Python Numpy

NumPy is a Python library used for working with arrays, It also has functions for working with numerical and matrices. NumPy aims to provide an array object that is up to 50 times faster than traditional Python lists. The array object in NumPy is called ndarray, it provides a lot of supporting functions that make working with ndarray very easy. Arrays are very frequently used in data science, where speed and resources are very important.

Example Arrays using Numpy:

```
# Creating Python program with math functions

import numpy as np # np is alias
a = np.array([1, 2, 3, 4, 5])  # Creates simple numpy array
print (type(a))  # Returns array type
a1 = np.array(2) # Zero dimensional array
print(a1.ndim)
a2= np.array([1,2,3,4,5])  # Single Dimensional array
print(a2.ndim)
a3 = np.array([[4,5,6] ,[1,2,3]])  # 2 Dimensional Array
print(a3.ndim)
a4 = np.array([[[1, 2, 3], [4, 5, 6]], [[1, 2, 3], [4, 5, 6]]])
print(a4.ndim)  # Returns dimension of array
print (a4[1]) # accessing second element
```

```
print (a4[1,2] ) # accessing 1 row third column element
print (a3[1,2,1 ] ) # accessing 3 dimensional array element
print( a2[2:4] ) # Slicing array with elements
print ( a.shape ) # returns the shape in dimensions
print ( a.reshape(2,3) ) # returns the reshape in dimensions
a3 = np.concatenate((a1, a2)) # concatenate two arrays and assign to third
a = np.where(a == 4) # search the elment 4
np.sort(a) # sorts the array
```