package Collections.Maps;  
  
import java.util.\*;  
  
public class SortedMapDemo {  
 public static void main(String[] args) {  
 SortedMap<Integer,String> sortMap1=new TreeMap<>();  
 sortMap1.put(2,"Roy");  
 sortMap1.put(4,"Raj");  
 sortMap1.put(1,"Lawrence");  
 sortMap1.put(5,"Tekla");  
 sortMap1.put(6,"rohan");  
 sortMap1.put(3,"Jasmine");  
  
 int firstKey=sortMap1.firstKey();  
 int lastKey=sortMap1.lastKey();  
 System.*out*.println("firstKey:"+firstKey+" lastKey:"+lastKey);  
  
 Collection<String> values=sortMap1.values();  
 System.*out*.println(" values:"+values);  
  
 SortedMap<Integer,String> headMap= sortMap1.headMap(4);  
 SortedMap<Integer,String> tailMap= sortMap1.tailMap(4);  
 SortedMap<Integer,String> subMap= sortMap1.subMap(3,6);  
 System.*out*.println("headMap:"+headMap+" tailMap:"+tailMap+" subMap: "+subMap);  
  
 // key set  
 System.*out*.println("Key Set name ");  
 Set<Integer>names= sortMap1.keySet();  
 for (Integer name:names){  
 System.*out*.print(name+" ");  
 }  
 // entry set  
 System.*out*.println(" \n entrySet name and value");  
 Set<Map.Entry<Integer, String>> mappings= sortMap1.entrySet();  
 for (Map.Entry<Integer, String> mapping:mappings){  
 Integer name=mapping.getKey();  
 String value=mapping.getValue();  
 System.*out*.println("entrySet name: "+name+" entrySet value: "+value);  
 }

//refer unimpmented map functionalities in map programs  
  
 }  
}

C:\Users\Roystan\.jdks\openjdk-21.0.2\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2023.3.3\lib\idea\_rt.jar=61142:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2023.3.3\bin" -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -classpath C:\Users\Roystan\IdeaProjects\JavaWorkspace\out\production\JavaWorkspace Collections.Maps.SortedMapDemo

firstKey:1 lastKey:6

values:[Lawrence, Roy, Jasmine, Raj, Tekla, rohan]

headMap:{1=Lawrence, 2=Roy, 3=Jasmine} tailMap:{4=Raj, 5=Tekla, 6=rohan} subMap: {3=Jasmine, 4=Raj, 5=Tekla}

Key Set name

1 2 3 4 5 6

entrySet name and value

entrySet name: 1 entrySet value: Lawrence

entrySet name: 2 entrySet value: Roy

entrySet name: 3 entrySet value: Jasmine

entrySet name: 4 entrySet value: Raj

entrySet name: 5 entrySet value: Tekla

entrySet name: 6 entrySet value: rohan

Process finished with exit code 0

package Collections.Maps;  
  
import java.util.\*;  
  
public class NavigableMapDemo {  
 public static void main(String[] args) {  
 NavigableMap<Integer,String> navigabeMap1=new TreeMap<>();  
 navigabeMap1.put(2,"Roy");  
 navigabeMap1.put(4,"Raj");  
 navigabeMap1.put(1,"Lawrence");  
 navigabeMap1.put(5,"Tekla");  
 navigabeMap1.put(6,"rohan");  
 navigabeMap1.put(3,"Jasmine");  
  
 Map.Entry<Integer, String> firstEntry=navigabeMap1.firstEntry();  
 Map.Entry<Integer, String> lastEntry=navigabeMap1.lastEntry();  
 System.*out*.println("firstEntry:"+firstEntry+" lastEntry:"+lastEntry);  
  
 Map.Entry<Integer, String> lowerEntry=navigabeMap1.lowerEntry(3);  
 Map.Entry<Integer, String> floorEntry=navigabeMap1.floorEntry(3);  
 Map.Entry<Integer, String> ceilingEntry=navigabeMap1.ceilingEntry(3);  
 Map.Entry<Integer, String> higherEntry=navigabeMap1.higherEntry(3);  
 System.*out*.println("lowerEntry:"+lowerEntry+" floorEntry:"+floorEntry+" ceilingEntry:"+ceilingEntry+" higherEntry:"+higherEntry);  
  
 int lowerKey=navigabeMap1.lowerKey(3);  
 int ceilingKey=navigabeMap1.ceilingKey(3);  
 int floorKey=navigabeMap1.floorKey(3);  
 int higherKey=navigabeMap1.higherKey(3);  
 System.*out*.println("lowerKey:"+lowerKey+" ceilingKey:"+ceilingKey+" floorKey:"+floorKey+" higherKey:"+higherKey);  
  
 Collection<String> values=navigabeMap1.values();  
 System.*out*.println(" values:"+values);  
  
  
 NavigableMap<Integer,String> headMap= navigabeMap1.headMap(4,true);  
 NavigableMap<Integer,String> tailMap= navigabeMap1.tailMap(4,true);  
 NavigableMap<Integer,String> subMap= navigabeMap1.subMap(3,true,6,true);  
 System.*out*.println("headMap:"+headMap+" tailMap:"+tailMap+" subMap: "+subMap);  
  
 Map.Entry<Integer, String> pollFirstEntry=navigabeMap1.pollFirstEntry();  
 Map.Entry<Integer, String> pollLastEntry=navigabeMap1.pollLastEntry();  
 System.*out*.println("pollFirstEntry:"+pollFirstEntry+" pollLastEntry:"+pollLastEntry);  
  
  
 NavigableSet<Integer> descendingKeySet=navigabeMap1.descendingKeySet();  
 System.*out*.println("descendingKeySet: "+descendingKeySet);  
  
 NavigableMap<Integer,String>descendingMap=navigabeMap1.descendingMap();  
 System.*out*.println("descendingMap: "+descendingMap);  
  
 // key set  
 System.*out*.println("Key Set name ");  
 Set<Integer> names= navigabeMap1.keySet();  
 for (Integer name:names){  
 System.*out*.print(name+" ");  
 }  
 // entry set  
 System.*out*.println(" \n entrySet name and value");  
 Set<Map.Entry<Integer, String>> mappings= navigabeMap1.entrySet();  
 for (Map.Entry<Integer, String> mapping:mappings){  
 Integer name=mapping.getKey();  
 String value=mapping.getValue();  
 System.*out*.println("entrySet name: "+name+" entrySet value: "+value);  
 }

//for other uimplemented functions please refer sortedMap and Map programs  
 }  
}

C:\Users\Roystan\.jdks\openjdk-21.0.2\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2023.3.3\lib\idea\_rt.jar=58294:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2023.3.3\bin" -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -classpath C:\Users\Roystan\IdeaProjects\JavaWorkspace\out\production\JavaWorkspace Collections.Maps.NavigableMapDemo

firstEntry:1=Lawrence lastEntry:6=rohan

lowerEntry:2=Roy floorEntry:3=Jasmine ceilingEntry:3=Jasmine higherEntry:4=Raj

lowerKey:2 ceilingKey:3 floorKey:3 higherKey:4

values:[Lawrence, Roy, Jasmine, Raj, Tekla, rohan]

headMap:{1=Lawrence, 2=Roy, 3=Jasmine, 4=Raj} tailMap:{4=Raj, 5=Tekla, 6=rohan} subMap: {3=Jasmine, 4=Raj, 5=Tekla, 6=rohan}

pollFirstEntry:1=Lawrence pollLastEntry:6=rohan

descendingKeySet: [5, 4, 3, 2]

descendingMap: {5=Tekla, 4=Raj, 3=Jasmine, 2=Roy}

Key Set name

2 3 4 5

entrySet name and value

entrySet name: 2 entrySet value: Roy

entrySet name: 3 entrySet value: Jasmine

entrySet name: 4 entrySet value: Raj

entrySet name: 5 entrySet value: Tekla

Process finished with exit code 0