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	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:92400133110**

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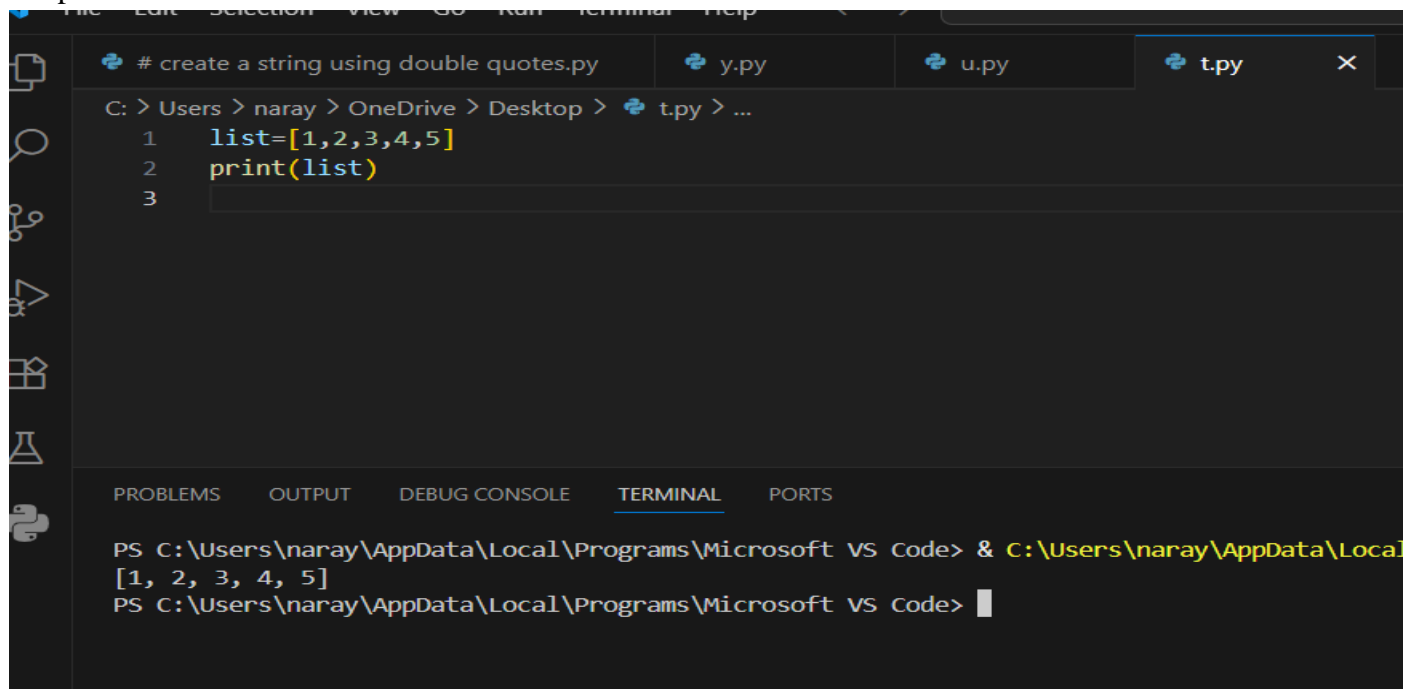
A tuple represents a sequence of any objects separated by commas and enclosed in parentheses. A tuple is an immutable object, which means it cannot be changed, and we use it to represent fixed collections of items.

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

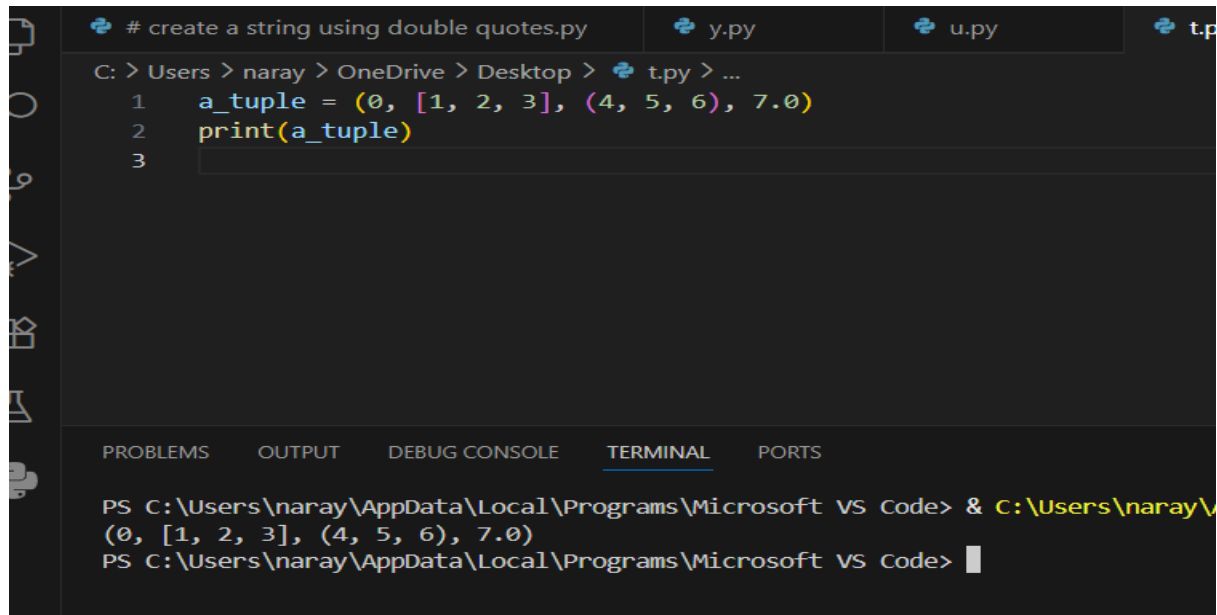('10', 101, True) — a tuple containing a string, an integer, and a Boolean object

Also, other objects like lists and tuples can comprise a tuple, like this:

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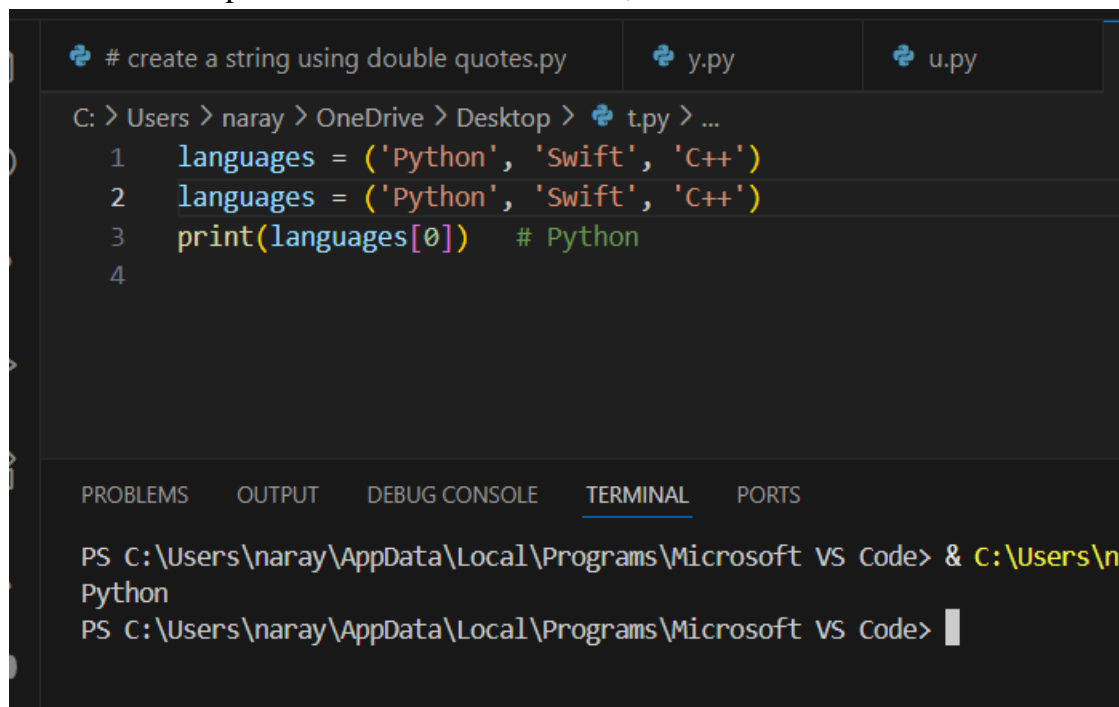a_tuple = (0, [1, 2, 3], (4, 5, 6), 7.0)
print(a_tuple)
output:

Access Tuple Items

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

Output:
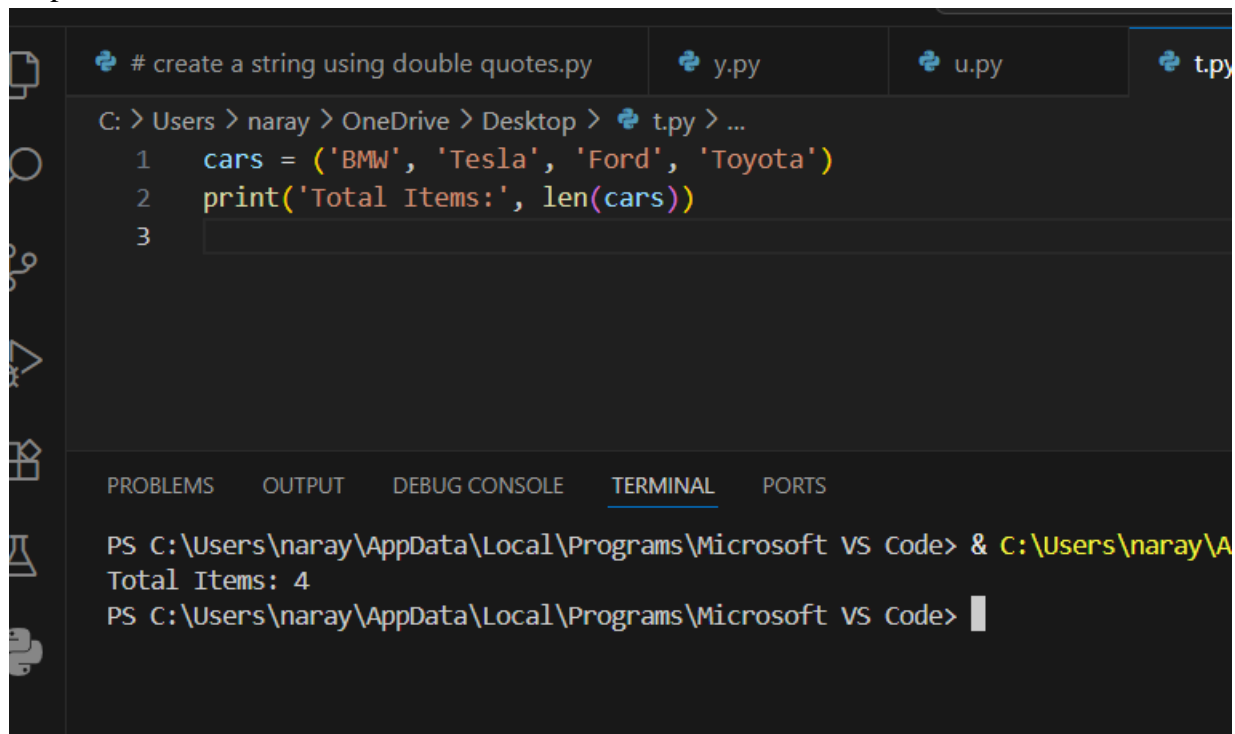
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Python Tuple Length

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

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

output

```
# create a string using double quotes.py    y.py    u.py    t.py

C: > Users > naray > OneDrive > Desktop > t.py > ...
1    cars = ('BMW', 'Tesla', 'Ford', 'Toyota')
2    print('Total Items:', len(cars))
3

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C:\Users\naray\A
Total Items: 4
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code>
```

Task

a = tuple(range(5))

print(a)

output

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

Terminal output:
```
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C:\Users\nar
(0, 1, 2, 3, 4)
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code>
```

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

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

Terminal output:
```
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C:\
(5, 6, 7, 8, 9)
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code>
```

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

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

Task:

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

Extract **6**

Syntax:

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

```
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C:\Users\n
6
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code>
```

Important Functions of the Python Tuple

t1 = (2,3,4,5)

print(sum(t1))

output

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

```
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C
14
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code>
```

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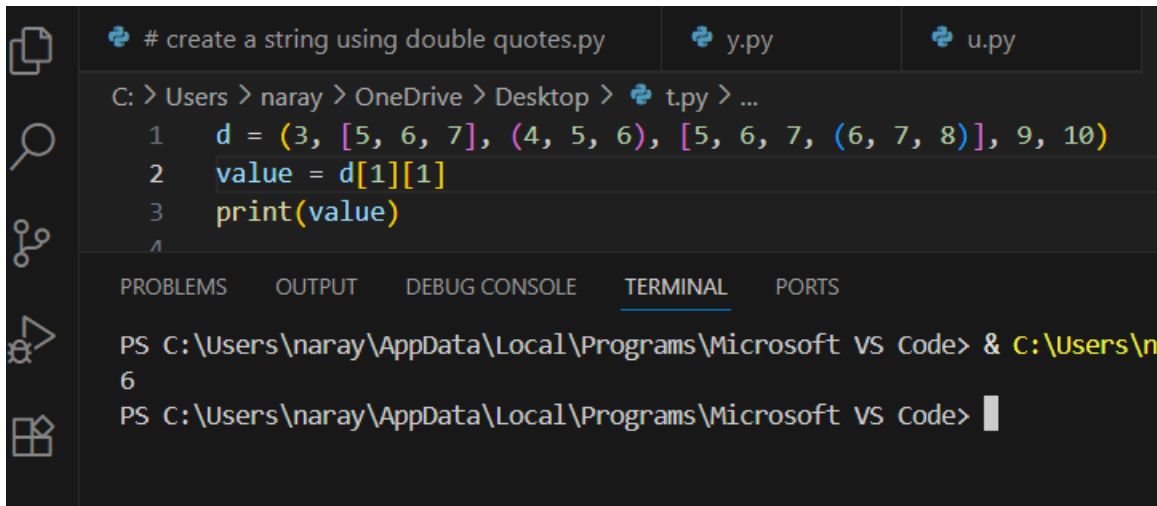
print(t3.count(4))

output

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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:

5. Python min() Method
t3 = (3,4,4,2,2,3,6,7,4,4)
print(min(t3))
output

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```
# create a string using double quotes.py        y.py              u.py

C: > Users > naray > OneDrive > Desktop >  t.py > ...
  1    t3 = (3,4,4,2,2,3,6,7,4,4)
  2    print(min(t3))
  3


PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS


PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C:\
2
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> []
```

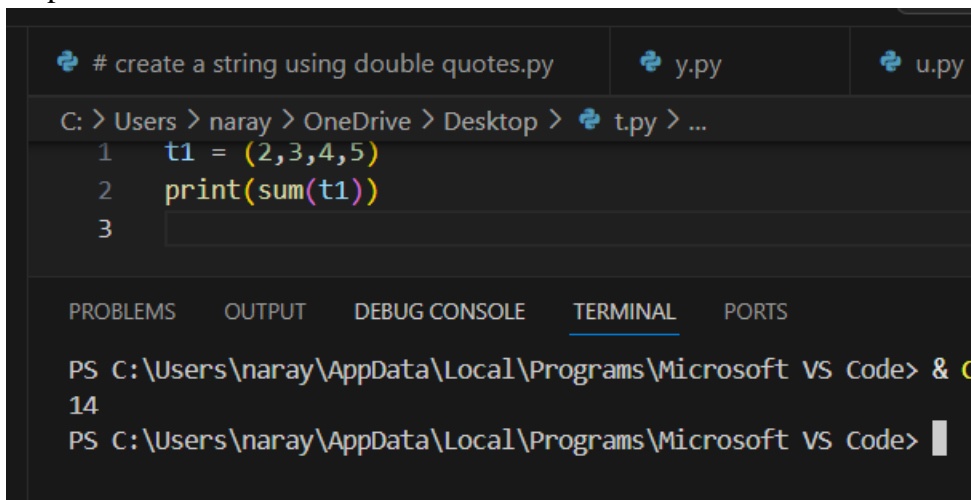6. Python max() Method

Calculates the maximum of all the elements of the tuple.

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

print(max(numbers))

output

```
# create a string using double quotes.py        y.py              u.py

C: > Users > naray > OneDrive > Desktop >  t.py > ...
  1    numbers = (7, 2, 8, 5, 9)
  2    print(max(numbers))
  3


PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS


PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C:\U
9
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> |
```

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)

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my_tu_2 = tuple(dict.fromkeys(b))

print(my_tu_2)

Output:

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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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

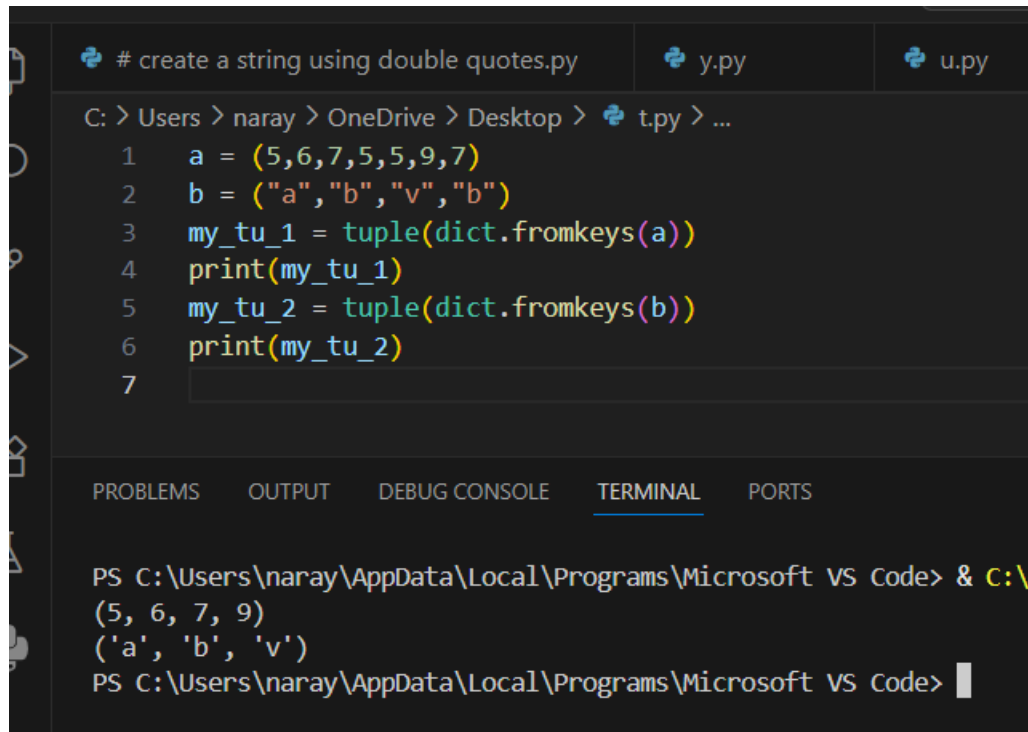|	Marwadi University
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Post Lab Exercise:

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

```
# create a string using double quotes.py        y.py        u.py

C: > Users > naray > OneDrive > Desktop >    t.py > ...
    1    # Tuple
    2    t = (1, 2, 3, 2, 4, 2, 5)
    3
    4    # Element to count
    5    element = 2
    6
    7    # Count
    8    count = t.count(element)
    9    print(f"{element} occurs {count} times in the tuple.")
   10
```

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C:\Users\n
2 occurs 3 times in the tuple.
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code>
```

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

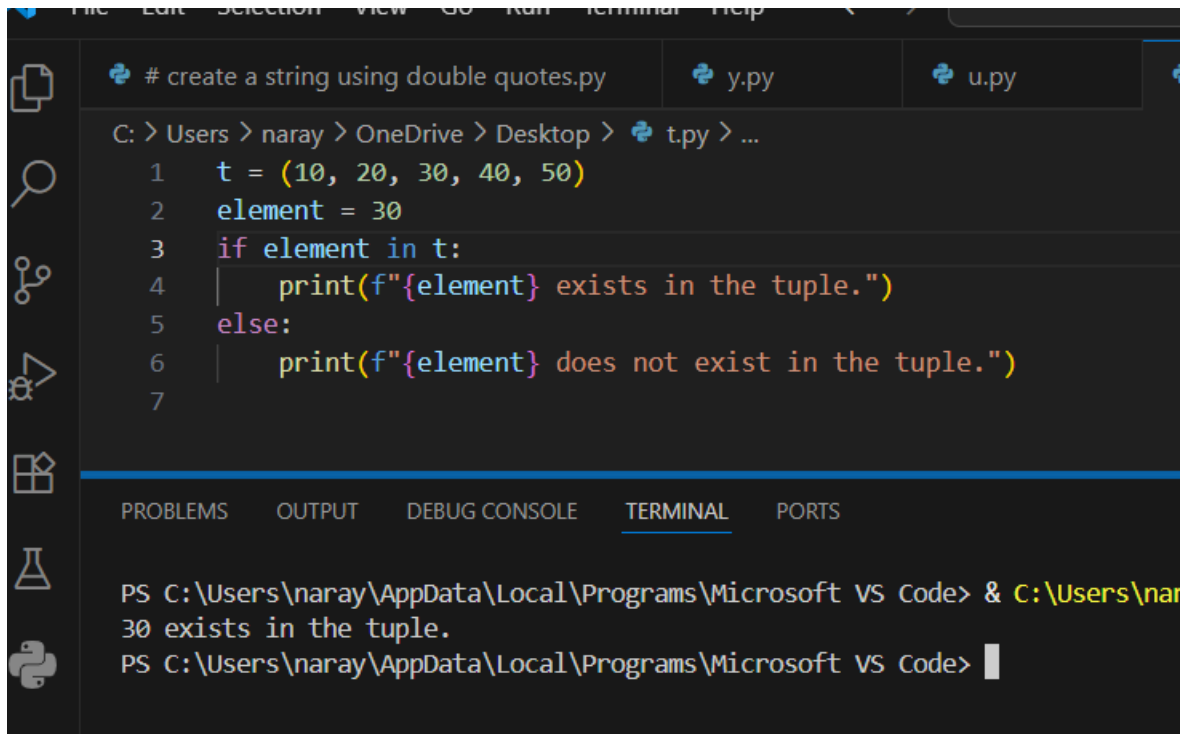| Marwadi University		
(logo) Marwadi University Marwadi Chandarana Group NAAC A+	**Marwadi University** **Faculty of Engineering & Technology** **Department of Information and Communication Technology**	
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```
# create a string using double quotes.py    y.py    u.py

C: > Users > naray > OneDrive > Desktop >  t.py > ...
   1    t = (10, 20, 30, 40, 50)
   2    element = 30
   3    if element in t:
   4        print(f"{element} exists in the tuple.")
   5    else:
   6        print(f"{element} does not exist in the tuple.")
   7
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C:\Users\nar
30 exists in the tuple.
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code>
```

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

```
# create a string using double quotes.py    y.py    u.py

C: > Users > naray > OneDrive > Desktop >  t.py > [0] t
   1    t = ('H', 'e', 'l', 'l', 'o')
   2    s = ''.join(t)
   3    print("String:", s)
   4
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C:\Users
String: Hello
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code>
```

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

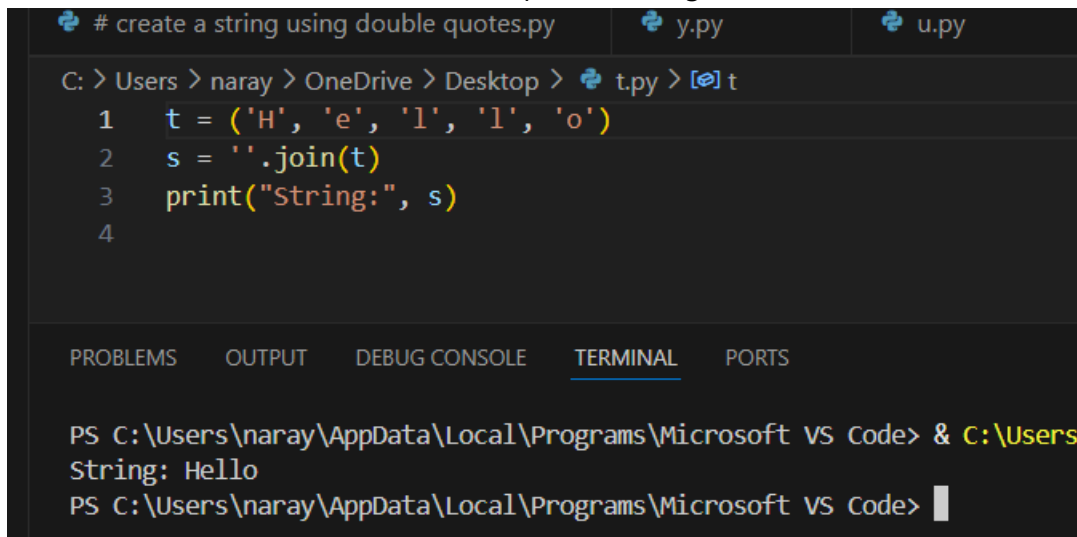|	Marwadi University
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```
# create a string using double quotes.py        y.py        u.py

C: > Users > naray > OneDrive > Desktop >  t.py > [∅] t
  1    t = (5, 3, 9, 1, 7)
  2    print("Maximum element:", max(t))
  3    print("Minimum element:", min(t))
  4


PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C:\Us
Maximum element: 9
Minimum element: 1
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code>
```

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

```
C: > Users > naray > OneDrive > Desktop >  t.py > [∅] t
  1    t = ("Hello", "World", "from", "Python")
  2    s = ' '.join(t)
  3    print("Single string:", s)
  4


PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C:\
Single string: Hello World from Python
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code>
```

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

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```python
# create a string using double quotes.py          y.py          u.py
C: > Users > naray > OneDrive > Desktop >  t.py > [∅] t
1    t = (4, 1, 3, 2, 5)
2    sorted_tuple = tuple(sorted(t))
3    print("Sorted tuple:", sorted_tuple)
4
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C:\User
Sorted tuple: (1, 2, 3, 4, 5)
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code>
```

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

```python
# create a string using double quotes.py          y.py          u.py
C: > Users > naray > OneDrive > Desktop >  t.py > ...
1    t = (10, 20, 30, 40, 50)
2    first = t[0]
3    last = t[-1]
4    print("First element:", first)
5    print("Last element:", last)
6
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code> & C:\Users\naray
First element: 10
Last element: 50
PS C:\Users\naray\AppData\Local\Programs\Microsoft VS Code>
```