Федеральное государственное образовательное бюджетное

учреждение высшего образования

**«Финансовый университет при Правительстве Российской Федерации»**

**(Финансовый университет)**

Колледж информатики и программирования

**ОТЧЕТ О ВЫПОЛНЕНИИ ЗАДАНИЯ № 7**

**Тема: “События C#”**

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Группа: 3ПКС-420

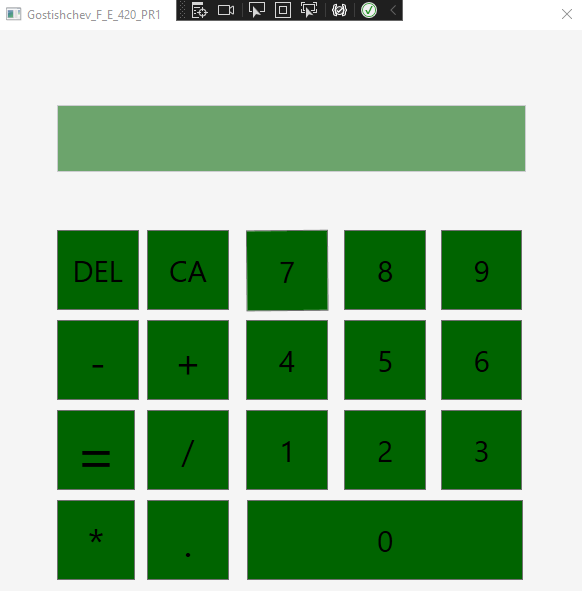
Преподаватель: Сибирев И.В.

Дата:27.11.2022

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**Цель работы**: разработать калькулятор на языке C#. В проекте использовать приём создания одного обработчика для нескольких событий.

1. На рисунке снизу представлено окно WPF c дизайном самого калькулятора.



1. Код программы:

using System;

using System.Collections.Generic;

using System.ComponentModel;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

using System.Windows;

using System.Windows.Controls;

using System.Windows.Data;

using System.Windows.Documents;

using System.Windows.Input;

using System.Windows.Media;

using System.Windows.Media.Imaging;

using System.Windows.Navigation;

using System.Windows.Shapes;

namespace CalculatorF\_WPF

{

public partial class MainWindow : Window

{

public MainWindow()

{

InitializeComponent();

}

private void Button\_Click\_0(object sender, RoutedEventArgs e)

{

if (screen.Text.Length == 0)

return;

screen.Text += "0";

}

private void Button\_Click\_1(object sender, RoutedEventArgs e)

{

screen.Text += "1";

}

private void Button\_Click\_2(object sender, RoutedEventArgs e)

{

screen.Text += "2";

}

private void Button\_Click\_3(object sender, RoutedEventArgs e)

{

screen.Text += "3";

}

private void Button\_Click\_4(object sender, RoutedEventArgs e)

{

screen.Text += "4";

}

private void Button\_Click\_5(object sender, RoutedEventArgs e)

{

screen.Text += "5";

}

private void Button\_Click\_6(object sender, RoutedEventArgs e)

{

screen.Text += "6";

}

private void Button\_Click\_7(object sender, RoutedEventArgs e)

{

screen.Text += "7";

}

private void Button\_Click\_8(object sender, RoutedEventArgs e)

{

screen.Text += "8";

}

private void Button\_Click\_9(object sender, RoutedEventArgs e)

{

screen.Text += "9";

}

private void Button\_Click\_Plus(object sender, RoutedEventArgs e)

{

if (screen.Text.Length != 0 && !new char[5]{'+','-','\*','/','.'}.Contains(screen.Text[screen.Text.Length-1]))

screen.Text += "+";

}

private void Button\_Click\_Minus(object sender, RoutedEventArgs e)

{

if (screen.Text.Length > 0 && new char[5] { '+', '-', '\*', '/', '.' }.Contains(screen.Text[screen.Text.Length - 1]))

{

return;

}

screen.Text += "-";

}

private void Button\_Click\_Mul(object sender, RoutedEventArgs e)

{

if (screen.Text.Length != 0 && !new char[5] { '+', '-', '\*', '/', '.' }.Contains(screen.Text[screen.Text.Length - 1]))

screen.Text += "\*";

}

private void Button\_Click\_Div(object sender, RoutedEventArgs e)

{

if (screen.Text.Length != 0 && !new char[5] { '+', '-', '\*', '/', '.' }.Contains(screen.Text[screen.Text.Length - 1]))

screen.Text += "/";

}

private void Button\_Click\_Float(object sender, RoutedEventArgs e)

{

if (screen.Text.Length == 0 || !new char[5] { '+', '-', '\*', '/', '.' }.Contains(screen.Text[screen.Text.Length - 1]))

if (screen.Text.Count(x => x == '.') < screen.Text.Count(x => x == '+' || x == '-' || x == '\*' || x == '/' ) + 1)

screen.Text += ".";

}

private void Button\_Click\_Result(object sender, RoutedEventArgs e)

{

if (screen.Text.Trim().Length == 0)

{

return;

}

try

{

screen.Text = Eval(screen.Text).ToString().Replace(',', '.');

}

catch(OverflowException)

{

MessageBox.Show("Overflow", "Error", MessageBoxButton.OK, MessageBoxImage.Error);

}

catch(DivideByZeroException)

{

MessageBox.Show("Division by zero", "Error", MessageBoxButton.OK, MessageBoxImage.Error);

}

catch(Exception Ex)

{

MessageBox.Show("Error in the expression");

}

}

static Double Eval(String expression)

{

System.Data.DataTable table = new System.Data.DataTable();

return Convert.ToDouble(table.Compute(expression, String.Empty));

}

private void Button\_CA\_Click(object sender, RoutedEventArgs e)

{

screen.Text = "";

}

protected override void OnClosing(CancelEventArgs e)

{

e.Cancel = MessageBox.Show("Do you really want to get out?", "Confirm the action", MessageBoxButton.YesNo, MessageBoxImage.Question) == MessageBoxResult.No;

}

private void Button\_DEL\_Click(object sender, RoutedEventArgs e)

{

if(screen.Text.Length > 0)

screen.Text = screen.Text.Substring(0, screen.Text.Length - 1);

}

}

}

1. XAML

<Window x:Class="CalculatorF\_WPF.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:Calculator\_WPF"

mc:Ignorable="d"

Title="Gostishchev\_F\_E\_420\_PR1" Height="600" Width="600" WindowStartupLocation="CenterScreen" ResizeMode="NoResize" Background="WhiteSmoke">

<Grid>

<Grid.ColumnDefinitions>

<ColumnDefinition Width="50\*"/>

<ColumnDefinition Width="63\*"/>

<ColumnDefinition Width="67\*"/>

<ColumnDefinition Width="420\*"/>

</Grid.ColumnDefinitions>

<Button Content="7" Margin="73,200,0,0" FontSize="30" Click="Button\_Click\_7" Background="DarkGreen" Cursor="Hand" RenderTransformOrigin="0.5,0.5" Grid.Column="3" Height="81" VerticalAlignment="Top" HorizontalAlignment="Left" Width="82">

<Button.RenderTransform>

<TransformGroup>

<ScaleTransform/>

<SkewTransform AngleX="0.022"/>

<RotateTransform Angle="-0.406"/>

<TranslateTransform/>

</TransformGroup>

</Button.RenderTransform>

</Button>

<Button Content="0" Margin="74,470,0,0" FontSize="30" Click="Button\_Click\_0" Background="DarkGreen" Cursor="Hand" Grid.Column="3" Height="80" VerticalAlignment="Top" HorizontalAlignment="Left" Width="276"/>

<Button Content="1" HorizontalAlignment="Left" Margin="73,380,0,0" VerticalAlignment="Top" Width="82" Height="80" FontSize="30" Click="Button\_Click\_1" Background="DarkGreen" Cursor="Hand" Grid.Column="3"/>

<Button Content="2" HorizontalAlignment="Left" Margin="171,380,0,0" VerticalAlignment="Top" Width="82" Height="80" FontSize="30" Click="Button\_Click\_2" Grid.Column="3" Background="DarkGreen" Cursor="Hand"/>

<Button Content="3" HorizontalAlignment="Left" Margin="268,380,0,0" VerticalAlignment="Top" Width="81" Height="80" FontSize="30" Click="Button\_Click\_3" Grid.Column="3" Background="DarkGreen" Cursor="Hand"/>

<Button Content="4" HorizontalAlignment="Left" Margin="73,290,0,0" VerticalAlignment="Top" Width="82" Height="80" FontSize="30" Click="Button\_Click\_4" Background="DarkGreen" Cursor="Hand" Grid.Column="3"/>

<Button Content="5" Margin="171,290,0,0" VerticalAlignment="Top" Height="80" FontSize="30" Click="Button\_Click\_5" Grid.Column="3" Background="DarkGreen" Cursor="Hand" HorizontalAlignment="Left" Width="82"/>

<Button Content="6" HorizontalAlignment="Left" Margin="268,290,0,0" VerticalAlignment="Top" Width="81" Height="80" FontSize="30" Click="Button\_Click\_6" Grid.Column="3" Background="DarkGreen" Cursor="Hand"/>

<Button Content="8" HorizontalAlignment="Left" Margin="171,200,0,0" VerticalAlignment="Top" Width="82" Height="80" FontSize="30" Click="Button\_Click\_8" Grid.Column="3" Background="DarkGreen" Cursor="Hand"/>

<Button Content="9" Margin="268,200,0,0" VerticalAlignment="Top" Height="80" FontSize="30" Click="Button\_Click\_9" Grid.Column="3" Background="DarkGreen" Cursor="Hand" HorizontalAlignment="Left" Width="81"/>

<TextBox Name="screen" TextAlignment="Center" IsEnabled="False" HorizontalAlignment="Left" Height="67" Margin="10,75,0,0" TextWrapping="Wrap" Text="" VerticalAlignment="Top" Width="469" FontSize="40" Grid.ColumnSpan="3" Background="DarkGreen" Grid.Column="1"/>

<Button HorizontalContentAlignment="Center" Content="+" HorizontalAlignment="Left" Margin="39,290,0,0" VerticalAlignment="Top" Width="82" Height="80" FontSize="40" Click="Button\_Click\_Plus" Grid.Column="2" Background="DarkGreen" Cursor="Hand" Grid.ColumnSpan="2"/>

<Button HorizontalContentAlignment="Center" Content="-" HorizontalAlignment="Left" Margin="10,290,0,0" VerticalAlignment="Top" Width="82" Height="80" FontSize="40" Click="Button\_Click\_Minus" Background="DarkGreen" Cursor="Hand" Grid.ColumnSpan="2" Grid.Column="1"/>

<Button HorizontalContentAlignment="Center" Content="\*" Margin="10,470,38,0" VerticalAlignment="Top" Height="80" FontSize="40" Click="Button\_Click\_Mul" Background="DarkGreen" Cursor="Hand" Grid.ColumnSpan="2" Grid.Column="1"/>

<Button HorizontalContentAlignment="Center" Content="/" HorizontalAlignment="Left" Margin="39,380,0,0" VerticalAlignment="Top" Width="82" Height="80" FontSize="32" Click="Button\_Click\_Div" Background="DarkGreen" Cursor="Hand" Grid.ColumnSpan="2" Grid.Column="2"/>

<Button HorizontalContentAlignment="Center" Content="." HorizontalAlignment="Left" Margin="39,470,0,0" VerticalAlignment="Top" Width="82" Height="80" FontSize="40" Click="Button\_Click\_Float" Grid.Column="2" Background="DarkGreen" Cursor="Hand" Grid.ColumnSpan="2"/>

<Button Content="=" Margin="10,380,38,0" VerticalAlignment="Top" Height="80" FontSize="60" Click="Button\_Click\_Result" Background="DarkGreen" Cursor="Hand" Grid.ColumnSpan="2" Grid.Column="1"/>

<Button HorizontalContentAlignment="Center" Content="CA" HorizontalAlignment="Left" Margin="39,200,0,0" VerticalAlignment="Top" Width="82" Height="80" FontSize="30" Click="Button\_CA\_Click" Background="DarkGreen" Cursor="Hand" Grid.ColumnSpan="2" Grid.Column="2"/>

<Button HorizontalContentAlignment="Center" Content="DEL" HorizontalAlignment="Left" Margin="10,200,0,0" VerticalAlignment="Top" Width="82" Height="80" FontSize="30" Click="Button\_DEL\_Click" Background="DarkGreen" Cursor="Hand" Grid.ColumnSpan="2" Grid.Column="1"/>

</Grid>

</Window>

***Вывод***: Я разработал калькулятор на C# c помощью одного обработчика для нескольких событий.