

## Arrays vs ArrayLists

### Recall an Array

A data structure that is a part of the Java language (built-in). Holds a collection of the same data type.

### Compare (How are they the same?)

Array and Array list are index-based data structures

Both can be processed using a for loop repetition-based algorithm.

Both can be used to create object sets.

Both can have duplicate values.

### Contrast (How are they different?)

Implementation of array is simple fixed sized array but Implementation of ArrayList is dynamic sized array.

Array can contain both primitives and objects but ArrayList can contain only object elements

You can use length variable to calculate length of an array but size() method to calculate size of ArrayList.

Array use an assignment operator to store elements but ArrayList use add() to insert elements.

Arrays can have more than one dimension.

For Each loop can be used to step through array list elements.

Arrays are part of the Java programming language whereas ArrayList is a class that has been created to act like an array.

ArrayLists use a special constructor whereas arrays are declared like variables.

<https://javaconceptoftheday.com/differences-between-array-vs-arraylist-in-java/>

Array   ArrayList

Arrays are static in nature. Arrays are fixed length data structures. You can't change their size once they are created.   ArrayList is dynamic in nature. Its size is automatically increased if you add elements beyond its capacity.

Arrays can hold both primitives as well as objects.   ArrayList can hold only objects.

Arrays can be iterated only through for loop or for-each loop.   ArrayList provides iterators to iterate through their elements.

The size of an array is checked using length attribute.   The size of an ArrayList can be checked using size() method.

Array gives constant time performance for both add and get operations. ArrayList also gives constant time performance for both add and get operations provided adding an element doesn't trigger resize.

Arrays don't support generics.   ArrayList supports generics.

Arrays are not type safe.   ArrayList are type safe.

Arrays can be multi-dimensional.   ArrayList can't be multi-dimensional.

Elements are added using assignment operator. Elements are added using add() method.