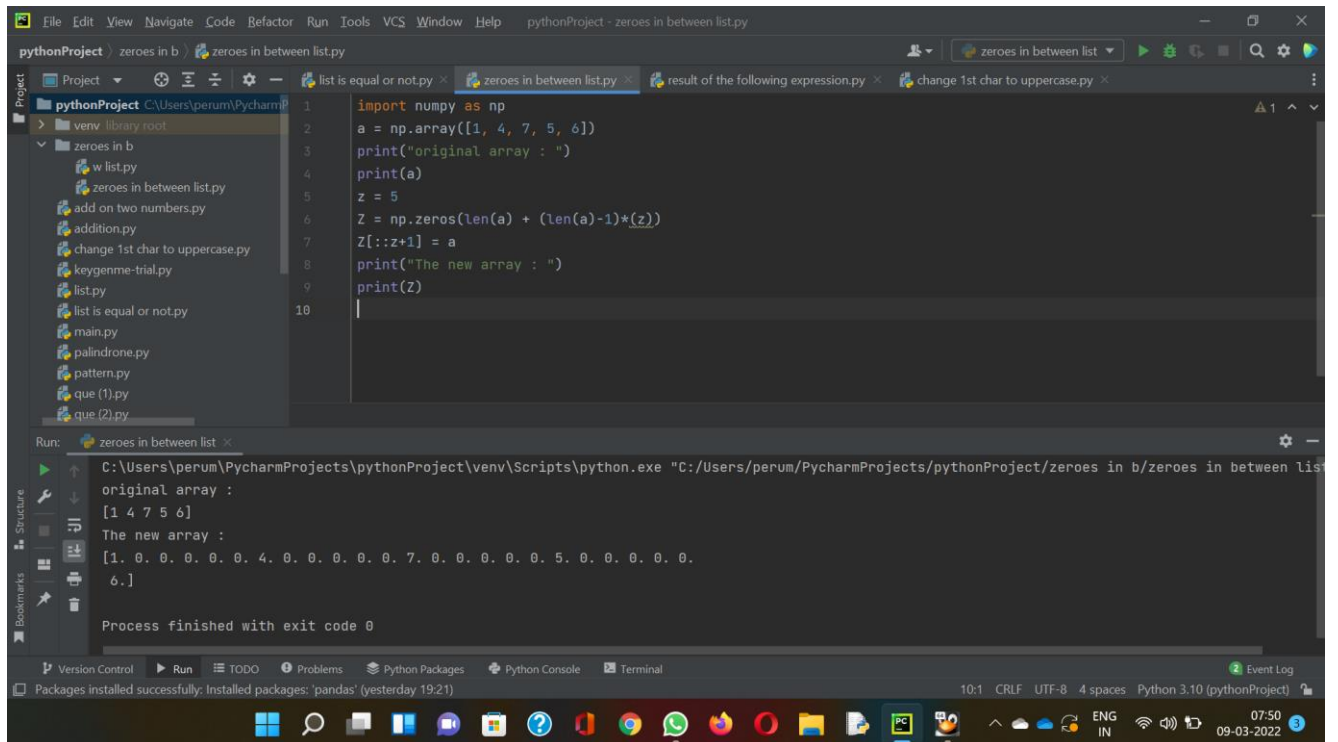


Outputs

1.a :-



The screenshot shows the PyCharm IDE with a project named 'pythonProject'. The file explorer on the left shows a directory structure with files like 'w list.py', 'zeros in between list.py', 'add on two numbers.py', 'addition.py', 'change 1st char to uppercase.py', 'keygenme-trial.py', 'list.py', 'list is equal or not.py', 'main.py', 'palindrome.py', 'pattern.py', 'que (1).py', and 'que (2).py'. The main editor displays the code for 'zeros in between list.py'.

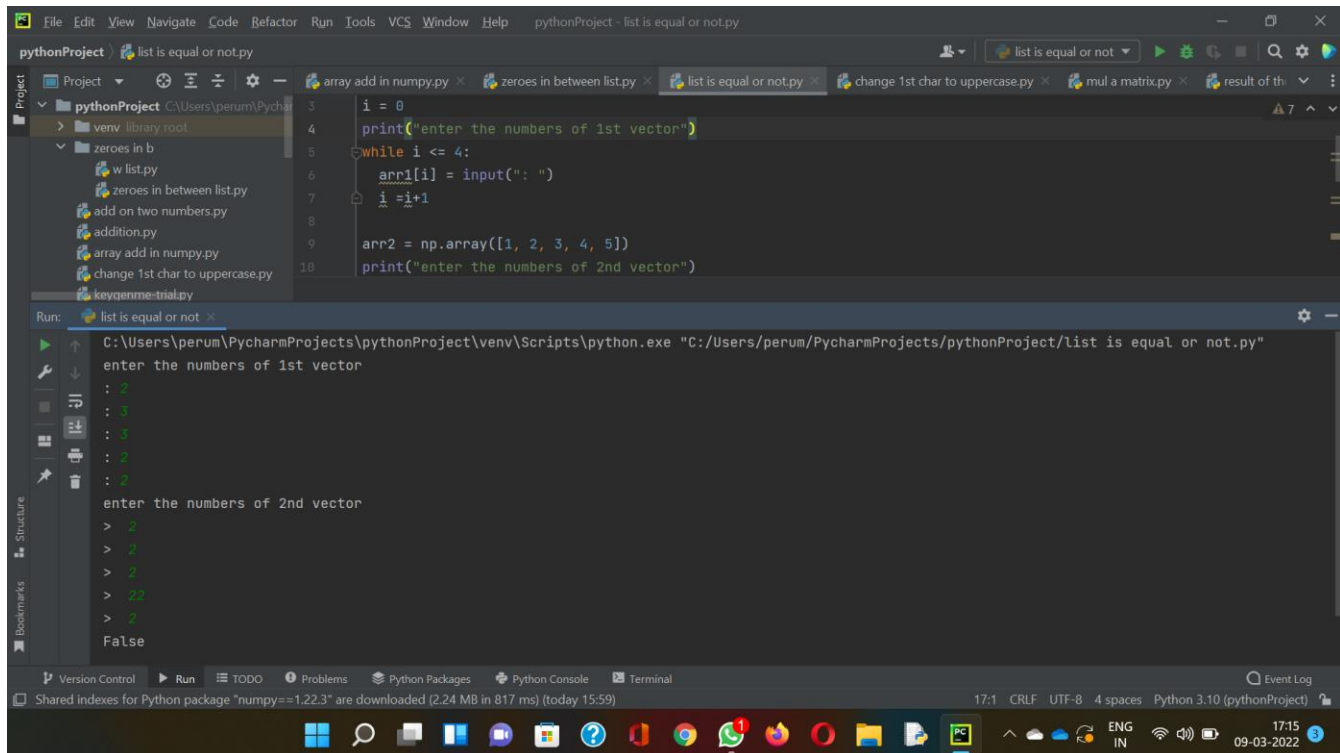
```
1 import numpy as np
2 a = np.array([1, 4, 7, 5, 6])
3 print("original array : ")
4 print(a)
5 z = 5
6 Z = np.zeros(len(a) + (len(a)-1)*(z))
7 Z[::z+1] = a
8 print("The new array : ")
9 print(Z)
10
```

The Run window at the bottom shows the output of the script:

```
original array :
[1 4 7 5 6]
The new array :
[1. 0. 0. 0. 0. 0. 4. 0. 0. 0. 0. 0. 7. 0. 0. 0. 0. 5. 0. 0. 0. 0. 6.]
```

Process finished with exit code 0

2.a :-



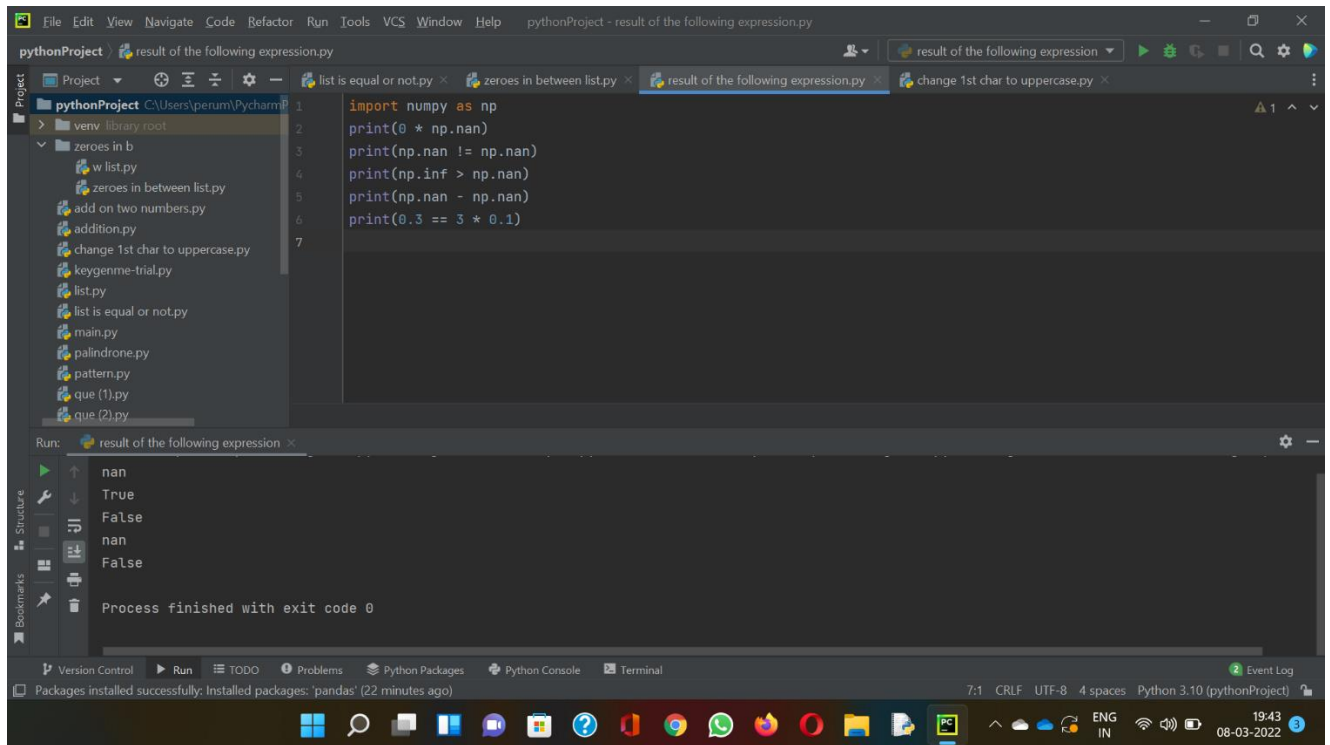
The screenshot shows the PyCharm IDE with a project named 'pythonProject'. The file explorer on the left shows a directory structure with files like 'w list.py', 'zeros in between list.py', 'add on two numbers.py', 'addition.py', 'array add in numpy.py', 'change 1st char to uppercase.py', 'keygenme-trial.py', and 'list is equal or not.py'. The main editor displays the code for 'list is equal or not.py'.

```
3 i = 0
4 print("enter the numbers of 1st vector")
5 while i <= 4:
6     arr1[i] = input(": ")
7     i = i+1
8
9 arr2 = np.array([1, 2, 3, 4, 5])
10 print("enter the numbers of 2nd vector")
```

The Run window at the bottom shows the output of the script:

```
enter the numbers of 1st vector
: 2
: 3
: 3
: 2
: 2
enter the numbers of 2nd vector
> 2
> 2
> 2
> 22
> 2
False
```

3.a :-



The screenshot shows the PyCharm IDE with a project named 'pythonProject'. The file explorer on the left shows a directory structure with files like 'w list.py', 'zeros in between list.py', 'add on two numbers.py', 'addition.py', 'change 1st char to uppercase.py', 'keygenme-trial.py', 'list.py', 'list is equal or not.py', 'main.py', 'palindrome.py', 'pattern.py', 'que (1).py', and 'que (2).py'. The main editor displays a Python script named 'result of the following expression.py' with the following code:

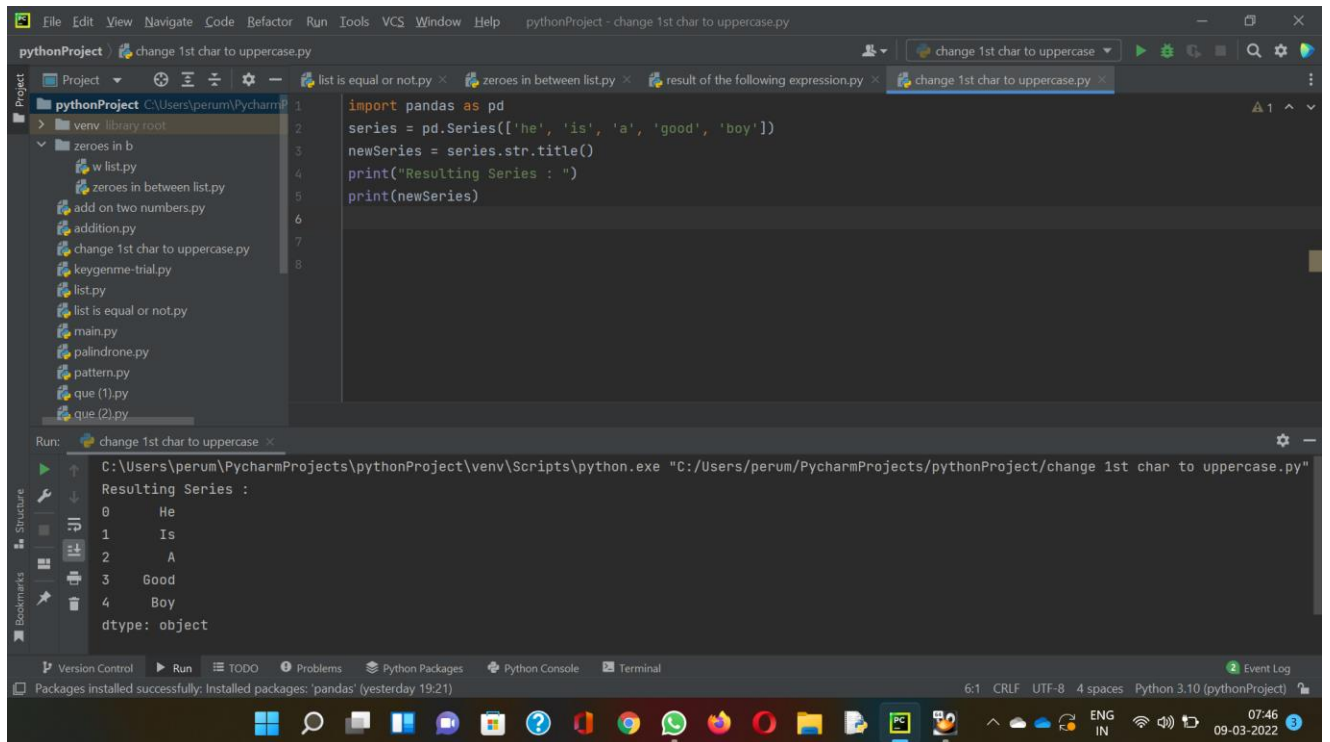
```
1 import numpy as np
2 print(0 * np.nan)
3 print(np.nan != np.nan)
4 print(np.inf > np.nan)
5 print(np.nan - np.nan)
6 print(0.3 == 3 * 0.1)
7
```

The Run console at the bottom shows the output of the script:

```
nan
True
False
nan
False
```

Below the output, it states 'Process finished with exit code 0'. The status bar at the bottom indicates '7:1 CRLF UTF-8 4 spaces Python 3.10 (pythonProject)' and the date '08-03-2022'.

4.a :-



The screenshot shows the PyCharm IDE with a project named 'pythonProject'. The file explorer on the left shows the same directory structure as in the previous screenshot. The main editor displays a Python script named 'change 1st char to uppercase.py' with the following code:

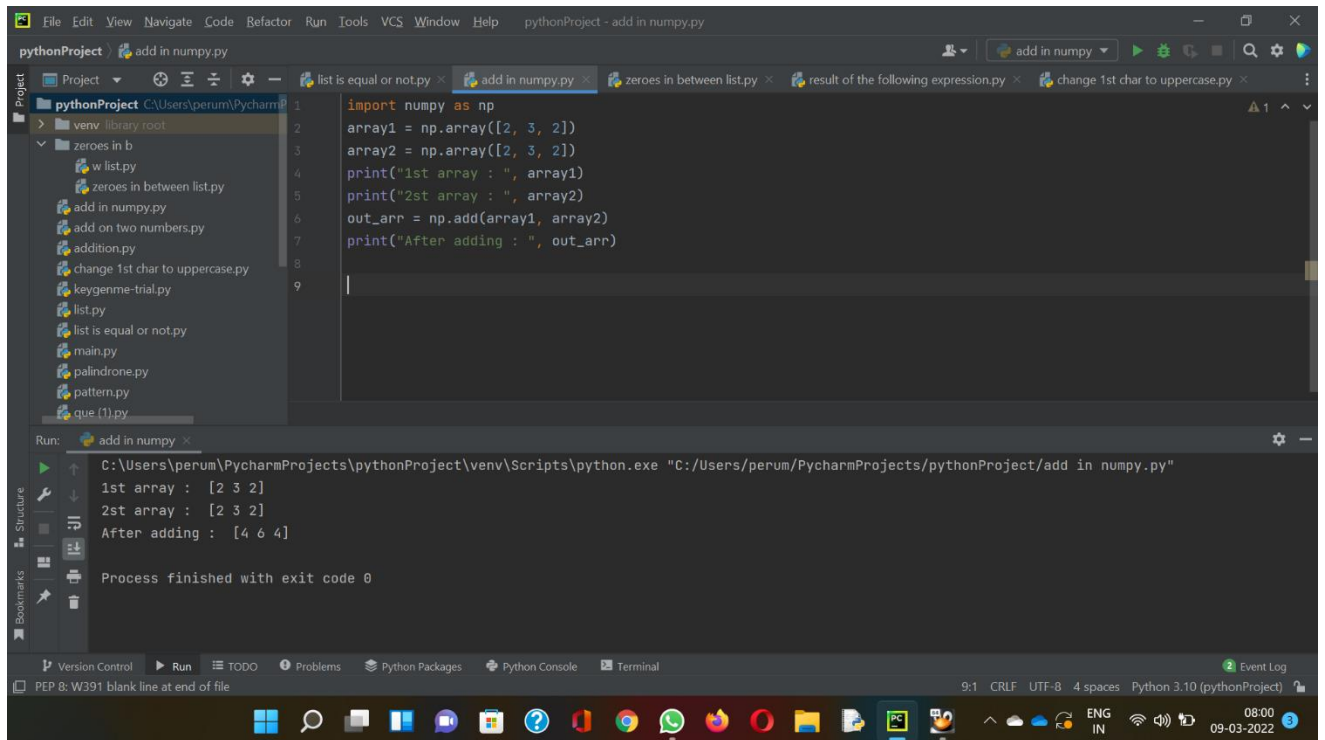
```
1 import pandas as pd
2 series = pd.Series(['he', 'is', 'a', 'good', 'boy'])
3 newSeries = series.str.title()
4 print("Resulting Series : ")
5 print(newSeries)
6
7
8
```

The Run console at the bottom shows the output of the script:

```
C:\Users\perum\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:/Users/perum/PycharmProjects/pythonProject/change 1st char to uppercase.py"
Resulting Series :
0    He
1    Is
2     A
3   Good
4    Boy
dtype: object
```

The status bar at the bottom indicates '6:1 CRLF UTF-8 4 spaces Python 3.10 (pythonProject)' and the date '09-03-2022'.

5.A.a



The screenshot shows the PyCharm IDE with a project named 'pythonProject'. The file explorer on the left shows a directory structure with files like 'list.py', 'zeros in between list.py', 'add in numpy.py', 'add on two numbers.py', 'addition.py', 'change 1st char to uppercase.py', 'keygenme-trial.py', 'list.py', 'list is equal or not.py', 'main.py', 'palindrome.py', 'pattern.py', and 'que (1).py'. The main editor window displays the code for 'add in numpy.py':

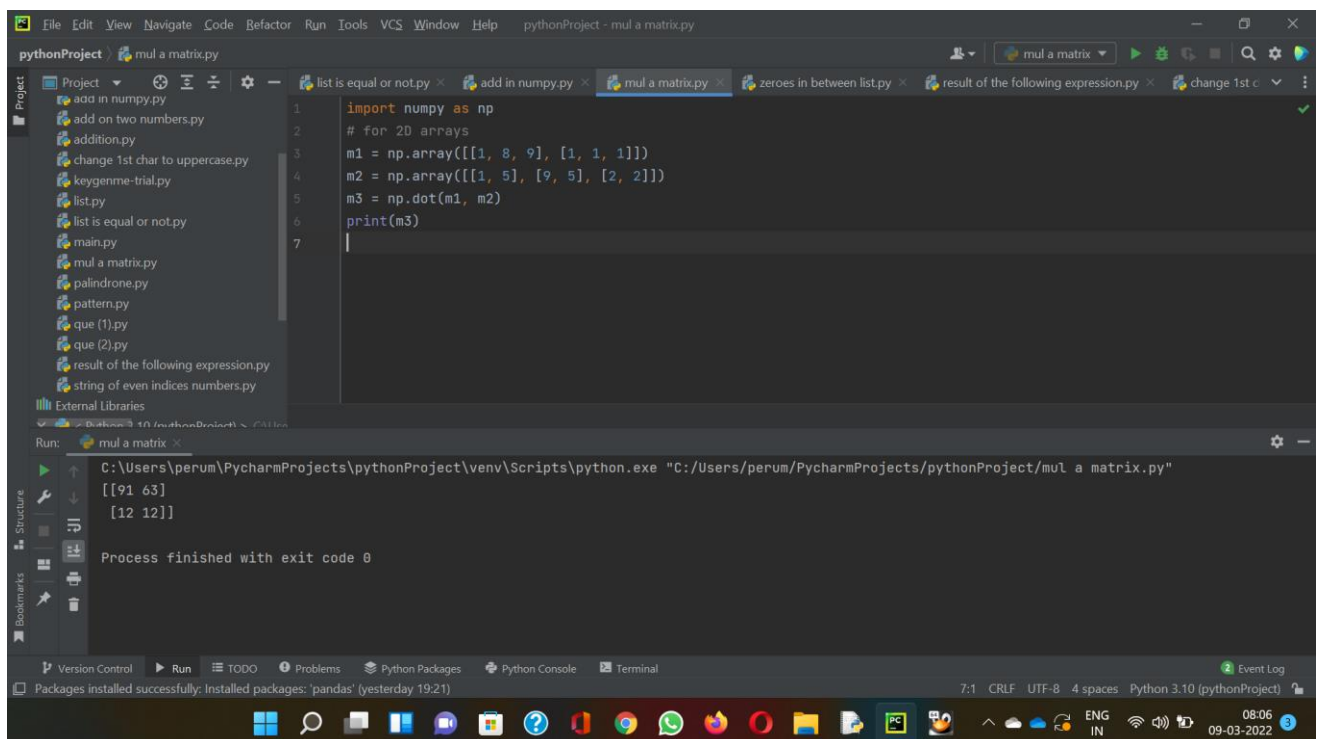
```
1 import numpy as np
2 array1 = np.array([2, 3, 2])
3 array2 = np.array([2, 3, 2])
4 print("1st array : ", array1)
5 print("2st array : ", array2)
6 out_arr = np.add(array1, array2)
7 print("After adding : ", out_arr)
8
9
```

The Run window at the bottom shows the output of the program:

```
C:\Users\perum\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:/Users/perum/PycharmProjects/pythonProject/add in numpy.py"
1st array : [2 3 2]
2st array : [2 3 2]
After adding : [4 6 4]
Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, line endings are CRLF, and the Python version is 3.10.

5.B.a :-



The screenshot shows the PyCharm IDE with a project named 'pythonProject'. The file explorer on the left shows a directory structure with files like 'add in numpy.py', 'add on two numbers.py', 'addition.py', 'change 1st char to uppercase.py', 'keygenme-trial.py', 'list.py', 'list is equal or not.py', 'main.py', 'mul a matrix.py', 'palindrome.py', 'pattern.py', 'que (1).py', 'que (2).py', 'result of the following expression.py', and 'string of even indices numbers.py'. The main editor window displays the code for 'mul a matrix.py':

```
1 import numpy as np
2 # for 2D arrays
3 m1 = np.array([[1, 8, 9], [1, 1, 1]])
4 m2 = np.array([[1, 5], [9, 5], [2, 2]])
5 m3 = np.dot(m1, m2)
6 print(m3)
7
```

The Run window at the bottom shows the output of the program:

```
C:\Users\perum\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:/Users/perum/PycharmProjects/pythonProject/mul a matrix.py"
[[91 63]
 [12 12]]
Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, line endings are CRLF, and the Python version is 3.10. A message at the bottom of the Run window states: 'Packages installed successfully: Installed packages: 'pandas' (yesterday 19:21)'.