**1 уровень**

№2

using System;

class Program

{

    static void Main(string[] args)

    {

        int[,] a = new int[5, 7];

        for (int i = 0; i < 5; i++)

            for (int j = 0; j < 7; j++)

            {

                string s = Console.ReadLine();

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

            }

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 7; j++)

                Console.Write("{0:d} ", a[i, j]);

            Console.WriteLine();

        }

        double sum = 0;

        int t = 0;

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 7; j++)

            {

                if (a[i, j] > 0)

                {

                    sum += a[i, j];

                    t += 1;

                }

            }

        }

        double sr = sum / t;

        Console.WriteLine("Среднее арифметическое матрицы: ");

        Console.WriteLine(sr);

    }

}

№6

using System;

class Program

{

    static void Main(string[] args)

    {

        Console.WriteLine("Введите двумерный массив:");

        double[,] a = new double[4, 7];

        int[] b = new int[4];

        double min, elm;

        for (int i = 0; i < 4; i++)

        {

            min = 100000000;

            for (int j = 0; j < 7; j++)

            {

                Console.WriteLine("[" + i + "," + j + "]");

                elm = Double.Parse(Console.ReadLine());

                a[i, j] = elm;

                if (elm < min)

                {

                    min = elm;

                    b[i] = j;

                }

            }

        }

        Console.WriteLine();

        for (int i = 0; i < 4; i++)

        {

            Console.WriteLine(b[i] + " ");

        }

    }

}

№10

using System;

class Program

{

    static void Main(string[] args)

    {

        int[,] a = new int[5, 7];

        Random random = new Random();

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 7; j++)

            {

                a[i, j] = random.Next(100);

            }

        }

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 7; j++)

            {

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

            }

            Console.WriteLine();

        }

        int t = 2;

        int amax = a[0, t];

        int imax = 0;

        for (int i = 1; i < 5; i++)

        {

            if (a[i, t] > amax)

            {

                amax = a[i, t];

                imax = i;

            }

        }

        Console.WriteLine("Максимальный элемент 3 столбца:");

        Console.WriteLine(amax);

        for (int j = 0; j < 7; j++)

        {

                int d = a[imax, j];

                a[imax, j] = a[3, j];

                a[3, j] = d;

        }

        Console.WriteLine("Матрица после замены строк:");

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 7; j++)

            {

                Console.Write("{0:d} ", a[i, j]);

            }

            Console.WriteLine();

        }

    }

}

№14

using System;

class Program

{

    static void Main(string[] args)

    {

        int[,] a = new int[4, 3];

        int[] b = new int[3];

        Random random = new Random();

        for (int i = 0; i < 4; i++)

        {

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

            {

                a[i, j] = random.Next(-100,100);

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

            }

            Console.WriteLine();

        }

        for (int j = 0; j < 3; j++)

        {

            int count = 0;

            for (int i = 0; i < 4; i++)

            {

                if (a[i, j] < 0)

                {

                    count++;

                    b[j] = count;

                }

            }

        }

        Console.WriteLine("Получившийся массив: ");

        for (int i = 0; i < 3; i++)

        {

            Console.Write(b[i] + " ");

        }

    }

}

№18

using System;

class Program

{

    static void Main(string[] args)

    {

        Console.WriteLine("Введите n: ");

        int n = int.Parse(Console.ReadLine());

        Console.WriteLine("Введите m: ");

        int m = int.Parse(Console.ReadLine());

        if (n > 0 && m > 0)

        {

            int[,] d = new int[n, m];

            Random random = new Random();

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

            {

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

                {

                    d[i, j] = random.Next(-100, 100);

                }

            }

            Console.WriteLine("Исходная матрица D:");

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

            {

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

                {

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

                }

                Console.WriteLine();

            }

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

            {

                int max = -1;

                int j1 = -1;

                int j2 = -1;

                bool f = true;

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

                {

                    if (d[i, j] < 0)

                    {

                        f = false;

                        j2 = j;

                    }

                    if (d[i, j] > max & f == true)

                    {

                        max = d[i, j];

                        j1 = j;

                    }

                }

                if (j1 != -1 & j2 != -1)

                {

                    int t = d[i, j1];

                    d[i, j1] = d[i, j2];

                    d[i, j2] = t;

                }

                Console.WriteLine();

            }

            Console.WriteLine("Получившаяся матрица: ");

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

            {

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

                {

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

                }

                Console.WriteLine();

            }

        }

        else

        {

            Console.WriteLine("В матрице 0 элементов, дальнейшие действия невозможны");

        }

    }

}

№22

using System;

class Program

{

    static void Main(string[] args)

    {

        double[,] z = new double[6, 8];

        Random random = new Random();

        for (int i = 0; i < 6; i++)

        {

            for (int j = 0; j < 8; j++)

            {

                z[i, j] = random.Next(-10,100);

            }

        }

        for (int i = 0; i < 6; i++)

        {

            for (int j = 0; j < 8; j++)

            {

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

            }

            Console.WriteLine();

        }

        double sum = 0;

        int t = 0;

        for (int i = 0; i < 6; i++)

        {

            for (int j = 0; j < 8; j++)

            {

                if (z[i, j] > 0)

                {

                    sum += z[i, j];

                    t += 1;

                }

            }

        }

        double sr = sum / t;

        Console.WriteLine("Среднее арифметическое матрицы: ");

        Console.WriteLine(sr);

        double max = z[0, 0];

        for (int i = 0; i < 6; i++)

        {

            for (int j = 0; j < 8; j++)

            {

                if (z[i, j] > max)

                {

                    max = z[i, j];

                }

            }

        }

        Console.WriteLine("Максимальный элемент матрицы:");

        Console.WriteLine(max);

        for (int i = 0; i < 6; i++)

        {

            for (int j = 0; j < 8; j++)

            {

                if (z[i, j] == max)

                {

                    z[i, j] = sr;

                }

            }

            Console.WriteLine();

        }

        Console.WriteLine("Получившаяся матрица: ");

        for (int i = 0; i < 6; i++)

        {

            for (int j = 0; j < 8; j++)

            {

                Console.Write("{0:f2}\t", z[i, j]);

            }

            Console.WriteLine();

        }

    }

}

№26

using System;

class Program

{

    static void Main(string[] args)

    {

        int[,] a = new int[5, 7];

        Random random = new Random();

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 7; j++)

            {

                a[i, j] = random.Next(100);

            }

        }

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 7; j++)

            {

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

            }

            Console.WriteLine();

        }

        Console.WriteLine();

        Console.WriteLine("Одномерный массив:");

        int[] b = new int[7];

        Random random1 = new Random();

        for (int i = 0; i < 7; i++)

        {

            b[i] = random1.Next(10);

        }

        for (int i = 0; i < 7; i++)

        {

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

        }

            int t = 5;

        int amax = a[0, t];

        int imax = 0;

        for (int i = 1; i < 5; i++)

        {

            if (a[i, t] > amax)

            {

                amax = a[i, t];

                imax = i;

            }

        }

        Console.WriteLine();

        Console.WriteLine("Максимальный элемент 6 столбца:");

        Console.WriteLine(amax);

        for (int j = 0; j < 7; j++)

        {

            a[imax, j] = b[j];

        }

        Console.WriteLine("Матрица после замены строк:");

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 7; j++)

            {

                Console.Write("{0:d} ", a[i, j]);

            }

            Console.WriteLine();

        }

    }

}

№30

using System;

class Program

{

    static void Main(string[] args)

    {

        int[,] b = new int[5, 5];

        Random random = new Random();

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 5; j++)

            {

                b[i, j] = random.Next(-100,100);

            }

        }

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 5; j++)

            {

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

            }

            Console.WriteLine();

        }

        int amax = b[0, 0];

        int imax = 0;

        for (int i = 0; i < 5; i++)

        {

            if (b[i, i] > amax)

            {

                amax = b[i, i];

                imax = i;

            }

        }

        Console.WriteLine("Максимальный элемент главной диагонали матрицы:");

        Console.WriteLine(amax);

        int imax1 = -1;

        for (int i = 0; i < 5; i++)

        {

            if (b[i, 2] < 0)

            {

                imax1 = i;

                break;

            }

        }

        if (imax != -1 &&  imax1 != -1)

        {

            for (int j = 0; j < 5; j++)

            {

                int t = b[imax, j];

                b[imax, j] = b[imax1, j];

                b[imax1, j] = t;

            }

        }

        Console.WriteLine("Матрица после замены строк:");

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 5; j++)

            {

                Console.Write("{0:d} ", b[i, j]);

            }

            Console.WriteLine();

        }

    }

}

**2 уровень**

№1

using System;

class Program

{

    static void Main(string[] args)

    {

        int[,] a = new int[5, 7];

        Random random = new Random();

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 7; j++)

            {

                a[i, j] = random.Next(100);

            }

        }

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 7; j++)

            {

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

            }

            Console.WriteLine();

        }

        for (int i = 0; i < 5; i++)

        {

            int max = a[i, 0];

            int maxIndex = 0;

            for (int j = 1; j < 7; j++)

            {

                if (a[i, j] > max)

                {

                    max = a[i, j];

                    maxIndex = j;

                }

            }

            if (maxIndex > 0 && maxIndex < 6)

            {

                if (a[i, maxIndex - 1] < a[i, maxIndex + 1])

                {

                    a[i, maxIndex - 1] \*= 2;

                }

                else

                {

                    a[i, maxIndex + 1] \*= 2;

                }

            }

            else if (maxIndex == 0)

            {

                a[i, maxIndex + 1] \*= 2;

            }

            else

            {

                a[i, maxIndex - 1] \*= 2;

            }

        }

        Console.WriteLine("Матрица A после обработки:");

        for (int i = 0; i < 5; i++)

        {

            for (int j = 0; j < 7; j++)

            {

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

            }

            Console.WriteLine();

        }

    }

}

№5

using System;

class Program

{

    static void Main(string[] args)

    {

        int[,] a = new int[7, 5];

        Random random = new Random();

        for (int i = 0; i < 7; i++)

        {

            for (int j = 0; j < 5; j++)

            {

                a[i, j] = random.Next(100);

            }

        }

        for (int i = 0; i < 7; i++)

        {

            for (int j = 0; j < 5; j++)

            {

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

            }

            Console.WriteLine();

        }

        for (int i = 0; i < 5; i++)

        {

            int maxRowIndex = 0;

            int maxElement = a[0, i];

            for (int j = 0; j < 7; j++)

            {

                if (a[j, i] > maxElement)

                {

                    maxElement = a[j, i];

                    maxRowIndex = j;

                }

            }

            Console.WriteLine($"Максимальный элемент в столбце {i}: {maxElement}");

            int halfSum = (a[0, i] + a[6, i]) / 2;

            if (maxElement < halfSum)

            {

                a[maxRowIndex, i] = halfSum;

            }

            else

            {

                a[maxRowIndex, i] = i;

            }

            Console.WriteLine("полусумма:");

            Console.WriteLine(halfSum);

        }

        Console.WriteLine("Матрица A после обработки:");

        for (int i = 0; i < 7; i++)

        {

            for (int j = 0; j < 5; j++)

            {

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

            }

            Console.WriteLine();

        }

    }

}

№9

using System;

class Program

{

    static void Main(string[] args)

    {

        int[,] a = new int[6, 7];

        Random random = new Random();

        for (int i = 0; i < 6; i++)

        {

            for (int j = 0; j < 7; j++)

            {

                a[i, j] = random.Next(100);

            }

        }

        for (int i = 0; i < 6; i++)

        {

            for (int j = 0; j < 7; j++)

            {

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

            }

            Console.WriteLine();

        }

        for (int i = 0; i < 6; i++)

        {

            int b = 0;

            int e = 6;

            while (b < e)

            {

                int temp = a[i, b];

                a[i, b] = a[i, e];

                a[i, e] = temp;

                b++;

                e--;

            }

        }

        Console.WriteLine("Матрица A после обработки:");

        for (int i = 0; i < 6; i++)

        {

            for (int j = 0; j < 7; j++)

            {

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

            }

            Console.WriteLine();

        }

    }

}

**3 уровень**

№1

using System;

class Program

{

    static void Main(string[] args)

    {

        int[,] a = new int[7, 5];

        Random random = new Random();

        for (int i = 0; i < 7; i++)

        {

            for (int j = 0; j < 5; j++)

            {

                a[i, j] = random.Next(100);

            }

        }

        for (int i = 0; i < 7; i++)

        {

            for (int j = 0; j < 5; j++)

            {

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

            }

            Console.WriteLine();

        }

        int[] min1 = new int[7];

        for (int i=0; i < 7; i++)

        {

            int amin = a[i,0];

            for (int j = 0;j < 5; j++)

            {

                if (a[i,j] < amin)

                {

                    amin= a[i,j];

                }

            }

            Console.WriteLine($"Минимальный элемент в столбце {i}: {amin}");

            min1[i] = amin;

        }

        for (int i = 0; i < 7 - 1; i++)

        {

            for (int j = i + 1; j < 7; j++)

            {

                if (min1[j] > min1[i])

                {

                    int d = min1[i];

                    min1[i] = min1[j];

                    min1[j] = d;

                    for (int k = 0; k < 5; k++)

                    {

                        d = a[i, k];

                        a[i, k] = a[j, k];

                        a[j, k] = d;

                    }

                }

            }

        }

        Console.WriteLine("Матрица A после обработки:");

        for (int i = 0; i < 7; i++)

        {

            for (int j = 0; j < 5; j++)

            {

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

            }

            Console.WriteLine();

        }

    }

}

№2

using System;

class Program

{

    static void Main(string[] args)

    {

        Console.WriteLine("Введите n: ");

        int n = int.Parse(Console.ReadLine());

        if (n > 0)

        {

            int[,] a = new int[n, n];

            Random random = new Random();

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

            {

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

                {

                    a[i, j] = random.Next(100);

                }

            }

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

            {

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

                {

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

                }

                Console.WriteLine();

            }

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

            {

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

                {

                    if (i == n - 1 || j == 0 || j == n - 1 || i == 0)

                    {

                        a[i, j] = 0;

                    }

                }

            }

            Console.WriteLine("Матрица A после обработки:");

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

            {

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

                {

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

                }

                Console.WriteLine();

            }

        }

        else

        {

            Console.WriteLine("В матрице 0 элементов, дальнейшие действия невозможны");

        }

    }

}