





## Task 8

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Python(Numpy and pandas)

Q1) Consider the vector[10,11,12,13,14,] how to build a new vector with 5 consecutive zeros interleaved between each value?

 **QUESTION 1** Last Checkpoint: 3 hours ago (unsaved changes)  [Logout](#)

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```
In [3]: import numpy as np

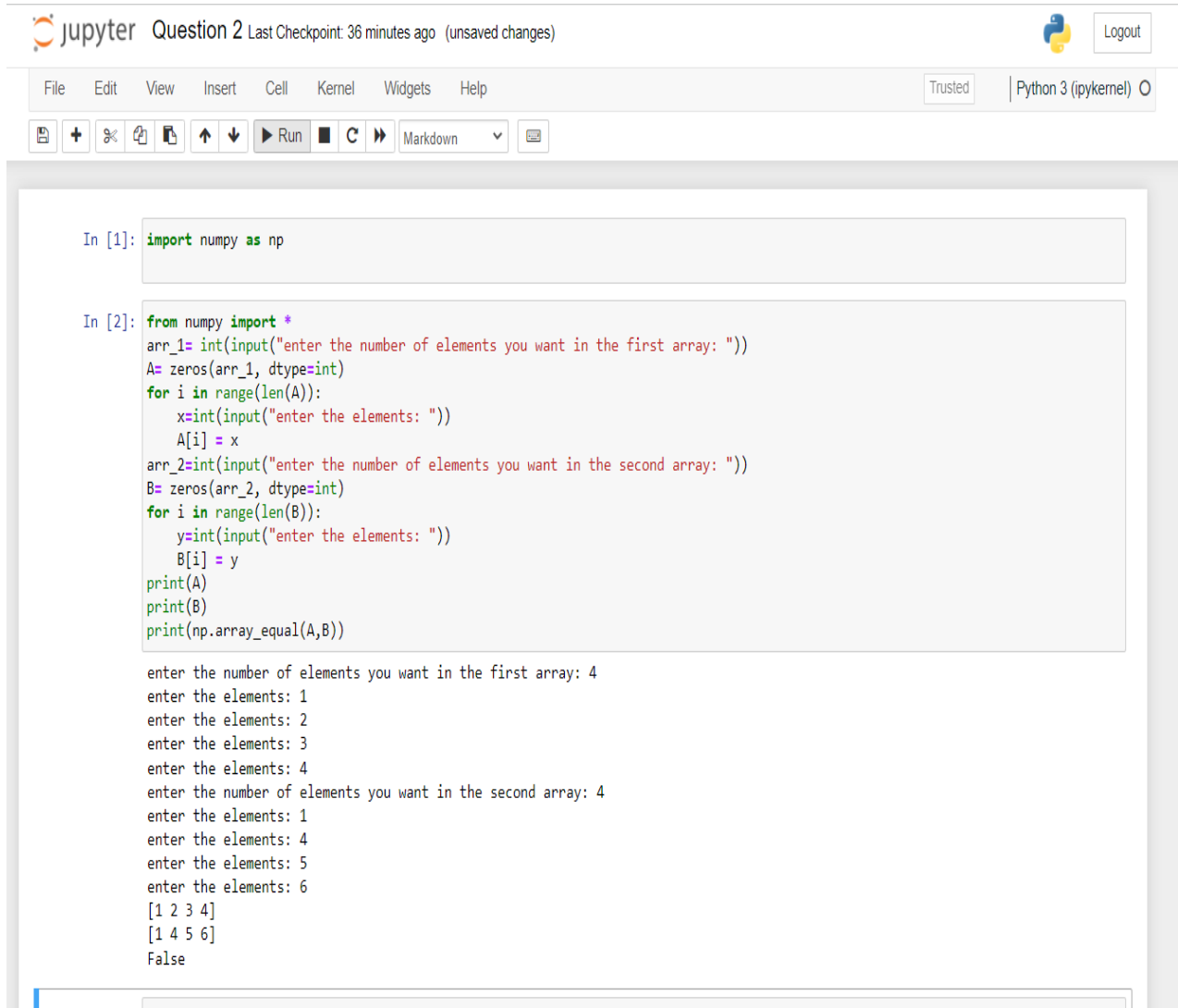
In [4]: # CONSIDER THE GIVEN ARRAY

n = np.array([10,11,12,13,14])
print(" The Original array is:")
print(n)
k = 5
new_num = np.zeros(len(n) + (len(n)-1)*(k))
new_num[::k+1] = n
print("The new array is:")
print(new_num)

The Original array is:
[10 11 12 13 14]
The new array is:
[10.  0.  0.  0.  0.  0.  11.  0.  0.  0.  0.  0.  12.  0.  0.  0.  0.  0.
 13.  0.  0.  0.  0.  0.  14.]

In [ ]:
```

Q2) Consider two random arrays A and B , check if they are equal.



The image shows a Jupyter Notebook interface. At the top, the title bar says "Jupyter Question 2 Last Checkpoint: 36 minutes ago (unsaved changes)". There is a "Logout" button on the right. Below the title bar is a menu bar with "File", "Edit", "View", "Insert", "Cell", "Kernel", "Widgets", and "Help". To the right of the menu bar are "Trusted" and "Python 3 (ipykernel)" labels. Below the menu bar is a toolbar with icons for saving, adding cells, undo, redo, running, and other notebook functions. The main area contains two code cells. The first cell, labeled "In [1]:", contains the code `import numpy as np`. The second cell, labeled "In [2]:", contains a more complex script. This script prompts the user to enter the number of elements for two arrays, A and B. It then creates these arrays using `zeros` and fills them with user input. Finally, it prints both arrays and checks if they are equal using `np.array_equal(A,B)`. The output of the second cell shows the user entering 4 for the first array and 4 for the second array, followed by the arrays `[1 2 3 4]` and `[1 4 5 6]`, and the result `False`.

```
In [1]: import numpy as np

In [2]: from numpy import *
arr_1= int(input("enter the number of elements you want in the first array: "))
A= zeros(arr_1, dtype=int)
for i in range(len(A)):
    x=int(input("enter the elements: "))
    A[i] = x
arr_2=int(input("enter the number of elements you want in the second array: "))
B= zeros(arr_2, dtype=int)
for i in range(len(B)):
    y=int(input("enter the elements: "))
    B[i] = y
print(A)
print(B)
print(np.array_equal(A,B))



enter the number of elements you want in the first array: 4
enter the elements: 1
enter the elements: 2
enter the elements: 3
enter the elements: 4
enter the number of elements you want in the second array: 4
enter the elements: 1
enter the elements: 4
enter the elements: 5
enter the elements: 6
[1 2 3 4]
[1 4 5 6]
False
```

```
In [1]: import numpy as np
```













```
In [2]: from numpy import *
arr_1= int(input("enter the number of elements you want in the first array: "))
A= zeros(arr_1, dtype=int)
for i in range(len(A)):
    x=int(input("enter the elements: "))
    A[i] = x
arr_2=int(input("enter the number of elements you want in the second array: "))
B= zeros(arr_2, dtype=int)
for i in range(len(B)):
    y=int(input("enter the elements: "))
    B[i] = y
print(A)
print(B)
print(np.array_equal(A,B))
```

```
enter the number of elements you want in the first array: 4
enter the elements: 1
enter the elements: 2
enter the elements: 3
enter the elements: 4
enter the number of elements you want in the second array: 4
enter the elements: 1
enter the elements: 2
enter the elements: 3
enter the elements: 4
[1 2 3 4]
[1 2 3 4]
True
```

### Q3)What is the result of the following expressions

 Question 3 Last Checkpoint: 9 minutes ago (unsaved changes)  Logout

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           Code 

```
In [1]: import numpy as np
print(0 * np.nan)
nan

In [2]: print(np.nan != np.nan)
True

In [3]: print(np.inf > np.nan)
False

In [4]: print(np.nan - np.nan)
nan

In [5]: print(0.3 == 3 * 0.1)
False

In [ ]:
```

Q4) Convert the first character of each element in the series to uppercase.

```
In [1]: import pandas as pd

In [2]: ser = pd.Series(['amrita', 'school', 'of', 'engineering', 'chennai', 'campus'])
new_ser = ser.str.title() #inbuilt function
print("The original series: ")
print(ser)
print("\nThe new series: ")
print(new_ser)

The original series:
0      amrita
1      school
2         of
3  engineering
4      chennai
5      campus
dtype: object

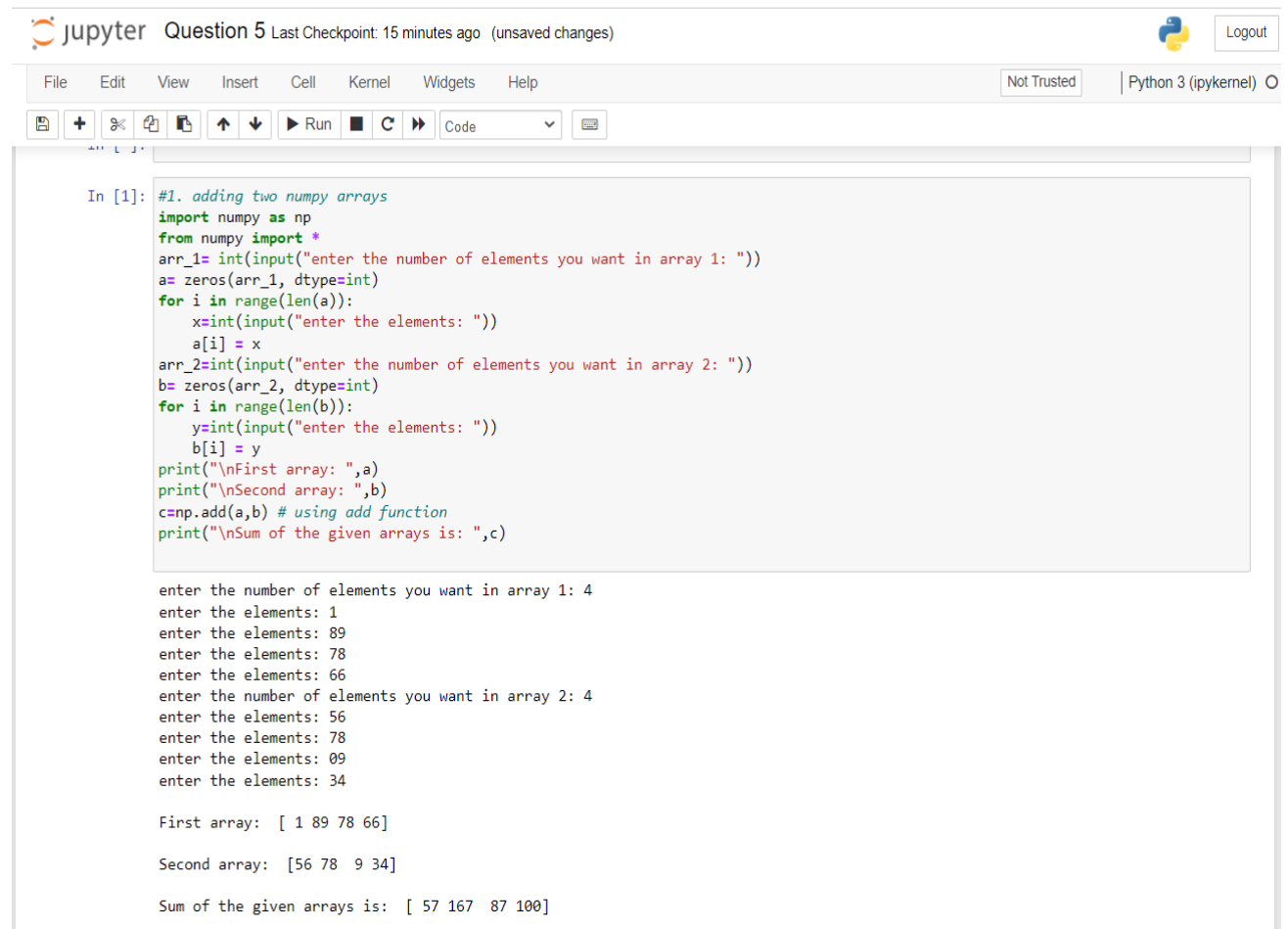
The new series:
0      Amrita
1      School
2         Of
3  Engineering
4      Chennai
5      Campus
dtype: object

In [ ]:
```

## Q5 Do any two Exercises using Numpy

### Do any two exercises using Numpy

#### 1) Addition of to numpy arrays



The image shows a Jupyter Notebook interface. At the top, it says "jupyter Question 5 Last Checkpoint: 15 minutes ago (unsaved changes)". There is a "Logout" button and a "Not Trusted" warning. The menu bar includes File, Edit, View, Insert, Cell, Kernel, Widgets, and Help. Below the menu bar are icons for saving, adding cells, and running code. The main area contains a code cell with the following Python code:

```
In [1]: #1. adding two numpy arrays
import numpy as np
from numpy import *
arr_1= int(input("enter the number of elements you want in array 1: "))
a= zeros(arr_1, dtype=int)
for i in range(len(a)):
    x=int(input("enter the elements: "))
    a[i] = x
arr_2=int(input("enter the number of elements you want in array 2: "))
b= zeros(arr_2, dtype=int)
for i in range(len(b)):
    y=int(input("enter the elements: "))
    b[i] = y
print("\nFirst array: ",a)
print("\nSecond array: ",b)
c=np.add(a,b) # using add function
print("\nSum of the given arrays is: ",c)
```

The output of the code is as follows:


```
enter the number of elements you want in array 1: 4
enter the elements: 1
enter the elements: 89
enter the elements: 78
enter the elements: 66
enter the number of elements you want in array 2: 4
enter the elements: 56
enter the elements: 78
enter the elements: 09
enter the elements: 34

First array: [ 1 89 78 66]

Second array: [56 78  9 34]

Sum of the given arrays is: [ 57 167  87 100]
```

## 4)Array datatype conversion

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Second array: [56 78 9 34]

Sum of the given arrays is: [ 57 167 87 100]

```
In [2]: # 4. array datatype conversion

import numpy as np
from numpy import *
n= int(input("enter the number of elements you want: "))
arr= zeros(n, dtype=int)
for i in range(len(arr)):
    x=int(input("enter the elements: "))
    arr[i] = x
print(arr)
print(arr.dtype)
arr = arr.astype('float64')
print(arr)
print(arr.dtype)
```

enter the number of elements you want: 5  
enter the elements: 45  
enter the elements: 90  
enter the elements: 89  
enter the elements: 67  
enter the elements: 39  
[45 90 89 67 39]  
int32  
[45. 90. 89. 67. 39.]  
float64

In [ ]: