

Program10:**Aim: Area of different shapes using overloaded functions****Source Code:**

```
import java.util.Scanner;
public class shapes {
    // int a1,b1,c1;
    // shapes(int l,int b, int h){
    //     a1=l;
    //     b1=b;
    //     c1=h;
    // }

    void area(int r1){
        double Area_val = 3.14*r1*r1;
        System.out.println("\nArea of Circle is Radius "+r1+" = "+Area_val);
    }
    void area(int a1,int b1){
        int Area_val = a1*b1;
        System.out.println("\nArea of Rectangle is with dimensions "+a1+" X "+b1+" = "+Area_val);
    }
    void area(int a1,int b1,int c1){
        int Area_val = a1*b1*c1;
        System.out.println("\nArea of Cuboid is with dimensions "+a1+" X "+b1+" X "+c1+" = "+Area_val);
    }
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("\nINDULEKHA PS,ROLL NO:31");
        System.out.println("\nEnter the Length");
        int l = sc.nextInt();
        System.out.println("Enter the Breath");
        int b = sc.nextInt();
        System.out.println("Enter the Height");
        int h = sc.nextInt();
        System.out.println("Enter the Radius");
        int r = sc.nextInt();
        shapes obj1 = new shapes();
        obj1.area(r);
        obj1.area(l,b);
        obj1.area(l,b,h);
    }
}
```

Output:

```
mca@Z238-UL: ~/ijava
mca@Z238-UL:~/ijava$ javac shapes.java
mca@Z238-UL:~/ijava$ java shapes

INDULEKHA PS,ROLL NO:31

Enter the Length
2
Enter the Breath
2
Enter the Height
2
Enter the Radius
3

Area of Circle is Radius 3 = 28.259999999999998

Area of Rectangle is with dimensions 2 X 2 = 4

Area of Cuboid is with dimensions 2 X 2 X 2 = 8
mca@Z238-UL:~/ijava$
```

Program11:

Aim: Create a class 'Employee' with data members Empid, Name, Salary, Address and constructors to initialize the data members. Create another class 'Teacher' that inherit the properties of class employee and contain its own data members department, Subjects taught and constructors to initialize these data members and also include display function to display all the data members. Use array of objects to display details of N teachers.

Source Code:

```
import java.util.Scanner;
class Employee {
    int Empid;
    String Name;
    double Salary;
    String Address;
    Employee(int no, String na, double sal, String add) {
        this.Empid = no;
        this.Name = na;
        this.Salary = sal;
        this.Address = add;
    }
}
public class Teacher extends Employee{
    String dept;
    String subject;

    Teacher(int no, String na, double sal, String add, String dep, String sub){
        super(no,na,sal,add);
        this.dept= dep;
        this.subject=sub;
    }

    void display(){
        System.out.println("Employee id: "+Empid);
        System.out.println("Name: "+Name);
        System.out.println("Salary: "+Salary);
        System.out.println("Address: "+Address);
        System.out.println("Department: "+dept);
        System.out.println("Subject: "+subject);
    }
    public static void main(String[] args) {
        System.out.println("INDULEKHA PS \n rollno:31 \n 06-APR-2024");
        System.out.println("\nEnter the No. of Employee's");
        Scanner sc1 = new Scanner(System.in);
        int num = sc1.nextInt();
        Teacher arr[]=new Teacher[num];
        for(int i =0;i<num;i++)
```

```
{
    Scanner sc =new Scanner(System.in);
    System.out.println("\nEnter Employee id: ");
    int Empid=sc.nextInt();
    System.out.println("\nEnter Employee Name: ");
    String Name=sc.next();
    System.out.println("\nEnter Salary: ");
    double Salary=sc.nextDouble();
    System.out.println("\nEnter Address: ");
    String Address=sc.next();
    System.out.println("\nEnter department: ");
    String dept=sc.next();
    System.out.println("\nEnter Subject: ");
    String subject=sc.next();
    arr[i]=new Teacher(Empid,Name,Salary,Address,dept,subject);

}
System.out.println("\n*****Informations of all the employee's*****");
for(int i=0;i<num;i++){
    int j=i+1;
    System.out.println("\n"+j+").");
    arr[i].display();
}
sc1.close();
}
```



```
}
```

Output:

```
mca@Z238-UL:~/ijava$ javac Teacher.java
mca@Z238-UL:~/ijava$ java Teacher
INDULEKHA PS
rollno:31
06-APR-2024

Enter the No. of Employee's
2

Enter Employee id:
21

Enter Employee Name:
JOHN

Enter Salary:
10000

Enter Address:
GOLDENLANE,UK

Enter department:
CS

Enter Subject:
DESIGNING

Enter Employee id:
34

Enter Employee Name:
JACK

Enter Salary:
12000

Enter Address:
DOWNSTREET,UN

Enter department:
CSE
```

```
Enter Subject:
COMPUTERELECTRONICS

*****Informations of all the employee's*****

1).
Employee id: 21
Name: JOHN
Salary: 10000.0
Address: GOLDENLANE,UK
Department: CS
Subject: DESIGNING

2).
Employee id: 34
Name: JACK
Salary: 12000.0
Address: DOWNSTREET,UN
Department: CSE
Subject: COMPUTERELECTRONICS
mca@Z238-UL:~/ijava$
```

Program12:

Aim: Create a class 'Person' with data members Name, Gender, Address, Age and a constructor to initialize the data members and another class 'Employee' that inherits the properties of class Person and also contains its own data members like Empid, Company_name, Qualification, Salary and its own constructor. Create another class 'Teacher' that inherits the properties of class Employee and contains its own data members like Subject, Department, Teacherid and also contain constructors and methods to display the data members. Use array of objects to display details of N teachers.

Source Code:

```
import java.util.Scanner;
class person {
    String Name;
    String Gender;
    String Address;
    int Age;
    person(String name,String gender,String address, int age) {
        this.Name = name;
        this.Gender = gender;
        this.Address = address;
        this.Age = age;
    }
}
//another class 'Employee' that inherits the properties of class Person and also contains its
own data members
// like Empid, Company_name, Qualification, Salary and its own constructor.
class Employee extends person
{
    int Empid;
    String Company_name;
    String Qualification;
    long Salary;

    Employee(String name,String gender,String address, int age,int empid, String
company_name, String qualification,long salary)
    {
        super(name,gender,address,age);
        this.Empid= empid;
        this.Company_name=company_name;
        this.Qualification=qualification;
        this.Salary=salary;
    }
}
// Create another class 'Teacher' that inherits the properties of class Employee and contains
its
// own data members like Subject,Department, Teacherid and also contain constructors and
methods to
```

```
// display the data members. Use array of objects to display details of N teachers.
public class Teacher2 extends Employee{
    String Subject;
    String Department;
    String Teacherid;
    Teacher2(String name,String gender,String address, int age,int empid, String
company_name, String qualification,long salary, String subject, String department, String
teacherid){
        super(name,gender,address,age,empid,company_name,qualification,salary);
        this.Subject=subject;
        this.Department=department;
        this.Teacherid=teacherid;
    }

    void display(){
        System.out.println("Name: "+Name);
        System.out.println("Gender: "+Gender);
        System.out.println("Address: "+Address);
        System.out.println("Age: "+Age);
        System.out.println("Employee id: "+Empid);
        System.out.println("Company Name: "+Company_name);
        System.out.println("Qualification: "+Qualification);
        System.out.println("Salary: "+Salary);
        System.out.println("Subject: "+Subject);
        System.out.println("Department: "+Department);
        System.out.println("Teacher id: "+Teacherid);
    }

    public static void main(String[] args) {
        System.out.println("INDULEKHA PS \n ROLLNO:31 \n 06-APR-2024");
        System.out.println("\nEnter the No. of Teacher's");
        Scanner sc1 = new Scanner(System.in);
        int num = sc1.nextInt();
        Teacher2 arr[]=new Teacher2[num];
        System.out.println("\nEnter the Teacher Details\n");
        int x = 0,j=0;
        Scanner sc =new Scanner(System.in);
        for(int i =0;i<num;i++)
        {
            x = i +1;
            System.out.println("\n"+x+").");
            System.out.println("\n Name: ");
            String a =sc.next();
            System.out.println("\n Gender: ");
            String b =sc.next();
            System.out.println("\n Address: ");
            String c =sc.next();
            System.out.println("\n Age: ");
            int d =sc.nextInt();
```



```
System.out.println("\n Employee id: ");
    int e =sc.nextInt();
    System.out.println("\n Company name: ");
    String f =sc.next();
    System.out.println("\n Qualification: ");
    String g =sc.next();
    System.out.println("\n Salary: ");
    long h =sc.nextLong();
    System.out.println("\n Subject: ");
    String k =sc.next();
    System.out.println("\n Department: ");
    String l =sc.next();
    System.out.println("\n Teacher Id: ");
    String n =sc.next();
    arr[i]=new Teacher2(a,b,c,d,e,f,g,h,k,l,n);
}
sc.close();
System.out.println("\n*****Informations of all the Teacher's*****");
for(int i=0;i<num;i++){
    j=i+1;
    System.out.println("\n"+j+").");
    arr[i].display();

}
sc1.close();
}

}
```

Output:

```
mca@Z238-UL:~/ijava$ javac Teacher2.java
mca@Z238-UL:~/ijava$ java Teacher2
INDULEKHA PS
ROLLNO:31
06-APR-2024

Enter the No. of Teacher's
2

Enter the Teacher Details

1).

Name:
angitha

Gender:
female

Address:
changanassery,kottayam

Age:
36

Employee id:
32

Company name:
usg

Qualification:
MSC

Salary:
15000
```

```
Subject:
datastructure

Department:
cs

Teacher Id:
32

2).

Name:
lintu

Gender:
female

Address:
manimala,kottayam

Age:
26

Employee id:
54

Company name:
ust

Qualification:
mca

Salary:
14000

Subject:
java
```

```
Department:
cs

Teacher Id:
37

*****Informations of all the Teacher's*****

1).
Name: angitha
Gender: female
Address: changanassery,kottayam
Age: 36
Employee id: 32
Company Name: usg
Qualification: msc
Salary: 15000
Subject: datastructure
Department: cs
Teacher id: 32

2).
Name: lintu
Gender: female
Address: manimala,kottayam
Age: 26
Employee id: 54
Company Name: ust
Qualification: mca
Salary: 14000
Subject: java
Department: cs
Teacher id: 37
mca@Z238-UL:~/ijava$
```

Program13:

Aim: Write a program has class Publisher, Book, Literature and Fiction. Read the information and print the details of books from either the category, using inheritance.

Source Code:

```
import java.util.Scanner;
class Publisher{
    String publisher;
    Publisher(String pub){
        this.publisher=pub;
    }
}
class Book extends Publisher{
    String book;
    Book(String pub,String boo){
        super(pub);
        book=boo;
    }
}
class Literature extends Book{
    String category;
    Literature(String pub, String boo){
        super(pub, boo);
    }
    void display(){
        System.out.println("Publisher :"+publisher);
        System.out.println("Book :"+book);
    }
}
class Fiction extends Book{
    Fiction(String pub, String boo){
        super(pub, boo);
    }
    void display(){
        System.out.println("Publisher :"+publisher);
        System.out.println("Book :"+book);
    }
}
public class bookDetails{
    public static void main(String[] args) {
        System.out.println("INDULEKHA PS\n rollno:31\n 08-APR-2024");
        System.out.println("\nEnter the No. of Literature Books");
        Scanner sc1 = new Scanner(System.in);
        int num = sc1.nextInt();
    }
}
```

```
Literature arr[]=new Literature[num];
System.out.println("\n Enter the Literature Book Details\n");
int x = 0,j=0;
Scanner sc =new Scanner(System.in);

for(int i =0;i<num;i++)
{
    x = i +1;
    System.out.println("\n"+x+").");
    System.out.println("\n Book : ");
    String boo =sc.next();
    System.out.println("\n Publisher: ");
    String pub =sc.next();

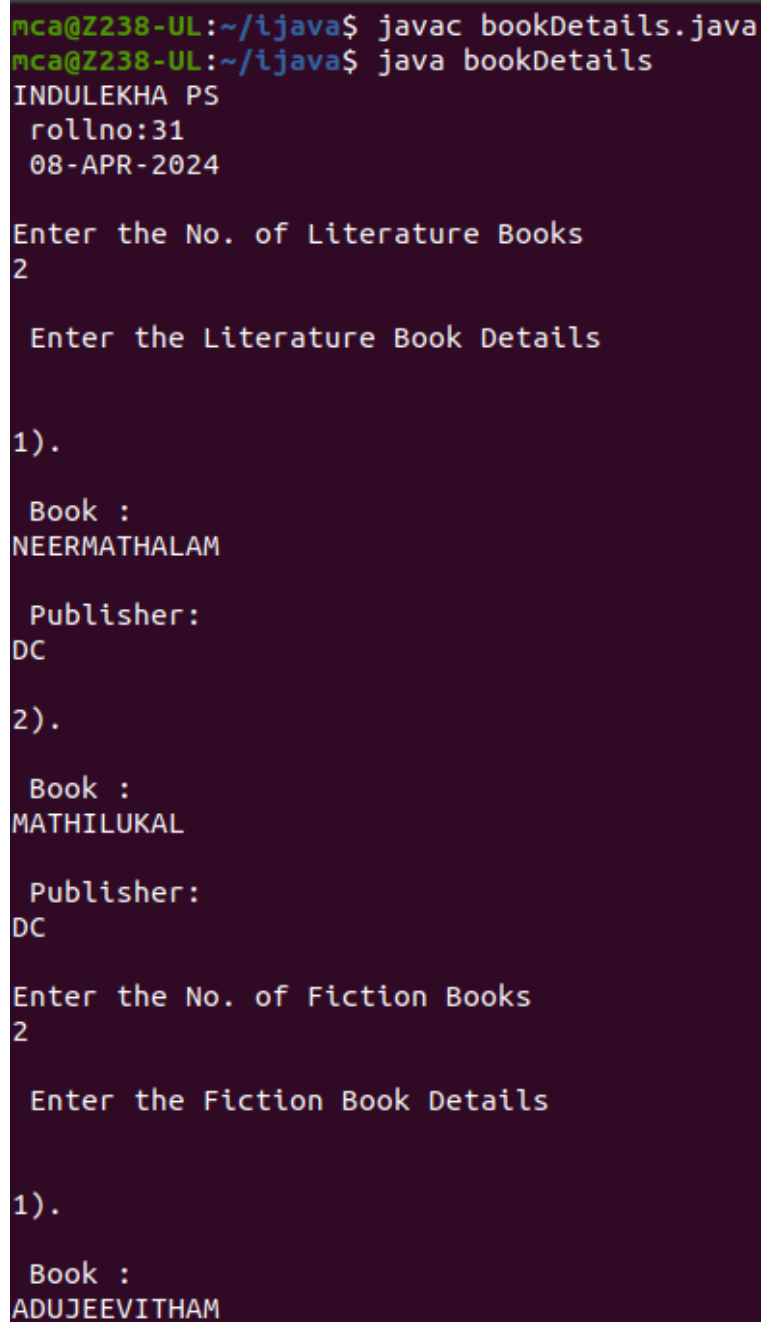
    arr[i]=new Literature(boo,pub);
}
System.out.println("\nEnter the No. of Fiction Books");
int num1 = sc1.nextInt();
Fiction arr1[]=new Fiction[num1];
System.out.println("\n Enter the Fiction Book Details\n");
int x1 = 0,j1=0;
for(int i =0;i<num1;i++)
{
    x1 = i +1;
    System.out.println("\n"+x1+").");
    System.out.println("\n Book : ");
    String boo =sc.next();
    System.out.println("\n Publisher: ");
    String pub =sc.next();

    arr1[i]=new Fiction(pub,boo);
}
sc.close();
sc1.close();

System.out.println("\n*****Informations of all the Literature
Books*****");
for(int i=0;i<num;i++){
    j=i+1;
    System.out.println("\n"+j+").");
    arr[i].display();
}

System.out.println("\n*****Informations of all the Fiction
Books*****");
for(int i=0;i<num1;i++){
    j1=i+1;
    System.out.println("\n"+j1+").");
```

```
arr1[i].display();  
    }  
    sc1.close();  
}  
  
}
```

Output:

```
mca@Z238-UL:~/ijava$ javac bookDetails.java  
mca@Z238-UL:~/ijava$ java bookDetails  
INDULEKHA PS  
rollno:31  
08-APR-2024  
  
Enter the No. of Literature Books  
2  
  
Enter the Literature Book Details  
  
1).  
  
Book :  
NEERMATHALAM  
  
Publisher:  
DC  
  
2).  
  
Book :  
MATHILUKAL  
  
Publisher:  
DC  
  
Enter the No. of Fiction Books  
2  
  
Enter the Fiction Book Details  
  
1).  
  
Book :  
ADUJEEVITHAM
```

```
Publisher:
BC

2).

Book :
AGNICHIRAKU

Publisher:
BC

*****Informations of all the Literature Books*****

1).
Publisher :NEERMATHALAM
Book :DC

2).
Publisher :MATHILUKAL
Book :DC

*****Informations of all the Fiction Books*****

1).
Publisher :BC
Book :ADUJEEVITHAM

2).
Publisher :BC
Book :AGNICHIRAKU
mca@Z238-UL:~/ijava$
```


Program14:

Aim: Create classes Student and Sports. Create another class Result inherited from Student and Sports. Display the academic and sports score of a student.

Source Code:

```
import java.util.Scanner;

// Create classes Student and Sports. Create another class Result inherited from
// Student and
// Sports. Display the academic and sports score of a student
class sports{
    String sport;
    int Rating;
    sports(String spo, int ra){
        sport = spo;
        Rating = ra;
    }
}

class student extends sports{
    String Grade;
    double Overall_per;
    student(String spo, int ra,String gd, double per ){
        super(spo, ra);
        Grade = gd;
        Overall_per = per;
    }
}

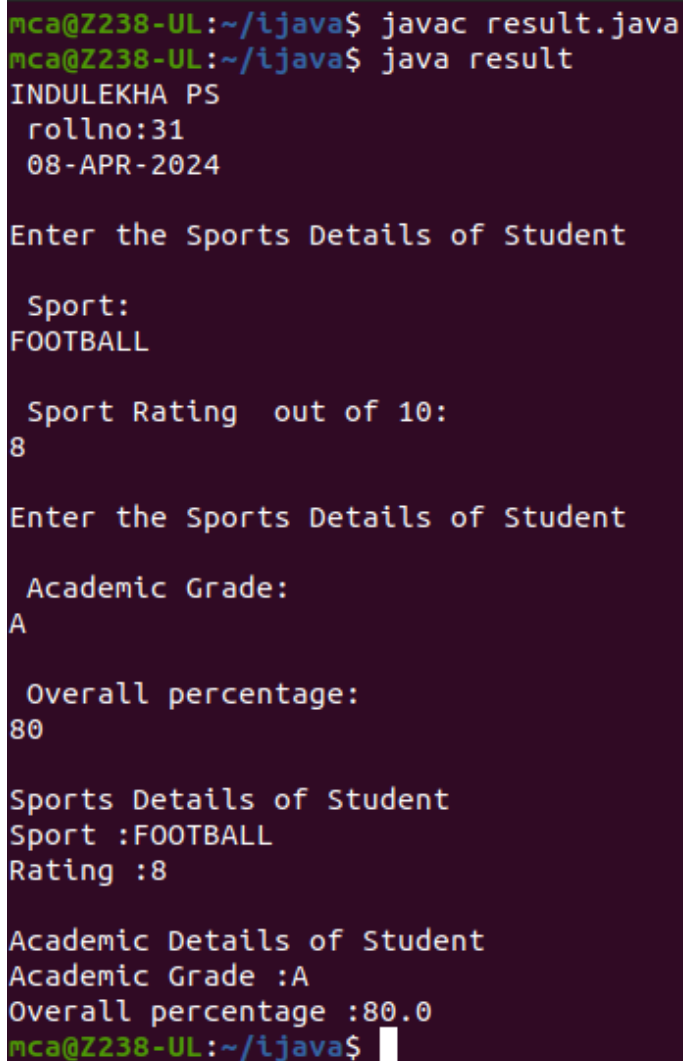
public class result extends student {
    result(String spo, int ra,String gd, double per ){
        super(spo, ra, gd, per);
    }
    void display(){
        System.out.println("\nSports Details of Student");
        System.out.println("Sport :"+sport);
        System.out.println("Rating :"+Rating);
        System.out.println("\nAcademic Details of Student");
        System.out.println("Academic Grade :"+Grade);
        System.out.println("Overall percentage :"+Overall_per);
    }

    public static void main(String[] args) {
        System.out.println("INDULEKHA PS \n rollno:31 \n 08-APR-2024");
        Scanner sc =new Scanner(System.in);
        System.out.println("\nEnter the Sports Details of Student");
        System.out.println("\n Sport: ");
        String a =sc.next();
    }
}
```

```
System.out.println("\n Sport Rating  out of 10: ");
int b =sc.nextInt();
System.out.println("\nEnter the Sports Details of Student");
System.out.println("\n Academic Grade: ");

String c =sc.next();

System.out.println("\n Overall percentage: ");
double d =sc.nextDouble();
sc.close();
result obj= new result(a,b,c,d);
obj.display();
    }
}
```

Output:

```
mca@Z238-UL:~/ijava$ javac result.java
mca@Z238-UL:~/ijava$ java result
INDULEKHA PS
rollno:31
08-APR-2024

Enter the Sports Details of Student

Sport:
FOOTBALL

Sport Rating  out of 10:
8

Enter the Sports Details of Student

Academic Grade:
A

Overall percentage:
80

Sports Details of Student
Sport :FOOTBALL
Rating :8

Academic Details of Student
Academic Grade :A
Overall percentage :80.0
mca@Z238-UL:~/ijava$
```

Program15:

Aim: Create an interface having prototypes of functions area() and perimeter(). Create two classes Circle and Rectangle which implements the above interface. Create a menu driven program to find area and perimeter of objects.

Source Code:

```
import java.io.*;
import java.util.*;
class Area
{
void shape(int l,int b)
{
int area;
area=l*b;
System.out.println("area of the rectangle="+area);
}
void shape(int l)
{
int area;
area=l*l;
System.out.println("area of the square="+area);
}
void shape(double r)
{
double area;
area=3.14*r*r;
System.out.println("area of the square="+area);
}
}
class AreaMain{
public static void main(String args[]){
Area a=new Area();
Scanner s=new Scanner(System.in);
System.out.println("INDULEKHA PS\n rollno:31 \n 2-04-2024");
System.out.println("enter the length and breadth of rectangle:");
int len=s.nextInt();
int bred=s.nextInt();
a.shape(len,bred);
System.out.println("enter the side of square:");
int side=s.nextInt();
a.shape(side);
System.out.println("enter the radius of circle:");
double radius=s.nextInt();
a.shape(radius);

} }
```

Output:

```
mca@Z238-UL:~/ijava$ javac AreaMain.java
mca@Z238-UL:~/ijava$ java AreaMain
INDULEKHA PS
  rollno:31
  2-04-2024
enter the length and breadth of rectangle:
2
3
area of the rectangle=6
enter the side of square:
4
area of the square=16
enter the radius of circle:
3
area of the square=28.259999999999998
mca@Z238-UL:~/ijava$
```

Program16:

Aim:Prepare bill with the given format using calculate method from interface.

Order No.

Date :

Product Id	Name	Quantity	unit price	Total
101	A	2	25	50
102	B	1	100	100
Net. Amount				150

Source Code:

```

import java.util.Scanner;

interface calc
{
    void calculate();
}

class bill implements calc
{
    String date,name,p_id;
    int quantity;
    double unit_price,total,namount=0;
    Scanner sc = new Scanner(System.in);
    public void getdata()
    {
        System.out.println("\nEnter product id:");
        p_id = sc.nextLine();
        System.out.println("Enter product name:");
        name = sc.nextLine();
        System.out.println("Enter the Quantity:");
        quantity = sc.nextInt();
        System.out.println("Enter the unit price:");
        unit_price = sc.nextDouble();
    }

    @Override
    public void calculate()
    {
        total = quantity * unit_price;
    }
    public void display()
    {
        System.out.println(p_id+"\t\t"+name+"\t\t"+quantity+"\t\t"+unit_price+"\t\t"+total);
    }
}

```

```
public class CO3_Q7
{
    public static void main(String[] args)
    {
        System.out.println("INDULEKHA PS \n ROLLNO:31 \n 08-APR-2024");
        int n,i;
        double namount=0,t;
        int ran;
        String date;
        t = Math.random() *1000000;
        ran = (int) t;
        Scanner sc = new Scanner(System.in);
        System.out.println("Order no. #" +ran);
        System.out.println("Enter the date:");
        date = sc.nextLine();
        System.out.println("Enter how many products are there:");
        n = sc.nextInt();
        bill ob[] = new bill[n];
        for(i=0;i<n;i++)
            ob[i] = new bill();
        for(i=0;i<n;i++){
            ob[i].getdata();
            ob[i].calculate();
        }
        System.out.println("Date:" +date);
        System.out.println("Product Id \tName\t Quantity\t unit price\t Total ");
        System.out.println("-----");
        for(i=0;i<n;i++){
            ob[i].display();
            namount += ob[i].total;
        }
        System.out.println("-----");
        System.out.println("\t\t\tNet.Amount\t" + namount);
    }
}
```

Output:

```
mca@Z238-UL:~/ijava$ javac C03_Q7.java
mca@Z238-UL:~/ijava$ java C03_Q7
INDULEKHA PS
ROLLNO:31
08-APR-2024
Order no. #806471
Enter the date:
23
Enter how many products are there:
2

Enter product id:
101
Enter product name:
A
Enter the Quantity:
2
Enter the unit price:
25

Enter product id:
102
Enter product name:
B
Enter the Quantity:
1
Enter the unit price:
100
Date:23


| Product Id | Name | Quantity | unit price | Total |
|------------|------|----------|------------|-------|
| 101        | A    | 2        | 25.0       | 50.0  |
| 102        | B    | 1        | 100.0      | 100.0 |


Net.Amount 150.0
mca@Z238-UL:~/ijava$
```