List of Concepts Involved:

- Why Collection?
- Collection Hierarchy
- ArrayList
- LinkedList
- ArrayDeque
- PriorityQueue
- TreeSet
- HashSet
- LinkedHashSet
- Iterator , List Iterator
- Legacy classes and Enumeration

Why Collection?

1. They are growable in nature(we can increase and decrease)
2. They can hold both heterogeneous and homogeneous data elements
3. Every collection class is implemented using some standard data structure, so ready methods are available, as a programmer we need to implement rather we should just know how to call those methods.

Which one is prefered over Arrays and Collections?

Arrays is prefered, because performance is good.
Collections is not prefered because

1. List l=new ArrayList(); // default: 10 locations
   if 11th element has to added, then
   a. create a list with 11 locations
   b. copy all the elements from the previous collection
   c. copy the new reference into reference variable
   d. call the garbage collector and clean the old memory.

Note: To get something we need to compromise something, so if we use Collections performance is not upto the mark.
Array is language level concept(memory wise it is not good, performance is high)
Collection is API level(memory wise it is good,performance is low)

Difference b/w Arrays and Collection

Arrays => It is used only when Array size is fixed
Collection => It is used only when size is not fixed(dynamic)

Arrays => memory wise not recommended to use.
Collection => memory wise recommended to use.

Arrays => Performance wise recommended to use.
Collection => Performance wise it is recommended to use.

Arrays => It can hold only homogeneous objects
Collection => It can hold both heterogenous and homogenous Objects

Arrays => We can hold both primitive values and Objects
eg: int[] arr=new int[5];
Integer[] arr=new Integer[5];
Collection => It is capable of holding only objects not primitive types.

Arrays => It is not implemented using any standard data structure, so no ready made methods For our requirement,it increases the complexity of programming.

Collection => It is implemented using standard data structure, so ready made methods are available for our requirement,it is not complex.

What is a Collection?

In Order to represent a group of individual object as a single entity then we need to go for Collection.

CollectionFramework

Group of classes and interface, which can be used to represent a group of individual object as a single entity, then we need to go for "CollectionFramework".

Java C++
Collection => container
CollectionFramework => STL(standard template library)

Collection

1. In order to represent a group of individual object, then we need to go for "Collection".
2. It is a root interface of collection framework
3. All the commonly used method required for all the collections are a part of Collection(I).

Note: There is no concrete class which would implement the interface Collection(I) directly.

Collection Hierarchy