**JAVA LAB EXAM**

**QUESTION 1:**

Create a class called point with data members to rep[resent the x and y coordinates and have a function to display the coordinates. Derive a class called Circle from Point with a data member to represent the radius.

Have a functuion called area() to calculate the area of the circle and also display the coordinates.

Derive a class Cylinder from Circle with a data member to represent the height of the cylinder.Have a function called Volume()to calculate the volume of the Cylinder.

**PROGRAM**

**import** java.util.Scanner;

//import StudentPackage.Circle;

//import StudentPackage.Cylinder;

//import StudentPackage.Point;

**class** Point {

**int** x,y;

Point(**int** a, **int** b){

x = a;

y = b;

}

**void** display() {

System.***out***.println("x="+x);

System.***out***.println("y="+y);

}

}

//import StudentPackage.Circle;

//import StudentPackage.Cylinder;

//import StudentPackage.Point;

**class** Circle **extends** Point {

**double** radius = 0.0;

**int** x,y;

Circle(**int** a, **int** b) {

**super**(a, b);

radius = Math.*sqrt*((a\*a)+(b\*b));

x=a;

y=b;

}

//Circle(int a, int b) {

//super(a, b);

//radius = Math.sqrt((a\*a)+(b\*b));

//x=a;

//y=b;

//}

**double** area() {

**return** (22/7)\*radius\*radius;

}

}

**class** Cylinder **extends** Circle {

Scanner sc = **new** Scanner(System.***in***);

**int** height = 0;

**double** area = 0.0;

Cylinder(**int** a, **int** b) {

**super**(a, b);

System.***out***.println("Enter the height of the cylinder");

height = sc.nextInt();

area = **super**.area();

}

**double** volume() {

**return** area\*height;

}

//System.out.println("Enter the y coordinate:");

//int y = sc.nextInt();

//Circle ob1 = new Circle(x,y);

//System.out.println("Area of the circle is "+ob1.area());

//Cylinder ob2 = new Cylinder(10,10);

//System.out.println("The volume of the cylinder is "+ob2.volume());

//}

**public** **class** Exam1 {

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

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter the x coordinate: ");

**int** x = sc.nextInt();

System.***out***.println("Enter the y coordinate:");

**int** y = sc.nextInt();

Circle ob1 = **new** Circle(x,y);

System.***out***.println("Area of the circle is "+ob1.area());

Cylinder ob2 = **new** Cylinder(10,10);

System.***out***.println("The volume of the cylinder is "+ob2.volume());

}

}

}

**OUTPUT**

Please enter information regarding books:

Enter title: harry

Enter author: abc

Enter cost: 100

Enter no of books: 100

Enter title: potter

Enter author: xyz

Enter cost:

150

Enter no of books: 200

Enter title: alice

Enter author: stuti

Enter cost: 130

Enter no of books: 150

Enter title to search: alice

Enter no of books required: 100

Title: alice, Author: stuti

Cost: 130.0

Books are sufficient.

Total cost of books: 13000.0

**QUESTION 2:**

a) Create a class to hold information about books.Write a function to display information about the book.

Data members: Title,Author,cost,no\_of\_books

b) Create 3 instances of the above class and initialize the members of the class with the data accepted from the user.

c) Accept a title and the no\_of\_books required from the user. Find whether the book exists. If it exists, check if the no\_of\_books are sufficient and if so indicate the total cost of the books.

**PROGRAM**

**import** java.util.Scanner;

//import StudentPackage.Circle;

//import StudentPackage.Cylinder;

//import StudentPackage.Point;

**public** **class** Exam1 {

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

Scanner sc = **new** Scanner(System.***in***);

System.***out***.println("Enter the x coordinate: ");

**int** x = sc.nextInt();

System.***out***.println("Enter the y coordinate:");

**int** y = sc.nextInt();

Circle ob1 = **new** Circle(x,y);

System.***out***.println("Area of the circle is "+ob1.area());

Cylinder ob2 = **new** Cylinder(10,10);

System.***out***.println("The volume of the cylinder is "+ob2.volume());

}

}

**class** Point {

**int** x,y;

Point(**int** a, **int** b){

x = a;

y = b;

}

**void** display() {

System.***out***.println("x="+x);

System.***out***.println("y="+y);

}

}

//import StudentPackage.Circle;

//import StudentPackage.Cylinder;

//import StudentPackage.Point;

**class** Circle **extends** Point {

**double** radius = 0.0;

**int** x,y;

Circle(**int** a, **int** b) {

**super**(a, b);

radius = Math.*sqrt*((a\*a)+(b\*b));

x=a;

y=b;

}

//Circle(int a, int b) {

//super(a, b);

//radius = Math.sqrt((a\*a)+(b\*b));

//x=a;

//y=b;

//}

**double** area() {

**return** (22/7)\*radius\*radius;

}

}

**class** Cylinder **extends** Circle {

Scanner sc = **new** Scanner(System.***in***);

**int** height = 0;

**double** area = 0.0;

Cylinder(**int** a, **int** b) {

**super**(a, b);

System.***out***.println("Enter the height of the cylinder");

height = sc.nextInt();

area = **super**.area();

}

**double** volume() {

**return** area\*height;

}

//System.out.println("Enter the y coordinate:");

//int y = sc.nextInt();

//Circle ob1 = new Circle(x,y);

//System.out.println("Area of the circle is "+ob1.area());

//Cylinder ob2 = new Cylinder(10,10);

//System.out.println("The volume of the cylinder is "+ob2.volume());

//}

}

**OUTPUT**

Enter the x coordinate:

2

Enter the y coordinate:

3

Area of the circle is 38.99999999999999

Enter the height of the cylinder

4

The volume of the cylinder is 2400.0