

Why NumPy?

NumPy is an open-source numerical Python library used for working with arrays. It aims to provide an **array object that is upto 50x faster than traditional python list takes significantly less amount of memory as compared to python lists.**

How to Install Numpy

```
pip install numpy
or
conda install numpy
```

Importing Library

```
import numpy as np
```

Attributes of ndarray

| | |
|---------------|--|
| ndarray.shape | Tuple of array shape |
| ndarray.ndim | Number of array dimensions as interger |
| ndarray.size | Number of elements in the array |
| ndarray.dtype | Data type of array's elements |
| ndarray.base | To check if object has its own memory |

Slicing

| | |
|------------|--|
| arr[0] | Returns the element at index 0 |
| arr[1,2] | Returns array element on index [1][2] |
| arr[0:3] | Returns the elements at indices on outer dimension |
| arr[0:3,2] | Returns the elements on rows 0,1,2 at column 2 |
| arr<n | Returns an array with boolean values |
| ~arr | Returns an array with boolean values |

Statistics

| | |
|-----------------------|--|
| np.mean(arr,axis=0/1) | Compute the arithmetic mean along the specified axis. |
| arr.sum() | Sum of array elements over a given axis |
| arr.min() | Return the minimum along a given axis |
| arr.max() | Return the maximum along a given axis |
| np.var(arr) | Compute the variance along the specified axis |
| np.std(arr) | Compute the standard deviation along the specified axis. |
| arr.corrcoef() | Return Pearson product-moment correlation coefficients |

Creating Arrays

| | |
|-----------------------------|--|
| np.array(object) | Creates an array |
| np.array([1,2,3]) | 1D array |
| np.array([(1,2,3),(4,5,6)]) | 2D array |
| np.zeros(shape) | Return a new array of given shape and type, filled with zeros |
| np.ones(shape) | Return a new array of given shape and type, filled with ones |
| np.eye(no. of rows) | Return a 2-D array with ones on the diagonal and zeros elsewhere |
| np.arange(start,stop,step) | Return evenly spaced values within a given interval. |
| np.random.rand(shape) | Return array of random floats between 0–1 of given shape |
| np.random.randint(low,high) | Return random integers from low (inclusive) to high (exclusive) |
| np.linspace(start, stop, n) | Returns n evenly spaced numbers over a specified interval |

commonly used methods

| | |
|-------------------------|--|
| np.sort(arr) | Returns a sorted copy of the array |
| np.argsort(arr) | Returns the indices that would sort an array |
| np.resize(a, new_shape) | Return a new array with the specified shape |
| np.dot(arr1, arr2) | Dot product of two arrays |
| arr.copy() | Returns a copy of the array |
| arr.view() | New view of array with the same data |
| arr.flatten() | Return a copy of the array collapsed into 1D |
| arr.reshape(new_shape) | Returns an array containing the same data with a new shape |

Math operators

| | |
|---------------------------|----------------------------------|
| np.add(arr_1, arr_2) | Add arguments element-wise |
| np.subtract(arr_1, arr_2) | Subtract arguments, element-wise |
| np.multiply(arr_1, arr_2) | Multiply arguments, element-wise |
| np.divide(arr_1, arr_2) | Divide arguments, element-wise |



Math operators (cont)

| | |
|-------------------------------------|---|
| <code>np.power(arr_1, arr_2)</code> | First array elements raised to powers from second array, element-wise |
| <code>np.sqrt(arr)</code> | Return the non-negative square-root of an array, element-wise |
| <code>np.log(arr)</code> | Natural logarithm, element-wise |
| <code>np.ceil(arr)</code> | Rounds up to the nearest int , element-wise |
| <code>np.floor(arr)</code> | Rounds down to the nearest int ,element-wise |
| <code>np.abs(arr)</code> | Absolute value of each element in the array |
| <code>np.round(arr)</code> | Rounds to the nearest int |

Useful links

[NumPy Official documentaion](#)

[w3schools NumPy Tutorial](#)

[NumPy Illustrated: The Visual Guide to NumPy](#)

[NumPy: creating and manipulating numerical data](#)

C

By **Lavanya-M22**
cheatography.com/lavanya-m22/

Published 11th September, 2021.
Last updated 12th September, 2021.
Page 2 of 2.

Sponsored by **CrosswordCheats.com**
Learn to solve cryptic crosswords!
<http://crosswordcheats.com>