Brushes

abelski

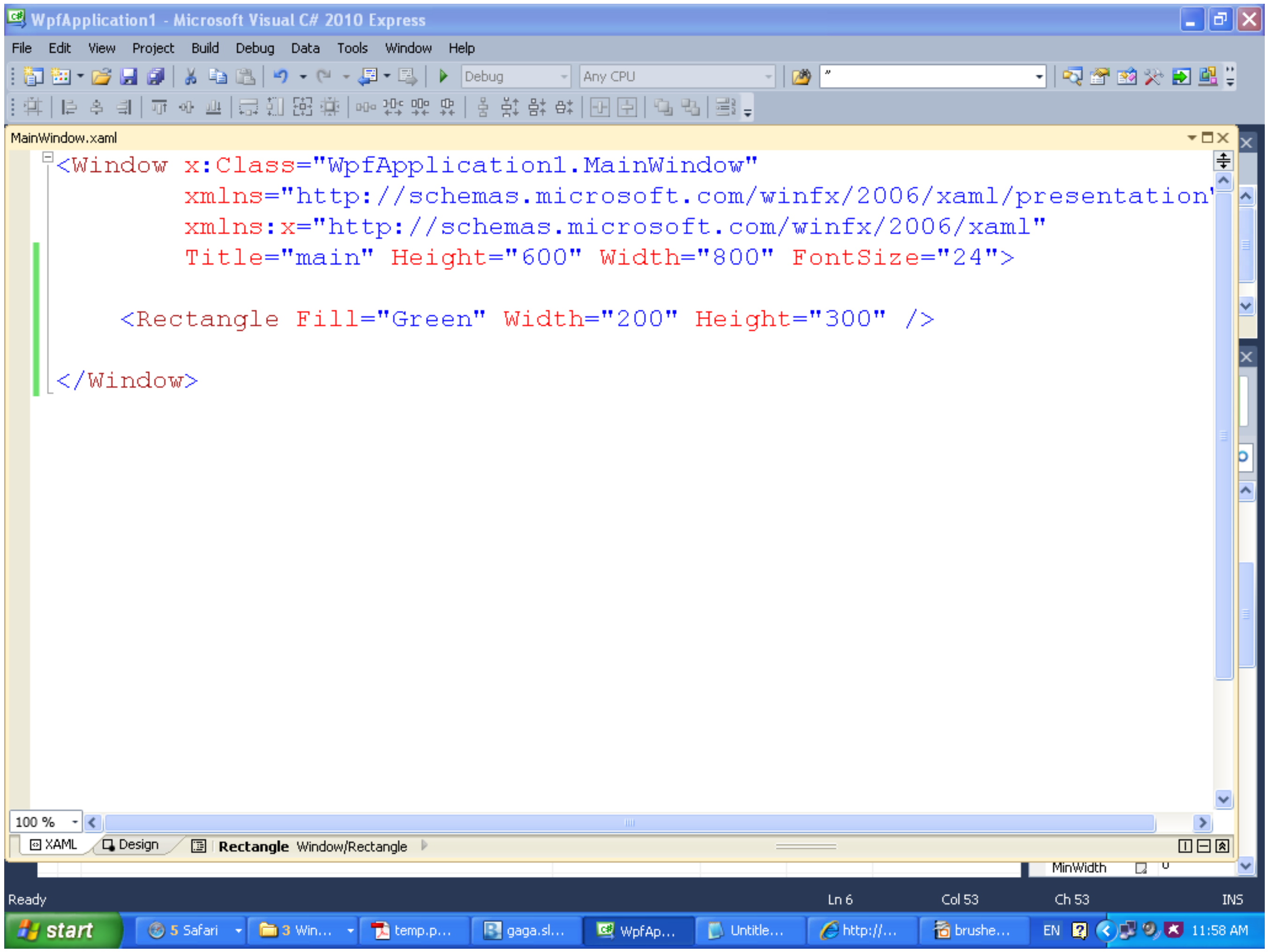
Introduction

- The `brush` determines how to fill-in an area. An area can be either a simple area of a specific share, such as a circle, rectangle or any other shape. An area can also be a complex one, such as the area of a polygon.
- The `brush` also determines how to fill-in the texts graphics. We can fill in the text either with a solid color, a color gradient or even using a picture or a pattern.

Introduction

- The simplest way for setting the brush we want to use is by using the `Fill` attribute.

Introduction


WpfApplication1 - Microsoft Visual C# 2010 Express
File Edit View Project Build Debug Data Tools Window Help
Debug
Any CPU
MainWindow.xaml
100 %
XAML
Design
Rectangle Window/Rectangle
MinWidth
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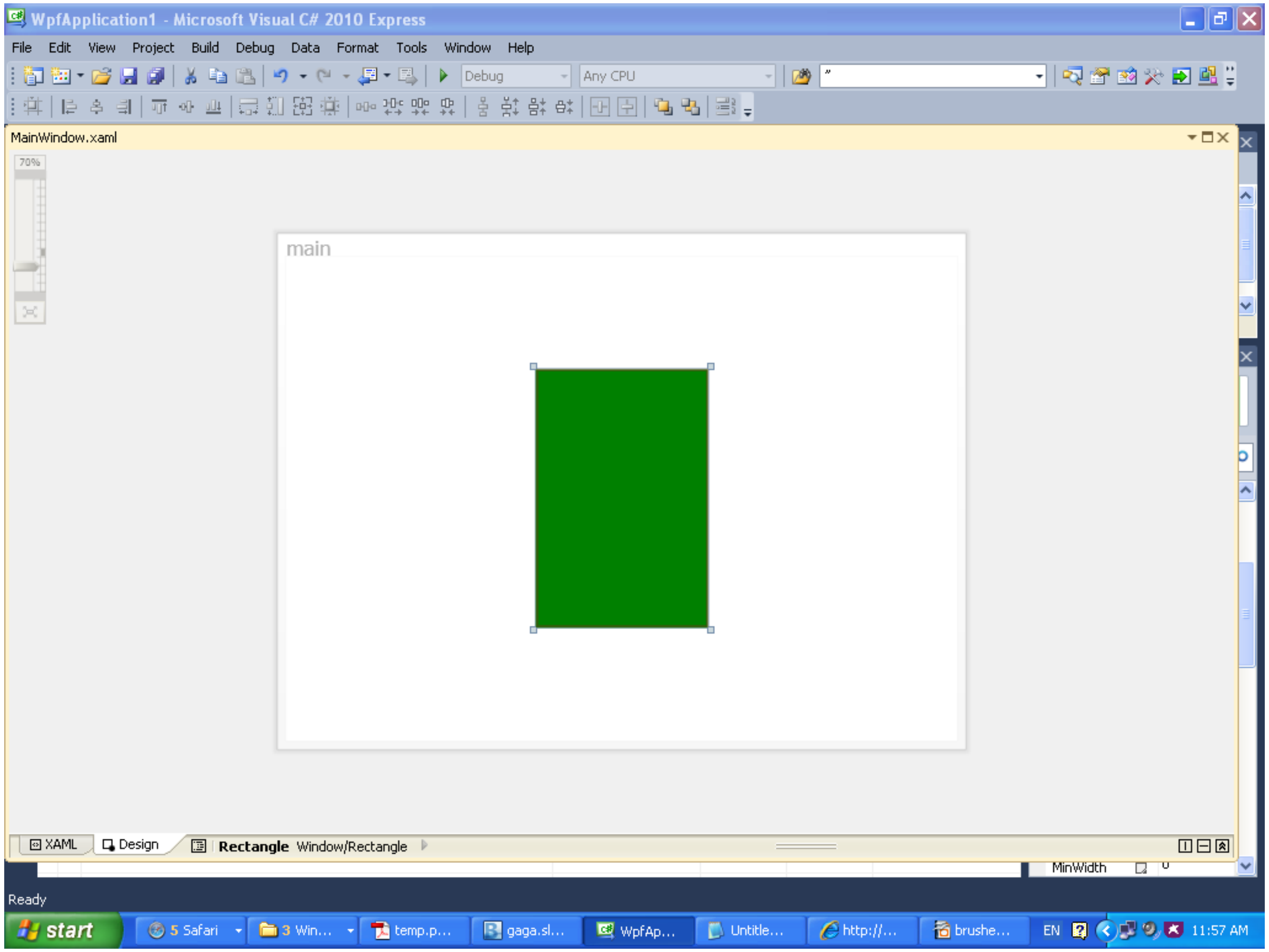
```
<Window x:Class="WpfApplication1.MainWindow"
        xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
        xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
        Title="main" Height="600" Width="800" FontSize="24">

    <Rectangle Fill="Green" Width="200" Height="300" />

</Window>
```

Introduction


WpfApplication1 - Microsoft Visual C# 2010 Express
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Rectangle Window/Rectangle
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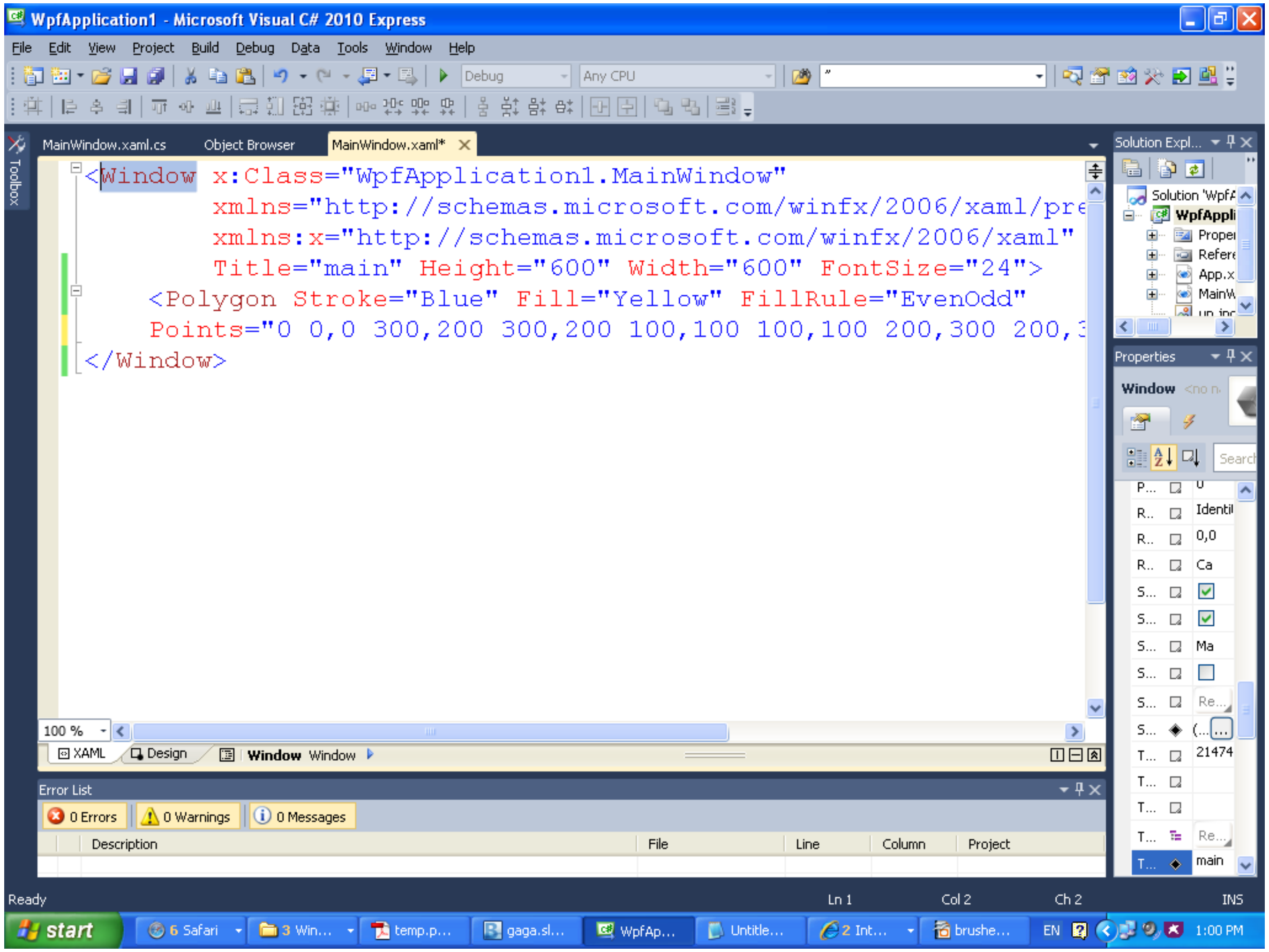
The `FillRule` Attribute

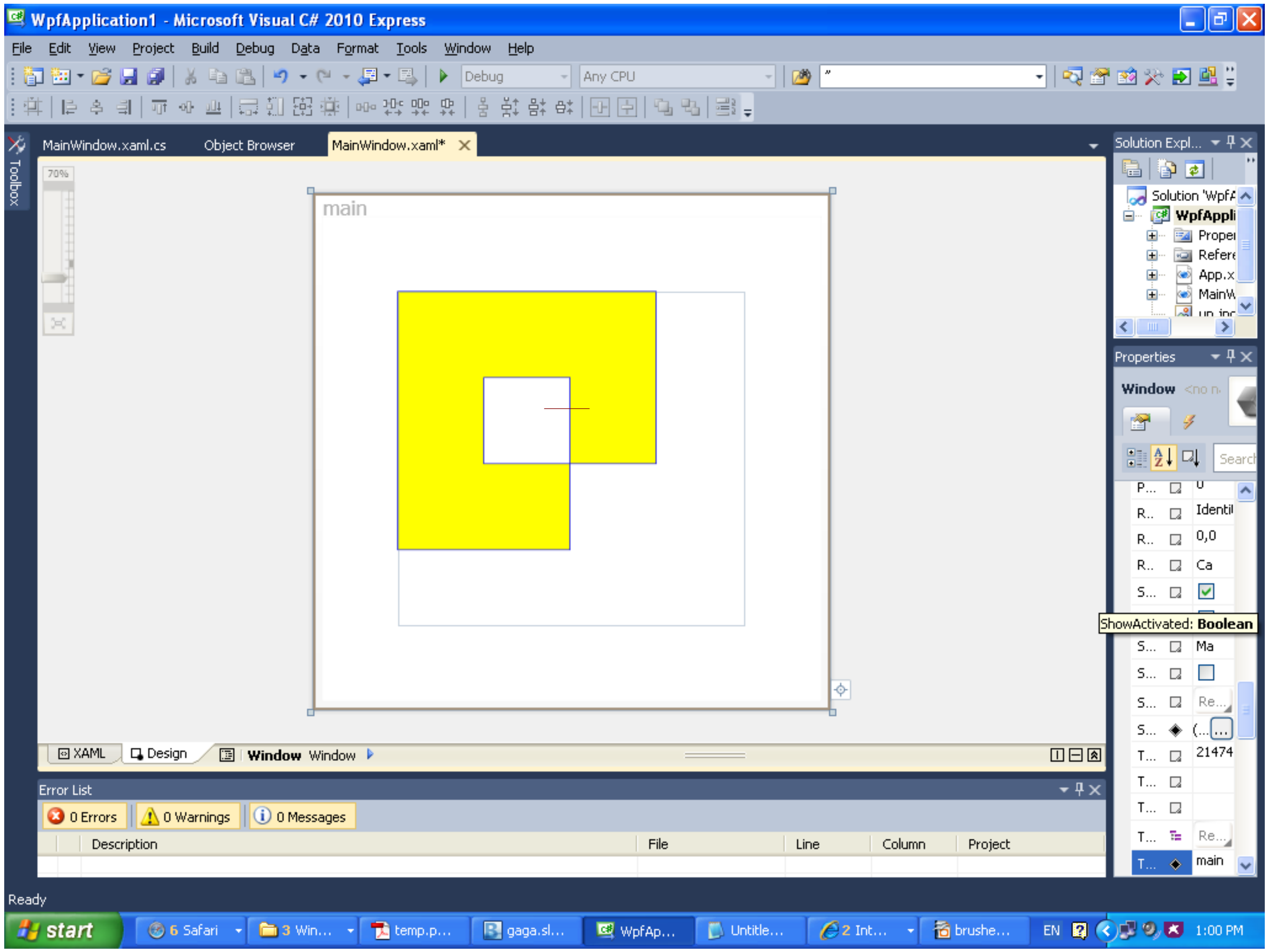
- We use this attribute in order to instruct how to fill in areas created by lines that cross with each other.
- If the value of this attribute is `Nonzero` then each one of the areas will be filled.
- If the value of this attribute is `EvenOdd` then just those areas that are enclosed an odd number of times will be filled-in.

The `FillRule` Attribute (`EvenOdd`)

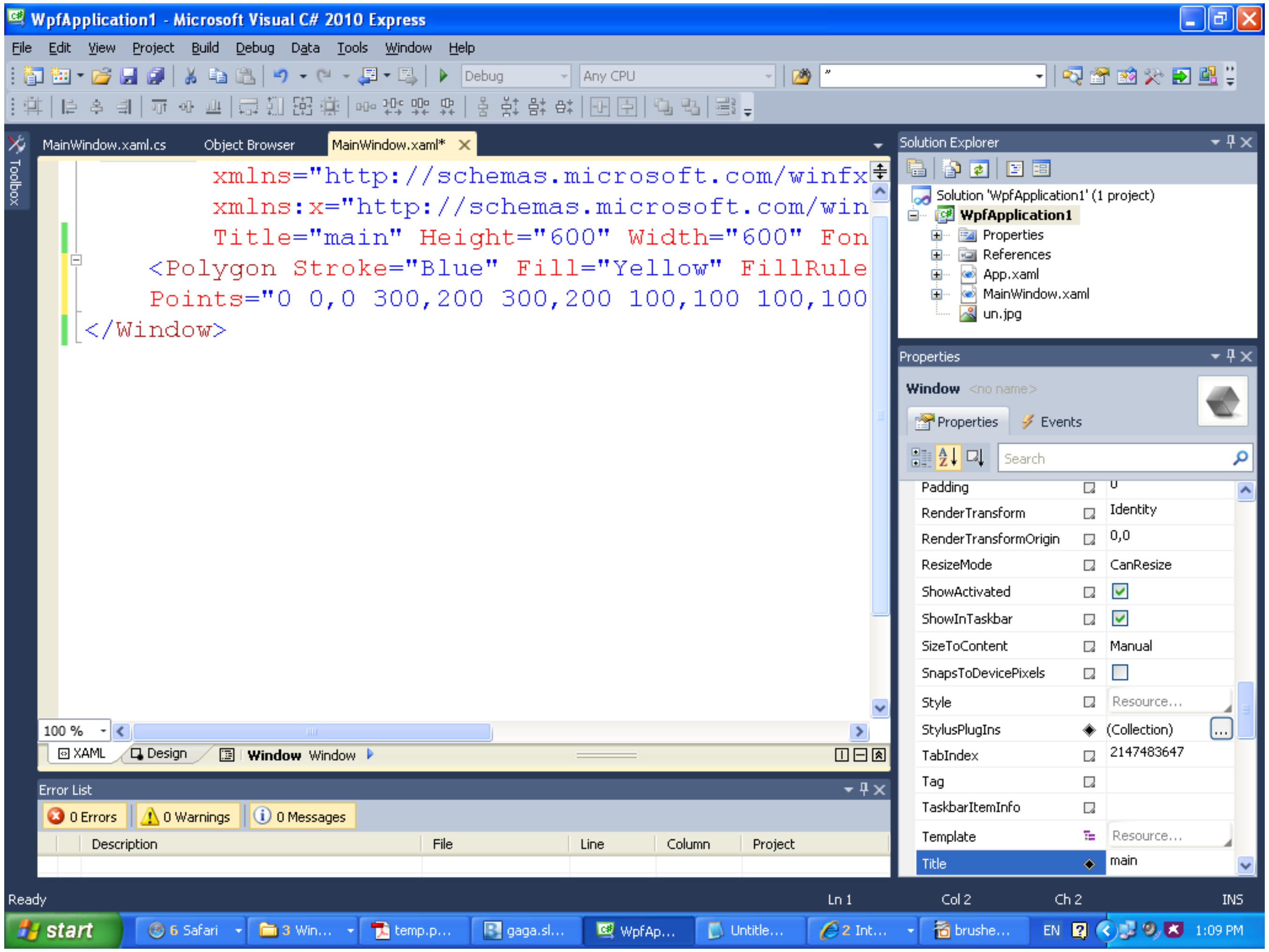


```
<Window x:Class="WpfApplication1.MainWindow"
        xmlns="http://schemas.microsoft.com/winfx/2006/xaml/pre
        xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
        Title="main" Height="600" Width="600" FontSize="24">
    <Polygon Stroke="Blue" Fill="Yellow" FillRule="EvenOdd"
    Points="0 0,0 300,200 300,200 100,100 100,100 200,300 200,3
</Window>
```

The `FillRule` Attribute (`EvenOdd`)



The `FillRule` Attribute (`EvenOdd`)



```
        xmlns="http://schemas.microsoft.com/winfx
        xmlns:x="http://schemas.microsoft.com/win
        Title="main" Height="600" Width="600" Fon
    <Polygon Stroke="Blue" Fill="Yellow" FillRule
    Points="0 0,0 300,200 300,200 100,100 100,100
</Window>
```

WpfApplication1 - Microsoft Visual C# 2010 Express

Solution 'WpfApplication1' (1 project)
- WpfApplication1
  - Properties
  - References
  - App.xaml
  - MainWindow.xaml
  - un.jpg

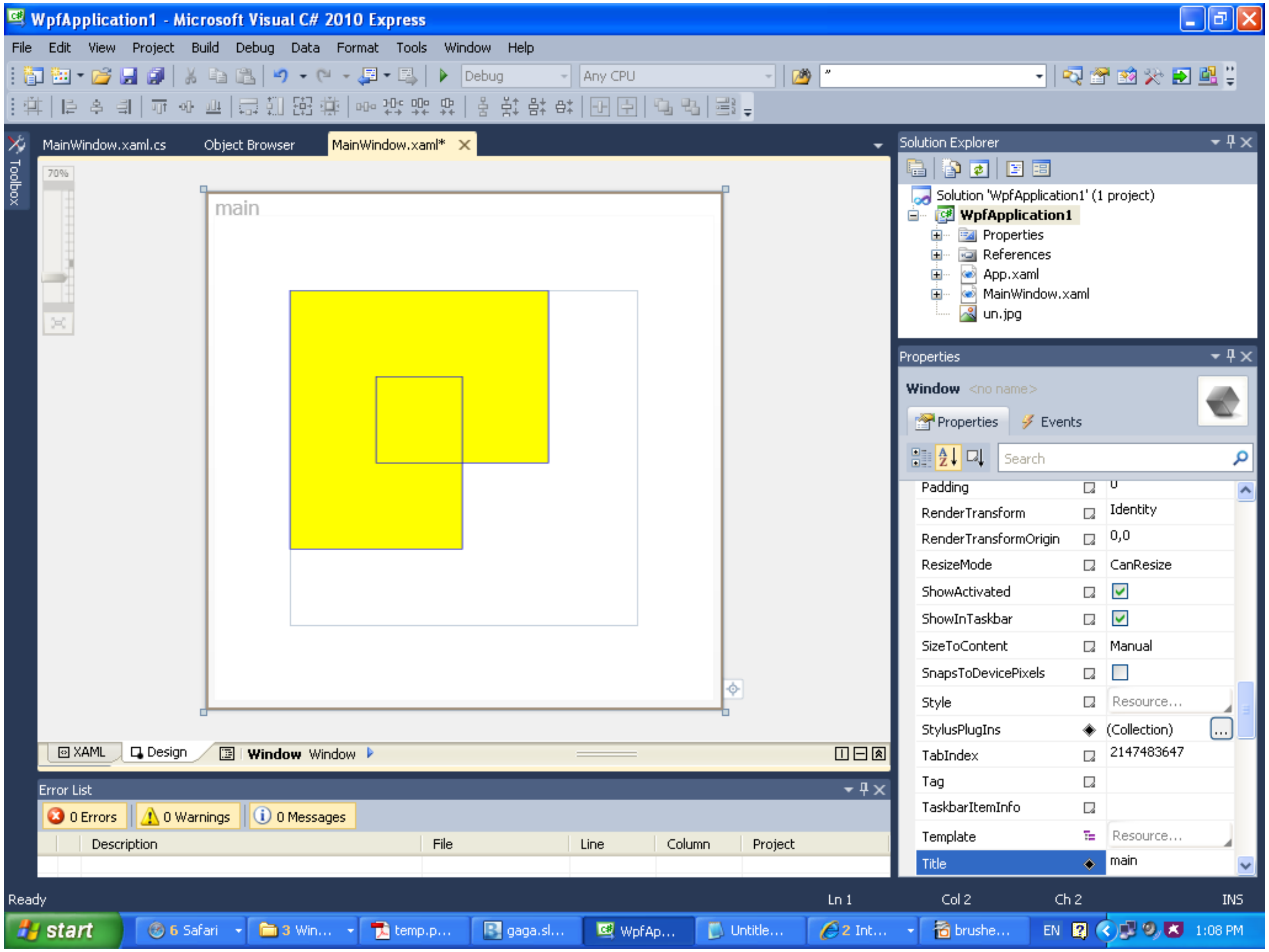
Properties

Window <no name>

Padding	0
RenderTransform	Identity
RenderTransformOrigin	0,0
ResizeMode	CanResize
ShowActivated	✓
ShowInTaskbar	✓
SizeToContent	Manual
SnapsToDevicePixels	☐
Style	Resource...
StylusPlugIns	(Collection)
TabIndex	2147483647
Tag	
TaskbarItemInfo	
Template	Resource...
Title	main

Error List: 0 Errors, 0 Warnings, 0 Messages

The `FillRule` Attribute (`EvenOdd`)



Padding	0
RenderTransform	Identity
RenderTransformOrigin	0,0
ResizeMode	CanResize
ShowActivated	✓
ShowInTaskbar	✓
SizeToContent	Manual
SnapsToDevicePixels	☐
Style	Resource...
StylusPlugIns	(Collection)
TabIndex	2147483647
Tag	
TaskbarItemInfo	
Template	Resource...
Title	main

0 Errors 0 Warnings 0 Messages

The `SpreadMethod` Attribute

- This attribute determines how to fill a drawn area when the brush isn't big enough to cover the entire area.
- This attribute can take the following values: `Pad`, `Reflect` and `Repeat`.
- Using the `Pad` value the remaining of the area will be filled in with the final color.

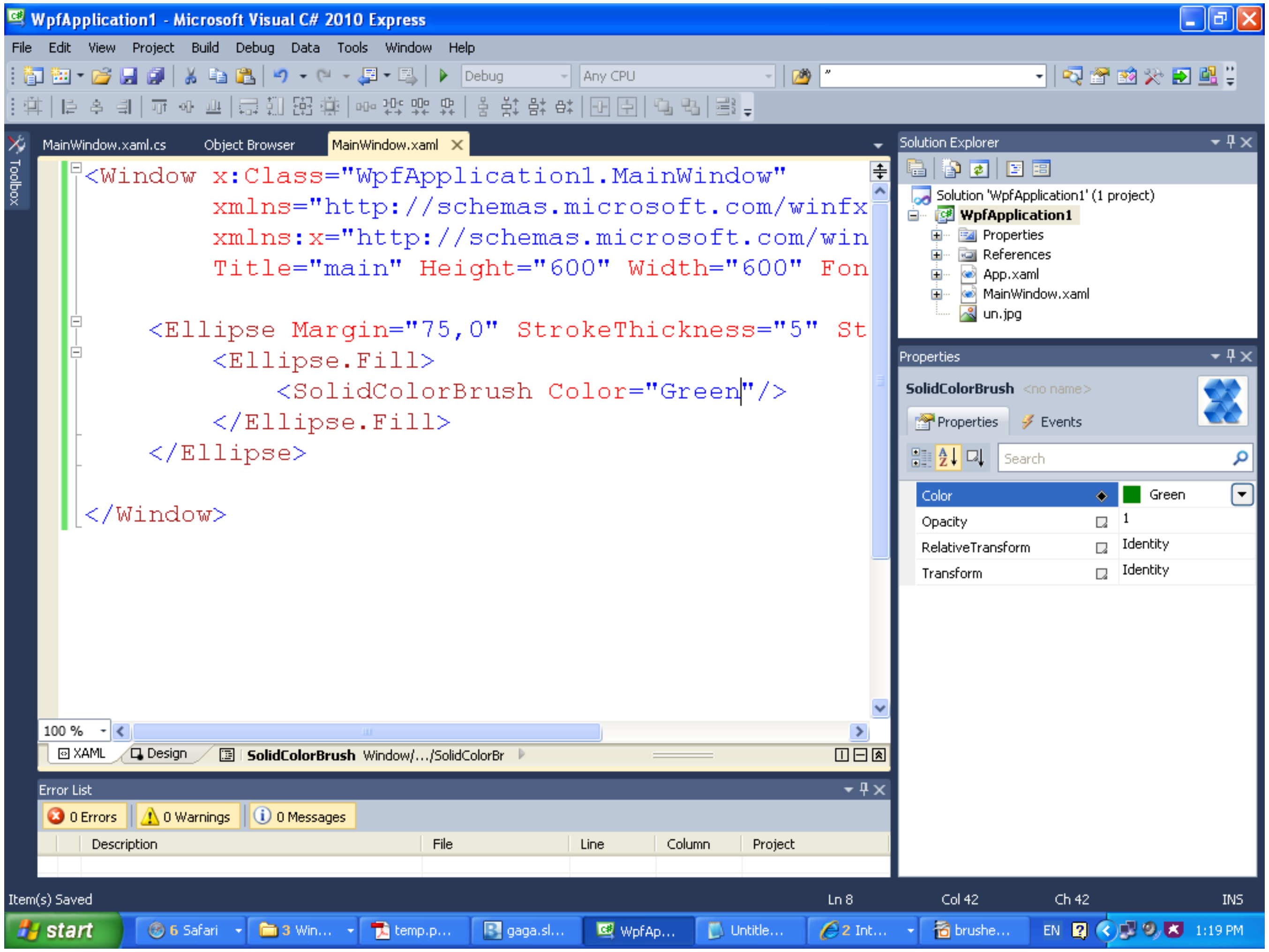
The `SpreadMethod` Attribute

- Using the `Reflect` value the brush will reverse it self and continue to fill in the area. This pattern will repeat until the entire area is filled.
- Using the `Repeat` value the brush will start over and repeat itself again and again till the entire area is filled.

The `SolidColorBrush` Attribute

- This attribute represents a single solid color. We can specify the brush's color either by name (e.g. `Yellow`) or by hexadecimal value (e.g. `#FFAA0033`).

The `SolidColorBrush` Attribute



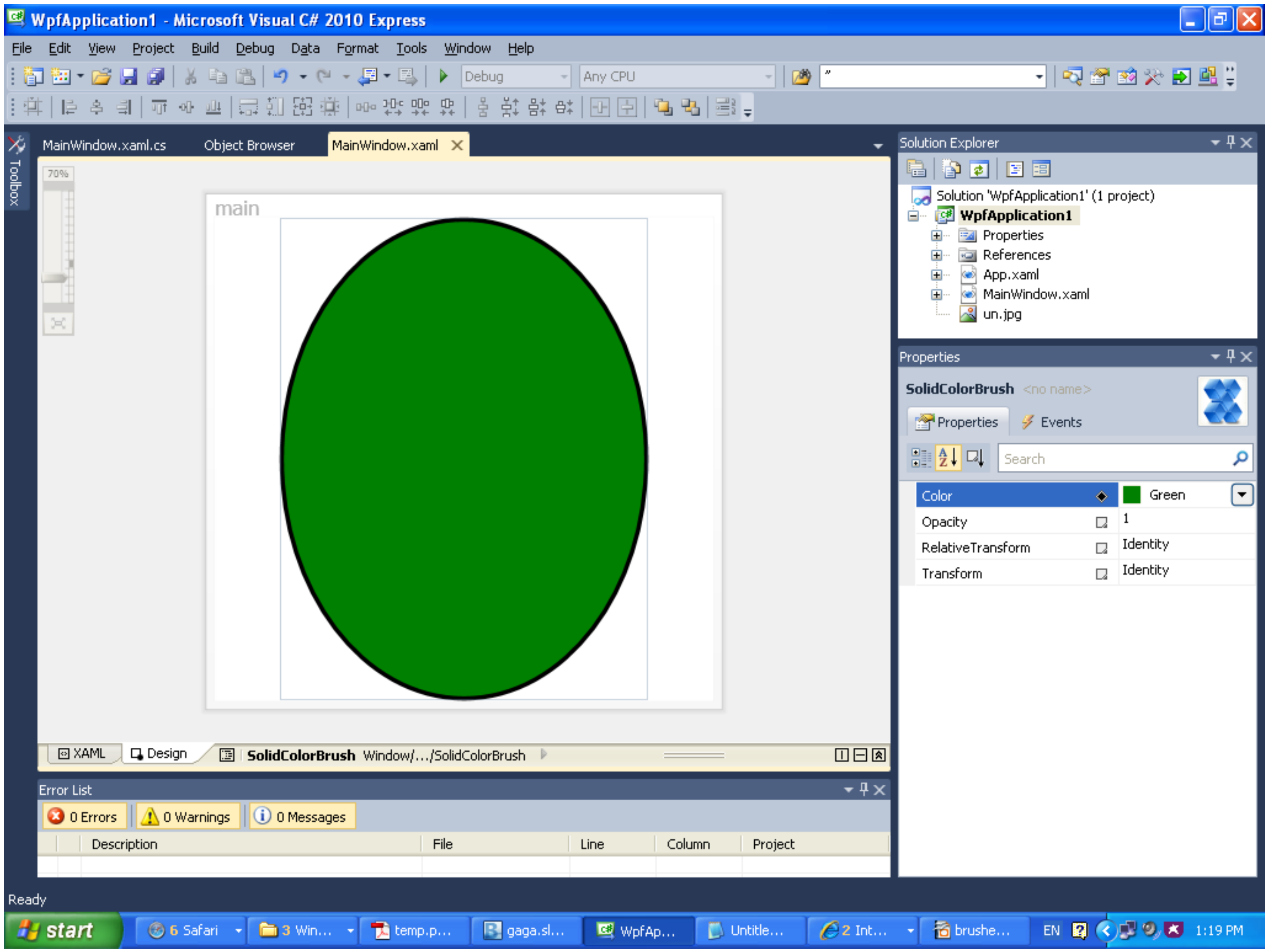
```
<Window x:Class="WpfApplication1.MainWindow"
        xmlns="http://schemas.microsoft.com/winfx
        xmlns:x="http://schemas.microsoft.com/win
        Title="main" Height="600" Width="600" Fon

    <Ellipse Margin="75,0" StrokeThickness="5" St
        <Ellipse.Fill>
            <SolidColorBrush Color="Green"/>
        </Ellipse.Fill>
    </Ellipse>

</Window>
```

Color	🟩 Green
Opacity	1
RelativeTransform	Identity
Transform	Identity

The `SolidColorBrush` Attribute


WpfApplication1 - Microsoft Visual C# 2010 Express
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XAML
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SolidColorBrush Window/…/SolidColorBrush
Error List
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0 Messages
Ready

Properties

SolidColorBrush <no name>

Color	🟩 Green
Opacity	1
RelativeTransform	Identity
Transform	Identity

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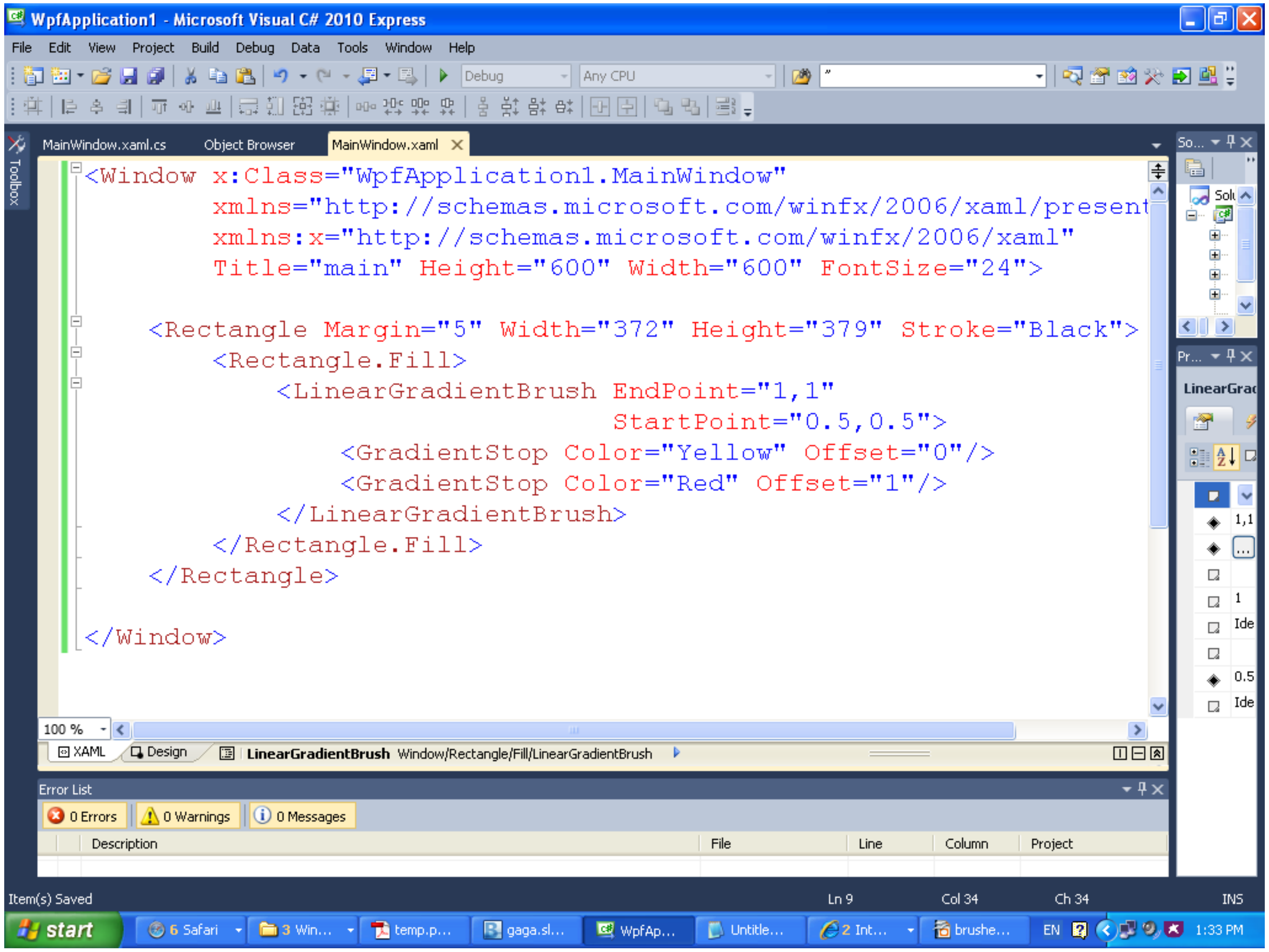
The `LinearGradientBrush` Attribute

- This attribute fills an area with a sequence of colors that smoothly linearly blend with each from one color to the others.
- The `LinearGradientBrush`'s `StartPoint` and `EndPoint` attributes determine where the gradient starts and when it ends.
- The coordinates of these points use a scale in which (0, 0) is the upper left corner and (1,1) is the lower right one.

The `LinearGradientBrush` Attribute

- Collection of `GradientStop` objects describe the exact way the area is filled.
- Each `GradientStop` object describes the exact color the brush should use in a specific point.
- The `Offset` attribute determines on a 0 to 1 scale how far through the brush the color should be positioned.

The `LinearGradientBrush` Attribute



```
<Window x:Class="WpfApplication1.MainWindow"
        xmlns="http://schemas.microsoft.com/winfx/2006/xaml/present
        xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
        Title="main" Height="600" Width="600" FontSize="24">

    <Rectangle Margin="5" Width="372" Height="379" Stroke="Black">
        <Rectangle.Fill>
            <LinearGradientBrush EndPoint="1,1"
                                 StartPoint="0.5,0.5">
                <GradientStop Color="Yellow" Offset="0"/>
                <GradientStop Color="Red" Offset="1"/>
            </LinearGradientBrush>
        </Rectangle.Fill>
    </Rectangle>

</Window>
```

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MainWindow.xaml
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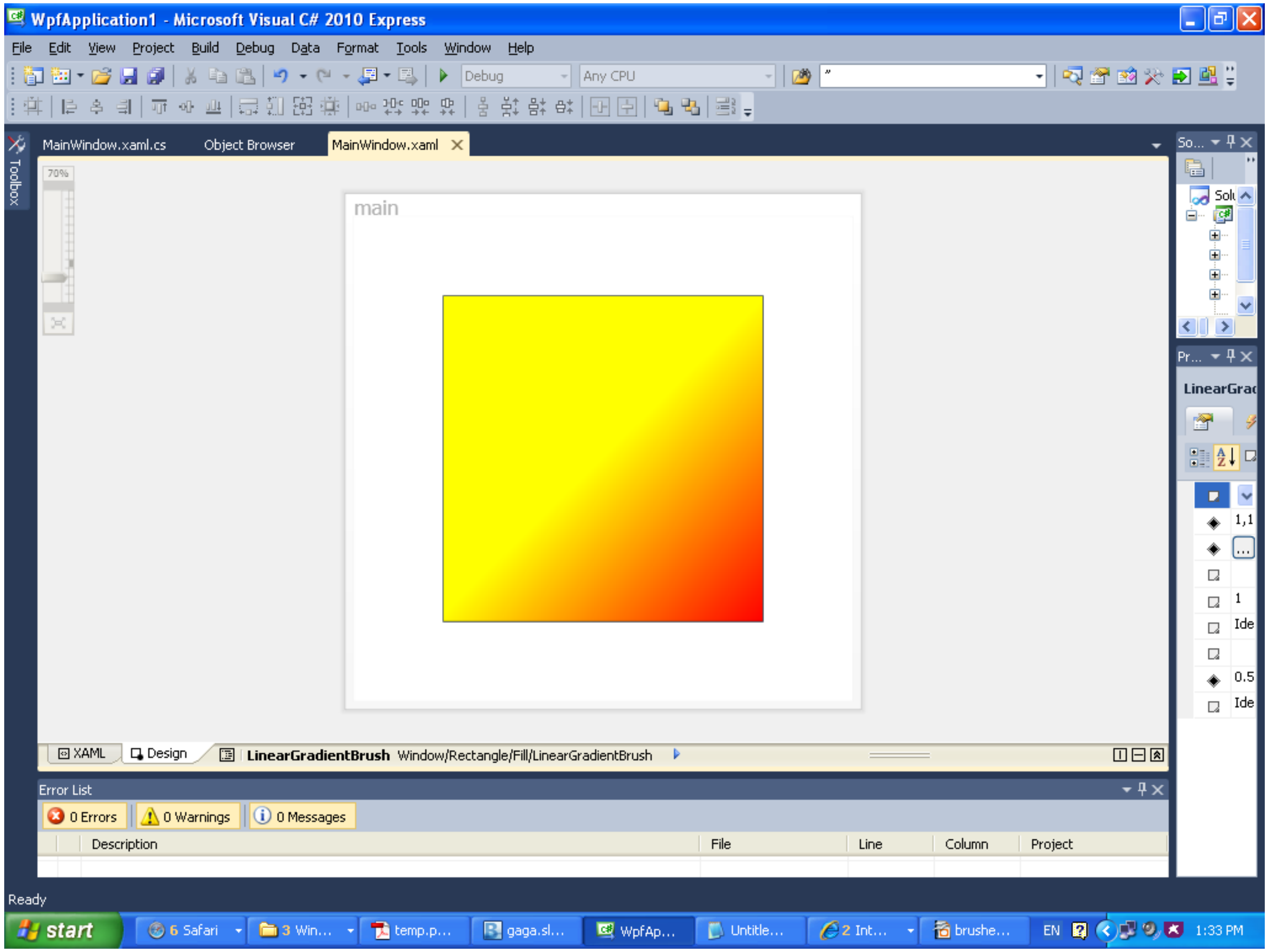
XAML
Design
LinearGradientBrush Window/Rectangle/Fill/LinearGradientBrush
Error List
0 Errors
0 Warnings
0 Messages
Description File Line Column Project
Item(s) Saved Ln 9 Col 34 Ch 34 INS
start
1:33 PM

The `LinearGradientBrush` Attribute


WpfApplication1 - Microsoft Visual C# 2010 Express
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Any CPU
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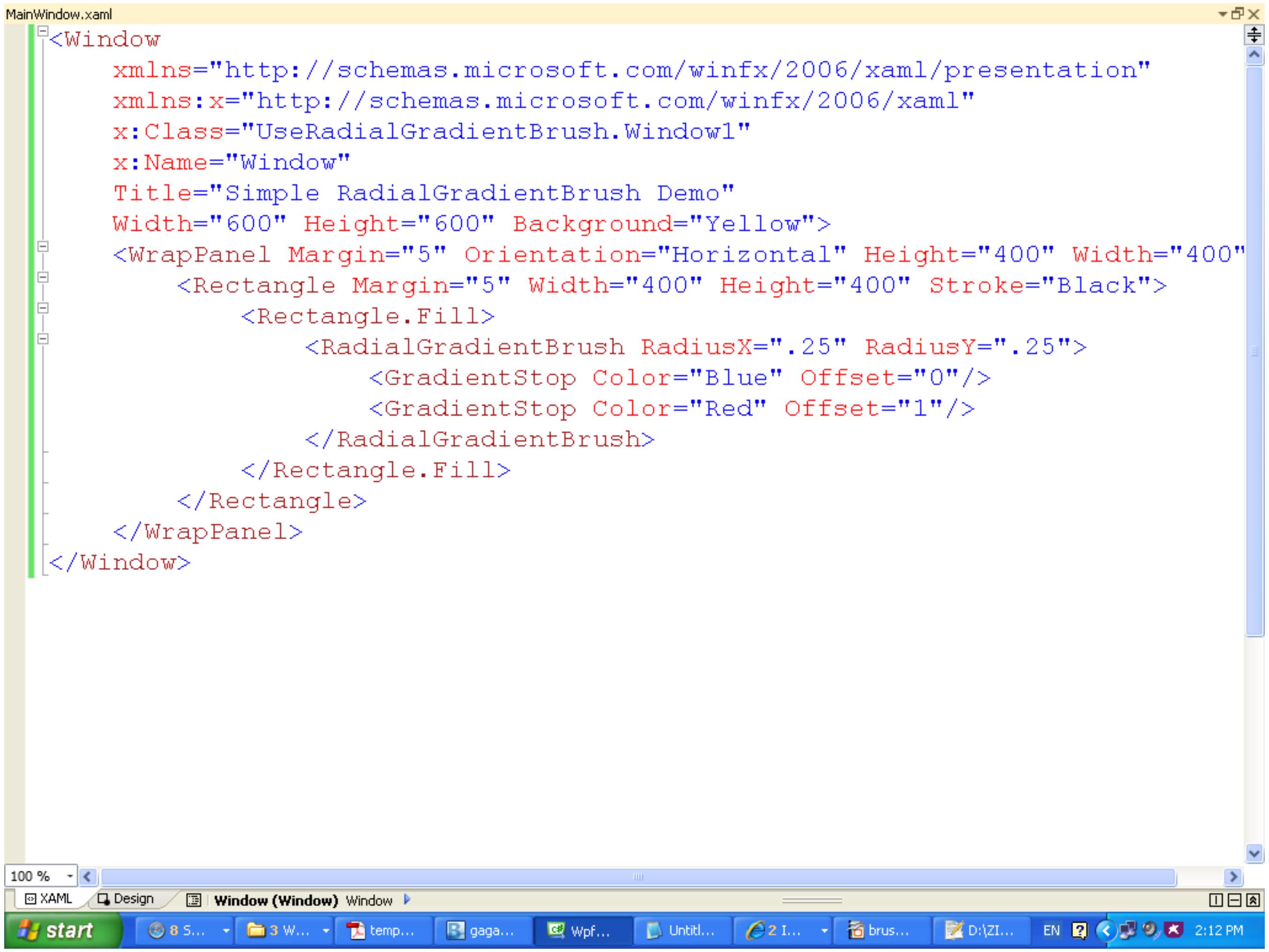
Object Browser
MainWindow.xaml
main
XAML
Design
LinearGradientBrush Window/Rectangle/Fill/LinearGradientBrush
Error List
0 Errors
0 Warnings
0 Messages
Description
File
Line
Column
Project
Ready
start
1:33 PM

The `RadialGradientBrush` Attribute

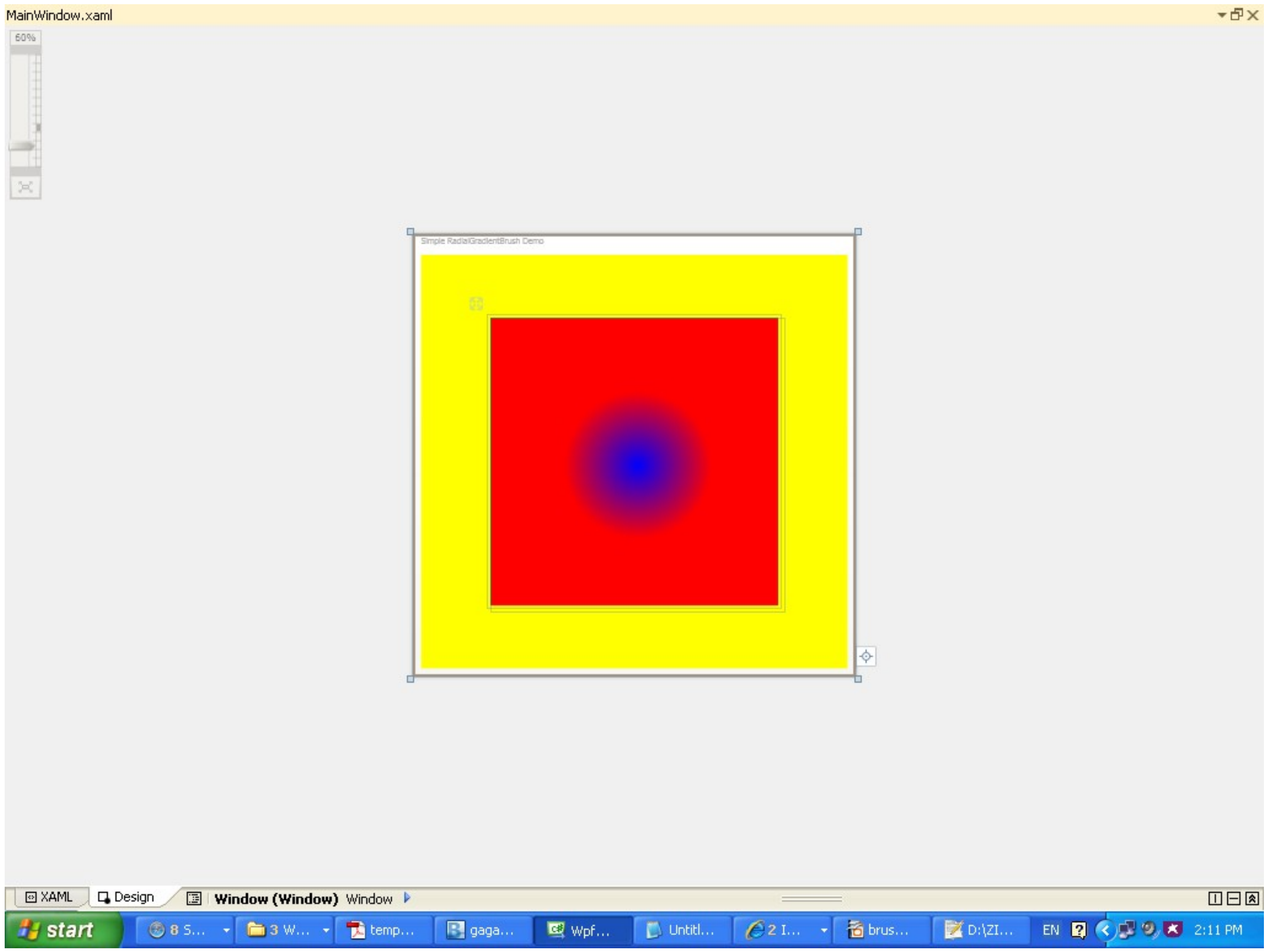
- The `RadialGradientBrush` smoothly blends the colors radiating away from the central point.
- The `GradientOrigin` determines the point from which the colors radiate.
- The `RadiusX` and `RadiusY` attributes determine how far the brush extends horizontally and vertically from the center. These two attributes use the (0,0) to (1,1) coordinate system.

The `RadialGradientBrush` Attribute



```
<Window
    xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
    xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
    x:Class="UseRadialGradientBrush.Window1"
    x:Name="Window"
    Title="Simple RadialGradientBrush Demo"
    Width="600" Height="600" Background="Yellow">
    <WrapPanel Margin="5" Orientation="Horizontal" Height="400" Width="400"
        <Rectangle Margin="5" Width="400" Height="400" Stroke="Black">
            <Rectangle.Fill>
                <RadialGradientBrush RadiusX=".25" RadiusY=".25">
                    <GradientStop Color="Blue" Offset="0"/>
                    <GradientStop Color="Red" Offset="1"/>
                </RadialGradientBrush>
            </Rectangle.Fill>
        </Rectangle>
    </WrapPanel>
</Window>
```

The `RadialGradientBrush` Attribute



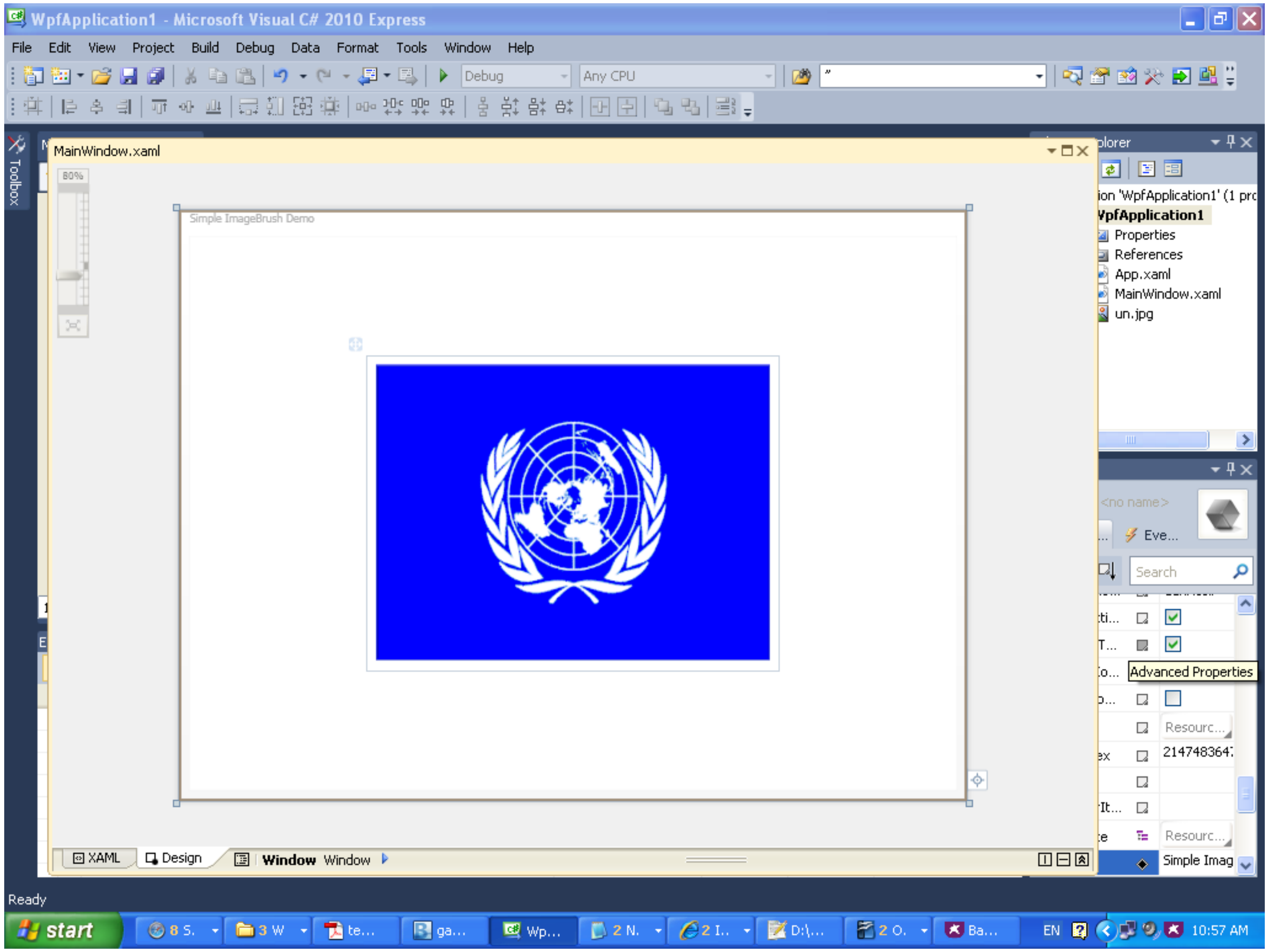
The `ImageBrush` Class

- This class fills in the area with an image. We can import any image into our project and refer it using the `ImageSource` attribute.

The `ImageBrush` Class

```
<Window  xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
         xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
         Title="Simple ImageBrush Demo"
         Width="800" Height="600" Background="White"
         Loaded="Window_Loaded">

    <WrapPanel Height="322" Width="420">

        <Rectangle  Width="400" Height="300"
                    Stroke="Blue" StrokeThickness="2"
                    HorizontalAlignment="Left"
                    VerticalAlignment="Top"
                    Margin="10,10,0,0">
            <Rectangle.Fill>
                <ImageBrush ImageSource="un.jpg"/>
            </Rectangle.Fill>
        </Rectangle>

    </WrapPanel>

</Window>
```

The `ImageBrush` Class


WpfApplication1 - Microsoft Visual C# 2010 Express
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Simple ImageBrush Demo
XAML
Design
Window Window
Properties
References
App.xaml
MainWindow.xaml
un.jpg
Advanced Properties
Search
Ready
start
10:57 AM