20MCA132 OBJECT ORIENTED PROGRAMMING LAB

ASSIGNMENT-4(CO-3)

SUBMITTED BY

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SUBMITTED TO ,

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Course Outcome 3 (CO3)

1. Area of different shapes using overloaded functions

PROGRAM

```java
import java.util.*;

public class area
{
        static double circle(double r)

        {

                return 3.14*r*r;

        }

        static int rectangle(int a,int b)

        {

                return a*b;

        }

        static double triangle(double c, double d)

        {

                return 0.5*c*d;

        }

        static double cone(double e,double f)

        {

                return (3.14*e*e)+(3.14*e*f);

        }

        static double sphere(double r1)

        {

                return 4*3.14*r1;

        }

        static double cylinder(double h,double r2)

        {
```

```java
                return (2*3.14*r2)+(r2+h);
        }
        public static void main(String[] args)
        {
                Scanner o= new Scanner(System.in);

                System.out.println();
                System.out.println("1.CHECK AREA OF CIRCLE");
                System.out.println();
                System.out.println("********************");
                System.out.print("Enter the Radius of Circle : ");
                double r=o.nextInt();
                double ab=circle(r);
                System.out.println("Area of Circle : "+ab);

                System.out.println();
                System.out.println("2.CHECK AREA OF RECTANGLE");
                System.out.println();
                System.out.println("********************");
                System.out.println();
                System.out.print("Enter the Length of Rectangle : ");
                int a=o.nextInt();
                System.out.print("Enter the Breadth of Rectangle : ");
                int b=o.nextInt();
                int ac=rectangle(a,b);
                System.out.println("Area of Rectangle : "+ac);

                System.out.println();
                System.out.println("3.CHECK AREA OF TRIANGLE");
                System.out.println();
```

```java
System.out.println("*********************");

System.out.println();

System.out.print("Enter the Height of Triangle : ");

double c=o.nextInt();

System.out.print("Enter the Base of Triangle : ");

double d=o.nextInt();

double cd=triangle(c,d);

System.out.println("Area of Triangle : "+cd);


System.out.println();

System.out.println("4.CHECK AREA OF CONE");

System.out.println();

System.out.println("*********************");

System.out.println();

System.out.print("Enter the Base Radius of Cone : ");

double e=o.nextInt();

System.out.print("Enter the Slant Height of Cone : ");

double f=o.nextInt();

double ef=cone(e,f);

System.out.println("Area of Cone : "+ef);


System.out.println();

System.out.println("5.CHECK AREA OF SPHERE : ");

System.out.println();

System.out.println("*********************");

System.out.println();

System.out.print("Enter the Radius of Sphere : ");

double r1=o.nextInt();

double ra=sphere(r1);

System.out.println("Area of Sphere : "+ra);
```

```java
System.out.println();

System.out.println("6.CHECK AREA OF CYLINDER : ");

System.out.println();

System.out.println("*********************");

System.out.println();

System.out.print("Enter the Height of Cylinder : ");

double h=o.nextInt();

System.out.print("Enter the Radius of Cylinder : ");

double r2=o.nextInt();

double rh=cylinder(h,r2);

System.out.println("Area of Cylinder : "+rh);
    }

}
```

OUTPUT

2. 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

```java
import java.util.*;

class Employees
{
        int empid;
        String name,address;
        double salary;
        public Employees(int empid, String name, String address, double salary)
        {
                this.empid = empid;
                this.name = name;
                this.address = address;
                this.salary = salary;
        }
}

public class Teacher extends Employees
{
        String subject,department;
        public Teacher(int empid, String name, String address, double salary,String
department,String subject )
        {
                super(empid, name, address, salary);
                this.subject = subject;
                this.department = department;
        }
        void display()
        {
```

```java
            System.out.println("Empid : "+this.empid+" \nName : "+this.name+" \nSalary
: "+this.salary+" \nAddress : "+this.address+" \ndepartment : "+this.department+" \nSubjects
: "+this.subject);
    }
    public static void main(String[] args)
    {
            Scanner sc=new Scanner(System.in);
            Scanner oc=new Scanner(System.in);
            int n;
            System.out.print("Enter number of Teachers : ");
            n=sc.nextInt();
            Teacher obj[]=new Teacher[n];
            for(int i=0;i<n;i++)
            {
                    int j = i+1;
                    System.out.print("Enter Empid of teacher "+j+" : ");
                    int Empid = sc.nextInt();
                    System.out.print("Enter Name of teacher "+j+" : ");
                    String Name = oc.nextLine();
                    System.out.print("Enter Salary of teacher "+j+" : ");
                    double Salary = sc.nextDouble();
                    System.out.print("Enter Address of teacher "+j+" : ");
                    String Address = oc.nextLine();
                    System.out.print("Enter department of teacher "+j+" : ");
                    String department =oc.nextLine();
                    System.out.print("Enter Subjects of teacher "+j+" : ");
                    String Subjects =oc.nextLine();
                    obj[i] = new Teacher(Empid, Name, Address, Salary, department,
Subjects);
            }
            System.out.println("\n----------------------------------------------------------------
-----\n");
```

```
        System.out.println("Teacher's List \n");

        for(int i=0;i<n;i++)

        {

                obj[i].display();

        }

    }

}
```

OUTPUT

3. 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 inheritsthe 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

```java
import java.util.Scanner;
class Person
{
    String name,gender,address;
    int age;
    public Person(String name, String gender, String address, int age)
    {
            super();
            this.name = name;
            this.gender = gender;
            this.address = address;
            this.age = age;
    }
}
class Employee extends Person
{
    int empid;
    String company_name,qualification;
    double salary;
    public Employee(String name, String gender, String address, int age, int empid, String company_name,
    String qualification, double 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 subject,department;
    int teacherid;
    public Teacher(String name, String gender, String address, int age, int empid, String company_name,
    String qualification, double salary, String subject, String department, int teacherid)
```

```java
        {
                super(name, gender, address, age, empid, company_name, qualification,
salary);
                this.subject = subject;
                this.department = department;
                this.teacherid = teacherid;
        }
    void display()
    {
                System.out.println("....Personal details...");
                System.out.println("Name : "+this.name+"\nGender : "+this.gender+"\nAge
:"+this.age);
                System.out.println("...Employee details....");
                System.out.println("Empid : "+this.empid +"\ncompany_name :
"+this.company_name+"\nSalary : "+this.salary+" Address :
"+this.address+"\nqualification : "+this.qualification);
                System.out.println("...Teacher's details...");
                System.out.println("Teacherid : "+this.teacherid+ "\ndepartment :
"+this.department+"\nSubjects : "+this.subject);
    }
}
public class Main5
{
    public static void main(String[] args)
    {
                Scanner s=new Scanner(System.in);
                Scanner os=new Scanner(System.in);
                int n;
                System.out.println("Enter number of Teachers : ");
                n=s.nextInt();
                Teacher obj[]=new Teacher[n];
                for(int i=0;i<n;i++)
                {
                        System.out.println("Enter the person name:");
                        String nam1=os.nextLine();
                        System.out.println("Enter the Gender: ");
                        String gen1=os.nextLine();
                        System.out.println("Enter the Address: ");
                        String adr1=s.next();
                        System.out.println("Enter the Age:");
                        int age1=s.nextInt();
                        System.out.println("Enter the Employee id: ");
                        int id1=s.nextInt();
                        System.out.println("Enter the Company name: ");
                        String cname1=os.nextLine();
                        System.out.println("Enter the Salary:");
                        double sal1=s.nextDouble();
                        System.out.println("Enter the Qualification:");
                        String qu1=os.nextLine();
                        System.out.println("Enter the Teacher id: ");
```

```
                        int tid1=s.nextInt();
                        System.out.println("Enter the Department:");
                        String dept1=os.nextLine();
                        System.out.println("Enter the Subject:");
                        String sub1=os.nextLine();
                        obj[i]=new
Teacher(nam1,gen1,adr1,age1,id1,cname1,qu1,sal1,sub1,dept1,tid1);
                }
                System.out.println("\n--------------------------------------------------------------------
-----\n");

                for(int i=0;i<n;i++)
                {
                        obj[i].display();
                }
        }
}
```

OUTPUT

4. 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

```java
import java.util.Scanner;
class Publisher
{
    String Pubname;
    Publisher()
    {
        Scanner s=new Scanner(System.in);
        System.out.println("Enter publisher name");
        Pubname=s.next();
    }
}
class Book extends Publisher
{
    String title, author;
    int price;
    Book()
    {
        Scanner s=new Scanner(System.in);
        Scanner os=new Scanner(System.in);
        System.out.println("Enter Title of the book");
        title=os.nextLine();
        System.out.println("Enter Author's name");
        author=os.nextLine();
        System.out.println("Enter price");
        price=s.nextInt();
    }
}
class Literature extends Book
{
    Literature()
    {
        System.out.println("Literature Books");
    }
    void display()
    {
        System.out.println("Publisher name: "+Pubname);
        System.out.println("Title of the book: "+title);
        System.out.println("Author's name: "+author);
        System.out.println("Price: "+price);
    }
}
public class Fiction extends Literature
```

```java
{
    Fiction()
    {
        System.out.println("Friction Books");
    }
    void display()
    {
        super.display();
    }
    public static void main(String[] args)
    {
        int n;
        Scanner s=new Scanner(System.in);
        System.out.println("Enter the No of literature book: ");
        int a=s.nextInt();
        Literature L[]=new Literature[a];
        for(int i=0;i<a;i++)
        {
            L[i]=new Literature();
        }
        System.out.println("Enter the No of Fiction book: ");
        int b=s.nextInt();
        Fiction F[]=new Fiction[b];
        for(int i=0;i<b;i++)
        {
            F[i]=new Fiction();
        }
        int no;
        System.out.println("Enter your choice of book \n1-Literature\n2-Fiction");

        no=s.nextInt();
        int type =no;
        switch (no)
        {
            case 1:
            System.out.println(".....Details of literature books ");

            for(int i=0;i<a;i++)
                L[i].display();
            break;
            case 2:
            System.out.println(".....Details of fiction books");
            for(int i=0;i<b;i++)
                F[i].display();
            break;
            default:
            System.out.println("Wrong input");
        }
    }
}
```

<u>OUTPUT</u>

```
Command Prompt                                                    —    □

D:\java_lab>javac Fiction.java

D:\java_lab>java Fiction
Enter the No of literature book:
2
Enter publisher name
Allen Samuel
Enter Title of the book
The True Story
Enter Author's name
Samuel
Enter price
340
Literature Books
Enter publisher name
ADN
Enter Title of the book
The Story
Enter Author's name
Anu
Enter price
320
Literature Books
Enter the No of Fiction book:
1
Enter publisher name
ADn
Enter Title of the book
The Earth
Enter Author's name
Amal
Enter price
190
Literature Books
Friction Books
Enter your choice of book
1-Literature
2-Fiction
1
.....Details of literature books
Publisher name: Allen
Title of the book: The True Story
Author's name: Samuel
Price: 340
Publisher name: ADN
Title of the book: The Story
Author's name: Anu
Price: 320

D:\java_lab>
```