Introduction

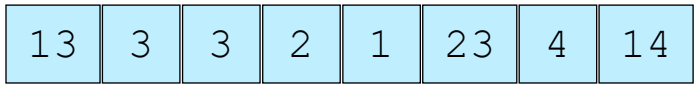
This lesson introduces you to n-dimensional arrays in NumPy.

The **NUM**erical **PY**thon package, commonly known as **NumPy**, provides a data structure called **arrays**. They allow efficient vector and matrix operations. These arrays are of type `ndarray` from the `numpy` module.

These arrays :

- are essential for plotting using `matplotlib`.
- are commonly used to solve systems of linear equations.
- can be used to store an image in the form of an array.

NumPy arrays are the basis of all computations performed by the NumPy library. They are simple Python lists with a few additional properties.



NumPy `ndarray` is very similar to the Python `list` except that the array can only keep elements of the same type while the list can have different kinds of objects.

The uniformity of element types enables Python to store arrays more efficiently than lists. Arrays are efficient when modeling vectors and matrices for numerical calculations in Python.

> 💡 **Note:** In this course, we will import numpy with the alias name `np`, i.e., `import numpy as np`.

In the next lesson, we will learn about 1-D arrays, called **vectors**.