#### Caluculating Average student marks?

#### Program:

import java.util.\*;  
 class average{  
 public static void main(String[] args){  
 Scanner s=new Scanner(System.*in*);  
 int i;  
 int sum=0,avg;  
 int a[]=new int[5];  
 System.*out*.println("Enter the marks ");  
 for(i=0;i<a.length;i++)  
 {  
  
 a[i]=s.nextInt();  
 sum=sum+a[i];  
 }  
 avg=sum/ a.length;  
 System.*out*.println("sum is = " +sum);  
 System.*out*.println("average is ="+avg);  
 }  
}

#### Output:

#### Enter the marks

#### 14

#### 12

#### 14

#### 52

#### 46

#### sum is = 138

#### average is =27

#### 4

#### Process finished with exit code 0

#### Matrixs Addition?

#### Program:

class MatrixAddition  
{  
 public static void main(String args[])  
 {  
 int a[][]={{1,3,4},{2,4,3},{3,4,5}};  
 int b[][]={{1,3,4},{2,4,3},{1,2,4}};  
 int c[][]=new int[3][3];  
 for(int i=0;i<3;i++){  
 for(int j=0;j<3;j++){  
 c[i][j]=a[i][j]+b[i][j];  
 System.*out*.print(c[i][j]+" ");  
 }  
 System.*out*.println();  
 }  
 }}

#### Output:

#### 2 6 8

#### 4 8 6

#### 4 6 9

#### Matrix subtration?

#### Program:

class Matrixsubtration  
{  
 public static void main(String args[])  
 {  
 int a[][]={{1,3,4},{2,4,3},{3,4,5}};  
 int b[][]={{1,3,4},{2,4,3},{1,2,4}};  
 int c[][]=new int[3][3];  
 for(int i=0;i<3;i++){  
 for(int j=0;j<3;j++){  
 c[i][j]=a[i][j]-b[i][j];  
 System.*out*.print(c[i][j]+" ");  
 }  
 System.*out*.println();  
 }  
 }

}

#### Output:

#### 0 0 0

#### 0 0 0

#### 2 2 1

#### Area of Rectangle?

#### Program:

import java.util.\*;  
class Rectangle  
{  
 int height,width;  
 void area() {  
 Scanner s = new Scanner(System.*in*);  
 System.*out*.println("Enter the height:");  
 height = s.nextInt();  
 System.*out*.println("Enter the width:")  
 width = s.nextInt();  
 }  
 void cal()  
 {  
 int result = height\* width;  
 System.*out*.println("Area of rectangle=" +result);  
 }  
}  
class rect  
{  
 public static void main(String []arg)  
{  
 Rectangle obj=new Rectangle();  
 obj.area();  
 obj.cal();  
}  
}

#### Output:

#### Enter the height:

#### 12

#### Enter the width:

#### 3

#### Area of rectangle=36

#### Area of circle?

#### Program:

import java.util.\*;  
class Circle  
{  
 int height,width;  
 void area() {  
 Scanner s = new Scanner(System.*in*);  
 System.*out*.println("Enter the height:");  
 height = s.nextInt();  
 System.*out*.println("Enter the width:");  
 width = s.nextInt();  
 }  
 void cal()  
 {  
 int result = height\* width;  
 System.*out*.println("Area of rectangle=" +result);  
 }  
}  
class rect  
{  
 public static void main(String []arg)  
{  
 Rectangle obj=new Rectangle();  
 obj.area();  
 obj.cal();  
}  
}

#### Output:

#### Enter the radius:

#### 6

#### Enter the p value:

#### 3.14

#### Area of circle=113.04

#### Simple Interest?

#### Program:

import java.util.\*;  
class interest  
{  
 float p,t,r,si;  
 void area() {  
 Scanner s = new Scanner(System.*in*);  
 System.*out*.println("Enter the principel amount:");  
 p= s.nextFloat();  
 System.*out*.println("Enter the time:");  
 t=s.nextFloat();  
 System.*out*.println("Enter the Rate:");  
 r=s.nextFloat();  
 }  
 void cal()  
 {  
 float result=p\*t\*r/100;  
 System.*out*.println("Simple Interest=" +result);  
 }  
}  
class Inter  
{  
 public static void main(String []arg)  
 {  
 interest obj=new interest();  
 obj.area();  
 obj.cal();  
 }  
}

#### Output:

#### Enter the principle amount:

#### 100000

#### Enter the time:

#### 2

#### Enter the Rate:

#### 2

#### Simple Interest=4000.0

#### Area of triangle?

#### Program:

import java.util.\*;  
class Triangle1  
{  
 int base,height;  
 void area()  
 {  
 Scanner s=new Scanner(System.*in*);  
 System.*out*.println("Enter the base of triangle: ");  
 base=s.nextInt();  
 System.*out*.println("Enter the height of triangle: ");  
 height=s.nextInt();  
 }  
 void cal()  
 {  
 int result=base\*height/2;  
 System.*out*.println("Area of triangle= "+result);  
 }  
 public static void main(String[] arg)  
 {  
 Triangle1 obj=new Triangle1();  
 obj.area();  
 obj.cal();  
 }  
}

#### Output:

#### Enter the base of triangle:

#### 2

#### Enter the height of triangle:

#### 3

#### Area of triangle= 3

#### 4

#### Box ?

#### Program:

import java.util.\*;  
class Box  
{  
 double width,height,depth;  
 Box(double w,double h,double d)  
 {  
 width=w;  
 height=h;  
 depth=d;  
 }  
 double volume()  
 {  
 return width\*height\*depth;  
 }  
 public static void main(String[] arg)  
 {  
 Box obj=new Box(10.5,20.5,30.4);  
 double res3=obj.volume();  
 System.*out*.println("result3: "+res3);  
 }  
}

#### Output:

#### result3: 6543.599999999999

#### Sum of series?

#### Program:

import java.util.\*;  
class SumofSeries1  
{  
 int n,sum=0;  
 void sum()  
 {  
 Scanner s=new Scanner(System.*in*);  
 System.*out*.println("Enter a number");  
 n=s.nextInt();  
 }  
 void cal()  
 {  
 for(int i=0;i<=n;i++)  
 {  
 sum=sum+i;  
 }  
 System.*out*.println("Sum = "+sum);  
 }  
 public static void main(String[] arg)  
 {  
 SumofSeries1 obj=new SumofSeries1();  
 obj.sum();  
 obj.cal();  
 }  
}

#### Output:

#### Enter a number

#### 4

#### Sum = 10

#### Area of rectangle in constructor?

#### Program:

import java.util.\*;  
class Rectangle1  
{  
 int height,width;  
 void area() {  
 Scanner s = new Scanner(System.*in*);  
 System.*out*.println("Enter the height:");  
 height = s.nextInt();  
 System.*out*.println("Enter the width:");  
 width = s.nextInt();  
 }  
 void cal()  
 {  
 int result = height\* width;  
 System.*out*.println("Area of rectangle=" +result);  
 }  
}  
class rect  
{  
 public static void main(String []arg)  
{  
 Rectangle1 obj=new Rectangle1();  
 obj.area();  
 obj.cal();  
}  
}

#### Output:

#### Enter the height:

#### 3

#### Enter the width:

#### 4

#### Area of rectangle=12

#### Assignment 2 Programs

#### Implement a class Account. An account has

#### • a balance

#### • functions to add

#### • and withdraw money,

#### • and a function to inquire about the current balance.

#### Condition:

#### 1. Pass a value into a constructor to set an initial balance.

#### 2. If no value is passed the initial balance should be set to $0.

#### 3. Charge a $5 penalty if an attempt is made to withdraw more money than is available in the account.

#### 4. Enhance the Account class to compute interest on the current balance.

#### Program:

class Account  
{  
 private double balance;  
 private double interestRate;  
 public Account(double initialBalance) {  
 if (initialBalance < 0) {  
 System.*out*.println("Initial balance cannot be negative. Setting balance to $0.");  
 this.balance = 0;  
 } else {  
 this.balance = initialBalance;  
 }  
 this.interestRate = 0.03;  
 }  
 public void deposit(double amount) {  
 if (amount > 0) {  
 balance += amount;  
 System.*out*.println("$" + amount + " deposited successfully.");  
 } else {  
 System.*out*.println("Invalid deposit amount. Please enter a positive amount.");  
 }  
 }  
 public void withdraw(double amount) {  
 if (amount > 0) {  
 if (balance >= amount) {  
 balance -= amount;  
 System.*out*.println("$" + amount + " withdrawn successfully.");  
 } else {  
 System.*out*.println("Insufficient funds. A $5 penalty will be charged.");  
 balance -= 5;  
 }  
 } else {  
 System.*out*.println("Invalid withdrawal amount. Please enter a positive amount.");  
 }  
 }  
 public double getBalance() {  
 return balance;  
 }  
 public void computeInterest() {  
 double interest = balance \* interestRate;  
 balance += interest;  
 System.*out*.println("Interest of $" + interest + " added to the account.");  
 }  
 public static void main(String[] args) {  
 Account myAccount = new Account(1000);  
 myAccount.deposit(500);  
 myAccount.withdraw(800);  
 myAccount.withdraw(200);  
 myAccount.computeInterest();  
 double currentBalance = myAccount.getBalance();  
 System.*out*.println("Current balance: $" + currentBalance);  
 }  
}

#### Output:

#### $500.0 deposited successfully.

#### $800.0 withdrawn successfully.

#### $200.0 withdrawn successfully.

#### Interest of $15.0 added to the account.

#### Current balance: $515.0

#### 2) Write a class called Triangle that can be used to represent a triangle. It should include the following methods that return Boolean values indicating if the particular property holds:

#### • isRight (a right triangle)

#### • isScalene (no two sides are the same length)

#### • isIsosceles (exactly two sides are the same length)

#### • isEquilateral (all three sides are the same length)

#### Program:

class Triangle  
{  
 private double a;  
 private double b;  
 private double c;  
 public Triangle(double a, double b, double c)  
 {  
 this.a = a;  
 this.b = b;  
 this.c = c;  
 }  
 public boolean isRight()  
 {  
 double hypotenuse = Math.*max*(a, Math.*max*(b, c));  
 if (hypotenuse == a)  
 {  
 return a \* a == b \* b + c \* c;  
 }  
 else if (hypotenuse == b)  
 {  
 return b \* b == a \* a + c \* c;  
 }  
 else  
 {  
 return c \* c == a \* a + b \* b;  
 }  
 }  
 public boolean isScalene()  
 {  
 return a!=b && a!=c && b!=c;  
 }  
 public boolean isIsosceles()  
 {  
 return a == b || a == c || b == c;  
 }  
 public boolean isEquilateral()  
 {  
 return a == b && a == c;  
 }  
}  
class Traingleclass  
{  
 public static void main(String[] args)  
 {  
 Triangle triangle1 = new Triangle(3, 4, 5);  
 System.*out*.println("Is triangle1 a right triangle? " + triangle1.isRight());  
 System.*out*.println("Is triangle1 scalene? " + triangle1.isScalene());  
 System.*out*.println("Is triangle1 isosceles? " + triangle1.isIsosceles());  
 System.*out*.println("Is triangle1 equilateral? " + triangle1.isEquilateral());  
 Triangle triangle2 = new Triangle(5, 5, 5);  
 System.*out*.println("Is triangle2 a right triangle? " + triangle2.isRight());  
 System.*out*.println("Is triangle2 scalene? " + triangle2.isScalene());  
 System.*out*.println("Is triangle2 isosceles? " + triangle2.isIsosceles());  
 System.*out*.println("Is triangle2 equilateral? " + triangle2.isEquilateral());  
 }  
}

#### Output:

#### Is triangle1 a right triangle? true

#### Is triangle1 scalene? true

#### Is triangle1 isosceles? false

#### Is triangle1 equilateral? false

#### Is triangle2 a right triangle? false

#### Is triangle2 scalene? false

#### Is triangle2 isosceles? true

#### Is triangle2 equilateral? True

#### 3)Write a program for matrix multiplication.

#### Program:

import java.util.\*;  
class mt {  
 public static void main(String[] args) {  
 int i, j, k,n;  
 int a[][] = new int[4][4];  
 int b[][] = new int[4][4];  
 int c[][] = new int[4][4];  
 Scanner s = new Scanner(System.*in*);  
 System.*out*.println("enter no of rows and column:");  
 n=s.nextInt();  
 System.*out*.println("enter the elements of matrix1:");  
 for(i=0;i<n;i++)  
 {  
 for(j=0;j<n;j++)  
 {  
 a[i][j]=s.nextInt();  
 }  
 }  
 System.*out*.println("enter the elements of matrix1:");  
 for(i=0;i<n;i++)  
 {  
 for(j=0;j<n;j++)  
 {  
 b[i][j]=s.nextInt();  
 }  
 }  
 System.*out*.println("multipled matrix :");  
 for(i=0;i<n;i++)  
 {  
 for(j=0;j<n;j++)  
 {  
 c[i][j] = 0;  
 for(k=0;k<n;k++)  
 {  
 c[i][j]+=a[i][k] \* b[k][j];  
 }  
 System.*out*.print(c[i][j] + " ");  
 }  
 System.*out*.println();  
 }  
 }  
}

#### Output:

#### enter no of rows and column:

#### 4

#### enter the elements of matrix1:

#### 1 2 3 4

#### 1 5 4 3

#### 1 4 3 2

#### 5 4 3 2

#### enter the elements of matrix1:

#### 2 3 4 5

#### 2 3 1 4

#### 4 3 2 1

#### 3 2 4 3

#### multipled matrix :

#### 30 26 28 28

#### 37 36 29 38

#### 28 28 22 30

#### 36 40 38 50