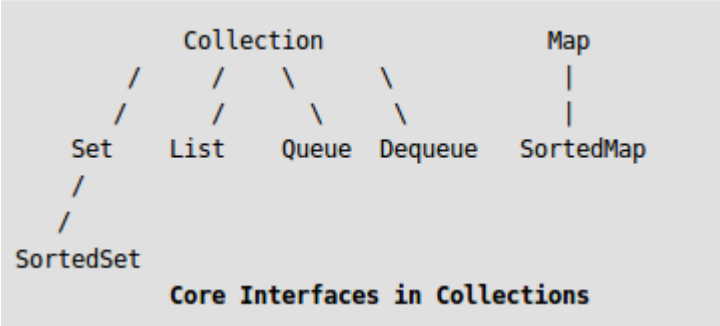
SortedMap Interface in Java with Examples

SortedMap is an interface in collection framework. This interface extends Map inrerface and provides a total ordering of its elements (elements can be traversed in sorted order of keys). Exampled class that implements this interface is TreeMap.



Core Interfaces in Collections

The main characteristic of a SortedMap is that, it orders the keys by their natural ordering, or by a specified comparator. So consider using a TreeMap when you want a map that satisfies the following criteria:

- null key or null value are not permitted.
- The keys are sorted either by natural ordering or by a specified comparator.

Methods of SortedMap:

1. subMap(K fromKey, K toKey): Returns a view of the portion of this Map whose keys range from fromKey, inclusive, to toKey, exclusive.
2. headMap(K toKey): Returns a view of the portion of this Map whose keys are strictly less than toKey.
3. tailMap(K fromKey): Returns a view of the portion of this Map whose keys are greater than or equal to fromKey.
4. firstKey(): Returns the first (lowest) key currently in this Map.
5. lastKey(): Returns the last (highest) key currently in this Map.

6. comparator(): Returns the Comparator used to order the keys in this Map, or null if this Map uses the natural ordering of its keys.

Code for SortedMap:

```
public interface SortedMap extends Map
{
    Comparator comparator();
    SortedMap subMap(K fromKey, K toKey);
    SortedMap headMap(K toKey);
    SortedMap tailMap(K fromKey);
    K firstKey();
    K lastKey();
}
```

```
// Java code to demonstrate SortedMap
import java.util.Iterator;
import java.util.Map;
import java.util.Set;
import java.util.SortedMap;
import java.util.TreeMap;

public class SortedMapExample
{
    public static void main(String[] args)
    {
        SortedMap<Integer, String> sm =
                    new TreeMap<Integer, String>();
        sm.put(new Integer(2), "practice");
        sm.put(new Integer(3), "quiz");
        sm.put(new Integer(5), "code");
        sm.put(new Integer(4), "contribute");
        sm.put(new Integer(1), "geeksforgeeks");
        Set s = sm.entrySet();

        // Using iterator in SortedMap
        Iterator i = s.iterator();

        // Traversing map. Note that the traversal
        // produced sorted (by keys) output .
        while (i.hasNext())
        {
            Map.Entry m = (Map.Entry)i.next();

            int key = (Integer)m.getKey();
            String value = (String)m.getValue();

            System.out.println("Key : " + key +
                               "  value : " + value);
        }
    }
}
```

Run on IDE

Output:

```
Key : 1  value : geeksforgeeks
Key : 2  value : practice
Key : 3  value : quiz
```

```
Key : 4  value : contribute
Key : 5  value : code
```

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