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1.

Create a base class Shape with relevant data members and member functions to Get data and print the area. Create two more classes Rectangle and Triangle. Which inherit Shape class. Test the classes in main method.(ex-3,q-4)

Program:

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(9.0f);

Ecllipse e = new Ecllipse(4.0f,3.0f);

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());

}

}

Output::

Area of circle is 254.34

Area of ellipse is 37.68

Perimeter of circle is 56.52

Perimeter of ecclipse is 31.400000000000002

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.(ex-3,q-5)

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(60,30,300);

Truck T = new Truck (80,55,450);

System.out.println(“distance covered on ful tank of car :” + c.computeDistance());

System.out.println(“no of filling is required for car :”+ c.computeFuel(350));

System.out.println(“distance covered on ful tank of Truck : “ + T.computeDistance());

System.out.println(“no of filling is required for Trunk : “+ T.computeFuel(350));

}

}

Output::

Distance covered on ful tank of car :200.0

No of filling is required for car :1.1666666

Distance covered on ful tank of Truck : 145.45454

No of filling is required for Trunk : 0.7777778

3.Create three classes Student, Test and Result classes. The student class contains student relevant information. Test class contains marks for five subjects. The result class contains Total and average of the marks obtained in five subjects. Inherit the properties of Student and Text class details in Result class through multiple inheritances.(ex-2,q-7)

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(“ \n Total Marks: “+ sum + “ Average = “ + (sum/5.0) );

}

}

Public class TestMain

{

Public static void main(String arg[])

{

Int mark[]= {99,98,97,96,95};

Result r = new Result(4044, “Ramu “, “CSE “, mark);

r.printResult();

int mark2[] = {99,99,99,99,99};

Result r2 = new Result(4000,”Siva “, “CSE “, mark2);

R2.printResult();

}

}

Output::

4044 Ramu CSE

Total Marks: 485 Average = 97.0

4000 Siva CSE

Total Marks: 495 Average = 99.0