NumPy is the fundamental package for scientific computing in Python. It is a Python library that provides a multidimensional array object, various derived objects (such as masked arrays and matrices), and an assortment of routines for fast operations on arrays, including mathematical, logical, shape manipulation, sorting, selecting, I/O, discrete Fourier transforms, basic linear algebra, basic statistical operations, random simulation and much more.

In [1]:
```
import numpy as np
```

Better than Lists as it has less storage requirements, Thus making it fast

In [3]:
```
a = np.array([1, 2, 3])
print(a)
```

```
[1 2 3]
```

In [4]:
```
temp = [[9,8,7],[6.0,5,4],['h', 'i', 'j']]
b = np.array(temp)
print(b)
```

```
[['9' '8' '7']
 ['6.0' '5' '4']
 ['h' 'i' 'j']]
```

In [5]:
```
# Get Dimension
b.ndim
```

Out[5]: 2

In [6]:
```
# Get shape
b.shape
```

Out[6]: (3, 3)

In [7]:
```
# Get Type
b.dtype
```

Out[7]: dtype('<U32')

In [8]:
```
# Get Size
b.itemsize
```

Out[8]: 128

In [9]:
```
# Get totoal size
b.nbytes
```

Out[9]: 1152

In [10]:
```
# Accessing/Changing specififc elements, rows, columns, etc
```

In [11]:
```
a = np.array([[1,2,3,4,5,6,7],[8,9,10,11,12,13,14]])
print(a)
```

```
[[ 1  2  3  4  5  6  7]
 [ 8  9 10 11 12 13 14]]
```

In [12]:
```
# Get a specific element
a[1, 5]
```

Out[12]:
```
13
```

In [13]:
```
# Get a specific row/column
a[0,:]
```

Out[13]:
```
array([1, 2, 3, 4, 5, 6, 7])
```

In [14]:
```
a[:,2]
```

Out[14]:
```
array([ 3, 10])
```

In [15]:
```
# Taking specific area in array
a[0:, 1:6:2]
```

Out[15]:
```
array([[ 2,  4,  6],
       [ 9, 11, 13]])
```

In [16]:
```
# 3D- example
b = np.array([[[1,2],[3,4]],[[5,6],[7,8]]])
b
```

Out[16]:
```
array([[[1, 2],
        [3, 4]],

       [[5, 6],
        [7, 8]]])
```

In [17]:
```
b.ndim
```

Out[17]:
```
3
```