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

```
package javaprj;
class Student
{
	int maths = 85;
   int science = 72;
   int english = 88;
   int socialScience = 70;
}
class Sports extends Student
{
	String sport = "Football";
   int goals = 2;
   int assists = 1;
   int minutesPlayed = 81;
   int grace = 20;
}
public class Result extends Sports{
	public void display()
	{
	System.out.println("Academic Result");
   System.out.println("---------------");
   System.out.println("Maths : "+this.maths);
   System.out.println("Science : "+this.science);
   System.out.println("English : "+this.english);
   System.out.println("Social Science : "+this.socialScience);
   System.out.println("Sports Grace : "+this.grace);
   System.out.println("---------------");


   System.out.println("\n");
   System.out.println("Sports Result");
   System.out.println("-------------");
   System.out.println("Sport : "+this.sport);
   System.out.println("Goals : "+this.goals);
   System.out.println("Assists : "+this.assists);
   System.out.println("Minutes Played "+this.minutesPlayed);
   System.out.println("-------------");
	}
	public static void main(String[] args) {
		// TODO Auto-generated method stub
```

```
            Result obj=new Result();
            obj.display();

        }

}
```

OUTPUT

```
Academic Result
---------------
Maths : 85
Science : 72
English : 88
Social Science : 70
Sports Grace : 20
---------------


Sports Result
-------------
Sport : Football
Goals : 2
Assists : 1
Minutes Played 81
-------------
```

6. 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.

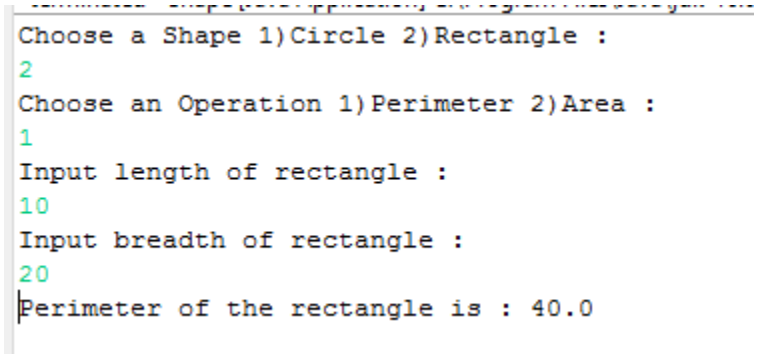
```
package javaprj;
import java.util.*;
interface prototype
{
        public void area();
        public void perimeter();
}
class Circle implements prototype
{
        int radius;
   Scanner scanner = new Scanner(System.in);

        public void area()
        {
```

```
                System.out.println("Input radius of circle : ");
        radius = scanner.nextInt();
        String area = Double.toString(Math.PI*radius*radius);
        System.out.println("Area of the circle is : "+area);

           }
           public void perimeter()
           {
                System.out.println("Input radius of circle : ");
        radius = scanner.nextInt();
        String perimeter = Double.toString(Math.PI*radius*2);
        System.out.println("Circumference of the circle is : "+perimeter);
    }
}
class Rectangle implements prototype
{
           int length;
    int breadth;

    Scanner scanner = new Scanner(System.in);

           public void area()
           {
                System.out.println("Input length of rectangle : ");
        length = scanner.nextInt();
        System.out.println("Input breadth of rectangle : ");
        length = scanner.nextInt();
        String area = Double.toString(length*breadth);
        System.out.println("Area of the rectangle is : "+area);
           }
           public void perimeter()
           {
                System.out.println("Input length of rectangle : ");
        length = scanner.nextInt();
        System.out.println("Input breadth of rectangle : ");
        length = scanner.nextInt();
        String perimeter = Double.toString(2*(length+breadth));
        System.out.println("Perimeter of the rectangle is : "+perimeter);
           }
}

public class Shape {

           public static void main(String[] args) {
```

```
            // TODO Auto-generated method stub
            Scanner scanner = new Scanner(System.in);
    int shape,operation;

    System.out.println("Choose a Shape 1)Circle 2)Rectangle : ");
    shape = scanner.nextInt();

    System.out.println("Choose an Operation 1)Perimeter 2)Area : ");
    operation = scanner.nextInt();

    if(shape==1){
        Circle circle = new Circle();
        if(operation==1){
            circle.perimeter();
        }
        else if(operation==2)
        {
            circle.area();
        }
        else {
            System.out.println("Operation code.");
        }
    }
    else if(shape==2)
    {
        Rectangle rectangle = new Rectangle();
        if(operation==1){
            rectangle.perimeter();
        }
        else if(operation==2)
        {
            rectangle.area();
        }
        else {
            System.out.println("Operation code :");
            System.exit(0);
        }
    }
    else {
        System.out.println("Incorrect Shape code.");
    }

}
```

}

OUTPUT



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

```
package javaprj;
import java.time.format.DateTimeFormatter;
import java.time.LocalDateTime;
import java.util.Scanner;
interface Bill {

    String productId = "";
    String productName="";
    int unitPrice = 0;
    int quantity = 0;
    int total = 0;
    public void printBillItem();
    public void printBillHeader();
    public void printBillFooter(int billTotal);

}
class ProductBill implements Bill {

    String productId = "";
    String productName="";
    int unitPrice = 0;
    int quantity = 0;
    int total = 0;

    ProductBill(String productId,String productName,int unitPrice,int quantity){
        this.productId = productId;
        this.productName = productName;
```

```
        this.unitPrice = unitPrice;
        this.quantity = quantity;
        this.total = unitPrice*quantity;
    }

    public void printBillHeader() {
        System.out.println("Order No : " + Math.random() * 1000);

        DateTimeFormatter dtf = DateTimeFormatter.ofPattern("yyyy/MM/dd HH:mm:ss");
        LocalDateTime now = LocalDateTime.now();
        System.out.println("Date : " + dtf.format(now));

        System.out.println("Product ID              Name  Quantity  Unit Price       Total ");
        System.out.println("-----------------------------------------------------------------");
    }

    public void printBillItem()
    {
        System.out.format("%10s%20s%10d%12d%12d
\n",this.productId,this.productName,this.unitPrice,this.quantity,this.total);
    }

    public void printBillFooter(int billTotal)
    {
        System.out.println("-----------------------------------------------------------------");
        System.out.format("%64s \n","Net. Amount : "+billTotal);
    }

}

public class calculate {

            public static void main(String[] args) {
                    // TODO Auto-generated method stub
                    Scanner scanner = new Scanner(System.in);

        System.out.println("Input Number of items in Bill : ");
        int count = scanner.nextInt();
        ProductBill[] productBill=new ProductBill[count];
        int billTotal=0;

        for(int i=0;i<count;i++) {
            System.out.println("Enter Product ID : ");
            String productId = scanner.next();
```

```
            System.out.println("Enter Name : ");
            String name = scanner.next();
            System.out.println("Enter Quantity : ");
            int qty = scanner.nextInt();
            System.out.println("Unit Price : ");
            int up = scanner.nextInt();

            productBill[i]=new ProductBill(productId,name,up,qty);
        }

        if(count>0){

            productBill[0].printBillHeader();

            for(int i=0;i<count;i++) {
                productBill[i].printBillItem();
                billTotal += productBill[i].total;
            }
            productBill[0].printBillFooter(billTotal);
        }

    }

}
```

OUTPUT