JBK1012-Collection

Q.)program to read all elements in ArrayList by using an iterator

```
import java.util.ArrayList;
import java.util.Iterator;
public class ArrayList_Demo1 {
	public static void main(String[] args) {
		ArrayList arrl = new ArrayList();
		// adding elements to the end0
		arrl.add("Pune");
		arrl.add("Mumbai");
		arrl.add("Aurangabad");
		arrl.add("Nagpur");
		Iterator<String> itr = arrl.iterator();
		while (itr.hasNext()) {
			System.out.println(itr.next());
		} }	}
```

Q.) program for display arraylist and its operation

```
import java.util.ArrayList;
public class ArrayList_Demo {
	public static void main(String[] args) {
		ArrayList  al = new ArrayList ();
	//add elements to the ArrayList
	al.add("JAVA");  al.add("C++");
	al.add("PERL");  al.add("PHP");
	System.out.println(al);
	//get elements by index
	System.out.println("Element at index 1: "+al.get(1));
	System.out.println("Does list contains JAVA?
"+al.contains("JAVA"));
	//add elements at a specific index
	al.add(2,"PLAY");
	System.out.println(al);
	System.out.println("Is arraylist empty? "+al.isEmpty());
	System.out.println("Index of PERL is "+al.indexOf("PERL"));
	System.out.println("Size of the arraylist is: "+al.size());
	 }		}
```

Q.)program for to add all elements of a list to ArrayList

```
import java.util.ArrayList;
import java.util.List;
```

```
public class ArrayList_Demo3 {
	public static void main(String[] args) {
		ArrayList arrl = new ArrayList();
		arrl.add("First");
		arrl.add("Second");
		arrl.add("Third");
		arrl.add("Random");
		System.out.println(" Before Actual ArrayList:" + arrl);
		List list = new ArrayList();
		list.add("one");
		list.add("two");
		arrl.addAll(list);
		System.out.println("\n After Copy ArrayList: " + arrl);
	}   }
```

Q.)program for to delete all elements from ArrayList

```
import java.util.ArrayList;
public class ArrayList_Demo4 {
	public static void main(String[] args) {
		ArrayList arrl = new ArrayList();
		arrl.add("Zero");
		arrl.add("First");
		arrl.add("Second");
		arrl.add("Third");
		arrl.add("Random");
		System.out.println(" Actual ArrayList:" + arrl);
		arrl.clear(); // this function delete all items from
arraylist
		System.out.println("\n After clear ArrayList:" + arrl);
	} }
```

Q.)program for to find does ArrayList contains all list elements or not

```
import java.util.ArrayList;
import java.util.List;
public class ArrayList_Demo5 {
	public static void main(String[] args) {
		ArrayList arrl = new ArrayList();
		arrl.add("First");
		arrl.add("Second");
		arrl.add("Third");
```

```
            arrl.add("Random");
            List list = new ArrayList();
            list.add("Second");
            list.add("Random");
        System.out.println(" Does ArrayList contains all list
elements?: "
                        + arrl.containsAll(list));
            list.add("one");
System.out.println("\n Does ArrayList contains all list
elements?: "
                        + arrl.containsAll(list));
        }   }
```

Q.) Program for to copy ArrayList into array

```
import java.util.ArrayList;

public class ArrayList_Demo6 {
        public static void main(String[] args) {
            ArrayList arrl = new ArrayList();
            arrl.add("Pune");   arrl.add("Mumbai");
            arrl.add("Delhi");   arrl.add("Nagpur");
            System.out.println(" Actual ArrayList:" + arrl);
            String[] strArr = new String[arrl.size()];
            arrl.toArray(strArr);
            System.out.println("\nCreated Array content:");
            for (String str : strArr) {
                System.out.println(str);
            }   }      }
```

Q.)Program for to get sub list from ArrayList

```
import java.util.ArrayList;
import java.util.List;

public class ArrayList_Demo7 {
        public static void main(String[] args) {
            ArrayList  arrl = new ArrayList();
            arrl.add("First");
            arrl.add("Second");
            arrl.add("Third");
            arrl.add("Random");
            arrl.add("Click");
            System.out.println(" Actual ArrayList:"+arrl);
```

```
            List list = arrl.subList(2, 4);
            System.out.println("\n Sub List: "+list);
      }    }
```

Q.)Program for to iterate HashSet element through iterator

```
import java.util.HashSet;
import java.util.Iterator;

public class HashSet_Demo2 {
      public static void main(String[] args) {
            HashSet hs = new HashSet();
            hs.add("Java");
            hs.add("By");
            hs.add("Kiran");
            Iterator itr = hs.iterator();
            while (itr.hasNext()) {
                  System.out.println(itr.next());
            }      }    }
```

Program for basic hashset operations

```
import java.util.HashSet;
public class HashSet_Demo1 {
      public static void main(String[] args) {
            HashSet hs = new HashSet();
            hs.add("Java");
            hs.add("By");
            hs.add("Kiran");
            System.out.println(hs);
      System.out.println(" HashSet is empty or not= " +
hs.isEmpty());
            hs.remove("Karvenagar");
            System.out.println(hs);
            System.out.println(" Size of HashSet= " + hs.size());
      System.out.println(" Does HashSet contains first element=
"+ hs.contains("Java"));
      }  }
```

program for compare two sets and retain elements which are same on both hashsets

```
import java.util.HashSet;
public class HashSet_Demo6 {
      public static void main(String[] args) {
            HashSet hs = new HashSet();
            hs.add("Java");
```

```
            hs.add("By");
            hs.add("Kiran");
            hs.add("karvenagar");
            hs.add("pune");
            System.out.println("First Hashset:= "+hs);
            HashSet subSet = new HashSet();
            subSet.add("Java");
            subSet.add("J2EE");
            subSet.add("Selenium");
            System.out.println("Second Hashset:= "+subSet);
            hs.retainAll(subSet);    //this function retain common
element from both hashset
            System.out.println("" +
                    "Common Hashset content from both:");
            System.out.println(hs);
        }     }
```

Program for Iterating through each key get corresponding value object

```
import java.util.HashMap;
import java.util.Set;

public class HashMap_Demo2 {
      public static void main(String[] args) {
      HashMap<String, String> hm = new HashMap<String,
String>();
            hm.put("first", "Java");
            hm.put("second", "By");
            hm.put("third", "Kiran");
            System.out.println(hm);
            Set<String> keys = hm.keySet();

            for (String key : keys) {
            System.out.println("Value of " + key + " is: " +
hm.get(key));
            }  }    }
```

Q.)Program for copy Map content to another HashMap

```
import java.util.HashMap;

public class HashMap_Demo1 {
      public static void main(String[] args) {
```

```
        HashMap<String, String> hm = new HashMap<String,
String>();
                hm.put("first", "Java");
        hm.put("second", "By");
        hm.put("third","Kiran");
        System.out.println(hm);
        HashMap<String, String> hm1 = new HashMap<String,
String>();
        hm1.put("c1", "JAVA");
        hm1.put("c2", "SELENIUM");
        hm.putAll(hm1);
        System.out.println(hm);
         } }
```

Q.) Simple program for Hashmap Demo

```
import java.io.FileOutputStream;
import java.util.HashMap;
public class HashMap_Demo {
        public static void main(String[] args) {
                //HashMap<K, V> hm = new HashMap();
                HashMap<String, String> hm = new HashMap<String,
String>(); //key and value both are in string type
                hm.put("one", "Java");
        hm.put("two", "By");
        hm.put("three","Kiran");
        System.out.println(hm);
        System.out.println("Value of second:= "+hm.get("two"));
//get element from hashmap using key
        System.out.println("Is HashMap empty:= "+hm.isEmpty());
//check hashmap is empty or not
        hm.remove("third");      //delete element from hasmap
        System.out.println(hm);
        System.out.println("Size of the HashMap:= "+hm.size());
//size of hashmap
         } }
```

Q.)Program for Comparable Demo

```
public class Student implements Comparable {
        int rollno;  String name;  int age;
        Student(int rollno, String name, int age) {
                this.rollno = rollno;
                this.name = name;
```

```
            this.age = age;
      }  public int compareTo(Object obj) {
            Student st = (Student) obj;
            if (age == st.age)
                  return 0;
            else if (age > st.age)
                  return 1;
            else
                  return -1;
      }        }

import java.util.ArrayList;
import java.util.Collections;
import java.util.Iterator;
public class Test {
      public static void main(String[] args) {
            ArrayList al = new ArrayList();
            al.add(new Student(101, "Kiran", 23));
            al.add(new Student(106, "Tomesh", 27));
            al.add(new Student(105, "Yogesh", 21));

            Collections.sort(al);
            Iterator itr = al.iterator();
            while (itr.hasNext()) {
                  Student st = (Student) itr.next();
      System.out.println(st.rollno + "  " + st.name + "  " + st.age);
            }        }    }
```

Program for Comparator Demo

```
public class Student {
      int rollno;
      String name;
      int age;
      Student(int rollno,String name,int age){
      this.rollno=rollno;
      this.name=name;
      this.age=age;
} }
import java.util.Comparator;
public class AgeComparer implements Comparator {
      @Override
      public int compare(Object o1, Object o2) {
```

```
            Student s1 = (Student) o1;
            Student s2 = (Student) o2;
            if (s1.age == s2.age)
                  return 0;
            else if (s1.age > s2.age)
                  return 1;
            else
                  return -1;
      } }
import java.util.Comparator;
public class NameComparer implements Comparator {
      @Override
      public int compare(Object o1, Object o2) {
            Student s1 = (Student) o1;
            Student s2 = (Student) o2;
            return s1.name.compareTo(s2.name);
      } }
import java.util.ArrayList;
import java.util.Collections;
import java.util.Iterator;
public class Test {
      public static void main(String[] args) {
            ArrayList al=new ArrayList();
            al.add(new Student(101,"Kiran",23));
            al.add(new Student(106,"Tomesh",27));
            al.add(new Student(105,"Yogesh",21));

            System.out.println("Sorting by Name...");
            Collections.sort(al,new NameComparer());
            Iterator itr=al.iterator();
            while(itr.hasNext()){
            Student st=(Student)itr.next();
            System.out.println(st.rollno+"  "+st.name+"  "+st.age);
            }  System.out.println("sorting by age...");
            Collections.sort(al,new AgeComparer());
            Iterator itr2=al.iterator();
            while(itr2.hasNext()){
            Student st=(Student)itr2.next();
            System.out.println(st.rollno+"  "+st.name+"  "+st.age);
            }  }  }
```