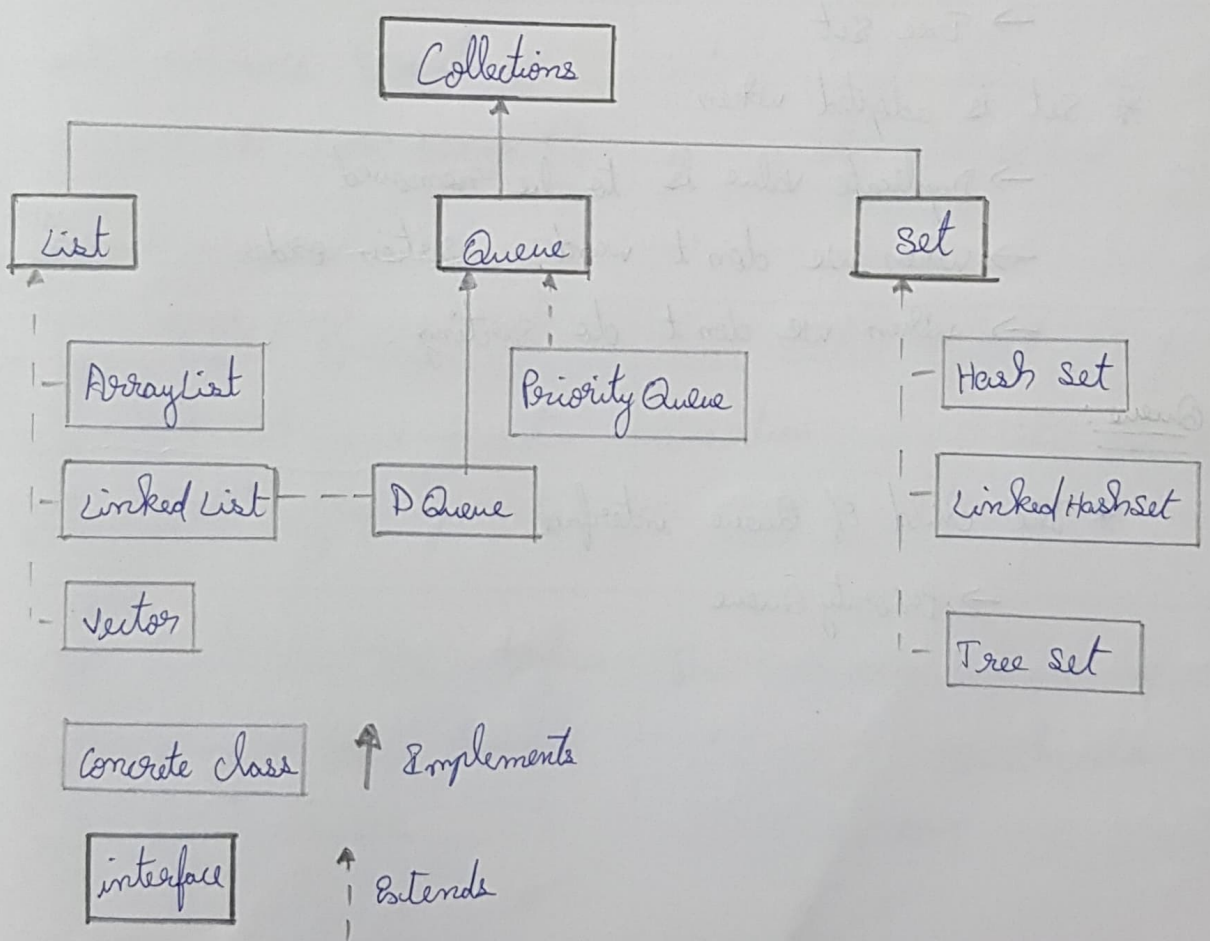
1. What are the main differences between array and Collection?

Array	Collection
* Array itself a data structure and has some restrictions for entering values.	Collection has various data structure available providing freedom to users for manipulation of Objects.
* Arrays are not growable	Collections are growable.
* Array elements cannot be removed	In collections elements can be removed and Modified
* Arrays doesn't allow null values	Collections allow Null values.

2. Explain various interfaces used in Collection framework?



List:

* The childs of List interface are
  - → Array List
  - → Vector
  - → Linked List
* List is adopted when,
  - → insertion order is of higher priority
  - → when inserting or deleting the elements wanted to be feasible.
  - → when sorting is of last priority.

Set:

* The child of Set are
  - → Hash Set
  - → Linked Hash Set
  - → Tree Set
* Set is adopted when
  - → Duplicate value is to be removed
  - → when we don't want insertion order
  - → when we don't do sorting.

Queue:

* The child of Queue interface
  - → Priority Queue.

3. What is the difference between ArrayList and Vector?

Array List	Vector
* Array List comes from non-Legacy class ie, from version 1.2	Vector comes from Legacy class ie from version 1.0
* ArrayList is not Synchronized	Vector is Synchronized
* It is thread Safe	It is thread Safe, but not fast
* Initially the new Capacity is meant to be (3/2 * old Capacity)+1 (ie, 0.5% and load factor)	The Capacity is (2 * old Capacity) ie, 100%.

4. What is the difference between ArrayList and LinkedList?

Array List	Linked List
* Underline data structure is growable (or) resizeable array	Underline data structure is doubley Linked List
* Best Suited Operation is data retrival and insertion order given higher priority	Best Suited Operation is for insertion and deletion feasibility
* It implements the interfaces of serializeable and cloneable and random access	The secondary interface of Linked List is Serializeable and Cloneable.

5. What is the difference between Iterator and List Iterator?

Iterator	List Iterator
* Iterator is the universal class that helps to fetch the data (among the other things)	List Iterator is the interface that extends interface
* Iterator can only point forward	List Iterator can point backward and forward.
* It prints from first to last	List Iterator can print for any specified Location.

6. What is the difference Between List and Set?

List	Set
* The list implementation allows us to add the same or duplicate elements	The set implements doesn't allow us to add the same or duplicate elements
* The insertion order is maintained by the List	It doesn't maintain the insertion order of elements
* List allows us to add any number of null values	The set allows us to add at least one null value in it
* The List implementation class are Linked List and array List	The Set implementation classes are treeSet, HashSet and Linked Hash set
* We can get the element of a specified index from the List using the get() method	We cannot find the element from the set based on the index because it doesn't provide any get() method

7. what is the difference between Hash Set and Tree Set ?

Hash set	Tree Set
* It does not provide a guarantee to sort the data	It provide a guarantee to sort the data. Sorting depends on the Supplied Comparator
* In Hash Set Only an element can be null	It does not allow null elements
* It uses hashCode() or equals() method for Comparison	It uses Compare() or CompareTO() methods from Comparison
* It is faster than treeset	It is slower in Comparison to Hash Set
* Underlying data structure is hashtable	Underlying data structure is Binary Tree.
* It allows only heterogeneous value	It allows only homogenous value.

8. What is the difference between Hash set and HashMap ?

Hash set	Hash Map
* Hash set is a set. It creates a collection that uses a hash table for storage	HashMap is a hash table based implementation of Map interface
* secondary interface is serializable, cloneable, iterable, collections	secondary interface is serializable and cloneable.
* It doesn't allow duplicate	It does not allow duplicate keys, but duplicate values are allowed.
* It can contain a single null value	It allows a single null value and multiple null values.
* It used add() method to add elements in the Hash Set	Hash Map uses the put() method to add the elements in the Hash Map.

9. What is the Difference between HashMap and HashTable?

HashMap	HashTable
* HashMap is non-Synchronized it is not-thread safe and can't be shared between many threads without proper synchronization code.	HashTable is Synchronized it is thread safe and can be shared with many threads.
* HashMap allows one null key and multiple null values	HashTable does not allow any null key or value
* HashMap is a new class introduced in version 1.2	HashTable is legacy class ie version 1.0
* HashMap is fast	HashTable is slow
* Iterator in HashMap is fail-fast	Enumerator in HashTable is not fail-fast.

10. What is the Difference between Comparable and Comparator?

Comparable	Comparator
* Comparable provides a single sorting sequence. In other words, we can sort the collection on the basis of single element such as id, name and price.	The Comparator provides multiple sorting sequences. In other words we can sort the collection on the basis of multiple element such as id, name and price, etc.
* Comparable affects the original class ie, the actual class is modified	Comparator does not affect the original class ie, the actual class is not modified.
* Comparable provides compareTO() method to sort elements.	Comparator provides compare() method to sort elements.
* Comparable is present in java.lang package	A Comparator is present in the java.util package.

11. How to Synchronize list, Set and Map elements?

* In order to get a Synchronized list from ArrayList we use Synchronized list (List <T>) method.

* Collections Synchronized Set() method is used to Synchronize Set elements.

* Collections Synchronized map (HashMap) method is used to Synchronize map elements.

12. What do you understand by fail fast and fail safe?

In Java, Collections supports two types of iterators they are,

1. fail fast
2. fail safe

} These are very useful in exception handling

1. Fail fast: The fail fast iterator aborts the operation as soon it exposes failure and stops the entire operation comparitively.

2. Fail safe: The fail safe iterator does not aborts the operation in case of failure. Instead it tries to avoid failures as much as possible.

13. Difference between Array and ArrayList?

Array	Array List
* Array is dynamically created Obj	The ArrayList is a class of Java Collections framework
* Array is static in size	Arraylist is dynamic in size
* Array is fixed length data structure	ArrayList is variable length data structure.
* It's Mandatory to provide size of an array why initializers it directly or indirectly	We can create an instance of array list without specifies its size.