NumPy = **Numerical Python**

- ✓ Its a View (View No Modification) - Immutable
- ✓ Its a Python Library
- ✓ It focus on Arrays , Linear Algebra , Matrices
- ✓ Created in the Year 2005

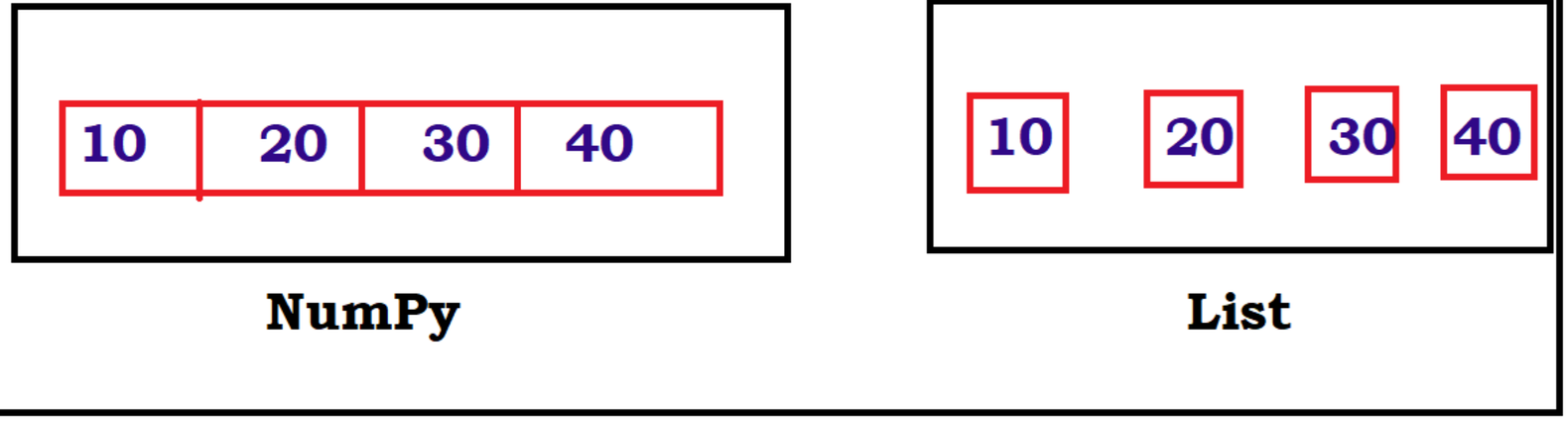
Uses of NumPy

It performs Very Fast Manuplations with Good Accurecy.
It Provides an Array Object for perform Numerical Tasks
Here , that Array Object is Know as ndarray to Work Easy

Library = { Module } - import

Why NumPy is Faster Than List ?

10 20 30 40



```
import numpy
a=numpy.array([10,20,30])
print(a)
#[10 20 30]
b=[10,20,30]
print(b)
#[10, 20, 30]
print(memoryview(a))
#<memory at 0x000001702468E940>
```

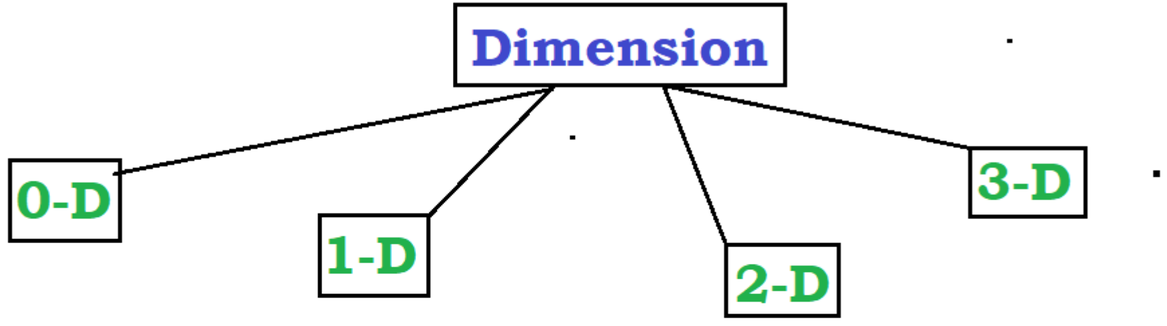
```
print(type(a))
#<class 'numpy.ndarray'>
print(len(a))
#3
```

NumPy as Alies

```
import numpy as m
a=m.array([10,20,5.6])
b=m.array([10,20,30])
print(a)
#[10.  20.   5.6]
print(b)
#[10 20 30]
```

Create NumPy Dimensions

[ ] - 1



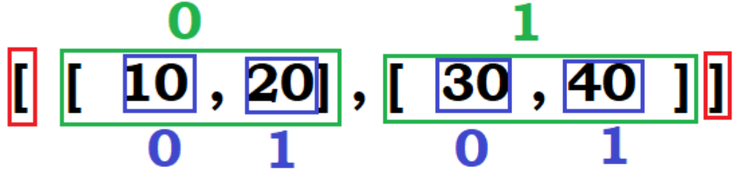
0 - Dim

```
import numpy as a
a=a.array(10)
print(a)#10
print(a.ndim)#0
```

One - Dim

```
import numpy as a
a=a.array([10,20,30,40,50])
print(a)
#[10 20 30 40 50]
print(a.ndim)#1
```

2-Dim

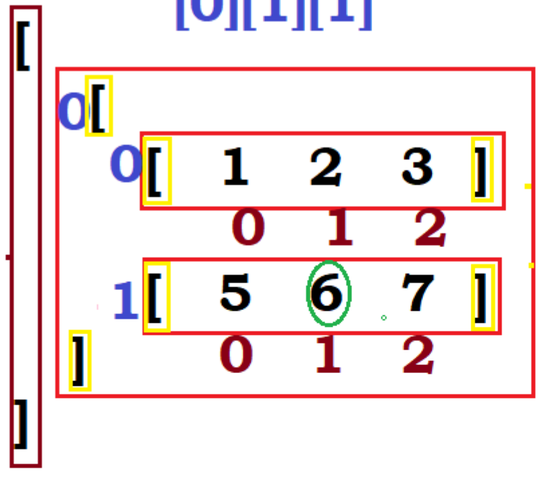


[0][0] - 10
[0][1] - 20
[1][0] - 30
[1][1] - 40

```
import numpy as a
a=a.array([[10,20],[30,40]])
print(a)
#[[10 20]
# [30 40]]
print(a.ndim)#2
print(a[0][1])#20
print(a[1][2])
```

```
import numpy as
a
a=a.array([[10,20
,30],[30,40]])
print(a[0][2]+a[1]
[1])#70
```

3-D




```
import numpy as np
a=np.array([[[1,2,3],[5,6,7]]])
print(a)
#[[[1 2 3]
#  [5 6 7]]]
print(a.ndim)#3
print(a[0][1][1])#6
```

0