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1.interface Shape{

double pi =3.14;

public double perimeter();

public double area();

}

class Circle implements Shape{

float radius;

Circle(float r){

radius = r;

}

public double area(){

return pi\*radius\*radius;

}

public double perimeter(){

return 2\*pi\*radius;

}

}

class Ecllipse implements Shape{

float a,b;

Ecllipse(float a,float b){

this.a = a;

this.b=b;

}

public double perimeter(){

return (2\*pi\*Math.sqrt(a\*a+b\*b));

}

public double area(){

return pi\*a\*b;

}

}

public class Main

{

public static void main(String[] args) {

Circle c = new Circle(3.2f);

Ecllipse e = new Ecllipse(4.2f,4.6f);

System.out.println("area of circle is "+ c.area());

System.out.println("area of ellipse is "+ e.area());

System.out.println("perimeter of circle is "+ c.perimeter());

System.out.println("perimeter of ecclipse is "+ e.perimeter());

}

}

2.Design a vehicle class that contains the following properties of motor vehicles:

Fuel tank capacity, average fuel consumption per 100 km and the distance a

vehicle can travel on a full tank. The vehicle class should be designed as a base

class from which the Car and Truck classes are derived. The derived classes

should have following member functions.

A function that contains data for a vehicle from the user

A function that computes and returns the distance a vehicle can travel on a

full tank.

A function that computes and returns how many times a vehicle has to be

refueled to travel a given distance.

Test the class in the main method.

class vehicle {

int capacity;

float consumption;

float distance ;

vehicle(int c, float consume , float d)

{

capacity = c;

consumption = consume;

distance = d;

}

}

class car extends vehicle {

car(int c, float consume , float d)

{

super(c,consume,d);

}

float computeDistance()

{

float d = (capacity \* 100.0f) / consumption;

return d;

}

float computeFuel(int d)

{

return d/ this.distance;

}

}

class Truck extends vehicle

{

Truck(int c, float consume , float d)

{

super(c,consume,d);

}

float computeDistance()

{

float d = (capacity \* 100.0f) / consumption;

return d;

}

float computeFuel(int d)

{

return d/ this.distance;

}

}

public class Main

{

public static void main(String args[])

{

car c = new car(50,22,420);

Truck T = new Truck (50,25,450);

System.out.println("distance covered on ful tank " + c.computeDistance());

System.out.println("no of filling is required"+ c.computeFuel(420));

System.out.println("distance covered on ful tank " + T.computeDistance());

System.out.println("no of filling is required"+ T.computeFuel(420));

}

}

3.class Student

{

int regno;

String name, dept;

Student(int rno, String name, String dept)

{

regno = rno; this.name=name; this.dept =dept;

}

void display()

{

System.out.print(regno + " "+ name + " "+ dept);

}

}

class Test extends Student

{

int marks[];

Test(int r, String n, String d, int m[])

{

super(r,n,d);

marks = m;

}

}

class Result extends Test

{

Result(int r, String n, String d, int m[])

{

super(r,n,d,m);

}

void printResult() {

display();

int sum = 0;

for (int i =0; i< marks.length; i++)

sum += marks[i];

System.out.println(" Total Marks: "+ sum + " Average = " + (sum/5.0) );

}

}

public class TestMain

{

public static void main(String arg[])

{

int mark[]= {90,89,98,96,91};

Result r = new Result(10, "sam", "CSE", mark);

r.printResult();

int mark2[] = {86,98,96,89,97};

Result r2 = new Result(11,"curran", "CSE", mark2);

r2.printResult();

}

}