**1. PRODUCT**

Package com.company

Public class product {

String pname,pcode;  
 int price;  
 public String getpname()  
 {  
 return pname;  
 }  
public Product(String pname,String pcode,int price)  
{  
 this.pname=pname;  
 this.pcode=pcode;  
 this.price=price;  
}  
public Product()  
{  
  
}  
public void setpname(String pname)  
{  
 this.pname=pname;  
}  
public String getpcode()  
{  
 return pcode;  
}  
public void setpcode(String pcode)  
{  
 this.pcode=pcode;  
}  
public int getprice()  
{  
 return price;  
}  
public void setprice(int price)  
{  
 this.price=price;  
}  
public void display()  
{  
 System.*out*.println("pcode="+this.pcode);  
 System.*out*.println("pname="+this.pname);  
 System.*out*.println("price="+this.price);  
}

package com.company;  
  
public class EXP1 {  
  
 public static void main(String[] args) {  
 Product p1=new Product("Benz","car123",100000);  
 //p1.pcode="car123";  
 //p1.pname="Benz";  
 //p1.price=1000000;  
 System.*out*.println("\*\*\*Display-p1\*\*\*");  
 p1.display();  
 Product p2=new Product("jagwar","car 426",25000);  
 System.*out*.println("\*\*\*Display=p2\*\*\*");  
 p2.display();  
 Product p3=new Product("maruthi","car 800",500000);  
 System.*out*.println("\*\*\*Display-p3\*\*\*");  
 p3.display();  
 Product p=new Product();  
 //Product p=p3.getprice()<(p1.price<p2.price? p1.price<p2.price?p3:(p1.price<p2.price?p1:p2));  
 if(p1.price<p2.price&& p1.price<p3.price)  
 p=p1;  
 else if(p2.price<p3.price)  
 p=p2;  
 System.*out*.println("\n\*\*\*Displaying product with lowest price\*\*");  
 p.display();  
 }  
}

**2. ADDITION OF 2 MATRIX**

package com.company;  
  
import java.util.Scanner;  
  
public class Main{  
  
 public static void main(String[] args) {  
 int row,col,i,j;  
 Scanner s=new Scanner(System.*in*);  
 System.*out*.println("Enter the number of rows:");  
 row=s.nextInt();  
 System.*out*.println("Enter the number of columns:");  
 col=s.nextInt();  
 int mat1[][]=new int[3][3];  
 int mat2[][]=new int[3][3];  
 int res[][] =new int[3][3];  
 System.*out*.println("Enter the elements of matrix 1:");  
 for(i=0;i<row;i++)  
 {  
 for(j=0;j<col;j++)  
 mat1[i][j]=s.nextInt();  
 System.*out*.println();  
 }  
 System.*out*.println("Enter the elements of matrix 2");  
 for(i=0;i<row;i++)  
 {  
 for(j=0;j<col;j++)  
 mat2[i][j]=s.nextInt();  
 System.*out*.println();  
 }  
 for(i=0;i<row;i++)  
 for(j=0;j<col;j++)  
 res[i][j]=mat1[i][j]+mat2[i][j];  
 System.*out*.println("sum of matrices:");  
 for(i=0;i<row;i++) {  
 for (j = 0; j < col; j++)  
 System.*out*.print  
 (res[i][j] +"\t");  
 System.*out*.println();  
 }  
  
 }  
}

**3. SYMMETRIC MATRIX OR NOT**

package com.company;  
  
import java.util.Scanner;  
  
public class Main {  
  
 public static void main(String[] args) {  
 Scanner s = new Scanner(System.*in*);  
 System.*out*.println("Enter the number of rows");  
 int rows = s.nextInt();  
 System.*out*.println("Enter the number of columns");  
 int cols = s.nextInt();  
 int matrix[][] = new int[rows][cols];  
 System.*out*.println("Enter the elements");  
 for (int i = 0; i < rows; i++)  
 for (int j = 0; j < cols; j++)  
 matrix[i][j] = s.nextInt();  
 s.close();  
 System.*out*.println("Printing the input matrix");  
 for (int i = 0; i < rows; i++) {  
 for (int j = 0; j < cols; j++)  
 System.*out*.print(matrix[i][j] + "\t");  
 System.*out*.println();  
 }  
 if (rows != cols)  
 System.*out*.println("The given matrix is not symmetric");  
 else {  
 boolean symmetric = true;  
 for (int i = 0; i < rows; i++)  
 for (int j = 0; j < cols; j++)  
 if (matrix[i][j] != matrix[j][i]) {  
 symmetric = false;  
 break;  
 }  
 if (symmetric) {  
 System.*out*.println("The given matrix is symmetric");  
 } else {  
 System.*out*.println("The given matrix is not symmetric");  
 }  
 }  
 }  
}

**4. INNER CLASS**

package com.company;  
  
public class CPU {  
 Double price;  
 class Processor  
 {  
 Double cores;  
 String manufactures;  
 Double getcache()  
 {  
 return 4.3;  
 }  
 }  
 protected class RAM  
 {  
 Double memory;  
 String manufacturer;  
 Double getclockspeed()  
 {  
 return 5.5;  
 }  
 }  
}

main.java

package com.company;  
  
public class Main {  
  
 public static void main(String[] args) {  
 CPU c1=new CPU();  
 CPU.Processor p1=c1.new Processor();  
 CPU.RAM ram=c1.new RAM();  
 System.*out*.println("Processor\_cache="+p1.getcache());  
 System.*out*.println("Ram\_clock\_speed="+ram.getclockspeed());  
 }  
}

**5. STRING SORTING**

package co1;  
  
import java.util.Arrays;  
import java.util.Scanner;  
  
public class stringsort  
{  
public static void main(String[] args)  
{  
        int count = 0;  
        String temp;  
        Scanner s = new Scanner(System.in);  
        System.out.println("enter no of strings to be sorted");  
        count = s.nextInt();  
        String[] str\_list = new String[count];  
        Scanner s1 = new Scanner(System.in);  
        System.out.println("enter your strings");  
        for (int i = 0; i < count; i++)  
            str\_list[i] = s1.nextLine();  
        System.out.println("choose 1 or 2 from the menu below");  
        System.out.println("1.inbuilt\_Sort()");  
        System.out.println("2.user\_defined\_sorting\_logic()");  
        int choice;  
        choice = s.nextInt();  
        switch (choice)  
        {  
            case 1:  
                Arrays.sort(str\_list);  
                System.out.print(Arrays.toString(str\_list));  
                break;  
            case 2:  
                for (int i = 0; i < count - 1;i++)  
            {  
                for (int j = i + 1; j < str\_list.length; j++)  
                {  
                    if (str\_list[i].compareTo(str\_list[j]) > 0 )  
                    {  
                        temp = str\_list[i];  
                        str\_list[i] = str\_list[j];  
                        str\_list[j] = temp;  
                    }  
                }  
                    System.out.println(Arrays.toString(str\_list));  
                    break;  
  
             }  
        }  
  
}          
}

**6. SEARCHING (BINARY AND LINEAR SEARCH)**

package co1;  
  
import java.util.Scanner;  
  
public class search {  
  
   public static void main(String[] args) {  
   Scanner s =new Scanner(System.in);  
   System.out.println("1.LINEAR SEARCH");  
   System.out.println("2.BINARY SEARCH");  
   System.out.println("Enter your choice");  
   int ch=s.nextInt();  
   if(ch==1) {  
       int arr[] = new int[10];  
       int i, num, n, c = 0,pos=0;  
       Scanner scan = new Scanner(System.in);  
       System.out.println("Enter the array size");  
       n = scan.nextInt();  
       System.out.println("Enter array elements");  
       for (i = 0; i < n; i++) {  
           arr[i] = scan.nextInt();  
       }  
       System.out.println("Enter the number of items to be searched");  
       num = scan.nextInt();  
       for (i = 0; i < n; i++) {  
           if (arr[i] == num) {  
               c = 1;  
               pos = i + 1;  
               break;  
           }  
       }  
       if (c == 0) {  
           System.out.println("Number not found");  
       } else {  
           System.out.println(num + "Found at position" + pos);  
       }  
   }  
   else if(ch==2) {  
       int n, i, search, first, last, middle;  
       int[] arr = new int[50];  
       Scanner scan = new Scanner(System.in);  
       System.out.println("Enter number of elements");  
       n = scan.nextInt();  
       System.out.println("Enter elements in sorted order");  
       for (i = 0; i < n; i++) {  
           arr[i] = scan.nextInt();  
       }  
       System.out.println("enter the number to be searched");  
       search = scan.nextInt();  
       scan.close();  
       first = 0;  
       last = n - 1;  
       middle = (first + last) / 2;  
       while (first <= last) {  
           if (arr[middle] < search) {  
               first = middle + 1;  
           } else if (arr[middle] == search) {  
               System.out.println(search + "found at location" + (middle+1));  
               break;  
           }  
  
        else  
       {  
           last = middle - 1;  
       }  
       middle = (first + last) / 2;  
   }  
  
       while(first > last){  
           if(first>last){  
  
               System.out.println("found..!"+search+"is present");  
  
           }  
       }  
   }  
   }  
}

**7. OVERLOAD FUNCTION**

package co1;  
import java.util.Scanner;  
public class Overloadshapearea {  
    void calcarea(float r) {  
        System.out.println("Area of square" + r \* r);  
    }  
  
    void calcarea(float x, float y) {  
        System.out.println("Area of rectangle" + x \* y);  
  
    }  
  
    void calcarea(double r) {  
        double area=3.14\*r\*r;  
        System.out.println("Area of circle" + area);  
    }  
  
  
    public static void main(String[] args) {  
        Overloadshapearea obj = new Overloadshapearea ();  
        System.out.println("Enter side of square");  
        Scanner sc = new Scanner(System.in);  
        float s1=sc.nextFloat();  
        obj.calcarea(s1);  
        System.out.println("Enter length of rectangle");  
        Scanner sc1 = new Scanner(System.in);  
        float side1 = sc1.nextFloat();  
        System.out.println("Enter breadth of rectangle");  
        Scanner sc2 = new Scanner(System.in);  
        float side2 = sc2.nextFloat();  
  
        obj.calcarea(side1, side2);  
        System.out.println("Enter radius of circle");  
        Scanner s = new Scanner(System.in);  
        double rad = s.nextDouble();  
        obj.calcarea(rad);  
    }  
}

**8. ARRAY OF OBJECT**

**9. SINGLE INHERITANCE**

package com.company;  
import java.util.Scanner;  
public class Main  
{  
 public static void main(String[] args) {  
 System.*out*.println("enter number of teachers :");  
 Scanner sc = new Scanner(System.*in*);  
 int n = sc.nextInt();  
 System.*out*.println("enter details of teacher :");  
 Teacher[] teacher;  
 teacher = new Teacher[n];  
 int tid;  
 String dept, name;  
 float salary;  
 String address;  
 String subject;  
 for (int i = 0; i < n; i++) {  
 System.*out*.println("enter" + i + " teacher details:");  
 System.*out*.println("enter teacher id :");  
 tid = sc.nextInt();  
 System.*out*.println("enter teacher name :");  
 Scanner s = new Scanner(System.*in*);  
 name = s.nextLine();  
 System.*out*.println("enter salary :");  
 salary = sc.nextFloat();  
 System.*out*.println("enter address : ");  
 address = s.nextLine();  
 System.*out*.println(" enter department:");  
 dept = s.nextLine();  
 System.*out*.println("enter subject:");  
 subject = sc.next();  
 teacher[i] = new Teacher(tid, name, salary, address, dept, subject);  
  
  
 }  
 System.*out*.println("teacher details are:");  
 for (Teacher x : teacher) {  
 x.display();  
 System.*out*.println();  
 }  
 }  
}

package com.company;  
  
import com.company.EmployeeT;  
  
public class Teacher extends EmployeeT {  
 String department;  
 String subject;  
  
 Teacher(int empid, String name, float salary, String address, String department, String subject) {  
 super(empid, name, salary, address);  
 this.department = department;  
 this.subject = subject;  
 }  
  
 public void display() {  
 System.*out*.println("teacher id:" + empid);  
 System.*out*.println("teacher name:" + name);  
 System.*out*.println("teacher salary:" + salary);  
 System.*out*.println("teacher address:" + address);  
 System.*out*.println("teacher department :" + department);  
 System.*out*.println("teacher subject :" + subject);  
  
 }  
  
}

package com.company;  
  
public class EmployeeT {  
 int empid;  
 String name;  
 float salary;  
 String address;  
 EmployeeT()  
 {}  
 EmployeeT(int empid,String name,float salary,String address)  
 {this.empid=empid;  
 this.name=name;  
 this.salary=salary;  
 this.address=address;  
 }}

**10. MULTIPLE INHERITANCE**

**11. MULTILEVEL INHERITANCE**

package com.company;  
  
public class Teacher extends Employee{  
 String subject,Department;  
 int teacherid;  
 public Teacher(String n,String g,String addr,int a,int eid,String ename,String qual,int sal,String sub,String dept,int tid) {  
 super(n, g, addr, a, eid, ename, qual, sal);  
 subject = sub;  
 Department = dept;  
 teacherid = tid;  
  
  
 }  
 public void displayT()  
 {super.display\_Employee();  
 System.*out*.println("teacherid"+teacherid);  
 System.*out*.println("subject"+subject);  
 System.*out*.println("department"+Department);  
  
 }  
}

package com.company;  
  
public class Employee extends Person{  
 int empid,salary;  
 String companyname,qualif;  
 public Employee(){}  
 public Employee(String n,String g,String addr,int a,int eid,String ename,String qual,int sal) {  
 super(n, g, addr, a);  
 empid = eid;  
 companyname = ename;  
 qualif = qual;  
 salary = sal;  
 }  
  
  
 public void display\_Employee() {  
 super.display\_person();  
 System.*out*.println("empid"+ empid);  
  
 System.*out*.println("companyname"+ companyname);  
 System.*out*.println("qualification"+ qualif);  
 System.*out*.println("salary"+ salary);  
  
  
  
  
 }  
}

package com.company;  
  
public class Person {  
 String name,gender ,address;  
  
 protected int age;  
 public Person()  
 {}  
  
  
 public Person(String n, String g, String addr, int a) {  
 this.name = n;  
 this.gender = g;  
 this.address = addr;  
 this.age = a;  
  
 }  
 public void display\_person() {  
 System.*out*.println("name" + name);  
 System.*out*.println("gender" + gender);  
 System.*out*.println("address" + address);  
 System.*out*.println("age" + age);  
 }}

package com.company;  
  
import java.util.Scanner;  
  
public class Main {  
  
 public static void main(String[] args) {  
 // write your code here  
 System.*out*.println("enter number of teacher");  
 Scanner sc = new Scanner(System.*in*);  
 Scanner s = new Scanner(System.*in*);  
  
 int n = s.nextInt();  
 Teacher[] teachers = new Teacher[n];  
  
 for (int i = 0; i < n; i++) {  
 System.*out*.println("enter name of teacher");  
 String name = sc.nextLine();  
 System.*out*.println("enter gender of teacher");  
 String gen = sc.nextLine();  
 System.*out*.println("enter address of teacher");  
 String addr = sc.nextLine();  
 System.*out*.println("enter age of teacher");  
 int age = s.nextInt();  
 System.*out*.println("enter empid of teacher");  
 int eid = s.nextInt();  
 System.*out*.println("enter company name ");  
 String cn = sc.nextLine();  
 System.*out*.println("enter qualification of teacher");  
 String quali = sc.nextLine();  
 System.*out*.println("enter salary of teacher");  
 int sal = s.nextInt();  
 System.*out*.println("enter teacherid");  
 int tid = s.nextInt();  
 System.*out*.println("enter subject of teacher");  
 String sub = sc.nextLine();  
 System.*out*.println("enter dept of teacher");  
 String dept = sc.nextLine();  
 Teacher t = new Teacher(name, gen, addr, age, eid, name, quali, sal, sub, dept, tid);  
 teachers[i] = t;  
 }  
 for (Teacher t : teachers) {  
 t.displayT();  
  
  
 }  
 }}

**12. INTERFACE**

package com.company;  
  
interface student{  
 int *score*=10;  
 void displayscore();  
 }  
 interface sports{  
 int *score*=25;  
 void displaysportscore();  
 }  
  
public class Result implements student,sports{  
 public void displayscore()  
 {  
 System.*out*.println("Academic score is"+student.*score*);  
  
 }  
 public void displaysportscore()  
 {  
 System.*out*.println("Sports score is"+sports.*score*);  
 }  
  
  
}

package com.company;  
  
public class Main {  
  
 public static void main(String[] args) {  
 Result r=new Result();  
 r.displayscore();  
 r.displaysportscore();  
 }  
}

**13. THREAD**

package co1;  
  
class Main{  
    public static void main(String [] args)  
    {  
        fThread ft=new fThread();  
        EvenRangeThread ev=new EvenRangeThread();  
        Thread t1=new Thread(ft);  
        Thread t2=new Thread(ev);  
        t1.start();  
        t2.start();  
    }  
    }

evenrange

package co1;  
  
class EvenRangeThread implements Runnable{  
    @Override  
    public void run() {  
int a=2,b=10;  
for(int k=a;k<=b;k=k+2)  
{  
    System.out.println("evenrange thread\_\_"+k);  
  
}  
    }}

fthread

package co1;  
  
public class fThread implements Runnable {  
    @Override  
    public void run() {  
        int a=0,b=1,c=0;  
        System.out.println("fibThread \_\_"+a);  
        System.out.println("fibThread\_\_"+b);  
        for(int h=1;h<7;h++)  
        {c=a+b;  
            System.out.println("fibThread\_\_"+c);  
            a=b;  
            b=c;  
      }}}

**14. EXCEPTION HANDLING**

package co1;  
  
import java.util.Scanner;  
class usernameException extends Exception {  
    public usernameException(String msg)  
    {super(msg);}  
  
}  
class passwordException extends Exception {  
    public passwordException(String msg)  
    {  
        super(msg);  
  
    }  
}  
public class checklogincredential {  
    public static void main(String [] args)  
    {  
        Scanner s=new Scanner(System.in);  
        String username,password;  
        System.out.println("enter  username" );  
        username=s.nextLine();  
        System.out.println("enter password");  
        password=s.nextLine();  
        int length=username.length();  
        try {  
            if (length < 6)  
                throw new usernameException("username must be greater than 6 characters");  
            else if (!password.equals("hello"))  
                throw new passwordException("incorrect passoword \n type correct password");  
            else  
                System.out.println("login successfull");  
        }   catch(usernameException  u)  
        {  
                    u.printStackTrace();}  
                    catch(passwordException p)  
                {  
                    p.printStackTrace();  
                }  
                finally  {  
                    System.out.println("finally statement is  executed");  
                }  
  
            }  
  
        }

**15. REMOVE ELEMENTS FROM LINKED LIST AND ADD ELEMENTS**

package co1;  
  
import java.io.\*;  
import java.util.LinkedList;  
  
public class Removell {  
  
    public static void main(String[] args) {  
     LinkedList <String> list=new LinkedList <>();  
      list.add("good ");  
        list.add("morning ");  
        list.add("have");  
        list.add("a ");  
        list.add("nice ");  
        list.add("day ");  
        System.out.println("Orginal linked list"+list);  
        list.clear();  
        System.out.println("List after Removing elements"+list);  
        list.add("looks ");  
        list.add("good ");  
        System.out.println("After adding elements to empty list"+list);  
    }  
}

**16. ARITHMETIC OPERATION**

package com.company;  
import org.Calc.\*;  
import java.util.Scanner;  
public class Main {  
 public static void main(String[] args) {  
 // write your code here  
 System.*out*.println("enter 2 numbers");  
 Scanner sc = new Scanner(System.*in*);  
 int a = sc.nextInt();  
 int b = sc.nextInt();  
 Add ad = new Add(a, b);  
 System.*out*.println("Addition" + ad.add());  
 Sub s = new Sub(a, b);  
 System.*out*.println("Subtraction " + s.sub());  
 Mult m = new Mult(a, b);  
 System.*out*.println("product" + m.mult());  
 Div d = new Div(a, b);  
 System.*out*.println("quotient" + a / b);  
 }  
}

add

package org.Calc;  
public class Add {  
 private int x, y;  
  
 public Add(int a, int b) {  
 x = a;  
 y = b;  
 }  
  
 public int add() {  
 return x + y;  
  
 }  
}

sub

package org.Calc;  
  
public class Sub {  
 private int x,y;  
 public Sub(int a,int b)  
 {  
 x=a;y=b;  
  
 }  
 public int sub()  
 {  
 return x-y;  
 }  
}

mult

package org.Calc;  
  
public class Mult {  
 private int x, y;  
  
 public Mult(int a, int b) {  
 x = a;  
 y = b;  
  
 }  
  
 public int mult() {  
 return x \* y;  
 }  
}

div

package org.Calc;  
  
public class Div {  
 private int x,y;  
 public Div(int a,int b)  
 {  
 x=a;y=b;  
  
 }  
 public int div()  
 {  
 return x/y;  
 }  
}

**17. GRAPHICS**

package com.company;  
import org.shape.\*;  
import java.util.\*;  
  
  
public class Main {  
 public static void main(String []args)  
 {  
 Scanner sc=new Scanner(System.*in*);  
 System.*out*.println("enter side of square");  
 int s=sc.nextInt();  
 Square sq=new Square(s);  
 System.*out*.println("area of square is"+sq.area());  
 System.*out*.println("enter radius of circle");  
 int r=sc.nextInt();  
 Circle c1=new Circle(r);  
 System.*out*.println("area of circle"+ c1.area());  
 System.*out*.println("enter side1 of triangle");  
 int s1=sc.nextInt();  
 System.*out*.println("enter side2 of triangle");  
 int s2=sc.nextInt();  
 System.*out*.println("enter side3 of square");  
 int s3=sc.nextInt();  
 triangle t=new triangle(s1,s2,s3);  
 System.*out*.println("area of triangle is"+t.area());  
 }}

package org.shape;  
  
public class Circle {  
 private int radius;  
 public Circle(int r)  
 {  
 radius =r;  
  
 }  
 public double area() {  
 return (3.14 \* radius \* radius);  
 }}

package org.shape;  
public class triangle {  
private int side1,side2,side3;  
public triangle(int s1,int s2,int s3)  
{  
 side1=s1;  
 side2=s2;  
 side3=s3;  
  
}public double area()  
 {  
 double s=(side1+side2+side3)/2;  
 double a=Math.*sqrt*((s-side1)+(s-side2)+(s-side3));  
 return a;  
  
 }  
}

package org.shape;  
public class Square  
{private int side;  
 public Square(int s)  
 {  
 side=s;  
  
 }  
public int area()  
{return (side\*side);  
}}

**18. DIRECTORIES**

package com.company;  
import java.io.File;  
  
public class Main {  
 public static void recursievprint(File [] arr,int index,int level)  
 {if(index==arr.length)  
 return;  
 for(int i=0;i<level;i++)  
 System.*out*.println("\t");  
 if(arr[index].isFile())  
 System.*out*.println(arr[index].getName());  
  
else if(arr[index].isDirectory())  
 {  
 System.*out*.println("[" + arr[index].getName() + "]");  
 *recursievprint*(arr[index].listFiles(),0,(level+1));  
 } *recursievprint*(arr, ++index, level);  
 }  
 public static void main(String [] args) {  
 String maindirpath="C:\\Anitta";  
 File maindir=new File(maindirpath);  
 if(maindir.exists()&&maindir.isDirectory())  
 {  
 File arr[]=maindir.listFiles();  
 System.*out*.println("\*\*\*\*\*");  
 System.*out*.println("files from main directory :"+maindir);  
 System.*out*.println("\*\*\*\*");  
 *recursievprint*(arr,0,0);  
 }  
 }}

**19. FORMATTING**

package com.company;  
import java.util.\*;  
interface Billgen {  
 int calculate();  
}  
public class productB implements Billgen {  
 public String name;  
 public int prodid, quantity, unitprice, total;  
  
 productB() {  
 }  
  
 public productB(String n, int p, int q, int u) {  
 name = n;  
 prodid = p;  
 quantity = q;  
 unitprice = u;  
  
  
 }  
  
 public int calculate() {  
 total = quantity \* unitprice;  
 return total;  
 }  
}

import com.company.productB;  
  
import java.util.Date;  
import java.util.Scanner;  
  
public class Main {  
 public static void main(String [] args)  
 {  
 productB[][] order;  
 System.*out*.println("enter number of orders");  
 Scanner sc=new Scanner(System.*in*);  
 int n=sc.nextInt();  
 order= new productB[n][];  
 for(int i=0;i<n;i++)  
 {System.*out*.println("enter number of products for order"+i);  
 int m=sc.nextInt();  
 order[i]=new productB[m];  
 for(int j=0;j<m;j++)  
 {System.*out*.println("enter product"+j+"name");  
 String a=sc.next();  
 System.*out*.println("enter product id");  
 int b=sc.nextInt();  
 System.*out*.println("enter product quantity");  
 int c=sc.nextInt();  
 System.*out*.println("enter product unit price");  
 int d=sc.nextInt();  
 productB pb=new productB(a,b,c,d);  
 order[i][j]=pb;  
 order[i][j].total=order[i][j].calculate();  
  
 }  
 }  
 for(int i=0;i<n;i++)  
 {int sum=0;  
 System.*out*.println("órder number "+(i+1));  
 Date date=java.util.Calendar.*getInstance*().getTime();  
 System.*out*.println(date);  
 System.*out*.println("\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_");  
 System.*out*.printf("%5s %20s %25s %10s %10s","prodid","name","quantity","unit price" ,"total");  
 System.*out*.println();  
 System.*out*.println("\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_");  
 for(int j=0;j<order[i].length;j++) {  
 System.*out*.printf("%5s %20s %25s %10s %10s" , order[i][j].prodid ,order[i][j].name , order[i][j].quantity , order[i][j].unitprice , order[i][j].total);  
 System.*out*.println();  
 }  
  
 System.*out*.println("\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_");  
for(int k=0;k<order[i].length;k++)  
 sum=sum+order[i][k].total;  
System.*out*.println("net amount:"+sum);  
 System.*out*.println("\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_");  
 }}}  
  
  
**20. SOCKET (CLIENT, SERVER)**

package com.company;  
  
import java.io.IOException;  
import java.net.DatagramPacket;  
import java.net.DatagramSocket;  
import java.net.InetAddress;  
import java.net.SocketException;  
  
  
public class Server\_udp {  
  
 public static void main(String[] args) throws IOException {  
  
 DatagramSocket ds = new DatagramSocket(1234);  
 byte[] receive = new byte[65535];  
 DatagramPacket dpreceive = null;  
 while (true) {  
 dpreceive = new DatagramPacket(receive, receive.length);  
 ds.receive(dpreceive);  
 System.*out*.println("client-" + *data*(receive));  
 if (*data*(receive).toString().equals("bye")) {  
 System.*out*.println("client sent bye...exiting");  
 break;  
  
 }  
 receive = new byte[65535];  
  
 }  
  
  
 }  
  
 public static StringBuilder data(byte []a) {  
 if (a == null)  
 return null;  
 StringBuilder ret = new StringBuilder();  
 int i = 0;  
 while (a[i] != 0) {ret.append((char)a[i]);  
 i++;  
  
  
 }  
 return ret;  
 }  
}  
  
  
  
  
 // write your code here

package com.company;  
  
import java.io.IOException;  
import java.net.DatagramPacket;  
import java.net.DatagramSocket;  
import java.net.InetAddress;  
import java.util.Scanner;  
  
public class Client\_udp {  
 public static void main(String [] args)throws IOException{  
 Scanner sc=new Scanner(System.*in*);  
 DatagramSocket ds =new DatagramSocket();  
 InetAddress ip= InetAddress.*getLocalHost*();  
 byte buf[]=null;  
 while(true)  
 {  
 String inp=sc.nextLine();  
 buf=inp.getBytes();  
 DatagramPacket dpsend=new DatagramPacket(buf,buf.length,ip,1234);  
 ds.send(dpsend);  
 if(inp.equals("bye"))  
 break;  
  
 }  
  
  
  
 }  
}

Single Inheritance

package com.company;  
  
import java.util.Scanner;  
  
public class Main {  
  
 public static void main(String[] args) {  
 // write your code here  
 System.*out*.println("enter number of teachers");  
 Scanner sc = new Scanner(System.*in*);  
 int n = sc.nextInt();  
 System.*out*.println("enter details of teacher");  
 Teacher[] teacher;  
 teacher = new Teacher[n];  
 int id;  
 String dept, name;  
 float salary;  
 String address;  
 String subject;  
 for (int i = 0; i < n; i++) {  
 System.*out*.println("enter" + i + " teacher details");  
 System.*out*.println("enter teacher id");  
 id = sc.nextInt();  
 System.*out*.println("enter teacher name ");  
 Scanner s = new Scanner(System.*in*);  
 name = s.nextLine();  
 System.*out*.println("enter salary");  
 salary = sc.nextFloat();  
 System.*out*.println("enter address ");  
 address = s.nextLine();  
 System.*out*.println(" enter department");  
 dept = s.nextLine();  
 System.*out*.println("enter subject");  
 subject = sc.next();  
 teacher[i] = new Teacher(id, name, salary, address, dept, subject);  
  
  
 }  
 System.*out*.println("teacher details are");  
 for (Teacher x : teacher) {  
 x.display();  
 }  
 System.*out*.println();  
 }  
}

EmployeeT

package com.company;  
  
public class EmployeeT {  
 int empid;  
 String name;  
 float salary;  
 String address;  
 EmployeeT()  
 {}  
 EmployeeT(int empid,String name,float salary,String address)  
 {  
 this.empid=empid;  
 this.name=name;  
 this.salary=salary;  
 this.address=address;  
 }}

Teacher

package com.company;  
import com.company.EmployeeT;  
  
public class Teacher extends EmployeeT {  
 String department;  
 String subject;  
  
 Teacher(int empid, String name, float salary, String address, String department, String subject) {  
 super(empid, name, salary, address);  
 this.department = department;  
 this.subject = subject;  
 }  
  
 public void display() {  
 System.*out*.println("teacher id" + empid);  
 System.*out*.println("teacher name" + name);  
 System.*out*.println("teacher salary" + salary);  
 System.*out*.println("teacher address" + address);  
 System.*out*.println("teacher department " + department);  
 System.*out*.println("teacher subject " + subject);  
  
 }  
  
}

Multilevel Inheritance

package com.company;  
  
public class Teacher extends Employee{  
 String subject,Department;  
 int teacherid;  
 public Teacher(String n,String g,String addr,int a,int eid,String ename,String qual,int sal,String sub,String dept,int tid) {  
 super(n, g, addr, a, eid, ename, qual, sal);  
 subject = sub;  
 Department = dept;  
 teacherid = tid;  
  
  
 }  
 public void displayT()  
 {super.display\_Employee();  
 System.*out*.println("teacherid"+teacherid);  
 System.*out*.println("subject"+subject);  
 System.*out*.println("department"+Department);  
  
 }  
}

package com.company;  
  
public class Employee extends Person{  
 int empid,salary;  
 String companyname,qualif;  
 public Employee(){}  
 public Employee(String n,String g,String addr,int a,int eid,String ename,String qual,int sal) {  
 super(n, g, addr, a);  
 empid = eid;  
 companyname = ename;  
 qualif = qual;  
 salary = sal;  
 }  
  
  
 public void display\_Employee() {  
 super.display\_person();  
 System.*out*.println("empid"+ empid);  
  
 System.*out*.println("companyname"+ companyname);  
 System.*out*.println("qualification"+ qualif);  
 System.*out*.println("salary"+ salary);  
  
  
  
  
 }  
}

package com.company;  
  
public class Person {  
 String name,gender ,address;  
  
 protected int age;  
 public Person()  
 {}  
  
  
 public Person(String n, String g, String addr, int a) {  
 this.name = n;  
 this.gender = g;  
 this.address = addr;  
 this.age = a;  
  
 }  
 public void display\_person() {  
 System.*out*.println("name" + name);  
 System.*out*.println("gender" + gender);  
 System.*out*.println("address" + address);  
 System.*out*.println("age" + age);  
 }}

package com.company;  
  
import java.util.Scanner;  
  
public class Main {  
  
 public static void main(String[] args) {  
 // write your code here  
 System.*out*.println("enter number of teacher");  
 Scanner sc = new Scanner(System.*in*);  
 Scanner s = new Scanner(System.*in*);  
  
 int n = s.nextInt();  
 Teacher[] teachers = new Teacher[n];  
  
 for (int i = 0; i < n; i++) {  
 System.*out*.println("enter name of teacher");  
 String name = sc.nextLine();  
 System.*out*.println("enter gender of teacher");  
 String gen = sc.nextLine();  
 System.*out*.println("enter address of teacher");  
 String addr = sc.nextLine();  
 System.*out*.println("enter age of teacher");  
 int age = s.nextInt();  
 System.*out*.println("enter empid of teacher");  
 int eid = s.nextInt();  
 System.*out*.println("enter company name ");  
 String cn = sc.nextLine();  
 System.*out*.println("enter qualification of teacher");  
 String quali = sc.nextLine();  
 System.*out*.println("enter salary of teacher");  
 int sal = s.nextInt();  
 System.*out*.println("enter teacherid");  
 int tid = s.nextInt();  
 System.*out*.println("enter subject of teacher");  
 String sub = sc.nextLine();  
 System.*out*.println("enter dept of teacher");  
 String dept = sc.nextLine();  
 Teacher t = new Teacher(name, gen, addr, age, eid, name, quali, sal, sub, dept, tid);  
 teachers[i] = t;  
 }  
 for (Teacher t : teachers) {  
 t.displayT();  
  
  
 }  
 }}