**Лабораторная работа №4**

**Код:**

using System;

namespace Test\_2

{

class MainClass

{

public static void Main(string[] args)

{

First();

Second();

Third();

Fourth();

Fifth();

Sixth();

Seventh();

Eighth();

}

public static void First()

{

Console.WriteLine("---------------------------");

int n = 1;

int m = 1;

int moreThan0 = 0;

int lessThan0 = 0;

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

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

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

Random random = new Random();

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

{

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

{

matrix[i, j] = random.Next(-5, 5);

Console.WriteLine("[{0}]:[{1}] = {2}", i, j, matrix[i, j]);

if (matrix[i, j] < 0)

{

lessThan0++;

}

else if (matrix[i, j] > 0)

{

moreThan0++;

}

else

{

Console.WriteLine("Элемент с координатами [{0}]:[{1}] равен 0", i, j);

}

}

}

Console.WriteLine("Больше нуля: {1} \nМеньше нуля: {0}", lessThan0, moreThan0);

Console.ReadKey();

}

public static void Second()

{

Console.WriteLine("---------------------------");

int[] arr\_A = new int[19];

int size = 0;

Random random = new Random();

for (int i = 0; i < 19; i++)

{

arr\_A[i] = random.Next(500, 2000);

Console.WriteLine("[{0}] = {1}", i, arr\_A[i]);

if (arr\_A[i] <= 999)

{

size++;

}

}

int[] arr\_B = new int[size];

int j = 0;

for (int i = 0; i < arr\_A.Length; i++)

{

if (arr\_A[i] <= 999)

{

arr\_B[j] = arr\_A[i];

j++;

}

}

int tmp = 0;

for (int i = arr\_B.Length - 1; i >= 0; i--)

{

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

{

if (arr\_B[j] < arr\_B[j + 1])

{

tmp = arr\_B[j];

arr\_B[j] = arr\_B[j + 1];

arr\_B[j + 1] = tmp;

}

}

}

Console.WriteLine("\nМассив В:");

OutputArray(arr\_B);

Console.ReadKey();

}

public static void Third()

{

Console.WriteLine("---------------------------");

int[,] arr = new int[19, 19];

double result\_sum = 0;

double result\_mul = 1;

Random random = new Random();

for (int i = 0; i < 19; i++)

{

for (int j = 0; j < 19; j++)

{

arr[i, j] = random.Next(1, 4);

//Console.WriteLine("[{0}]:[{1}] = {2}", i, j, arr[i, j]);

result\_mul \*= arr[i, j];

result\_sum += arr[i, j];

}

}

//OutputArray(arr, 19, 19);

Console.WriteLine("Result of sum is {0}", result\_sum);

Console.WriteLine("Result of multiplication is {0}", result\_mul);

Console.ReadKey();

}

public static void Fourth()

{

Console.WriteLine("---------------------------");

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

int[,] matrix = new int[n, 3];

double[] area = new double[n];

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

{

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

{

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

}

}

double p = 1;

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

{

p = 0.5 \* (matrix[i, 0] + matrix[i, 1] + matrix[i, 2]);

area[i] = Math.Sqrt(p \* (p - matrix[i, 0]) \* (p - matrix[i, 1]) \* (p - matrix[i, 2]));

if(area[i] == 0)

{

Console.WriteLine("Треугольник с индексом {0} не существует!", i);

}

}

double max = area[0], maxIndex = 0;

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

{

if (max < area[i])

{

max = area[i];

maxIndex = i;

}

}

Console.WriteLine("\nПлощади треугольников: ");

OutputArray(area);

Console.WriteLine("Max = {0}, Max index = {1}", max, maxIndex);

Console.ReadKey();

}

public static void Fifth()

{

Console.WriteLine("---------------------------");

double result = 1;

//double x = Convert.ToDouble(Console.ReadLine());

for (double x = 0.1; x < 1; x += 0.09)

{

result = Math.Pow(((x \* x) / 4) + (x / 2) + 1, Math.Pow(Math.E, (x / 2)));

Console.WriteLine("Result {1} is {0}", result, (x));

}

Console.ReadKey();

}

public static void Sixth()

{

Console.WriteLine("---------------------------");

int[] arr = new int[5];

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

{

arr[i] = Convert.ToInt32(Console.ReadLine());

}

int size = 0;

for (int i = 0; i < arr.Length; i++)

{

if ((arr[i] % 100 != ((arr[i] % 10) / 10)) && (arr[i] % 10 != (arr[i] / 100)))

{

size++;

}

}

int[] arr\_B = new int[size];

int j = 0;

for (int i = 0; i < arr.Length; i++)

{

if (((arr[i] % 100) != ((arr[i] % 10) / 10)) && ((arr[i] % 10) != (arr[i] / 100)))

{

arr\_B[j] = arr[i];

j++;

}

}

Array.Sort(arr\_B);

OutputArray(arr\_B);

Console.ReadKey();

}

public static void Seventh()

{

Console.WriteLine("---------------------------");

int[] arr = new int[10];

int sum\_1 = 0, sum\_2 = 0;

Random random = new Random();

for (int i = 0; i < 10; i++)

{

arr[i] = random.Next(-5, 5);

if (arr[i] > 0)

{

sum\_1 += arr[i];

}

else

{

sum\_2 += arr[i];

}

Console.WriteLine("[{0}] = {1}", i, arr[i]);

}

Console.WriteLine("7-е задание первым способом: {0}, {1}", sum\_1, sum\_2);

sum\_1 = 0;

sum\_2 = 0;

int[] arrForSum1 = Array.FindAll(arr, n => n > 0);

int[] arrForSum2 = Array.FindAll(arr, n => n < 0);

for (int i = 0; i < arrForSum1.Length; i++)

{

sum\_1 += arrForSum1[i];

}

for (int i = 0; i < arrForSum2.Length; i++)

{

sum\_2 += arrForSum2[i];

}

Console.WriteLine("7-е задание вторым способом: {0}, {1}", sum\_1, sum\_2);

Console.ReadKey();

}

public static void Eighth()

{

Console.WriteLine("---------------------------");

int[] arr = new int[10];

int lastZeroIndex = 0;

int sumAfterZeroElement = 0;

for (int i = 0; i < arr.Length; i++)

{

arr[i] = Convert.ToInt32(Console.ReadLine());

if (arr[i] == 0)

{

lastZeroIndex = i;

}

}

for (int i = lastZeroIndex + 1; i < arr.Length; i++)

{

sumAfterZeroElement += arr[i];

}

Console.WriteLine("8-е задание первым способом: {0}", sumAfterZeroElement);

lastZeroIndex = 0;

sumAfterZeroElement = 0;

for (int i = 0; i < arr.Length; i++)

{

lastZeroIndex = Array.FindLastIndex(arr, zero => zero == 0);

}

for (int i = lastZeroIndex + 1; i < arr.Length; i++)

{

sumAfterZeroElement += arr[i];

}

Console.WriteLine("8-е задание первым способом: {0}", sumAfterZeroElement);

Console.ReadKey();

}

public static void OutputArray(int[] arr)

{

for (int i = 0; i < arr.Length; i++)

{

Console.WriteLine("[{0}] = {1}", i, arr[i]);

}

}

public static void OutputArray(double[] arr)

{

for (int i = 0; i < arr.Length; i++)

{

Console.WriteLine("[{0}] = {1}", i, arr[i]);

}

}

public static void OutputArray(int[,] arr, int n, int m)

{

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

{

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

{

Console.WriteLine("[{0}]:[{1}] = {2}", i, j, arr[i, j]);

}

}

}

}

}

**Скриншоты:**



