




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?

Jupyter Question 1 Last Checkpoint: 7 minutes ago (unsaved changes)  Logout

File Edit View Insert Cell Kernel Widgets Help Trusted Python 3 (ipykernel)

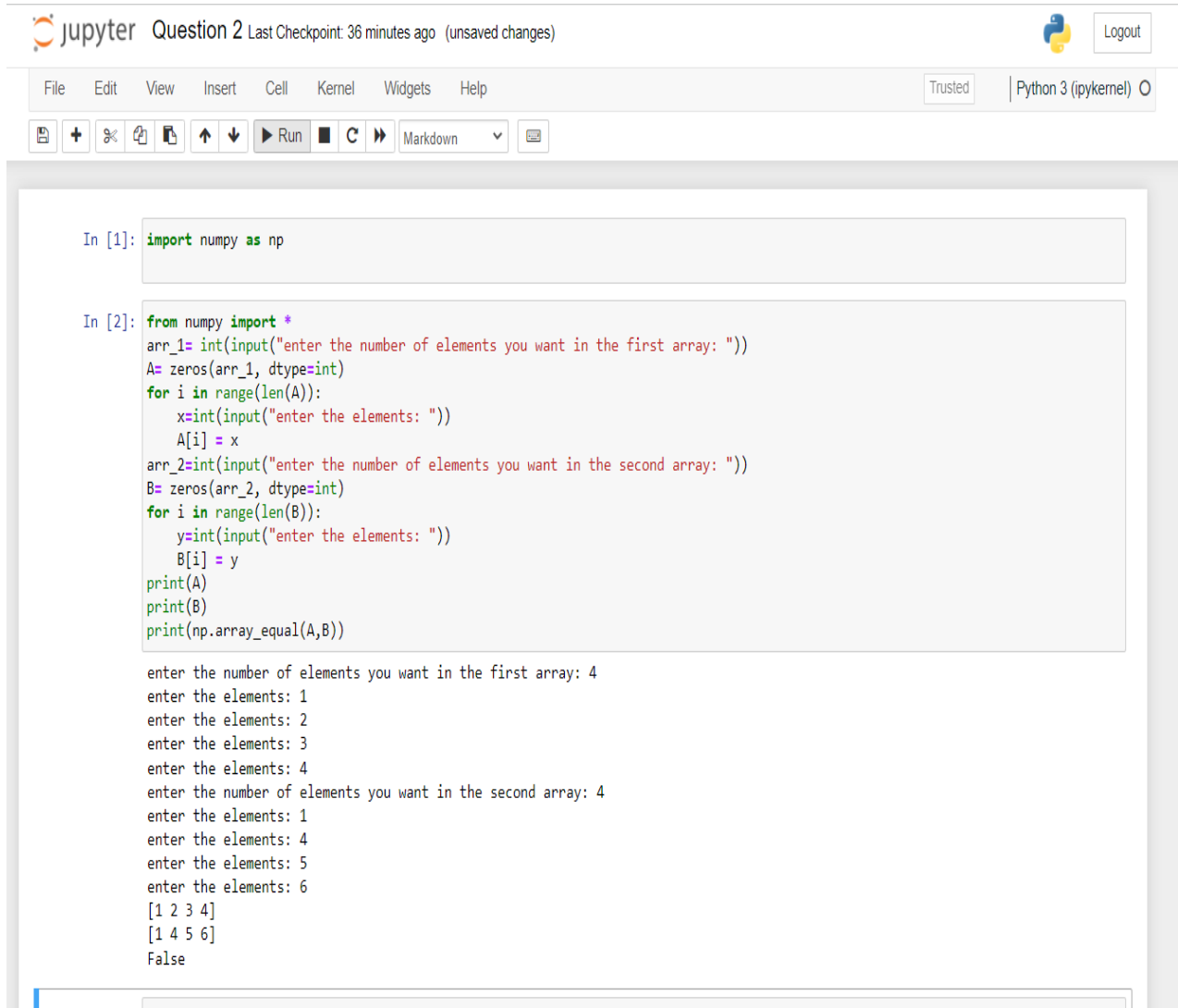
Run

```
In [3]: from numpy import *
a=array([])
b=int(input('Enter the First Number:'))
c=int(input('Enter the last number Number:'))
for p in range(b,c):
    a.append(a,p)
    for p in range(5):
        a.append(a,0)
a.append(a,c)
print(a)
```

Enter the First Number:10
Enter the last number Number:14
[10. 0. 0. 0. 0. 0. 11. 0. 0. 0. 0. 12. 0. 0. 0. 0. 13. 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 input for each prompt and the resulting arrays A = [1 2 3 4] and B = [1 4 5 6], with the final output being `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

 **Jupyter** 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

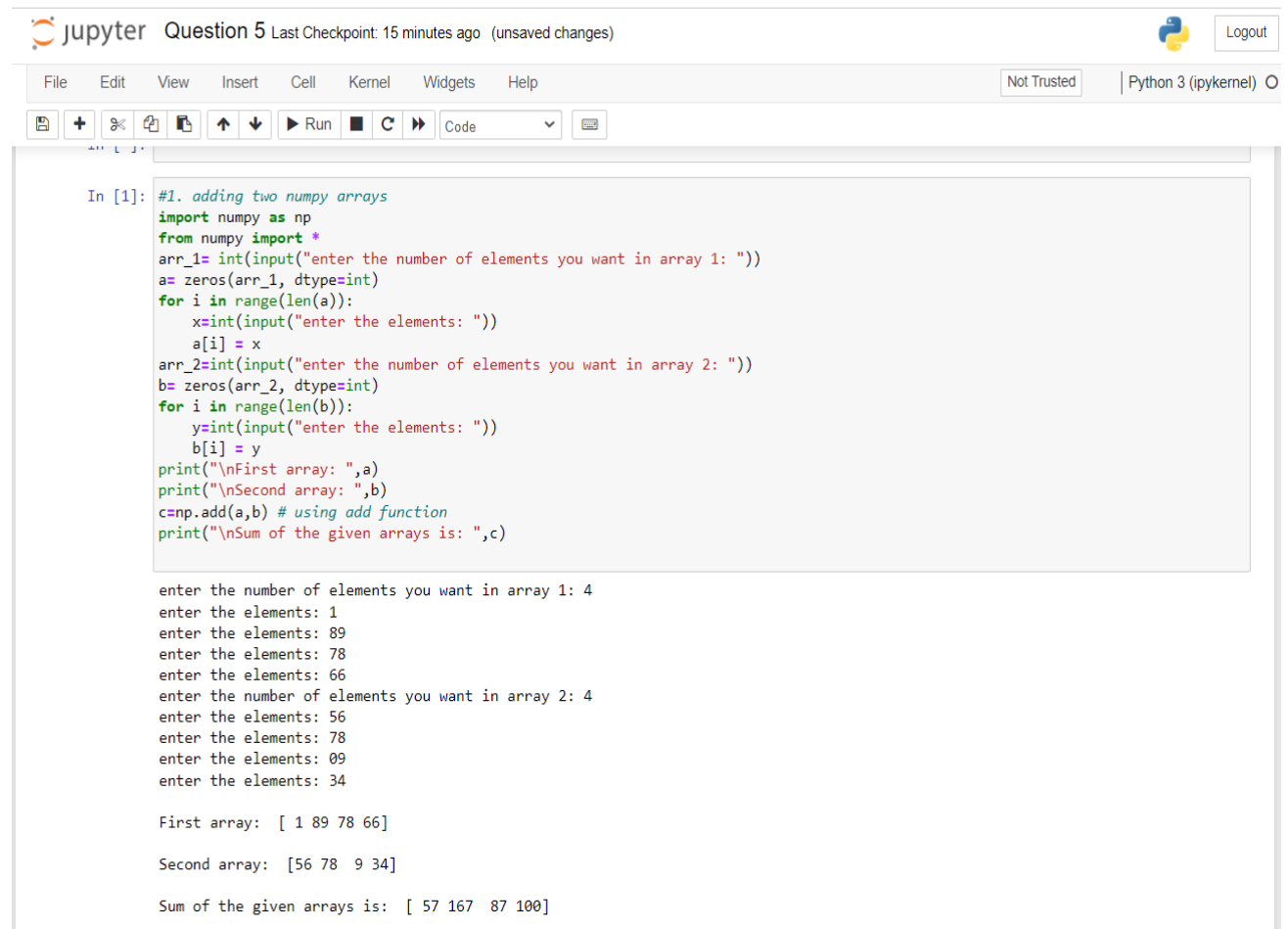
The new series:
0      Amrita
1      School
2         Of
3  Engineering
4      Chennai
5      Campus
dtype: object

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 "Question 5 Last Checkpoint: 15 minutes ago (unsaved changes)". The notebook has a menu bar with "File", "Edit", "View", "Insert", "Cell", "Kernel", "Widgets", and "Help". There is a "Not Trusted" warning and "Python 3 (ipykernel)" selected. The code cell contains 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

jupyter Question 5 Last Checkpoint: 15 minutes ago (unsaved changes)  Logout

File Edit View Insert Cell Kernel Widgets Help Not Trusted Python 3 (ipykernel)

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 []: