10. Area of different shapes using overloaded functions.

Program:

```
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) {
      Scanner sc = new Scanner(System.in);
      System.out.println(“JERIL JOY,NO:34,26-02-2024,PRGRM-C3.1 SHAPES");
      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@mca-HP-Z238-Microtower-Workstation:~/JAVA34$ javac shapes.java
mca@mca-HP-Z238-Microtower-Workstation:~/JAVA34$ java shapes
JERIL JOY,NO:34,26-02-2024,PRGRM-C3.1 SHAPES

Enter the Length
6
Enter the Breath
4
Enter the Height
5
Enter the Radius
3

Area of Circle is Radius 3 = 28.259999999999998

Area of Rectangle is with dimensions 6 X 4 = 24

Area of Cuboid is with dimensions 6 X 4 X 5 = 120
```

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.

Program:

```
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("\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**********");
   System.out.println("JERIL JOY,NO:34,26-02-2024,PRGRM-C3.2 EMPLOYEE");
   for(int i=0;i<num;i++){
      int j=i+1;
      System.out.println("\n"+j+").");
      arr[i].display();

 }
 sc1.close();
 }


}
```

Output:

```
mca@mca-HP-Z238-Microtower-Workstation:~/JAVA34$ javac Teacher.java
mca@mca-HP-Z238-Microtower-Workstation:~/JAVA34$ java Teacher

Enter the No. of Employee's
2

Enter Employee id:
1

Enter Employee Name:
MERIN

Enter Salary:
55000

Enter Address:
SJCET

Enter department:
MCA

Enter Subject:
JAVA

Enter Employee id:
2

Enter Employee Name:
JERIN

Enter Salary:
55000

Enter Address:
SJCET

Enter department:
MCA

Enter Subject:
C
```

```
********Informations of all the employee's************
JERIL JOY,NO:34,26-02-2024,PRGRM-C3.2 EMPLOYEE

1).
Employee id: 1
Name: MERIN
Salary: 55000.0
Address: SJCET
Department: MCA
Subject: JAVA

2).
Employee id: 2
Name: JERIN
Salary: 55000.0
Address: SJCET
Department: MCA
Subject: C
```

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.

Program:

```
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("\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(“JERIL JOY,NO:34,26-02-2024,PRGRM-C3.3 EMPLOYEE_2”);
    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:

```
Enter the No. of Teacher's
2

 Enter the Teacher Details


1).

 Name:
JERIN

 Gender:
MALE

 Address:
SJCET

 Age:
25

 Employee id:
1

 Company name:
TCS

 Qualification:
MCA

 Salary:
60000

 Subject:
JAVA

 Department:
CS

 Teacher Id:
1
```

```
2).

 Name:
MERIN

 Gender:
FEMALE

 Address:
SJCET

 Age:
24

 Employee id:
2

 Company name:
UST

 Qualification:
MCA

 Salary:
65000

 Subject:
HTML

 Department:
CS

 Teacher Id:
2
JERIL JOY,NO:34,26-02-2024,PRGRM-C3.3 EMPLOYEE_2
```

```
2
JERIL JOY,NO:34,26-02-2024,PRGRM-C3.3 EMPLOYEE_2

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

1).
Name: JERIN
Gender: MALE
Address: SJCET
Age: 25
Employee id: 1
Company Name: TCS
Qualification: MCA
Salary: 60000
Subject: JAVA
Department: CS
Teacher id: 1

2).
Name: MERIN
Gender: FEMALE
Address: SJCET
Age: 24
Employee id: 2
Company Name: UST
Qualification: MCA
Salary: 65000
Subject: HTML
Department: CS
Teacher id: 2
```

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.

Program:

```
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("JERIL JOY,NO:34,26-02-2024,PRGRM-C3.4 PUBLISHER");
```

```
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:

```
JERIL JOY,NO:34,26-02-2024,PRGRM-C3.4 PUBLISHER

Enter the No. of Literature Books
1

 Enter the Literature Book Details


1).

 Publisher:
DC

 Book :
LIFE

Enter the No. of Fiction Books
1

 Enter the Fiction Book Details


1).

 Publisher:
DC

 Book :
WONDER

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

1).
Publisher :DC
Book :LIFE

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

1).
Publisher :DC
Book :WONDER
```

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

Program:

```
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) {
      Scanner sc =new Scanner(System.in);
      System.out.println(“JERIL JOY,NO:34,26-02-2024,PRGRM-C3.5 STUDENT ”);
      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@mca-HP-Z238-Microtower-Workstation:~$ cd JAVA34
mca@mca-HP-Z238-Microtower-Workstation:~/JAVA34$ javac result.java
mca@mca-HP-Z238-Microtower-Workstation:~/JAVA34$ java result
JERIL JOY,NO:34,26-02-2024,PRGRM-C3.5 STUDENT

Enter the Sports Details of Student

 Sport:
FOOTBALL

 Sport Rating  out of 10:
7

Enter the Sports Details of Student

 Academic Grade:
A

 Overall percentage:
85

Sports Details of Student
Sport :FOOTBALL
Rating :7

Academic Details of Student
Academic Grade :A
Overall percentage :85.0
```

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.

Program:

```
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("JERIL JOY,NO:34,26-02-2024,PRGRM-C3.6 SHAPES");
        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:

```
JERIL JOY,NO:34,26-02-2024,PRGRM-C3.6 SHAPES

1.Circle
2.Rectangle
3.exit
Enter your choice:
1
Enter the radius of the circle:
3
Perimeter 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:
6
Enter the breadth of the rectangle:
4
Perimeter of a rectangle: 24.0
Perimeter of a rectangle: 20.0

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

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

Program:

```
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("JERIL JOY,NO:34,26-02-2024,PRGRM-C3.7 BILL");
      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:

```
JERIL JOY,NO:34,26-02-2024,PRGRM-C3.7 BILL
Order no. #790826
Enter the date:
26/02/24
Enter how many products are there:
2

Enter product id:
1
Enter product name:
OIL
Enter the Quantity:
10
Enter the unit price:
100

Enter product id:
2
Enter product name:
BISCUIT
Enter the Quantity:
2
Enter the unit price:
50
Date:26/02/24
Product Id      Name       Quantity        unit price    Total
-------------------------------------------------------------
1               OIL             10              100.0   1000.0
2               BISCUIT         2               50.0    100.0
-------------------------------------------------------------
                        Net.Amount      1100.0
```