In [ ]:
```
'''Create two 3×3 matrices using the random function in Numpy and perform the follo
-> Product (prod)
-> Multiplication (multiply)
-> Dot Product (dot)
'''
import numpy as np
matrix1=np.random.randint(1,5,size=(3,3))
matrix2=np.random.randint(1,5,size=(3,3))

print("MAT 1 :\n",matrix1)
print("MAT 2 :\n",matrix2)

prodMatrix=np.prod([matrix1,matrix2])
multiplyMatrix=np.multiply(matrix1,matrix2)
dotProductMatrix=np.dot(matrix1,matrix2)

print("Product Matrix\n",prodMatrix,"\n")
print("Multiply Matrix\n",multiplyMatrix,"\n")
print("Dot Product Matrix\n",dotProductMatrix)
```

```
MAT 1 :
 [[1 2 4]
 [4 2 3]
 [1 4 3]]
MAT 2 :
 [[3 3 2]
 [4 1 3]
 [4 3 1]]
Product Matrix
 5971968

Multiply Matrix
 [[ 3  6  8]
 [16  2  9]
 [ 4 12  3]]

Dot Product Matrix
 [[27 17 12]
 [32 23 17]
 [31 16 17]]
```

In [ ]:
```
'''
Perform the following set operations using the Numpy functions.
-> Union
-> Intersection
-> Set difference
-> XOR
'''
arr1=np.array([1,3,2,5,6,8])
arr2=np.array([7,3,4,5,2,9])

union_arr=np.union1d(arr1,arr2)
intersection_arr=np.intersect1d(arr1,arr2)
diffrence_arr=np.setdiff1d(arr1,arr2)
print("Union Array\n",union_arr,"\n")
```

```
print("Intersection Array\n",intersection_arr,"\n")
print("Diffrence Array\n",diffrence_arr)
```

```
Union Array
 [1 2 3 4 5 6 7 8 9]

Intersection Array
 [2 3 5]

Diffrence Array
 [1 6 8]
```

In [ ]:
```
'''
Create a 1D array using Random function and perform the following operations.
-> Cumulative sum
-> Cumulative Product
-> Discrete difference (with n=3)
-> Find the unique elements from the array
'''
arr=np.random.randint(1,5,size=(10))
cumsum = np.cumsum(arr)
cumprod = np.cumprod(arr)
discdiff = np.diff(arr,n=3)
uniqueElements = np.unique(arr)
print("Cumulative Sum\n",cumsum,"\n")
print("Cumulative Product \n",cumprod,"\n")
print("Discrete Difference\n",discdiff,"\n")
print("Unique Elements\n",uniqueElements)
```

```
Cumulative Sum
 [ 3  6  9 13 15 16 19 21 23 27]

Cumulative Product
 [    3     9    27   108   216   216   648  1296  2592 10368]

Discrete Difference
 [ 1 -4  4  2 -6  4  1]

Unique Elements
 [1 2 3 4]
```

In [ ]:
```
'''
Create two 1D array and perform the Addition using zip(), add() and user defined fu
'''
import numpy as np
arr1=np.random.randint(1,5,size=(10))
arr2=np.random.randint(2,7,size=(10))
zipsum=zip(arr1,arr2)
addsum=np.add(arr1,arr2)

def add(a,b):
    return a+b
addfunc = np.frompyfunc(add,2,1)
addfuncresult=addfunc(arr1,arr2)

print("Zip() Method")
for i in zipsum:
```

```
    print(i," ")
print("\nAdd() method :\n",addsum,"\n")
print("frompyfunc() method :\n",addfuncresult,"\n")
```

```
Zip() Method
(4, 6)
(1, 2)
(2, 4)
(1, 6)
(1, 2)
(2, 2)
(4, 3)
(2, 2)
(2, 5)
(4, 5)

Add() method :
 [10  3  6  7  3  4  7  4  7  9]

frompyfunc() method :
 [10 3 6 7 3 4 7 4 7 9]
```

In [ ]:

```
'''
Find the LCM (Least Common Multiple) and GCD (Greatest Common Divisor) of an array
'''
import numpy as np
arr=np.random.randint(1,5,size=(10))
LCM = np.lcm.reduce(arr)
GCD = np.gcd.reduce(arr)
print("LCM : ",LCM)
print("GCD : ",GCD)
```

```
LCM :  12
GCD :  1
```