**ABHISHEK VASANT GIRKAR VU4F1718022 SE/IT/A BATCH B**

EXPERIMENT NO 3 : Write a menu driven program to perform Addition, Subtrction, Multiplication &. . Transpose of two matrices

* Addition & Subtraction of two matrix

import java.util.Scanner;

public class mataddsub

{

public static void main(String args[])

{

Scanner scanner = new Scanner(System.in);

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

int r = scanner.nextInt();

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

int c = scanner.nextInt();

int[][] matrix1 = new int[r][c];

int[][] matrix2 = new int[r][c];

System.out.println("Enter the elements in first matrix :");

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

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

matrix1[i][j] = scanner.nextInt();

}

}

System.out.println("Enter the elements in second matrix :");

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

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

matrix2[i][j] = scanner.nextInt();

}

}

int[][] resultMatix = new int[r][c];

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

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

resultMatix[i][j] = matrix1[i][j] + matrix2[i][j];

}

}

int[][] subMatix = new int[r][c];

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

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

subMatix[i][j] = matrix1[i][j] - matrix2[i][j];

}

}

System.out.printf("\nFirst%dx%d matrix is :\n",r,c);

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

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

System.out.print(matrix1[i][j] + " ");

}

System.out.println();

}

System.out.printf("\nSecond %dx%d matrix is :\n",r,c);

for (int i = 0; i < r; i++)

{

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

{

System.out.print(matrix2[i][j] + " ");

}

System.out.println();

}

System.out.printf("\nThe sum of the two%dx%d matrices is :\n",r,c);

for (int i = 0; i < r; i++)

{

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

{

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

}

System.out.println();

}

System.out.printf("\nThe subtraction of the two %dx%d matrices is :\n",r,c);

for (int i = 0; i < r; i++)

{

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

{

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

}

System.out.println();

}

}

}

Output

C:\Users\abhishek123>cd desktop

C:\Users\abhishek123\Desktop>javac mataddsub.java

C:\Users\abhishek123\Desktop>java mataddsub

Enter number of rows in matrix : 3

Enter number of columns in matrix : 3

Enter the elements in first matrix :

10 20 30 40 50 60 70 80 90

Enter the elements in second matrix :

1 2 3 4 5 6 7 8 9

First3x3 matrix is :

10 20 30

40 50 60

70 80 90

Second 3x3 matrix is :

1 2 3

4 5 6

7 8 9

The sum of the two3x3 matrices is :

11 22 33

44 55 66

77 88 99

The subtraction of the two 3x3 matrices is :

9 18 27

36 45 54

63 72 81

Multiplication of two matrix

import java.util.Scanner;

class Matmult

{

public static void main(String args [ ])

{

Scanner scanner = new Scanner(System.in);

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

int r1 = scanner.nextInt();

System.out.print("Enter number of columns in first matrix / rows in matrix2: ");

int c1 = scanner.nextInt();

int r2=c1;

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

int c2 = scanner.nextInt();

int[][] matrix1 = new int[r1][c1];

int[][] matrix2 = new int[r2][c2];

System.out.println("Enter the first matrix in elements :");

for (int i = 0; i < r1; i++)

{

for (int j = 0; j < c1; j++)

{

matrix1[i][j] = scanner.nextInt();

}

}

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

for (int i = 0; i < r2; i++)

{

for (int j = 0; j < c2; j++)

{

matrix2[i][j] = scanner.nextInt();

}

}

int[][] productMatrix = new int[r1][c2];

for (int i = 0; i < r1; i++)

{

for (int j = 0; j < c2; j++)

{

for (int k = 0; k < r2; k++)

{

productMatrix[i][j] = productMatrix[i][j] + matrix1[i][k] \* matrix2[k][j];

}

}

}

System.out.printf("\nFirst %dX%dmatrix is : \n",r1,c1);

for (int i = 0; i < r1; i++) {

for (int j = 0; j < c1; j++) {

System.out.print(matrix1[i][j] + " ");

}

System.out.println();

}

System.out.printf("\nSecond %d X %dmatrix is :\n",r2,c2);

for (int i = 0; i < r2; i++)

{

for (int j = 0; j < c2; j++)

{

System.out.print(matrix2[i][j] + " ");

}

System.out.println();

}

System.out.printf("\nProduct of matrix1 and matrix2 is below %dX%d matrix\n",r1,c2);

for (int i = 0; i < r1; i++)

{

for (int j = 0; j < c2; j++)

{

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

}

System.out.println();

}

}

}

OUTPUT

C:\Users\abhishek123>cd desktop

C:\Users\abhishek123\Desktop>javac matmult.java

C:\Users\abhishek123\Desktop>java Matmult

Enter number of rows in first matrix : 3

Enter number of columns in first matrix / rows in matrix2: 3

Enter number of columns in second matrix : 2

Enter the first matrix in elements :

1

2

3

4

5

6

7

8

9

Enter the second matrix elements:

1

1

1

1

1

1

First 3X3matrix is :

1 2 3

4 5 6

7 8 9

Second 3 X 2matrix is :

1 1

1 1

1 1

Product of matrix1 and matrix2 is below 3X2 matrix

6 6

15 15

24 24

Transpose of matrix

import java.util.Scanner;

public class transpose {

public static void main(String...args) {

Scanner scanner = new Scanner(System.in);

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

int r = scanner.nextInt();

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

int c= scanner.nextInt();

int matrix[][] = new int[r][c];

System.out.printf("Enter the elements of %dx%dmatrix is :\n",r,c);

for (int i = 0; i < r; i++)

{

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

{

matrix[i][j] = scanner.nextInt();

}

}

int transpose[][] = new int[c][r];

for (int i = 0; i < r; i++)

{

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

{

transpose[j][i] = matrix[i][j];

}

}

System.out.printf("\nEntered %dx%dmatrix is :\n",r,c);

for (int i = 0; i < r; i++)

{

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

{

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

}

System.out.println();

}

System.out.printf("\nTranspose of entered %dx%dmatrix is :\n",r,c);

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

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

{

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

}

System.out.println();

}

}

}

Output

C:\Users\abhishek123>cd desktop

C:\Users\abhishek123\Desktop>javac transpose.java

C:\Users\abhishek123\Desktop>java transpose

Enter number of rows in matrix :

3

Enter number of columns in matrix : 5

Enter the elements of 3x5matrix is :

11 22 33 44 55 12 24 36 48 60 13 26 39 52 65

Entered 3x5matrix is :

11 22 33 44 55

12 24 36 48 60

13 26 39 52 65

Transpose of entered 3x5matrix is :

11 12 13

22 24 26

33 36 39

44 48 52

55 60 65

C:\Users\abhishek123\Desktop>