

10. Area of different shapes using overloaded functions

Code :

```
import java.util.Scanner;
public class AreaCalculator
{
    void calculateArea(float x)
    {
        System.out.println("Area of the square: " + x * x + " sq units");
    }
    void calculateArea(float x, float y)
    {
        System.out.println("Area of the rectangle: " + x * y + " sq units");
    }
    void calculateArea(double r)
    {
        double area = 3.14 * r * r;
        System.out.println("Area of the circle: " + area + " sq units");
    }

    public static void main(String args[])
    {
        System.out.println("Name : TOBIN K TOMY\nRoll No : 23MCA059\nDate : 06/04/2024");
        System.out.println("Program 10 : Area of different shapes using overloaded functions ");
        Scanner scanner = new Scanner(System.in);
        AreaCalculator obj = new AreaCalculator();
        System.out.println("Enter the dimensions:");
        System.out.print("Enter side length of the square: ");
        float side = scanner.nextFloat();
        obj.calculateArea(side);
        System.out.print("Enter length of the rectangle: ");
        float length = scanner.nextFloat();
        System.out.print("Enter width of the rectangle: ");
        float width = scanner.nextFloat();
        obj.calculateArea(length, width);
        System.out.print("Enter radius of the circle: ");
        double radius = scanner.nextDouble();
        obj.calculateArea(radius);
        scanner.close();
    }
}
```

Output :

```
Name : TOBIN K TOMY
Roll No : 23MCA059
Date : 06/04/2024
Program 10 : Area of different shapes using overloaded functions
Enter the dimensions:
Enter side length of the square: 4
Area of the square: 16.0 sq units
Enter length of the rectangle: 5
Enter width of the rectangle: 6
Area of the rectangle: 30.0 sq units
Enter radius of the circle: 6
Area of the circle: 113.03999999999999 sq units
```

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("Name : TOBIN K TOMY\nRoll No : 23MCA059\nDate : 06/04/2024");
System.out.println("Program 11 : Details of Employee's");
System.out.println("Enter 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("Enter Employee id: ");
int Empid=sc.nextInt();
System.out.println("Enter Employee Name: ");
String Name=sc.next();
System.out.println("Enter Salary: ");
double Salary=sc.nextDouble();
System.out.println("Enter Address: ");
String Address=sc.next();
System.out.println("Enter department: ");
String dept=sc.next();
System.out.println("Enter 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("Information of employee "+j);
arr[i].display();
}
sc1.close();
}
}
```

Output :

```
Name : TOBIN K TOMY
Roll No : 23MCA059
Date : 06/04/2024
Program 11 : Details of Employee's
Enter the No. of Employee's
2
Enter Employee id:
101
Enter Employee Name:
Tobin
Enter Salary:
25000
Enter Address:
Koovackal
Enter department:
Physics
Enter Subject:
Geophysics
Enter Employee id:
102
Enter Employee Name:
Thomas
Enter Salary:
28000
Enter Address:
Manjakalayil
Enter department:
Physics
Enter Subject:
Astrology

*****Informations of all the employee's*****
Information of employee 1
Employee id: 101
Name: Tobin
Salary: 25000.0
Address: Koovackal
Department: Physics
Subject: Geophysics

Information of employee 2
Employee id: 102
Name: Thomas
Salary: 28000.0
Address: Manjakalayil
Department: Physics
Subject: Astrology
```

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.*;
class Person{
String Name;
String Gender;
String Address;
String Age;
public Person(String Name,String Gender,String Address,String Age){
this.Name=Name;
this.Gender=Gender;
this.Address=Address;
this.Age=Age;
}
}
class Employee extends Person {
String Empid;
String Company_Name;
String Qualification;
String Salary;
public Employee(String Name,String Gender,String Address,String
Age ,String
Empid,String Company_Name, String Qualification,String Salary){
super(Name,Gender,Address,Age);
this.Empid= Empid;
this.Company_Name=Company_Name;
this.Qualification=Qualification;
this.Salary=Salary;
}
}
class Teacher extends Employee{
String Teacherid;
String Department;
String Subject;
public Teacher(String Name,String Gender,String Address,String Age,String
```

```
Empid,String Company_Name,String Qualification,String Salary,String
Teacherid,String
Department,String Subject){
super(Name,Gender,Address,Age,Empid,Name,Qualification, Salary);
this.Teacherid=Teacherid;
this.Department=Department;
this.Subject=Subject;
}
public void read(){
Scanner s =new Scanner(System.in);
System.out.println("enter the Name:");
Name=s.nextLine();
System.out.println("enter the Gender:");
Gender=s.nextLine();
System.out.println("enter the Address:");
Address=s.nextLine();
System.out.println("enter the Age:");
Age=s.nextLine();
System.out.println("enter the Employ id:");
Empid=s.nextLine();
System.out.println("enter the Company Name:");
Company_Name=s.nextLine();
System.out.println("enter the Qualification:");
Qualification=s.nextLine();
System.out.println("enter the Salary:");
Salary=s.nextLine();
System.out.println("enter the Teacher id:");
Teacherid=s.nextLine();
System.out.println("enter the Department:");
Department=s.nextLine();
System.out.println("Enter the Subject:");
Subject=s.nextLine();
}
public void display(){
System.out.println("\nEmployee Details");
System.out.println("Name: " + Name);
System.out.println("Gender: " + Gender);
System.out.println("Address: " + Address);
System.out.println("Age: " + Age);
System.out.println("Empid: " + Empid);
System.out.println("Company Name: " + Company_Name);
System.out.println("Qualification: " + Qualification);
System.out.println("Salary: " + Salary);
System.out.println("\nTeachers Details");
System.out.println("Teacher id: " + Teacherid);
System.out.println("Department: " + Department);
```

```
System.out.println("Subject: " + Subject);
}
}
class InheritancePerson{
public static void main(String Args[]){
System.out.println("Name : TOBIN K TOMY\nRoll No : 23MCA059\nDate :
06/04/2024");
System.out.println("Program 12: Details of Teachers ");
int i,n;
Scanner sc =new Scanner(System.in);
System.out.println("Enter the Number of employee's");
n=sc.nextInt();
Teacher T[ ] = new Teacher[n];
for(i=0;i<n;i++){
T[i]=new
Teacher("Name","Gender","Address","Age","Empid","Name","Qualification
","Salary","Teacherid","Department","Subject");
T[i].read();
}
for(i=0;i<n;i++){
T[i].display();
}
}
}
```


Output :

```
Name : TOBIN K TOMY
Roll No : 23MCA059
Date : 06/04/2024
Program 12: Details of Teachers
Enter the Number of employee's
1
enter the Name:
Tobin
enter the Gender:
Male
enter the Address:
Koovackal
enter the Age:
26
enter the Employ id:
101
enter the Company Name:
IBM
enter the Qualification:
MCA
enter the Salary:
28000
enter the Teacher id:
105
enter the Department:
Computer Applications
Enter the Subject:
Computer

Employee Details
Name: Tobin
Gender: Male
Address: Koovackal
Age: 26
Empid: 101
Company Name: IBM
Qualification: MCA
Salary:28000

Teachers Details
Teacher id: 105
Department: Computer Applications
Subject: Computer
```

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("Name : TOBIN K TOMY\nRoll No : 23MCA059\nDate : 06/04/2024");
System.out.println("Program 13: Details of Books ");
System.out.println("Enter the No. of Literature Books");
```

```
Scanner sc1 = new Scanner(System.in);
int num = sc1.nextInt();
Literature arr[]=new Literature[num];
System.out.println("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("Book : ");
    String boo =sc.nextLine();
    System.out.println("Publisher: ");
    String pub =sc.nextLine();
    arr[i]=new Literature(boo,pub);
}
System.out.println("Enter the No. of Fiction Books");
int num1 = sc1.nextInt();
Fiction arr1[]=new Fiction[num1];
System.out.println("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("Book : ");
    String boo =sc.nextLine();
    System.out.println("Publisher: ");
    String pub =sc.nextLine();
    arr1[i]=new Fiction(boo,pub);
}
sc.close();
sc1.close();
System.out.println(".....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(".....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 :

```
Name : TOBIN K TOMY  
Roll No : 23MCA059  
Date : 06/04/2024  
Program 13: Details of Books  
Enter the No. of Literature Books  
2  
Enter the Literature Book Details  
  
1)  
Book :  
400 Days  
Publisher:  
DC Books  
  
2)  
Book :  
Three Mistakes of My Life  
Publisher:  
DC Books  
Enter the No. of Fiction Books  
2  
Enter the Fiction Book Details  
  
1)  
Book :  
The Alchemist  
Publisher:  
Blues Books  
  
2)  
Book :  
The Kite Runner  
Publisher:  
Global Books  
.....Informations of all the Literature Books.....  
  
1).  
Publisher :400 Days  
Book :DC Books  
  
2).  
Publisher :Three Mistakes of My Life  
Book :DC Books  
.....Informations of all the Fiction Books.....  
  
1).  
Publisher :The Alchemist  
Book :Blues Books  
  
2).  
Publisher :The Kite Runner  
Book :Global Books
```

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("Name : TOBIN K TOMY\nRoll No : 23MCA059\nDate : 08/04/2024");
System.out.println("Program 14: Sports Details of Student ");
Scanner sc =new Scanner(System.in);
System.out.println("Enter the Sports Details of Student");
System.out.println("Sport: ");
String a =sc.next();
System.out.println("Sport Rating out of 10: ");
```

```
int b=sc.nextInt();
System.out.println("Enter the Sports Details of Student");
System.out.println("Academic Grade: ");
String c =sc.next();
System.out.println("Overall percentage: ");
double d =sc.nextDouble();
sc.close();
Result obj= new Result(a,b,c,d);
obj.display();
}
}
```

Output :

```
Name : TOBIN K TOMY
Roll No : 23MCA059
Date : 08/04/2024
Program 14: Sports Details of Student
Enter the Sports Details of Student
Sport:
Cricket
Sport Rating out of 10:
9
Enter the Sports Details of Student
Academic Grade:
A
Overall percentage:
96

Sports Details of Student
Sport :Cricket
Rating :9

Academic Details of Student
Academic Grade :A
Overall percentage :96.0
```

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

```
public void area()
{
    System.out.println("Area of a rectangle: "+(l*b));
}
public void perimeter()
{
    System.out.println("Perimeter of a rectangle: "+(2*(l+b)));
}
}
public class Function
{
    public static void main(String[] args)
    {
        System.out.println("\nName : TOBIN K TOMY\nRoll No :
        23MCA059\nDate : 08/04/2024");
        System.out.println("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. ");
        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 :

```
Name : TOBIN K TOMY
Roll No : 23MCA059
Date : 08/04/2024
Program 15 : Create an interface having prototypes of functions area() and
perimeter(). Create two classes Circle and Rectangle which implements the a
bove interface. Create a menu driven program to find area and perimeter of
objects.

1.Circle
2.Rectangle
3.exit
Enter your choice:
1
Enter the radius of the circle:
3
Area of the circle: 28.259999999999998
Perimeter of the circle: 18.84

1.Circle
2.Rectangle
3.exit
Enter your choice:
2
Enter the length of the rectangle:
5
Enter the breadth of the rectangle:
4
Area of a rectangle: 20.0
Perimeter of a rectangle: 18.0

1.Circle
2.Rectangle
3.exit
Enter your choice:
3
Exited...
```

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();
}
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 Amount
{
    public static void main(String[] args)
    {
        System.out.println("\nName : TOBIN K TOMY\nRoll No :
        23MCA059\nDate : 08/04/2024");
        System.out.println("Program 16 : Prepare bill with the given format using
        calculate method from interface");
        int n,i;
        double namount=0;

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter the order number: ");
        int orderNo = sc.nextInt();

        System.out.println("Enter the date:");
        String date = sc.next();

        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("\n Order no. "+orderNo);
        System.out.println("Date:"+date);
        System.out.println("Product Id\tName\tQuantity\tunit price\tTotal ");
        System.out.println("-----");
        for(i=0;i<n;i++){
            ob[i].display();
            namount += ob[i].total;
        }
        System.out.println("-----");
        System.out.println("\t\t\t\t\tNet. Amount\t\t"+ namount);
```

```
}
}
```

Output :

```
Name : TOBIN K TOMY
Roll No : 23MCA059
Date : 08/04/2024
Program 16 : Prepare bill with the given format using calculate method from interface
Enter the order number: 80048
Enter the date:
12/02/2024
Enter how many products are there:
2

Enter product id:
101
Enter product name:
Pen
Enter the Quantity:
2
Enter the unit price:
20

Enter product id:
102
Enter product name:
Chair
Enter the Quantity:
4
Enter the unit price:
90

Order no. 80048
Date:12/02/2024


| Product Id  | Name  | Quantity | unit price | Total |
|-------------|-------|----------|------------|-------|
| 101         | Pen   | 2        | 20.0       | 40.0  |
| 102         | Chair | 4        | 90.0       | 360.0 |
| Net. Amount |       |          |            | 400.0 |


```