

# Введение в System.Windows.Forms

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# Создание простой формы


```
using System;
using System.Collections.Generic;
using System.Text;
using System.Windows.Forms;

namespace ConsoleApplication1
{
    public class MyForm : Form { }

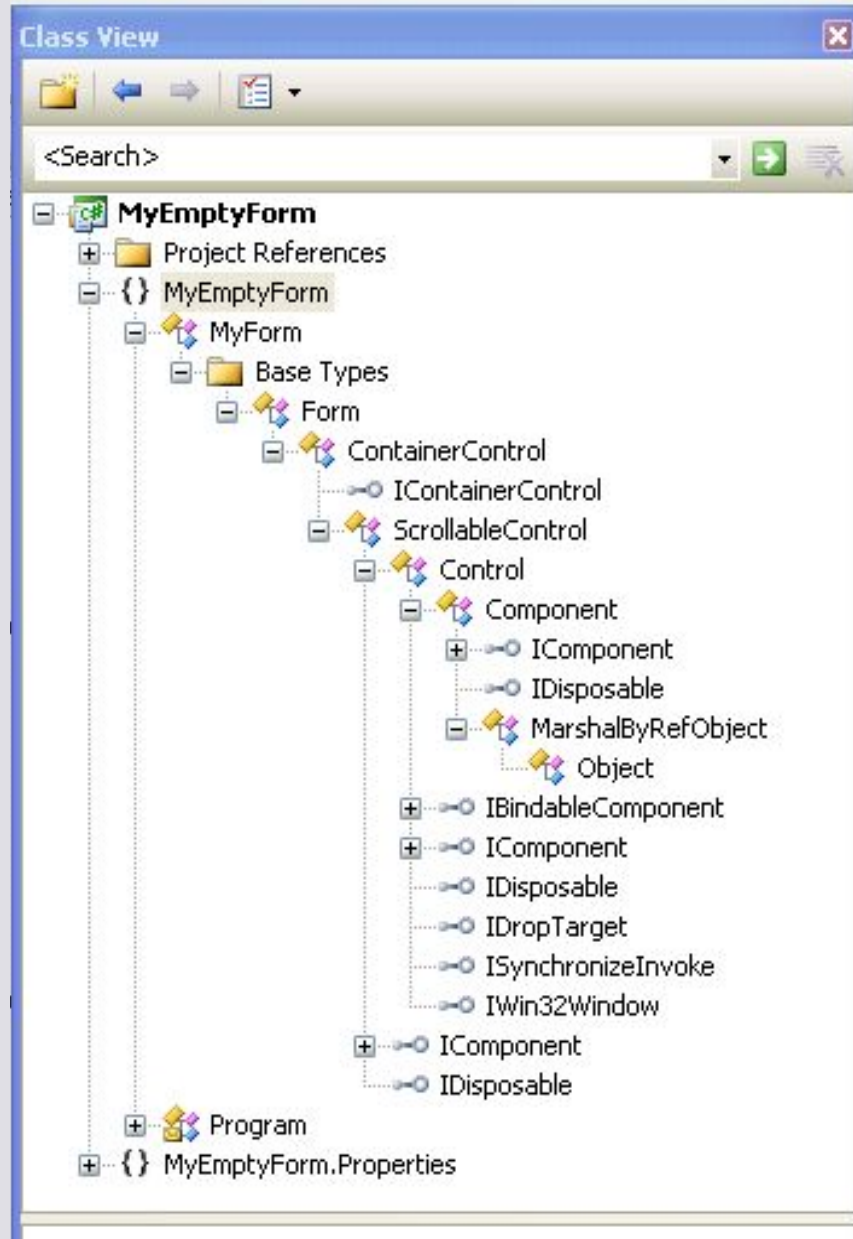
    class Program
    {
        static void Main(string[] args)
        {
            Application.Run (new MyForm());
        }
    }
}
```

# Обработка события ApplicationExit

```
public class MyForm : Form
{
    public MyForm()
    {
        Application.ApplicationExit += new EventHandler(OnExit);
    }
    private void OnExit(object sender, EventArgs e)
    {
        MessageBox.Show("bye");
    }
}
```



# Базовые классы класса Form



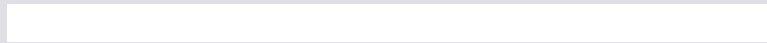
# Обработка событий мышки

```
public class MyForm : Form
{
    public MyForm()
    {
        MouseUp += new MouseEventHandler(MyForm_MouseUp);
    }

    public void MyForm_MouseUp(object sender, MouseEventArgs e)
    {
        Text = string.Format("Текущая позиция указателя: ({0},{1})", e.X, e.Y);
        MessageBox.Show(Text);
    }
}
```

# Свойства типа MouseEventArgs

- Button – какая клавиша была нажата.
- Clicks – сколько раз клавиша была нажата.
- Delta – сколько было щелчков при вращении колесика.
- X, Y – значения координат мышки.



# Основные методы класса Form

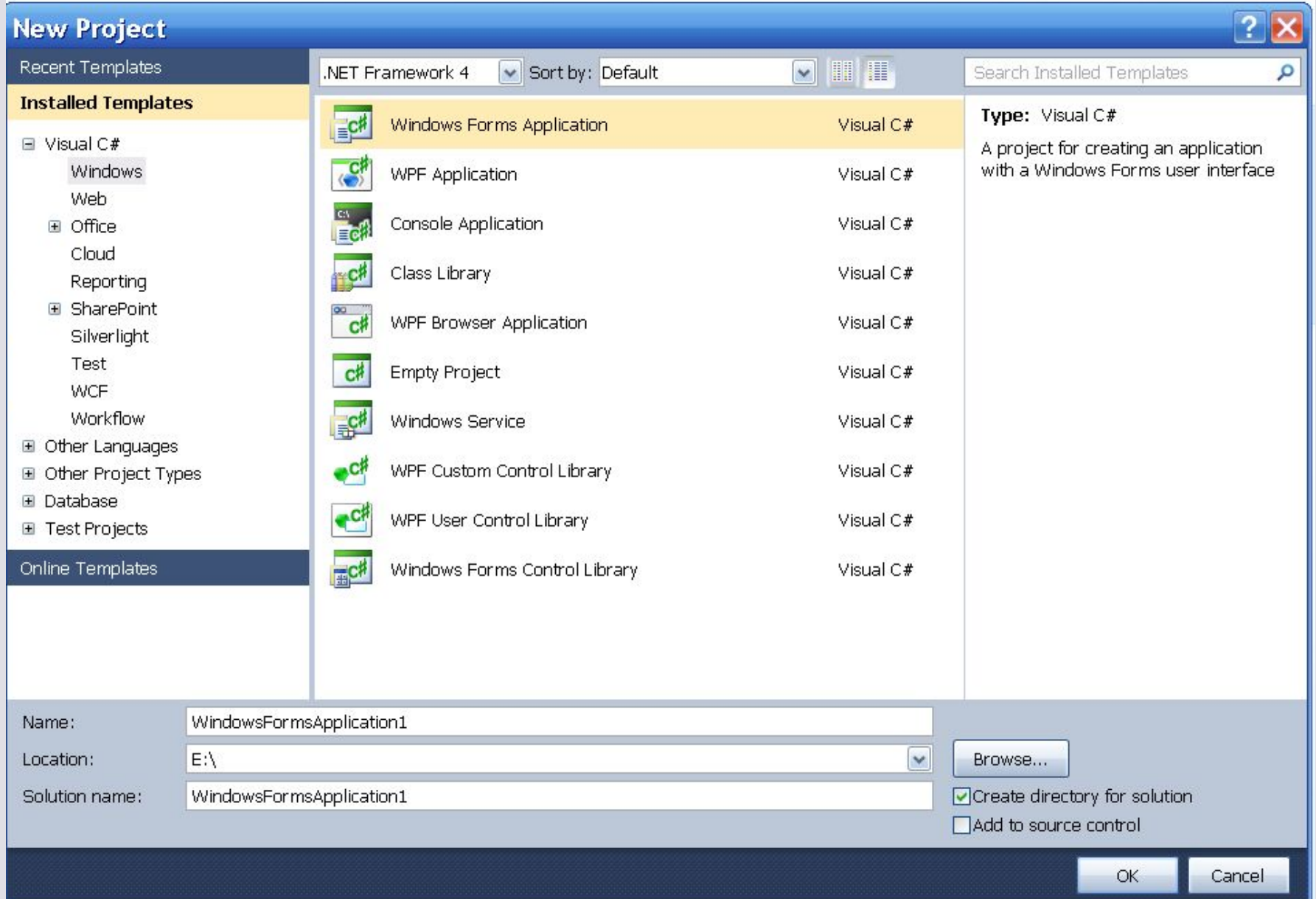
- Activate()
- Close()

# Основные события класса Form

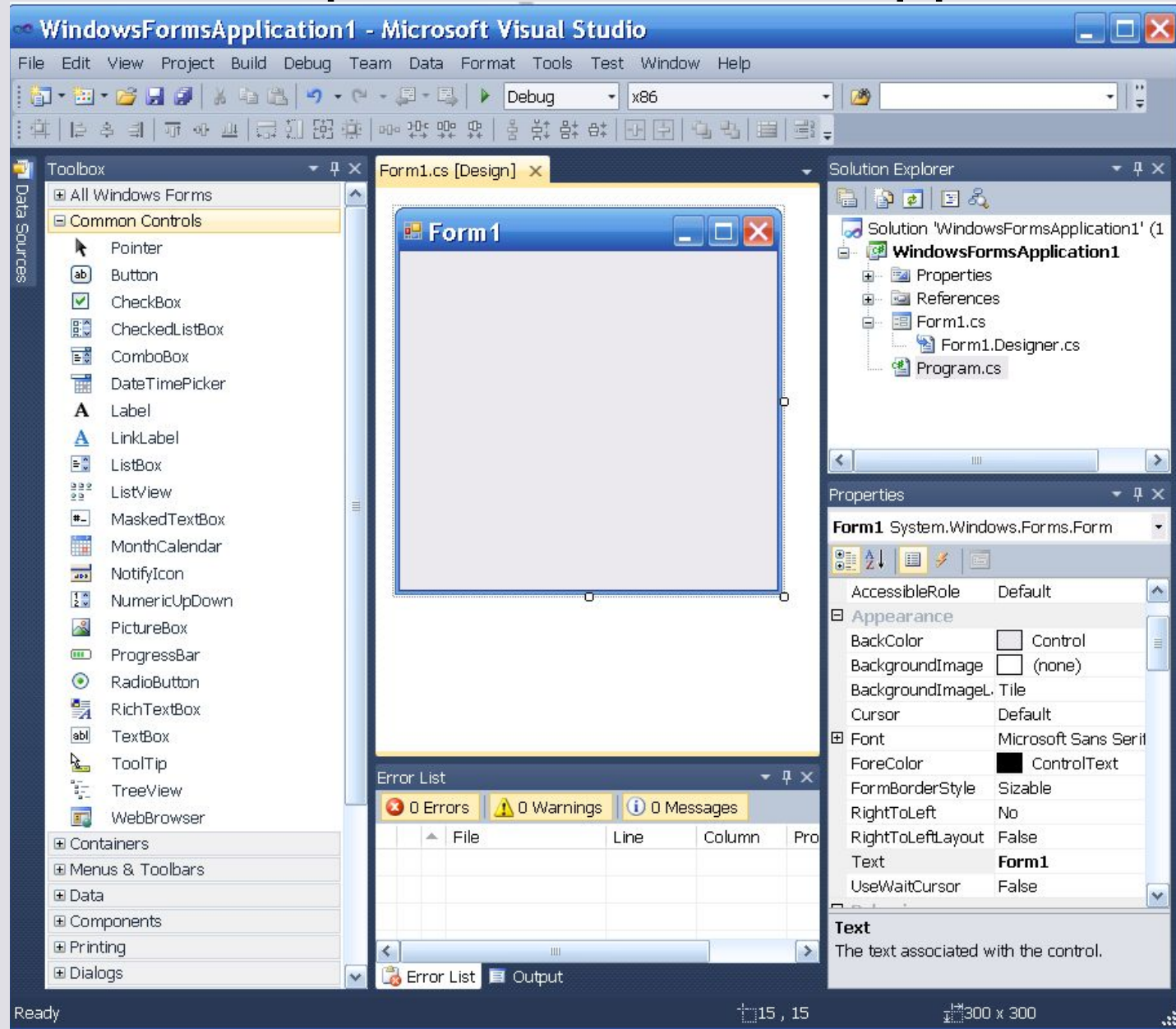
- Activated
- Closed
- Closing
- Deactivate
- Load



# Шаблон проекта WindowsApplication



# Шаблон проекта WindowsApplication



# Шаблон проекта WindowsApplication

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Windows.Forms;

namespace WindowsFormsApplication1
{
    static class Program
    {
        /// <summary>
        /// The main entry point for the application.
        /// </summary>
        [STAThread]
        static void Main()
        {
            Application.EnableVisualStyles();
            Application.SetCompatibleTextRenderingDefault(false);
            Application.Run(new Form1());
        }
    }
}
```

Solution Explorer: WindowsFormsApplication1

- Properties
- References
- Form1.cs
- Form1.Designer.cs
- Program.cs

Properties: (Empty)

Error List: 0 Errors, 0 Warnings, 0 Messages

Description	File	Line	Column	Project

Ln 22 Col 1 Ch 1 INS

# Шаблон проекта WindowsApplication

```
namespace WindowsFormsApplication1
{
    partial class Form1
    {
        /// <summary>
        /// Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        /// Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be disposed; otherwise, false;
        /// </param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

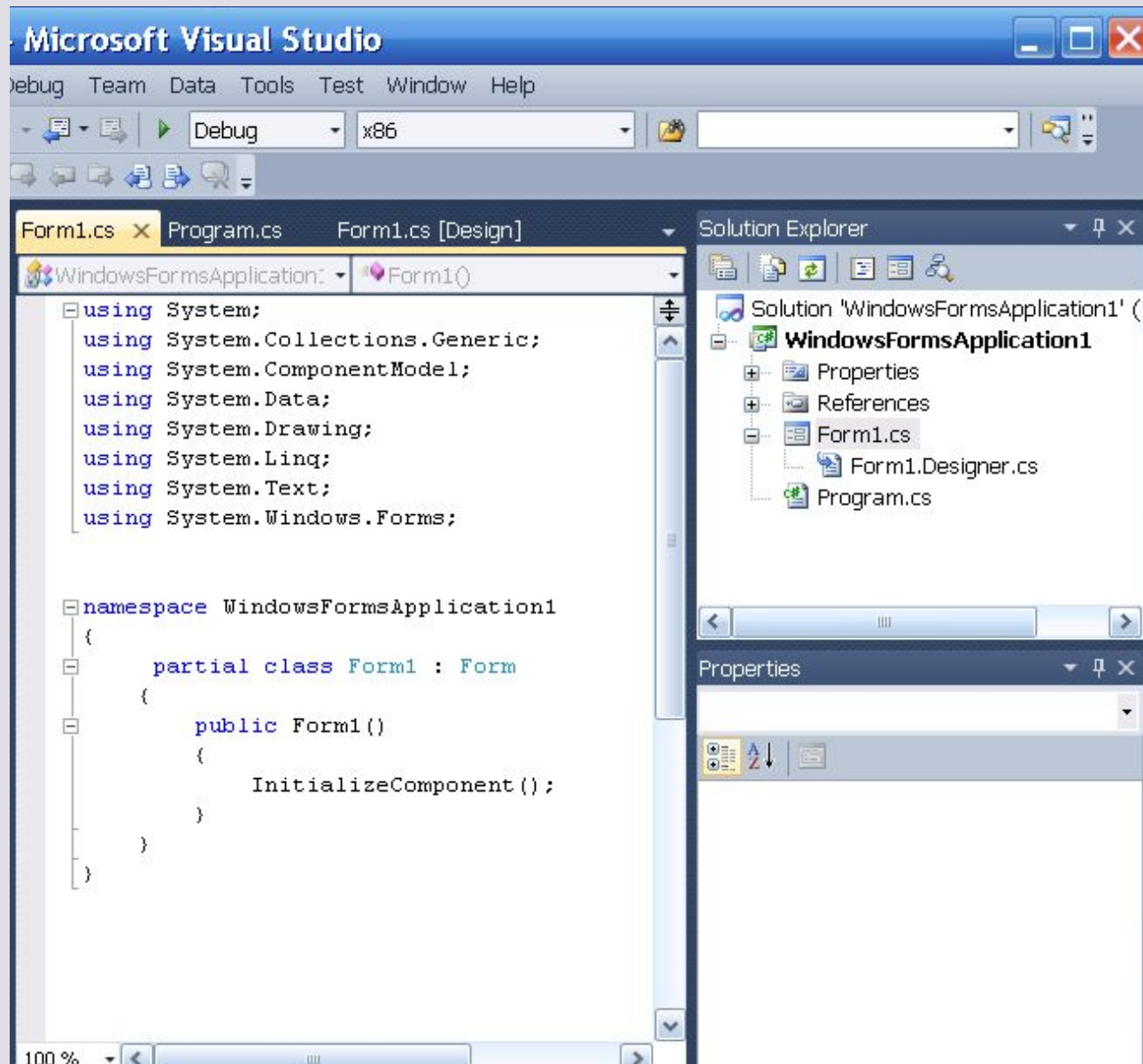
        #region Windows Form Designer generated code

        /// <summary>
```

The screenshot displays the Visual Studio IDE with the following components:

- Code Editor:** Shows the source code for `Form1.cs`. The code defines a `partial class Form1` within the `WindowsFormsApplication1` namespace. It includes a `private System.ComponentModel.IContainer components = null;` property, a `Dispose` method that disposes of the `components` and calls `base.Dispose(disposing);`, and a `#region Windows Form Designer generated code` block.
- Solution Explorer:** Shows the project structure for `WindowsFormsApplication1`, including `Properties`, `References`, `Form1.cs`, `Form1.Designer.cs`, and `Program.cs`.
- Properties Window:** Currently empty.
- Error List:** Shows 0 Errors, 0 Warnings, and 0 Messages.
- Status Bar:** Shows the current cursor position as `Ln 1 Col 1 Ch 1 INS`.

# Шаблон проекта WindowsApplication



# Структура палитры инструментов

The screenshot displays the Microsoft Visual Studio interface for a Windows Forms application. The main window is titled "WindowsFormsApplication1 - Microsoft Visual Studio". The menu bar includes File, Edit, View, Project, Build, Debug, Team, Data, Tools, Test, Window, and Help. The toolbar shows various development tools and a "Debug" dropdown menu. The main workspace is divided into several panes:

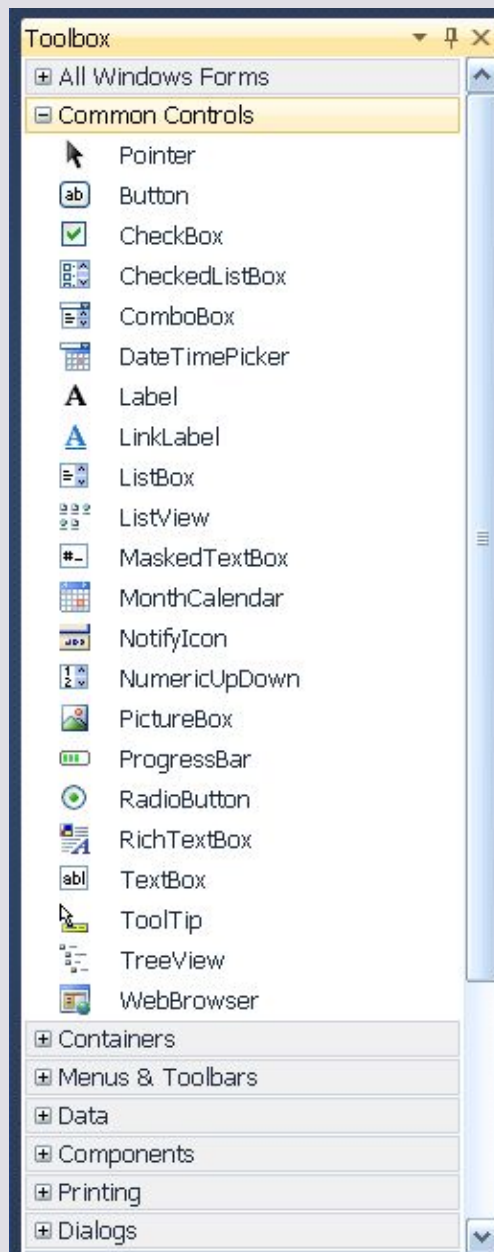
- Toolbox:** Located on the left, it contains a list of controls categorized into: All Windows Forms, Common Controls, Containers, Menus & Toolbars, Data, Components, Printing, Dialogs, WPF Interoperability, Reporting, Visual Basic PowerPacks, and General. Below the list is a text box that reads: "There are no usable controls in this group. Drag an item onto this text to add it to the toolbox."
- Form Designer:** The central pane shows a design view of a form named "Form1". The form is currently empty and has a standard Windows window title bar with minimize, maximize, and close buttons.
- Solution Explorer:** Located on the right, it shows the project structure for "WindowsFormsApplication1", including files like Program.cs, Form1.cs, and Form1.Designer.cs.
- Properties Window:** Also on the right, it displays the properties for the selected "Form1" control. The "Appearance" section is expanded, showing properties such as BackColor, BackgroundImage, Cursor, Font, ForeColor, FormBorderStyle, RightToLeft, RightToLeftLayout, and Text.
- Error List:** At the bottom, it shows 0 Errors, 0 Warnings, and 0 Messages.

The status bar at the bottom left indicates "Ready".

# Структура палитры инструментов

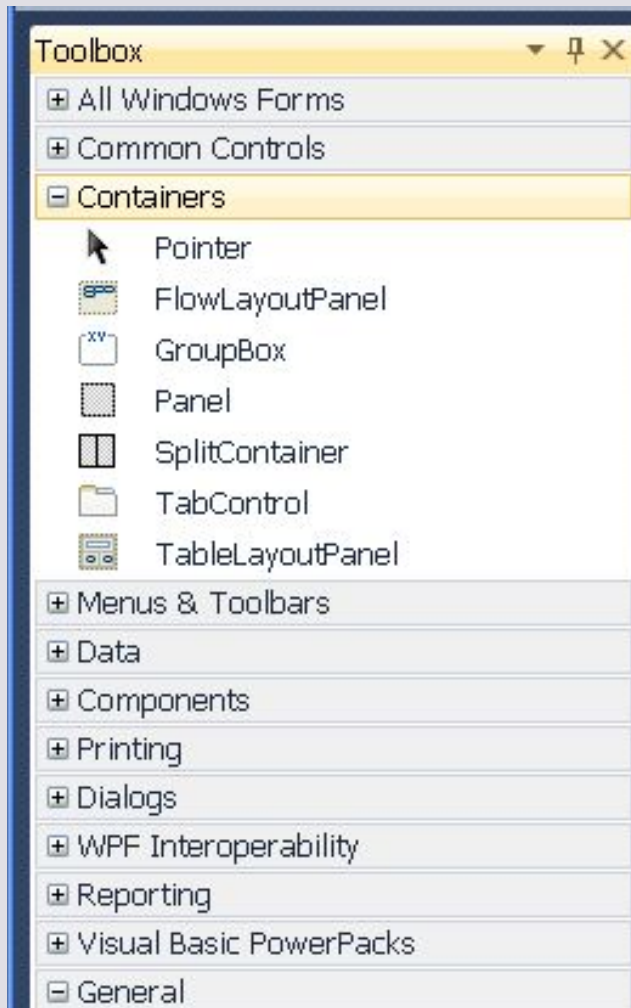


# Основные элементы управления

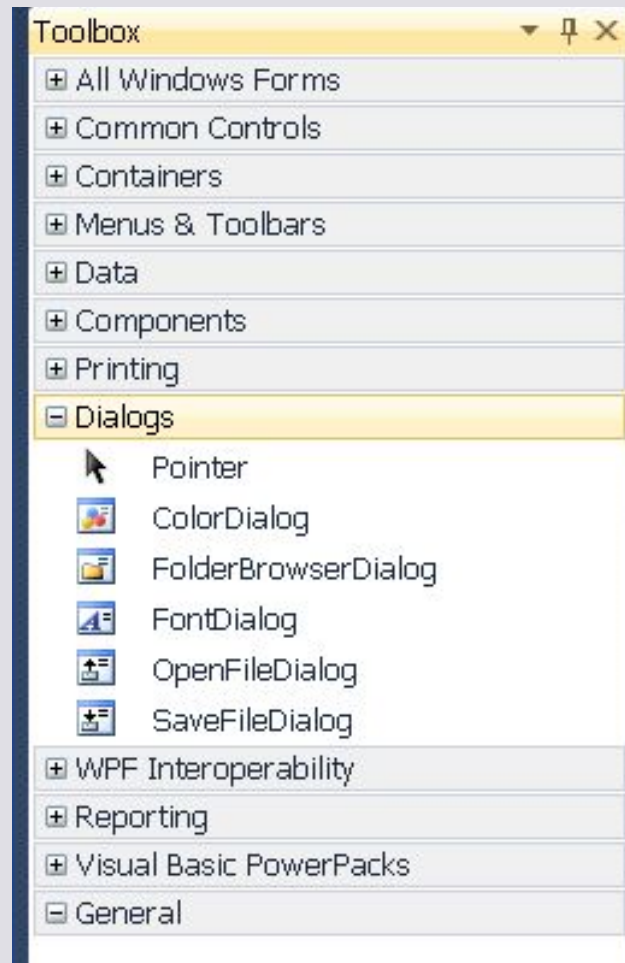




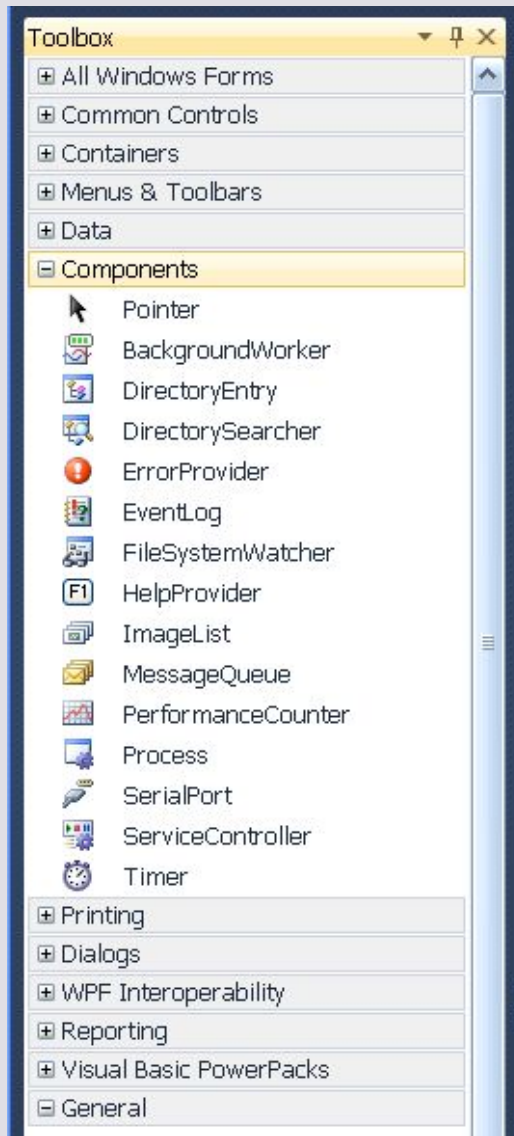
# Контейнеры



# Диалоговые окна

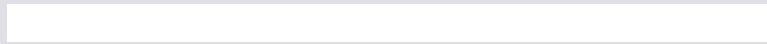


# Компоненты

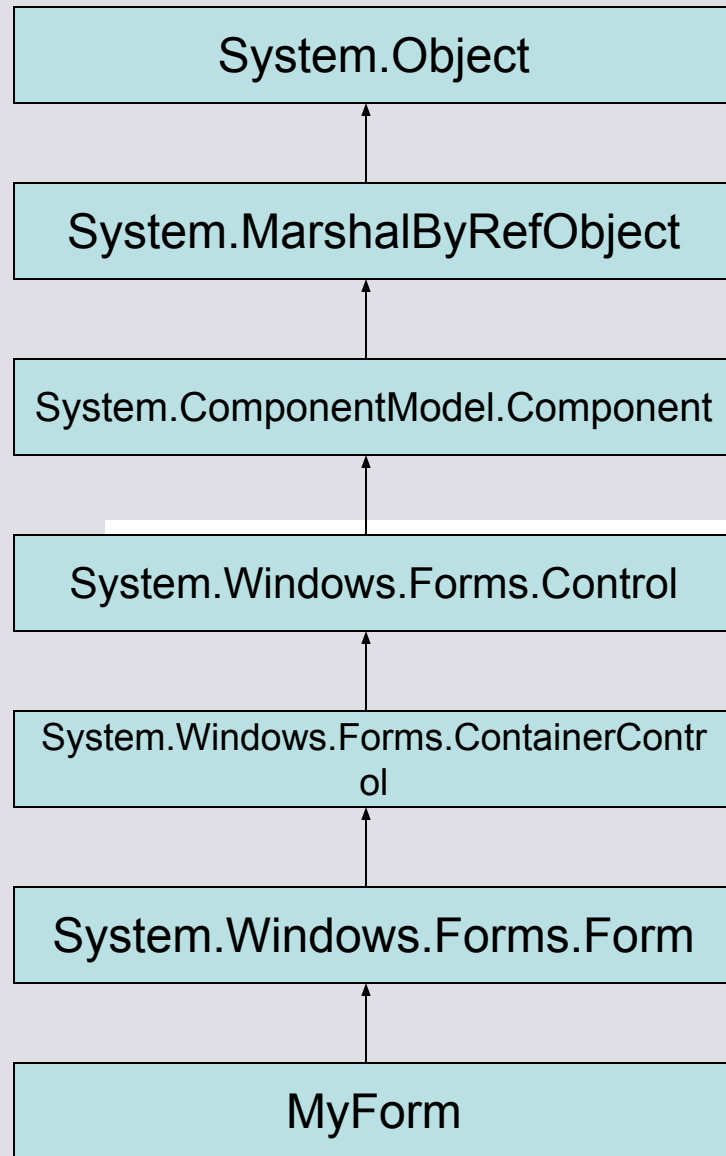


# Структура библиотеки System.Windows.Forms

1. Базовые классы
2. Визуальные компоненты - элементы управления
3. Компоненты
4. Диалоговые окна



# Базовые классы класса Form



# Ключевые свойства класса Control

- Свойства, определяющие параметры визуализации элемента управления (BackColor, ForeColor, BackgroundImage, Font, Cursor)
- Параметры размещения элемента управления в контейнере (Anchor, Dock)
- Текущие размеры элемента управления.
- Характеристики состояния элемента управления (Enabled, Focused, Visible).
- Порядок перехода (TabIndex, TabStop).
- Name – имя соответствующего элемента управления.
- Text, Font – ассоциированный текст и его параметры.
- Tag – ссылка на объект, ассоциированный с данным элементом управления.
- Opacity – свойство, определяющее степень прозрачности элемента управления.
- Controls – коллекция, содержащая все дочерние элементы управления, существующие в рамках данного элемента управления.
- Статические свойства, определяющие состояние мышки (MouseButtons, MousePosition).

# Некоторые события класса Control

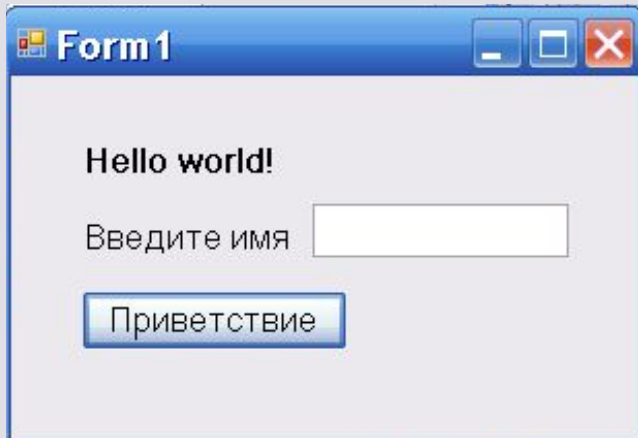
- События, позволяющие учитывать состояние мышки (Click, DoubleClick, MouseEnter, MouseLeave, MouseDown, MouseUp, MouseMove, MouseHover, MouseWheel).
- События, позволяющие учитывать состояние клавиатуры (KeyDown, KeyPress, KeyUp).
- Paint - событие, возникающее при попытке элемента управления обновить свое изображение.

# Некоторые методы класса Control

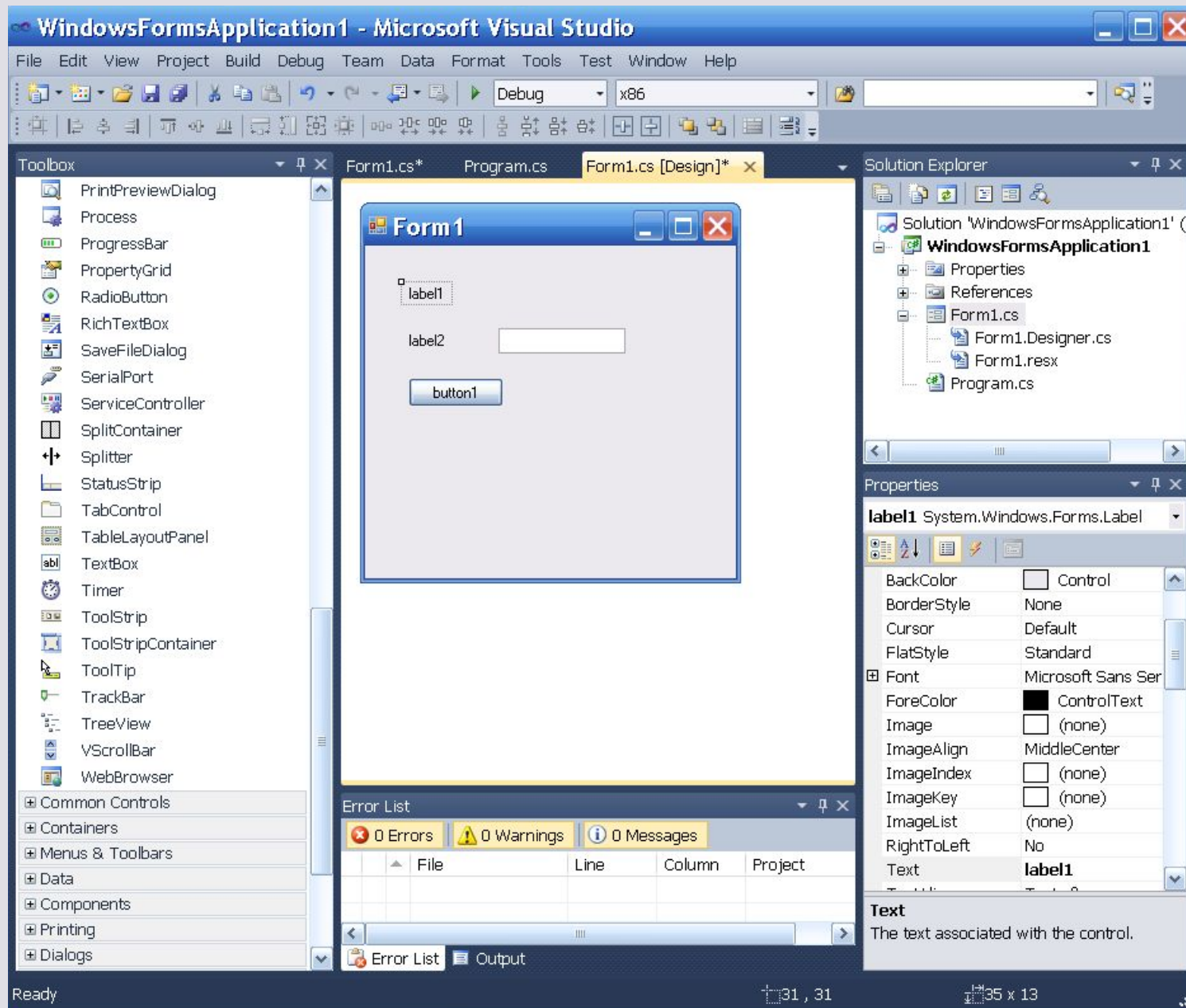
- Hide()
- Show()
- Invalidate()



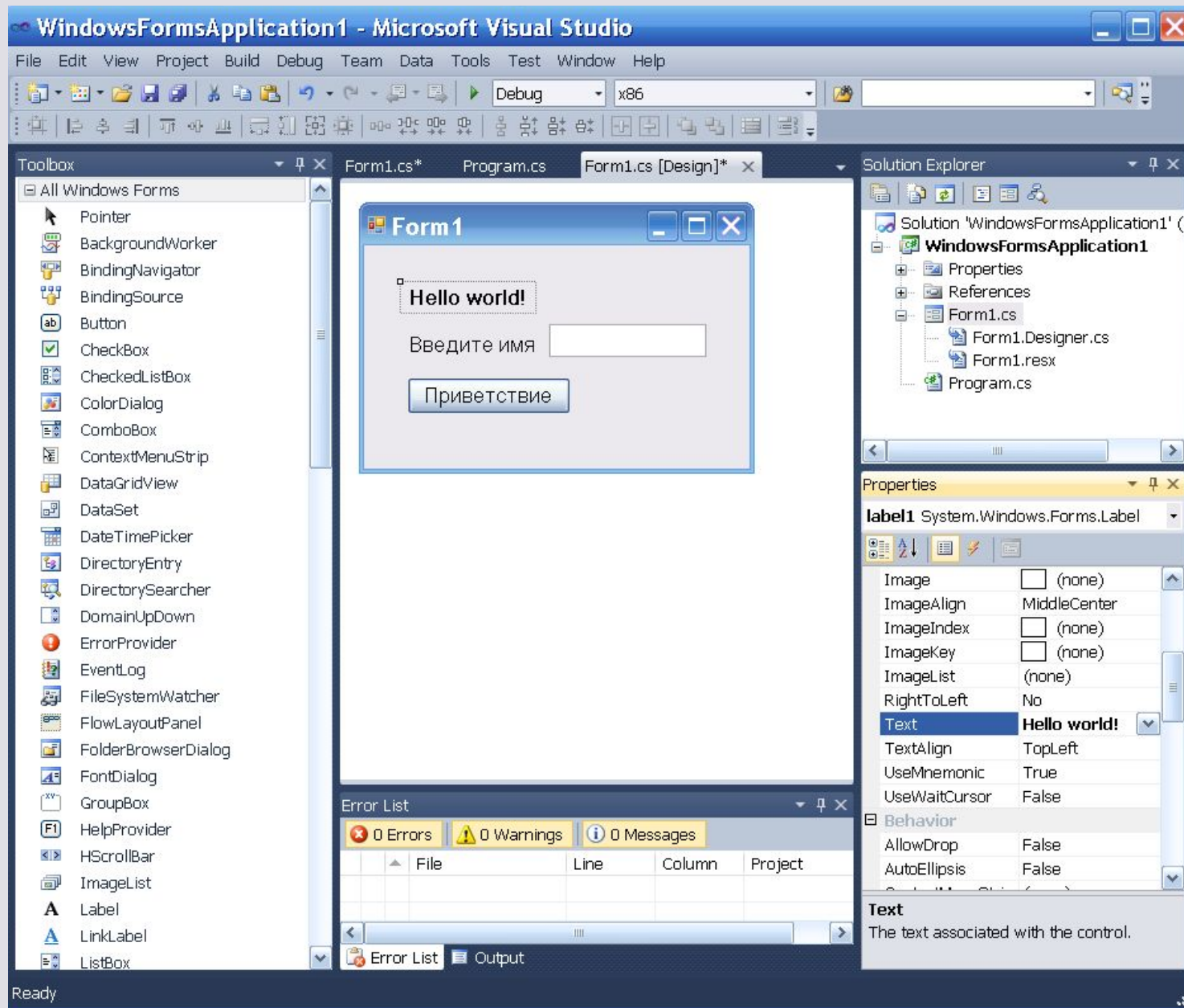
# Пример приложения



# Пример приложения



# Пример приложения



# Обработчик события Click кнопки

The screenshot displays the Microsoft Visual Studio environment for a Windows Forms application named "WindowsFormsApplication1". The main design area shows a form titled "Form 1" with the text "Hello world!" and a text box containing "Введите имя". A button labeled "Приветствие" is positioned below the text box. The Solution Explorer on the right shows the project structure, including "Form1.cs" and "Program.cs". The Properties window on the right is set to "button1" and shows the "Click" event handler selected. The Error List at the bottom shows 0 errors, 0 warnings, and 0 messages.

**WindowsFormsApplication1 - Microsoft Visual Studio**

File Edit View Project Build Debug Team Data Tools Test Window Help

Debug x86

**Toolbox**

- All Windows Forms
- Pointer
- BackgroundWorker
- BindingNavigator
- BindingSource
- Button
- CheckBox
- CheckedListBox
- ColorDialog
- ComboBox
- ContextMenuStrip
- DataGridView
- DataSet
- DateTimePicker
- DirectoryEntry
- DirectorySearcher
- DomainUpDown
- ErrorProvider
- EventLog
- FileSystemWatcher
- FlowLayoutPanel
- FolderBrowserDialog
- FontDialog
- GroupBox
- HelpProvider
- HScrollBar
- ImageList
- Label
- LinkLabel
- ListBox

**Form1.cs Program.cs Form1.cs [Design]**

**Form 1**

Hello world!

Введите имя

Приветствие

**Solution Explorer**

- Solution 'WindowsFormsApplication1' (C#)
- WindowsFormsApplication1
- Properties
- References
- Form1.cs
  - Form1.Designer.cs
  - Form1.resx
- Program.cs

**Properties**

**button1** System.Windows.Forms.Button

- Click
- MouseCaptureCha
- MouseClicked

**Appearance**

- Paint

**Behavior**

- ChangeUICues
- ControlAdded
- ControlRemoved
- HelpRequested
- QueryAccessibilityI
- StyleChanged
- SystemColorsChar

**Click**

Occurs when the component is clicked.

**Error List**

0 Errors 0 Warnings 0 Messages

File	Line	Column	Project
------	------	--------	---------

Ready

# Обработчик события Click кнопки

The screenshot displays the Visual Studio IDE with the following components:

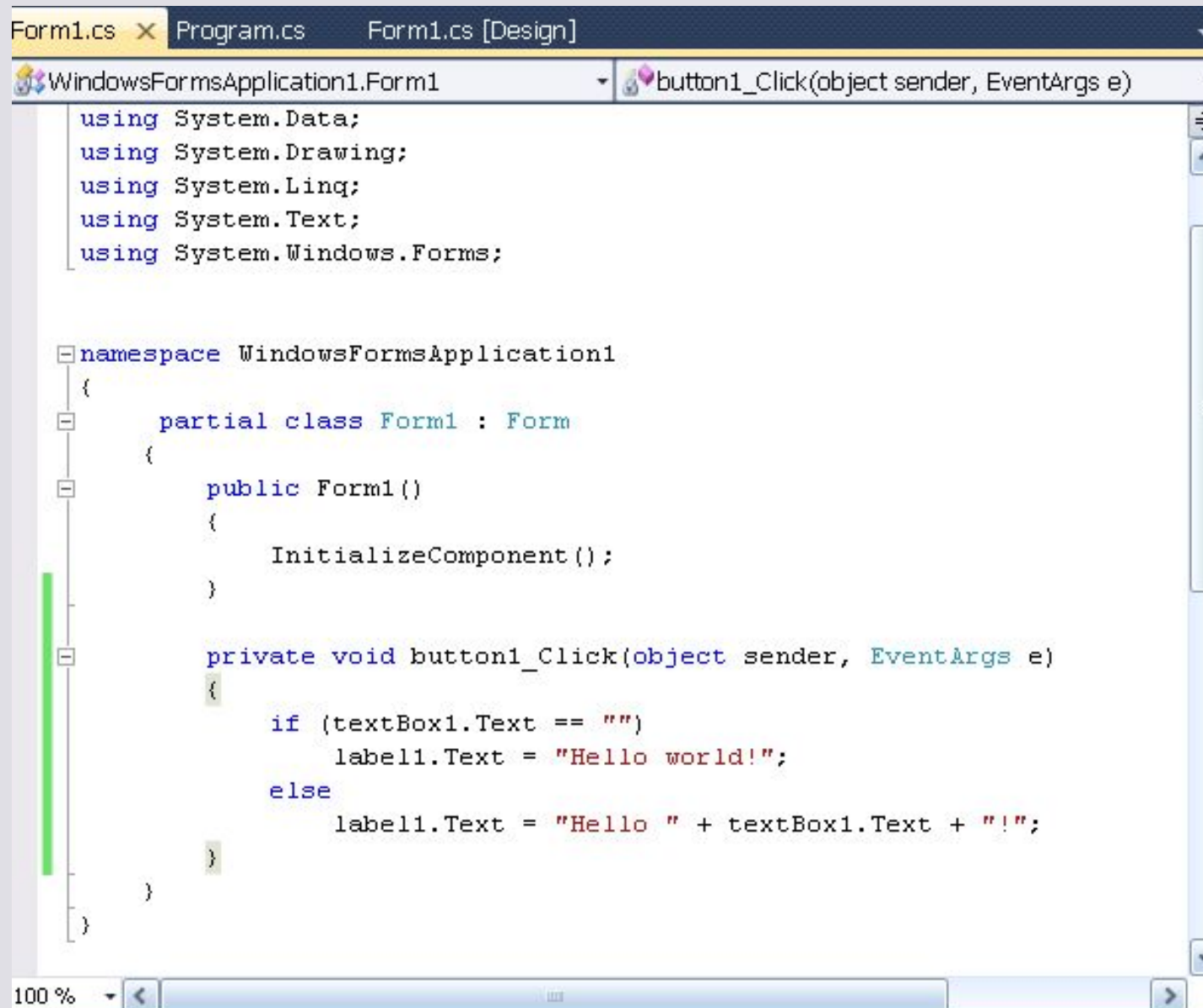
- Code Editor:** Shows the implementation of the `button1_Click` event handler for the `Form1` class. The code includes several `using` statements for system namespaces and a partial class definition for `Form1`.
- Solution Explorer:** Shows the project structure for `WindowsFormsApplication1`, including `Form1.cs`, `Form1.Designer.cs`, and `Form1.resx`.
- Properties Window:** Is currently empty.

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;

namespace WindowsFormsApplication1
{
    partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();
        }

        private void button1_Click(object sender, EventArgs e)
        {
        }
    }
}
```

# Обработчик события Click кнопки



The image shows a screenshot of the Visual Studio IDE. At the top, the solution explorer shows a project named 'WindowsFormsApplication1'. The current file is 'Form1.cs [Design]'. The code editor displays the following C# code:

```
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;

namespace WindowsFormsApplication1
{
    partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            if (textBox1.Text == "")
                label1.Text = "Hello world!";
            else
                label1.Text = "Hello " + textBox1.Text + "!";
        }
    }
}
```

The code defines a partial class `Form1` that inherits from `Form`. It includes a constructor `Form1()` that calls `InitializeComponent()`. The event handler `button1_Click` checks if the text in `textBox1` is empty. If it is, it sets the text of `label1` to "Hello world!". Otherwise, it appends the text from `textBox1` to "Hello " and "!", resulting in "Hello [text]!".