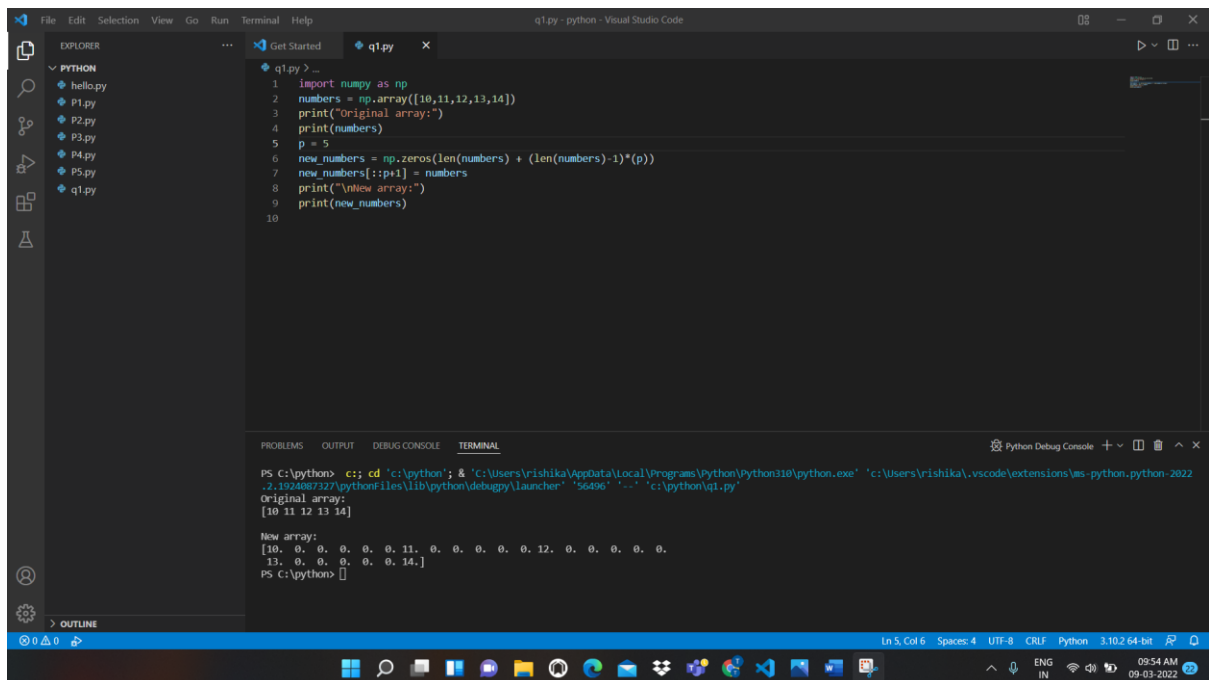


TASK 8 COGNIZANCE

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Question 1:



The screenshot displays the Visual Studio Code interface. The Explorer panel on the left shows a file tree with a 'PYTHON' folder containing files like 'hello.py', 'P1.py', 'P2.py', 'P3.py', 'P4.py', 'P5.py', and 'q1.py'. The main editor window shows the code for 'q1.py':

```
1 import numpy as np
2 numbers = np.array([10,11,12,13,14])
3 print("Original array:")
4 print(numbers)
5 p = 5
6 new_numbers = np.zeros(len(numbers) + (len(numbers)-1)*(p))
7 new_numbers[:p+1] = numbers
8 print("\nNew array:")
9 print(new_numbers)
10
```

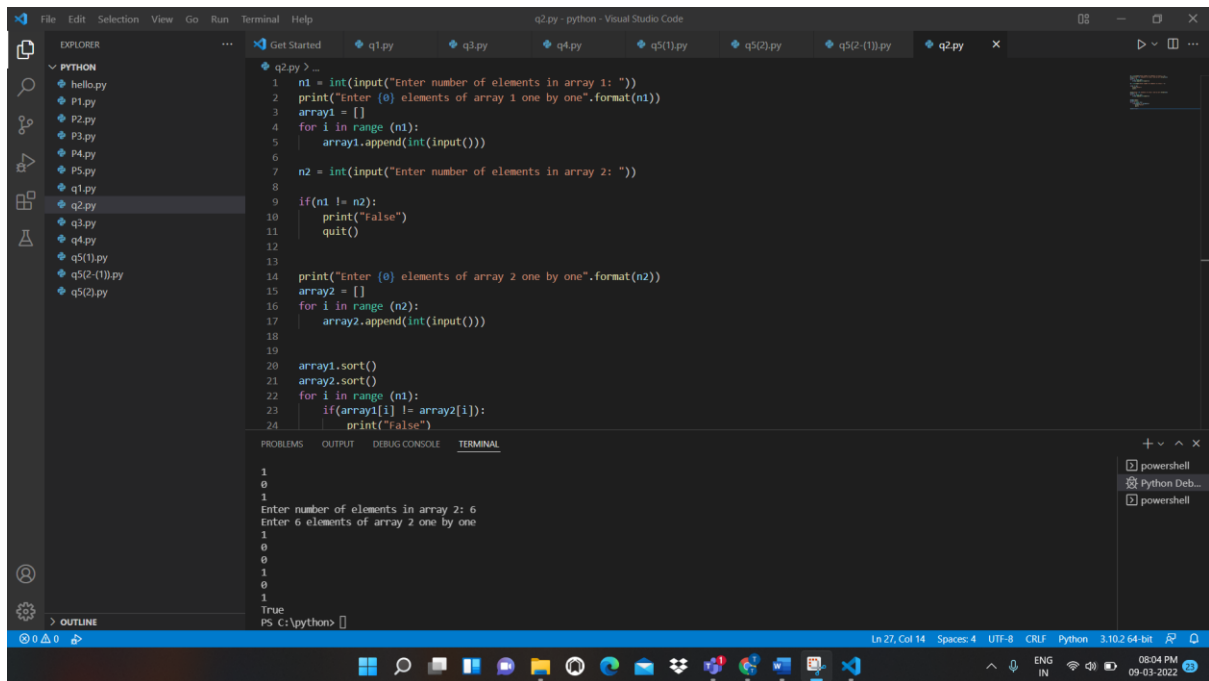
Below the editor, the 'TERMINAL' panel shows the command prompt output:

```
PS C:\python> cd 'c:\python'; & 'c:\Users\rishika\AppData\Local\Programs\Python\Python310\python.exe' 'c:\Users\rishika\.vscode\extensions\ms-python.python-2022.192.0\dist\python\debugpy\launcher' '56496' '-' 'c:\python\q1.py'
Original array:
[10 11 12 13 14]

New array:
[10.  0.  0.  0.  0.  0. 11.  0.  0.  0.  0.  0. 12.  0.  0.  0.  0.
 13.  0.  0.  0.  0.  0. 14.]
PS C:\python>
```

The status bar at the bottom indicates the file is 'Ln 5, Col 6', uses 'Spaces: 4', 'UTF-8' encoding, 'CRLF' line endings, and is a 'Python 3.10.2 64-bit' file. The system clock shows '09:54 AM 09-03-2022'.

Question 2:

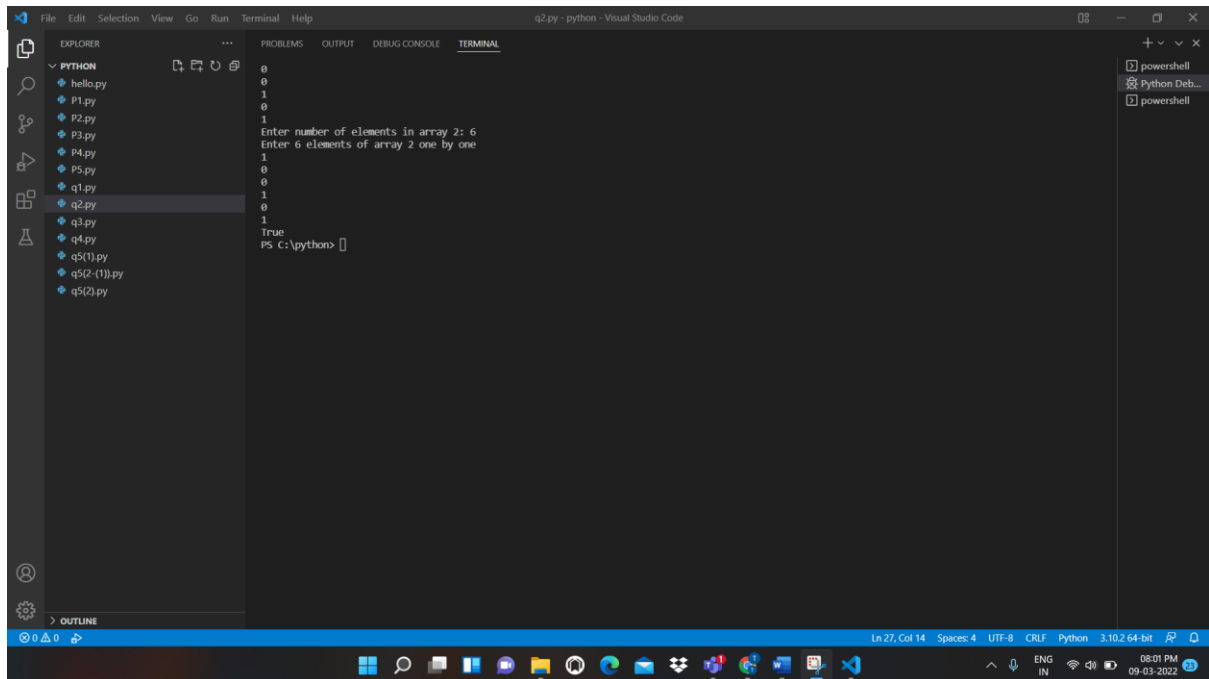


The screenshot shows the Visual Studio Code interface with a Python file named `q2.py` open. The code defines two arrays, `array1` and `array2`, based on user input. It then compares the arrays element by element and prints the result.

```
q2.py > ...
1 n1 = int(input("Enter number of elements in array 1: "))
2 print("Enter {} elements of array 1 one by one".format(n1))
3 array1 = []
4 for i in range (n1):
5     array1.append(int(input()))
6
7 n2 = int(input("Enter number of elements in array 2: "))
8
9 if(n1 != n2):
10     print("False")
11     quit()
12
13 print("Enter {} elements of array 2 one by one".format(n2))
14 array2 = []
15 for i in range (n2):
16     array2.append(int(input()))
17
18
19 array1.sort()
20 array2.sort()
21 for i in range (n1):
22     if(array1[i] != array2[i]):
23         print("False")
24
```

The terminal output shows the execution of the script:

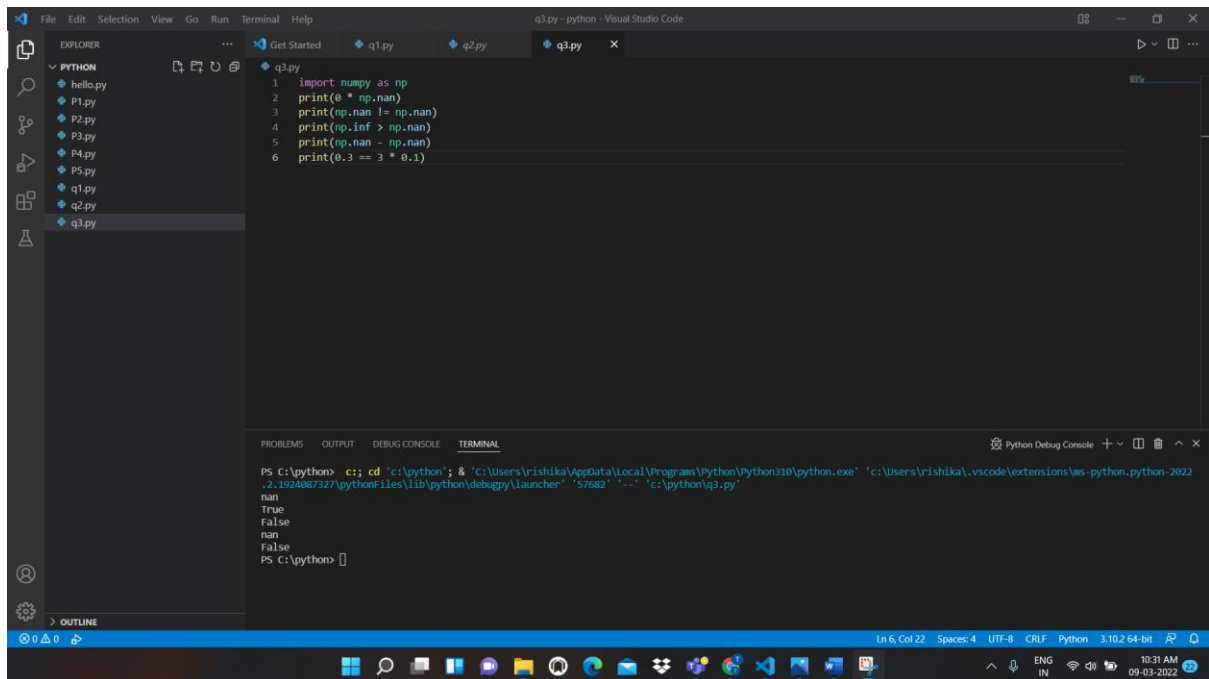
```
1
0
1
Enter number of elements in array 2: 6
Enter 6 elements of array 2 one by one
1
0
0
1
0
1
True
PS C:\python>
```



The screenshot shows the same Visual Studio Code interface with the `q2.py` file. The terminal output is different from the previous one, showing a different sequence of inputs and outputs.

```
0
0
1
1
0
1
Enter number of elements in array 2: 6
Enter 6 elements of array 2 one by one
1
0
0
1
0
1
True
PS C:\python>
```

Question 3:-



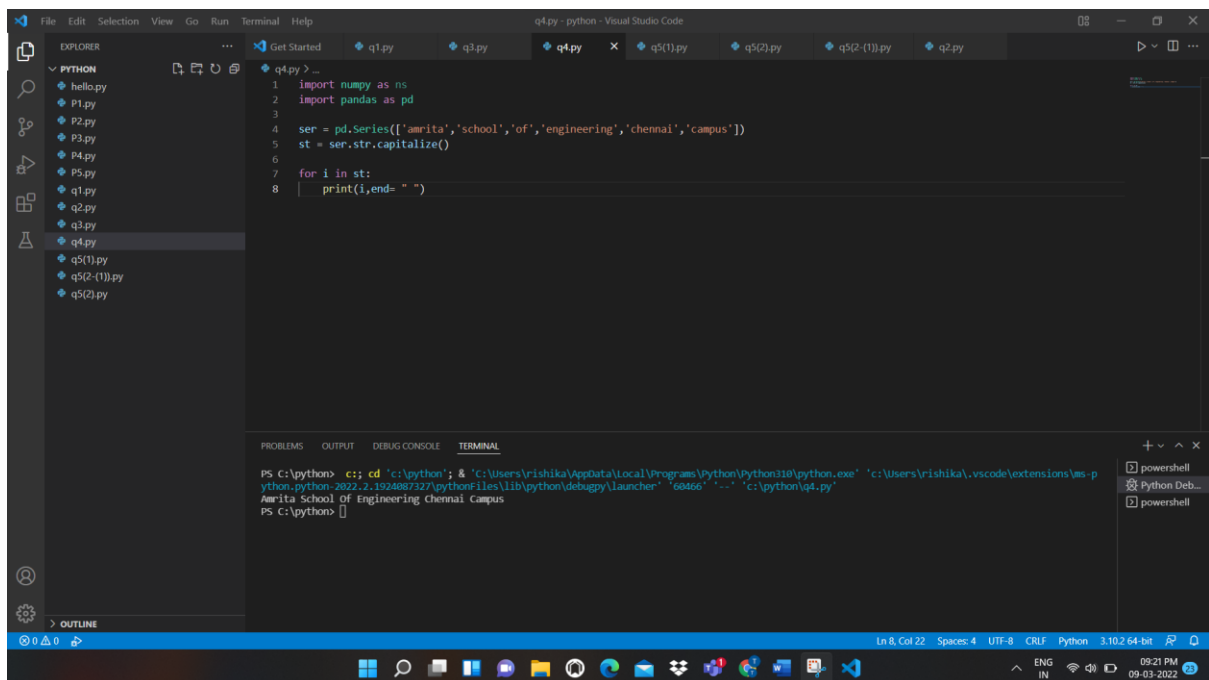
The screenshot shows the Visual Studio Code interface with a Python file named `q3.py` open. The file contains the following code:

```
1 import numpy as np
2 print(0 * np.nan)
3 print(np.nan != np.nan)
4 print(np.inf > np.nan)
5 print(np.nan - np.nan)
6 print(0.3 == 3 * 0.1)
```

The terminal output shows the execution of the script, which produces the following results:

```
PS C:\python> c:: cd 'c:\python'; & 'C:\Users\Irishika\AppData\Local\Programs\Python\Python310\python.exe' 'c:\Users\Irishika\.vscode\extensions\ms-python.python-2022.2.1924887327\pythonFiles\lib\python\debugpy\launcher' '57682' '-' 'c:\python\q3.py'
nan
True
False
nan
False
PS C:\python>
```

Question 4:



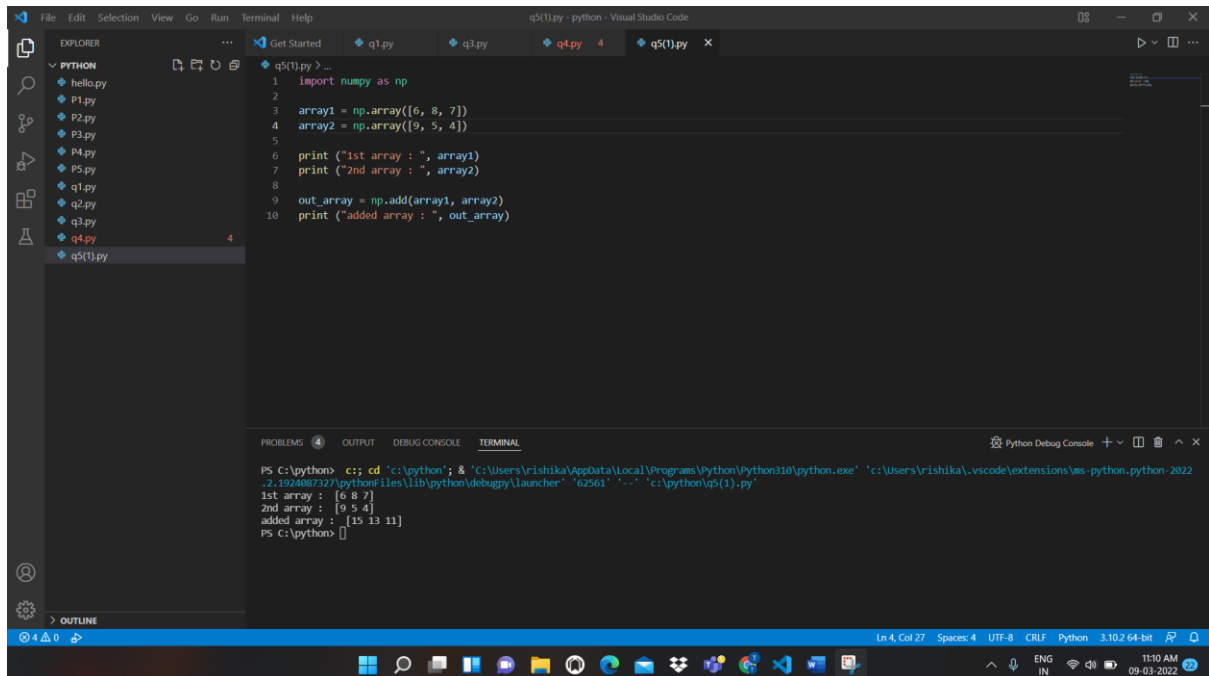
The screenshot shows the Visual Studio Code interface with a Python file named `q4.py` open. The file contains the following code:

```
1 import numpy as ns
2 import pandas as pd
3
4 ser = pd.Series(['amrita', 'school', 'of', 'engineering', 'chennai', 'campus'])
5 st = ser.str.capitalize()
6
7 for i in st:
8     print(i, end= " ")
```

The terminal output shows the execution of the script, which produces the following results:

```
PS C:\python> c:: cd 'c:\python'; & 'C:\Users\Irishika\AppData\Local\Programs\Python\Python310\python.exe' 'c:\Users\Irishika\.vscode\extensions\ms-python.python-2022.2.1924887327\pythonFiles\lib\python\debugpy\launcher' '6846' '-' 'c:\python\q4.py'
Amrita School Of Engineering Chennai Campus
PS C:\python>
```

Question5(1) : Addition of two numpy arrays



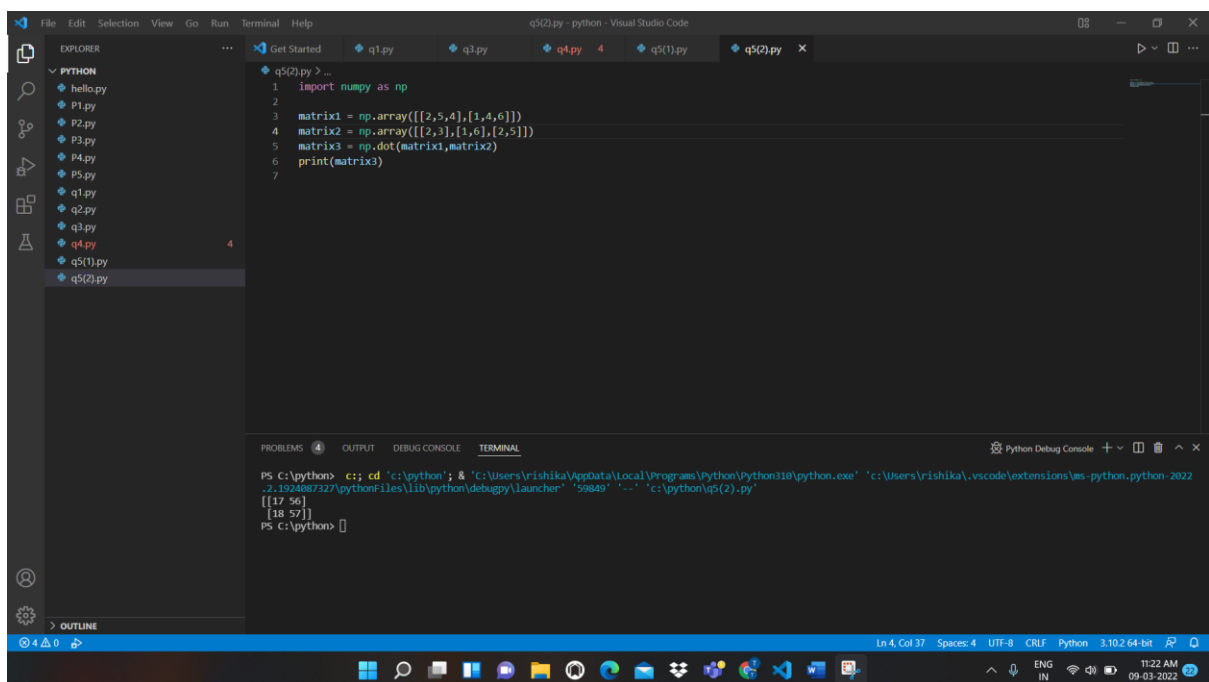
The screenshot shows a Visual Studio Code editor with a Python file named `q5(1).py`. The code defines two 1D numpy arrays, `array1` and `array2`, and adds them to produce `out_array`. The terminal output shows the execution of the code, displaying the arrays and the result of the addition.

```
1 import numpy as np
2
3 array1 = np.array([6, 8, 7])
4 array2 = np.array([9, 5, 4])
5
6 print ("1st array : ", array1)
7 print ("2nd array : ", array2)
8
9 out_array = np.add(array1, array2)
10 print ("added array : ", out_array)
```

```
PS C:\python> c; cd 'c:\python'; & 'C:\Users\irishika\AppData\Local\Programs\Python\Python310\python.exe' 'c:\Users\irishika\.vscode\extensions\ms-python.python-2022.1924087327\pythonFiles\lib\python\debugpy\launcher' '62561' '-' 'c:\python\q5(1).py'
1st array : [6 8 7]
2nd array : [9 5 4]
added array : [15 13 11]
PS C:\python>
```

Question5(2):- Multiplication of matrixes

#two dimensional arrays



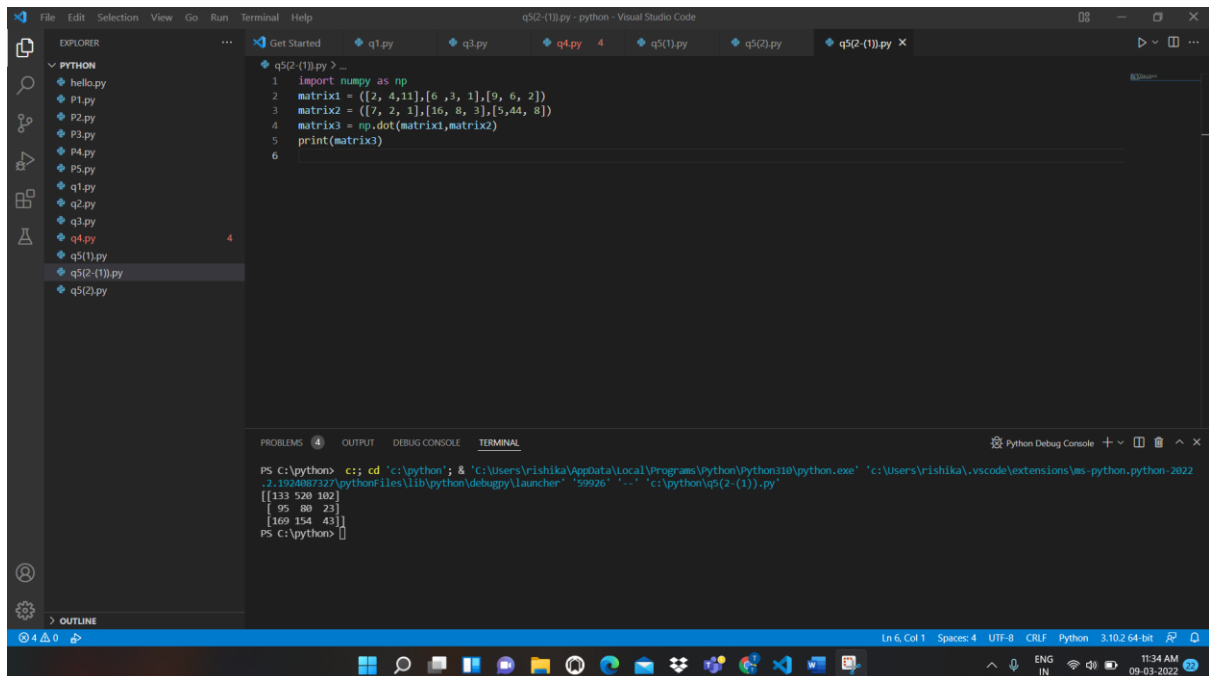
The screenshot shows a Visual Studio Code editor with a Python file named `q5(2).py`. The code defines two 2D numpy arrays, `matrix1` and `matrix2`, and multiplies them using `np.dot` to produce `matrix3`. The terminal output shows the execution of the code, displaying the matrices and the result of the multiplication.

```
1 import numpy as np
2
3 matrix1 = np.array([[2,5,4],[1,4,6]])
4 matrix2 = np.array([[2,3],[1,6],[2,5]])
5 matrix3 = np.dot(matrix1,matrix2)
6 print(matrix3)
7
```

```
PS C:\python> c; cd 'c:\python'; & 'C:\Users\irishika\AppData\Local\Programs\Python\Python310\python.exe' 'c:\Users\irishika\.vscode\extensions\ms-python.python-2022.1924087327\pythonFiles\lib\python\debugpy\launcher' '59849' '-' 'c:\python\q5(2).py'
[[17 56]
 [18 57]]
PS C:\python>
```

Question5(2-(1))

#three dimensional arrays



The screenshot shows the Visual Studio Code interface with a Python file named `q5(2-(1)).py` open. The file contains the following code:

```
1 import numpy as np
2 matrix1 = ([2, 4, 11], [6, 3, 1], [9, 6, 2])
3 matrix2 = ([7, 2, 1], [16, 8, 3], [5, 44, 8])
4 matrix3 = np.dot(matrix1, matrix2)
5 print(matrix3)
6
```

The Explorer sidebar on the left shows a list of files, including `q5(2-(1)).py`, which is currently selected. The Terminal panel at the bottom displays the output of the script:

```
PS C:\python> c:\cd 'c:\python'; & 'C:\Users\rishika\AppData\Local\Programs\Python\Python310\python.exe' 'c:\Users\rishika\.vscode\extensions\ms-python.python-2022.2.19\dist\python\python\lib\python\debugpy\launcher' '59926' '...' 'c:\python\q5(2-(1)).py'
[[133 520 182]
 [ 95  80 23]
 [169 154 43]]
PS C:\python>
```

The status bar at the bottom indicates the file is at line 6, column 1, with 4 spaces, using UTF-8 encoding and CRLF line endings. The system tray shows the time as 11:34 AM on 09-03-2022.