PROGRAM 10 :

Area of different shapes using overloaded functions

CODE :

```
import java.util.Scanner;
public class shapes {
   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("Area of Rectangle"+a1+" X "+b1+" = "+Area_val);
   }
   void area(int a1,int b1,int c1){
   int Area_val = a1*b1*c1;
   System.out.println("Area of Cuboid"+a1+" X "+b1+" X "+c1+" = "+Area_val);
   }
   public static void main(String[] args) {
     System.out.println("Lakshmi Hari");
     System.out.println("SJC22MCA-037");
     System.out.println("6-6-2023");
     System.out.println("Object Oriented Programming Lab");
     System.out.println("20MCA132");
      Scanner sc = new Scanner(System.in);
      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 :

PROGRAM 11 :

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.

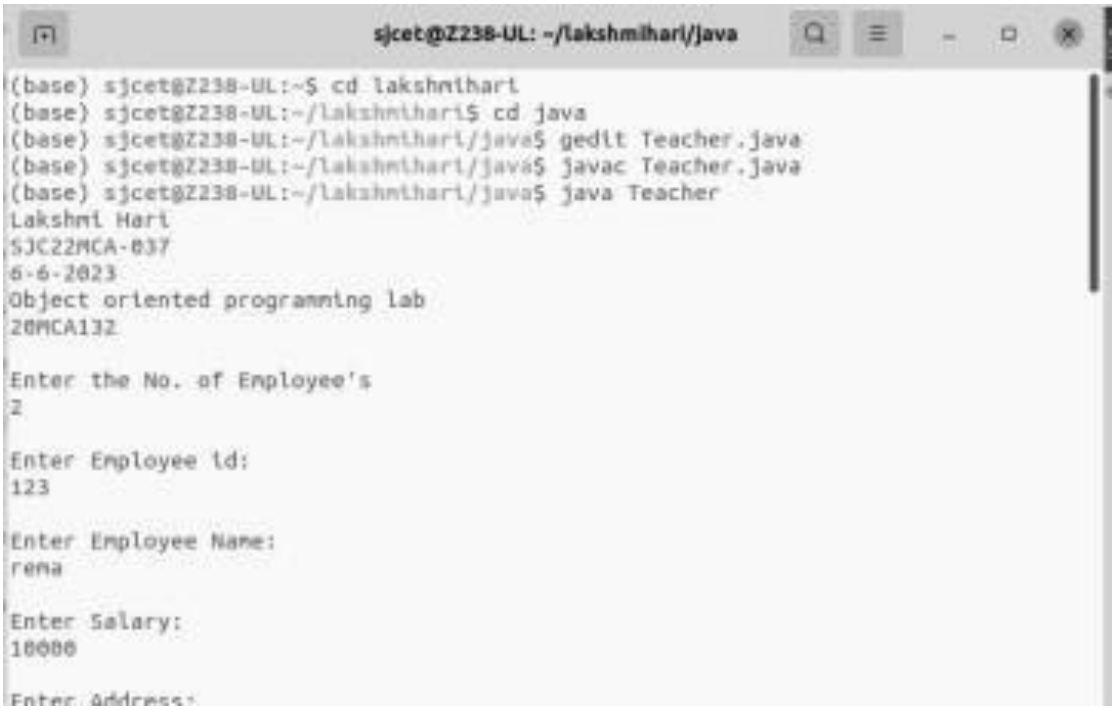
CODE :

```
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("Lakshmi Hari");
   System.out.println("SJC22MCA-037");
   System.out.println("6-6-2023");
   System.out.println("Object Oriented Programming Lab");
   System.out.println("20MCA132");
   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 :


sjcet@Z238-UL: ~/lakshmihari/java
(base) sjcet@Z238-UL:~$ cd lakshmihari
(base) sjcet@Z238-UL:~/lakshmihari$ cd java
(base) sjcet@Z238-UL:~/lakshmihari/java$ gedit Teacher.java
(base) sjcet@Z238-UL:~/lakshmihari/java$ javac Teacher.java
(base) sjcet@Z238-UL:~/lakshmihari/java$ java Teacher
Lakshmi Hari
SJC22MCA-037
6-6-2023
Object oriented programming lab
20MCA132
Enter the No. of Employee's
2
Enter Employee Id:
123
Enter Employee Name:
rema
Enter Salary:
10000


sjcet@Z238-UL: ~/lakshmihari/java
mca
Enter Subject:
dbms
********Informations of all the employee's**********
1).
Employee Id: 123
Name: rema
Salary: 10000.0
Address: ggg
Department: mca
Subject: os
2).
Employee Id: 124
Name: hari
Salary: 10400.0
Address: fff
Department: mca
Subject: dbms

PROGRAM 12 :

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.

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;
    }
}
class Employee extends person
{
```

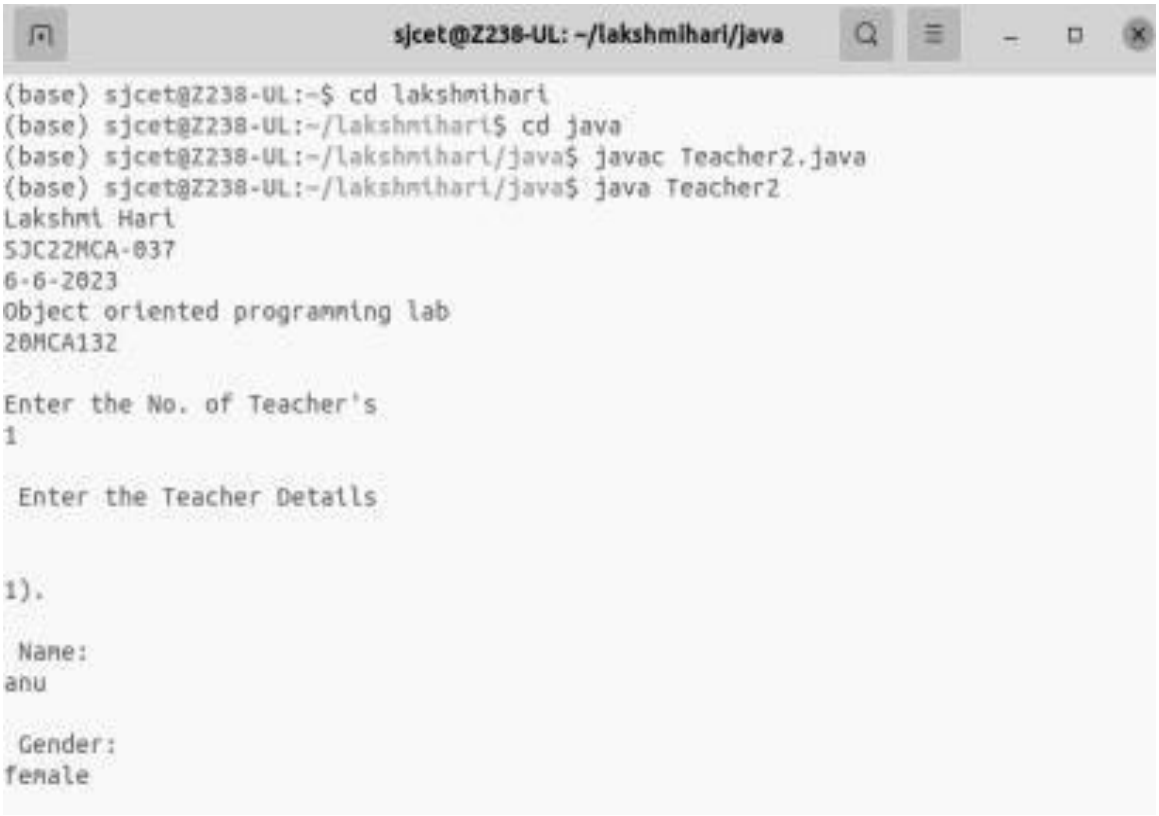
```
 int Empid;
 String Company_name;
 String Qualification;
 long Salary;
 Employee(String name,String gender,String address, int age,int empid,
 String company_name, String qualification,long salary)
 {
    super(name,gender,address,age);
    this.Empid= empid;
    this.Company_name=company_name;
    this.Qualification=qualification;
    this.Salary=salary;
 }
}
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("Lakshmi Hari");
    System.out.println("SJC22MCA-037");
    System.out.println("6-6-2023");
    System.out.println("Object Oriented Programming Lab");
    System.out.println("20MCA132");
    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("\n Enter 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 :


sjcet@Z238-UL: ~/lakshmihari/java
(base) sjcet@Z238-UL:~$ cd lakshmihari
(base) sjcet@Z238-UL:~/lakshmihari$ cd java
(base) sjcet@Z238-UL:~/lakshmihari/java$ javac Teacher2.java
(base) sjcet@Z238-UL:~/lakshmihari/java$ java Teacher2
Lakshmi Hari
SJC22MCA-037
6-6-2023
Object oriented programming lab
20MCA132
Enter the No. of Teacher's
1
Enter the Teacher Details
1).
Name:
anu
Gender:
female


sjcet@Z238-UL: ~/lakshmihari/java
Subject:
java
Department:
nca
Teacher Id:
13
********Informations of all the Teacher's**********
1).
Name: anu
Gender: female
Address: rrr
Age: 21
Employee id: 12
Company Name: tcs
Qualification: pg
Salary: 10000
Subject: java
Department: nca
Teacher id: 13
(base) sjcet@Z238-UL:~/lakshmihari/java$

PROGRAM 13 :

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.

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("Lakshmi Hari");
    System.out.println("SJC22MCA-037");
    System.out.println("6-6-2023");
    System.out.println("Object Oriented Programming Lab");
    System.out.println("20MCA132");

        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(boo,pub);
}
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 :

```
(base) sjcet@Z238-UL:~/lakshmihari/java$ javac bookDetails.java
(base) sjcet@Z238-UL:~/lakshmihari/java$ java bookDetails
Lakshmi Hari
SJC22MCA-037
6-6-2023
Object oriented programming lab
20MCA132

Enter the No. of Literature Books
1
 Enter the Literature Book Details

1).
 Book :
eee
 Publisher:
ggg
Enter the No. of Fiction Books
1
 Enter the Fiction Book Details

1).
 Book :
fff
 Publisher:
eeu
********Informations of all the Literature Books************

1).
Publisher :eee
Book :ggg

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

1).
Publisher :fff
Book :eeu
(base) sjcet@Z238-UL:~/lakshmihari/java$
```

PROGRAM 14 :

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

CODE :

```
import java.util.Scanner;
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("Lakshmi Hari");
    System.out.println("SJC22MCA-037");
    System.out.println("6-6-2023");
    System.out.println("Object Oriented Programming Lab");
    System.out.println("20MCA132");
        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 :

```
(base) sjcet@Z238-UL:~$ cd lakshmihari
(base) sjcet@Z238-UL:~/lakshmihari$ cd java
(base) sjcet@Z238-UL:~/lakshmihari/java$ gedit result.java
(base) sjcet@Z238-UL:~/lakshmihari/java$ javac result.java
(base) sjcet@Z238-UL:~/lakshmihari/java$ java result
Lakshmi Hari
SJC22MCA-037
6-6-2023
Object oriented programming lab
20MCA132

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:
70

Sports Details of Student
Sport :football
Rating :8

Academic Details of Student
Academic Grade :A+
Overall percentage :70.0
(base) sjcet@Z238-UL:~/lakshmihari/java$
```

PROGRAM 15 :

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.

CODE :

```
import java.util.*;
import java.lang.*;
interface Shape {
float pi=3.14F;
float area();
float perimeter();
}
class Circle implements Shape {
Scanner sc=new Scanner(System.in);
int r;
public float area() {
System.out.println(“Enter the Radius”);
r=Integer.parseInt(sc.nextLine());
return(pi*r*r);
}
public float perimeter(){
System.out.print("Enter the radius : ");
r = Integer.parseInt(sc.nextLine());
return (2 * pi * r);
}
}
class Rectangle implements Shape {
```

```
Scanner sc=new Scanner(System.in);
Int l,b;
public float area()
{
System.out.print("Enter the Length : ");
l = Integer.parseInt(sc.nextLine());
System.out.print("Enter the breadth : ");
b = Integer.parseInt(sc.nextLine()); return (l * b);
}
public float perimeter()
{
System.out.print("Enter the Length : ");
l = Integer.parseInt(sc.nextLine());
System.out.print("Enter the breadth : ");
b = Integer.parseInt(sc.nextLine());
return (2 * (l + b));
} }
 class ShapeInterface {
public static void main(String args[])
{
System.out.println("Lakshmi Hari");
System.out.println("SJC22MCA-037");
System.out.println("6-6-2023");
System.out.println("Object Oriented Programming Lab");
System.out.println("20MCA132");
Scanner sc = new Scanner(System.in);
 Circle c = new Circle();
Rectangle r = new Rectangle();
int ch;
while (true)
{
System.out.println("1:Area of Circle");
System.out.println("2:Perimeter of Circle");
```

```
System.out.println("3:Area of Rectangle");
System.out.println("4:Perimter of Rectangle");
System.out.println("5:EXIT");
System.out.print("Enter choice : ");
ch = Integer.parseInt(sc.nextLine());
switch (ch)
{
case 1:
float ar = c.area(); System.out.println("Area :" + ar);
System.out.println("**----------** --------- **");
break;
case 2:
float pr=c.perimeter();
System.out.println("Perimeter of Circle = "+pr);
System.out.println("**----------** --------- **");
break;
case 3:
float a = r.area();
System.out.println("Area :" + a);
System.out.println("**----------** --------- **");
break;
case 4:
float pr1 = r.perimeter();
System.out.println("Perimeter of Rectangle = "+pr1);
System.out.println("**----------** --------- **");
break;
case 5:
System.out.println("Exiting the Program!!!!!");
System.exit(0);
default:
System.out.println("invalid!");
 } } } }
```

OUTPUT :

```
(base) sjcet@Z238-UL:~$ cd lakshmihari
(base) sjcet@Z238-UL:~/lakshmihari$ cd java
(base) sjcet@Z238-UL:~/lakshmihari/java$ gedit ShapeInterface.java
(base) sjcet@Z238-UL:~/lakshmihari/java$ javac ShapeInterface.java
(base) sjcet@Z238-UL:~/lakshmihari/java$ java ShapeInterface
Lakshmi Hari
SJC22MCA-037
6-6-2023
Object oriented programming lab
20MCA132
1:Area of Circle
2:Perimeter of Circle
3:Area of Rectangle
4:Perimter of Rectangle
5:EXIT
Enter choice : 1
Enter the radius : 3
Area :28.26
**..........** --------- **
1:Area of Circle
2:Perimeter of Circle
3:Area of Rectangle
4:Perimter of Rectangle
5:EXIT
Enter choice : 2
Enter the radius : 12
Perimeter of Circle = 75.36
**..........** --------- **
1:Area of Circle
2:Perimeter of Circle
3:Area of Rectangle
4:Perimter of Rectangle
5:EXIT
Enter choice :
```

PROGRAM 16 :

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

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"+total);
}
}
public class qn7
{
public static void main(String[] args)
{
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("Lakshmi Hari");
System.out.println("SJC22MCA-037");
System.out.println("06-06-23");
System.out.println("Object Oriented Programming Lab");
System.out.println("20MCA132");
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 :

```
(base) sjcet@Z238-UL:~/lakshmihari/java$ javac qn7.java
(base) sjcet@Z238-UL:~/lakshmihari/java$ java qn7
Lakshmi Hari
SJC22MCA-037
06-06-23
Object Oriented Programming Lab
20MCA132
Order no. #386864
Enter the date:
6-6-2023
Enter how many products are there:
2

Enter product id:
11
Enter product name:
box
Enter the Quantity:
5
Enter the unit price:
50

Enter product id:
12
Enter product name:
book
Enter the Quantity:
4
Enter the unit price:
60
Date:6-6-2023
Product Id      Name     Quantity        unit price      Total
-----------------------------------------------------------------
11              box             5               50.0    250.0
12              book            4               60.0    240.0
-----------------------------------------------------------------
                        Net.Amount      490.0
(base) sjcet@Z238-UL:~/lakshmihari/java$
```