

TASK-8

PYTHON -2

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CONSIDER THE VECTOR [10, 11, 12, 13, 14], HOW TO BUILD A NEW VECTOR WITH 5 CONSECUTIVE ZEROS INTERLEAVED BETWEEN EACH VALUE?

```
import numpy as np
a = int(input("Enter the first number:"))
b = int(input("Enter the second number:"))
c = b + 1
nums = np.arange(a,c)
print("Original array:")
print(nums)
p = 5
new_nums = np.zeros(len(nums) + (len(nums)-1)*p)
new_nums[::p+1] = nums
print("\nNew array:")
print(new_nums)
```

OUTPUT:

```
Enter the first number:10
```

```
Enter the second number:14
```

```
Original array:
```

```
[10 11 12 13 14]
```

```
New array:
```

```
[10.  0.  0.  0.  0.  11.  0.  0.  0.  0.  12.  0.  0.  0.  0.  
13.  0.  0.  0.  0.  14.]
```

CONSIDER TWO RANDOM ARRAY A ANB B, CHECK IF THEY ARE EQUAL

```
import numpy as np
array1 = []
array = []
b = int(input("Size of array:"))

for i in range(b):
    print("Enter the", i+1,"-st element for first array." , end = " ")
    array1.append(int(input("Element : ")))
array1 = np.array(array1)
print("The first array is : ")
print(np.floor(array1))
for i in range(b):
    print("Enter the", i+1,"-st element second array." , end = " ")
    array.append(int(input("Element : ")))
array = np.array(array)
print("The second array is : ")
print(np.floor(array))
c = np.allclose(array1, array)
if (c == True):
    print("Both the arrays are equal.")
    print("Therefore : ", c)
else:
    print("Both the arrays are not equal.")
    print("Therefore : ", c)
```

OUTPUT:

```
Size of array:6
Enter the 1 -st element for first array.
Element : 0
Enter the 2 -st element for first array.
Element : 1
Enter the 3 -st element for first array.
Element : 1
Enter the 4 -st element for first array.
Element : 0
Enter the 5 -st element for first array.
Element : 0
Enter the 6 -st element for first array.
Element : 1
The first array is :
[0. 1. 1. 0. 0. 1.]
Enter the 1 -st element second array.
Element : 1
Enter the 2 -st element second array.
Element : 1
Enter the 3 -st element second array.
Element : 0
Enter the 4 -st element second array.
Element : 1
Enter the 5 -st element second array.
Element : 0
Enter the 6 -st element second array.
Element : 1
The second array is :
[1. 1. 0. 1. 0. 1.]
```

```
Element : 0
Enter the 2 -st element for first array.
Element : 1
Enter the 3 -st element for first array.
Element : 1
Enter the 4 -st element for first array.
Element : 0
Enter the 5 -st element for first array.
Element : 0
Enter the 6 -st element for first array.
Element : 1
The first array is :
[0. 1. 1. 0. 0. 1.]
Enter the 1 -st element second array.
Element : 1
Enter the 2 -st element second array.
Element : 1
Enter the 3 -st element second array.
Element : 0
Enter the 4 -st element second array.
Element : 1
Enter the 5 -st element second array.
Element : 0
Enter the 6 -st element second array.
Element : 1
The second array is :
[1. 1. 0. 1. 0. 1.]
Both the arrays are not equal.
Therefore : False
```

WHAT IS THE RESULT OF THE FOLLOWING EXPRESSION ?

OUTPUT:

```
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)
```

```
nan
True
False
nan
False
```

CONVERT THE FIRST CHARACTER OF EACH ELEMENT IN A SERIES TO UPPERCASE?

```
import pandas as pd
ser = pd.Series(['amrita', 'school', 'of', 'engineering','chennai' , 'campus'])
print("The series before captialising the series : ")
for i in ser:
    print(i , end = " ")
print("")
print("")
print("The series after captialising the series : ")
for j in ser:
    a = j
    b = a.capitalize()
    print(b , end = " ")
```

OUTPUT:

The series before captialising the series :
amrita school of engineering chennai campus

The series after captialising the series :
Amrita School Of Engineering Chennai Campus

DO ANY TWO EXERCISES USING NUMPY

1.ADDITION OF 2 NUMPY ARRAYS

```
import numpy as np  
a = int(input("Enter a first number:"))  
b = int(input("Enter a second number:"))  
  
print ("1st Input number : ", a)  
print ("2nd Input number : ", b)  
  
c = np.add(a, b)  
print ("output number after addition : ", c)
```

OUTPUT:

```
Enter a first number:123  
Enter a second number:321  
1st Input number : 123  
2nd Input number : 321  
output number after addition : 444
```

DO ANY TWO EXERCISES USING NUMPY

2.ARRAY DATATYPE CONVERSION

```
import numpy as np
a = []
b = int(input("Size of array:"))

for i in range(b):
    print("Enter the" , i+1,"-st element for first array." , end = " ")
    a.append(int(input("Element : ")))
a = np.array(a)
print("The array is : " , a)
print("The data type of the array : " , a.dtype)
print("")
b = a.astype('float64')
print("The converted array is : " , b)
print("")
print("The converted data type of the array : " , b.dtype)
```

OUTPUT:

```
Size of array:5
Enter the 1 -st element for first array.
Element : 12
Enter the 2 -st element for first array.
Element : 50
Enter the 3 -st element for first array.
Element : 23
Enter the 4 -st element for first array.
Element : 45
Enter the 5 -st element for first array.
Element : 6
The array is : [12 50 23 45 6]
The data type of the array : int32

The converted array is : [12. 50. 23. 45. 6.]
The conveted data type of the array : float64
```