Quiz on 1D Numpy Array

Implement the following vector subtraction in numpy: u-v

```
import numpy as np
u = np.array([1, 0])
v = np.array([0, 1])

result=u-v
print("Result =",result)
```

```
Result = [ 1 -1]
```

Multiply the numpy array z with -2:

```
z = np.array([2, 4])
z=z*-2
print("Result =",z)
```

```
Result = [-4 -8]
```

Consider the list [1, 2, 3, 4, 5] and [1, 0, 1, 0, 1]. Cast both lists to a numpy array then multiply them together:

```
list1=np.array([1, 2, 3, 4, 5])
list2=np.array([1, 0, 1, 0, 1])
result=list1*list2
print("Result =",result)
```

```
Result = [1 0 3 0 5]
```

Convert the list [1, 2, 3] and [8, 9, 10] to numpy arrays arr1 and arr2. Then perform Addition , Subtraction , Multiplication , Division and Dot Operation on the arr1 and arr2.

```
import numpy as np
arr1=np.array([1, 2, 3])
arr2=np.array([8, 9, 10])

Add=np.add(arr1,arr2)
Sub=np.subtract(arr1,arr2)
Mul=np.multiply(arr1,arr2)
Div=np.divide(arr1,arr2)
Dot=np.dot(arr1,arr2)
print("All Operation Result : ")
print("Addition =",Add)
print("Subtraction =",Sub)
print("Multiplication =",Mul)
print("Division =",Div)
print("Dot Operation =",Dot)
```

```
All Operation Result :
Addition = [ 9 11 13]
Subtraction = [-7 -7 -7]
Multiplication = [ 8 18 30]
Division = [0.125      0.22222222 0.3        ]
Dot Operation = 56
```

Convert the list [1, 2, 3, 4, 5] and [6, 7, 8, 9, 10] to numpy arrays arr1 and arr2. Then find the even and odd numbers from arr1 and arr2.

```
arr1 = np.array([1, 2, 3, 4, 5])
arr2 = np.array([6, 7, 8, 9, 10])

even_1 = arr1[1:5:2]
print("Even element from array1 =",even_1)

odd_1=arr1[0:5:2]
print("Odd element from array1 =",odd_1)

even_2 = arr2[0:5:2]
print("Even element from array2 =",even_2)

odd_2=arr2[1:5:2]
print("Odd element from array2 =",odd_2)
```

```
Even element from array1 = [2 4]
Odd element from array1 = [1 3 5]
Even element from array2 = [ 6  8 10]
Odd element from array2 = [7 9]
```

Consider the following list a, convert it to Numpy Array.

```
a = [[1, 2, 3, 4], [5, 6, 7, 8], [9, 10, 11, 12]]

arr=np.array(a)
print(arr)
```

```
[[ 1  2  3  4]
 [ 5  6  7  8]
 [ 9 10 11 12]]
```

Calculate the numpy array size.

```
length=arr.size
print(length)
```

```
12
```

Access the element on the first row and first and second columns.

```
arr[0][0:2]
```

```
array([1, 2])
```

Perform matrix multiplication with the numpy arrays A and B.

```
A = np.array([[1, 2, 3, 4], [5, 6, 7, 8], [9, 10, 11, 12]])
B = np.array([[0, 1], [1, 0], [1, 1], [-1, 0]])
result=np.dot(A,B)
print("Result matrix multiplication: \n",result)
```

```
Result matrix multiplication:
 [[ 1  4]
 [ 5 12]
 [ 9 20]]
```