**NUMPY**

Numpy is a library used in python to do Mathematics on data sets.

It is a Homogeneous Multidimensional array, Dimension are called axes and indexed by a tuple of positive Z.

Numpy 🡪 Arrays

Numpy array class is called ndarray.

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| Objects of ndarray | Uses  X = np.arrange (6).reshape(2,3)  Array ([ [0, 1, 2],  [3, 4, 5]]) |
| ndarray.ndim | Gives number of dimensions/axis of the array  X.ndim >> 2 |
| ndarray.shape | Gives information regarding rows and columns  X.shape >> (2 ,3) |
| ndarray.size | Total number of elements in the array : rows \* columns  >> 2\*3 = 6 |
| ndarray.dtype | This object describes about the type of the elements in array.  x.dtype.name >> int64 |
| ndarray.itemsize | Size in bytes  X.itemsize >>8 |

Array Creation:

Array is created using array function with Tuples and Lists.

Format:

|  |  |
| --- | --- |
| variable = np.array ( [1, 2, 3, 4, 5] ) | >>[1, 2, 3, 4, 5] |
| variable = np.array( [ [1,2], [3,4] ], dtype = complex ) | >>Array ( [ [ 1+0.j, 2+0.j ],  3 + 0.j, 4+0.j ] ] ) |
| Variable = np.zeros/ones ((1,2)) | >> array( [ [ 0/1, 0/1 ],  [ 0/1, 0/1 ] ] ) |
| np.arrange( 10, 20, 2) | >> array ([ 10, 12, 14, 16,17, 18]) |
| [**array**](https://www.numpy.org/devdocs/reference/generated/numpy.array.html#numpy.array), [**zeros**](https://www.numpy.org/devdocs/reference/generated/numpy.zeros.html#numpy.zeros), [**zeros\_like**](https://www.numpy.org/devdocs/reference/generated/numpy.zeros_like.html#numpy.zeros_like), [**ones**](https://www.numpy.org/devdocs/reference/generated/numpy.ones.html#numpy.ones), [**ones\_like**](https://www.numpy.org/devdocs/reference/generated/numpy.ones_like.html#numpy.ones_like), [**empty**](https://www.numpy.org/devdocs/reference/generated/numpy.empty.html#numpy.empty), [**empty\_like**](https://www.numpy.org/devdocs/reference/generated/numpy.empty_like.html#numpy.empty_like), [**arange**](https://www.numpy.org/devdocs/reference/generated/numpy.arange.html#numpy.arange), [**linspace**](https://www.numpy.org/devdocs/reference/generated/numpy.linspace.html#numpy.linspace), [**numpy.random.rand**](https://www.numpy.org/devdocs/reference/generated/numpy.random.rand.html#numpy.random.rand), [**numpy.random.randn**](https://www.numpy.org/devdocs/reference/generated/numpy.random.randn.html#numpy.random.randn), [**fromfunction**](https://www.numpy.org/devdocs/reference/generated/numpy.fromfunction.html#numpy.fromfunction), [**fromfile**](https://www.numpy.org/devdocs/reference/generated/numpy.fromfile.html#numpy.fromfile) |  |