

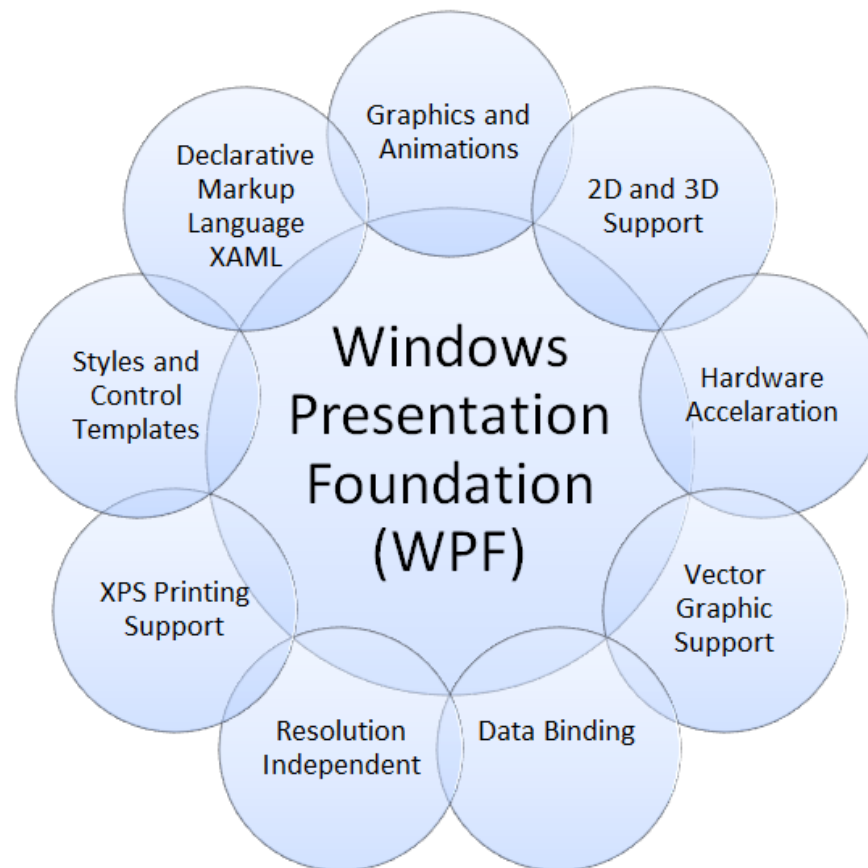
VISUAL PROGRAMMING

Windows Presentation Foundation

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Introduction

- A built-in API of .NET framework started from .NET 3.0 in 2006
- Provided event-driven programming aspect
- Helps to create GUI interfaces (forms) easily

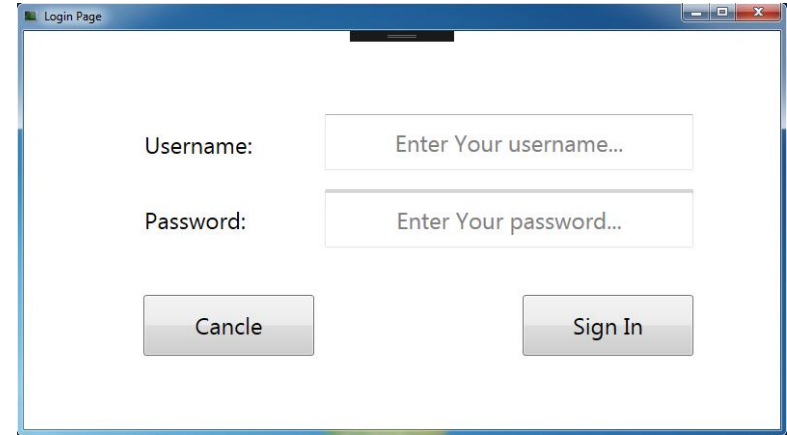


Introduction

- Represents GUI components information using XAML (eXtensible Application Markup Language) file
 - XAML allows to define rules or properties for a format that human & machines can understand
- GUI interface a.k.a Forms are initiated from c# program
- Several classes e.g. Application, Window, ContentControl, etc. are used
- GUI elements
 - Button
 - Text Box
 - Label
 - Main Window/Form
 - Radio Buttons
 - Select/Drop-down List and many more

Example (LoginWPF.sln)

- GUI form and its XAML code



```
<Window x:Name="mainw" x:Class="LoginWPF.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:LoginWPF"
  mc:Ignorable="d"
  Title="Login Page" TextBlock.TextAlignment="Center" Height="450" Width="800" Topmost="True" WindowStartupLocation="CenterScreen"
  Icon="C:\icon.ico">
  <Grid HorizontalAlignment="Center" VerticalAlignment="Center">
    <Grid.ColumnDefinitions>
      <ColumnDefinition/>
      <ColumnDefinition Width="Auto"/>
    </Grid.ColumnDefinitions>
    <TextBox x:Name="txtbox1" HorizontalAlignment="Left" Height="58" Margin="-54,-104,-276,0" TextWrapping="Wrap" VerticalAlignment="Top"
  Width="382" FontSize="24" Grid.ColumnSpan="2" Text="Enter Your username..." Foreground="Gray" GotFocus="rem_wm" LostFocus="show_wm"
  HorizontalContentAlignment="Center" VerticalContentAlignment="Center"/>
    <PasswordBox x:Name="pwsbox1" HorizontalAlignment="Left" Height="58" Margin="-54,-26,-276,0" VerticalAlignment="Top" Width="382"
  Grid.ColumnSpan="2" FontSize="24" GotFocus="rem_lb" LostFocus="show_lb" HorizontalContentAlignment="Center" VerticalContentAlignment="Center"/>
    <Label Content="Username:" HorizontalAlignment="Left" Height="58" Margin="-246,-94,0,68" VerticalAlignment="Bottom" Width="144" FontSize="24"/>
    <Label Content="Password:" HorizontalAlignment="Left" Height="58" Margin="-246,-16,0,-10" VerticalAlignment="Top" Width="144" FontSize="24"/>
    <Button x:Name="signb" Content="Sign In" HorizontalAlignment="Left" Height="63" Margin="147.193,83,-276,-114" VerticalAlignment="Top" Width="177"
  RenderTransformOrigin="0.079,0.533" FontSize="24" Grid.Column="1" Click="signb_button"/>
    <Button x:Name="canceleb" Content="Cancel" HorizontalAlignment="Left" Height="63" Margin="-242,83,0,-114" VerticalAlignment="Top" Width="177"
  FontSize="24" Click="canceleb_button"/>
    <TextBox x:Name="plabel" HorizontalAlignment="Left" Height="58" Margin="-54,-24,-276,-2" TextWrapping="Wrap" VerticalAlignment="Top" Width="382"
  FontSize="24" Grid.ColumnSpan="2" Text="Enter Your password..." Foreground="Gray" GotFocus="rem_lb" HorizontalContentAlignment="Center"
  VerticalContentAlignment="Center"/>
  </Grid>
</Window>
```

Example (LoginWPF.sln)

○ C# code

```
using System;
using System.Windows;
using System.Windows.Media;
namespace LoginWPF
{
    public partial class MainWindow : Window
    {
        public MainWindow()
        {
            InitializeComponent();
            this.Closing += mwclosing;
            this.Closed += MainWindow_Closed;
        }
        private void MainWindow_Closed(object sender, EventArgs e)
        {
            MessageBox.Show("Goodbye");
        }
        private void signb_button(object sender, RoutedEventArgs e)
        {
            if (txtbox1.Text.ToLower() == "visual programming" && pwsbox1.Password=="17CS")
                MessageBox.Show("Welcome to VC#", "Login Successful", MessageBoxButton.OK, MessageBoxImage.Warning);
            else
                MessageBox.Show("Incorrect Username or Password", "Login failed", MessageBoxButton.OK, MessageBoxImage.Information);
        }
        private void mwclosing(object sender, System.ComponentModel.CancelEventArgs e)
        {
            if (MessageBox.Show("Do you want to exit?", "Confirmation", MessageBoxButton.YesNo, MessageBoxImage.Question) ==
                MessageBoxResult.No)
                e.Cancel = true;
            else
                e.Cancel = false;
        }
    }
}
```

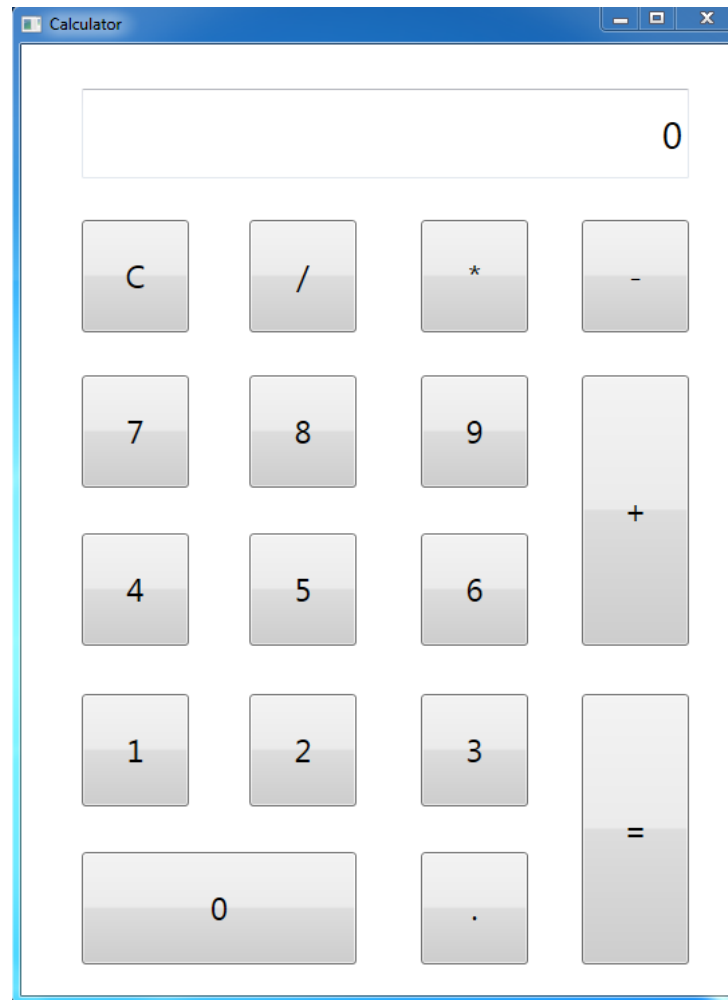
Example (LoginWPF.sln)

- C# code

```
private void cancel_button(object sender, RoutedEventArgs e)
{
    mainw.Close();
}
private void rem_wm(object sender, EventArgs e)
{
    txtbox1.Text = "";
    txtbox1.Foreground = Brushes.Black;
}
private void show_wm(object sender, EventArgs e)
{
    if(string.IsNullOrEmpty(txtbox1.Text))
    {
        txtbox1.Foreground = Brushes.Gray;
        txtbox1.Text = "Enter your username...";
    }
}
private void rem_lb(object sender, EventArgs e)
{
    plabel.Visibility = Visibility.Hidden;
    pwsbox1.Focus();
}
private void show_lb(object sender, EventArgs e)
{
    if (string.IsNullOrEmpty(pwsbox1.Password))
    {
        plabel.Visibility = Visibility.Visible;
    }
}
}
```

Task

- Create a C# WPF application for simple arithmetic calculator having following layout:





Questions

