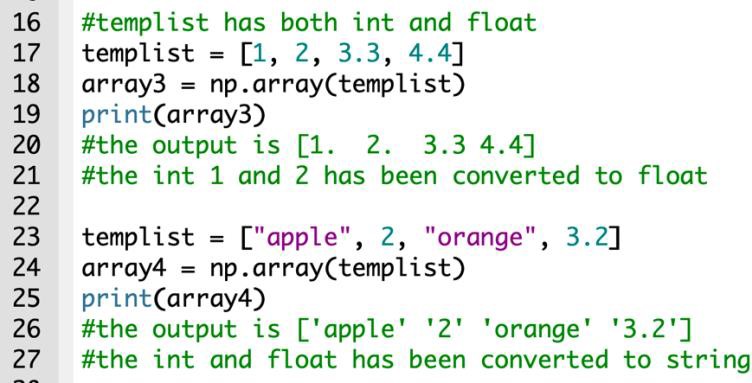
Lesson 3a worksheets – Numpy array basic

1. Numpy Array

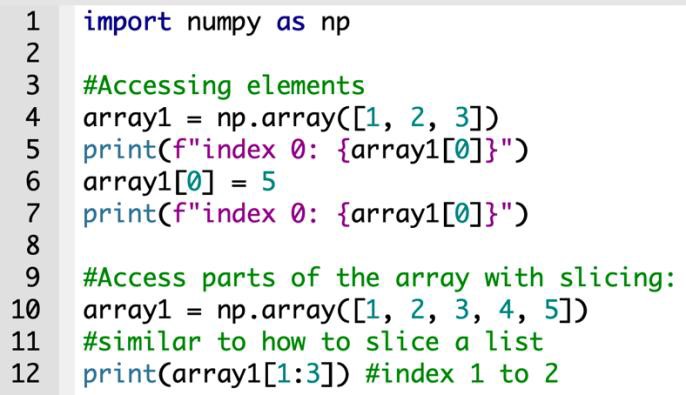
* This is the core library for scientific computing in Python – everything else builds upon it.
* A more superior version of list.
* Provides high-performance N-dimensional arrays operations and functions to manipulate arrays.
* Main differences between list and array

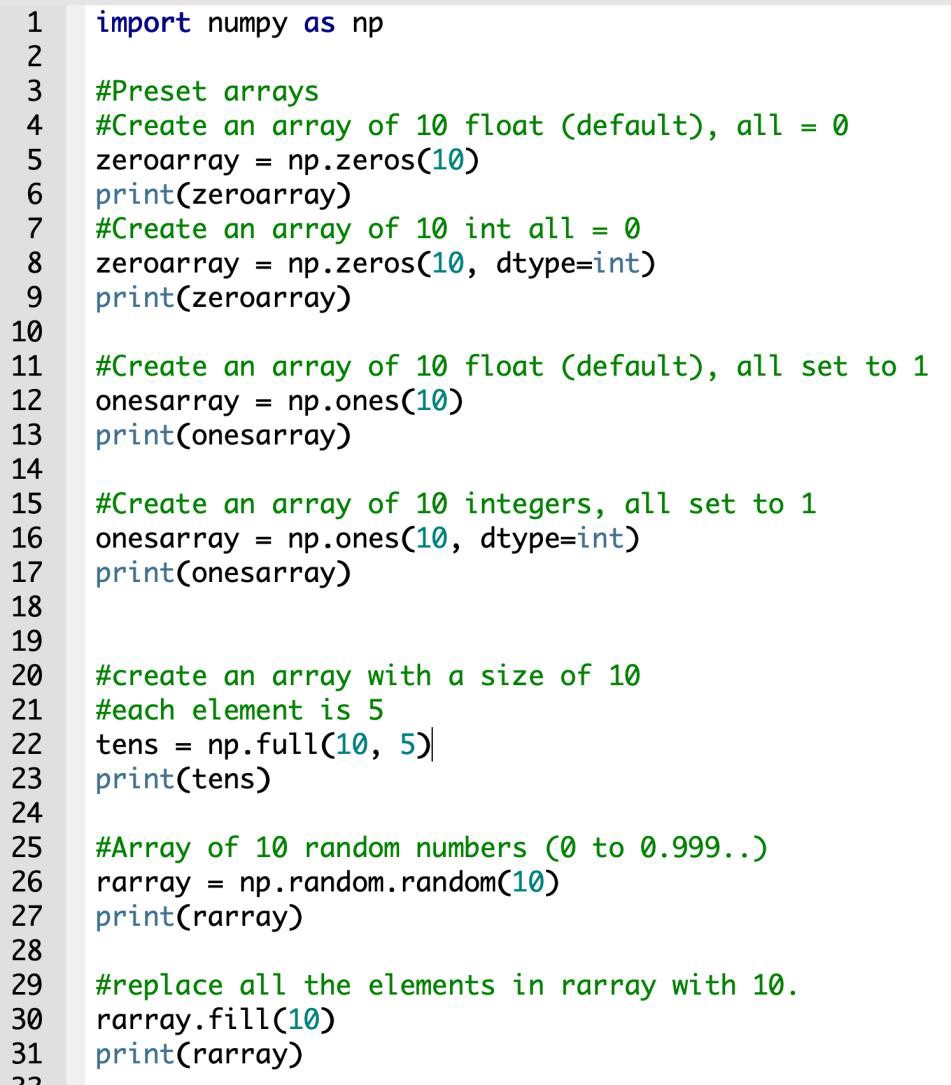
|  |  |
| --- | --- |
| List | Array |
| Cannot manage arithmetic  operations. | Can manage arithmetic operations. |
| Can store different data types  element. | The elements in an array must belong to  the same data type. |

1. Creating numpy array using np.array() function

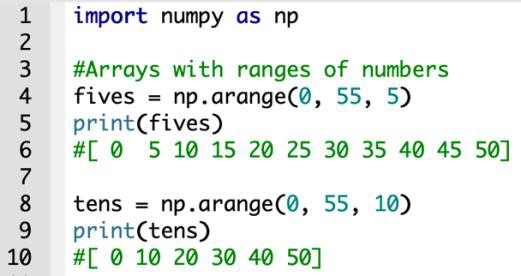
* A screenshot of a computer program

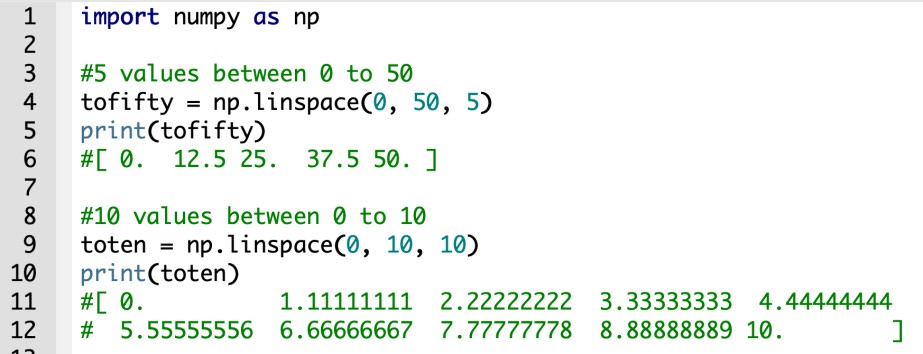
  AI-generated content may be incorrect.element in array must be the same data type.

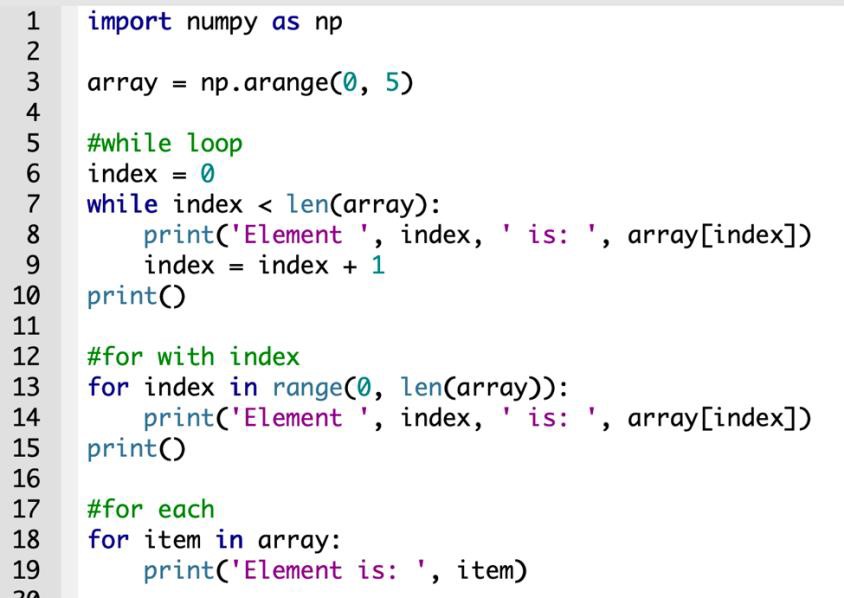
1. Accessing array elements
   * Similar to list.
   * Access by index or slicing.
2. Preset arrays

* Can create array with some preset values.
* Use zeros(), ones, full(), fill() and random() function.

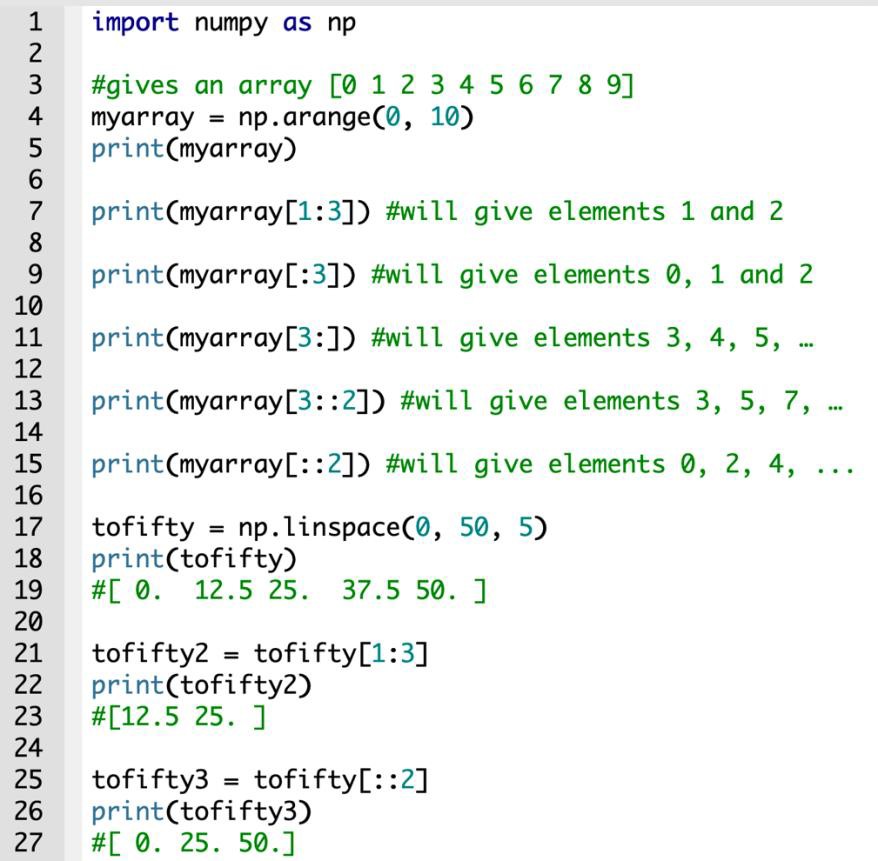
1. Create array with ranges of numbers

* Similar to using range to create a sequence for a for loop.
* note the function is arange() not "arrange()".
* arange means array range.

1. Create array with linspace (linear space)
2. Give the start and stop values.
3. indicate how many values should be in between.
4. Looping with array

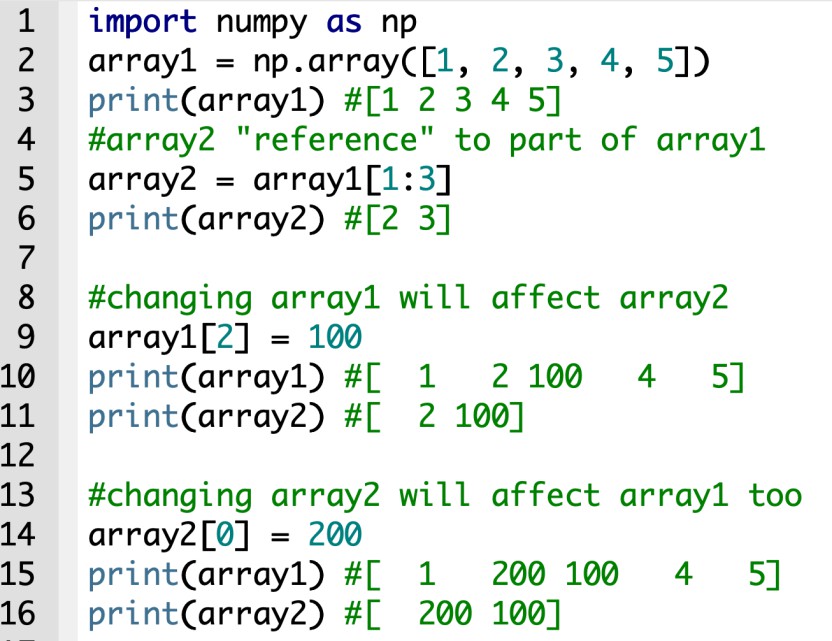
* Multiple ways to go through the elements of an array.

1. Array slicing

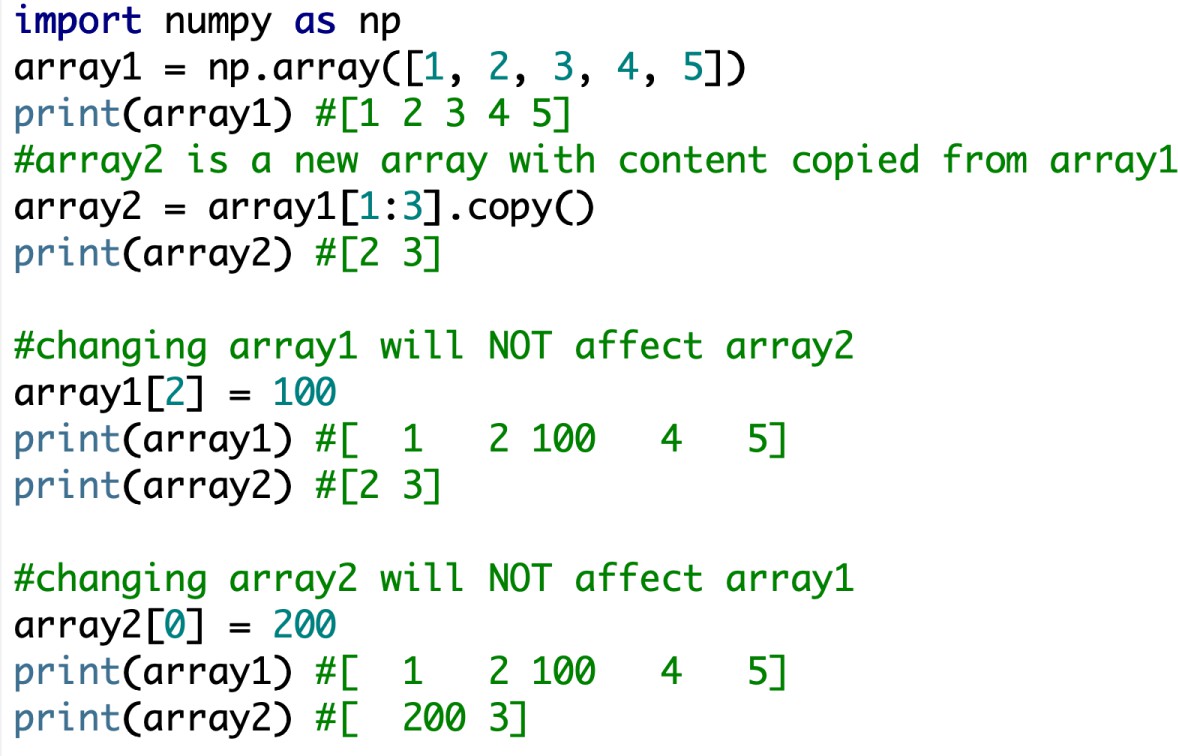
* Arrays can be sliced in the same way as strings and lists.
* The result of a sliced array is an array, so we can use slicing to make new arrays.
* State the start, stop, and step values.

1. Slicing to reference another Array.

* The result of a sliced array is a view on an array – changes to the original affect the view.



1. Slicing to make new Array.

* To create a new array, need to use the copy() method.