Edition 2020

Collections Interview Questions

Tech Bulletin Prime

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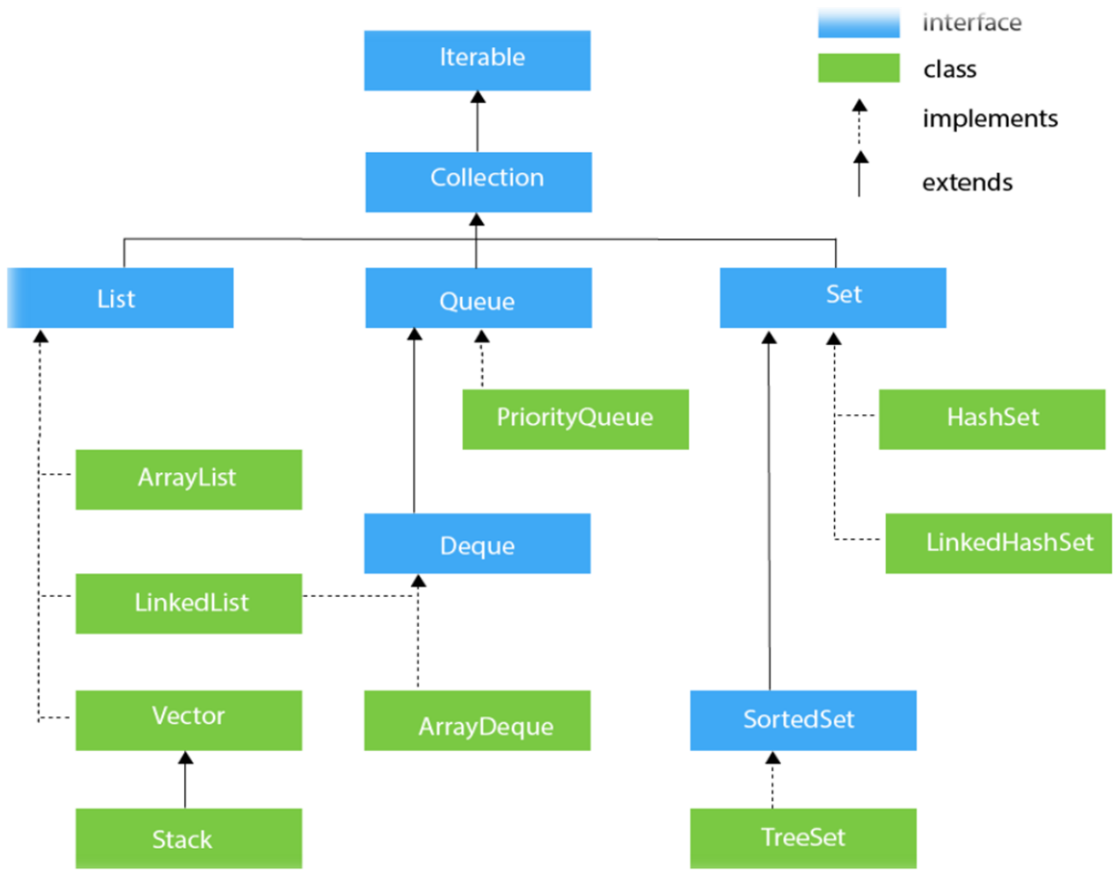
Collections

1.Explain Collection Hierarchy ?



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2. What are the main differences between array and collection?

- Array is limited in size, Collection can change dynamically.
- Array only contain homogeneous data, Collection can contain heterogenous data.

3. Base interfaces in Collection ?

List,Set,Queue

4. What is ArrayList in Java?

- ArrayList is the implementation class of List interface.

- ArrayList can contain duplicate elements
- ArrayList maintain insertion order

5. What is HashSet in java ?

- HashSet is the implementation of Set interface.
- HashSet stores unique elements.
- HashSet does not maintain insertion order.

6. What is Vector in java ?

- Vector is the legacy collection , it is an implementation class of List interface.
- All the methods present in vector is synchronized
- It is same as Array List only diff is all the methods are synchronized .

7. Difference between ArrayList and Vector?

ArrayList	Vector
1.ArrayList is not Synchronized	1.Vector is synchronized
2.ArrayList uses Iterator for traversal of elements	2.Vector can use Iterator or Enumeration for element traversal.
3.Not a Legacy class.	3.Legacy class.

8.List and Set Difference?

List	Set
1.We can store the duplicate elements in the list.	1.We can't store duplicate elements in Set

2. List maintains insertion order of elements in the collection 3. Implementation of List are ArrayList,LinkedList,Vector ,Stack 4. The list provides positional access of the elements in the collection.	2.Set doesn't maintain any order. 3. Implementation of a set interface is HashSet and LinkedHashSet. 4. Set doesn't provide positional access to the elements in the collection

9. ArrayList and LinkedList Diff?

ArrayList	**LinkedList**
1.This class implements only List interface 2.Uses a dynamic array.	1.This class implements both List and Deque interface. 2. Uses doubly linked list

10.What are the Set implementations?

Java Set interface extends Collection interface. Collection interface extends Iterable interface. Some of the frequently used Set implementation classes are **HashSet**, **LinkedHashSet**, **TreeSet**, **CopyOnWriteArraySet** and **ConcurrentSkipListSet**. **AbstractSet**

11. What is LinkedHashSet ?

LinkedHashSet Java Doc

- Hash table and linked list implementation of the Set interface .
- This implementation differs from HashSet in that it maintains a doubly-linked list running through all of its entries.
- Stores unique element.
- Maintain insertion order.

12. What is TreeSet ?

Java Doc

A NavigableSet implementation based on a TreeMap. The elements are ordered using their natural ordering, or by a Comparator provided at set creation time, depending on which constructor is used.

Stores unique element. By default, ascending order.

13. What is iterator?

This is an interface, all the implementations are provided at collection class level, it helps to iterate or traversal through collection.

14. Different types of Iterators?

There are 3 types of Iterators are there in java.

- Enumeration: Applicable for Vector and HashTable.
- Iterator: Universal and traverse only forward direction.
- ListIterator: Applicable only for List Type collection and traverse both the direction.

15. What is ConcurrentModification Exception ?

While Iterating non synchronized Collections over iterator , if you modify the structure of collection directly , that time we will get ConcurrentModificationException .

16. What is fail-fast ?

So while iterating the collections, if you are modifying the structure of collection directly, not via iterator , that time if iterator will through ConcurrentModificationException. Those iterators are known as fail-fast iterators. All the collections classes from util package are fail fast.

17. What is fail-safe?

So if you are modifying a collection structure while iteration using iterator, but still you are not getting any ConcurrentModification

Exception is known as Fail-Safe Iterators. All the collections from Concurrent packages are known as fail-safe.

18. How can you get thread safe collections ? or how to make a collection thread safe ?

In Collections utility class lots of methods are there to get synchronised version or thread safe version of that particular collection .

Example:

static <T> Collection<T> synchronizedCollection(Collection<T> c)

static <T> List<T> synchronizedList(List<T> list)

static <K,V> Map<K,V> synchronizedMap(Map<K,V> m)

19. How to avoid ConCurrentModificationException ?

We can use concurrent collections to avoid that exception.

Example: CopyOnWriteArrayList instead ArrayList.

20. Different ways we can Iterate List ?

- For loop
- For each loop
- Using iterators
- Using streams foreach

21. What is Collections class?

So Collections is the utility class present in the util package , which provides different utility methods.

22. Comparable and Comparator interfaces?

Both are used for sorting collections. Comparable interface have CompareTo method , Comparator have compare method which take two args, where as CompareTo take one arg.

Comparable for natural default sorting logic.

23. How can you create a Collection, that no one can modify it ?

You can create a collection using the Syntax.

Collections.UnmodifiableCollection (Collection c)

24. How can we sort List of Objects?

    Ans:

25. Contract between HashCode and Equals ?

If two Objects are equal then their hashCode must be equal.

26.HashSet internals?

27. Explain HashCode and Equals .