Collection v/s Collections
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1. In Java we have 2 entities called **Collections** and **Collection** both related to the topic **collection framwork.**

2. Due to similarity in names, many beginners remain confused about their use.

3. **Collection** is an interface which is the root of collection hierarchy and works as parent interface for numerous collection related classes.

4. On the other hand **Collections** is a special class made available by Java team containing many helper methods like **sort(), copy(), binarySearch(),** etc. to perform various operations on collections.

5. Both of them (**Collections and Collection**) come from the package **java.util**

How ArrayList resizes itself?
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1. By default the ArrayList has a capacity of 10 and uptill 10 elements the capacity of the ArrayList remains same.

2. After the 10th element when we will add the 11th element following actions take palced:

a) A new Array of a new capacity gets created.

b) All 10 elements from the previous array along with the 11th element are copied to the new Array.

c) The previous array is made available for the Garbage Collector.

3. The formula for calcuting the new capacity has changed from time to time and is implementation dependent.

4. However till **Java 7** the formula was

new capacity=**(old capacity * 3/2)+1.**

For example: **new capacity = 10 * 3 /2 +1 = 16.**

5. From **Java 8** onwards the formula has become

new capacity =**old capacity + old capacity >> 1**

For example: **new capacity = 10 + 10 >> 1 = 15**

15 | 2 => 7

15 >> 1

1111 >> 1

0111 -> 7

7

$y = x + \frac{x >> 1}{4}$

x | 2