 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:4-8-2025	Enrollment No: 92400133108

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.

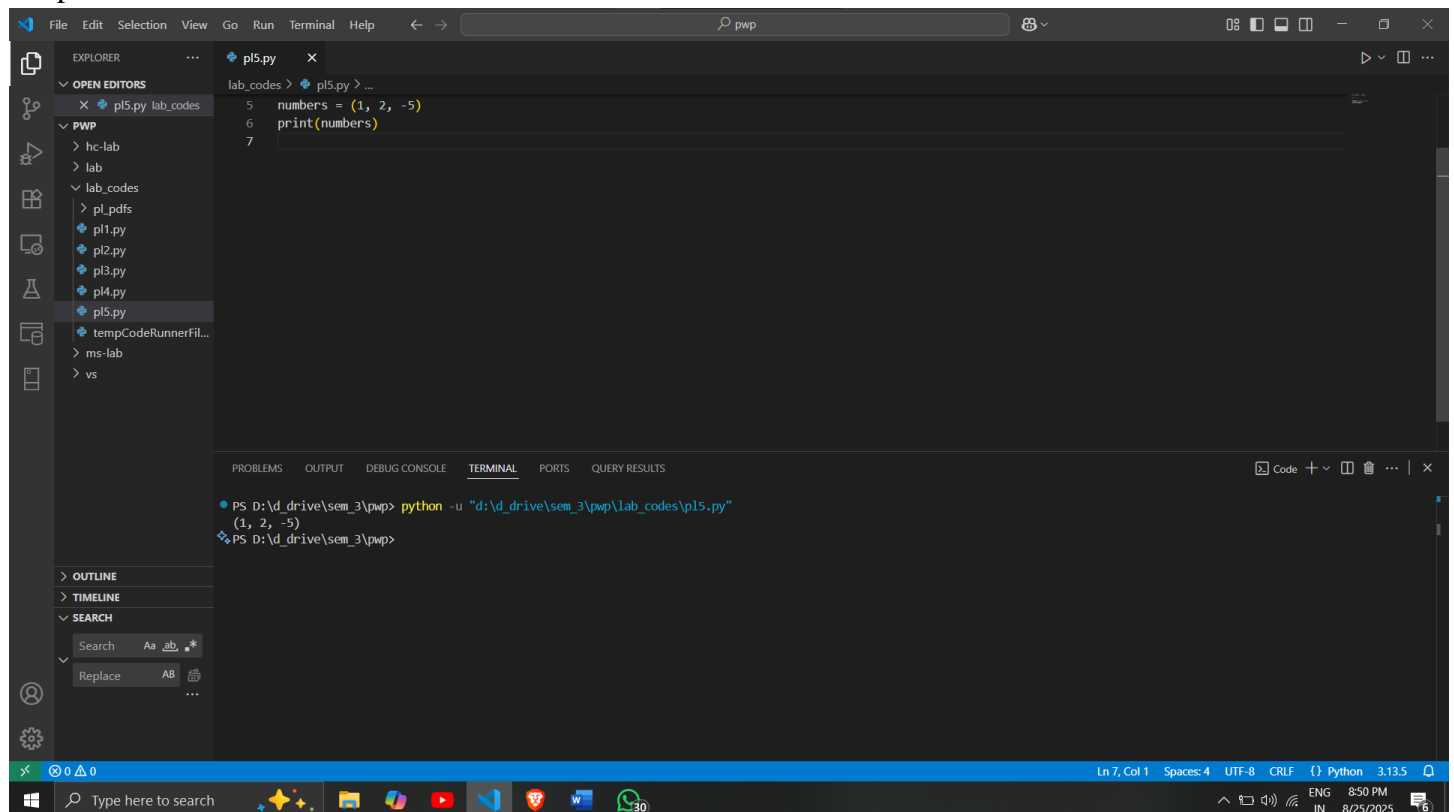
A tuple represents a sequence of any objects separated by commas and enclosed in parentheses. A tuple is an immutable object, which means it cannot be changed, and we use it to represent fixed collections of items.

Create a Python Tuple

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

```
print(numbers)
```

Output:





The screenshot shows a Visual Studio Code editor with a file named `pl5.py` open. The code in the editor is:

```
5 numbers = (1, 2, -5)
6 print(numbers)
7
```

The terminal at the bottom shows the command `python -u "d:\d_drive\sem_3\pwp\lab_codes\pl5.py"` being executed, and the output is `(1, 2, -5)`.

Let's take a look at some examples of Python tuples:

() — an empty tuple

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(1.0, 9.9, 10) — a tuple containing three numeric objects

('Casey', 'Darin', 'Bella', 'Mehdi') — a tuple containing four string objects

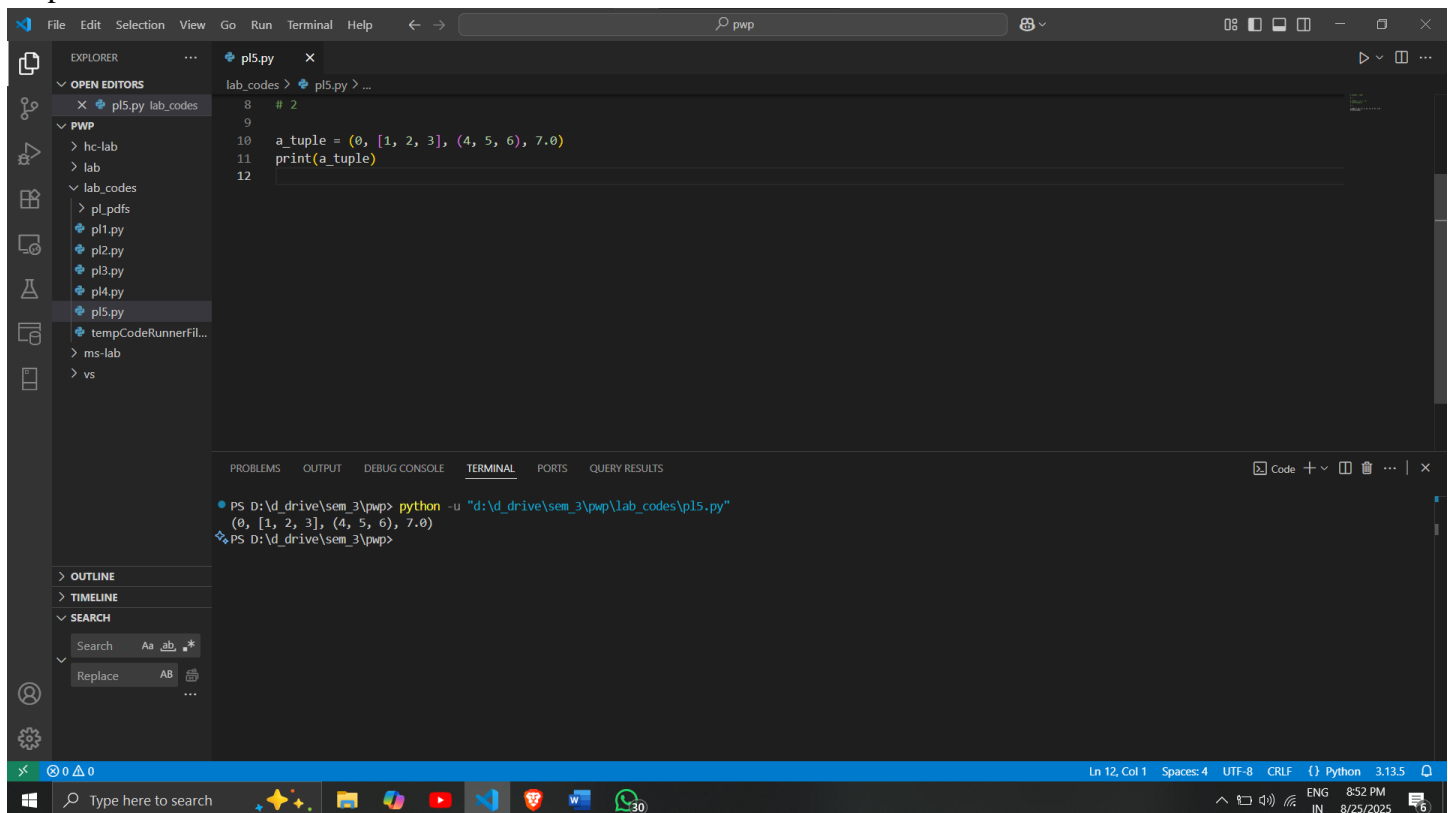
('10', 101, True) — a tuple containing a string, an integer, and a Boolean object

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



The screenshot shows a Visual Studio Code editor with a file explorer on the left containing a folder named 'lab_codes' with several Python files (pl1.py to pl5.py). The main editor window displays a file named 'pl5.py' with the following code:

```
8 # 2
9
10 a_tuple = (0, [1, 2, 3], (4, 5, 6), 7.0)
11 print(a_tuple)
12
```

Below the editor, the 'TERMINAL' panel shows the command prompt output:

```
PS D:\drive\sem_3\pwp> python -u "d:\drive\sem_3\pwp\lab_codes\pl5.py"
(0, [1, 2, 3], (4, 5, 6), 7.0)
PS D:\drive\sem_3\pwp>
```

The status bar at the bottom indicates the file is at Line 12, Column 1, using UTF-8 encoding with CRLF line endings, and the Python interpreter is set to version 3.13.5.

Access Tuple Items

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



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

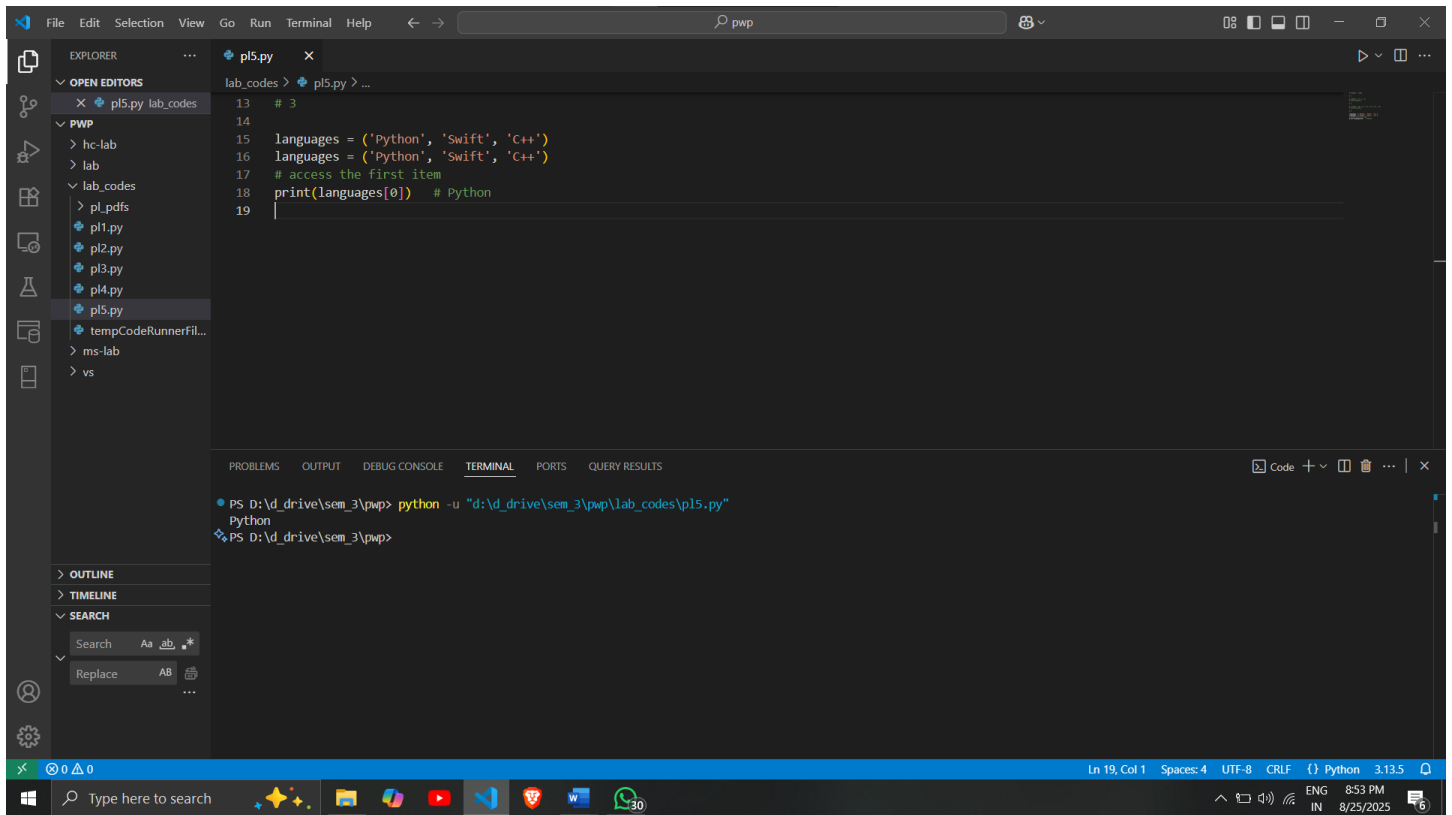
```
languages = ('Python', 'Swift', 'C++')
```

```
# access the first item
```

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

Output:

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The screenshot shows a Visual Studio Code editor with a file explorer on the left. The file explorer shows a project structure with folders like 'hc-lab', 'lab', 'lab_codes', and 'pl_pdfs'. The 'lab_codes' folder is expanded, showing files 'pl1.py', 'pl2.py', 'pl3.py', 'pl4.py', and 'pl5.py'. The 'pl5.py' file is open in the editor. The code in 'pl5.py' is as follows:

```

13 # 3
14
15 languages = ('Python', 'Swift', 'C++')
16 languages = ('Python', 'Swift', 'C++')
17 # access the first item
18 print(languages[0]) # Python
19

```

The terminal at the bottom shows the command to run the script:

```

PS D:\drive\sem_3\pwp> python -u "d:\drive\sem_3\pwp\lab_codes\pl5.py"
Python
PS D:\drive\sem_3\pwp>

```



The status bar at the bottom indicates the current line and column: 'Ln 19, Col 1'. The system tray at the bottom right shows the date and time: '8/25/2025 8:53 PM'.

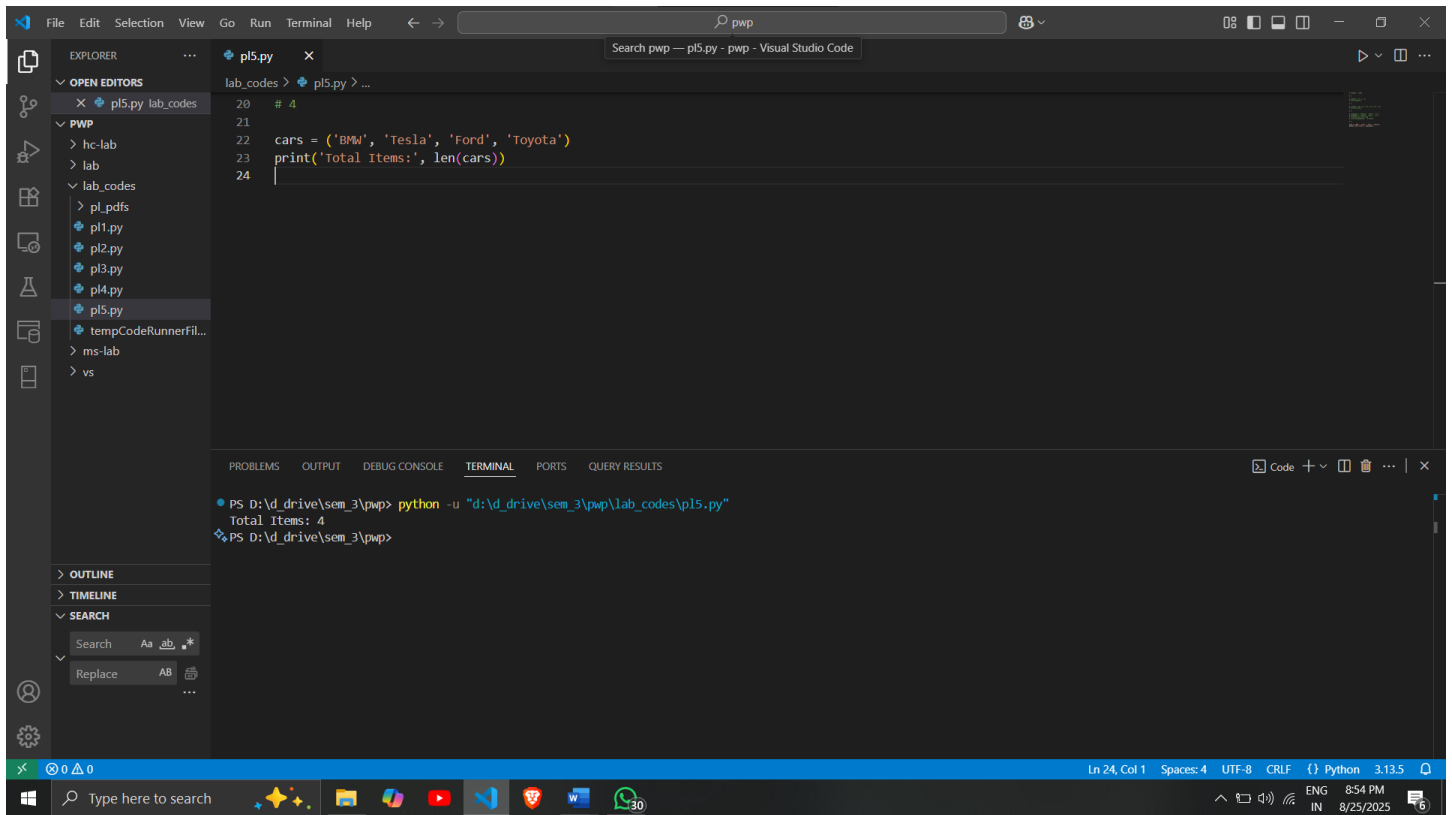
Python Tuple Length

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

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

output

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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108



The screenshot shows the Visual Studio Code interface. The Explorer panel on the left displays a file tree with folders like 'lab_codes' and 'pl5.py'. The main editor window shows a Python script named 'pl5.py' with the following code:

```

20 # 4
21
22 cars = ('BMW', 'Tesla', 'Ford', 'Toyota')
23 print('Total Items:', len(cars))
24

```

The TERMINAL panel at the bottom shows the command prompt output:

```

PS D:\d_drive\sem_3\pwp> python -u "d:\d_drive\sem_3\pwp\lab_codes\pl5.py"
Total Items: 4
PS D:\d_drive\sem_3\pwp>

```



The status bar at the bottom indicates the current line is 24, column 1, with 4 spaces, using UTF-8 encoding and CRLF line endings. The Python version is 3.13.5.

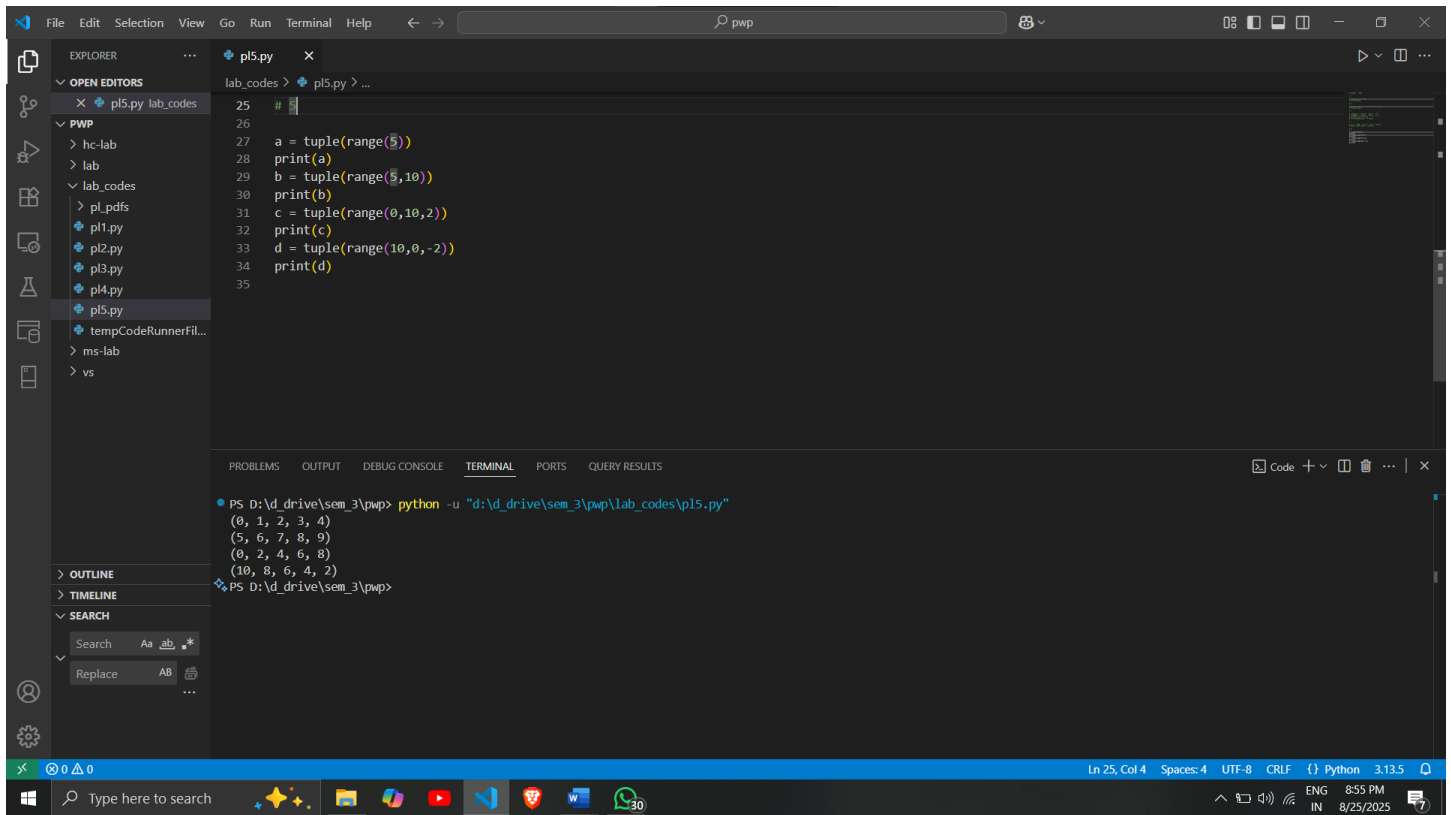
Task

```

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

```

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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108



```

25 #
26
27 a = tuple(range(5))
28 print(a)
29 b = tuple(range(5,10))
30 print(b)
31 c = tuple(range(0,10,2))
32 print(c)
33 d = tuple(range(10,0,-2))
34 print(d)
35

```

```

PS D:\drive\sem_3\pwp> python -u "d:\drive\sem_3\pwp\lab_codes\pl5.py"
(0, 1, 2, 3, 4)
(5, 6, 7, 8, 9)
(0, 2, 4, 6, 8)
(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:

print(d[1][1])

print(d[2][2])

print(d[3][1])



print(d[3][3][0])

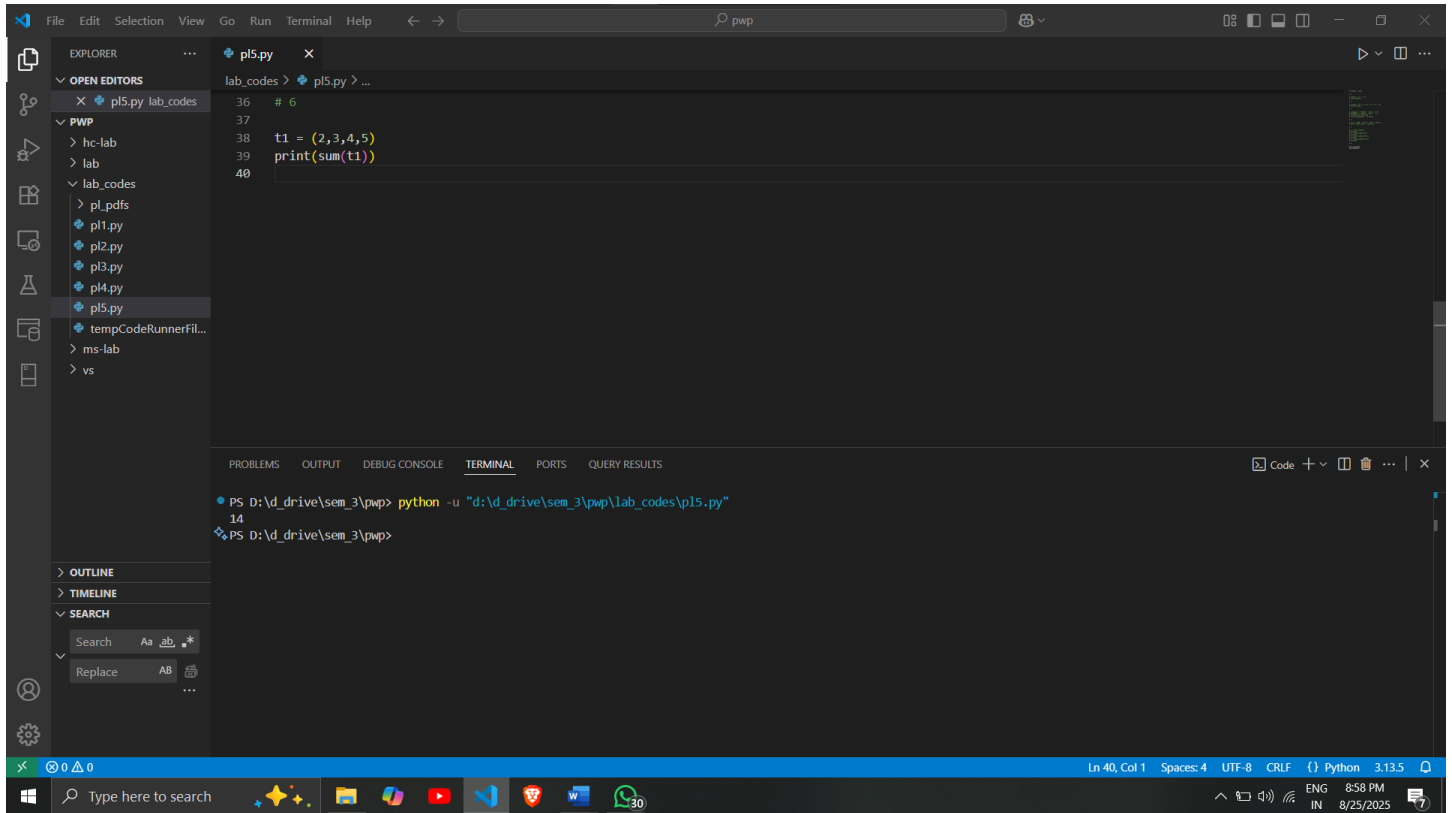
Important Functions of the Python Tuple

t1 = (2,3,4,5)

print(sum(t1))

output

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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108



The screenshot shows a Visual Studio Code editor with a file explorer on the left. The file explorer shows a project structure with folders like 'lab_codes' and 'vs'. The main editor window displays a Python file named 'pl5.py' with the following code:

```

36 # 6
37
38 t1 = (2,3,4,5)
39 print(sum(t1))
40

```

Below the editor, the terminal window shows the command to run the script:

```

PS D:\drive\sem_3\pwp> python -u "d:\drive\sem_3\pwp\lab_codes\pl5.py"
14
PS D:\drive\sem_3\pwp>



```

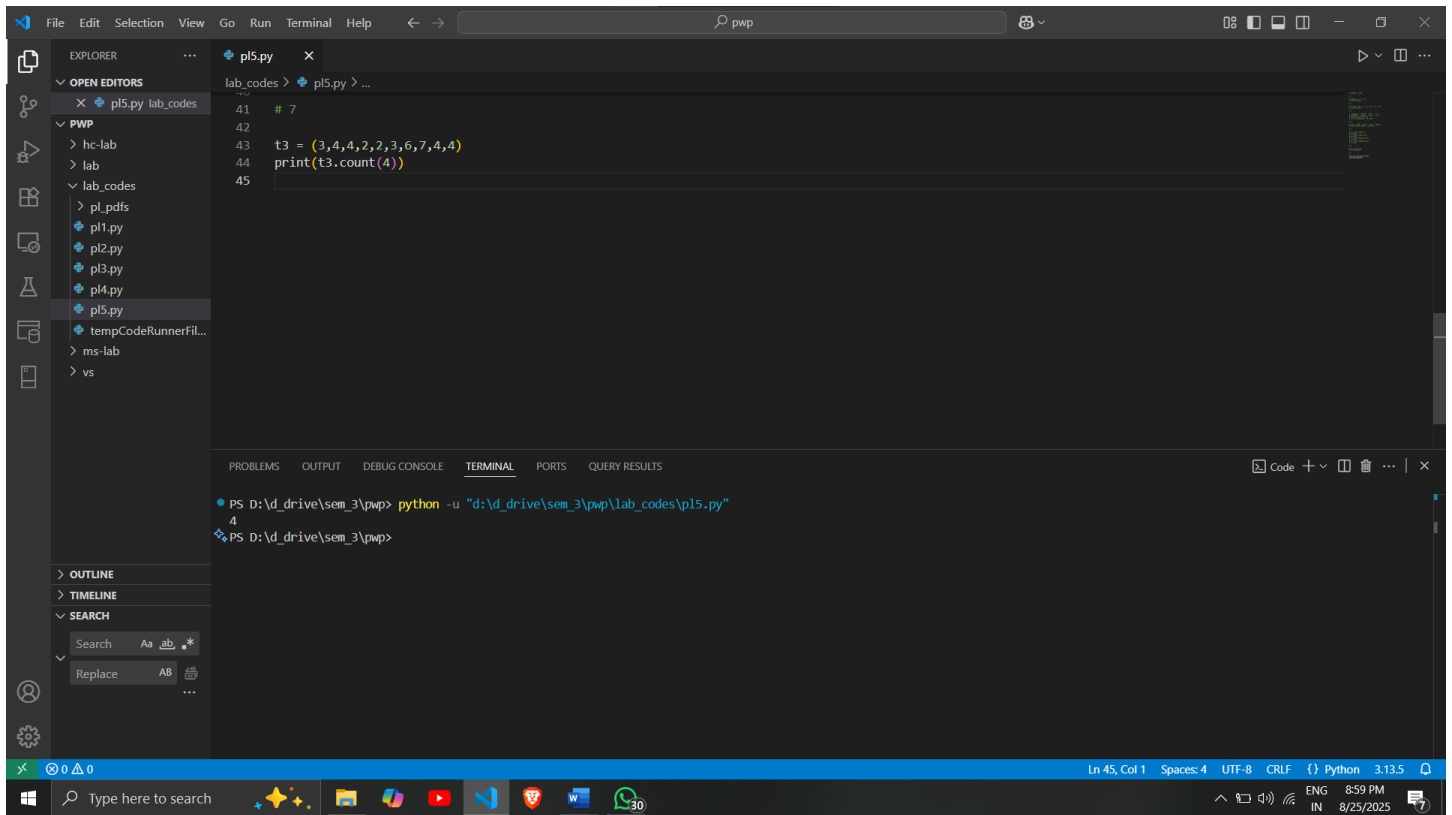
The status bar at the bottom indicates the current line and column (Ln 40, Col 1), the number of spaces (4), the encoding (UTF-8), the line ending (CRLF), the language (Python), and the version (3.13.5).

```

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

```

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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108



The screenshot shows the Visual Studio Code interface. The Explorer panel on the left displays a file tree with folders like 'lab_codes' and 'pl5.py'. The main editor window shows a Python script named 'pl5.py' with the following code:

```

41 # 7
42
43 t3 = (3,4,4,2,2,3,6,7,4,4)
44 print(t3.count(4))
45

```

The TERMINAL panel at the bottom shows the command prompt output:

```

PS D:\drive\sem_3\pwp> python -u "d:\drive\sem_3\pwp\lab_codes\pl5.py"
4
PS D:\drive\sem_3\pwp>

```



The status bar at the bottom indicates the current line and column as 'Ln 45, Col 1'.

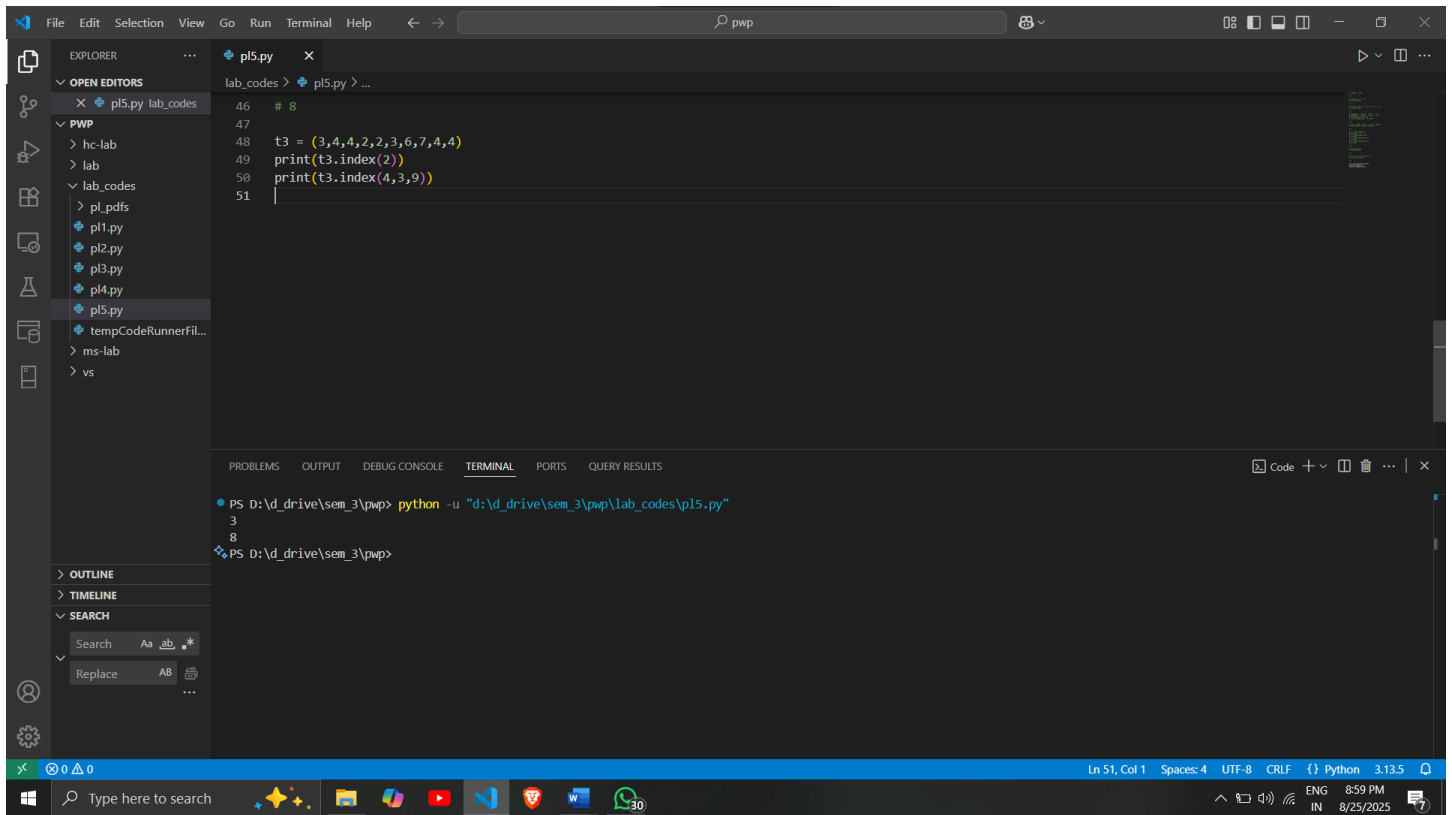
4. Python index() Method

```

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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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108



The screenshot shows a Visual Studio Code editor with a Python file named `pl5.py` open. The code in the file is as follows:

```

46 # 8
47
48 t3 = (3,4,4,2,2,3,6,7,4,4)
49 print(t3.index(2))
50 print(t3.index(4,3,9))
51

```

The terminal window at the bottom shows the command `python -u "d:\d_drive\sem_3\pwp\lab_codes\pl5.py"` being executed, resulting in the output:

```

3
8

```



The status bar at the bottom indicates the file is at line 51, column 1, using UTF-8 encoding with CRLF line endings, and the Python interpreter is set to 3.13.5.

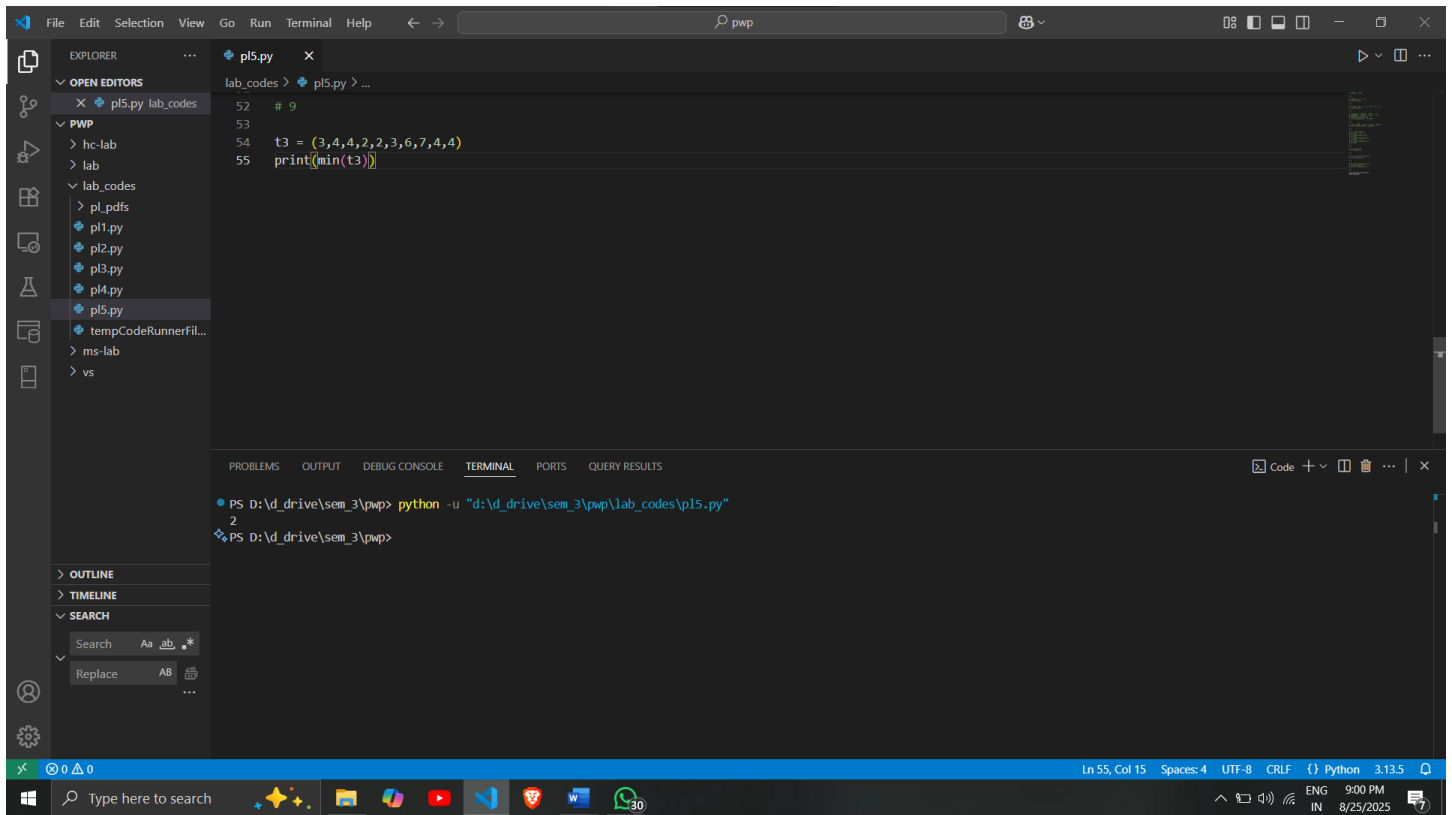
5. Python min() Method

```

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

```


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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108





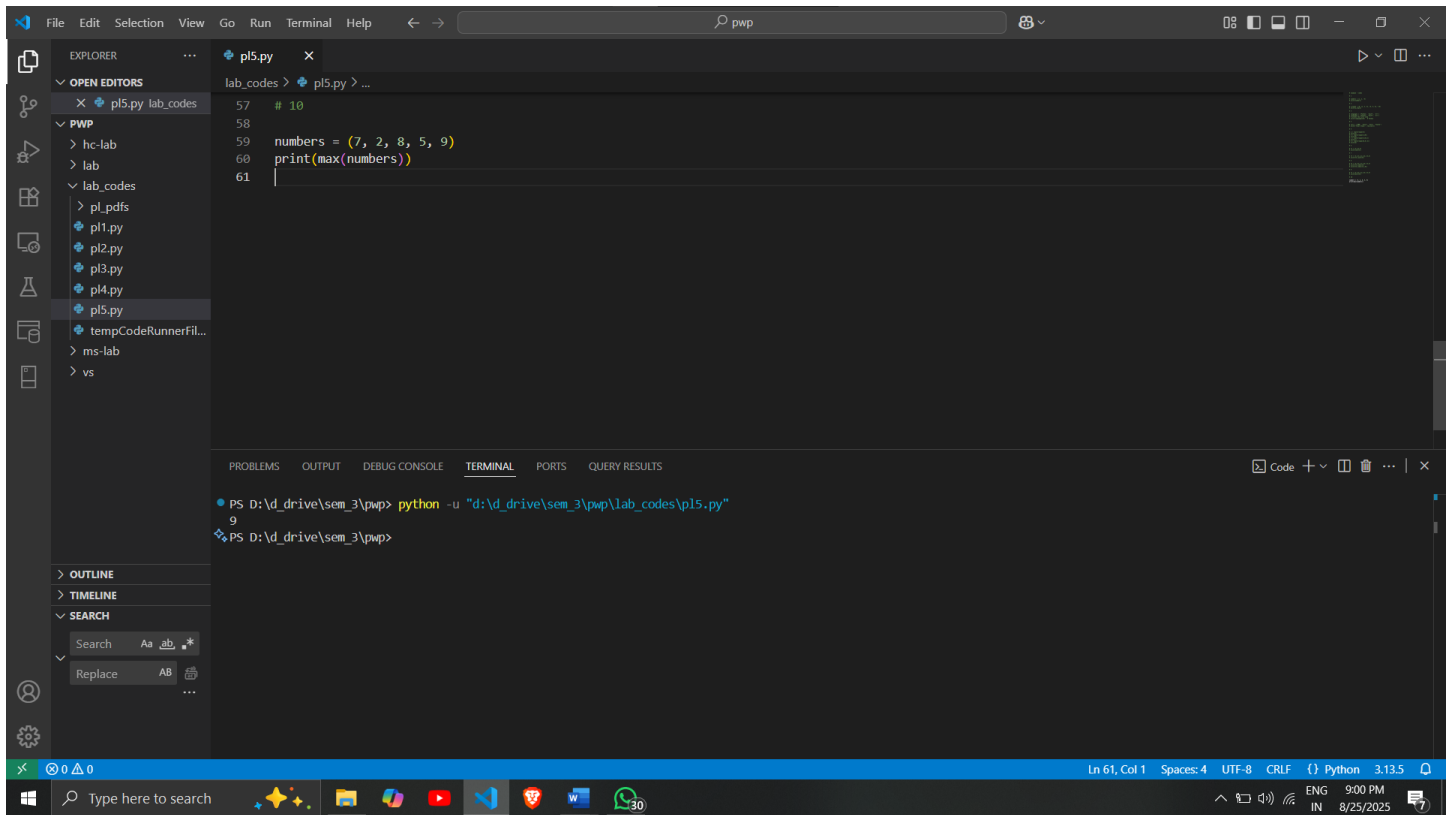
The screenshot shows a Visual Studio Code editor window with a file explorer on the left and a terminal at the bottom. The file explorer shows a project structure with a folder named 'lab_codes' containing several Python files, including 'pl5.py'. The main editor window displays the content of 'pl5.py', which contains the following code:

```
52 # 9
53
54 t3 = (3,4,4,2,2,3,6,7,4,4)
55 print(min(t3))
```

The terminal at the bottom shows the command to run the script: `python -u "d:\d_drive\sem_3\pwp\lab_codes\pl5.py"`. The output of the script is displayed as `2`, indicating that the minimum value in the tuple (3, 4, 4, 2, 2, 3, 6, 7, 4, 4) is 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

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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108



```

57 # 10
58
59 numbers = (7, 2, 8, 5, 9)
60 print(max(numbers))
61

```

```

PS D:\drive\sem_3\pwp> python -u "d:\drive\sem_3\pwp\lab_codes\pl5.py"
9
PS D:\drive\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))
```

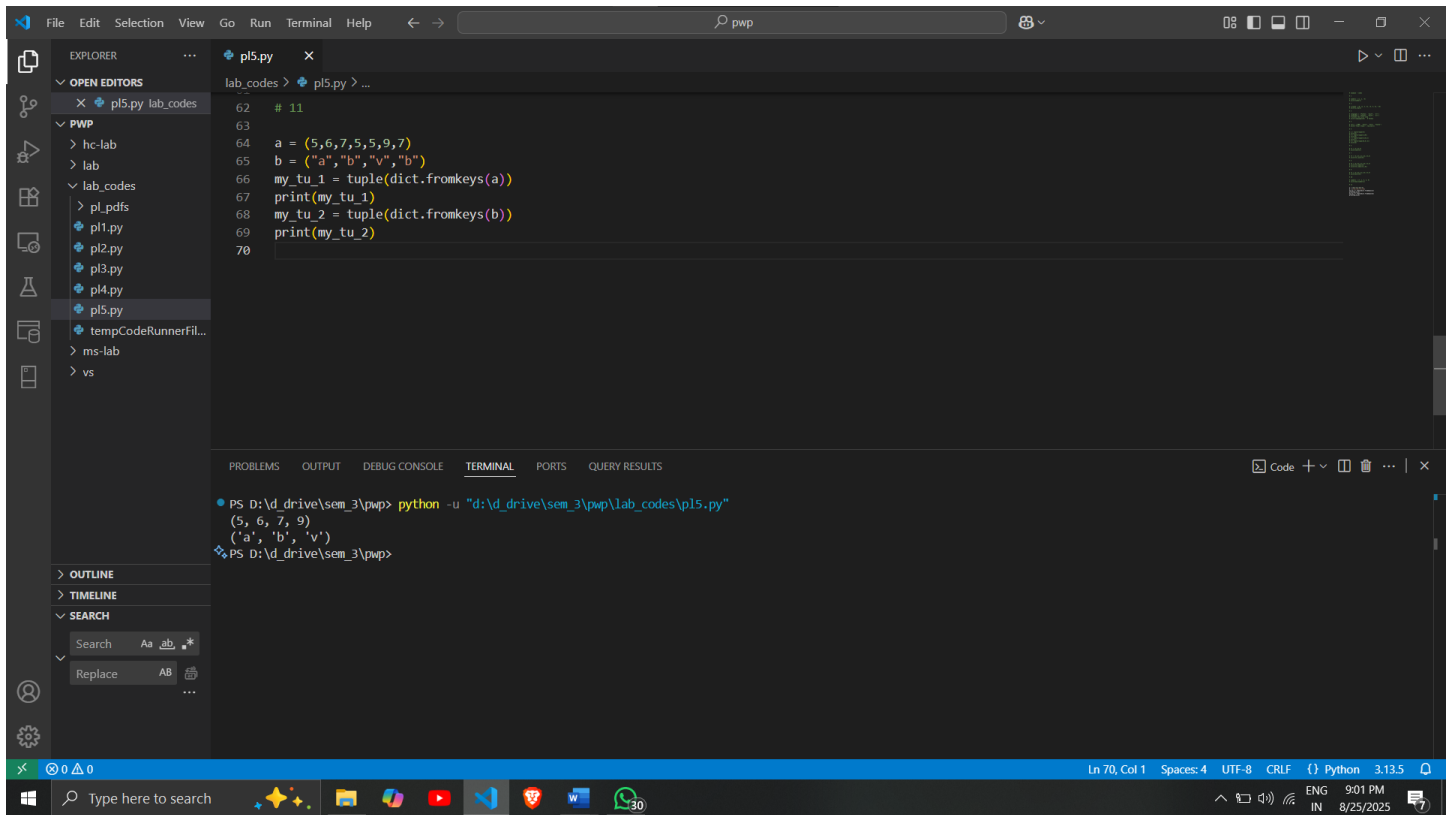
```
print(my_tu_1)
```

```
my_tu_2 = tuple(dict.fromkeys(b))
```

```
print(my_tu_2)
```

Output:

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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108



The screenshot shows the Visual Studio Code interface with a Python file named `pl5.py` open. The code in the file is as follows:

```

62 # 11
63
64 a = (5,6,7,5,5,9,7)
65 b = ("a","b","v","b")
66 my_tu_1 = tuple(dict.fromkeys(a))
67 print(my_tu_1)
68 my_tu_2 = tuple(dict.fromkeys(b))
69 print(my_tu_2)
70

```

The terminal window at the bottom shows the command `python -u "d:\d_drive\sem_3\pwp\lab_codes\pl5.py"` being executed, resulting in the output:

```

(5, 6, 7, 9)
('a', 'b', 'v')



```

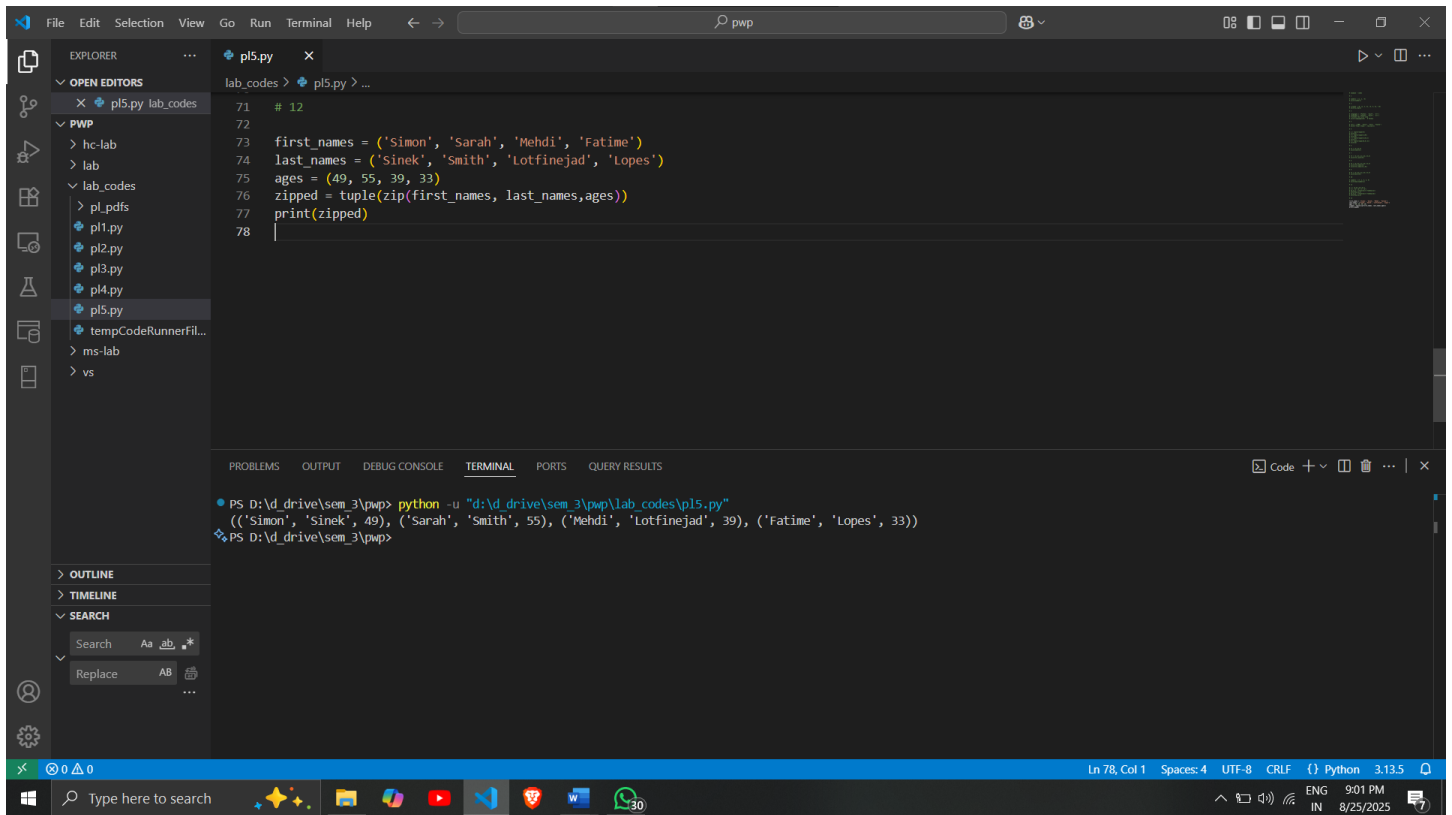
Combining tuples

```

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

```

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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108



The screenshot shows the Visual Studio Code interface with a Python file named `pl5.py` open. The code defines a tuple of first names, a tuple of last names, and a tuple of ages, then zips them together and prints the result. The terminal output shows the execution of the script, resulting in a tuple of tuples.

```

71 # 12
72
73 first_names = ('Simon', 'Sarah', 'Mehdi', 'Fatime')
74 last_names = ('Sinek', 'Smith', 'Lotfinejad', 'Lopes')
75 ages = (49, 55, 39, 33)
76 zipped = tuple(zip(first_names, last_names, ages))
77 print(zipped)
78

```

```

PS D:\drive\sem_3\pwp> python -u "d:\drive\sem_3\pwp\lab_codes\pl5.py"
(('Simon', 'Sinek', 49), ('Sarah', 'Smith', 55), ('Mehdi', 'Lotfinejad', 39), ('Fatime', 'Lopes', 33))
PS D:\drive\sem_3\pwp>



```

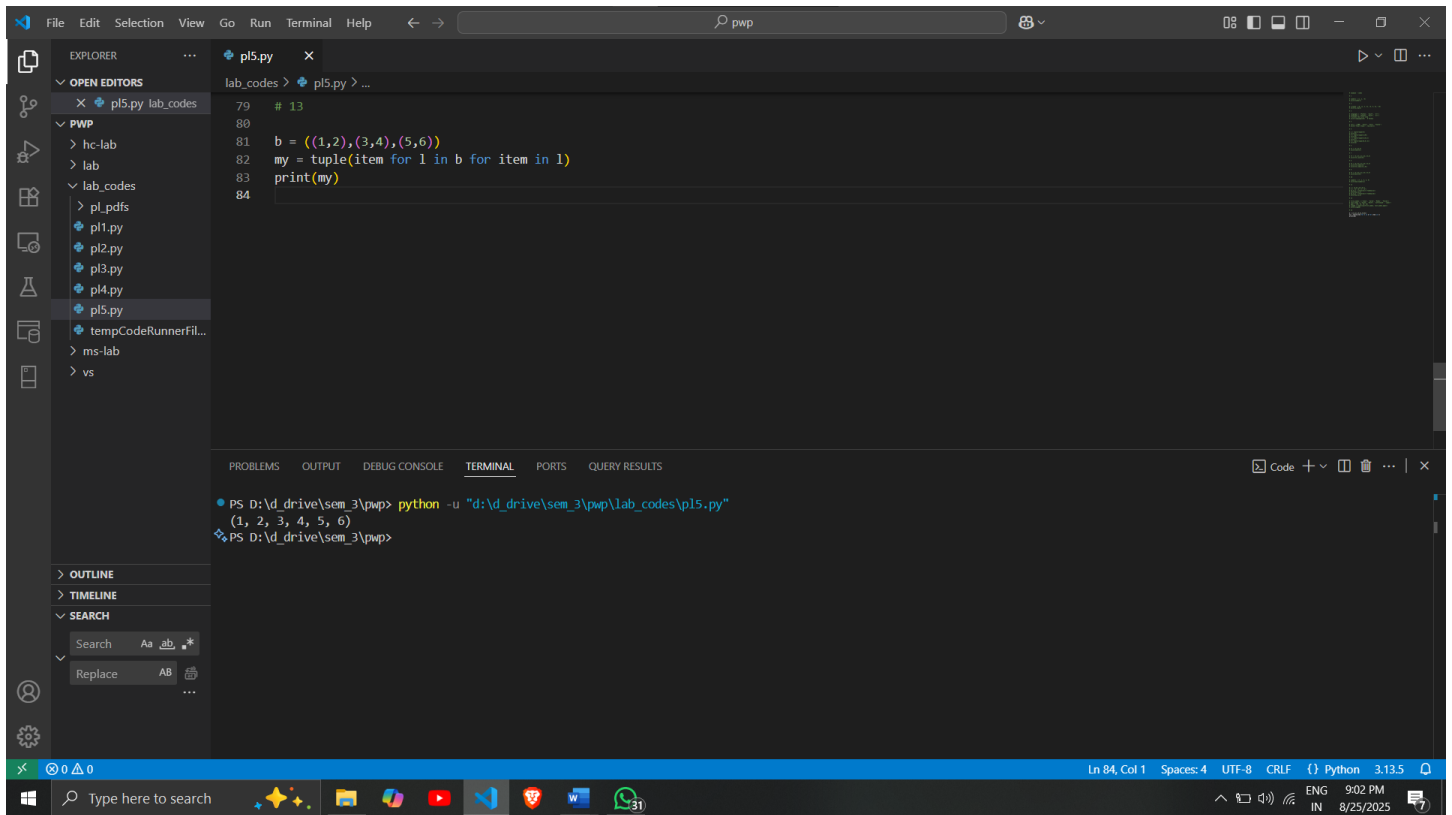
Flatten a tuple of tuples

```

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

```

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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108



The screenshot shows the Visual Studio Code interface with a Python file named `pl5.py` open. The code in the editor is as follows:

```

79 # 13
80
81 b = ((1,2),(3,4),(5,6))
82 my = tuple(item for l in b for item in l)
83 print(my)
84

```

The terminal at the bottom shows the command to run the script and its output:



```

PS D:\drive\sem_3\pwp> python -u "d:\drive\sem_3\pwp\lab_codes\pl5.py"
(1, 2, 3, 4, 5, 6)
PS D:\drive\sem_3\pwp>

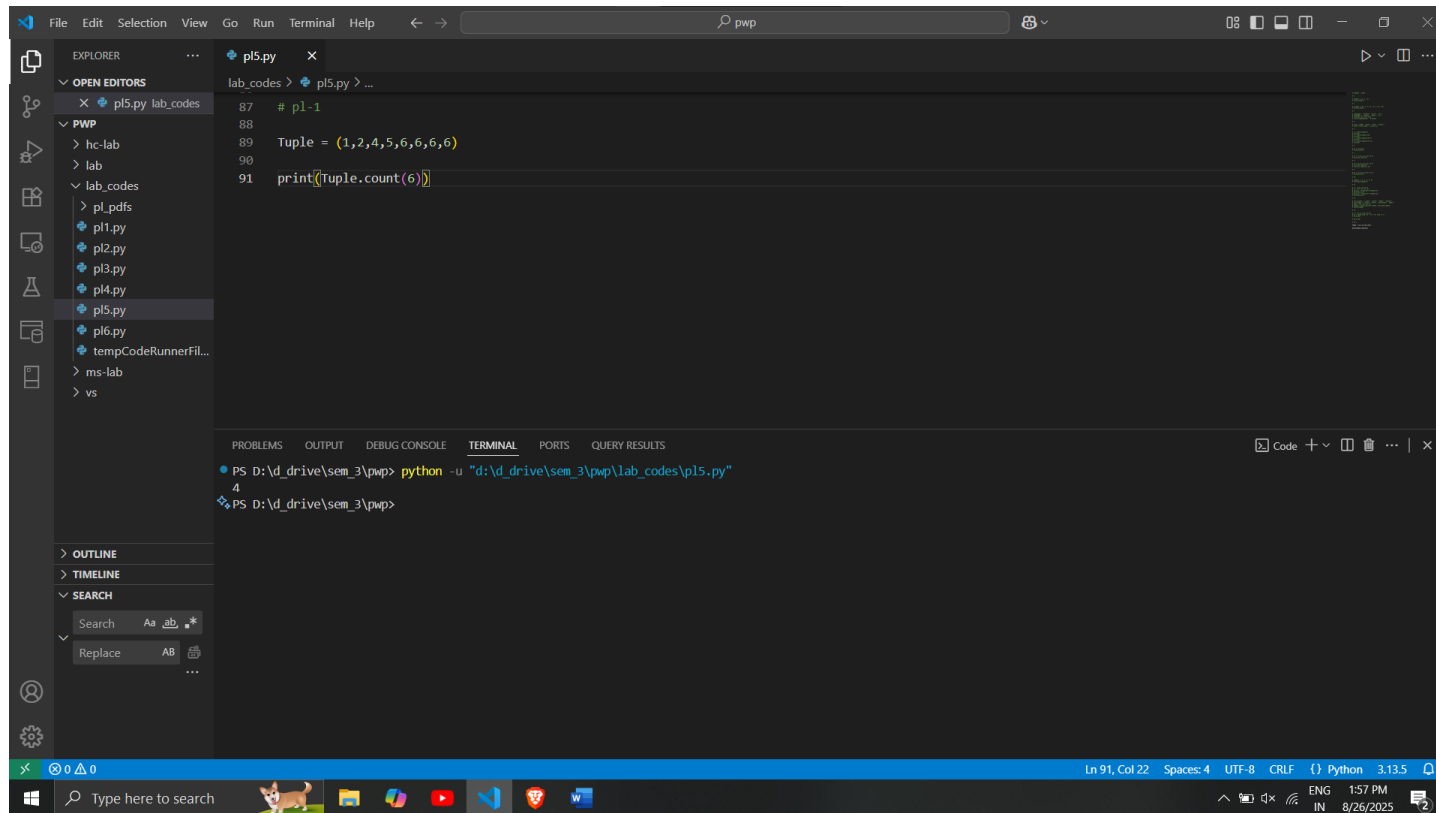
```

The status bar at the bottom indicates the file is at line 84, column 1, using UTF-8 encoding with CRLF line endings, and the Python interpreter is set to 3.13.5.

Post Lab Exercise:

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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108

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



```

lab_codes > pl5.py > ...
87 # pl-1
88
89 Tuple = (1,2,4,5,6,6,6)
90
91 print(Tuple.count(6))

```



PROBLEMS OUTPUT DEBUG CONSOLE **TERMINAL** PORTS QUERY RESULTS

```

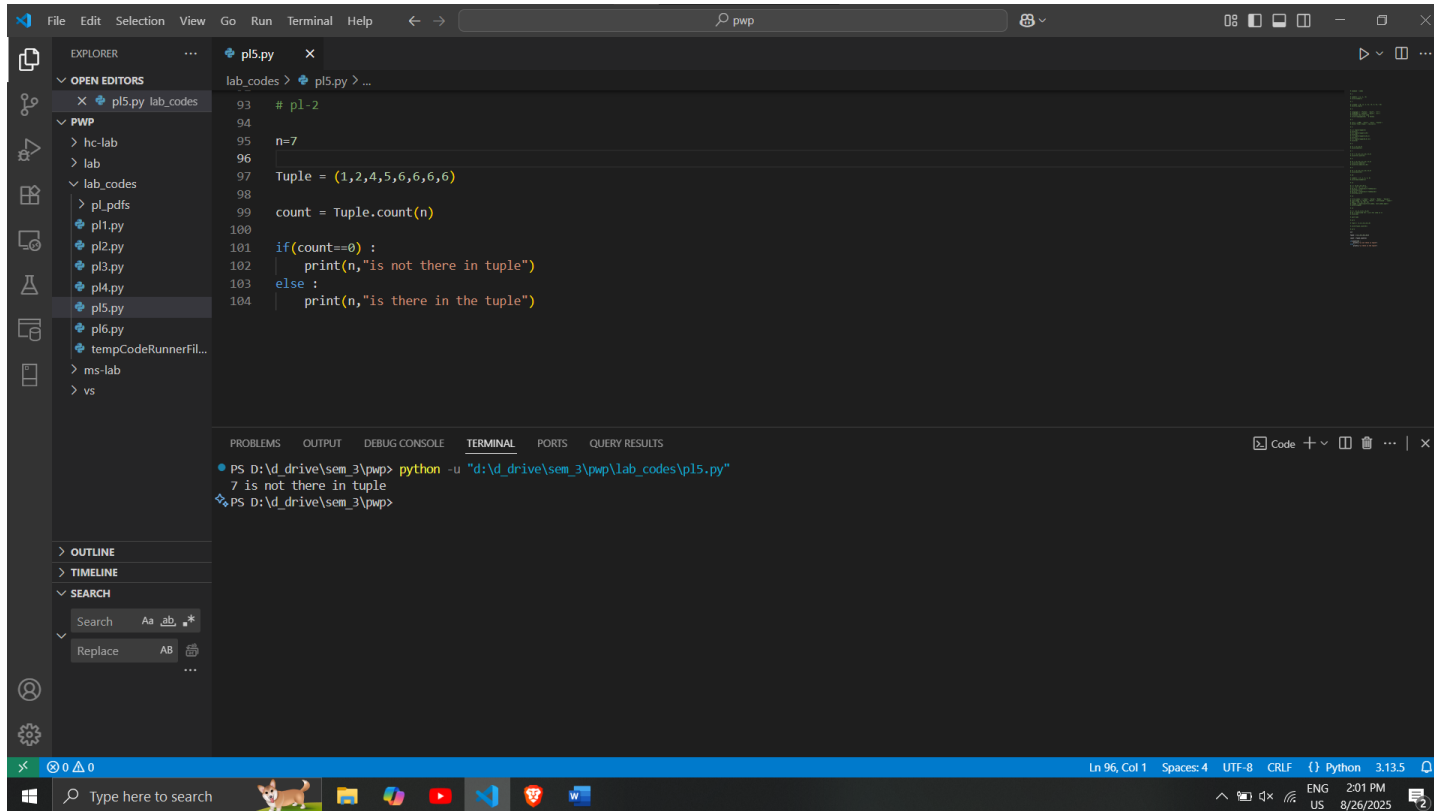
PS D:\d_drive\sem_3\pwp> python -u "d:\d_drive\sem_3\pwp\lab_codes\pl5.py"
4
PS D:\d_drive\sem_3\pwp>

```

Ln 91, Col 22 Spaces: 4 UTF-8 CRLF {} Python 3.13.5

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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108

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



```

93 # pl-2
94
95 n=7
96
97 Tupple = (1,2,4,5,6,6,6)
98
99 count = Tupple.count(n)
100
101 if(count==0):
102     print(n,"is not there in tuple")
103 else:
104     print(n,"is there in the tuple")

```



PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS QUERY RESULTS

```

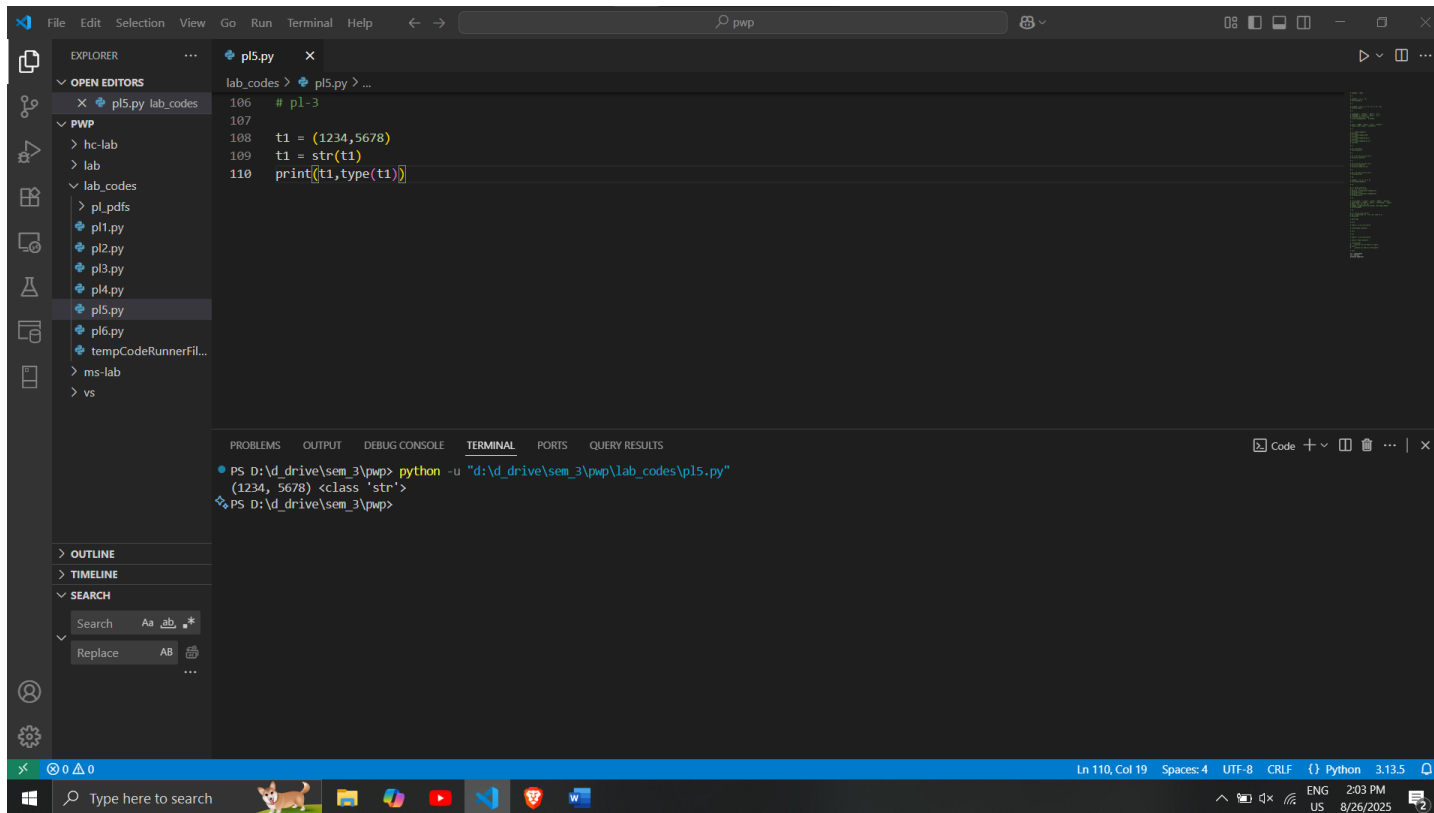
PS D:\d_drive\sem_3\pwp> python -u "d:\d_drive\sem_3\pwp\lab_codes\pl5.py"
7 is not there in tuple
PS D:\d_drive\sem_3\pwp>

```

Ln 96, Col 1 Spaces: 4 UTF-8 CRLF {} Python 3.13.5

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Subject: Programming With Python (01CT1309)	Aim: Write a program to demonstrate working with tuples in python.	
Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108

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



The screenshot shows the Visual Studio Code interface with a Python file named `pl5.py` open. The code in the file is as follows:

```

106 # pl-3
107
108 t1 = (1234,5678)
109 t1 = str(t1)
110 print(t1,type(t1))

```



The terminal at the bottom shows the execution of the program:

```

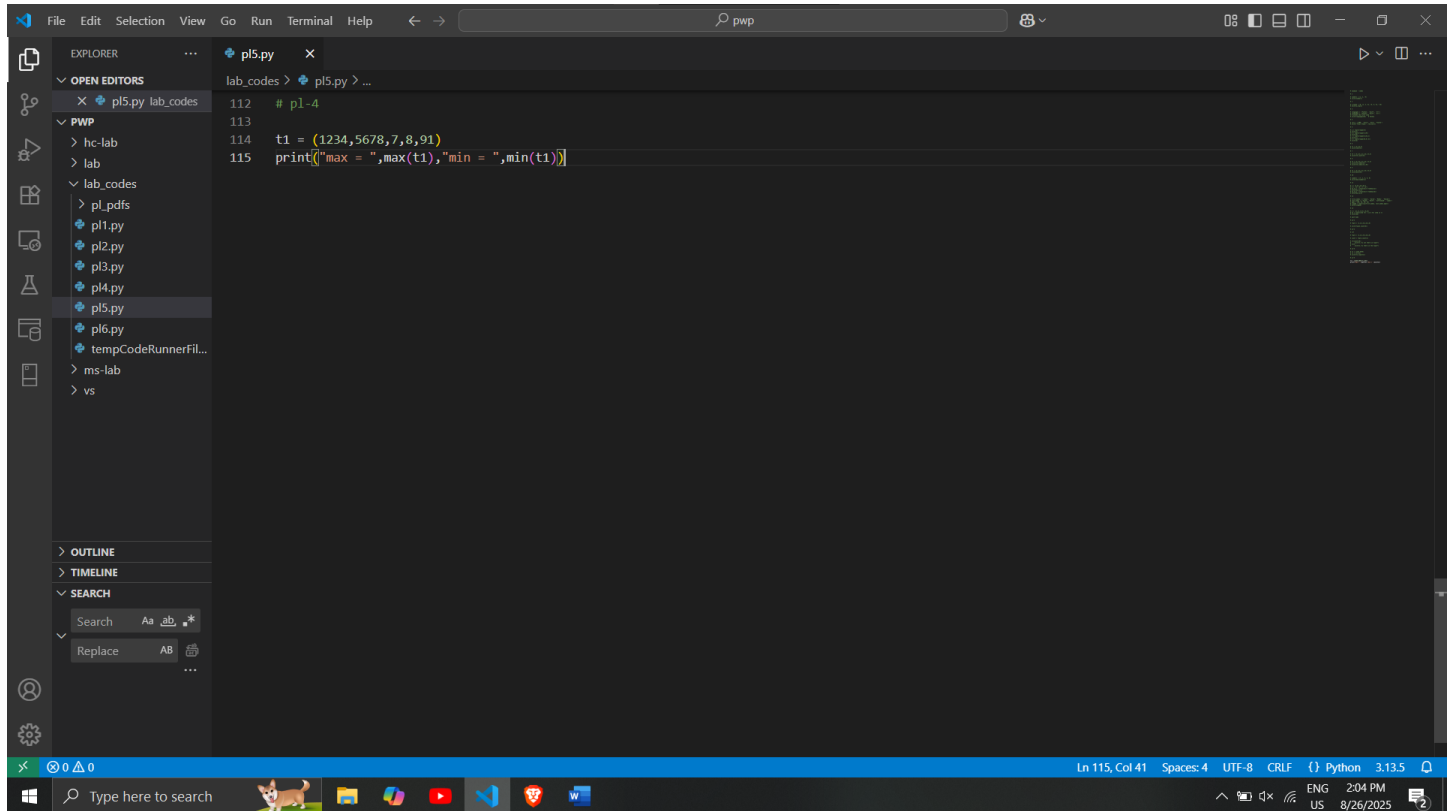
PS D:\drive\sem_3\pwp> python -u "d:\drive\sem_3\pwp\lab_codes\pl5.py"
(1234, 5678) <class 'str'>
PS D:\drive\sem_3\pwp>

```

The status bar at the bottom indicates the current line is 110, column 19, with 4 spaces, using UTF-8 encoding and CRLF line endings. The Python version is 3.13.5.

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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108

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



```

lab_codes > pl5.py > ...
112 # pl-4
113
114 t1 = (1234,5678,7,8,91)
115 print("max = ",max(t1),"min = ",min(t1))
  
```



The screenshot shows a Python IDE with a file explorer on the left displaying a project structure. The main editor window shows a Python script named `pl5.py` with the following code:

```

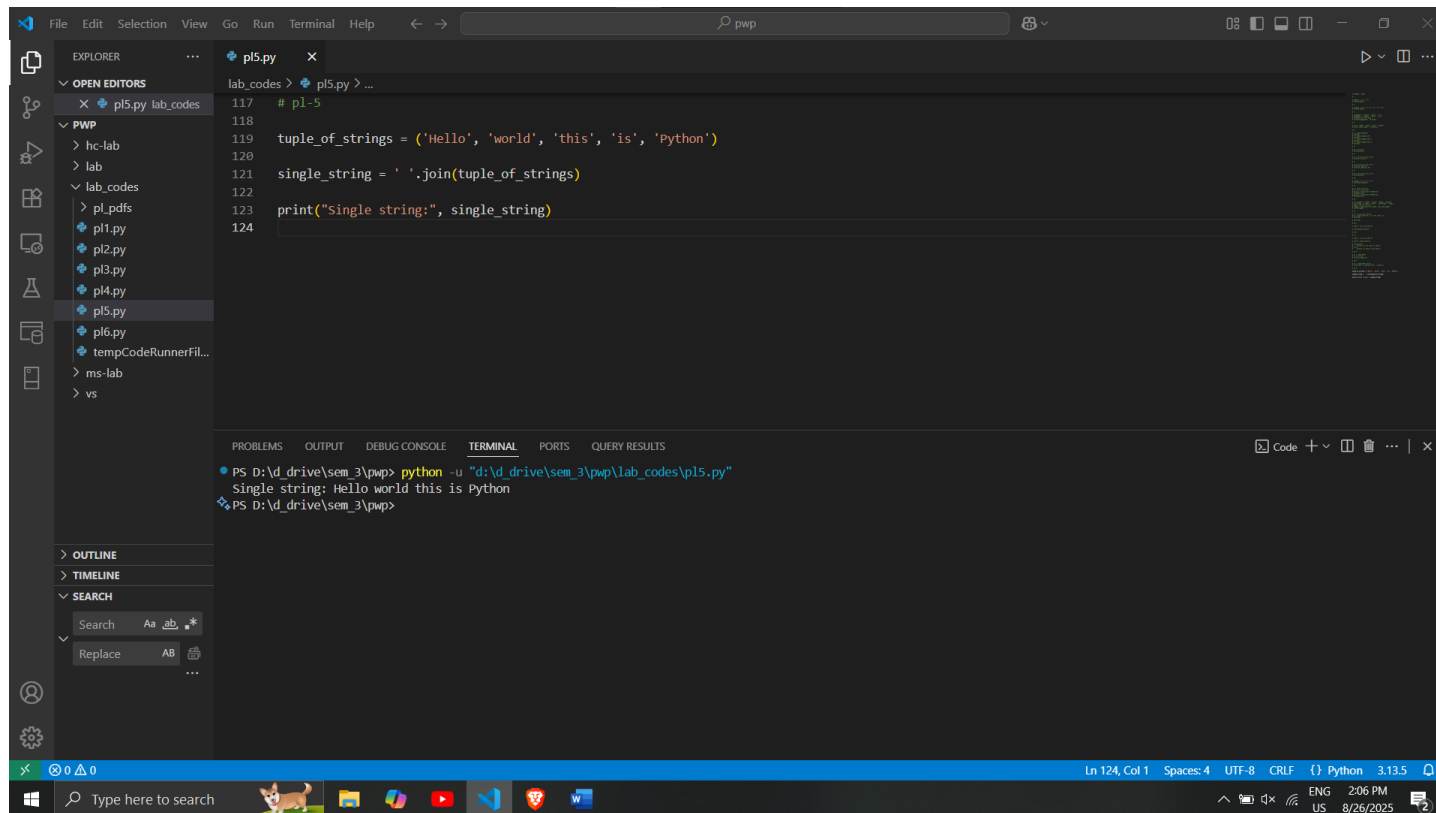
# pl-4

t1 = (1234,5678,7,8,91)
print("max = ",max(t1),"min = ",min(t1))
  
```

The status bar at the bottom indicates the current line is 115, column 41, with 4 spaces, UTF-8 encoding, CRLF line endings, and Python 3.13.5.

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Experiment No: 05	Date:4-8-2025	Enrollment No: 92400133108

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



```

lab_codes > pl5.py > ...
117 # pl-5
118
119 tuple_of_strings = ('Hello', 'world', 'this', 'is', 'Python')
120
121 single_string = ''.join(tuple_of_strings)
122
123 print("Single string:", single_string)
124

```



PROBLEMS OUTPUT DEBUG CONSOLE **TERMINAL** PORTS QUERY RESULTS

```

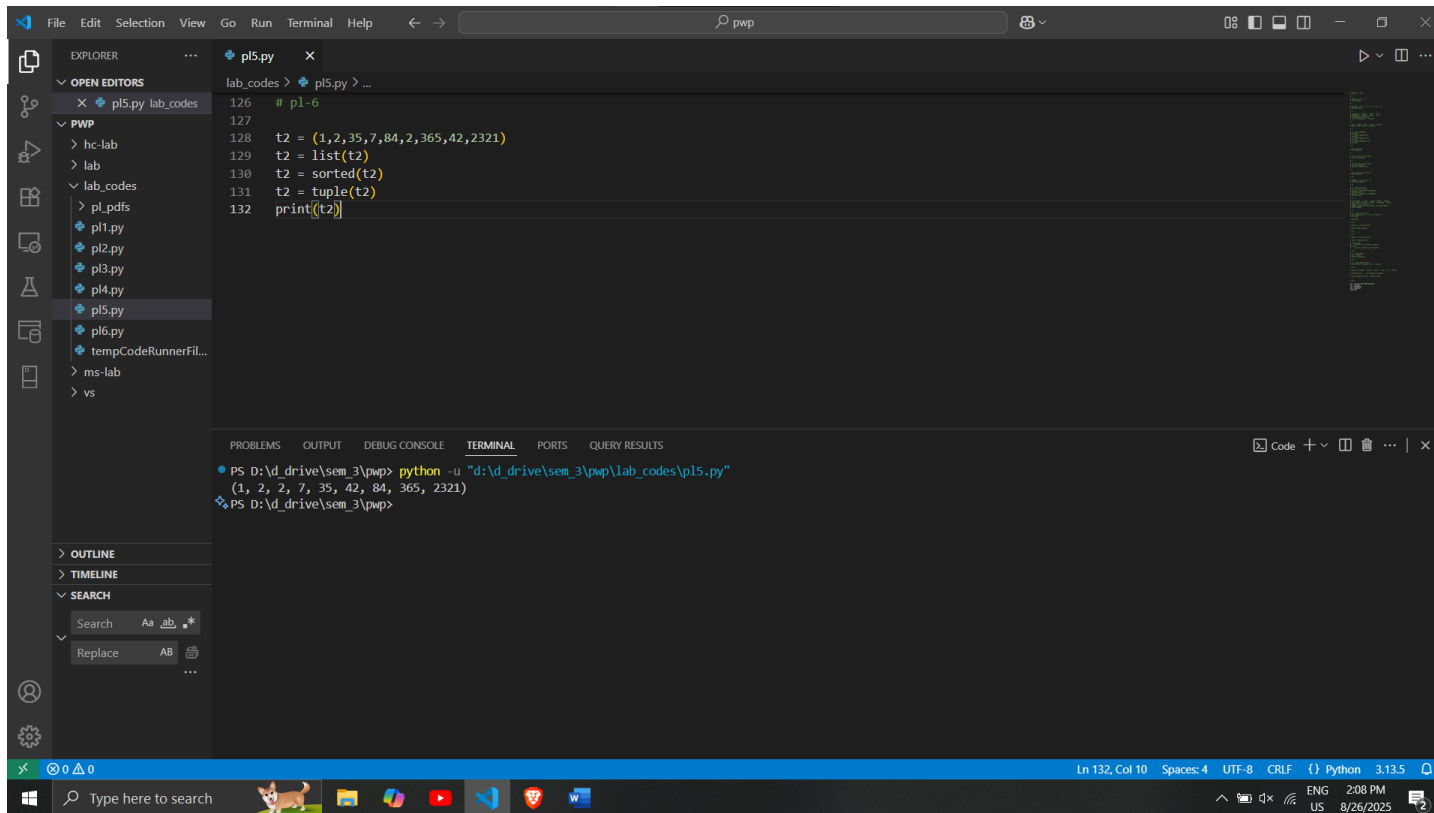
PS D:\d_drive\sem_3\pwp> python -u "d:\d_drive\sem_3\pwp\lab_codes\pl5.py"
Single string: Hello world this is Python
PS D:\d_drive\sem_3\pwp>

```

Ln 124, Col 1 Spaces: 4 UTF-8 CRLF {} Python 3.13.5

 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:4-8-2025	Enrollment No: 92400133108

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



```



lab_codes > pl5.py > ...
126 # pl-6
127
128 t2 = (1,2,35,7,84,2,365,42,2321)
129 t2 = list(t2)
130 t2 = sorted(t2)
131 t2 = tuple(t2)
132 print(t2)
  
```

PROBLEMS OUTPUT DEBUG CONSOLE **TERMINAL** PORTS QUERY RESULTS

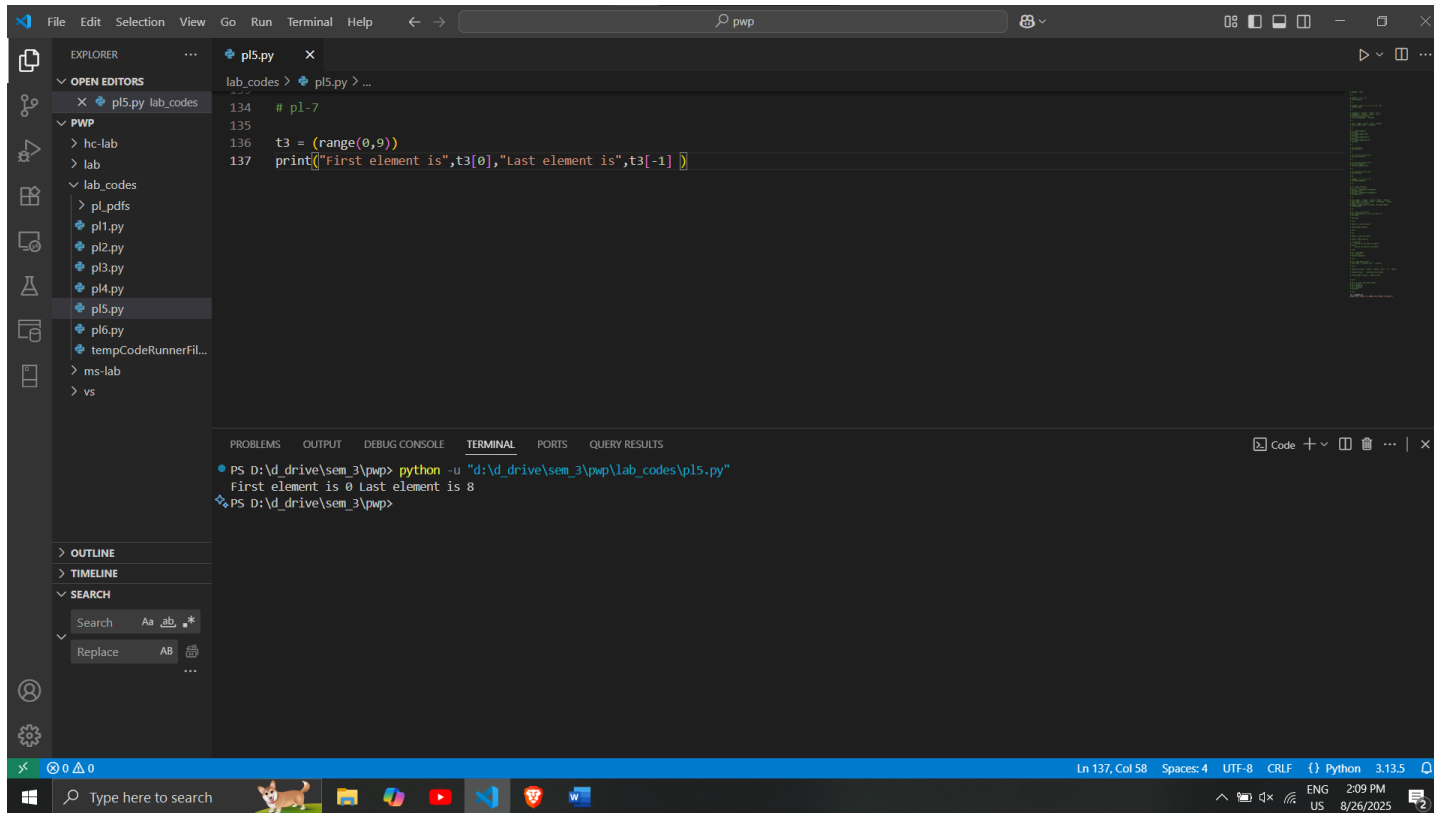
```

PS D:\d_drive\sem_3\pwp> python -u "d:\d_drive\sem_3\pwp\lab_codes\pl5.py"
(1, 2, 2, 7, 35, 42, 84, 365, 2321)
PS D:\d_drive\sem_3\pwp>
  
```

Ln 132, Col 10 Spaces: 4 UTF-8 CRLF {} Python 3.13.5

 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:4-8-2025	Enrollment No: 92400133108

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



The screenshot shows the Visual Studio Code interface with a Python file named `pl5.py` open. The code in the editor is as follows:

```

134 # pl-7
135
136 t3 = (range(0,9))
137 print("First element is",t3[0],"Last element is",t3[-1] )

```

The terminal output shows the execution of the program:

```

PS D:\drive\sem_3\pwp> python -u "d:\drive\sem_3\pwp\lab_codes\pl5.py"
First element is 0 Last element is 8
PS D:\drive\sem_3\pwp>

```

The status bar at the bottom indicates the file is at line 137, column 58, using UTF-8 encoding and CRLF line endings, with the Python 3.13.5 interpreter selected.