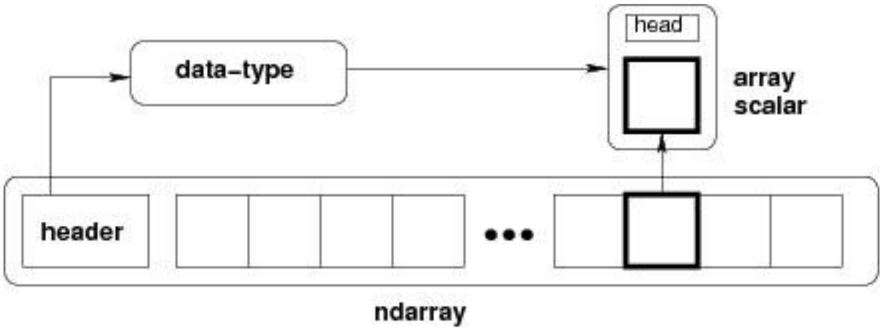
NumPy - Ndarray Object

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 of block in the memory. Each element in ndarray is an object of data-type object (called **dtype**).

Any item extracted from ndarray object (by slicing) is represented by a Python object of one of array scalar types. The following diagram shows a relationship between ndarray, data type object (dtype) and array scalar type −



An instance of ndarray class can be constructed by different array creation routines described later in the tutorial. The basic ndarray is created using an array function in NumPy as follows −

```
numpy.array
```

It creates an ndarray from any object exposing array interface, or from any method that returns an array.

```
numpy.array(object, dtype = None, copy = True, order = None, subok = False, ndmin = 0)
```

The above constructor takes the following parameters −

Sr.No.	Parameter & Description
1	**object**

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

Take a look at the following examples to understand better.

Example 1

Live Demo

```
import numpy as np

a = np.array([1,2,3])

print a
```

The output is as follows −

```
[1, 2, 3]
```

Example 2

Live Demo

```
# more than one dimensions

import numpy as np

a = np.array([[1, 2], [3, 4]])

print a
```

The output is as follows −

```
[[1, 2]
 [3, 4]]
```

Example 3

Live Demo

```
# minimum dimensions

import numpy as np

a = np.array([1, 2, 3,4,5], ndmin = 2)

print a
```

The output is as follows −

```
[[1, 2, 3, 4, 5]]
```

Example 4

Live Demo

```
# dtype parameter

import numpy as np

a = np.array([1, 2, 3], dtype = complex)

print a
```

The output is as follows −

```
[ 1.+0.j,  2.+0.j,  3.+0.j]
```

The **ndarray** object consists of contiguous one-dimensional segment of computer memory, combined with an indexing scheme that maps each item to a location in the memory block. The memory block holds the elements in a row-major order (C style) or a column-major order (FORTRAN or MatLab style).