Collection is an interface (or API)

**Definition: Collection is an API which talks about the collection of elements. Elements can be strings, integers or objects etc. etc.**

**What do we mean by API: API means, it contains certain classes for usage. Because, API being interface cannot be used so we have to use its extended classes.**

Since ‘Collection’ is an interface, so we can’t create an object of interface.

Now, question is why we need collection if we can create an array as below:

int [] a = new int [4]

Solution: because arrays is of fixed length. We cannot grow or shrink it. That’s we need ‘Collection’.

Difference between arrays and ‘Collection’ 🡪 Arrays works on only those type of values which is specified during its declaration e.g. integer array but in case of collection or arraylist , it can take any value due to generic implementation.

In ‘Collection’ concept, at top, there is ‘**Iterable**’ interface which is further extended by ‘Collection’ interface then this interface is extended by **‘List’ & ‘Set’ & ‘Map’** interfaces then this ‘List’ interface is implemented by ArrayList (which is a class). Set is extended by HashSet class & Map is extended by ‘HashMap’ and HashTable

Now above array of int can be implemented as below

Collection values= new ArrayList();

Or

List values = new ArrayList ();

Now we can any type of values (say integer, string or characters) as below

Values.add(1);

Values.add(“Hitesh”);

But we should avoid this. I want only integer value or string values. So, now above concept can be implemented as below:

List <String> values = new ArrayList<String> (); this way of defining is also known as ‘Generics’

Java 1.7 version onwards, above line of code can be written as

List<String> values= new ArrayList<> ();

Set

There is also another interface known as ‘Set’ which also implements ‘Collection’ interface.

‘HashSet’ is the class which implements ‘Set’ interface

Set <integer> values= HashSet<> ();

Difference between ‘List’ & ‘Set’ interface

List can have duplicate values whereas Set can’t have duplicate values. Every element in set should be unique.

Map

Map is also interface which is being extended by ‘HashMap’ class

Map works on key, value relationship.

Map<String, String> values= new HashMap<> ();