1. **Numpy – Introduction**

Numpy is a Python package. It stands for ‘Numerical Python’. It is a library consisting of multidimensional array objects and a collection of routines for processing of array.

Numeric, the ancestor of Numpy, was developed by Jim Hugunin. Another package Numarray was also developed, having some additional functionalities. In 2005, Travis Oliphant created NumPy package by incorporating the features of Numarray into Numeric package. There are many contributors to this open project.

**Operations using Numpy**

Using NumPy, a developer can perform the following operations:

* Mathematical and logical operations on arrays.
* Fourier transforms and routines for shape manipulation.
* Operations related to linear algebra. NumPy has in-built functions for linear algebra and random number generation.

1. **NumPy – ndarray Object**

The most important object defined in NumPy is an N-dimensional array type called ndarray. It describes the collection of items of the same type. Items in the collection can be accessed using a zero-based index.

Every item in an ndarray takes the same size block in the memory. Each element in ndarray is an object of-data-type object (called dtype).

* **object –** Any object exposing the array interface method returns an array, or any (nested) sequence
* **dtype –** Desired data type of array, optional
* **copy –** Optional. By default (true), the object is copied
* **order –** C (row major) or F (column major) or A (any) (default)
* **subok –** by default, returned array forced to be a base class array. If true, sub-classes passed through
* **ndimin –** specifies minimum dimensions of resultant array