Task -8

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

```python
import numpy as np
First = int(input("First Element: "))
Last = int(input("Last Element: "))
arr = np.arange(First, Last+1)
print(arr)
nz = 5
res = np.zeros(len(arr) + (len(arr)-1)*(nz))
res[::nz+1] = arr
print(res)

```

```
PROBLEMS 6  OUTPUT  TERMINAL  DEBUG CONSOLE

PS C:\Users\KOWTHAM\Downloads>  c:; cd 'c:\Users\KOWTHAM\Downloads'; & 'C:\Users\KOWT
rs\KOWTHAM\.vscode\extensions\ms-python.python-2022.2.1924087327\pythonFiles\lib\pyth
1.py'
First Element: 10
Last Element: 14
[10 11 12 13 14]
[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.]
PS C:\Users\KOWTHAM\Downloads>
```

2)Consider two random array A anb B, check if they are equal

```python
import numpy as np
a = np.random.randint(0,3,5)
print(a)
b = np.random.randint(0,3,5)
print(b)
array_equal = np.allclose(a,b)
print(array_equal)
```

PROBLEMS 2 OUTPUT TERMINAL DEBUG CONSOLE

```
PS C:\Users\KOWTHAM\Downloads>  c:; cd 'c:\Users\KOWT
rs\KOWTHAM\.vscode\extensions\ms-python.python-2022.2
2.py'
[0 2 2 2 1]
[0 1 0 2 2]
False
PS C:\Users\KOWTHAM\Downloads>
```

3)What is the result of the following expression ?

```
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)
```

```python
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)
```

PROBLEMS 3 OUTPUT TERMINAL DEBUG CONSOLE

```
PS C:\Users\KOWTHAM\Downloads>  c:; cd 'c:\Users\KOWT
rs\KOWTHAM\.vscode\extensions\ms-python.python-2022.2
3.py'
nan
True
False
nan
False
PS C:\Users\KOWTHAM\Downloads>
```

4)Convert the first character of each element in a series to uppercase?

```python
import pandas as pd
import string
ser = pd.Series(['amrita' , 'school' , 'of' , 'enginnering' , 'chennai' , 'campus'])
str = " ".join(ser)
print(string.capwords(str))

```

```
PROBLEMS 6  OUTPUT  TERMINAL  DEBUG CONSOLE

PS C:\Users\KOWTHAM\Downloads>  c:; cd 'c:\Users\KOWTHAM\Downloads'; & 'C:\Users\KOWTHAM\AppData\Loc
rs\KOWTHAM\.vscode\extensions\ms-python.python-2022.2.1924087327\pythonFiles\lib\python\debugpy\laun
4.py'
Amrita School Of Enginnering Chennai Campus
PS C:\Users\KOWTHAM\Downloads>
```

5)Do any two Exercises using Numpy

1.addition of 2 numpy arrays

2.multiplying a matrix

```python
import numpy as np
A = np.array([1,3,-8])
print("Array1: ",A)
B = np.array([2,-4,6])
print("Array2: ",B)
Result = np.add(A,B)
print("Added array: ",Result)

```

PROBLEMS 6 OUTPUT TERMINAL DEBUG CONSOL

```
PS C:\Users\KOWTHAM\Downloads>  c:; cd 'c:\Us
rs\KOWTHAM\.vscode\extensions\ms-python.pytho
5.py'
Array1:  [ 1  3 -8]
Array2:  [ 2 -4  6]
Added array:  [ 3 -1 -2]
PS C:\Users\KOWTHAM\Downloads>
```

2.Multiplying a matrix

```python
import numpy as np
P = np.array([[1,6], [2,1]])
print("Array1: ",P)
Q = np.array([[2,7], [4,8]])
print("Array2: ",Q)
Result = np.dot(P,Q)
print("Result: ",Result)
```

PROBLEMS 6 OUTPUT TERMINAL DEBUG CONSOLE

```
PS C:\Users\KOWTHAM\Downloads>  c:; cd 'c:\Users\
rs\KOWTHAM\.vscode\extensions\ms-python.python-20
5(2).py'
Array1:  [[1 6]
 [2 1]]
Array2:  [[2 7]
 [4 8]]
Result:  [[26 55]
 [ 8 22]]
PS C:\Users\KOWTHAM\Downloads>
```