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LinkedHashSet, SortedSet, NavigableSet in Java

=> LinkedHashMap :-

- ➔ LinkedHashMap is the child class of HashSet which is present in java.util package
- ➔ Syntax : public class LinkedHashMap extends HashSet implements Set, Cloneable, Serializable { - }
- ➔ The underline data structure of LinkedHashMap is "Hashtable + LinkedList"
- ➔ LinkedHashMap was introduced in JDK 1.4 version
- ➔ Properties of LinkedHashMap :-
 - = All properties of LinkedHashMap is same as HashSet except LinkedHashMap follows the insertion order
- ➔ Constructors of LinkedHashMap :-
 - = same constructors as HashSet

➔ Methods of LinkedHashSet :-

= Same methods as HashSet

➔ When we should use LinkedHashSet :-

= If we have to create cache based applications then we can use LinkedHashSet

➔ Difference between HashSet & LinkedHashSet :-

1. HashSet was introduced in JDK 1.2 version
LinkedHashSet was introduced in J2SE 1.4 version

2. HashSet does not follow the insertion order
LinkedHashSet follows the insertion order

3. HashSet underline data structure is "Hashtable"

LinkedHashSet underline data structure is
"Hashtable + LinkedList"

=> SortedSet :-

- ➔ SortedSet is a child interface of Set interface which is present in java.util package
- ➔ Syntax : public interface SortedSet extends Set
{ - }
- ➔ SortedSet was introduced in JDK 1.2 version

➔ Properties of SortedSet :-

1. SortedSet is not an index based data structure
2. SortedSet does not follows the insertion order
3. SortedSet follows the sorting order
4. SortedSet can store same data types or homogeneous elements. If we provide different data type element it will provide exception i.e. `java.lang.ClassCastException`
5. SortedSet cannot store the duplicate elements
6. We should not store null value in SortedSet because SortedSet follows the sorting order so while comparing the elements with null value, it will provide the `java.lang.NullPointerException`
7. SortedSet allows Comparable objects by default, but if we insert non-comparable objects, then it will provide an exception i.e. `java.lang.ClassCastException`
8. SortedSet is non-synchronized collection

➔ **Methods of SortedSet :-**

1. Object first();
 2. Object last();
 3. SortedSet headSet(Object toElement);
 4. SortedSet tailSet(Object fromElement);
 5. SortedSet subSet(Object fromElement, Object toElement);
-

=> NavigableSet :-

- ➔ NavigableSet is the child interface of SortedSet interface which is present in java.util package
- ➔ Syntax : public interface NavigableSet extends SortedSet { - }
- ➔ NavigableSet was introduced in Java SE 6 version

➔ Properties of NavigableSet :-

= NavigableSet has the same properties as that of SortedSet but it provides some extra navigable methods

➔ Methods :

1. public NavigableSet descendingSet()
2. public Object ceiling(Object obj)
3. public Object higher(Object obj)
4. public Object floor(Object obj)
5. public Object lower(Object obj)
6. public Object pollFirst()
7. public Object pollLast()

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