Program10:

Aim: Area of different shapes using overloaded functions.

Source 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("\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) {
    System.out.println("JERIN JOSE,NO:35,08-04-2024,PRGRM-C3.1 rectangle");
      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:

```
Book :thankappan
mca@Z238-UL:~/JERIN/java/CYCLE_3$ javac shapes.java
mca@Z238-UL:~/JERIN/java/CYCLE_3$ java shapes
JERIN JOSE,NO:35,08-04-2024,PRGRM-C3.1 rectangle

Enter the Length
20
Enter the Breath
20
Enter the Height
10
Enter the Radius
6

Area of Circle is Radius 6 = 113.03999999999999

Area of Rectangle is with dimensions 20 X 20 = 400

Area of Cuboid is with dimensions 20 X 20 X 10 = 4000
mca@Z238-UL:~/JERIN/java/CYCLE_3$
```

Program11:

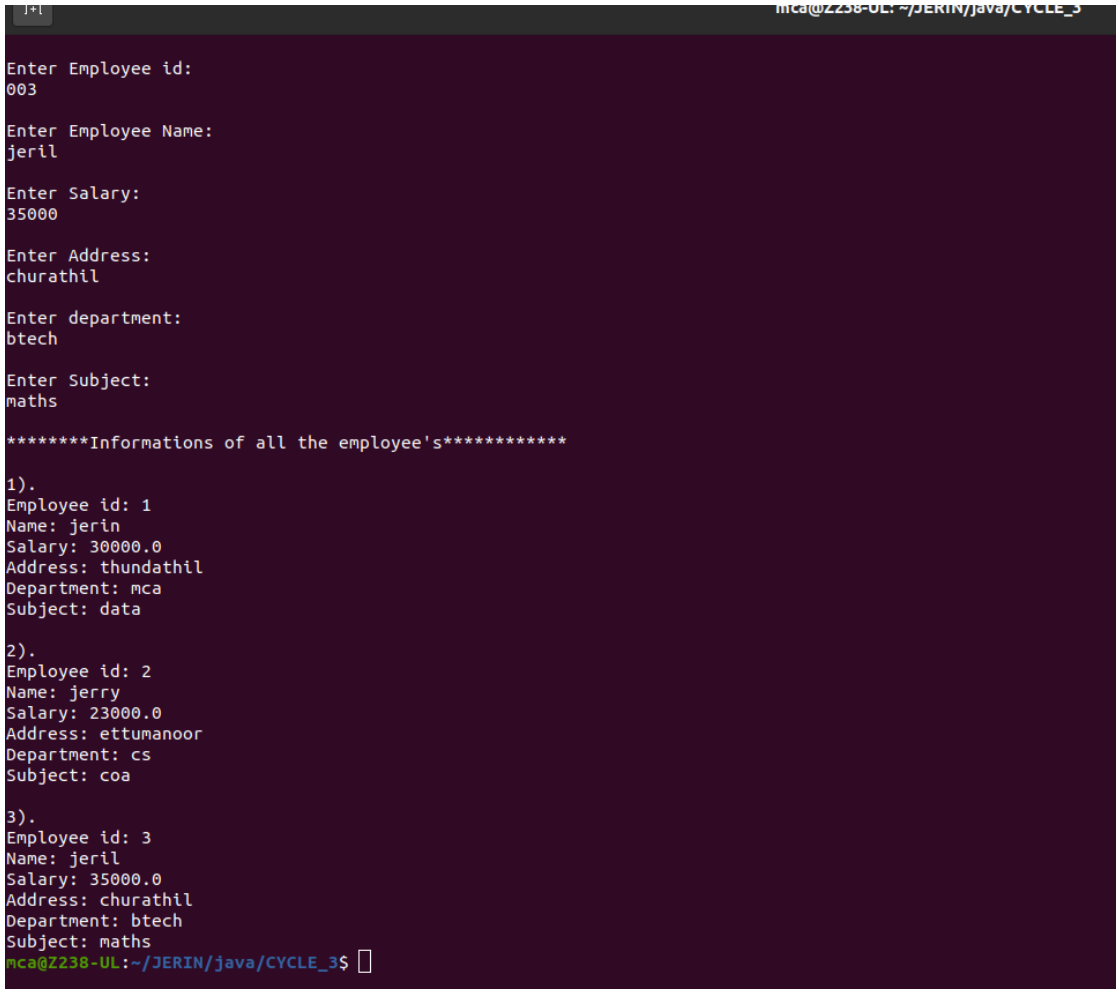
Aim: Create a class ‘Employee’ with data members Empid, Name, Salary, Address and constructors to initialize the data members. Create another class ‘Teacher’ that inherit the properties of class employee and contain its own data members department, Subjects taught and constructors to initialize these 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("JERIN JOSE,NO:35,08-04-2024,PRGRM-C3.2 teacher");
```

```
   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:


Enter Employee id:
003
Enter Employee Name:
jeril
Enter Salary:
35000
Enter Address:
churathil
Enter department:
btech
Enter Subject:
maths
********Informations of all the employee's***********
1).
Employee id: 1
Name: jerin
Salary: 30000.0
Address: thundathil
Department: mca
Subject: data
2).
Employee id: 2
Name: jerry
Salary: 23000.0
Address: ettumanoor
Department: cs
Subject: coa
3).
Employee id: 3
Name: jeril
Salary: 35000.0
Address: churathil
Department: btech
Subject: maths
mca@Z238-UL:~/JERIN/java/CYCLE_3$

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.

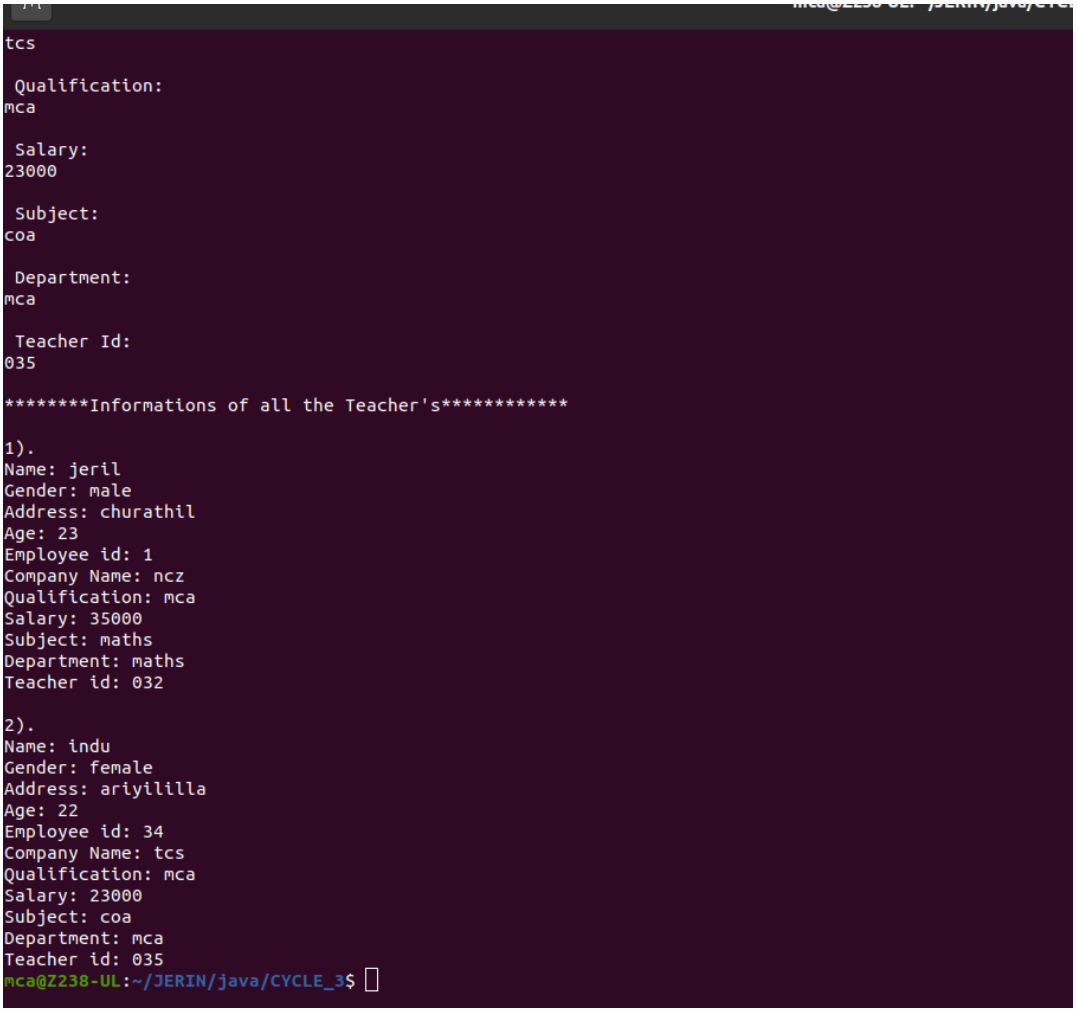
Source Code:

```
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;
    }
}

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("JERIN JOSE,NO:35,08-04-2024,PRGRM-C3.3 person");
       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:


tcs
Qualification:
mca
Salary:
23000
Subject:
coa
Department:
mca
Teacher Id:
035
********Informations of all the Teacher's**********
1).
Name: jeril
Gender: male
Address: churathil
Age: 23
Employee id: 1
Company Name: ncz
Qualification: mca
Salary: 35000
Subject: maths
Department: maths
Teacher id: 032
2).
Name: indu
Gender: female
Address: ariyililla
Age: 22
Employee id: 34
Company Name: tcs
Qualification: mca
Salary: 23000
Subject: coa
Department: mca
Teacher id: 035
mca@Z238-UL:~/JERIN/java/CYCLE_3$

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.

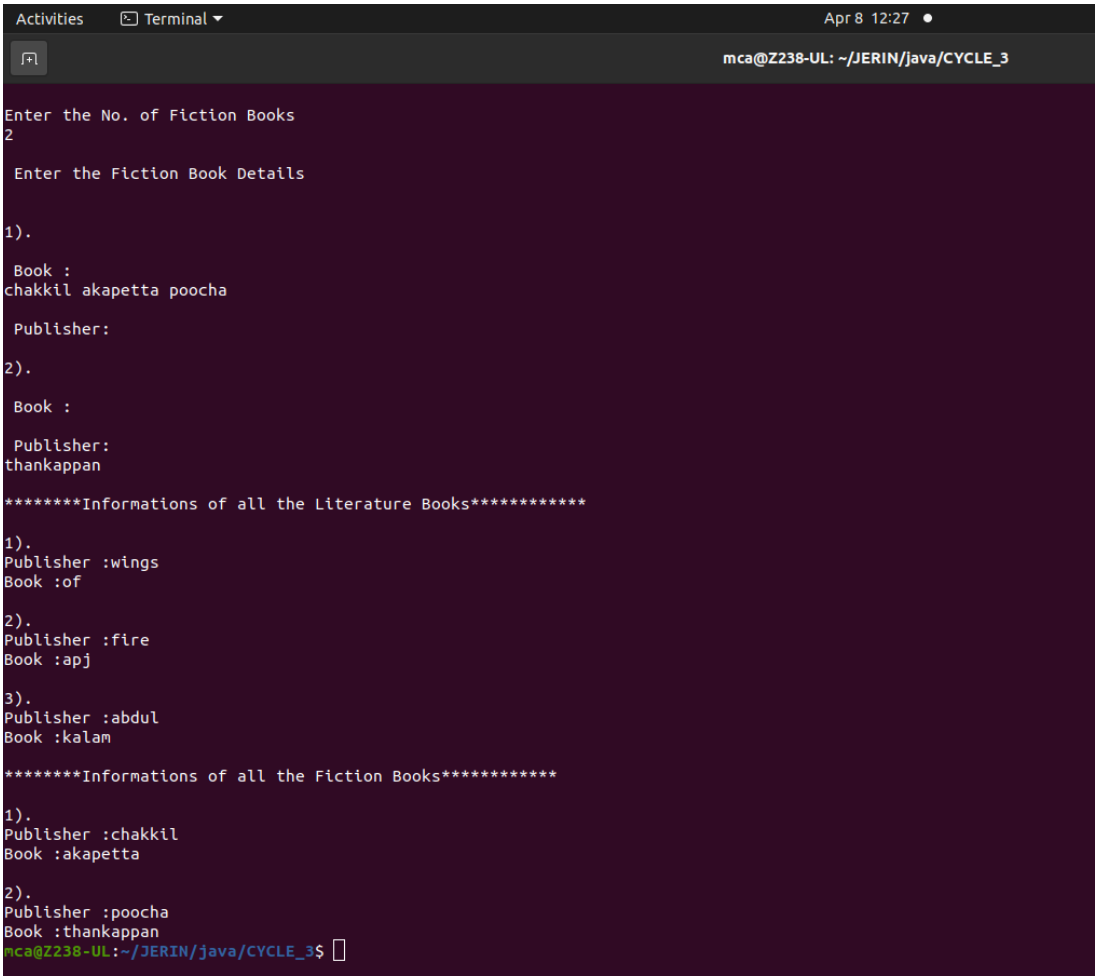
Source Code:

```
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("JERIN JOSE,NO:35,08-04-2024,PRGRM-C3.4 book");
   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:



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;

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("JERIN JOSE,NO:35,08-04-2024,PRGRM-C3.5 result");
      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:~/JERIN/java/CYCLE_3$ javac result.java
mca@Z238-UL:~/JERIN/java/CYCLE_3$ java result
JERIN JOSE,NO:35,08-04-2024,PRGRM-C3.5 result

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:
76

Sports Details of Student
Sport :football
Rating :8

Academic Details of Student
Academic Grade :a
Overall percentage :76.0
mca@Z238-UL:~/JERIN/java/CYCLE_3$
```

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.

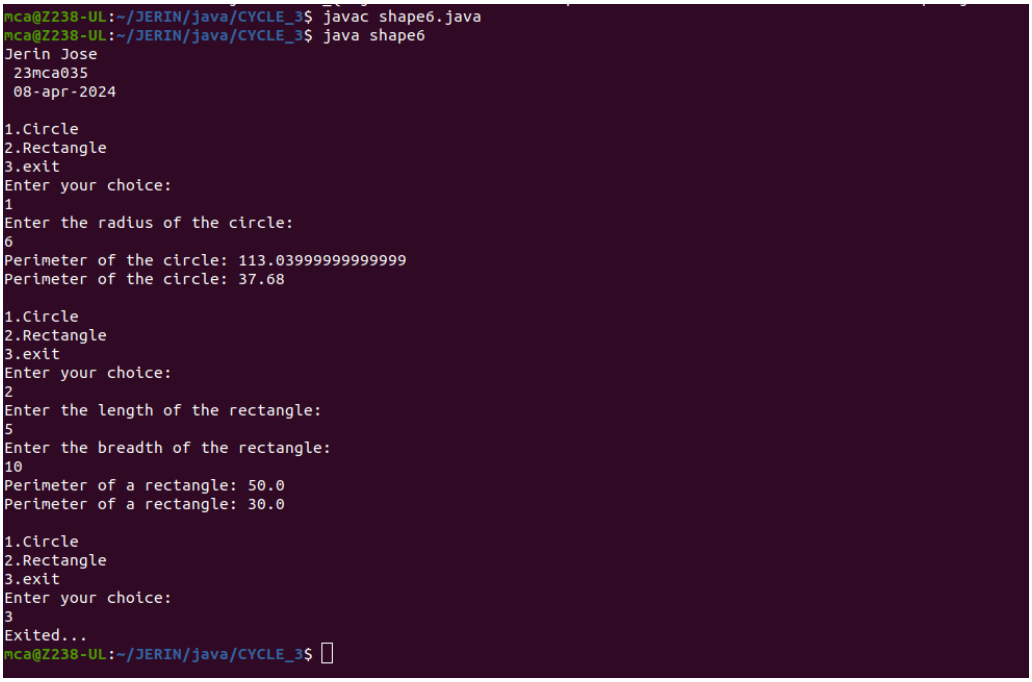
Source Code:

```
import java.util.Scanner;
interface prop
{
   void getdata();
   void area();
   void perimeter();
}
class Circle implements prop
{
   double pi = 3.14;
   double r;
   Scanner sc = new Scanner(System.in);
   @Override
   public void getdata()
   {
      System.out.println("Enter the radius of the circle:");
      r = sc.nextDouble();
   }
   @Override
   public void perimeter()
   {
      System.out.println("Perimeter of the circle: "+(2*pi*r));
   }
   @Override
   public void area()
   {
      System.out.println("Perimeter of the circle: "+(pi*r*r));
   }
}
class Rectangle implements prop
{
   double l,b;
   Scanner sc = new Scanner(System.in);
   @Override
   public void getdata()
   {
```

```
        System.out.println("Enter the length of the rectangle:");
        l = sc.nextDouble();
        System.out.println("Enter the breadth of the rectangle:");
        b = sc.nextDouble();
    }
    @Override
    public void area()
    {
        System.out.println("Perimeter of a rectangle: "+(l*b));
    }
    @Override
    public void perimeter()
    {
        System.out.println("Perimeter of a rectangle: "+(2*(l+b)));
    }
}
public class shape6
{
    public static void main(String[] args)
    {
    System.out.println("Jerin Jose\n 23mca035\n 08-apr-2024");
        int ch;
        Scanner sc = new Scanner(System.in);
        Circle ob = new Circle();
        Rectangle obj = new Rectangle();
        do
        {
            System.out.println("\n1.Circle\n2.Rectangle\n3.exit");
            System.out.println("Enter your choice:");
            ch = sc.nextInt();
            switch(ch)
            {
                case 1 :ob.getdata();
                        ob.area();
                        ob.perimeter();
                        break;
                case 2 :obj.getdata();
                        obj.area();
                        obj.perimeter();
                        break;
                case 3 :System.out.println("Exited...");
                        System.exit(0);
            }
        }while(true);
```

```
    }
}
```

Output:


mca@Z238-UL:~/JERIN/java/CYCLE_3$ javac shape6.java
mca@Z238-UL:~/JERIN/java/CYCLE_3$ java shape6
Jerin Jose
23mca035
08-apr-2024
1.Circle
2.Rectangle
3.exit
Enter your choice:
1
Enter the radius of the circle:
6
Perimeter of the circle: 113.03999999999999
Perimeter of the circle: 37.68
1.Circle
2.Rectangle
3.exit
Enter your choice:
2
Enter the length of the rectangle:
5
Enter the breadth of the rectangle:
10
Perimeter of a rectangle: 50.0
Perimeter of a rectangle: 30.0
1.Circle
2.Rectangle
3.exit
Enter your choice:
3
Exited...
mca@Z238-UL:~/JERIN/java/CYCLE_3$

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"+total);
    }
}
public class bill7
{
    public static void main(String[] args)
    {
    System.out.println("Jerin Jose\n 23mca035\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:~/JERIN/java/CYCLE_3$ javac bill7.java
mca@Z238-UL:~/JERIN/java/CYCLE_3$ java bill7
Jerin Jose
 23mca035
 08-apr-2024
Order no. #352123
Enter the date:
08-04-2024
Enter how many products are there:
2

Enter product id:
003
Enter product name:
soap
Enter the Quantity:
2
Enter the unit price:
30

Enter product id:
005
Enter product name:
brush
Enter the Quantity:
4
Enter the unit price:
15
Date:08-04-2024
Product Id      Name       Quantity        unit price    Total
---------------------------------------------------------------
003             soap            2               30.0    60.0
005             brush           4               15.0    60.0
---------------------------------------------------------------
                        Net.Amount      120.0
mca@Z238-UL:~/JERIN/java/CYCLE_3$
```