**Array List and Vector Similarities:**

* Both Arraylist and Vector implement the List Interface under Collection hierarchy

Collection (Interface)

| Extends

List (Interface)

Implements / \ Implements

ArrayList© Vector (Class)

* Whenever we want to represent a group of elements into a single entity we can go for both ArrayList and Vector
* Insertion Order: It is preserved in both (The same order we are adding the elements, in the same order the elements get fetched)

ArrayList alist = new ArrayList();

alist.add(10);

alist.add(2);

alist.add(9);

Printing alist: [10,2,9]

Vector vlist = new Vector();

vlist.addElement(10);

vlist.addElement(109);

vlist.addElement(11);

Printing vlist: [10,109,11]

* Duplicates : Both Internally uses index to store the elements.Both Arraylist and vector allow duplicates and the duplicates are identified with the help of index
* Heterogenous Elements:
* ArrayList and Vector are preferable for search operations because search is based on index
* Both arraylist and vector implements RandomAccess Interface which is a marker interface (Marker interface is an interface with no methods)
* Bad for insertion because shifting operation is performed which slows down the insertion

**DIfferences between ArrayList and Vector:**

* Almost all methods in the Vector class are synchronized where as ArrayList methods are not synchronized
* In case of multi threading env,if two threads are accessing the same object,if it is synchronized, it will not allow the threads to access at a time.it makes them access one by one
* ArrayList methods are not synchronized.
* Using keyword synchronized we can make unsync methods synchronized
* ArrayList is faster than Vector because Arraylist methods are unsync and Vector methods are sync
* When two or more threads access the same ArrayList object at the same time,and when th e Array List structure is changing,Concurrent Modification exception is thrown
* ArrayList iterator is fail-fast, while iterating the list,if the list structure is modified, then it throws exception
* Iterator internally uses boolean variable which is by default false. If there is any structural change in the list,boolean variable turns true and exception is thrown up
* In the case of multi threading environment,**CopyOnWriteArrayList** can be used in the place of ArrayList.
* **CopyOnWriteArrayList** iterator is **fail-safe**
* ArrayList and Vector differ in Memory allocation .In the case of memory management,Arraylist is better than Vector
* When Arraylist or Vector object is created, then the default size is 0.
* Once we start adding the elements, then the capacity gets allocated
* The default size of Arraylist/Vector is 10.
* Once 11th data gets added, arraylist increases its size by 50% and that of vector by 100%
* Iterator interface can be used to fetch elements on all collection classes like arraylist,vector,hashmap,hashset etc.,
* Enumeration is a legacy interface and can be used only by legacy classes like vector.It cannot be used on arraylist.
* ArrayList<String> alist = new ArrayList<String>();
* To get the capacity use alist.capacity();