WORK DONE BY OME JOHN

4 Dimensional matrix(2x3x5x4)

{

{

{

{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4}

}

{

{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4}

}

{

{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4}

}

}

{

{

{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4}

}

{

{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4}

}

{

{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4},{ 1,2,3,4}

}

}

}

Matrix Determinant in C# :

public class Determinant

{

public static void Main()

{

int i,j;

int[,] arr1 = new int[3,3];

int det=0;

Console.Write("\n\nCalculate the determinant of a 3 x 3 matrix :\n");

Console.Write("-------------------------------------------------\n");

Console.Write("Input elements in the matrix :\n");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

Console.Write("element - [{0}],[{1}] : ",i,j);

arr1[i,j] = Convert.ToInt32(Console.ReadLine());

}

}

Console.Write("The matrix is :\n");

for(i=0;i<3;i++)

{

for(j=0;j<3 ;j++)

Console.Write("{0} ",arr1[i,j]);

Console.Write("\n");

}

for(i=0;i<3;i++)

det = det + (arr1[0,i]\*(arr1[1,(i+1)%3]\*arr1[2,(i+2)%3] - arr1[1,(i+2)%3]\*arr1[2,(i+1)%3]));

Console.Write("\nThe Determinant of the matrix is: {0}\n\n",det);

}

}

Matrix addition in C# :

class MatrixAddition

{

public static void Main(string[] args)

{

int m, n, i, j;

Console.Write("Enter Number Of Rows And Columns Of Matrices A and B : ");

m = Convert.ToInt32(Console.ReadLine());

n = Convert.ToInt32(Console.ReadLine());

int[,] A = new int[3, 3];

Console.Write("\nEnter The First Matrix : ");

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

{

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

{

A[i, j] = Convert.ToInt16(Console.ReadLine());

}

}

int[,] B = new int[3, 3];

Console.Write("\nEnter The Second Matrix:");

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

{

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

{

B[i, j] = Convert.ToInt16(Console.ReadLine());

}

}

Console.Clear();

Console.WriteLine("\nMatrix A : ");

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

{

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

{

Console.Write(A[i, j] + "\t");

}

Console.WriteLine();

}

Console.WriteLine("\nMatrix B: ");

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

{

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

{

Console.Write(B[i, j] + "\t");

}

Console.WriteLine();

}

int[,] C = new int[3, 3];

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

{

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

{

C[i, j] = A[i, j] + B[i, j];

}

}

Console.Write("\nSum Matrix :");

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

{

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

{

Console.Write(C[i, j] + "\t");

}

Console.WriteLine();

}

Console.Read();

}

}

Matrix Subtraction in C# :

class MatrixSubtraction

{

public static void Main(string[] args)

{

int m, n, i, j;

Console.Write("Enter Number Of Rows And Columns Of Matrices A and B : ");

m = Convert.ToInt16(Console.ReadLine());

n = Convert.ToInt16(Console.ReadLine());

int[,] A = new int[3, 3];

Console.Write("\nEnter The First Matrix : ");

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

{

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

{

A[i, j] = Convert.ToInt16(Console.ReadLine());

}

}

int[,] B = new int[3, 3];

Console.Write("\nEnter The Second Matrix:");

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

{

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

{

B[i, j] = Convert.ToInt16(Console.ReadLine());

}

}

Console.Clear();

Console.WriteLine("\nMatrix A : ");

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

{

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

{

Console.Write(A[i, j] + "\t");

}

Console.WriteLine();

}

Console.WriteLine("\nMatrix B: ");

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

{

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

{

Console.Write(B[i, j] + "\t");

}

Console.WriteLine();

}

int[,] C = new int[3, 3];

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

{

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

{

C[i, j] = A[i, j] - B[i, j];

}

}

Console.Write("\nDifference Matrix :");

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

{

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

{

Console.Write(C[i, j] + "\t");

}

Console.WriteLine();

}

Console.Read();

}

}

Matrix Multiplication in C# :

class MatrixMultiplication

{

public static void Main(string[] args)

{

int i, j, m, n;

Console.WriteLine("Enter the Number of Rows and Columns : ");

m = Convert.ToInt32(Console.ReadLine());

n = Convert.ToInt32(Console.ReadLine());

int[,] a = new int[m, n];

Console.WriteLine("Enter the First Matrix");

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

{

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

{

a[i, j] = int.Parse(Console.ReadLine());

}

}

Console.WriteLine("First matrix is:");

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

{

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

{

Console.Write(a[i, j] + "\t");

}

Console.WriteLine();

}

int[,] b = new int[m, n];

Console.WriteLine("Enter the Second Matrix");

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

{

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

{

b[i, j] = int.Parse(Console.ReadLine());

}

}

Console.WriteLine("Second Matrix is :");

for (i = 0; i < 2; i++)

{

for (j = 0; j < 2; j++)

{

Console.Write(b[i, j] + "\t");

}

Console.WriteLine();

}

Console.WriteLine("Matrix Multiplication is :");

int[,] c = new int[m, n];

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

{

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

{

c[i, j] = 0;

for (int k = 0; k < 2; k++)

{

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

}

}

}

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

{

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

{

Console.Write(c[i, j] + "\t");

}

Console.WriteLine();

}

Console.ReadKey();

}

}