

T&T LAB ASSIGNMENT-04

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1) Write a NumPy program to create a 3x3 matrix with values ranging from 5 to 34
PROGRAM:

```
➤ import numpy as np
arr=np.arange(5,32,3).reshape(3,3)
print(arr)
```

```
[[ 5  8 11]
 [14 17 20]
 [23 26 29]]
```

2) Write a NumPy program to reverse an array
PROGRAM:

```
➤ arr=[1,2,3,4,5,6,7]
rev_arr=arr[::-1]
print(rev_arr)
```

```
[7, 6, 5, 4, 3, 2, 1]
```

3) Write a NumPy program to create a 2d array with 1 on the border and 0 inside.
PROGRAM:

```
➤ arr=np.full((3,3),1)
//setting non border values to zero by slicing
arr[1:-1,1:-1]=0
print(arr)
```

```
[[1 1 1]
 [1 0 1]
 [1 1 1]]
```

4) Write a NumPy program to append values to the end of an array
PROGRAM:

```
➤ arr=[12,3,4,5,52,24]
new_arr=np.append(arr,10)
print(new_arr)
```

```
[12  3  4  5 52 24 10]
```

5) Write a NumPy program to convert the values of Centigrade degrees into Fahrenheit degrees and vice versa. Values are stored into a NumPy array.

PROGRAM:

```
➤ centi=[22,45,6,78,23,45]
far=[]
for x in centi:
    val=(x*9/5)+32
    far.append(val)
print(far)
```

```
[71.6, 113.0, 42.8, 172.4, 73.4, 113.0]
```

6) Write a NumPy program to find common values between two arrays
PROGRAM:

```

> import numpy as np
array1 = np.array([0, 10, 20, 40, 60])
print("Array1: ",array1)
array2 = [10, 30, 40]
print("Array2: ",array2)
print("Common values between two arrays:")
print(np.intersect1d(array1, array2))

```

```

Array1: [ 0 10 20 40 60]
Array2: [10, 30, 40]
Common values between two arrays:
[10 40]

```

7) Write a NumPy program to construct an array by repeating.

PROGRAM:

```

> import numpy as np
a = [1, 2, 3, 4]
print("Original array")
print(a)
print("Repeating 2 times")
x = np.tile(a, 2)
print(x)
print("Repeating 3 times")
x = np.tile(a, 3)
print(x)

```

```

Original array
[1, 2, 3, 4]
Repeating 2 times
[1 2 3 4 1 2 3 4]
Repeating 3 times
[1 2 3 4 1 2 3 4 1 2 3 4]

```

8) Write a NumPy program to find the set difference of two arrays. The set difference will return the sorted, unique values in array1 that are not in array2.

PROGRAM:

```

> import numpy as np
array1 = np.array([0, 10, 20, 40, 60, 80])
print("Array1: ",array1)
array2 = [10, 30, 40, 50, 70]
print("Array2: ",array2)
print("Unique values in array1 that are not in array2:")
print(np.setdiff1d(array1, array2))

```

```

Array1: [ 0 10 20 40 60 80]
Array2: [10, 30, 40, 50, 70]
Unique values in array1 that are not in array2:
[ 0 20 60 80]

```

9) Write a NumPy program to find the union of two arrays. Union will return the unique, sorted array of values that are in either of the two input arrays.

PROGRAM:

```

> import numpy as np
array1 = np.array([0, 10, 20, 40, 60, 80])
print("Array1: ",array1)
array2 = [10, 30, 40, 50, 70]
print("Array2: ",array2)
print("Unique sorted array of values that are in either of the two input arrays:")
print(np.union1d(array1, array2))

```

Array1: [0 10 20 40 60 80]

Array2: [10, 30, 40, 50, 70]

Unique sorted array of values that are in either of the two input arrays:

[0 10 20 30 40 50 60 70 80]

10) Write a NumPy program to find the indices of the maximum and minimum values along the given axis of an array

PROGRAM:

```

> import numpy as np
x = np.array([1, 2, 3, 4, 5, 6])
print("Original array: ",x)
print("Maximum Values: ",np.argmax(x))
print("Minimum Values: ",np.argmin(x))

```

Original array: [1 2 3 4 5 6]

Maximum Values: 5

Minimum Values: 0