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1> Write a program to join two array lists.

Sol
package com.maurya.prashant;

import java.util.ArrayList;

public class Day4Ex1 {

    public static void main(String args[]) {

        ArrayList<String> ar1 = new ArrayList<String>();

        ar1.add("my");
        ar1.add("name");
        ar1.add("Prashant");
        ar1.add("maurya");

        ArrayList<String> ar2 = new ArrayList<String>();
        ar2.add("empID");
        ar2.add("12417");

        ar1.addAll(ar2);

        System.out.println(ar1);
    }

}

==

2)Write a program to iterate through a linked list from the
third position till the end and if the size of the list is
less than three then print that operation can't be performed.

```java
package com.maurya.prashant;

import java.util.LinkedList;

public class Day4Ex2 {

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        LinkedList<String> l1 = new LinkedList<String>();

        l1.addFirst("first");
        l1.addLast("last");
        l1.add("midle1");
        l1.add(1,"indexed");

        try {

            for (int i =0;i<5;i++) {
                System.out.println(l1.get(i));
            }

        }
        catch (OutOfMemoryError e) {
            // TODO: handle exception
            e.printStackTrace();
        }

    }

}
```

==

3)Write a program to sort HashMap by keys.
Sol

// 3)Write a program to sort HashMap by keys.

package com.maurya.prashant;

import java.util.HashMap;
import java.util.Map;
import java.util.TreeMap;

import javax.swing.text.html.HTMLDocument.Iterator;

public class Day4Ex3 {

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        {
            //implementation of HashMap
            HashMap<Integer, String> hm=new HashMap<Integer, String>();
            //addding keys and values to HashMap
            hm.put(23, "Yash");
            hm.put(17, "Arun");
            hm.put(15, "Swarit");
            hm.put(9, "Neelesh");
            Iterator <Integer> it = hm.keySet().iterator();
            System.out.println("Before Sorting");
            while(it.hasNext())
            {
            int key=(int)it.next();
            System.out.println("Roll no: "+key+"   name: "+hm.get(key));
            }
            System.out.println("\n");
            Map<Integer, String> map=new HashMap<Integer, String>();
            System.out.println("After Sorting");
            //using TreeMap constructor to sort the HashMap
            TreeMap<Integer,String> tm=new TreeMap<Integer,String> (hm);
            Iterator itr=tm.keySet().iterator();
            while(itr.hasNext())

```
                {
                int key=(int)itr.next();
                System.out.println("Roll no:  "+key+"     name:  "+hm.get(key));
                }
                }

        }

}
```

==

4)Write a program to get a list of names as String array and remove the duplicates
(case Sensitive) and sort the names (if the names are given in upper case and
lowercase then names starting with upper case letters takes precedence) and display
the names.
Hint: Use appropriate collection API

Sol
//4)Write a program to get a list of names as String array and
//remove the duplicates (case Sensitive) and sort the names
//(if the names are given in upper case and lowercase then names starting
//   with upper case letters takes precedence) and display the names.
//Hint: Use appropriate collection API

package com.maurya.prashant;

public class Day4ex4 {

        public static int removeDuplicate(String ar[],int n) {

                if(n == 0||n==1) {
                        return n;
                }

                String[] temp = new String[n];
```

```java
        int j =0;
        for(int i =0;i<n-1;i++)
        {
                if (ar[i]!=ar[i+1])
                {
                        temp[j++]=ar[i];
                }
        }
        temp[j++] = ar[n-1];
        for(int i=0;i<j;i++)
        {
                ar[i] = temp[i];
        }
        return j;
}

public static void main(String args[])
{
        String[] ar = {"asd","ASD","ZXS","qwx","tyv","Nmd","asd","Nmd"};

        String temp;

        for(int i =0;i<ar.length;i++)
        {
                for(int j=i+1;j<ar.length;j++)
                {

                        if(ar[i].compareTo(ar[j])>0)
                        {
                                temp = ar[i];
                                ar[i] = ar[j];
                                ar[j] = temp;
                        }
                }


        }

        int len =ar.length;
        len = removeDuplicate(ar, len);
```

```
            System.out.println("name in alphabetic order:");
            for(String a:ar)
            {
                    System.out.print(a+" ");
            }
        }

}
```

===

**5)Create an Employee class with employee id,name,salary and age as
its members. Sort the employee objects based on age using Comparable
interface. Sort the employee objects based on employee id and salary using
Comparator interface.**

```
package com.maurya.prashant;

import java.util.ArrayList;
import java.util.Collections;
import java.util.Comparator;

class Employee
{
        int empID;
        String name;
        float salary;
        int age;

        Employee(int emp,String name,float sal,int age) {
                // TODO Auto-generated constructor stub
                this.empID = emp;
                this.age = age;
                this.name = name;
                this.salary = sal;
        }
```

```java
}

class AgeComp implements Comparator<Employee>
{

        @Override
        public int compare(Employee arg0, Employee arg1) {
                // TODO Auto-generated method stub
                if(arg0.age==arg1.age)
                        return 0;

                else if(arg0.age>arg1.age)
                        return 1;
                else
                        return -1;

        }


}

class SalComp implements Comparator<Employee>
{


        @Override
        public int compare(Employee o1, Employee o2) {
                // TODO Auto-generated method stub

                if(o1.salary==o2.salary)
                        return 0;

                else if(o1.salary>o2.salary)
                        return 1;
                else
                        return -1;
        }
}
```

```java
public class Day4Ex5 {

    public static void main(String[] args) {
        // TODO Auto-generated method stub

        ArrayList<Employee> arl = new ArrayList<Employee>();

        arl.add(new Employee(12,"Raj Singh",12344,22));
        arl.add(new Employee(14,"Ravinda Singh",12234,24));
        arl.add(new Employee(16,"Kashi Singh",12674,21));
        arl.add(new Employee(17,"Sam Singh",11234,27));

        System.out.println("Sorting by age");

        Collections.sort(arl,new AgeComp());

        for(Employee e : arl)
        {
            System.out.println("Name "+ e.name +" age "+ e.age);
        }

        Collections.sort(arl, new SalComp());
        for(Employee e : arl)
        {
            System.out.println("Name "+ e.name +" salary "+ e.salary);
        }
    }

}
```

==