# DAY-2

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1.Write a java program to find the Matrix Addition

public class MatrixAddition {

public static void main(String[] args) {

int[][] matrix1={{1,3,4},{2,4,3},{3,4,5}};

int[][] matrix2={{1,3,4},{2,4,3},{1,2,4}};

int rows=matrix1.length;

int cols=matrix1[0].length;

int[][] resultMatrix=new int[rows][cols];

for (int i=0;i<rows;i++) {

for (int j=0;j<cols;j++) {

resultMatrix[i][j]=matrix1[i][j] +

matrix2[i][j];

}

}

System.out.println("Resultant Matrix:");

for (int i=0;i<rows;i++) {

for (int j=0;j<cols;j++) {

System.out.print(resultMatrix[i][j]+" ");

}

System.out.println();

       }

    }

}

Output

Resultant Matrix:

2 6 8

4 8 6

4 6 9

2. Write a java program to find the Matrix Sub

public class MatrixAddition {

public static void main(String[] args) {

int[][] matrix1={{1,3,4},{2,4,3},{3,4,5}};

int[][] matrix2={{1,3,4},{2,4,3},{1,2,4}};

int rows=matrix1.length;

int cols=matrix1[0].length;

int[][] resultMatrix=new int[rows][cols];

for (int i=0;i<rows;i++) {

for (int j=0;j<cols;j++) {

resultMatrix[i][j]=matrix1[i][j] -

matrix2[i][j];

}

}

System.out.println("Resultant Matrix:");

for (int i=0;i<rows;i++) {

for (int j=0;j<cols;j++) {

System.out.print(resultMatrix[i][j]+" ");

}

System.out.println();

       }

    }

}

Output

Resultant Matrix:

0 0 0

0 0 0

2 2 1

3. Write a java program to print the Area of Rectangle.

class Rectangle{

int height,width;

void area(){

int result=height\*width;

System.out.println("Area of rectangle is = "+result);

}

}

class Rect {

public static void main(String[] args){

Rectangle obj=new Rectangle();

obj.height=5;

obj.width=10;

obj.area();

}

}

Output

Area of rectangle is = 50

4. Write the java program to print the Area of rectangle using constructor .

import java.util.\*;

class Rectangle{

int height,width;

public Rectangle(){

Scanner s =new Scanner(System.in);

System.out.println("Enter a height");

height=s.nextInt();

System.out.println("Enter a width");

width=s.nextInt();

}

void cal()

{

int result=height\*width;

System.out.println("Area of rectangle is = "+result);

}

public static void main(String[] args){

Rectangle obj=new Rectangle();

obj.cal();

}

}

Output

Enter a height 7

Enter a width 3

Area of rectangle is = 21

5.Write a java program for sum of series in oops.

import java.util.Scanner;

class SeriesCalculator {

public int n; // Number of terms in the series

public SeriesCalculator(int n) {

this.n = n;

}

public int calculateSum() {

int sum = 0;

for (int i = 1; i <= n; i++) {

// Replace this line with the formula for your series

sum += i; // Example: Sum of first 'n' natural numbers

}

return sum;

}

}

class SumOfSeries {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the number of terms in the series: ");

int n = scanner.nextInt();

SeriesCalculator series = new SeriesCalculator(n);

int sum = series.calculateSum();

System.out.println("Sum of the series: " + sum);

scanner.close();

}

}

Output:

Enter the number of terms in the series: 2

Sum of the series: 3

6. Write a java program for area of circle.

import java.util.\*;

class cicle{

float r,pi;

Scanner s=new Scanner(System.in);

System.out.println("Enter radious of circle");

r=s.nextFloat();

System.out.println("Enter the pi vales");

pi=s.nextFloat();

void area()

}

void cal()

{

float result=pi\*r\*;

System.out.println("Area of circle is="+"result");

}

}

class circle

{

public static void main(string args())

{

cicle obj=new circle();

obj area();

obj cal();

}

}

Output:

Enter radious of circle: 9

Enter the pi vales:3.14

Area of circle is= 254.34

7. Write a java program for simple interest.

import java.util.\*;

class SimpleInterest{

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the principal amount: ");

double principal = scanner.nextDouble();

System.out.print("Enter the rate of interest: ");

double rate = scanner.nextDouble();

System.out.print("Enter the time (in years): ");

double time = scanner.nextDouble();

double simpleInterest = (principal \* rate \* time) / 100;

System.out.println("Simple Interest: " + simpleInterest);

}

void cal()

{

float result=p\*t\*r/100;

System.out.println("simpleinterest is="+"result");

}

class simple

{

public static void main(string args())

{

SimpleInterest obj=new SimpleInterest();

obj simple();

obj cal();

}

}

Output:

Enter the principal amount:10000

Enter the rate of interest:5

Enter the time (in years):2

simpleinterest is=1000

8.Write a java program for matrix mul .

mport java.util.Scanner;

class matrixmultiplication

{

public static void main(String args[]){

int row1, col1, row2, col2;

Scanner s = new Scanner(System.in);

System.out.print("Enter number of rows in first matrix:");

row1 = s.nextInt();

System.out.print("Enter number of columns in first matrix:");

col1 = s.nextInt();

System.out.print("Enter number of rows in second matrix:");

row2 = s.nextInt();

System.out.print("Enter number of columns in second matrix:");

col2 = s.nextInt();

if (col1 != row2) {

System.out.println("Matrix multiplication is not possible");

}

else {

int a[][] = new int[row1][col1];

int b[][] = new int[row2][col2];

int c[][] = new int[row1][col2];

System.out.println("Enter values for matrix A : \n");

for (int i = 0; i < row1; i++) {

for (int j = 0; j < col1; j++)

a[i][j] = s.nextInt();

}

System.out.println("Enter values for matrix B : \n");

for (int i = 0; i < row2; i++) {

for (int j = 0; j < col2; j++)

b[i][j] = s.nextInt();

}

System.out.println("Matrix multiplication is : \n");

for(int i = 0; i < row1; i++) {

for(int j = 0; j < col2; j++){

c[i][j]=0;

for(int k = 0; k < col1; k++){

c[i][j] += a[i][k] \* b[k][j];

}

System.out.print(c[i][j] + " ");

}

System.out.println();

}

}

}

}

Output:

Enter number of rows in first matrix:2Enter number of columns in first matrix:2Enter number of rows in second matrix:2Enter number of columns in second matrix:2Enter values for matrix A : 1 25 3Enter values for matrix B : 2 34 1Matrix multiplication is : 10 5 22 18

9. 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.

public class Account {

private double balance;

private double interestRate;

public Account() {

this.balance = 0.0;

this.interestRate = 0.02; // Default interest rate of 2%

}

public Account(double initialBalance) {

if (initialBalance < 0) {

System.out.println("Initial balance cannot be negative. Setting balance to $0.");

this.balance = 0.0;

} else {

this.balance = initialBalance;

}

this.interestRate = 0.02; // Default interest rate of 2%

}

public void deposit(double amount) {

if (amount > 0) {

balance += amount;

System.out.println("Deposited $" + amount);

} else {

System.out.println("Invalid deposit amount. Please deposit a positive amount.");

}

}

public void withdraw(double amount) {

if (amount > 0) {

if (balance >= amount) {

balance -= amount;

System.out.println("Withdrawn $" + amount);

} else {

System.out.println("Insufficient balance. A $5 penalty will be charged.");

balance -= 5.0; // Apply $5 penalty

}

} else {

System.out.println("Invalid withdrawal amount. Please withdraw a positive amount.");

}

}

public double getBalance() {

return balance;

}

public void addInterest() {

double interest = balance \* interestRate;

balance += interest;

System.out.println("Added interest of $" + interest);

}

public static void main(String[] args) {

Account account1 = new Account(1000); // Creating an account with an initial balance of $1000

Account account2 = new Account(); // Creating an account with an initial balance of $0

account1.deposit(500);

account2.deposit(200);

account1.withdraw(300);

account2.withdraw(50);

account1.addInterest();

account2.addInterest();

System.out.println("Account 1 balance: $" + account1.getBalance());

System.out.println("Account 2 balance: $" + account2.getBalance());

}

}

Output:

Deposited $500.0

Deposited $200.0

Withdrawn $300.0

Withdrawn $50.0

Added interest of $24.0

Added interest of $3.0Account 1 balance: $1224.0

Account 2 balance: $153.0

10. 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)

public class Triangle {

private double side1;

private double side2;

private double side3;

public Triangle(double side1, double side2, double side3) {

this.side1 = side1;

this.side2 = side2;

this.side3 = side3;

}

public boolean isRight() {

// Check if it's a right triangle using the Pythagorean theorem

return Math.pow(side1, 2) + Math.pow(side2, 2) == Math.pow(side3, 2)

|| Math.pow(side1, 2) + Math.pow(side3, 2) == Math.pow(side2, 2)

|| Math.pow(side2, 2) + Math.pow(side3, 2) == Math.pow(side1, 2);

}

public boolean isScalene() {

return !isIsosceles();

}

public boolean isIsosceles() {

return side1 == side2 || side1 == side3 || side2 == side3;

}

public boolean isEquilateral() {

return side1 == side2 && side1 == side3;

}

public static void main(String[] args) {

Triangle triangle1 = new Triangle(3, 4, 5);

Triangle triangle2 = new Triangle(2, 2, 3);

Triangle triangle3 = new Triangle(1, 1, 1);

System.out.println("Triangle 1 is a right triangle: " + triangle1.isRight());

System.out.println("Triangle 1 is scalene: " + triangle1.isScalene());

System.out.println("Triangle 1 is isosceles: " + triangle1.isIsosceles());

System.out.println("Triangle 1 is equilateral: " + triangle1.isEquilateral());

System.out.println("Triangle 2 is a right triangle: " + triangle2.isRight());

System.out.println("Triangle 2 is scalene: " + triangle2.isScalene());

System.out.println("Triangle 2 is isosceles: " + triangle2.isIsosceles());

System.out.println("Triangle 2 is equilateral: " + triangle2.isEquilateral());

System.out.println("Triangle 3 is a right triangle: " + triangle3.isRight());

System.out.println("Triangle 3 is scalene: " + triangle3.isScalene());

System.out.println("Triangle 3 is isosceles: " + triangle3.isIsosceles());

System.out.println("Triangle 3 is equilateral: " + triangle3.isEquilateral());

}

}

Output:

Triangle 1 is a right triangle: trueTriangle 1 is scalene: true

Triangle 1 is isosceles: false

Triangle 1 is equilateral: false

Triangle 2 is a right triangle: false

Triangle 2 is scalene: false

Triangle 2 is isosceles: true

Triangle 2 is equilateral: false

Triangle 3 is a right triangle: false

Triangle 3 is scalene: false

Triangle 3 is isosceles: true

Triangle 3 is equilateral: true

11. Write a java program for area of triangle.

import java.util.Scanner;

class Triangle {

public double base;

public double height;

public Triangle(double base, double height) {

this.base = base;

this.height = height;

}

public double calculateArea() {

return 0.5 \* base \* height;

}

}

public class TriangleAreaCalculator {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the base of the triangle: ");

double base = scanner.nextDouble();

System.out.print("Enter the height of the triangle: ");

double height = scanner.nextDouble();

Triangle triangle = new Triangle(base, height);

double area = triangle.calculateArea();

System.out.println("The area of the triangle is: " + area);

scanner.close();

}

}

Output:

Enter the base of the triangle:10

Enter the height of the triangle:20

The area of the triangle is:100

12. Write a program for matrix multiplication?

import java.util.\*;

class MatrixMul

{

public static void main(String args[])

{

int m, n, p, q, sum = 0, c, d, k;

Scanner in = new Scanner(System.in);

System.out.println("Enter the number of rows and columns of first matrix");

m = in.nextInt();

n = in.nextInt();

int first[][] = new int[m][n];

System.out.println("Enter elements of first matrix");

for (c = 0; c < m; c++)

for (d = 0; d < n; d++)

first[c][d] = in.nextInt();

System.out.println("Enter the number of rows and columns of second matrix");

p = in.nextInt();

q = in.nextInt();

if (n != p)

System.out.println("The matrices can't be multiplied with each other.");

else

{

int second[][] = new int[p][q];

int multiply[][] = new int[m][q];

System.out.println("Enter elements of second matrix");

for (c = 0; c < p; c++)

for (d = 0; d < q; d++)

second[c][d] = in.nextInt();

for (c = 0; c < m; c++)

{

for (d = 0; d < q; d++)

{

for (k = 0; k < p; k++)

{

sum = sum + first[c][k]\*second[k][d];

}

multiply[c][d] = sum;

sum = 0;

}

}

System.out.println("Product of the matrices:");

for (c = 0; c < m; c++)

{

for (d = 0; d < q; d++)

System.out.print(multiply[c][d]+"\t");

System.out.print("\n");

}

}

}

}

Output:

Sample Input:

Mat1 = 1 2

5 3

Mat2 = 2 3

4 1

Sample Output:

Mat Sum = 10 5

22 18

13. Write a java program for argument constructor.

Class Box

{

double width, heighth, depth; Box (double w, double h, double d) || alguments Constructor

{

width=W;

height=h;

depth =d,

}

double volume ()

{

return width \*height \* depth;

}

public static void main ( String[ ] args)

{

BOX B= new BOX [4, 5, 20, 5, 10, 4)

double res3=63.volume();"

System.out.println (" result 3 :"+res3) ;

}

}

Output:

4, 5, 20, 5, 10, 4