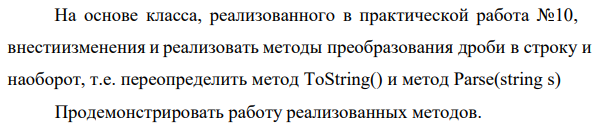
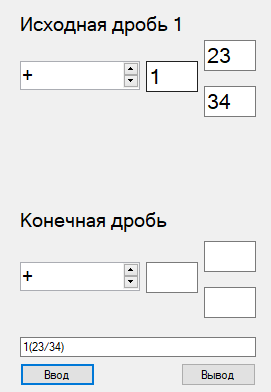
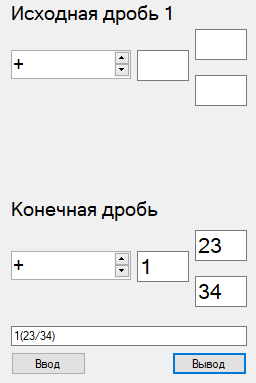
Практическая работа №11







**Fraction.cs**

public class Fraction

{

public int sign, integer, numerator, denominator;

public Fraction(int n\_sign, int n\_integer, int n\_numerator, int n\_denominator)//конструктор класса

{

sign =n\_sign;

integer = n\_integer;

numerator = n\_numerator;

denominator = n\_denominator;

}

public Fraction() {

sign = 1;

integer = 0;

numerator = 0;

denominator = 1;

}

private int NOD(int A, int B)

{

while (A != B)

{

if (A > B)

{

A = A - B;

}

else

{

B = B - A;

}

}

return A;

}

public void Reduction()// сокращение дроби

{

if (numerator > 0)

{

int k = NOD(numerator, denominator);

if (k != 1)

{

numerator = numerator / k;

denominator = denominator / k;

}

}

}

public void Incorrect\_fraction()//приведение в неправильную дробь

{

numerator = integer \* denominator + numerator;

integer = 0;

}

public void Correct\_fraction()//создание правильной дроби и выделение целой части

{

int k = integer;

integer = numerator / denominator;

numerator = numerator - integer \* denominator;

integer = integer + k;

}

public void Addition(Fraction d)//сложение дробей

{

integer = sign\* integer + d.sign\*d.integer;

int k1 = sign\*numerator \* d.denominator + d.sign\*d.numerator \* denominator;

denominator = denominator \* d.denominator;

numerator = k1;

if (integer < 0)

{

integer = integer \* (-1);

sign = sign \* (-1);

}

}

public void Subtraction(Fraction d)//Вычитание дробей

{

Incorrect\_fraction();

d.Incorrect\_fraction();

//integer = sign \* integer - d.sign \* d.integer;

int k1 = (sign \* numerator) \* d.denominator - (d.sign \* (d.numerator)) \* denominator;

numerator = k1;

denominator = d.denominator \* denominator;

if (numerator < 0)

{

numerator = numerator \* (-1);

sign = sign \* (-1);

}

Correct\_fraction();

Reduction();

}

public void Multiplication(Fraction d)

{

Incorrect\_fraction();

d.Incorrect\_fraction();

int t = sign \* numerator \* d.sign \* d.numerator;

int t2 = denominator \* d.denominator;

numerator = t;

denominator = t2;

if (numerator < 0)

{

numerator = numerator \* (-1);

sign = -1;

}

else

{

sign = 1;

}

Correct\_fraction();

Reduction();

}

public void Division(Fraction d)//Деление дробей

{

Incorrect\_fraction();

d.Incorrect\_fraction();

int t = sign \* numerator \* d.sign \* d.denominator;

int t2 = d.numerator \* denominator;

numerator = t;

denominator = t2;

if (numerator < 0)

{

numerator = numerator \* (-1);

sign = -1;

}

else

{

sign = 1;

}

Correct\_fraction();

Reduction();

}

//вычитание, умножение деление дописать

public static Fraction operator +(Fraction b1, Fraction b2)

{

Fraction b = new Fraction();

b1.Incorrect\_fraction();

b2.Incorrect\_fraction();

//integer = sign \* integer - d.sign \* d.integer;

int k1 = (b1.sign \* b1.numerator) \* b2.denominator

+ (b2.sign \* (b2.numerator)) \* b1.denominator;

b.numerator = k1;

b.denominator = b1.denominator \* b2.denominator;

if (b.numerator < 0)

{

b.numerator = b.numerator \* (-1);

b.sign = b.sign \* (-1);

}

b.Correct\_fraction();

b.Reduction();

return b;

}

public static Fraction operator -(Fraction b1, Fraction b2)

{

Fraction b = new Fraction();

b1.Incorrect\_fraction();

b2.Incorrect\_fraction();

//integer = sign \* integer - d.sign \* d.integer;

int k1 = (b1.sign \* b1.numerator) \* b2.denominator - (b2.sign \* (b2.numerator)) \* b1.denominator;

b.numerator = k1;

b.denominator = b1.denominator \* b2.denominator;

if (b.numerator < 0)

{

b.numerator = b.numerator \* (-1);

b.sign = b.sign \* (-1);

}

b.Correct\_fraction();

b.Reduction();

return b;

}

public static Fraction operator \*(Fraction b1, Fraction b2)

{

Fraction b = new Fraction();

b1.Incorrect\_fraction();

b2.Incorrect\_fraction();

int t = b1.sign \* b1.numerator \* b2.sign \* b2.numerator;

int t2 = b1.denominator \* b2.denominator;

b.numerator = t;

b.denominator = t2;

if (b.numerator < 0)

{

b.numerator = b.numerator \* (-1);

b.sign = -1;

}

else

{

b.sign = 1;

}

b.Correct\_fraction();

b.Reduction();

return b;

}

public static Fraction operator /(Fraction b1, Fraction b2)

{

Fraction b = new Fraction();

b1.Incorrect\_fraction();

b2.Incorrect\_fraction();

int t = b1.sign \* b1.numerator \* b2.sign \* b2.denominator;

int t2 = b2.numerator\*b1.denominator;

b.numerator = t;

b.denominator = t2;

if (b.numerator < 0)

{

b.numerator = b.numerator \* (-1);

b.sign = -1;

}

else

{

b.sign = 1;

}

b.Correct\_fraction();

b.Reduction();

return b;

}

public static bool operator >= (Fraction b1, Fraction b2)

{

b1.Incorrect\_fraction();

b2.Incorrect\_fraction();

int k1 = b1.numerator \* b1.sign \* b2.denominator;

int k2 = b2.numerator \* b2.sign \* b1.denominator;

if (k1 >= k2)

{

return true;

}

else

{

return false;

}

}

public static bool operator <=(Fraction b1, Fraction b2)

{

b1.Incorrect\_fraction();

b2.Incorrect\_fraction();

int k1 = b1.numerator \* b1.sign \* b2.denominator;

int k2 = b2.numerator \* b2.sign \* b1.denominator;

if (k1 <= k2)

{

return true;

}

else

{

return false;

}

}

public static bool operator <(Fraction b1, Fraction b2)

{

b1.Incorrect\_fraction();

b2.Incorrect\_fraction();

int k1 = b1.numerator \* b1.sign \* b2.denominator;

int k2 = b2.numerator \* b2.sign \* b1.denominator;

if (k1 < k2)

{

return true;

}

else

{

return false;

}

}

public static bool operator >(Fraction b1, Fraction b2)

{

b1.Incorrect\_fraction();

b2.Incorrect\_fraction();

int k1 = b1.numerator \* b1.sign \* b2.denominator;

int k2 = b2.numerator \* b2.sign \* b1.denominator;

if (k1 > k2)

{

return true;

}

else

{

return false;

}

}

public static bool operator ==(Fraction b1, Fraction b2)

{

b1.Incorrect\_fraction();

b2.Incorrect\_fraction();

int k1 = b1.numerator \* b1.sign \* b2.denominator;

int k2 = b2.numerator \* b2.sign \* b1.denominator;

if (k1 == k2)

{

return true;

}

else

{

return false;

}

}

public static bool operator != (Fraction b1, Fraction b2)

{

b1.Incorrect\_fraction();

b2.Incorrect\_fraction();

int k1 = b1.numerator \* b1.sign \* b2.denominator;

int k2 = b2.numerator \* b2.sign \* b1.denominator;

if (k1 != k2)

{

return true;

}

else

{

return false;

}

}

public override string ToString()

{

string s = "";

if (sign < 0)

{

s = s + "";

}

if (integer != 0)

{

s = s + integer.ToString();

}

s = s + "(" + numerator + "/" + denominator + ")";

return s;

}

public static Fraction Parse(string str)

{

Fraction f = new Fraction();

int k = str.IndexOf("(");

string s2 = str.Substring(0, k);

f.integer = Convert.ToInt32(s2);

if (f.integer < 0)

{

f.sign = -1;

f.integer = -f.integer;

}

int k2 = str.IndexOf(")");

s2 = str.Substring(k + 1, k2 - k - 1);

int k3 = s2.IndexOf("/");

f.numerator = Convert.ToInt32(s2.Substring(0, k3));

f.denominator = Convert.ToInt32(s2.Substring(k3+1,s2.Length-k3-1));

return f;

}

}

**Form1.cs**

public partial class Form1 : Form

{

public Form1()

{

InitializeComponent();

}

private void Form1\_Load(object sender, EventArgs e)

{

domainUpDown1.SelectedIndex = 0;

domainUpDown2.SelectedIndex = 0;

domainUpDown3.SelectedIndex = 0;

}

public void Print(Fraction f)

{

if (f.sign > 0)

{

domainUpDown2.SelectedIndex = 0;

}

else

{

domainUpDown2.SelectedIndex = 1;

}

textBox6.Text = f.integer.ToString();

textBox5.Text = f.numerator.ToString();

textBox4.Text = f.denominator.ToString();

}

public Fraction ReceiveF()

{

int sign = 1;

if (domainUpDown1.SelectedIndex == 1)

{

sign = -1;

}

else if (domainUpDown1.SelectedIndex == 0)

{

sign = 1;

}

int integer = Convert.ToInt32(textBox2.Text);

int numerator = Convert.ToInt32(textBox1.Text);

int denominator = Convert.ToInt32(textBox3.Text);

Fraction newf = new Fraction(sign, integer, numerator, denominator);

return newf;

}

public Fraction ReceiveF2()

{

int sign2 = 1;

if (domainUpDown3.SelectedIndex == 1)

{

sign2 = -1;

}

else if (domainUpDown3.SelectedIndex == 0)

{

sign2 = 1;

}

int integer2 = Convert.ToInt32(textBox9.Text);

int numerator2 = Convert.ToInt32(textBox8.Text);

int denominator2 = Convert.ToInt32(textBox7.Text);

Fraction newf2 = new Fraction(sign2, integer2, numerator2, denominator2);

return newf2;

}

private void button1\_Click(object sender, EventArgs e)

{

Fraction f = ReceiveF();

f.Reduction();

Print(f);

}

private void button2\_Click(object sender, EventArgs e)

{

Fraction f = ReceiveF();

ReceiveF();

f.Incorrect\_fraction();

Print(f);

}

private void button3\_Click(object sender, EventArgs e)

{

Fraction f = ReceiveF();

f.Correct\_fraction();

Print(f);

}

private void button5\_Click(object sender, EventArgs e)

{

Fraction f = ReceiveF();

Fraction f2 = ReceiveF2();

f.Subtraction(f2);

Print(f2);

}

private void button6\_Click(object sender, EventArgs e)

{

Fraction f = ReceiveF();

Fraction f2=ReceiveF2();

f.Multiplication(f2);

Print(f2);

}

private void button7\_Click(object sender, EventArgs e)

{

Fraction f1 = ReceiveF();

Fraction f2 = ReceiveF2();

Fraction f3 = f1 + f2;

//Fraction f4 = f1 \* f2;

// Fraction f5 = f1 - f2;

//Fraction f6 = f1 / f2;

Print(f3);

}

private void button4\_Click(object sender, EventArgs e)

{

Fraction f = ReceiveF();

Fraction f2 = ReceiveF2();

f.Addition(f2);

Print(f2);

}

private void button8\_Click(object sender, EventArgs e)

{

Fraction f1 = ReceiveF();

Fraction f2 = ReceiveF2();

Fraction f5 = f1 - f2;

Print(f5);

}

private void button9\_Click(object sender, EventArgs e)

{

Fraction f1 = ReceiveF();

Fraction f2 = ReceiveF2();

Fraction f4 = f1 \* f2;

Print(f4);

}

private void button10\_Click(object sender, EventArgs e)

{

Fraction f1 = ReceiveF();

Fraction f2 = ReceiveF2();

Fraction f6 = f1 / f2;

Print(f6);

}

private void button11\_Click(object sender, EventArgs e)

{

Fraction f = ReceiveF();

Fraction f2 = ReceiveF2();

f.Division(f2);

Print(f2);

}

private void radioButton1\_CheckedChanged(object sender, EventArgs e)

{

if (radioButton1.Checked)

{

Fraction f1 = ReceiveF();

Fraction f2 = ReceiveF2();

Fraction f3 = f1 + f2;

//Fraction f4 = f1 \* f2;

// Fraction f5 = f1 - f2;

//Fraction f6 = f1 / f2;

Print(f3);

}

}

private void radioButton2\_CheckedChanged(object sender, EventArgs e)

{

if (radioButton2.Checked)

{

Fraction f1 = ReceiveF();

Fraction f2 = ReceiveF2();

Fraction f5 = f1 - f2;

Print(f5);

}

}

private void radioButton3\_CheckedChanged(object sender, EventArgs e)

{

if (radioButton3.Checked)

{

Fraction f1 = ReceiveF();

Fraction f2 = ReceiveF2();

Fraction f4 = f1 \* f2;

Print(f4);

}

}

private void radioButton4\_CheckedChanged(object sender, EventArgs e)

{

if (radioButton4.Checked)

{

Fraction f1 = ReceiveF();

Fraction f2 = ReceiveF2();

Fraction f6 = f1 / f2;

Print(f6);

}

}

private void radioButton5\_CheckedChanged(object sender, EventArgs e)

{

if (radioButton5.Checked)

{

Fraction f = ReceiveF();

Fraction f2 = ReceiveF2();

if (f >= f2)

{

MessageBox.Show("Верно");

}

else

{

MessageBox.Show("Неверно");

}

}

}

private void radioButton6\_CheckedChanged(object sender, EventArgs e)

{

if (radioButton6.Checked)

{

Fraction f = ReceiveF();

Fraction f2 = ReceiveF2();

if (f <= f2)

{

MessageBox.Show("Верно");

}

else

{

MessageBox.Show("Неверно");

}

}

}

private void radioButton7\_CheckedChanged(object sender, EventArgs e)

{

if (radioButton7.Checked)

{

Fraction f = ReceiveF();

Fraction f2 = ReceiveF2();

if (f < f2)

{

MessageBox.Show("Верно");

}

else

{

MessageBox.Show("Неверно");

}

}

}

private void radioButton8\_CheckedChanged(object sender, EventArgs e)

{

if (radioButton8.Checked)

{

Fraction f = ReceiveF();

Fraction f2 = ReceiveF2();

if (f > f2)

{

MessageBox.Show("Верно");

}

else

{

MessageBox.Show("Неверно");

}

}

}

private void radioButton9\_CheckedChanged(object sender, EventArgs e)

{

if (radioButton9.Checked)

{

Fraction f = ReceiveF();

Fraction f2 = ReceiveF2();

if (f == f2)

{

MessageBox.Show("Верно");

}

else

{

MessageBox.Show("Неверно");

}

}

}

private void radioButton10\_CheckedChanged(object sender, EventArgs e)

{

if (radioButton10.Checked)

{

Fraction f = ReceiveF();

Fraction f2 = ReceiveF2();

if (f != f2)

{

MessageBox.Show("Верно");

}

else

{

MessageBox.Show("Неверно");

}

}

}

private void button1\_Click\_1(object sender, EventArgs e)

{

Fraction f = ReceiveF();

textBox10.Text = f.ToString();

}

private void button2\_Click\_1(object sender, EventArgs e)

{

string s = textBox10.Text;

Fraction ff = Fraction.Parse(s);

Print(ff);

}

}

Ссылка на гитхаб:

<https://github.com/Alexandrov911/Practical-N11.2022.git>