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DISCORD HANDLE: **Abhij18#2629**

TASK – 3 [Python – Easy Lvl]

Question-1

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

In [1]:
```
import numpy as np
Z = np.array([10,11,12,13,14])
z = 5
N = np.zeros(len(Z) + (len(Z)-1)*(z))
N[::z+1] = Z
print(N)
```

```
[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.]
```

Question-2

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

In [19]:
```
import numpy as np
x = np.random.randint(0,2,6)
print("First array:")
print(x)
y = np.random.randint(0,2,6)
print("Second array:")
print(y)
print("Testing both the arrays if they are equal or not: ")
equal = np.allclose(x, y)
print(equal)
```

```
First array:
[0 0 1 0 1 1]
Second array:
[1 0 0 0 1 1]
Testing both the arrays if they are equal or not:
False
```

Question-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)
```

```
In [4]: 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
```

Question-4

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

```
In [11]: import pandas as pd
         ser = pd.Series(['amrita', 'school', 'of', 'engineering', 'chennai', 'campus'])
         result = ser.map(lambda x: x[0].upper() + x[1:])
         print("\nFirst character of each word to upper case:")
         print(result)

         First character of each word to upper case:
         0         Amrita
         1         School
         2             Of
         3    Engineering
         4        Chennai
         5         Campus
         dtype: object
```

Question-5

Do any two Exercises using NumPy

2. Multiplying a matrix?

```
In [12]: import numpy as np
         mat1 = ([1, 2, 3],[2 ,3, 4],[3, 4, 5])
         mat2 = ([4, 5, 6],[5, 6, 7],[6, 7, 8])
         res = np.dot(mat1,mat2)
         print(res)

         [[32 38 44]
          [47 56 65]
          [62 74 86]]
```

3. Identity Matrix

```
In [18]: import numpy as np
         dim = int(input("Enter the dimension of identitiy matrix: "))
         matrix = np.identity(dim, dtype="int")
         print(matrix)

         Enter the dimension of identitiy matrix: 2
         [[1 0]
          [0 1]]
```