Subject: Programming With Python (01CT1309)	**Aim:** Write a program to demonstrate working with tuples in python.	
Experiment No: 05	**Date:04/08/25**	**Enrollment No:92400133037**

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:



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)

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

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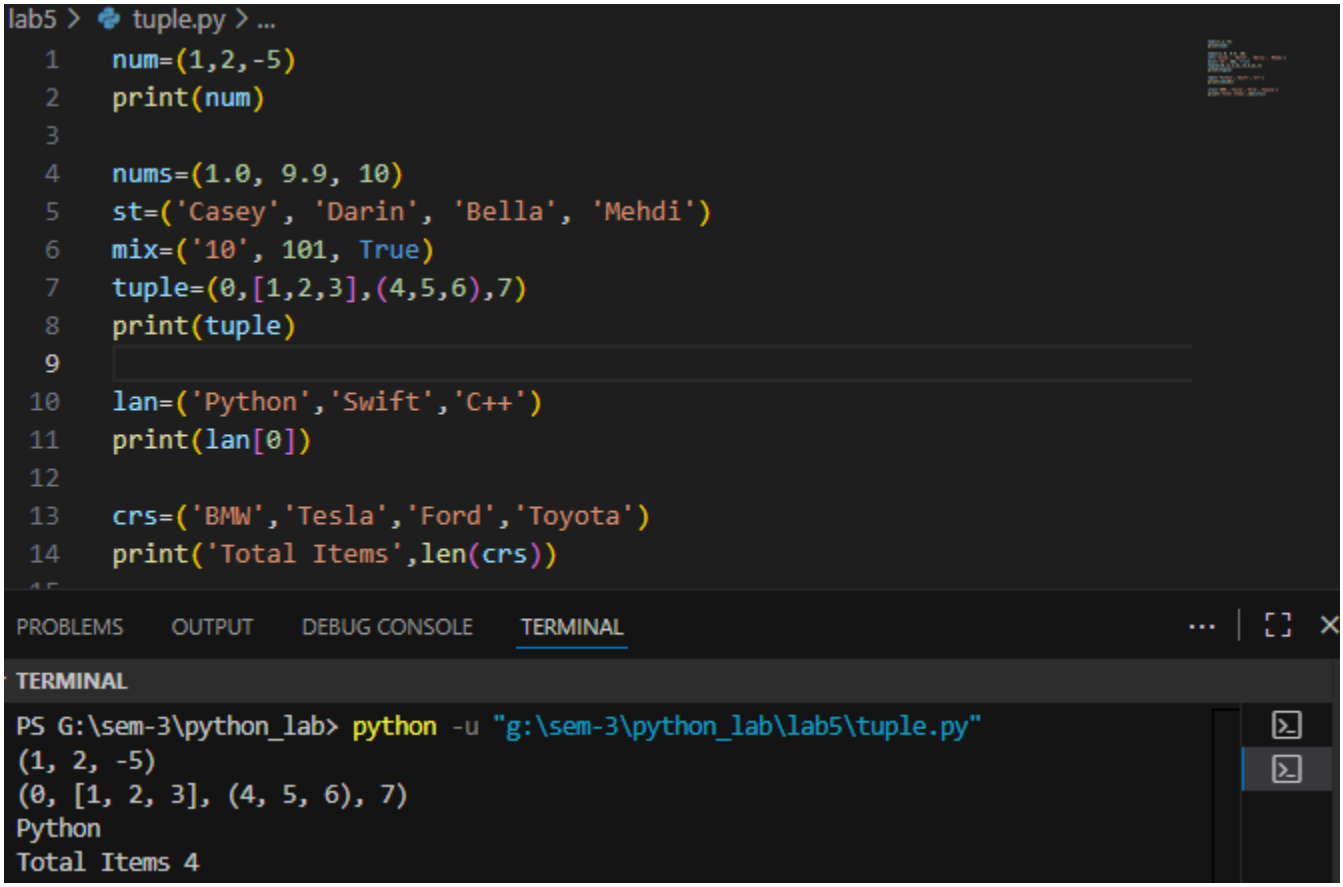
print(languages[0]) # Python

Python Tuple Length
cars = ('BMW', 'Tesla', 'Ford', 'Toyota')
print('Total Items:', len(cars))
output



Task
a = tuple(range(5))

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

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

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

Task:
d = (3,[5,6,7],(4,5,6),[5,6,7,(6,7,8)],9,10)
Extract **6**
Syntax:

```python
a=tuple(range(5))
print(a)
b=tuple(range(5,10))
print(b)
c = tuple(range(0,10,2))
print(c)
d = tuple(range(10,0,-2))
print(d)

d = (3,[5,6,7],(4,5,6),[5,6,7,(6,7,8)],9,10)
print(d[1][1])
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
TERMINAL                                  Code
PS G:\sem-3\python_lab> python -u "g:\sem-3\python_lab\lab5\task.py"
(0, 1, 2, 3, 4)
(5, 6, 7, 8, 9)
(0, 2, 4, 6, 8)
(10, 8, 6, 4, 2)
6
```

Important Functions of the Python Tuple
t1 = (2,3,4,5)
print(sum(t1))
output

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

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```
TERMINAL                                                    Code
PS G:\sem-3\python_lab> python -u "g:\sem-3\python_lab\lab5\tuple-fns.py"
14
```

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

5. Python min() Method

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

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

```
4   t3=(3,4,4,2,2,3,6,7,4,4)
5   print(t3.count(4))
6   print(t3.index(2))#returns the index of the first occurrence
7   print(t3.index(4,3,9))#tuple.index(x, start, end)
8   print(min(t3))
9
10  num=(7,2,8,5,9)
11  print(max(num))
12
```

```
4
3
8
2
9
```

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# 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:

```
12
13    a=(5,6,7,5,5,9,7)
14    b=("a","b","v","b")
15    tu1=tuple(dict.fromkeys(a))
16    print(tu1)
17    tu2=tuple(dict.fromkeys(b))
18    print(tu2)
```

```
(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

```
19
20    first_names = ('Simon', 'Sarah', 'Mehdi', 'Fatime')
21    last_names = ('Sinek', 'Smith', 'Lotfinejad', 'Lopes')
22    ages=(49,55,39,33)
23    com=tuple(zip(first_names,last_names,ages))
24    print(com)
```

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

Flatten a tuple of tuples

b = ((1,2),(3,4),(5,6))

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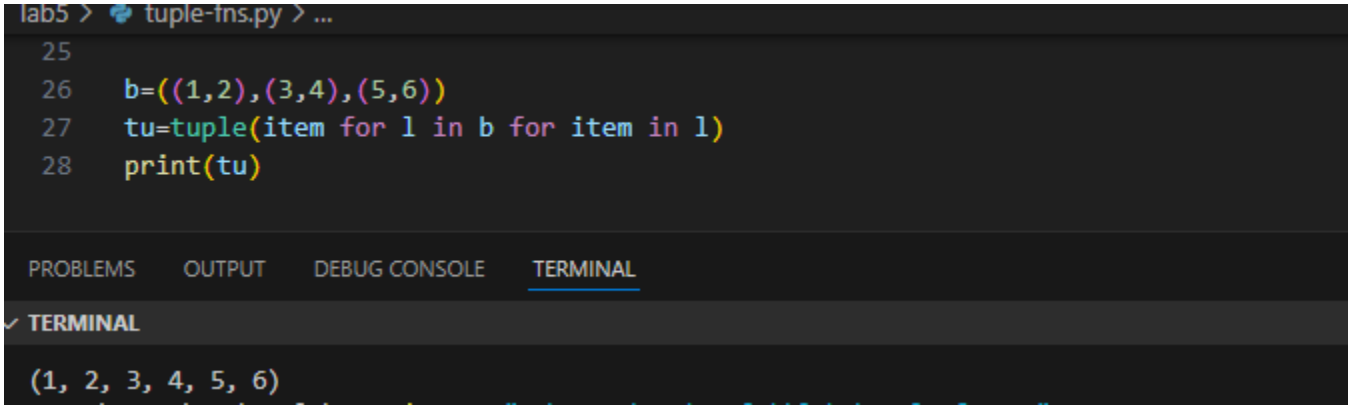
my = tuple(item for l in b for item in l)
print(my)
output



Post Lab Exercise:

a. Write a Python program to Count the occurrences of an element in a tuple.
b. Write a Python program to Check if an element exists in a tuple.
c. Write a Python program to Convert a tuple to a string.
d. Write a Python program to Find the maximum and minimum elements in a tuple.
e. Write a Python program to convert a tuple of strings to a single string.
f. Write a Python program to sort a tuple of integers.
g. Write a python program to find the first and last elements of a tuple.

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lab5 > PostLab.py > ...

```python
#a. Write a Python program to Count the occurrences of an element in a tuple
tu =('a','a','a','b','c','d','d','e')
freq={}
for i in tu:
    freq[i]=freq[i]+1 if i in freq else 1
print("Frequency of elements:",freq)

#b.Write a Python program to Check if an element exists in a tuple.
t=(10,20,30,40,50)
el=22
if el in t:
    print(f"{el} exists in the tuple")
else:
    print(f"{el} does not exist in the tuple")

#c. Write a Python program to Convert a tuple to a string.
t=('p','y','t','h','o','n')
print("Tuple converted to string:",''.join(t))

#d. Find the maximum and minimum elements in a tuple
t=(5,0,-3,1,0.6,4)
print("Maximum element:",max(t))
print("Minimum element:",min(t))

#e. Convert a tuple of strings to a single string
t=("Hello","World","Python")
print("Tuple converted to single string:"," ".join(t))
```

lab5 > PostLab.py > ...

```python

#f. Sort a tuple of integers
t=(5,1,-2,3,7)
print("Sorted:",tuple(sorted(t)))

#g. Find the first and last elements of a tuple
t = (10, 20, 30, 40, 50)

print("First element:", t[0])
print("Last element:", t[-1])
```

```
PS G:\sem-3\python_lab> python -u "g:\sem-3\python_lab\lab5\PostLab.py"
Frequency of elements: {'a': 3, 'b': 1, 'c': 1, 'd': 2, 'e': 1}
22 does not exist in the tuple
Tuple converted to string: python
Maximum element: 5
Minimum element: -3
Tuple converted to single string: Hello World Python
Sorted: (-2, 1, 3, 5, 7)
First element: 10
Last element: 50
```

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GITHUB LINK

https://github.com/Heer972005/Python_Lab