**Arrays**

* Collection of similar type values stored at **contiguous memory location**.
* Faster reads as utilizes locality of references.
* Ordered storage.
* The size of an array must be specified by an int value and not long or short
* Default values in array: 0 for numeric types, null for reference types, false for Booleans.
* For primitive data types, the actual values are stored in contiguous memory locations. In case of objects of a class, [the actual objects are stored in heap segment](https://www.geeksforgeeks.org/g-fact-46/).
* [Jagged array](https://en.wikipedia.org/wiki/Jagged_array) is array of arrays such that member arrays can be of different sizes.
* In Java always allocated on heap space.

**Cloning of arrays:**  Clone method provides deep copy for single dimension array but shallow copy for multidimensional or jagged arrays as each element in multidimension array contain reference to same element array.

**Dynamic Size Arrays:** ArrayList in java. ArrayList is initialized by a size, however the size can increase if collection grows or shrunk if objects are removed from the collection. If size becomes full , they resize.

**Operations in Array complexity:**

* Search an element: O(n) ,O(logn) for sorted array
* Insert at ith index:O(n)
* Retrieval of ith element : O (1)
* Delete of ith element: O(n)
* Reverse an Array: O(n)

**Check Problems for following algorithms:**

* Kadene Algo
* Window sliding technique
* Prefix sum
* Moore voting algo

**Multidimensional Arrays**

In java multidimensional array is array of objects, so each object is not stored at contiguous location.

Matrix multiplication using dot product : <https://www.mathsisfun.com/algebra/matrix-multiplying.html>