
 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 different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110

Aim: Write a program to demonstrate different number datatypes in python.

IDE:

Data types in Python refer to classifying or categorizing data objects based on their characteristics and behavior. They determine the type of values variables can hold and specify the operations that can be performed on those values. For instance, Python has several built-in data types, including numeric types (int, float, complex), string (str), Boolean (bool), and collection types (list, tuple, dict, set). Moreover, each data type has its own set of properties, methods, and behaviors that allow programmers to manipulate and process data effectively in their programs.

Built-in Data Types in Python

Built-in data types in Python are fundamental data structures provided by the Python programming language. Pre-defined and available for use without requiring any additional libraries or modules. Python offers several built-in data types, including:

Numeric Data Types: Numeric data types in Python are used to represent numerical values. Python provides three primary numeric datatypes in python:


- Integer (int): Integers are whole numbers without any decimal points. They can be positive or negative.
- Floating-Point (float): Floating-point numbers represent decimal values. They can be positive or negative and may contain a decimal point.
- Complex (complex): People use complex numbers to represent numbers with a real and imaginary part. You write them in the form of $a + bj$, where a is the real part and b is the imaginary part.

String Data Type(str): Represents a sequence of characters enclosed in single quotes (‘ ’) or double quotes (“ ”), such as “Hello, World!”, ‘Python’.

Boolean Data Type(bool): Represents either True or False, used for logical operations and conditions.

Collection Data Types:

- list: Represents an ordered and mutable collection of items, enclosed in square brackets [].
- tuple: Represents an ordered and immutable collection of items, enclosed in parentheses ().
- dict: Represents a collection of key-value pairs enclosed in curly braces { } with unique keys.
- set: Represents an unordered and mutable collection of unique elements, enclosed in curly braces { } or using the set() function.

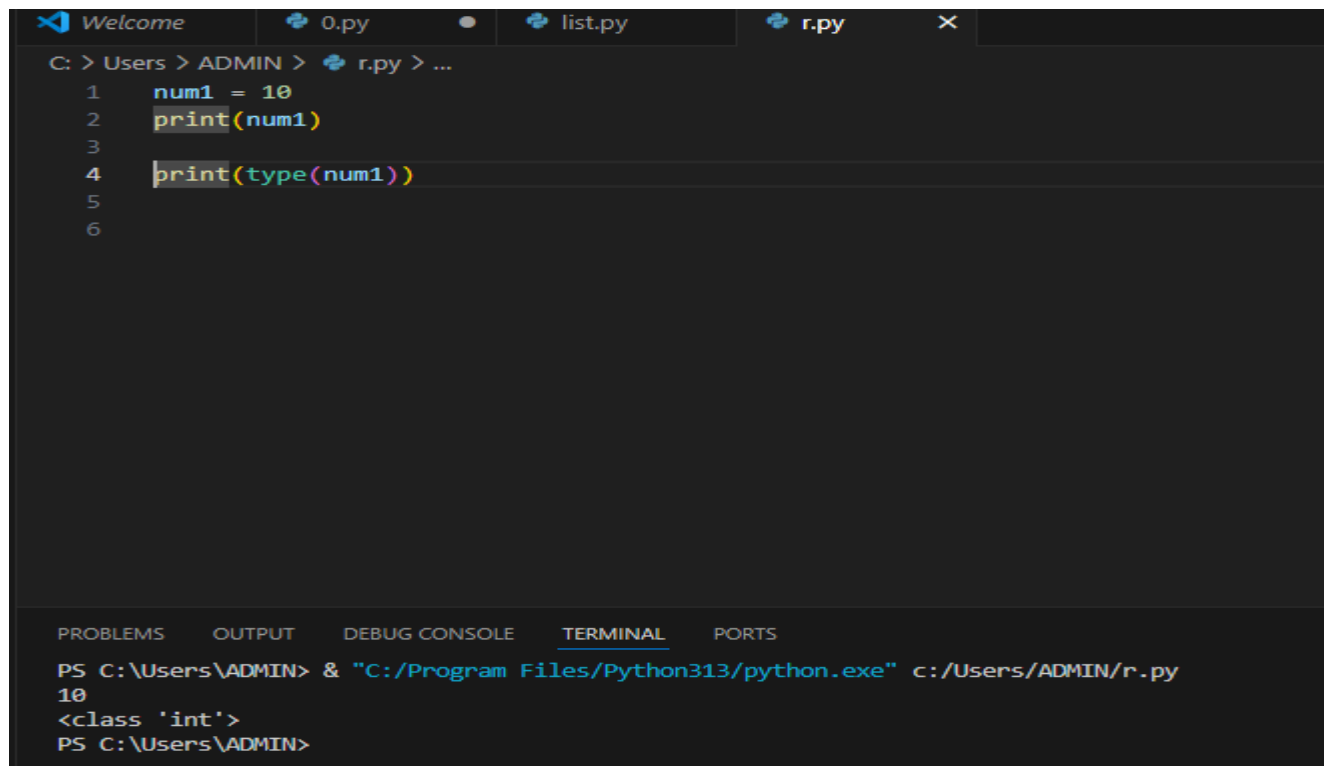
 Marwadi University Marwadi Chandarana Group	Marwadi University Faculty of Engineering & Technology Department of Information and Communication Technology	
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Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110

Results

Numeric Data Types

Python Code:

```
num1 = 10
print(num1)
print("Datatype of num1 is", type(num1))
```





```

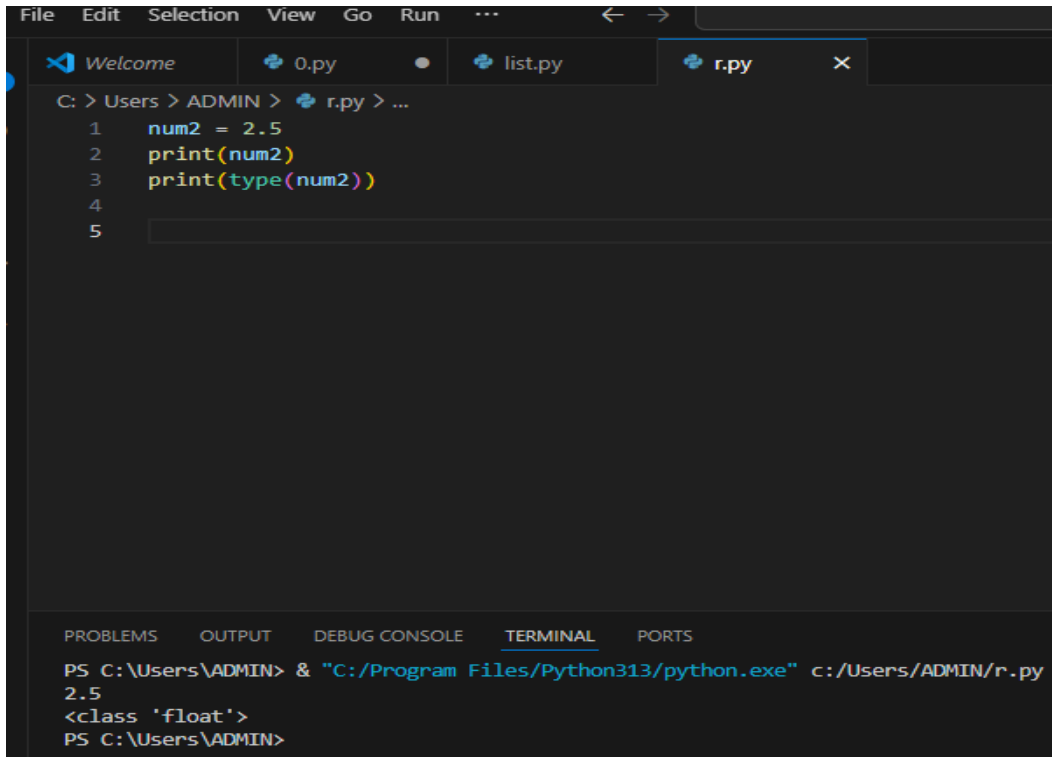
Welcome
0.py
list.py
r.py
C: > Users > ADMIN > r.py > ...
1  num1 = 10
2  print(num1)
3
4  print(type(num1))
5
6

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
10
<class 'int'>
PS C:\Users\ADMIN>

```

```
num2 = 2.5
print(num2)
print("Datatype of num1 is", type(num2))
```

 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 different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133094



```

File Edit Selection View Go Run ...
Welcome 0.py list.py r.py x
C: > Users > ADMIN > r.py > ...
1  num2 = 2.5
2  print(num2)
3  print(type(num2))
4
5



PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
2.5
<class 'float'>
PS C:\Users\ADMIN>

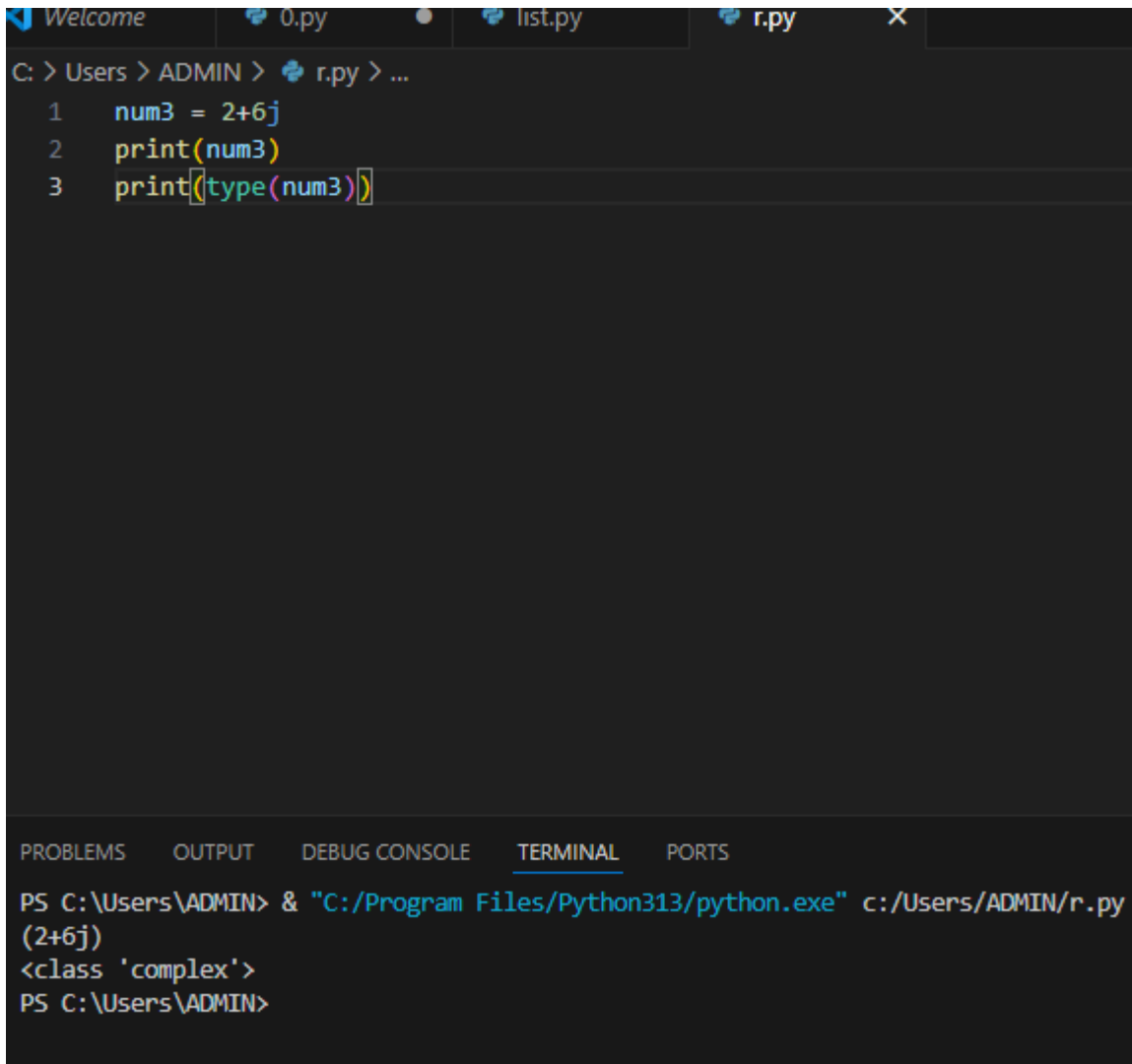
```

```

num3 = 2+6j
print(num3)
print("Datatype of num1 is", type(num3))

```

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Subject: Programming With Python (01CT1309)	Aim: Write a program to demonstrate different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110



```

Welcome | 0.py | list.py | r.py | X
C: > Users > ADMIN > r.py > ...
1  num3 = 2+6j
2  print(num3)
3  print(type(num3))

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
(2+6j)
<class 'complex'>
PS C:\Users\ADMIN>

```

Example 1

```



x = 5
y = -6

```

```

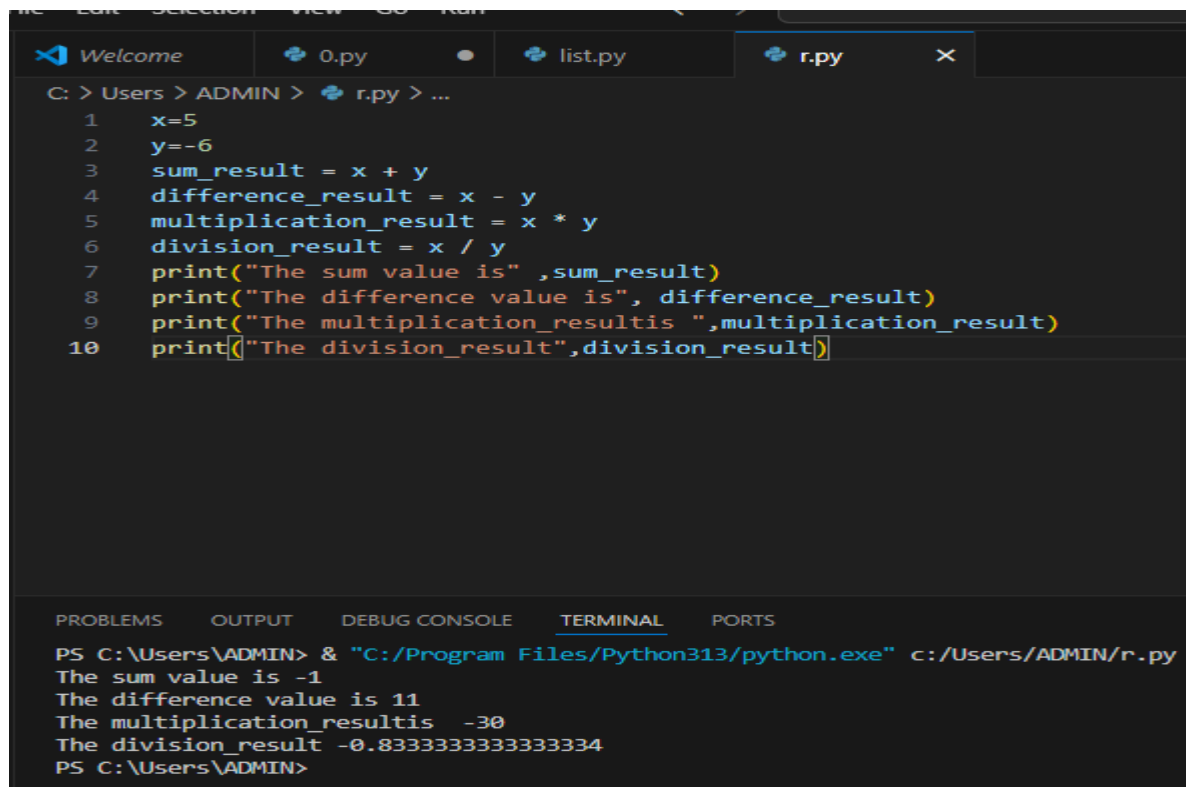
# Performing arithmetic operations
sum_result = x + y
difference_result = x - y
multiplication_result = x * y
division_result = x / y
# Printing the results
print("Sum:", sum_result)
print("Difference:", difference_result)

```

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Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110

```
print("Multiplication:", multiplication_result)
print("Division:", division_result)
```

Output:



```

C: > Users > ADMIN > r.py > ...
1  x=5
2  y=-6
3  sum_result = x + y
4  difference_result = x - y
5  multiplication_result = x * y
6  division_result = x / y
7  print("The sum value is" ,sum_result)
8  print("The difference value is", difference_result)
9  print("The multiplication_resultis ",multiplication_result)
10 print("The division_result",division_result)

```

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
The sum value is -1
The difference value is 11
The multiplication_resultis -30
The division_result -0.8333333333333334
PS C:\Users\ADMIN>



```

Example 2:

```

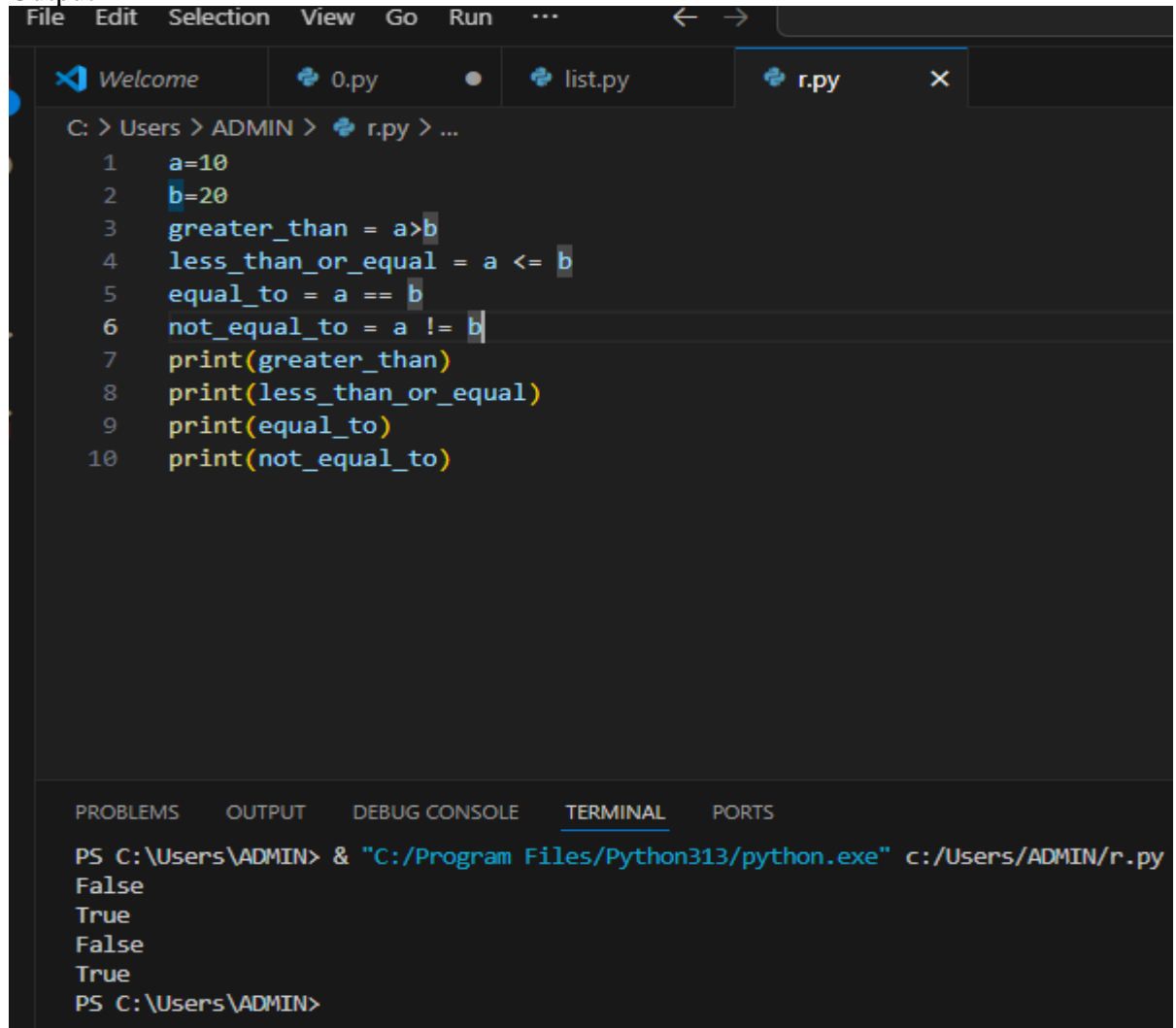
a = 10
b = 20
# Comparing the values
greater_than = a > b
less_than_or_equal = a <= b
equal_to = a == b
not_equal_to = a != b
# Printing the results
print("Greater than:", greater_than)
print("Less than or equal to:", less_than_or_equal)
print("Equal to:", equal_to)

```

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```
print("Not equal to:", not_equal_to)
```

Output



```

C: > Users > ADMIN > r.py > ...
1  a=10
2  b=20
3  greater_than = a>b
4  less_than_or_equal = a <= b
5  equal_to = a == b
6  not_equal_to = a != b
7  print(greater_than)
8  print(less_than_or_equal)
9  print(equal_to)
10 print(not_equal_to)

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
False
True
False
True
PS C:\Users\ADMIN>



```

Example 3

```

x = 3.14
y = 2.5
# Performing arithmetic operations
sum_result = x + y

```

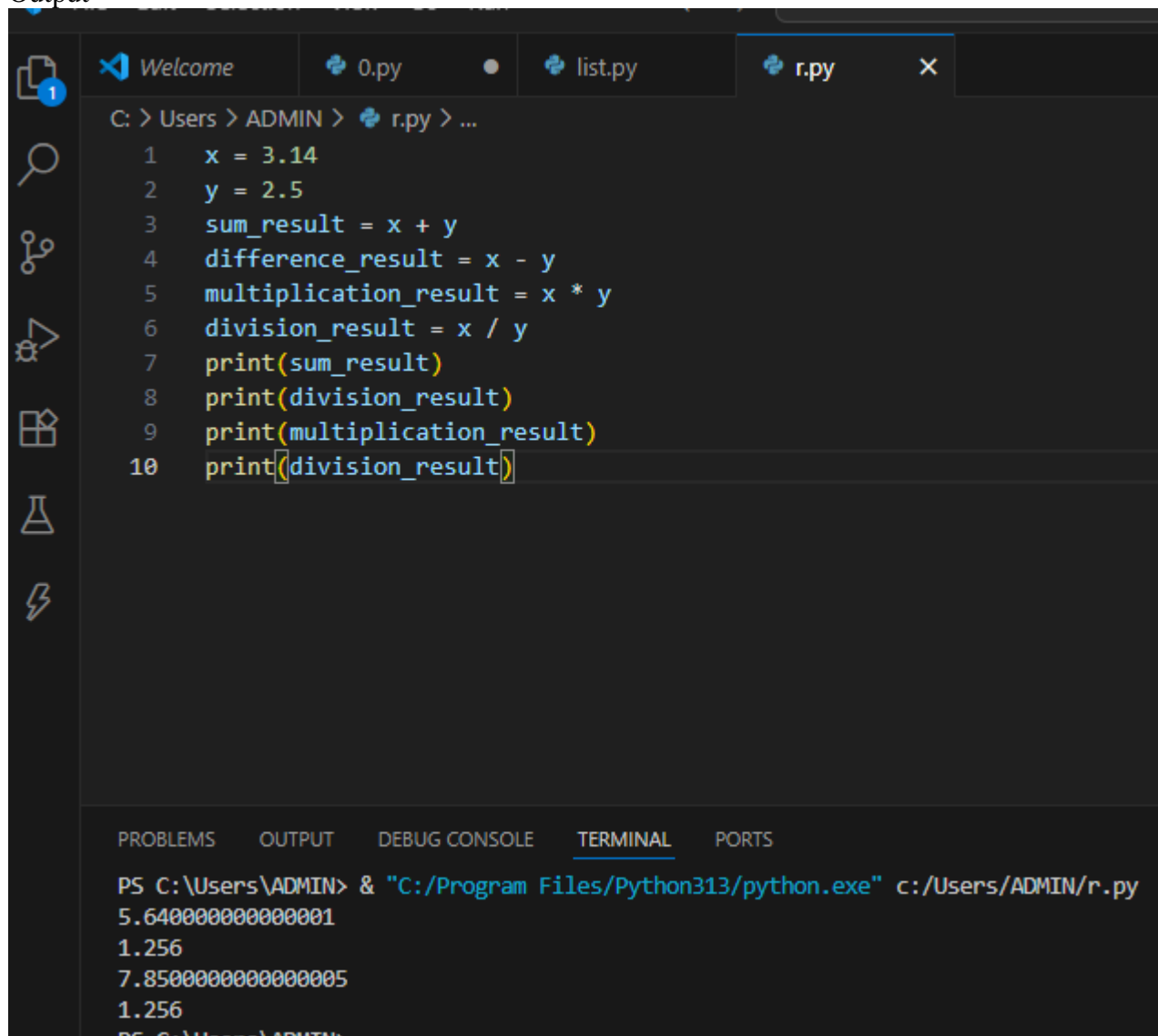
 Marwadi University Marwadi Chandarana Group 	Marwadi University Faculty of Engineering & Technology Department of Information and Communication Technology	
Subject: Programming With Python (01CT1309)	Aim: Write a program to demonstrate different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110

```

difference_result = x - y
multiplication_result = x * y
division_result = x / y
# Printing the results
print("Sum:", sum_result)
print("Difference:", difference_result)
print("Multiplication:", multiplication_result)
print("Division:", division_result)

```

Output



The screenshot shows a code editor with a file named `r.py` open. The code in the editor is as follows:

```

1  x = 3.14
2  y = 2.5
3  sum_result = x + y
4  difference_result = x - y
5  multiplication_result = x * y
6  division_result = x / y
7  print(sum_result)
8  print(difference_result)
9  print(multiplication_result)
10 print(difference_result)

```



Below the code editor, the terminal output is displayed. The command executed is `PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py`. The output shows the results of the calculations:

```

5.640000000000001
1.256
7.850000000000005
1.256

```

The terminal also shows the prompt `PS C:\Users\ADMIN>` at the bottom.

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Subject: Programming With Python (01CT1309)	Aim: Write a program to demonstrate different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110


Example 4

```

a = 1.2
b = 2.7
# Comparing the values
greater_than = a > b
less_than_or_equal = a <= b
equal_to = a == b
not_equal_to = a != b
# Printing the results
print("Greater than:", greater_than)
print("Less than or equal to:", less_than_or_equal)
print("Equal to:", equal_to)
print("Not equal to:", not_equal_to)

```

Output

 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 different number datatypes in python.
Experiment No: 01	Date:08/07/2025 Enrollment No:92400133110

```

C: > Users > ADMIN > r.py > ...
1  a = 1.2
2  b = 2.7
3  greater_than = a > b
4  less_than_or_equal = a <= b
5  equal_to = a == b
6  not_equal_to = a != b
7  print("Greater than:", greater_than)
8  print("Less than or equal to:", less_than_or_equal)
9  print("Equal to:", equal_to)
10 print("Not equal to:", not_equal_to)
11

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
Greater than: False
Less than or equal to: True
Equal to: False
Not equal to: True
PS C:\Users\ADMIN>



```

Example 5

```

x = 2 + 3j
y = -1 + 2j
# Performing arithmetic operations

```


 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 different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110

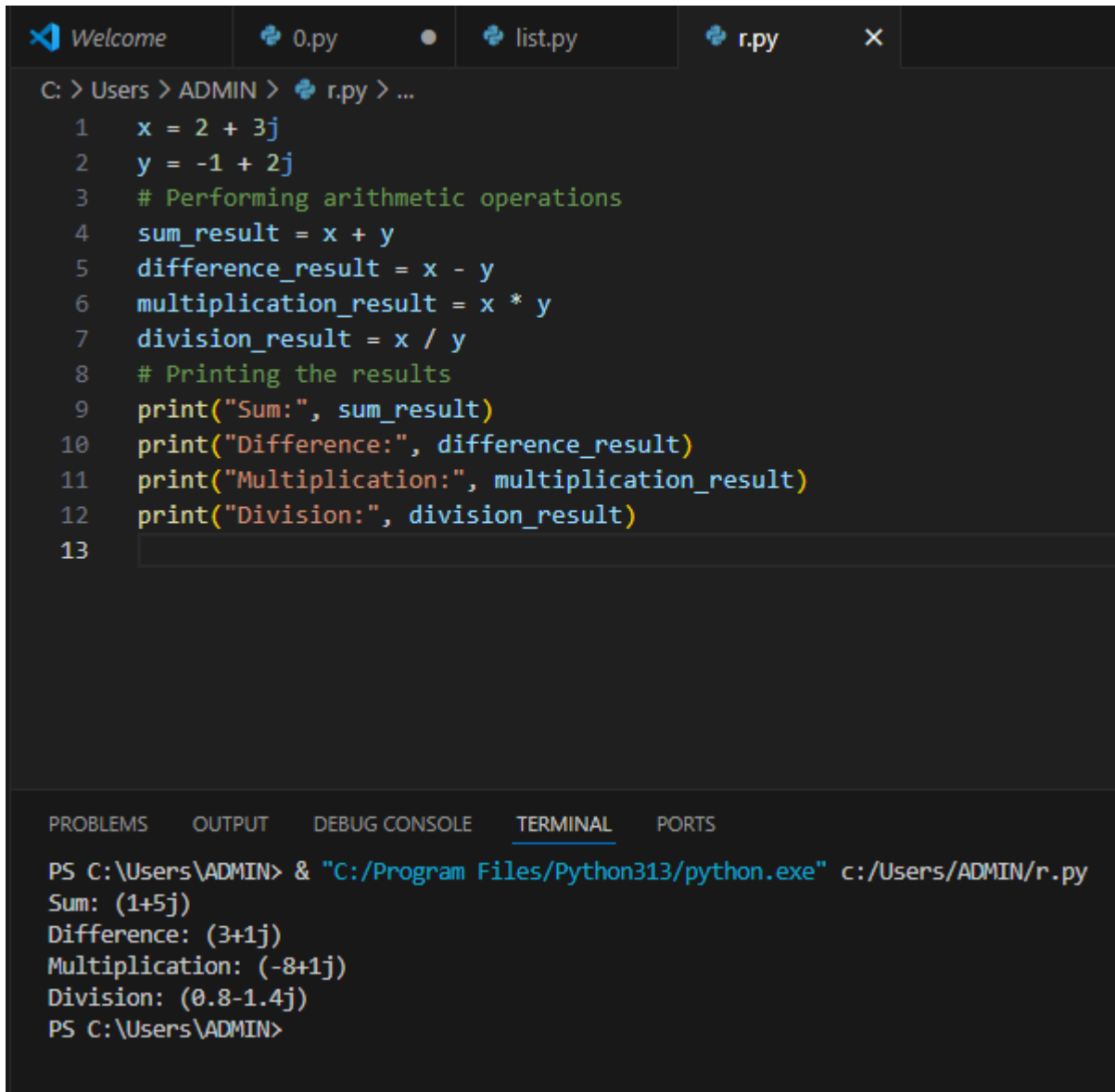
```

sum_result = x + y
difference_result = x - y
multiplication_result = x * y
division_result = x / y
# Printing the results
print("Sum:", sum_result)
print("Difference:", difference_result)
print("Multiplication:", multiplication_result)
print("Division:", division_result)

```

Output

 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 different number datatypes in python.
Experiment No: 01	Date:08/07/2025 Enrollment No:92400133110



```

C: > Users > ADMIN > r.py > ...
1  x = 2 + 3j
2  y = -1 + 2j
3  # Performing arithmetic operations
4  sum_result = x + y
5  difference_result = x - y
6  multiplication_result = x * y
7  division_result = x / y
8  # Printing the results
9  print("Sum:", sum_result)
10 print("Difference:", difference_result)
11 print("Multiplication:", multiplication_result)
12 print("Division:", division_result)
13

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
Sum: (1+5j)
Difference: (3+1j)
Multiplication: (-8+1j)
Division: (0.8-1.4j)
PS C:\Users\ADMIN>


```

Example 6

```

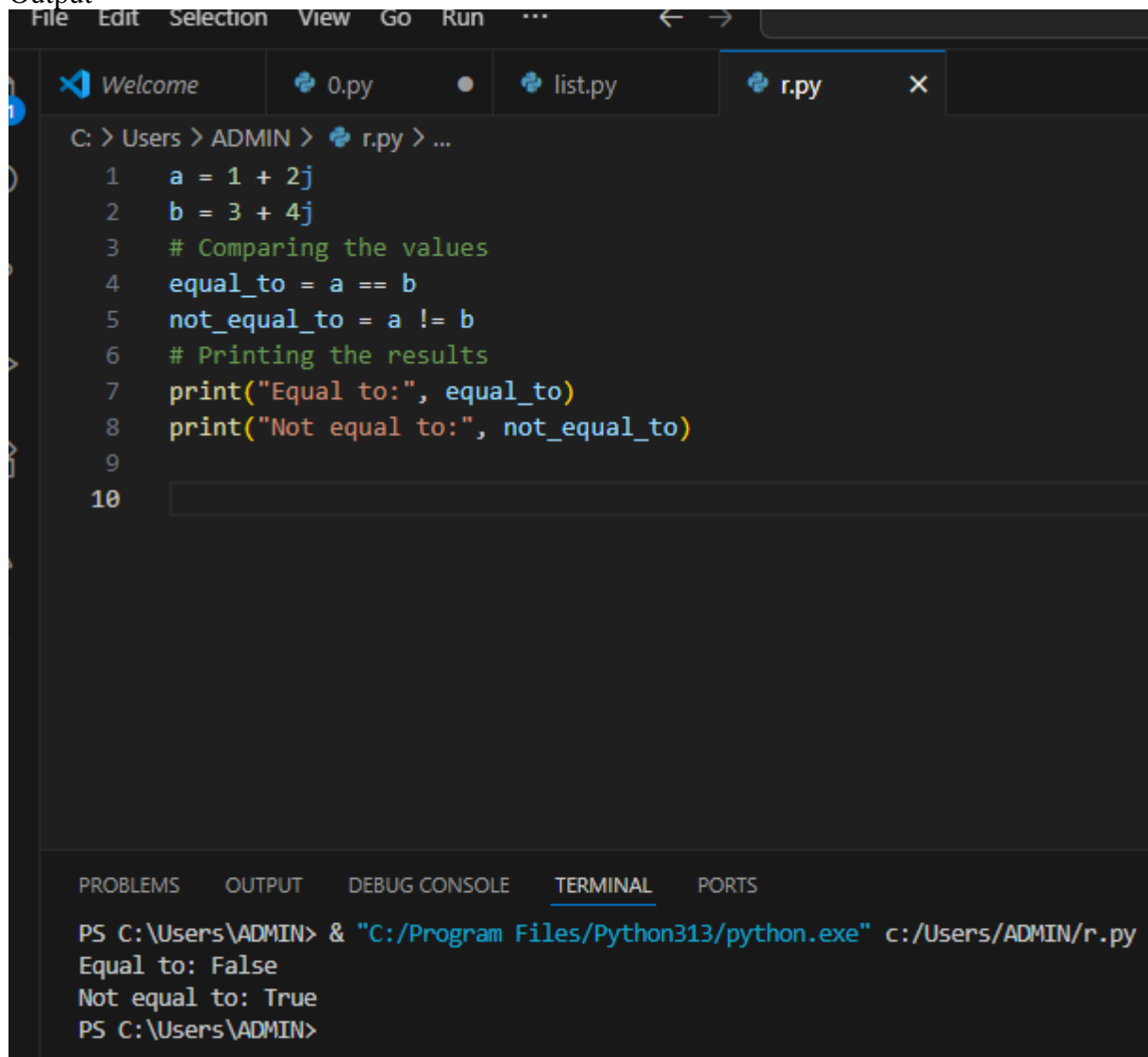
a = 1 + 2j
b = 3 + 4j
# Comparing the values
equal_to = a == b

```

 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 different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110

```
not_equal_to = a != b
# Printing the results
print("Equal to:", equal_to)
print("Not equal to:", not_equal_to)
```


Output



```
File Edit Selection View Go Run ...
Welcome 0.py list.py r.py x
C: > Users > ADMIN > r.py > ...
1 a = 1 + 2j
2 b = 3 + 4j
3 # Comparing the values
4 equal_to = a == b
5 not_equal_to = a != b
6 # Printing the results
7 print("Equal to:", equal_to)
8 print("Not equal to:", not_equal_to)
9
10

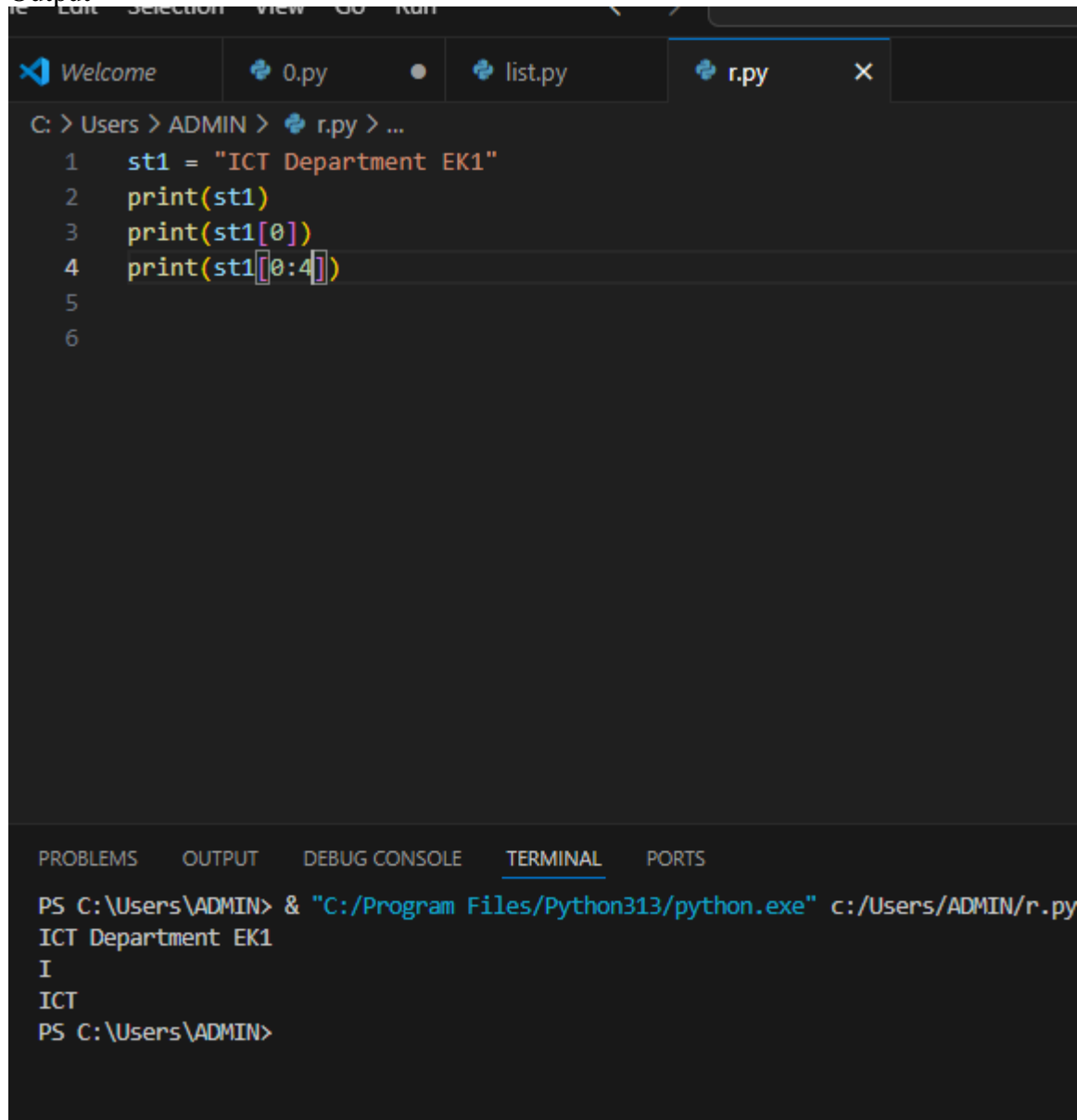
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
Equal to: False
Not equal to: True
PS C:\Users\ADMIN>
```

Example 7

 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 different number datatypes in python.
Experiment No: 01	Date:08/07/2025 Enrollment No:92400133110

```
st1 = "ICT Department 3EK1"
print(st1)
print(st1[0])
print(st1[0:4])
```

Output





The screenshot shows a Python IDE with a file named 'r.py' open. The code in the editor is:

```
1 st1 = "ICT Department EK1"
2 print(st1)
3 print(st1[0])
4 print(st1[0:4])
5
6
```

Below the editor, the 'TERMINAL' tab is active, showing the command to run the script and its output:

```
PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
ICT Department EK1
I
ICT
PS C:\Users\ADMIN>
```

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Subject: Programming With Python (01CT1309)	Aim: Write a program to demonstrate different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110



Example 8

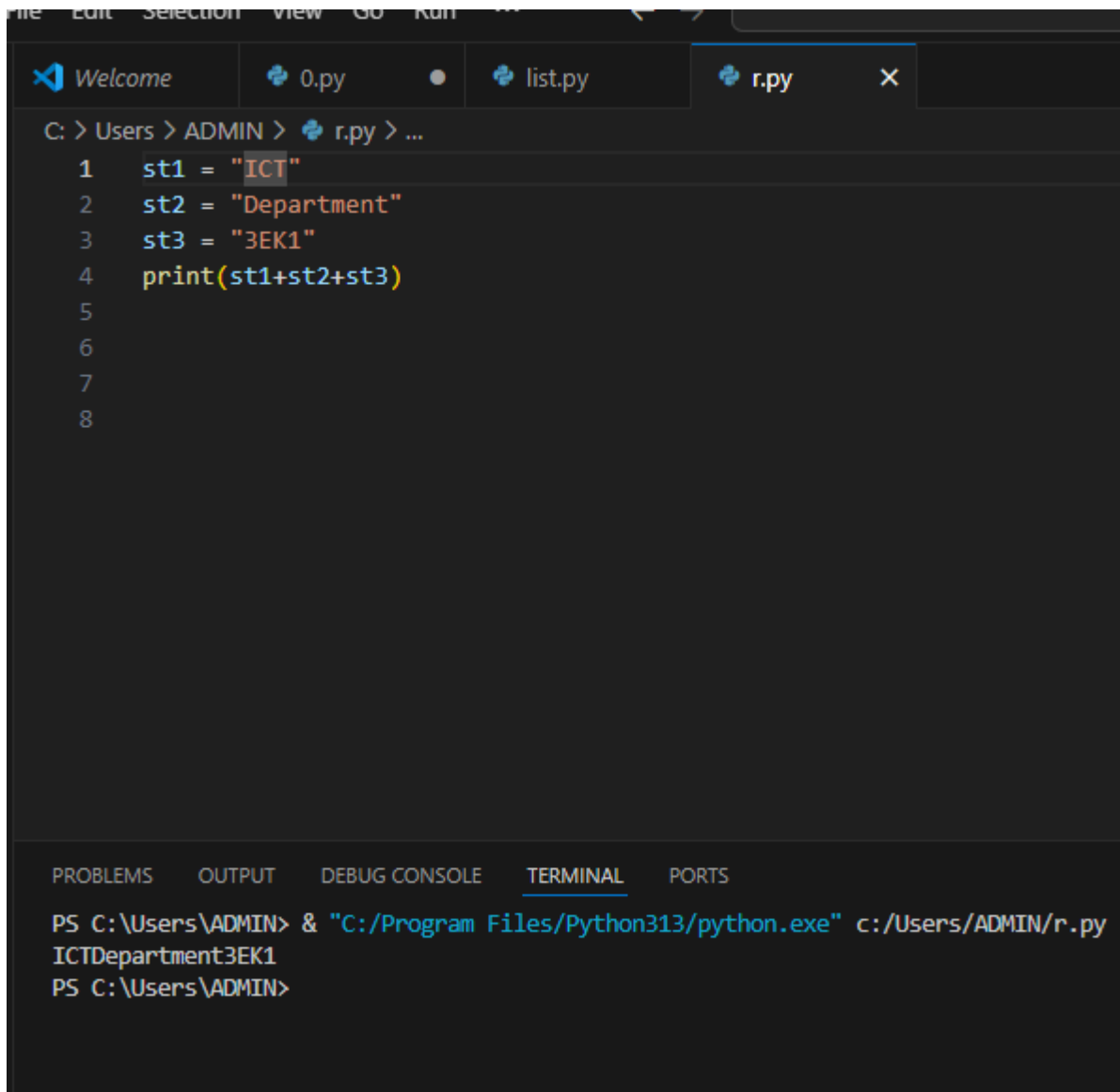
```
st1 = "ICT"
st2 = "Department"
st3 = "3EK1"
print(st1+st2+st3)
```

Repetitions: Python allows us to repeat a given string with the help of ‘ * ‘ operator.

```
print(4*st1)
```

Output

 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 different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110



```

1  st1 = "ICT"
2  st2 = "Department"
3  st3 = "3EK1"
4  print(st1+st2+st3)
5
6
7
8

```

```

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS



PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
ICTDepartment3EK1
PS C:\Users\ADMIN>

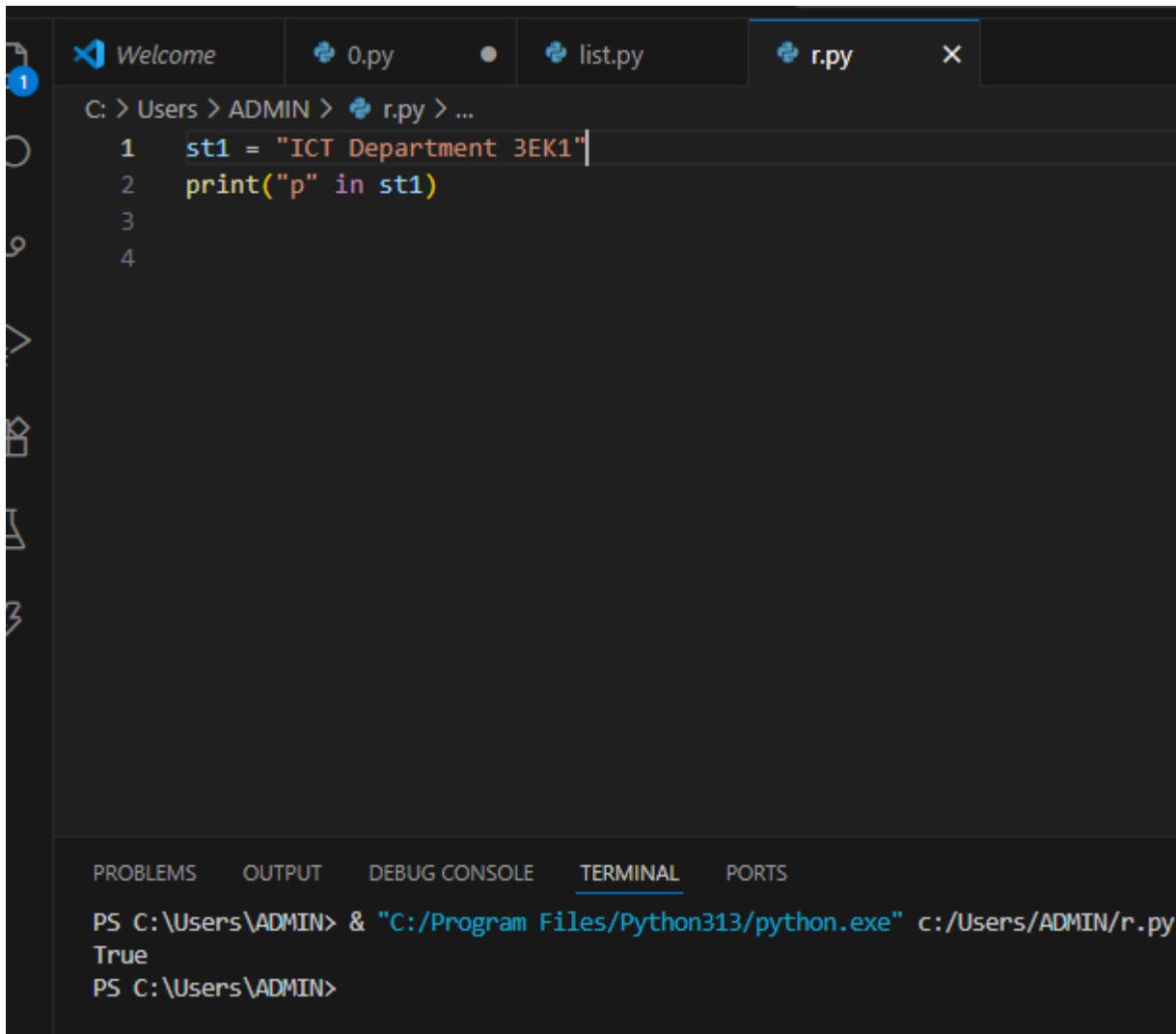
```

Membership: The Membership operator helps to check whether a given character is present in the string or not with the help of two operators in and not in. In and not in operator returns the Boolean value True or False.

```
st1 = "ICT Department 3EK1"
print("p" in st1)
```

Output

 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 different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110



The screenshot shows a Python IDE with a file named `r.py` open. The code in the editor is:

```

1 st1 = "ICT Department 3EK1"
2 print("p" in st1)
3
4

```

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

```

PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
True
PS C:\Users\ADMIN>

```



Print("p" not in st1)

Output

Collection Data Types

Collection data types in Python are used to store and organize multiple values into a single entity. Python provides several built-in collection data types, including lists, tuples, dictionaries, and sets.

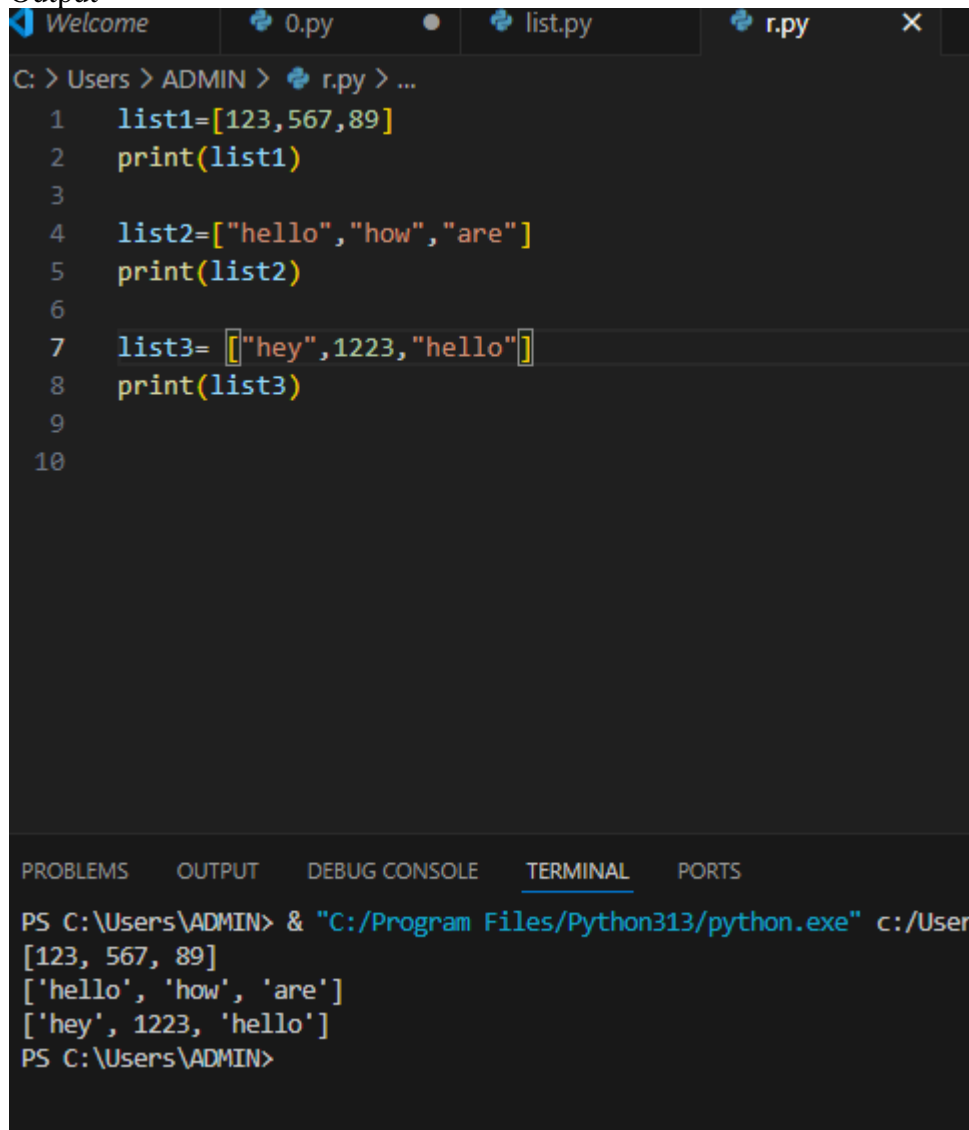
```
list1=[123,567,89]
print(list1)
```


 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 different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110

```
list2=["hello","how","are"]
print(list2)
```

```
list3= ["hey",1223,"hello"]
print(list3)
```

Output




The screenshot shows a Python IDE with three tabs: 'Welcome', '0.py', and 'list.py'. The 'list.py' tab is active, displaying the following code:

```
1 list1=[123,567,89]
2 print(list1)
3
4 list2=["hello","how","are"]
5 print(list2)
6
7 list3= ["hey",1223,"hello"]
8 print(list3)
9
10
```

Below the code editor, the 'TERMINAL' tab is selected, showing the command prompt output:

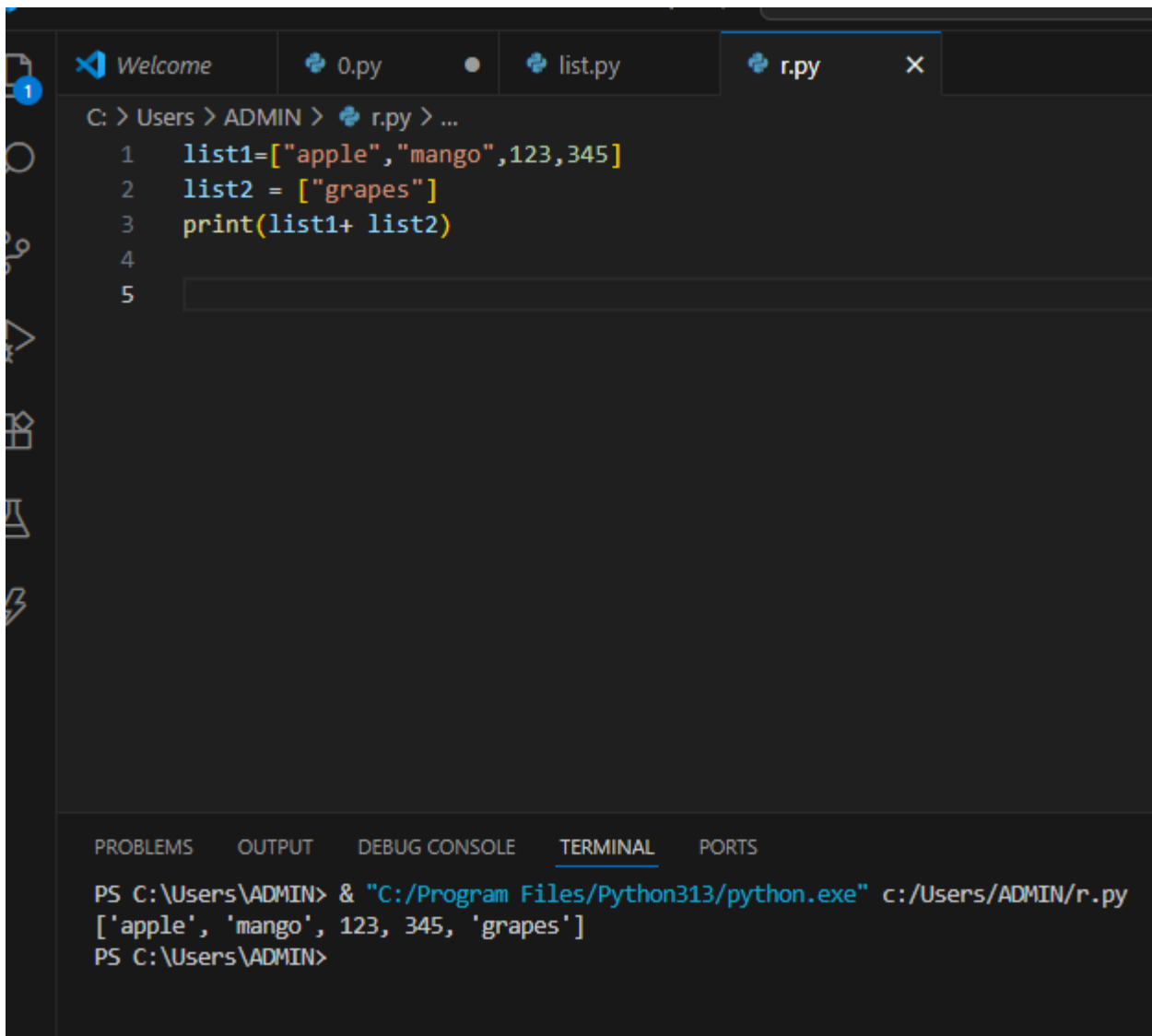
```
PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/User
[123, 567, 89]
['hello', 'how', 'are']
['hey', 1223, 'hello']
PS C:\Users\ADMIN>
```

```
list1=["apple","mango",123,345]
```

 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 different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110

```
list2 = ["grapes"]
print(list1+ list2)
```

Output




The screenshot shows a Python IDE with a dark theme. The top bar has tabs for 'Welcome', '0.py', 'list.py', and 'r.py'. The main editor area shows the following code:

```
1 list1=["apple","mango",123,345]
2 list2 = ["grapes"]
3 print(list1+ list2)
4
5
```

The bottom panel has tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL', and 'PORTS'. The 'TERMINAL' tab is active, showing the command prompt output:

```
PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
['apple', 'mango', 123, 345, 'grapes']
PS C:\Users\ADMIN>
```

```
dict1={"comp": "computer", "sci": "science"}
print(dict["comp"])
dict2={"123": "computer", 456 : "maths"}
```

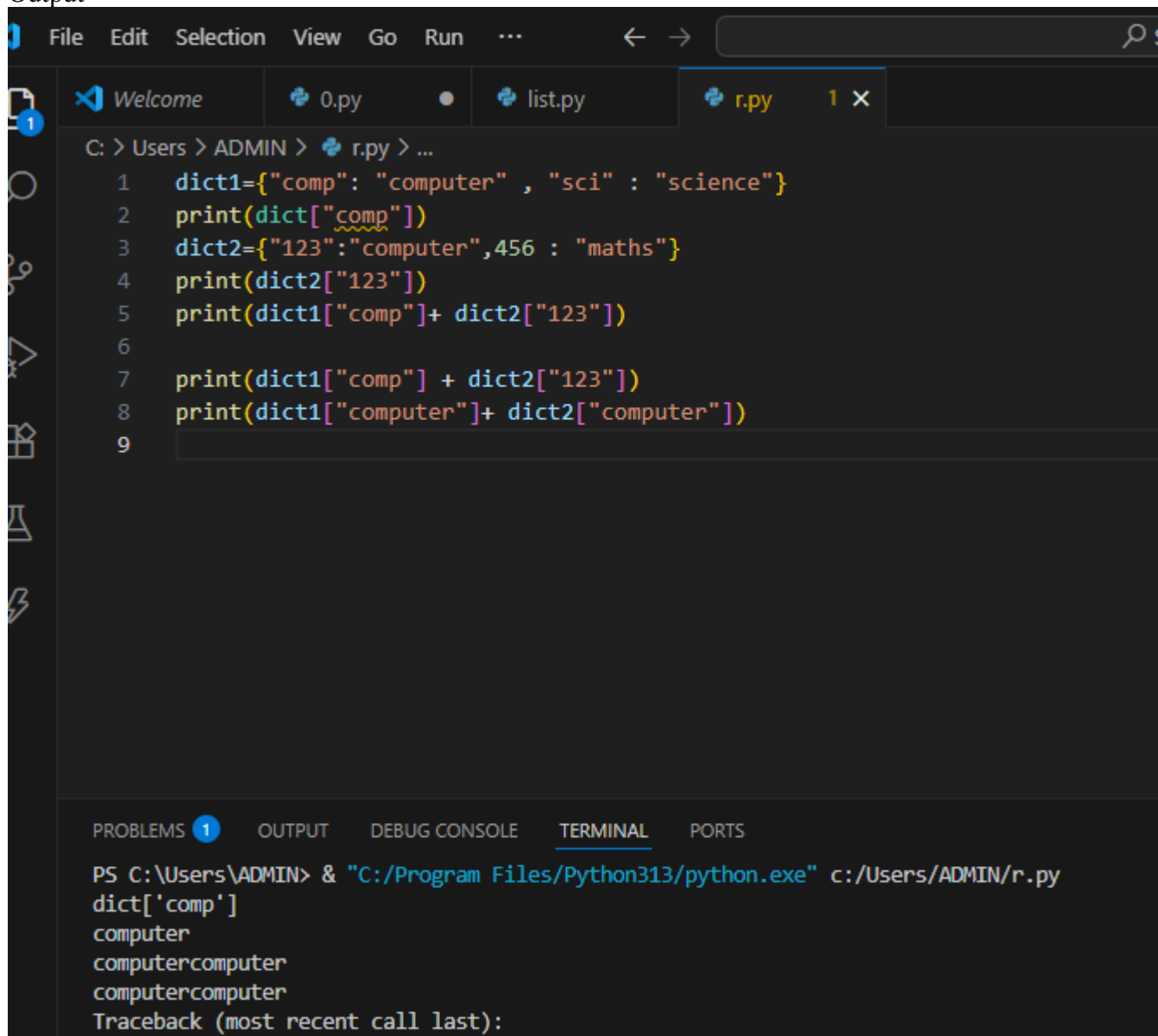
 Marwadi University Marwadi Chandarana Group	Marwadi University Faculty of Engineering & Technology Department of Information and Communication Technology	
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Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110

```
print(dict2["123"])
print(dict1["comp"]+ dict2["123"])
```

Check

```
print(dict1+ dict2)
print(dict1["computer"]+ dict2["computer"])
```

Output





```

File Edit Selection View Go Run ...
Welcome 0.py list.py r.py 1 x
C: > Users > ADMIN > r.py > ...
1 dict1={"comp": "computer" , "sci" : "science"}
2 print(dict["comp"])
3 dict2={"123":"computer",456 : "maths"}
4 print(dict2["123"])
5 print(dict1["comp"]+ dict2["123"])
6
7 print(dict1["comp"] + dict2["123"])
8 print(dict1["computer"]+ dict2["computer"])
9

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
dict['comp']
computer
computercomputer
computercomputer
Traceback (most recent call last):

```

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Subject: Programming With Python (01CT1309)	Aim: Write a program to demonstrate different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110



```
my_set = {1, 2, 3, 4, 5}
print(my_set)
```

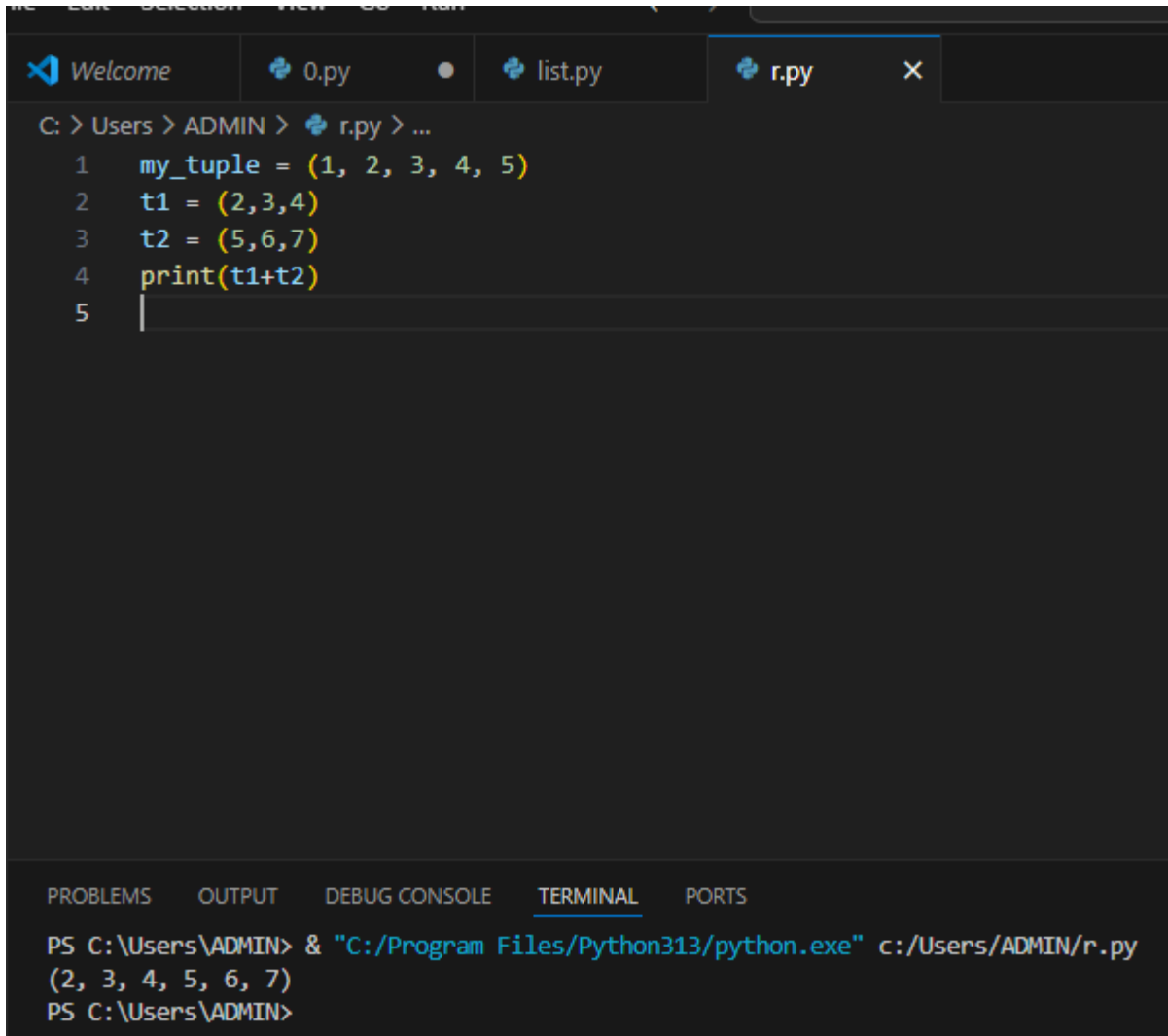
```
set1 = {1, 2, 3, 4, 5}
set2 = {4, 5, 6, 7, 8}
check
print(set1 + set2)
```

Output

```
my_tuple = (1, 2, 3, 4, 5)
t1 = (2,3,4)
t2 = (5,6,7)
print(t1+t2)
```

Output

 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 different number datatypes in python.	
Experiment No: 01	Date:08/07/2025	Enrollment No:92400133110



```


C: > Users > ADMIN > r.py > ...
1  my_tuple = (1, 2, 3, 4, 5)
2  t1 = (2,3,4)
3  t2 = (5,6,7)
4  print(t1+t2)
5

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
PS C:\Users\ADMIN> & "C:/Program Files/Python313/python.exe" c:/Users/ADMIN/r.py
(2, 3, 4, 5, 6, 7)
PS C:\Users\ADMIN>

```

Post Lab Exercise:

- Write a program that displays “Welcome to Python” five times.

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b. Write a program that displays the following table:

a	a ²	a ³
1	1	1
2	4	8
3	9	27
4	16	64

c. Write a program that displays the result of

$$\frac{9.5 \times 4.5 - 2.5 \times 3}{45.5 - 3.5}$$