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Муромский институт
федерального государственного образовательного учреждения
высшего профессионального образования
«Владимирский государственный университет
имени Александра Григорьевича и Николая Григорьевича
Столетовых»
(МИ ВлГУ)

Факультет _____ ИТ
Кафедра _____ САПР

Лабораторная работа №3

по _____ Инструментальные средства разработки ПО
Тема: _____ Калькулятор на WPF

Руководитель

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(фамилия, инициалы)

(подпись) (дата)

Студент _____ ПКС-115
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(фамилия, инициалы)

(подпись) 10.04.2018
(дата)

Задание

Листинг по XAML.

```
<Window x:Class="pugin_calc.MainWindow"
        xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
        xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
        xmlns:d="http://schemas.microsoft.com/expression/blend/2008"
        xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006"
        xmlns:local="clr-namespace:pugin_calc"
        mc:Ignorable="d"
        Title="CALC" Height="339.243" Width="517.828">
    <Grid>
        <Grid.ColumnDefinitions>
            <ColumnDefinition Width="136*"/>
            <ColumnDefinition Width="3*"/>
            <ColumnDefinition Width="22*"/>
            <ColumnDefinition Width="94*"/>
        </Grid.ColumnDefinitions>
        <Button Content="X^2" HorizontalAlignment="Left" Margin="27,126,0,0"
            VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
            FontFamily="Open Sans" FontSize="16" Height="50" Click="Button_Click_18"/>
        <Button Content="1" HorizontalAlignment="Left" Margin="103,126,0,0"
            VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
            FontFamily="Open Sans" FontSize="11" Height="50" Click="Button_Click_6"/>
        <Button Content="Button" HorizontalAlignment="Left"
            Margin="179,177,0,0" VerticalAlignment="Top" Width="75" Background="White"
            BorderBrush="Black" FontFamily="Open Sans" FontSize="11" Height="50"/>
        <Button Content="2" HorizontalAlignment="Left" Margin="179,126,0,0"
            VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
            FontFamily="Open Sans" FontSize="11" Height="50" Click="Button_Click_7"/>
        <Button Content="Button" HorizontalAlignment="Left"
            Margin="27,177,0,0" VerticalAlignment="Top" Width="75" Background="White"/>
```

					МИВУ 09.02.03 ПЗ						
Изм	Лист	№ докум.	Подп.	Дата	Лабораторная работа №3 Калькулятор на WPF			Лит.	Лист	Листов	
Разраб.	Мартояс И. С.								У	2	14
Пров.	Пугин Е. В.							МИ ВлГУ ПКС-115			
Н. контр.											
Утв.											

```

BorderBrush="Black" FontFamily="Open Sans" FontSize="11" Height="50"/>
    <Button Content="Button" HorizontalAlignment="Left"
Margin="103,177,0,0" VerticalAlignment="Top" Width="75" Background="White"
BorderBrush="Black" FontFamily="Open Sans" FontSize="11" Height="50"/>

    <Button Content="3" HorizontalAlignment="Left" Margin="255,126,0,0"
VerticalAlignment="Top" Width="74" Background="White" BorderBrush="Black"
FontFamily="Open Sans" FontSize="11" Height="50" Grid.ColumnSpan="4"

Click="Button_Click_8"/>
    <Button Content="корень" HorizontalAlignment="Left"
Margin="13,126,0,0" VerticalAlignment="Top" Width="75"
Background="White" BorderBrush="Black" FontFamily="Open Sans" FontSize="11"
Height="50" Grid.Column="3" Click="Button_Click_19"/>
    <Button Content="=" HorizontalAlignment="Left" Margin="89,126,0,0"
VerticalAlignment="Top" Width="75" BorderBrush="Black" FontFamily="Open
Sans" FontSize="36" Height="101" Foreground="Black" Background="White"
Grid.Column="3" Click="Button_Click_1"/>
    <Button Content="Button" HorizontalAlignment="Left"
Margin="255,177,0,0" VerticalAlignment="Top" Width="74"
Background="White" BorderBrush="Black" FontFamily="Open Sans" FontSize="11"
Height="50" Grid.ColumnSpan="4"/>
    <Button Content="Button" HorizontalAlignment="Left"
Margin="13,177,0,0" VerticalAlignment="Top" Width="75"
Background="White" BorderBrush="Black" FontFamily="Open Sans" FontSize="11"
Height="50" Grid.Column="3"/>
    <Button Content="C" HorizontalAlignment="Left" Margin="28,75,0,0"
VerticalAlignment="Top" Width="150" BorderBrush="Black" FontFamily="Open
Sans" FontSize="20" Height="50" Background="White" Click="Button_Click_17"/>
    <Button Content="+" HorizontalAlignment="Left" Margin="179,75,0,0"
VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
FontFamily="Open Sans" FontSize="20" Height="50" Click="Button_Click_2"/>
    <Button Content="-" HorizontalAlignment="Left" Margin="255,75,0,0"
VerticalAlignment="Top" Width="74" Background="White"
BorderBrush="Black" FontFamily="Open Sans" FontSize="20" Height="50"
Grid.ColumnSpan="4" Click="Button_Click_3"/>
    <Button Content="*" HorizontalAlignment="Left" Margin="13,75,0,0"
VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
FontFamily="Open Sans" FontSize="20" Height="50" Grid.Column="3"
Click="Button_Click_4"/>
    <Button Content="/" HorizontalAlignment="Left" Margin="89,75,0,0"

```

```

VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
FontFamily="Open Sans" FontSize="20" Height="50" Grid.Column="3"
Click="Button_Click_5"/>
    <TextBox Name="FieldCalc" HorizontalAlignment="Left" Height="38"
Margin="27,19,0,0" TextWrapping="Wrap" VerticalAlignment="Top" Width="460"
FontFamily="Open Sans" FontSize="16" Padding="5" Grid.ColumnSpan="4"
IsEnabled="False" Background="White" Foreground="Black"

SelectionBrush="Black"/>
    <Button Content="5" HorizontalAlignment="Left" Margin="179,177,0,0"
VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
FontFamily="Open Sans" FontSize="11" Height="50" Click="Button_Click_10"/>
    <Button Content="." HorizontalAlignment="Left" Margin="27,177,0,0"
VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
FontFamily="Open Sans" FontSize="11" Height="50" Click="Button_Click_16"/>
    <Button Content="4" HorizontalAlignment="Left" Margin="103,177,0,0"
VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
FontFamily="Open Sans" FontSize="11" Height="50" Click="Button_Click_9"/>
    <Button Content="6" HorizontalAlignment="Left" Margin="255,177,0,0"
VerticalAlignment="Top" Width="74" Background="White" BorderBrush="Black"
FontFamily="Open Sans" FontSize="11" Height="50" Grid.ColumnSpan="4"
Click="Button_Click_11"/>
    <Button Content="X^3" HorizontalAlignment="Left" Margin="13,177,0,0"
VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
FontFamily="Open Sans" FontSize="16" Height="50" Grid.Column="3"
Click="Button_Click_20"/>
    <Button Content="8" HorizontalAlignment="Left" Margin="179,228,0,0"
VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
FontFamily="Open Sans" FontSize="11" Height="50" Click="Button_Click_13"/>
    <Button Content="0" HorizontalAlignment="Left" Margin="27,228,0,0"
VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
FontFamily="Open Sans" FontSize="11" Height="50" Click="Button_Click_15"/>
    <Button Content="7" HorizontalAlignment="Left" Margin="103,228,0,0"
VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
FontFamily="Open Sans" FontSize="11" Height="50" Click="Button_Click_12"/>
    <Button Content="9" HorizontalAlignment="Left" Margin="255,228,0,0"
VerticalAlignment="Top" Width="75" Background="White" BorderBrush="Black"
FontFamily="Open Sans" FontSize="11" Height="50" Grid.ColumnSpan="4"
Click="Button_Click_14"/>
    <Button Content="EXIT" HorizontalAlignment="Left"
Margin="14,228,0,0" VerticalAlignment="Top" Width="151" BorderBrush="Black"

```

```

FontFamily="Open Sans" FontSize="11" Height="50" Foreground="Black"
Click="Button_Click" Background="White" Grid.Column="3"/>

</Grid>
</Window>

```

Листинг по C# коду

```

namespace pugin_calc
{
    /// <summary>
    /// Логика взаимодействия для MainWindow.xaml
    /// </summary>
    public partial class MainWindow : Window
    {
        public MainWindow()
        {
            InitializeComponent();
        }

        public string VariableA = "";
        public string VariableB = "";
        public bool flag = false; //replace variable with value textbox
        (отвечает за смену переменных значений поля)
        public int sign = 0; //number operate(под каждым номером своя операция)
        public bool signPress = false; // answer for press one button + - *
        \ (убираем возможность повторного нажатия клавиши)
        public bool point = false; //избавляемся от повторного нажатия кнопки
        bool press = false; //нужно чтобы проверить что перед нажатием на
        знаки (.) или +-*\ было что то внесено в textbox

        private void Button_Click(object sender, RoutedEventArgs e)
        {
            Close();
        }

        private void Button_Click_1(object sender, RoutedEventArgs e)
        {
            press = true;

```

```

if (sign != 0)//(проверяем выбрана ли операция над числами)
{
    press = false;

    double var_a = Convert.ToDouble(VariableA);
    double var_b = Convert.ToDouble(VariableB);

    double c;
    switch (sign)
    {

        case 1:
            c = var_a + var_b;
            FieldCalc.Text = Convert.ToString(c);
            break;
        case 2:
            c = var_a - var_b;
            FieldCalc.Text = Convert.ToString(c);
            break;
        case 3:
            c = var_a * var_b;
            FieldCalc.Text = Convert.ToString(c);
            break;
        case 4:
            c = var_a / var_b;
            FieldCalc.Text = Convert.ToString(c);
            break;
        default:
            c = 0;
            FieldCalc.Text = Convert.ToString(c);
            break;
    }

    flag = false;
    signPress = false;
    sign = 0;
    VariableA = c.ToString();
    VariableB = "";
    c = 0;
}

```

```

    }

    private void Button_Click_2(object sender, RoutedEventArgs e)
    {
        //addition
        press = false; //если клавиша нажата то нельзя ничего
        записать не внеся данные

        if (signPress == false) //если операция ещё не выбрана
        {
            flag = true; // другое значение записываем в другую переменную
            sign = 1; //записываем номер операции
            FieldCalc.Text += " + ";
            signPress = true; //говорим что операция уже выбрана
            point = false;
        }
    }

    private void Button_Click_3(object sender, RoutedEventArgs e)
    {

        press = false;
        //subtraction
        if (signPress == false)
        {
            flag = true;
            sign = 2;
            FieldCalc.Text += " - ";
            signPress = true;
            point = false;
        }
    }

    private void Button_Click_4(object sender, RoutedEventArgs e)
    {

        press = false;
        //multiplication
        if (signPress == false)
        {

```

```

        flag = true;
        sign = 3;
        FieldCalc.Text += " * ";
        signPress = true;
        point = false;
    }
}

private void Button_Click_5(object sender, RoutedEventArgs e)
{
    press = false;
    //division
    if (signPress == false)
    {
        flag = true;
        sign = 4;
        FieldCalc.Text += " / ";
        signPress = true;
        point = false;
    }
}

private void Button_Click_6(object sender, RoutedEventArgs e)
{
    press = true;
    // press 1
    if (flag == false)
    {
        VariableA += "1";
    }
    else
        VariableB += "1";

    FieldCalc.Text += 1;
}

private void Button_Click_7(object sender, RoutedEventArgs e)
{
    press = true;
    // press 2

```



```

        if (flag == false)
        {
            VariableA += "2";
        }
        else
            VariableB += "2";
        FieldCalc.Text += 2;
    }

private void Button_Click_8(object sender, RoutedEventArgs e)
{
    press = true;
    // press 3
    if (flag == false)
    {
        VariableA += "3";
    }
    else
        VariableB += "3";
    FieldCalc.Text += 3;
}

private void Button_Click_9(object sender, RoutedEventArgs e)
{
    press = true;
    // press 4
    if (flag == false)
    {
        VariableA += "4";
    }
    else
        VariableB += "4";
    FieldCalc.Text += 4;
}

private void Button_Click_10(object sender, RoutedEventArgs e)
{
    press = true;
    // press 5
    if (flag == false)
    {

```

```

        VariableA += "5";
    }
    else
        VariableB += "5";
    FieldCalc.Text += 5;
}

private void Button_Click_11(object sender, RoutedEventArgs e)
{
    press = true;
    // press 6
    if (flag == false)
    {
        VariableA += "6";
    }
    else
        VariableB += "6";
    FieldCalc.Text += 6;
}

private void Button_Click_12(object sender, RoutedEventArgs e)
{
    press = true;
    // press 7
    if (flag == false)
    {
        VariableA += "7";
    }
    else
        VariableB += "7";
    FieldCalc.Text += 7;
}

private void Button_Click_13(object sender, RoutedEventArgs e)
{
    press = true;
    // press 8
    if (flag == false)
    {
        VariableA += "8";
    }
}

```

```

        else
            VariableB += "8";
        FieldCalc.Text += 8;
    }

private void Button_Click_14(object sender, RoutedEventArgs e)
{
    press = true;
    // press 9
    if (flag == false)
    {
        VariableA += "9";
    }
    else
        VariableB += "9";
    FieldCalc.Text += 9;
}

private void Button_Click_15(object sender, RoutedEventArgs e)
{
    press = true;
    // press 0
    if (flag == false)
    {
        VariableA += "0";
    }
    else
        VariableB += "0";
    FieldCalc.Text += 0;
}

private void Button_Click_16(object sender, RoutedEventArgs e)
{
    // press
    if (press == true)
    {
        if (point == false)//избавляемся от повторного нажатия кнопки
        {
            if (flag == false)
            {
                VariableA += ",";
                // point = true;
            }
        }
    }
}

```

```

        }
        point = true;
        FieldCalc.Text += ".";
    }
}

private void Button_Click_17(object sender, RoutedEventArgs e)
{
    //сброс
    press = false;

    flag = false;
    signPress = false;
    sign = 0;
    VariableA = "";
    VariableB = "";
    point = false;
    FieldCalc.Text = "";
}

private void Button_Click_18(object sender, RoutedEventArgs e)
{
    double a = Convert.ToDouble(VariableA);
    a *= a;
    FieldCalc.Text = Convert.ToString(a);
    VariableA = a.ToString();
}

private void Button_Click_19(object sender, RoutedEventArgs e)
{
    double a = Convert.ToDouble(VariableA);

    FieldCalc.Text = Convert.ToString(Math.Sqrt(a));
    VariableA = a.ToString();}

private void Button_Click_20(object sender, RoutedEventArgs e)
{
    double a = Convert.ToDouble(VariableA);
    a = a * (a * a);
    FieldCalc.Text = Convert.ToString(a);
    VariableA = a.ToString();}

private void delet_chart(object sender, RoutedEventArgs e)
{
    if (signPress == false)//если операция ещё не выбрана

```

```

{
    string[] a = VariableA.Split();
    for (int i = 0; i <= a.Length - 1; i++)
    {
    }
}
else
{
}
}}}}

```



Рисунок 1 – вводим данные



Рисунок 2 – Получаем ответ