PP Experiment 11

Aim: Exploring NumPy basics

Class: SE COMPS

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1) Create two NumPy 1-dimensional arrays and perform following operations on them:

In [80]:
```
import numpy as np

arr1 = np.array([12, 13, 4, 5, 6])
arr2 = np.array([3, 2, 7, 1, 5])
arr3 = np.array([1, 2, 3 , 4, 5, 6])
```

a) Find the number of elements of an array:

In [81]:
```
print(arr1.size)
print(arr2.size)
```

```
5
5
```

b) Length of one array element in bytes:

In [82]:
```
print(arr1.itemsize)
print(arr2.itemsize)
```

```
8
8
```

c) Test whether each element of a 1-D array is also present in a second array:

In [83]:
```
print(np.in1d(arr1, arr2))
```

```
[False False False  True False]
```

d) Find common values between two arrays:

In [84]:
```
print(np.intersect1d(arr1, arr2))
```

```
[5]
```

e) Get the unique elements of an array:

In [85]:
```
print(np.setdiff1d(arr1, arr2))
```

```
[ 4  6 12 13]
```

f) find the set difference of two arrays:

In [86]:
```
print(np.setdiff1d(arr1, arr2))
```

```
[ 4  6 12 13]
```

g) Find the set exclusive-or of two arrays:

In [87]:
```
print(np.bitwise_xor(arr1, arr2))
```

```
[15 15  3  4  3]
```

h) Find the union of two arrays:

In [88]:
```
print(np.union1d(arr1, arr2))
```

```
[ 1  2  3  4  5  6  7 12 13]
```

i) Compare two given arrays:

In [89]:
```
print((arr1==arr2).all())
```

```
False
```

j) Save a NumPy array to a text file:

In [90]:
```
np.savetxt('test.txt', arr1, delimiter=',')
```

k) Create a new shape to an array without changing its data:

In [91]:
```
print(arr3.reshape((3, 2)))
```

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

2) Read a CSV data file and store records in an array:

In [92]:
```
from numpy import genfromtxt
data = genfromtxt (
    'data.csv',
    dtype=['S10','float32','float32','float32','float32'],
    delimiter=","
)
print(data)
```

```
[(b'03-10-16', 774.25, 776.065, 769.5 , 772.56)
 (b'04-10-16', 776.03, 778.71 , 772.89, 776.43)
 (b'05-10-16', 779.31, 782.07 , 775.65, 776.47)
 (b'06-10-16', 779.  , 780.48 , 775.54, 776.86)
 (b'07-10-16', 779.66, 779.66 , 770.75, 775.08)]
```