**ПР 01.**

**Задание 1.**

Найти длину окружности L и площадь круга S заданного радиуса R:

**Листинг интерфейса.**

﻿<Window x:Class="kochergin\_225\_1.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:kochergin\_225\_1"

mc:Ignorable="d"

Title="Задание 1" Height="450" Width="800"

Icon="/Icons/1.ico"

>

<Window.Resources>

<Style TargetType="Control" x:Key="Graphic Element">

<Setter Property="Height" Value="42" />

<Setter Property="Margin" Value="16" />

<Setter Property="Padding" Value="12" />

</Style>

<Style TargetType="Label" x:Key="Text" BasedOn="{StaticResource Graphic Element}">

<Setter Property="FontSize" Value="14" />

<Setter Property="FontFamily" Value="Candana" />

</Style>

<Style x:Key="Main Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#243238"/>

</Style>

<Style x:Key="Sub Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#78909c"/>

</Style>

<Style x:Key="Attention Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#fff6a5"/>

</Style>

</Window.Resources>

<Grid>

<Grid.RowDefinitions>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

</Grid.RowDefinitions>

<Grid.ColumnDefinitions>

<ColumnDefinition></ColumnDefinition>

<ColumnDefinition></ColumnDefinition>

<ColumnDefinition></ColumnDefinition>

<ColumnDefinition></ColumnDefinition>

</Grid.ColumnDefinitions>

<StackPanel Grid.Row="1" Grid.Column="1" Grid.ColumnSpan="2" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите R: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="R" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="R\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="2" Grid.Column="1" Grid.ColumnSpan="2" Grid.RowSpan="2" Orientation="Vertical" HorizontalAlignment="Center" VerticalAlignment="Center">

<StackPanel Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="L: " Style="{StaticResource Sub Text}"></Label>

<Label x:Name="L" Style="{StaticResource Main Text}">-</Label>

</StackPanel>

<StackPanel Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="S: " Style="{StaticResource Sub Text}"></Label>

<Label x:Name="S" Style="{StaticResource Main Text}">-</Label>

</StackPanel>

</StackPanel>

</Grid>

</Window>

**Листинг программы.**

**﻿**using System;

using System.Collections.Generic;

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 kochergin\_225\_1

{

/// <summary>

/// Логика взаимодействия для MainWindow.xaml

/// </summary>

public partial class MainWindow : Window

{

public MainWindow()

{

InitializeComponent();

}

private void R\_TextChanged(object sender, TextChangedEventArgs e)

{

double l, s = 0.0;

try

{

double r = double.Parse(R.Text);

l = 2 \* 3.14 \* r;

s = 3.14 \* Math.Pow(r, 2);

L.Content = $"{l}";

S.Content = $"{s}";

}

catch (Exception)

{

L.Content = "-";

S.Content = "-";

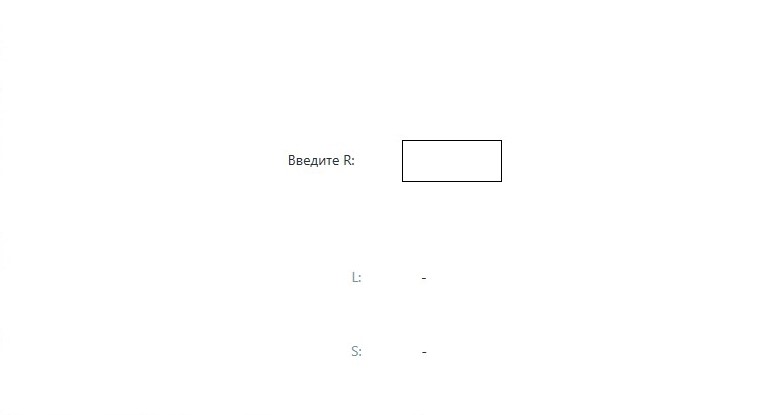
}

}

}

}

**Скриншот программы**



**Задание 2.**

Найти расстояние между двумя точками с заданными координатами

и на плоскости. Расстояние вычисляется по формуле

**Листинг интерфейса.**

<Window x:Class="\_2.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:\_2"

mc:Ignorable="d"

Title="Задание 2" Height="450" Width="800"

Icon="/Icons/2.ico">

<Window.Resources>

<Style TargetType="Control" x:Key="Graphic Element">

<Setter Property="Height" Value="42" />

<Setter Property="Margin" Value="16" />

<Setter Property="Padding" Value="12" />

</Style>

<Style TargetType="Label" x:Key="Text" BasedOn="{StaticResource Graphic Element}">

<Setter Property="FontSize" Value="14" />

<Setter Property="FontFamily" Value="Candana" />

</Style>

<Style x:Key="Main Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#243238"/>

</Style>

<Style x:Key="Sub Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#78909c"/>

</Style>

<Style x:Key="Attention Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#fff6a5"/>

</Style>

</Window.Resources>

<Grid>

<Grid.RowDefinitions>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

</Grid.RowDefinitions>

<Grid.ColumnDefinitions>

<ColumnDefinition></ColumnDefinition>

<ColumnDefinition></ColumnDefinition>

<ColumnDefinition></ColumnDefinition>

<ColumnDefinition></ColumnDefinition>

</Grid.ColumnDefinitions>

<StackPanel Grid.Row="0" Grid.Column="0" Grid.ColumnSpan="2" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите x₁: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="X1" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="X1\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="0" Grid.Column="2" Grid.ColumnSpan="2" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите y₁: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="Y1" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="Y1\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="1" Grid.Column="0" Grid.ColumnSpan="2" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите x₂: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="X2" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="X2\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="1" Grid.Column="2" Grid.ColumnSpan="2" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите y₂: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="Y2" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="Y2\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="2" Grid.Column="1" Grid.ColumnSpan="2" Grid.RowSpan="2" Orientation="Vertical" HorizontalAlignment="Center" VerticalAlignment="Center">

<StackPanel Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Расстояние:" Style="{StaticResource Sub Text}"></Label>

<Label x:Name="distance" Style="{StaticResource Main Text}">-</Label>

</StackPanel>

</StackPanel>

</Grid>

</Window>

**Листинг программы.**

using System;

using System.Collections.Generic;

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 \_2

{

/// <summary>

/// Логика взаимодействия для MainWindow.xaml

/// </summary>

public partial class MainWindow : Window

{

public MainWindow()

{

InitializeComponent();

}

double x1, x2, y1, y2;

private void X1\_TextChanged(object sender, TextChangedEventArgs e)

{

try

{

x1 = double.Parse(X1.Text);

x2 = double.Parse(X2.Text);

y1 = double.Parse(Y1.Text);

y2 = double.Parse(Y2.Text);

double distance\_ = Math.Sqrt(Math.Pow(x2 - x1, 2) + Math.Pow(y2 - y1, 2));

distance.Content = $"{distance\_}";

}

catch (Exception) { };

}

private void Y1\_TextChanged(object sender, TextChangedEventArgs e)

{

try

{

x1 = double.Parse(X1.Text);

x2 = double.Parse(X2.Text);

y1 = double.Parse(Y1.Text);

y2 = double.Parse(Y2.Text);

double distance\_ = Math.Sqrt(Math.Pow(x2 - x1, 2) + Math.Pow(y2 - y1, 2));

distance.Content = $"{distance\_}";

}

catch (Exception) { };

}

private void X2\_TextChanged(object sender, TextChangedEventArgs e)

{

try

{

x1 = double.Parse(X1.Text);

x2 = double.Parse(X2.Text);

y1 = double.Parse(Y1.Text);

y2 = double.Parse(Y2.Text);

double distance\_ = Math.Sqrt(Math.Pow(x2 - x1, 2) + Math.Pow(y2 - y1, 2));

distance.Content = $"{distance\_}";

}

catch (Exception) { };

}

private void Y2\_TextChanged(object sender, TextChangedEventArgs e)

{

try

{

x1 = double.Parse(X1.Text);

x2 = double.Parse(X2.Text);

y1 = double.Parse(Y1.Text);

y2 = double.Parse(Y2.Text);

double distance\_ = Math.Sqrt(Math.Pow(x2 - x1, 2) + Math.Pow(y2 - y1, 2));

distance.Content = $"{distance\_}";

}

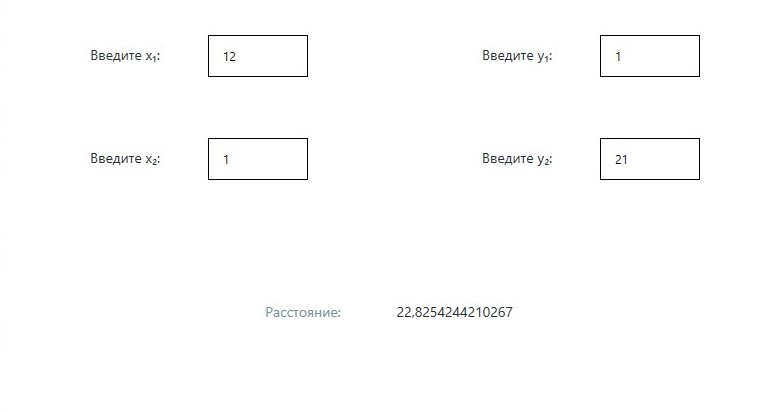
catch (Exception) { };

}

}

}

**Скриншот программы.**



**Задание 3**

Известно, что X кг конфет стоит A рублей. Определить, сколько стоит

1 кг и Y кг этих же конфет.

**Листинг интерфейса.**

<Window x:Class="\_3.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:\_3"

mc:Ignorable="d"

Title="Задание 3" Height="450" Width="800"

Icon="/Icons/3.ico">

<Window.Resources>

<Style TargetType="Control" x:Key="Graphic Element">

<Setter Property="Height" Value="42" />

<Setter Property="Margin" Value="16" />

<Setter Property="Padding" Value="12" />

</Style>

<Style TargetType="Label" x:Key="Text" BasedOn="{StaticResource Graphic Element}">

<Setter Property="FontSize" Value="14" />

<Setter Property="FontFamily" Value="Candana" />

</Style>

<Style x:Key="Main Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#243238"/>

</Style>

<Style x:Key="Sub Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#78909c"/>

</Style>

<Style x:Key="Attention Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#fff6a5"/>

</Style>

</Window.Resources>

<Grid>

<Grid.RowDefinitions>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

</Grid.RowDefinitions>

<Grid.ColumnDefinitions>

<ColumnDefinition></ColumnDefinition>

<ColumnDefinition></ColumnDefinition>

</Grid.ColumnDefinitions>

<StackPanel Grid.Row="0" Grid.Column="0" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Конфет (X): " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="X" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="X\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="1" Grid.Column="0" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Стоимость X конфет (A): " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="A" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="A\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="2" Grid.Column="0" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Вычислить для кол-ва (Y): " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="Y\_in" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="Y\_in\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="0" Grid.Column="1" Grid.RowSpan="2" Orientation="Vertical" HorizontalAlignment="Center" VerticalAlignment="Center">

<StackPanel Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="1 кг. стоит (руб):" Style="{StaticResource Sub Text}"></Label>

<Label x:Name="One" Style="{StaticResource Main Text}">-</Label>

</StackPanel>

</StackPanel>

<StackPanel Grid.Row="1" Grid.Column="2" Grid.RowSpan="2" Orientation="Vertical" HorizontalAlignment="Center" VerticalAlignment="Center">

<StackPanel Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Y кг. стоит (руб):" Style="{StaticResource Sub Text}"></Label>

<Label x:Name="Y\_out" Style="{StaticResource Main Text}">-</Label>

</StackPanel>

</StackPanel>

</Grid>

</Window>

**Листинг программы.**

using System;

using System.Collections.Generic;

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 \_3

{

/// <summary>

/// Логика взаимодействия для MainWindow.xaml

/// </summary>

public partial class MainWindow : Window

{

public MainWindow()

{

InitializeComponent();

}

private void A\_TextChanged(object sender, TextChangedEventArgs e)

{

try

{

// x кг конфет стоит a руб. Сколько стоит 1 кг конфет и y кг конфет?

// a / x = стоимость за 1 кг. Тогда стоимость за 1 кг \* y = стоимость за y кг

double x = double.Parse(X.Text);

double y\_in = double.Parse(Y\_in.Text);

double a = double.Parse(A.Text);

if (x != 0.0)

{

double one = a / x;

double y\_out = one \* y\_in;

One.Content = $"{one}";

Y\_out.Content = $"{y\_out}";

}

else

{

One.Content = "неизвестно (т.к. x = 0)";

Y\_out.Content = "неизвестно (т.к. x = 0)";

}

}

catch (Exception) { }

}

private void X\_TextChanged(object sender, TextChangedEventArgs e)

{

try

{

// x кг конфет стоит a руб. Сколько стоит 1 кг конфет и y кг конфет?

// a / x = стоимость за 1 кг. Тогда стоимость за 1 кг \* y = стоимость за y кг

double x = double.Parse(X.Text);

double y\_in = double.Parse(Y\_in.Text);

double a = double.Parse(A.Text);

if (x != 0.0)

{

double one = a / x;

double y\_out = one \* y\_in;

One.Content = $"{one}";

Y\_out.Content = $"{y\_out}";

}

else

{

One.Content = "неизвестно (т.к. x = 0)";

Y\_out.Content = "неизвестно (т.к. x = 0)";

}

}

catch (Exception) { }

}

private void Y\_in\_TextChanged(object sender, TextChangedEventArgs e)

{

try

{

// x кг конфет стоит a руб. Сколько стоит 1 кг конфет и y кг конфет?

// a / x = стоимость за 1 кг. Тогда стоимость за 1 кг \* y = стоимость за y кг

double x = double.Parse(X.Text);

double y\_in = double.Parse(Y\_in.Text);

double a = double.Parse(A.Text);

if (x != 0.0)

{

double one = a / x;

double y\_out = one \* y\_in;

One.Content = $"{one}";

Y\_out.Content = $"{y\_out}";

}

else

{

One.Content = "неизвестно (т.к. x = 0)";

Y\_out.Content = "неизвестно (т.к. x = 0)";

}

}

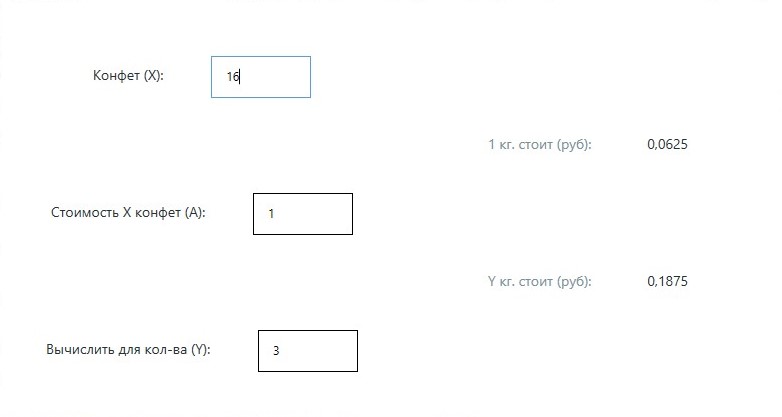
catch (Exception) { }

}

}

}

**Скриншот программы**



**Задание 4**

Найти значение выражения. Исходные данные необходимо подобрать

самостоятельно, исходя из допустимой области значений исследуемой функции. , где

**Листинг интерфейса.**

<Window x:Class="\_4.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:\_4"

mc:Ignorable="d"

Title="Задание 4" Height="450" Width="800"

Icon="/Icons/4.ico">

<Window.Resources>

<Style TargetType="Control" x:Key="Graphic Element">

<Setter Property="Height" Value="42" />

<Setter Property="Margin" Value="16" />

<Setter Property="Padding" Value="12" />

</Style>

<Style TargetType="Label" x:Key="Text" BasedOn="{StaticResource Graphic Element}">

<Setter Property="FontSize" Value="14" />

<Setter Property="FontFamily" Value="Candana" />

</Style>

<Style x:Key="Main Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#243238"/>

</Style>

<Style x:Key="Sub Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#78909c"/>

</Style>

<Style x:Key="Attention Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#fff6a5"/>

</Style>

</Window.Resources>

<Grid>

<Grid.RowDefinitions>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

</Grid.RowDefinitions>

<Grid.ColumnDefinitions>

<ColumnDefinition></ColumnDefinition>

<ColumnDefinition></ColumnDefinition>

<ColumnDefinition></ColumnDefinition>

<ColumnDefinition></ColumnDefinition>

</Grid.ColumnDefinitions>

<StackPanel Grid.Row="1" Grid.Column="1" Grid.ColumnSpan="2" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите X: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="X" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="X\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="2" Grid.Column="1" Grid.ColumnSpan="2" Grid.RowSpan="2" Orientation="Vertical" HorizontalAlignment="Center" VerticalAlignment="Center">

<StackPanel Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Тогда a: " Style="{StaticResource Sub Text}"></Label>

<Label x:Name="A" Style="{StaticResource Main Text}">-</Label>

</StackPanel>

</StackPanel>

</Grid>

</Window>

**Листинг программы.**

using System;

using System.Collections.Generic;

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 \_4

{

/// <summary>

/// Логика взаимодействия для MainWindow.xaml

/// </summary>

public partial class MainWindow : Window

{

public MainWindow()

{

InitializeComponent();

}

private void X\_TextChanged(object sender, TextChangedEventArgs e)

{

try

{

double x = double.Parse(X.Text);

if (x > 0)

{

double b = Math.Pow(10, x + Math.Log(x));

double a = 1.0 / Math.Cos(x) + Math.Log(Math.Abs(Math.Tan(x / 2))) + Math.Pow(b, 2);

A.Content = $"{a}";

}

else

{

A.Content = "вне области допуст. знач.";

}

}

catch (Exception)

{

A.Content = "-";

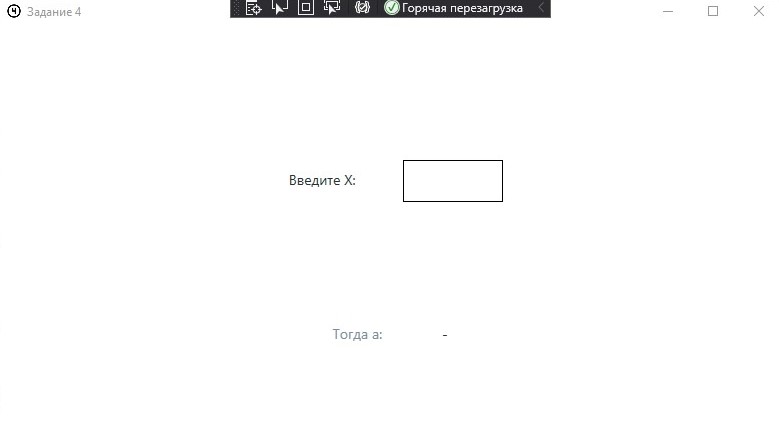
}

}

}

}

**Скриншот программы**



**Задание 5**

Найти решение системы линейных уравнений вида

A1·x + B1·y = C1, A2·x + B2·y = C2,

заданной своими коэффициентами A1, B1, C1, A2, B2, C2, если известно, что

данная система имеет единственное решение.

Воспользоваться формулами

x = (C1·B2 − C2·B1)/D, y = (A1·C2 − A2·C1)/D, где D = A1·B2 − A2·B1.

**Листинг интерфейса.**

<Window x:Class="\_5.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:\_5"

mc:Ignorable="d"

Title="Задание 5" Height="450" Width="800"

Icon="/Icons/5.ico">

<Window.Resources>

<Style TargetType="Control" x:Key="Graphic Element">

<Setter Property="Height" Value="42" />

<Setter Property="Margin" Value="16" />

<Setter Property="Padding" Value="12" />

</Style>

<Style TargetType="Label" x:Key="Text" BasedOn="{StaticResource Graphic Element}">

<Setter Property="FontSize" Value="14" />

<Setter Property="FontFamily" Value="Candana" />

</Style>

<Style x:Key="Main Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#243238"/>

</Style>

<Style x:Key="Sub Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#78909c"/>

</Style>

<Style x:Key="Attention Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#fff6a5"/>

</Style>

</Window.Resources>

<Grid>

<Grid.RowDefinitions>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

</Grid.RowDefinitions>

<Grid.ColumnDefinitions>

<ColumnDefinition></ColumnDefinition>

<ColumnDefinition></ColumnDefinition>

<ColumnDefinition></ColumnDefinition>

</Grid.ColumnDefinitions>

<StackPanel Grid.Row="0" Grid.Column="0" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите A₁: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="A1" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="A1\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="0" Grid.Column="1" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите B₁: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="B1" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="B1\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="0" Grid.Column="2" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите C₁: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="C1" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="C1\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="1" Grid.Column="0" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите A₂: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="A2" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="A2\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="1" Grid.Column="1" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите B₂: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="B2" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="B2\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="1" Grid.Column="2" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите C₂: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="C2" BorderThickness="1" Width="100" BorderBrush="Black" Style="{StaticResource Graphic Element}" TextChanged="C2\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="3" Grid.Column="0" Grid.ColumnSpan="2" Orientation="Vertical" HorizontalAlignment="Center" VerticalAlignment="Center">

<StackPanel Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Тогда x:" Style="{StaticResource Sub Text}"></Label>

<Label x:Name="X" Style="{StaticResource Main Text}">-</Label>

</StackPanel>

</StackPanel>

<StackPanel Grid.Row="3" Grid.Column="1" Grid.ColumnSpan="2" Orientation="Vertical" HorizontalAlignment="Center" VerticalAlignment="Center">

<StackPanel Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Тогда y:" Style="{StaticResource Sub Text}"></Label>

<Label x:Name="Y" Style="{StaticResource Main Text}">-</Label>

</StackPanel>

</StackPanel>

</Grid>

</Window>

**Листинг программы.**

using System;

using System.Collections.Generic;

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 \_5

{

/// <summary>

/// Логика взаимодействия для MainWindow.xaml

/// </summary>

public partial class MainWindow : Window

{

public MainWindow()

{

InitializeComponent();

}

private void compute()

{

try

{

double a1 = double.Parse(A1.Text);

double a2 = double.Parse(A2.Text);

double b1 = double.Parse(B1.Text);

double b2 = double.Parse(B2.Text);

double c1 = double.Parse(C1.Text);

double c2 = double.Parse(C2.Text);

if (a1 \* b2 == a2 \* b1)

{

X.Content = "не сущ. или не единств.";

Y.Content = "не сущ. или не единств.";

}

else

{

double D = a1 \* b2 - a2 \* b1;

double x = (c1 \* b2 - c2 \* b1) / D;

double y = (a1 \* c2 - a2 \* c1) / D;

X.Content = $"{x}";

Y.Content = $"{y}";

}

}

catch (Exception)

{

X.Content = "-";

Y.Content = "-";

}

}

private void A1\_TextChanged(object sender, TextChangedEventArgs e)

{

compute();

}

private void A2\_TextChanged(object sender, TextChangedEventArgs e)

{

compute();

}

private void B1\_TextChanged(object sender, TextChangedEventArgs e)

{

compute();

}

private void B2\_TextChanged(object sender, TextChangedEventArgs e)

{

compute();

}

private void C1\_TextChanged(object sender, TextChangedEventArgs e)

{

compute();

}

private void C2\_TextChanged(object sender, TextChangedEventArgs e)

{

compute();

}

}

}

**Скриншот программы**



**ПР 02.**

**Задание 1**

Дано двузначное число. Найти сумму и произведение его цифр.

**Листинг интерфейса.**

<Window x:Class="kochergin\_225\_2.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:kochergin\_225\_2"

mc:Ignorable="d"

Title="Задание 1" Height="450" Width="800"

Icon="/Icons/1.ico">

<Window.Resources>

<Style TargetType="Control" x:Key="Graphic Element">

<Setter Property="Height" Value="42" />

<Setter Property="Margin" Value="16" />

<Setter Property="Padding" Value="12" />

</Style>

<Style TargetType="Label" x:Key="Text" BasedOn="{StaticResource Graphic Element}">

<Setter Property="FontSize" Value="14" />

<Setter Property="FontFamily" Value="Candana" />

</Style>

<Style x:Key="Main Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#243238"/>

</Style>

<Style x:Key="Sub Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#78909c"/>

</Style>

<Style x:Key="Attention Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#fff6a5"/>

</Style>

<Style x:Key="TextBox" TargetType="TextBox" BasedOn="{StaticResource Graphic Element}">

<Setter Property="BorderBrush" Value="#243238"/>

<Setter Property="BorderThickness" Value="1"/>

<Setter Property="Foreground" Value="#243238"/>

<Setter Property="Width" Value="100"/>

<Setter Property="TextAlignment" Value="Center"/>

</Style>

</Window.Resources>

<Grid>

<Grid.RowDefinitions>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

</Grid.RowDefinitions>

<Grid.ColumnDefinitions>

<ColumnDefinition></ColumnDefinition>

</Grid.ColumnDefinitions>

<StackPanel Grid.Row="0" Grid.RowSpan="2" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите двухзначное число: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="Number" Style="{StaticResource TextBox}" TextChanged="Number\_TextChanged" MaxLength="2"></TextBox>

</StackPanel>

<StackPanel Grid.Row="1" Grid.RowSpan="3" Orientation="Vertical" HorizontalAlignment="Center" VerticalAlignment="Center">

<StackPanel Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Cумма цифр:" Style="{StaticResource Sub Text}"></Label>

<Label x:Name="Sum" Style="{StaticResource Main Text}">-</Label>

</StackPanel>

<StackPanel Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Произведение цифр:" Style="{StaticResource Sub Text}"></Label>

<Label x:Name="Product" Style="{StaticResource Main Text}">-</Label>

</StackPanel>

</StackPanel>

</Grid>

</Window>

**Листинг программы.**

using System;

using System.Collections.Generic;

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 kochergin\_225\_2

{

/// <summary>

/// Логика взаимодействия для MainWindow.xaml

/// </summary>

public partial class MainWindow : Window

{

public MainWindow()

{

InitializeComponent();

}

private void Number\_TextChanged(object sender, TextChangedEventArgs e)

{

try

{

double digit\_1 = double.Parse($"{Number.Text[0]}");

double digit\_2 = double.Parse($"{Number.Text[1]}");

Sum.Content = $"{digit\_1 + digit\_2}";

Product.Content = $"{digit\_1 \* digit\_2}";

}

catch

{

Sum.Content = "-";

Product.Content = "-";

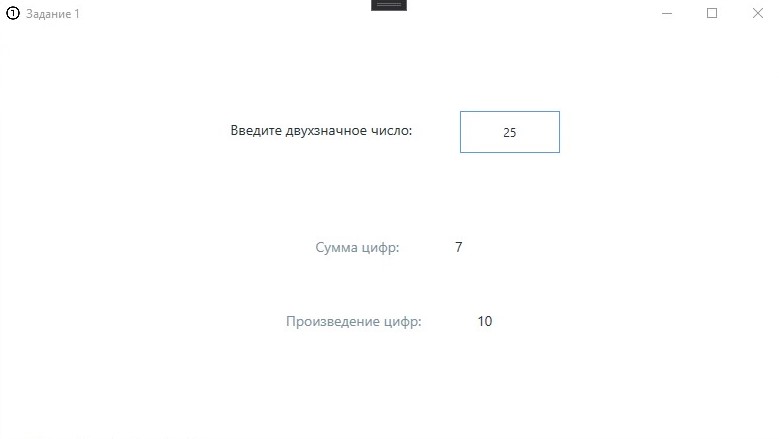
}

}

}

}

**Скриншот программы**



**Задание 2**

С начала суток прошло N секунд (N — целое). Найти количество

полных часов, прошедших с начала суток.

**Листинг интерфейса.**

<Window x:Class="\_2.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:\_2"

mc:Ignorable="d"

Title="Задание 2" Height="450" Width="800"

Icon="/Icons/2.ico">

<Window.Resources>

<Style TargetType="Control" x:Key="Graphic Element">

<Setter Property="Height" Value="42" />

<Setter Property="Margin" Value="16" />

<Setter Property="Padding" Value="12" />

</Style>

<Style TargetType="Label" x:Key="Text" BasedOn="{StaticResource Graphic Element}">

<Setter Property="FontSize" Value="14" />

<Setter Property="FontFamily" Value="Candana" />

</Style>

<Style x:Key="Main Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#243238"/>

</Style>

<Style x:Key="Sub Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#78909c"/>

</Style>

<Style x:Key="Attention Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#fff6a5"/>

</Style>

<Style x:Key="TextBox" TargetType="TextBox" BasedOn="{StaticResource Graphic Element}">

<Setter Property="BorderBrush" Value="#243238"/>

<Setter Property="BorderThickness" Value="1"/>

<Setter Property="Foreground" Value="#243238"/>

<Setter Property="Width" Value="100"/>

<Setter Property="TextAlignment" Value="Center"/>

</Style>

</Window.Resources>

<Grid>

<Grid.RowDefinitions>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

</Grid.RowDefinitions>

<Grid.ColumnDefinitions>

<ColumnDefinition></ColumnDefinition>

</Grid.ColumnDefinitions>

<StackPanel Grid.Row="0" Grid.RowSpan="1" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите кол-во секунд: " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="Seconds" Style="{StaticResource TextBox}" TextChanged="Number\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="1" Grid.RowSpan="3" Orientation="Vertical" HorizontalAlignment="Center" VerticalAlignment="Center">

<StackPanel Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Полных часов прошло:" Style="{StaticResource Sub Text}"></Label>

<Label x:Name="Hours" Style="{StaticResource Main Text}">-</Label>

</StackPanel>

</StackPanel>

</Grid>

</Window>

**Листинг программы.**

using System;

using System.Collections.Generic;

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 \_2

{

/// <summary>

/// Логика взаимодействия для MainWindow.xaml

/// </summary>

public partial class MainWindow : Window

{

public MainWindow()

{

InitializeComponent();

}

private void Number\_TextChanged(object sender, TextChangedEventArgs e)

{

try

{

int seconds = int.Parse($"{Math.Floor(double.Parse(Seconds.Text))}");

int hours = (seconds - seconds % 3600) / 3600;

Hours.Content = $"{hours}";

}

catch

{

Hours.Content = "-";

}

}

}

}

**Скриншот программы**



**Задание 3**

Дни недели пронумерованы следующим образом: 0 — воскресенье, 1

— понедельник, 2 — вторник, ..., 6 — суббота. Дано целое число K, лежащее в диапазоне 1–365. Определить номер дня недели для K-го дня года, если известно, что в этом году 1 января было понедельником.

**Листинг интерфейса.**

<Window x:Class="\_3.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:\_3"

mc:Ignorable="d"

Title="Задание 3" Height="450" Width="800"

Icon="/Icons/3.ico">

<Window.Resources>

<Style TargetType="Control" x:Key="Graphic Element">

<Setter Property="Height" Value="42" />

<Setter Property="Margin" Value="16" />

<Setter Property="Padding" Value="12" />

</Style>

<Style TargetType="Label" x:Key="Text" BasedOn="{StaticResource Graphic Element}">

<Setter Property="FontSize" Value="14" />

<Setter Property="FontFamily" Value="Candana" />

</Style>

<Style x:Key="Main Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#243238"/>

</Style>

<Style x:Key="Sub Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#78909c"/>

</Style>

<Style x:Key="Attention Text" TargetType="Label" BasedOn="{StaticResource Text}">

<Setter Property="Foreground" Value="#fff6a5"/>

</Style>

<Style x:Key="TextBox" TargetType="TextBox" BasedOn="{StaticResource Graphic Element}">

<Setter Property="BorderBrush" Value="#243238"/>

<Setter Property="BorderThickness" Value="1"/>

<Setter Property="Foreground" Value="#243238"/>

<Setter Property="Width" Value="100"/>

<Setter Property="TextAlignment" Value="Center"/>

</Style>

</Window.Resources>

<Grid>

<Grid.RowDefinitions>

<RowDefinition></RowDefinition>

<RowDefinition></RowDefinition>

</Grid.RowDefinitions>

<Grid.ColumnDefinitions>

<ColumnDefinition></ColumnDefinition>

</Grid.ColumnDefinitions>

<StackPanel Grid.Row="0" Grid.RowSpan="1" Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Введите K (день года): " Style="{StaticResource Main Text}"></Label>

<TextBox x:Name="K" Style="{StaticResource TextBox}" TextChanged="K\_TextChanged"></TextBox>

</StackPanel>

<StackPanel Grid.Row="1" Grid.RowSpan="3" Orientation="Vertical" HorizontalAlignment="Center" VerticalAlignment="Center">

<StackPanel Orientation="Horizontal" HorizontalAlignment="Center" VerticalAlignment="Center">

<Label Content="Его номер как дня недели:" Style="{StaticResource Sub Text}"></Label>

<Label x:Name="DayOfWeek" Style="{StaticResource Main Text}">-</Label>

</StackPanel>

</StackPanel>

</Grid>

</Window>

**Листинг программы.**

using System;

using System.Collections.Generic;

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 \_3

{

/// <summary>

/// Логика взаимодействия для MainWindow.xaml

/// </summary>

public partial class MainWindow : Window

{

public MainWindow()

{

InitializeComponent();

}

/\*

1 янв - 1 день года

1 день года - четверг, тоесть имеет номер 4

2 день года - 5

3 день - 6

4 день - 0

и т.д.

в терминах функции f сопостовления номера дня к дню в аргументе:

f(1) = 4

f(2) = 5

f(3) = 6

f(4) = 0

f(5) = 1

f(6) = 2

f(7) = 3

f(8) = f(1) = 4

...

тоесть функция сопостовления номера к K-ому дню будет:

f(k) = (k + 3) mod 7

\*/

private int f(int n)

{

return (n + 3) % 7;

}

private void K\_TextChanged(object sender, TextChangedEventArgs e)

{

try

{

int k = int.Parse(K.Text);

if (k < 1 || k > 365)

{

throw new ArgumentOutOfRangeException();

}

DayOfWeek.Content = $"{f(k)}";

}

catch (FormatException)

{

DayOfWeek.Content = "-";

}

catch (ArgumentOutOfRangeException)

{

DayOfWeek.Content = "- (K вне возм. знач.)";

}

catch

{

DayOfWeek.Content = "-";

}

}

}

}

**Скриншот программы**

