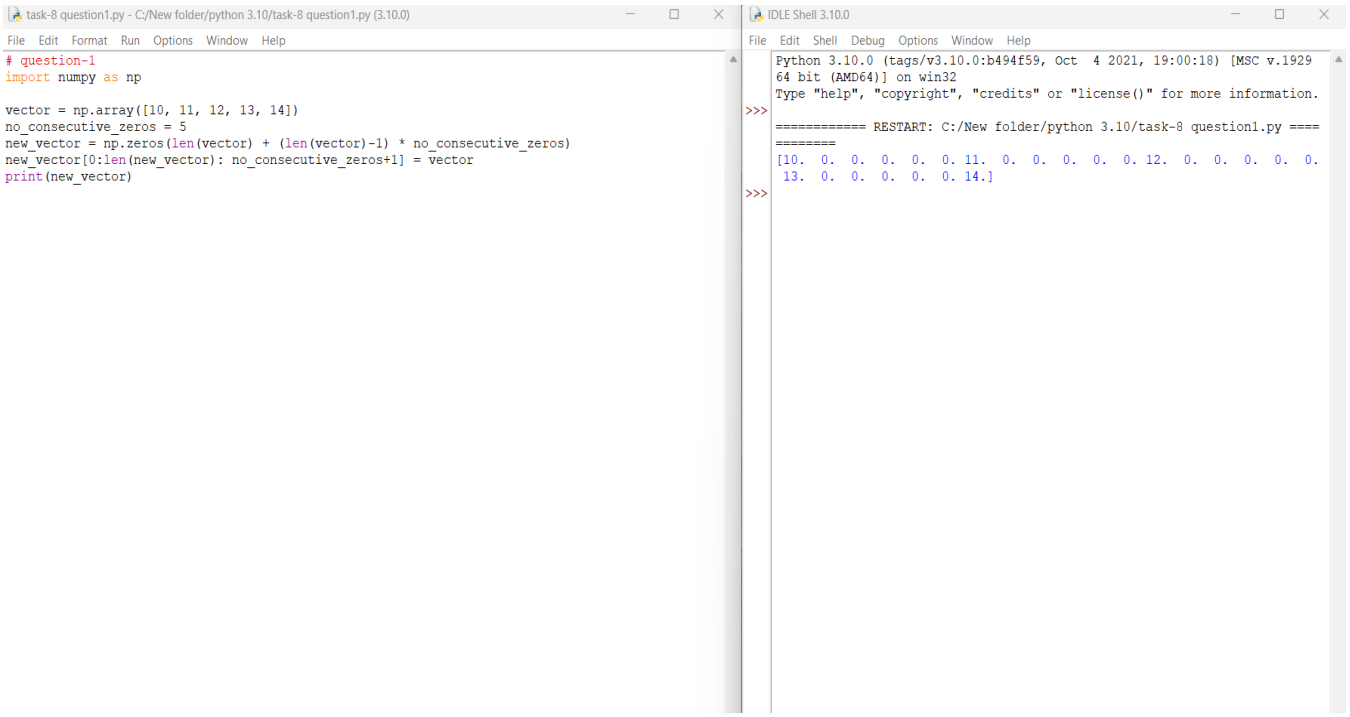
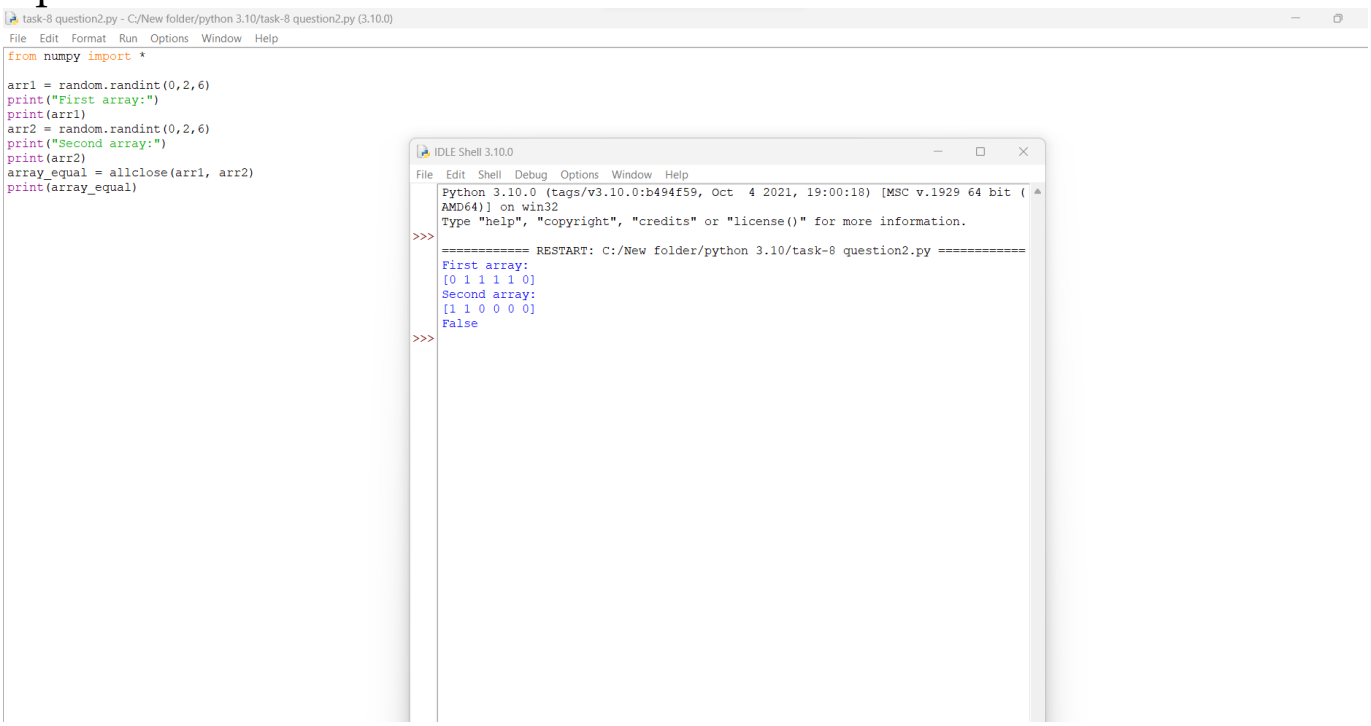
Question-1. Consider the vector [10, 11, 12, 13, 14], how to build a new vector with 5 consecutive zeros interleaved between each value?



Question2. Consider two random array A and B, check if they are equal?



Question-3. What is the result of the following expression?

task-8 question3.py - C:/New folder/python 3.10/task-8 question3.py (3.10.0)

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```
import numpy as np

print(0 * np.nan)
print(np.nan != np.nan)
print(np.inf > np.nan)
print(np.nan - np.nan)
print(0.3 == 3 * 0.1)
```

IDLE Shell 3.10.0

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```
Python 3.10.0 (tags/v3.10.0:b494f59, Oct  4 2021, 19:00:18) [MSC v.1929 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
============ RESTART: C:/New folder/python 3.10/task-8 question3.py ============
nan
True
False
nan
False
>>>
```

Question-4. Convert the first character of each element in a series to uppercase?

task-8 question4.py - C:\New folder\python 3.10\task-8 question4.py (3.10.0)

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```
import pandas as pd

ser = pd.Series(['amrita', 'school', 'of', 'engineering', 'chennai', 'campus'])
new_ser = ser.str.title()
new_string = ""
for(index,words) in new_ser.iteritems():
   new_string += words
   new_string += " "
print(new_string)
```

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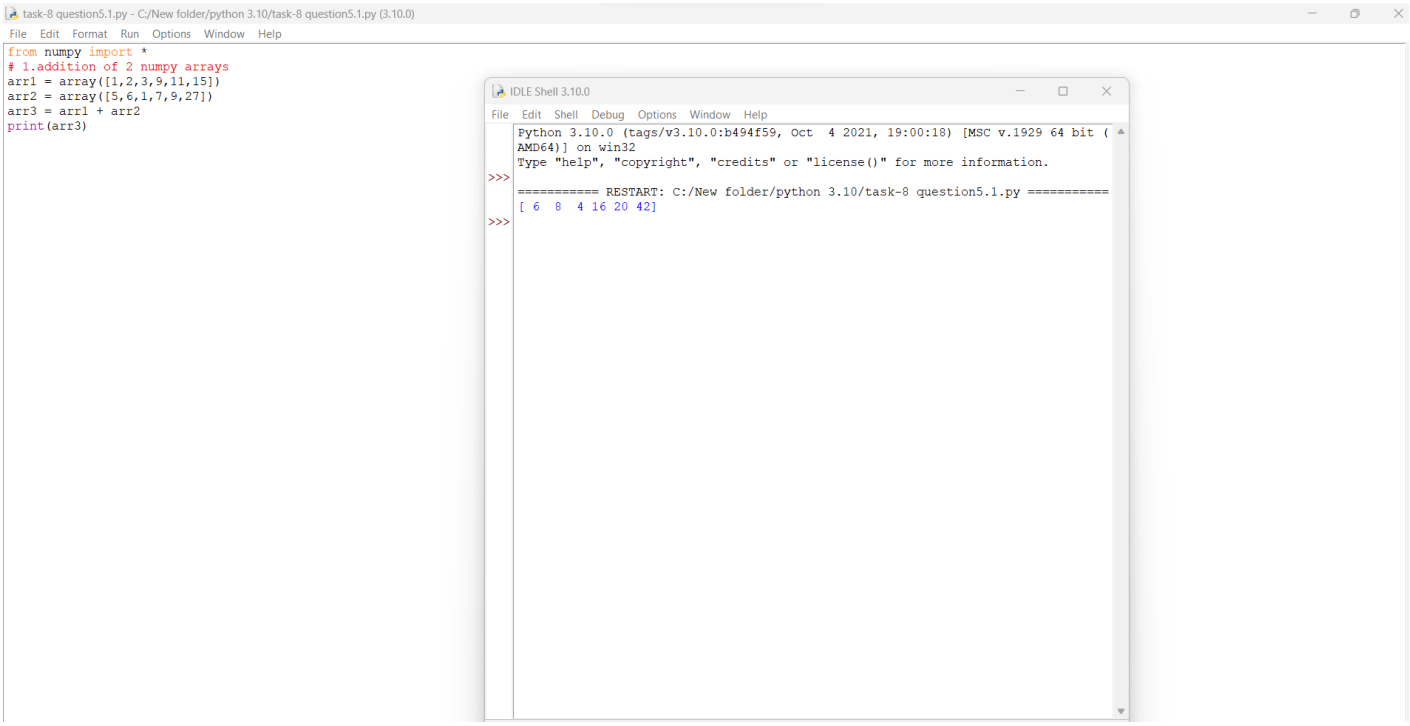
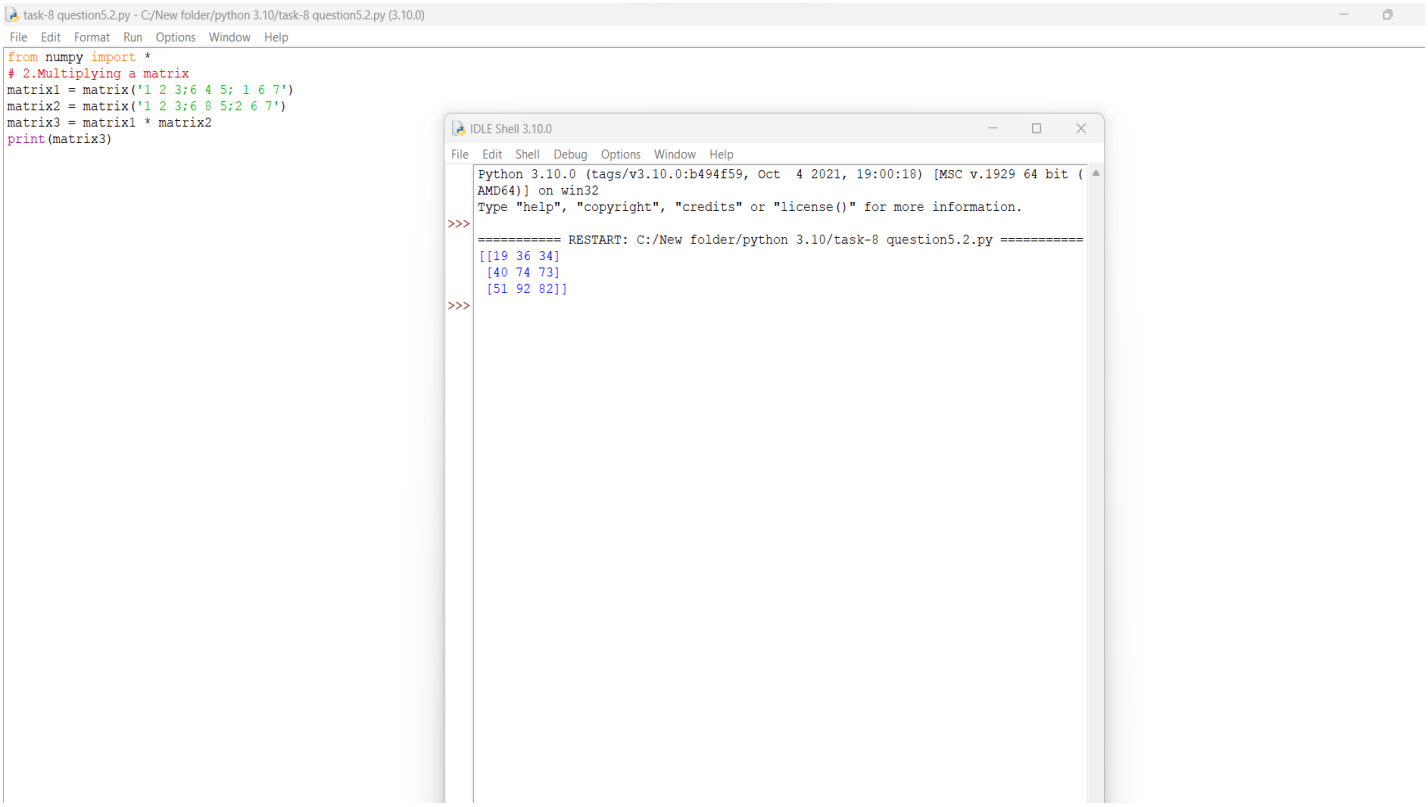
```
Python 3.10.0 (tags/v3.10.0:b494f59, Oct  4 2021, 19:00:18) [MSC v.1929 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
============ RESTART: C:\New folder\python 3.10\task-8 question4.py ============
Amrita School Of Engineering Chennai Campus
>>>
```

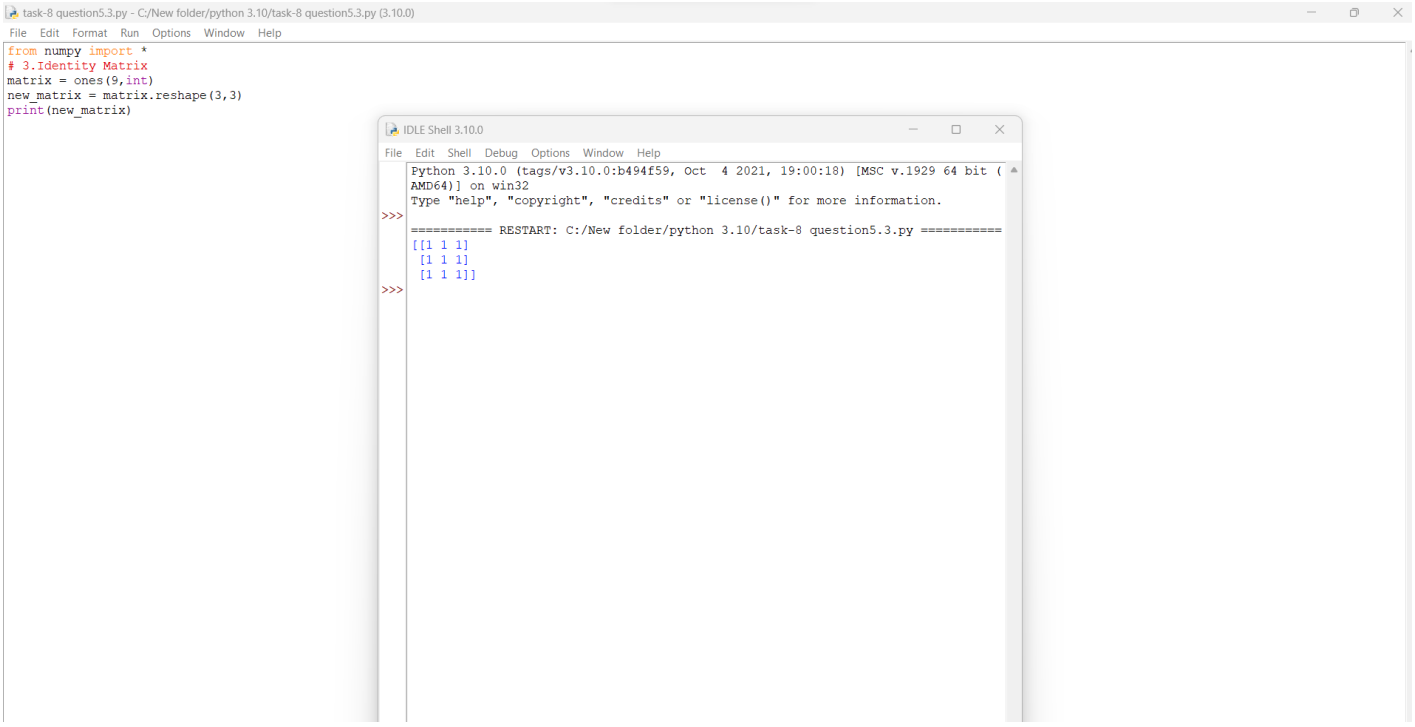
Question-5. 1.addition of 2 NumPy arrays:



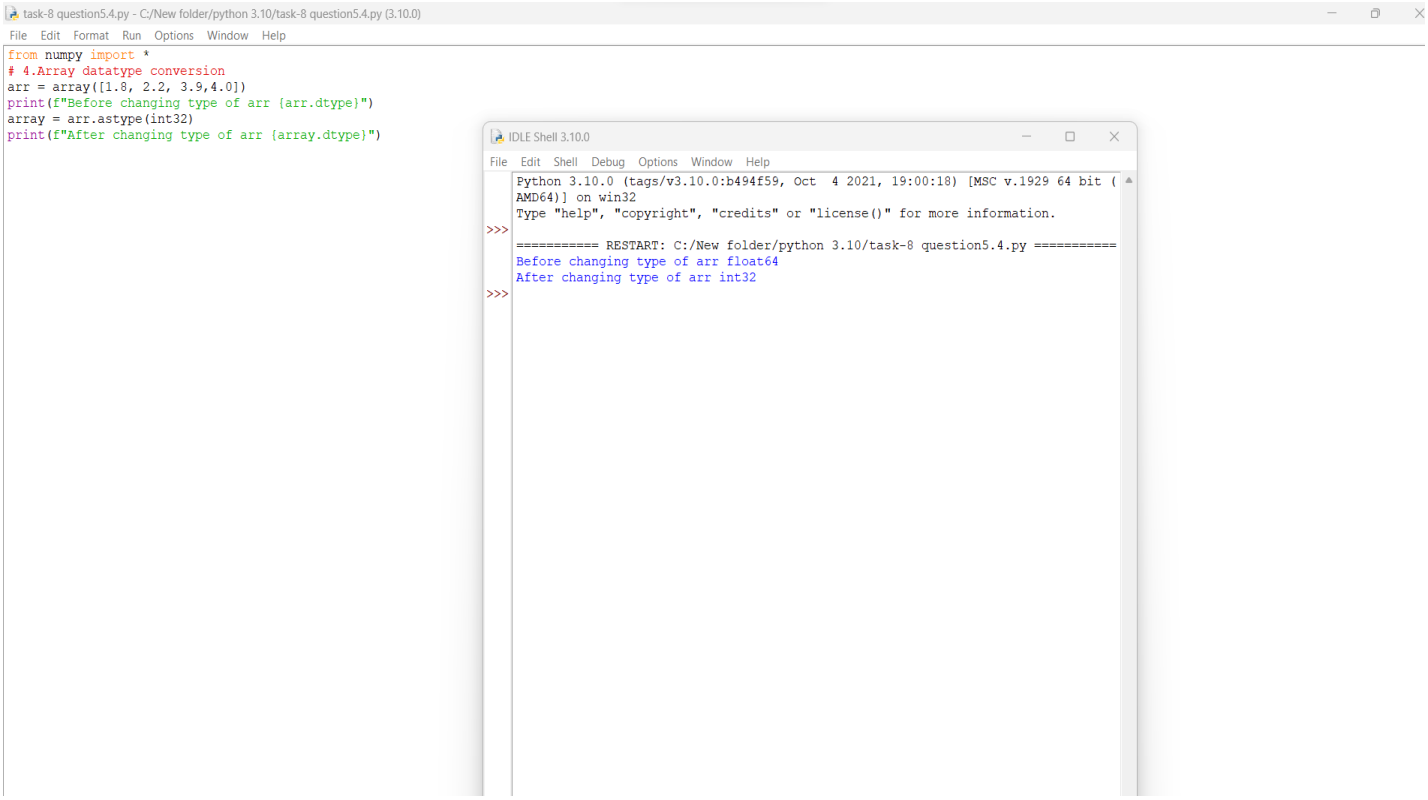
2.Multiplying a matrix:



3.Identity Matrix:



4.Array datatype conversion:



5.Array re-dimensioning:

task-8 question5.5.py - C:/New folder/python 3.10/task-8 question5.5.py (3.10.0)

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```
from numpy import *
# 5.Array re-dimensioning
arr_1d = array([1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12])
print(f"array of 1d dimension {arr_1d.ndim}")
print(f"array of 1d {arr_1d}")
arr_2d = resize(arr_1d, (3, 4))
print(f"array of 2d \n {arr_2d}")
print(f"array of 2d dimension {arr_2d.ndim}")
arr_3d = resize(arr_1d, (2, 3, 2))
print(f"array of 3d \n {arr_3d}")
print(f"array of 3d dimension {arr_3d.ndim}")
```

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```
Python 3.10.0 (tags/v3.10.0:b494f59, Oct  4 2021, 19:00:18) [MSC v.1929 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:/New folder/python 3.10/task-8 question5.5.py ==========
array of 1d dimension 1
array of 1d [ 1  2  3  4  5  6  7  8  9 10 11 12]
array of 2d
 [[ 1  2  3  4]
 [ 5  6  7  8]
 [ 9 10 11 12]]
array of 2d dimension 2
array of 3d
 [[[ 1  2]
  [ 3  4]
  [ 5  6]]

 [[ 7  8]
  [ 9 10]
  [11 12]]]
array of 3d dimension 3
>>>
```

6.Custom Sequence Generation:

task-8 question5.6.py - C:/New folder/python 3.10/task-8 question5.6.py (3.10.0)

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```
from numpy import *
# 6.Custom Sequence Generation
arr = arange(15)
print(f"{arr} \n")
create_arr= arange(9) **2
print(create_arr)
```

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```
Python 3.10.0 (tags/v3.10.0:b494f59, Oct  4 2021, 19:00:18) [MSC v.1929 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:/New folder/python 3.10/task-8 question5.6.py ==========
[ 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14]

[ 0  1  4  9 16 25 36 49 64]
>>>
```

7.Getting the positions (indexes) where elements of 2 NumPy arrays match:

task-8 question5.7.py - C:/New folder/python 3.10/task-8 question5.7.py (3.10.0)

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```
from numpy import *
# 7.Getting the positions (indexes) where elements of 2 numpy arrays match
arr_1 = array([1,2,3])
arr_2 = array([5,6,3])
for i in range(0,len(arr_1)):
    if arr_1[i] == arr_2[i]:
        print(f"The position or index where elements of numpy arrays match is {i}")
```

IDLE Shell 3.10.0

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```
Python 3.10.0 (tags/v3.10.0:b494f59, Oct  4 2021, 19:00:18) [MSC v.1929 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:/New folder/python 3.10/task-8 question5.7.py ==========
The position or index where elements of numpy arrays match is 2
>>>
```