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**Assignment No 4**

**Problem Statement : Design a base class shape with two double type values and member functions to input the data and compute\_area() for calculating area of shape. Derive two classes: triangle and rectangle. Make**

**compute\_area() as abstract function and redefine this function in the derived class to suit their**

**requirements. Write a program that accepts dimensions of triangle/rectangle and display**

**calculated area. Implement dynamic binding for given case study.**

**import** java.util.\*;

**abstract** **class** shape{

**double** dim1,dim2;

**abstract** **void** input();

**abstract** **double** compute\_area();

//default constructor

shape(){

}

//parameterised constructor

shape(**double** dimension1,**double** dimension2){

dim1=dimension1;

dim2=dimension2;

}

}

**class** triangle **extends** shape{

//default constructor

triangle(){

}

//parameterised constructor for using super constructor

triangle(**double** base,**double** height){

**super**(base,height);

}

//input method to read the base and height of triangle

**void** input() {

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

System.***out***.println("Enter base : ");

dim1=s.nextDouble();

System.***out***.println("Enter height : ");

dim2=s.nextDouble();

}

//method to compute area of triangle

**double** compute\_area() {

**return** 0.5\*dim1\*dim2;

}

}

**class** rectangle **extends** shape{

//default constructor

rectangle(){

}

//parameterised constructor for using super constructor

rectangle(**double** length,**double** breadth){

**super**(length,breadth);//calling super constructor

}

//input method to read the length and breadth of rectangle

**void** input() {

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

System.***out***.println("Enter length : ");

dim1=sc.nextDouble();

System.***out***.println("Enter breadth : ");

dim2=sc.nextDouble();

}

//method to compute area of rectangle

**double** compute\_area() {

**return** dim1\*dim2;

}

}

**public** **class** Demojava {

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

// **TODO** Auto-generated method stub

**double** parameter1,parameter2;

**int** option,ch=1;

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

**while**(ch==1) {

System.***out***.println("Select \n1.Triangle\n2.Rectangle\n3.Exit");

option=s.nextInt();

**switch**(option) {

**case** 1:

shape t=**new** triangle();

t.input();

System.***out***.println("The area of triangle is : "+t.compute\_area()+"\n");

**break**;

**case** 2:

System.***out***.println("Enter length : ");

parameter1=s.nextDouble();

System.***out***.println("Enter breadth : ");

parameter2=s.nextDouble();

shape r=**new** rectangle(parameter1,parameter2);

System.***out***.println("The area of rectangle is : "+r.compute\_area()+"\n");

**break**;

**case** 3:

System.*exit*(0);

**default**:

System.***out***.println("Enter valid input.........");

}

}

}

}

**Output :**

Select

1.Triangle

2.Rectangle

3.Exit

1

Enter base :

30

Enter height :

40

The area of triangle is : 600.0

Select

1.Triangle

2.Rectangle

3.Exit

2

Enter length :

32

Enter breadth :

40

The area of rectangle is : 1280.0

Select

1.Triangle

2.Rectangle

3.Exit

3