
 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:92400133189

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.

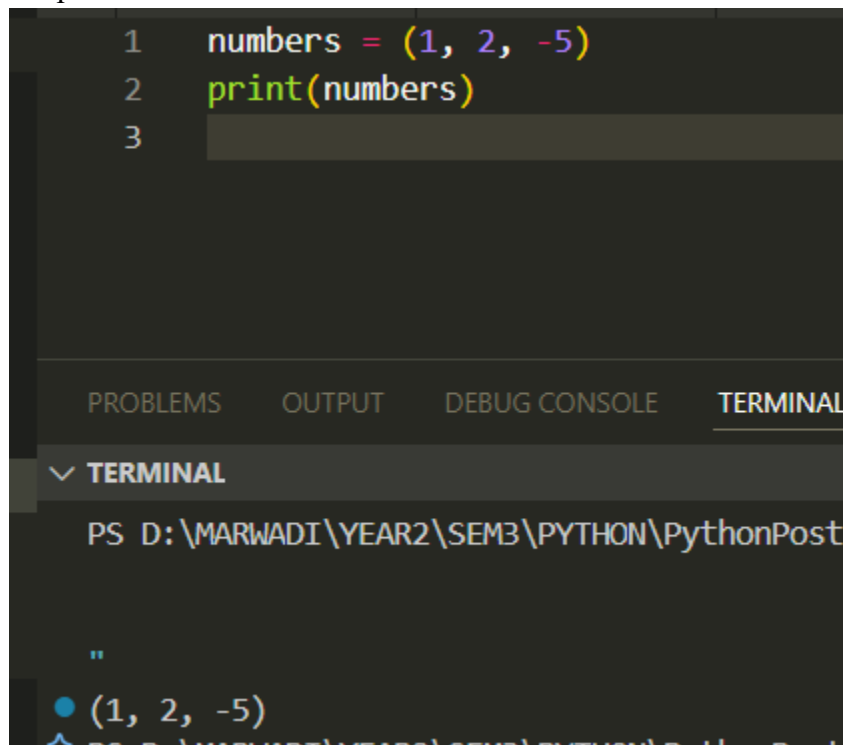
A tuple represents a sequence of any objects separated by commas and enclosed in parentheses. A tuple is an immutable object, which means it cannot be changed, and we use it to represent fixed collections of items.

Create a Python Tuple

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

```
print(numbers)
```

Output:



```

1  numbers = (1, 2, -5)
2  print(numbers)
3

```



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"

• (1, 2, -5)

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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

```

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

```

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PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab> python -u "d

python -u "d

"

• (0, [1, 2, 3], (4, 5, 6), 7.0)

PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab>

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Access Tuple Items

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

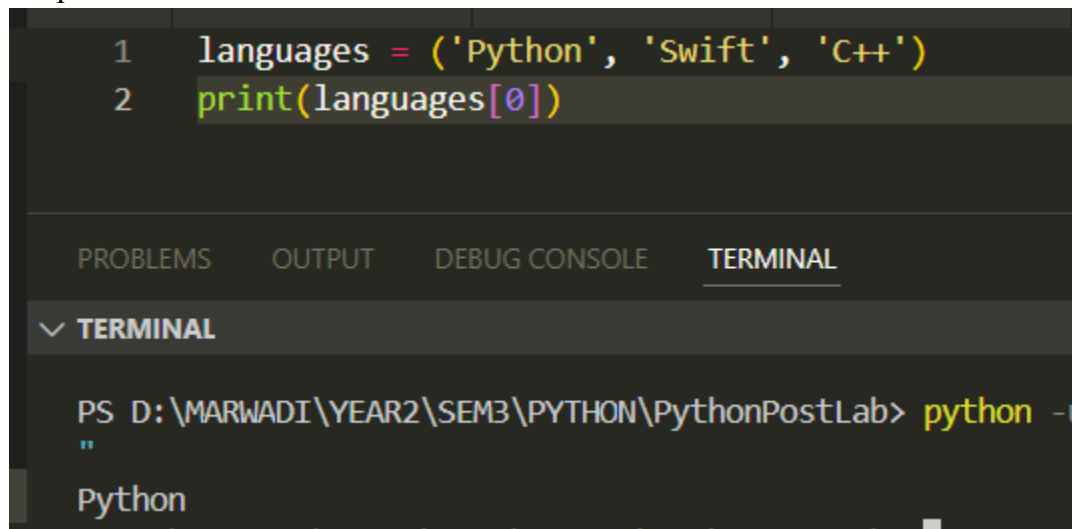
```
languages = ('Python', 'Swift', 'C++')
```

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

```
# access the first item
```

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

Output:



```

1  languages = ('Python', 'Swift', 'C++')
2  print(languages[0])

```



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```

PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab> python -U
"
Python

```

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Python Tuple Length

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

output

```


1 cars = ('BMW', 'Tesla', 'Ford', 'Toyota')
2 print('Total Items:', len(cars))
3

```

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● PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab> py
python -u "d:
"
Total Items: 4

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Task

a = tuple(range(5))

output

```

1  a = tuple(range(5))
2  print(a)

```

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(0, 1, 2, 3, 4)

b = tuple(range(5,10))

print(b)

Output:

```

1  b = tuple(range(5,10))
2  print(b)
3



```

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PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab>

(5, 6, 7, 8, 9)

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

```

1  c = tuple(range(0,10,2))
2  print(c)
3

```

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```

PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab>
(0, 2, 4, 6, 8)

```

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

```

1  d = tuple(range(10,0,-2))
2  print(d)
3

```


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```

PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab> py
(10, 8, 6, 4, 2)

```

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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

```



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

```

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



1
2
3

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

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4

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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:

```



1  t3 = (3,4,4,2,2,3,6,7,4,4)
2  print(t3.index(2))
3  print(t3.index(4,3,9))
4

```

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3
8

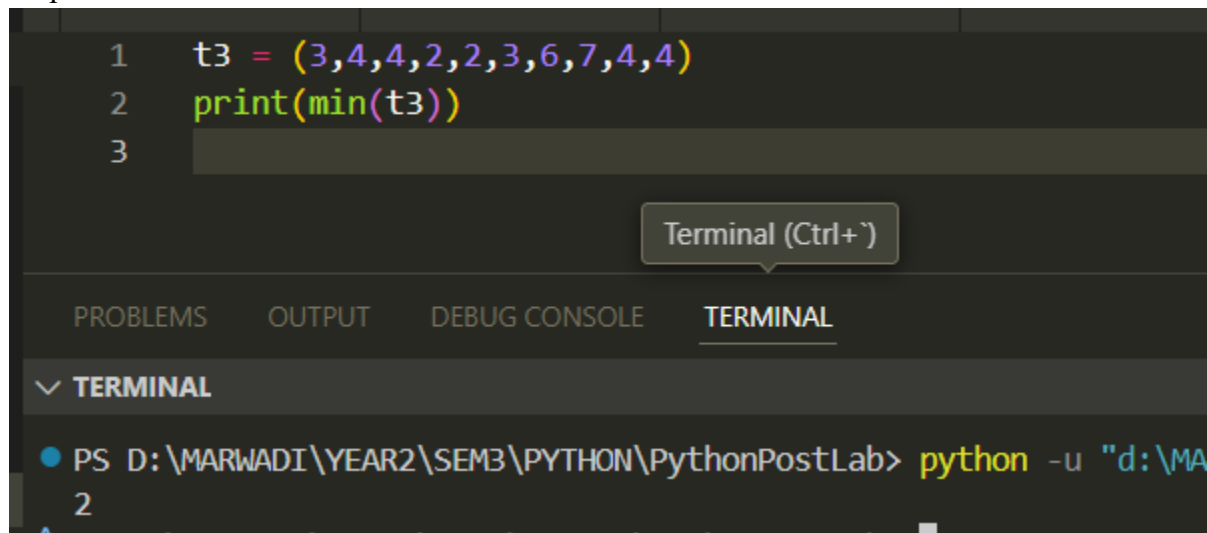
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5. Python min() Method

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

print(min(t3))

output



```

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



```

Terminal (Ctrl+`)

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2

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6. Python max() Method

Calculates the maximum of all the elements of the tuple.

```
numbers = (7, 2, 8, 5, 9)
```

```
print(max(numbers))
```

output

```

1  numbers = (7, 2, 8, 5, 9)
2  print(max(numbers))
3


```

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● PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab

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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:

```

1  a = (5,6,7,5,5,9,7)
2  b = ("a","b","v","b")
3  my_tu_1 = tuple(dict.fromkeys(a))
4  print(my_tu_1)
5  my_tu_2 = tuple(dict.fromkeys(b))
6  print(my_tu_2)
7  |

```



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```

PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab> python
(5, 6, 7, 9)
('a', 'b', 'v')

```

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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
```

```


1 first_names = ('Simon', 'Sarah', 'Mehdi', 'Fatime')
2 last_names = ('Sinek', 'Smith', 'Lotfinejad', 'Lopes')
3 ages = (49, 55, 39, 33)
4 zipped = tuple(zip(first_names, last_names, ages))
5 print(zipped)
6

```

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● PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab> python -u "d:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab\
(('Simon', 'Sinek', 49), ('Sarah', 'Smith', 55), ('Mehdi', 'Lotfinejad', 39), ('Fatime', 'Lopes', 33))

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

```

Debug Console (Ctrl+Shift+Y)


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```

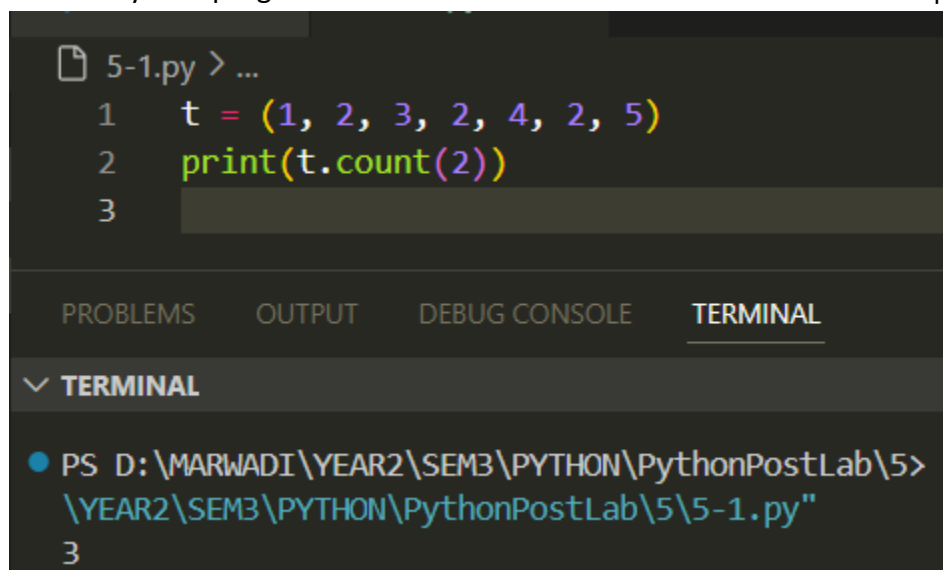
PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab> python -u "d:\MARWADI\YEAR2\SE
python -u "d:\MARWADI\YEAR2\SE
(1, 2, 3, 4, 5, 6)

```

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Post Lab Exercise:

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



```

5-1.py > ...
1  t = (1, 2, 3, 2, 4, 2, 5)
2  print(t.count(2))
3

```



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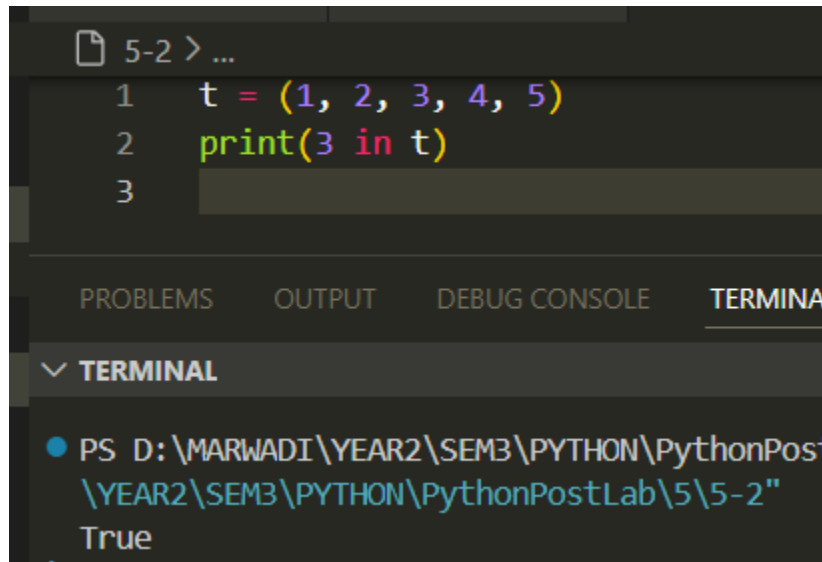
```

PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab\5> p
\YEAR2\SEM3\PYTHON\PythonPostLab\5\5-1.py"
3

```

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



```


5-2 > ...
1  t = (1, 2, 3, 4, 5)
2  print(3 in t)
3

```

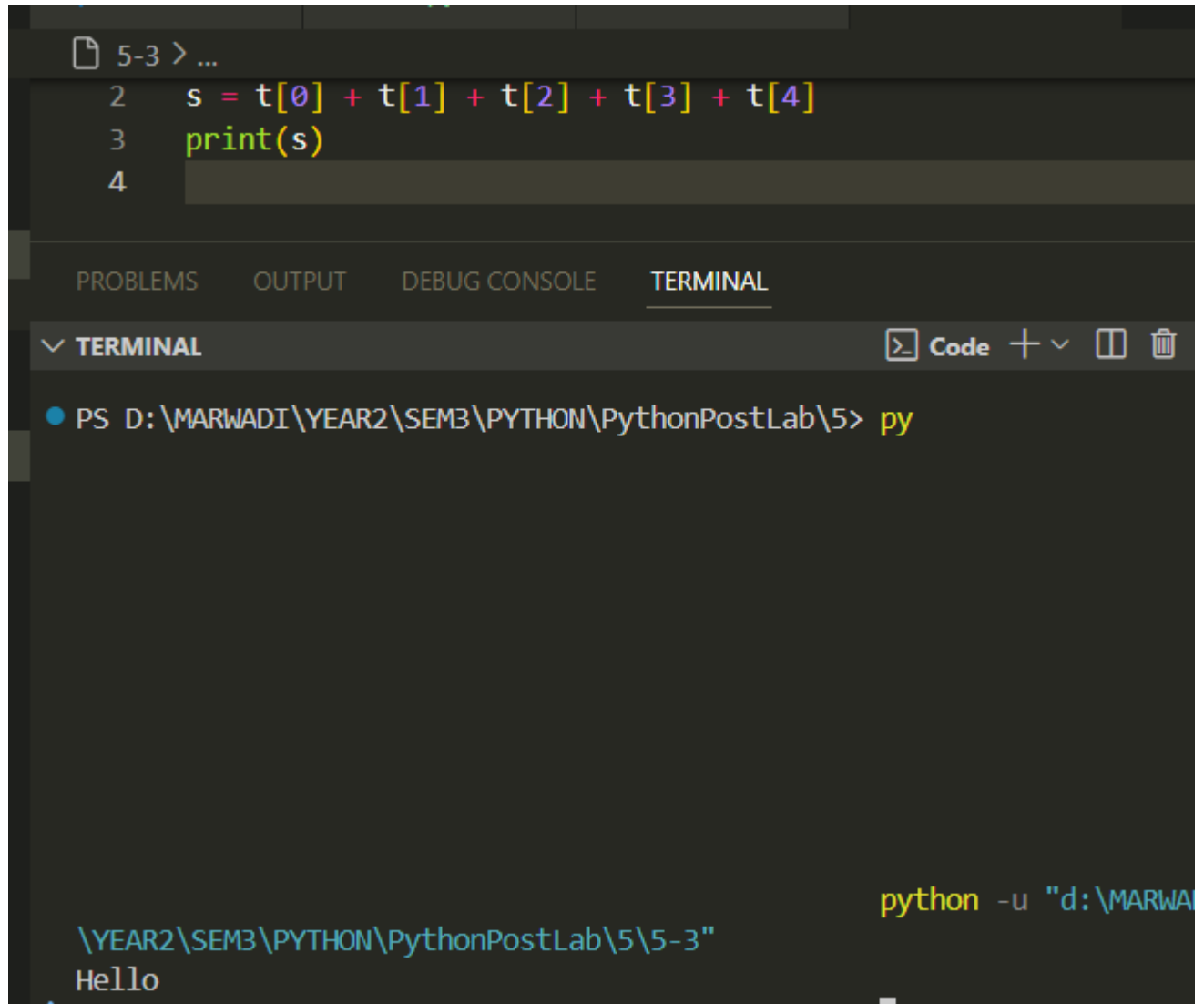
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PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab\5\5-2" True

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



```

5-3 > ...
2 s = t[0] + t[1] + t[2] + t[3] + t[4]
3 print(s)
4

```


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✓ **TERMINAL** Code + - [] [X]

● PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab\5> py

python -u "d:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab\5\5-3"

Hello

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

```

5-4 > ...
1  t = (10, 25, 5, 30, 15)
2  print(max(t))
3  print(min(t))
4

```


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```

PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab\5> python -u "d:\MARW
30
5

```

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

```

5-5 > ...
1  t = ('Python', 'is', 'fun')
2  s = t[0] + " " + t[1] + " " + t[2]
3  print(s)
4

```


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```

PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab\5> python -u "d:\V
python -u "d:\V
Python is fun

```

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

```

5-6 > ...
1  t = (5, 2, 8, 1, 9)
2  print(tuple(sorted(t)))
3

```

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```

PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab\5> py
python
(1, 2, 5, 8, 9)
PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab\5>

```

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

```

5-7 > ...
1  t = (10, 20, 30, 40, 50)
2  print(t[0], t[-1])
3

```

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```

PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab\5> py
10 50

```