SharpMap is an easy-to-use mapping library for use in web and desktop applications. It provides access to many types of GIS data, enables spatial querying of that data, and renders beautiful maps. The engine is written in C# and based on the .Net 4.0 framework. SharpMap is released under GNU Lesser General Public License.

Supporters of SharpMap

SharpMap developers kindly appreciate support from

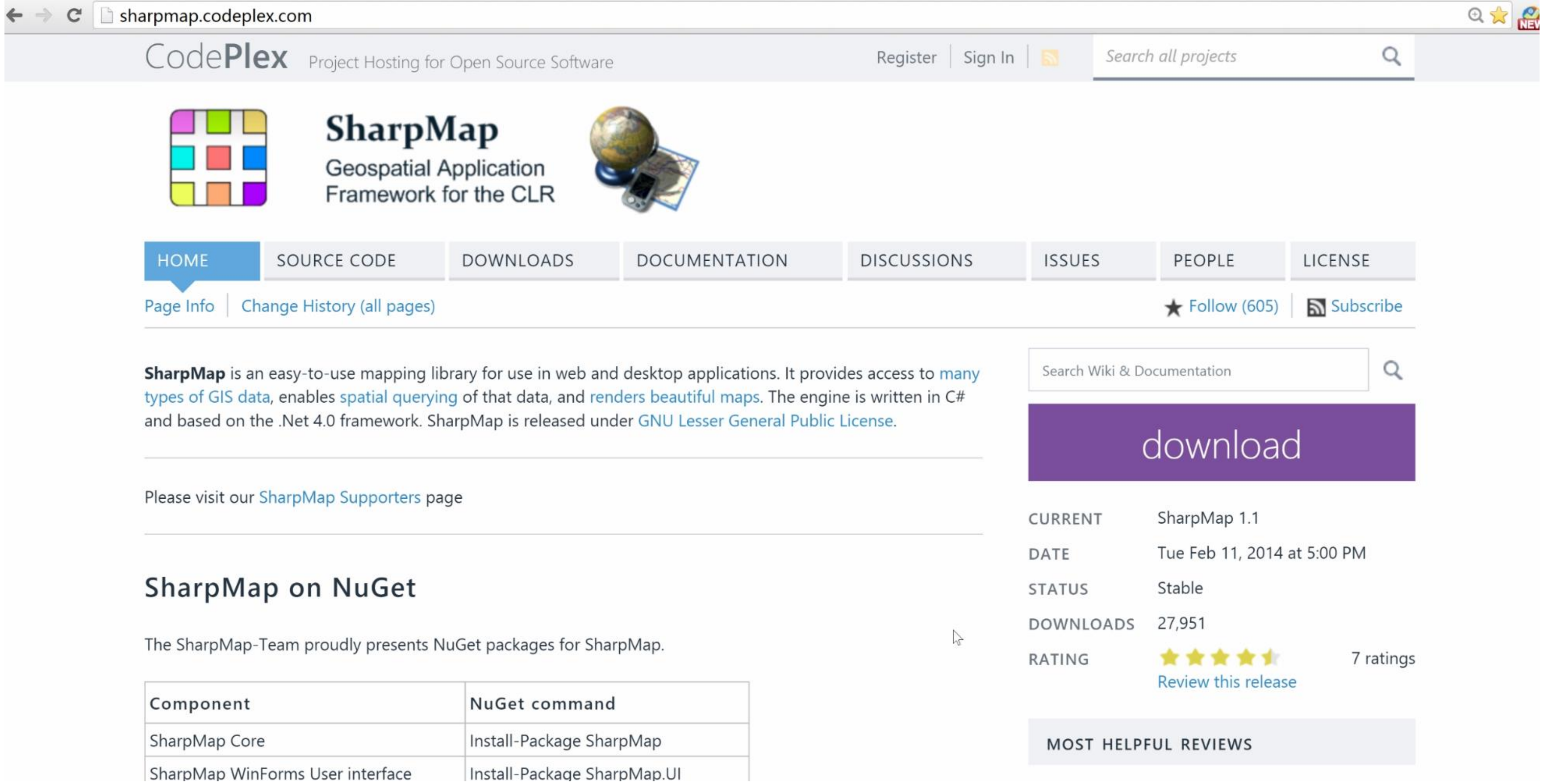
JetBrains

NDepend

NDepend is a Visual Studio tool to manage complex .NET code and achieve high Code Quality

How to download the SharpMap

- http://sharpmap.codeplex.com/



SharpMap is an easy-to-use mapping library for use in web and desktop applications. It provides access to many types of GIS data, enables spatial querying of that data, and renders beautiful maps. The engine is written in C# and based on the .Net 4.0 framework. SharpMap is released under GNU Lesser General Public License.

Please visit our SharpMap Supporters page

SharpMap on NuGet

The SharpMap-Team proudly presents NuGet packages for SharpMap.

Component	NuGet command
SharpMap Core	Install-Package SharpMap
SharpMap WinForms User interface	Install-Package SharpMap.UI

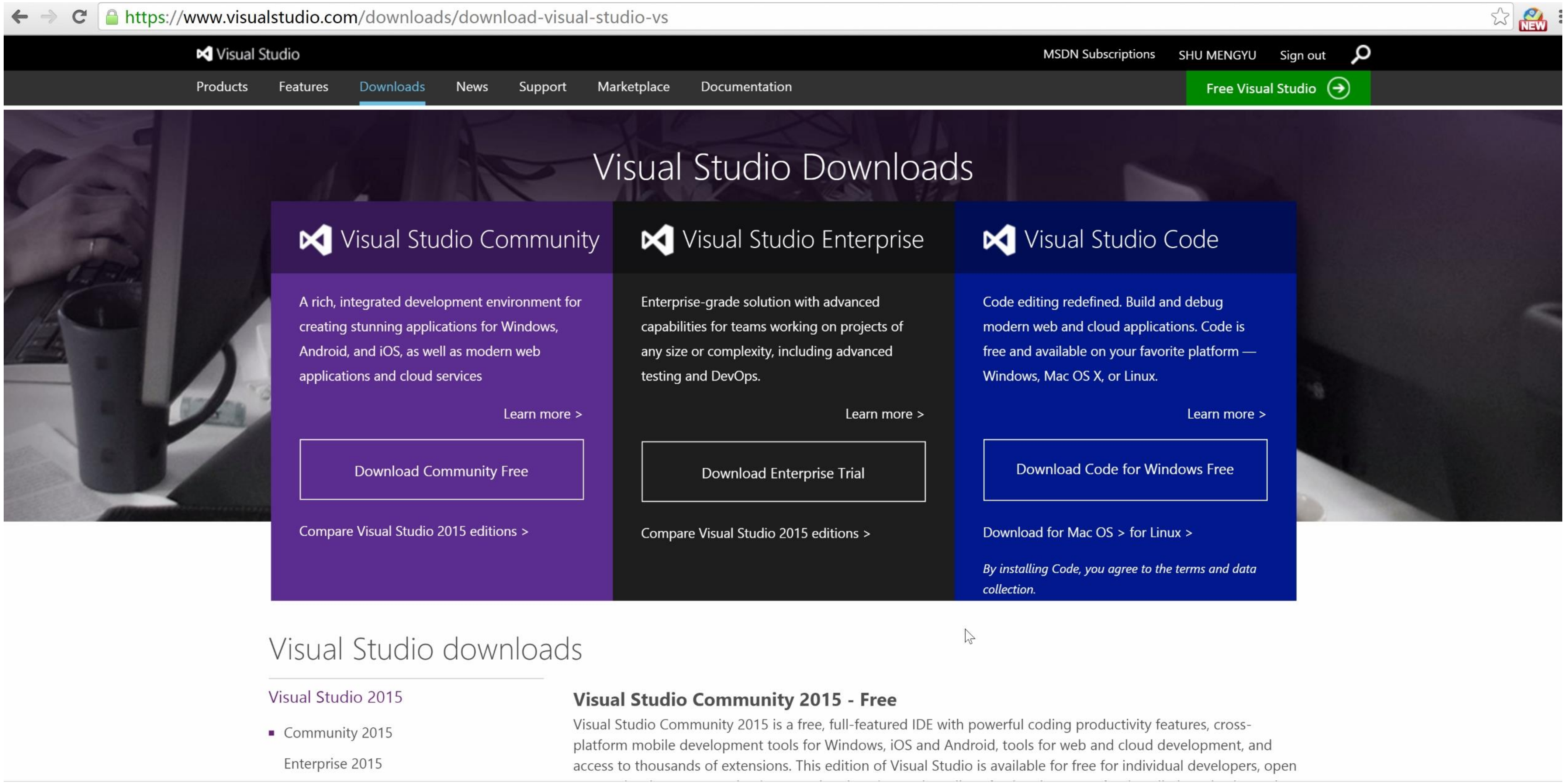
CURRENT	SharpMap 1.1
DATE	Tue Feb 11, 2014 at 5:00 PM
STATUS	Stable
DOWNLOADS	27,951
RATING	★★★★½ 7 ratings

※ ***<u>Microsoft Visual Studio</u>***

- Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It is used to develop computer programs for Microsoft Windows, as well as web sites, web applications and web services. It can produce both native code and managed code.

How to download the Visual Studio

- https://www.visualstudio.com/en-us/dn469161



https://www.visualstudio.com/downloads/download-visual-studio-vs

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Visual Studio 2015

- Community 2015

Enterprise 2015

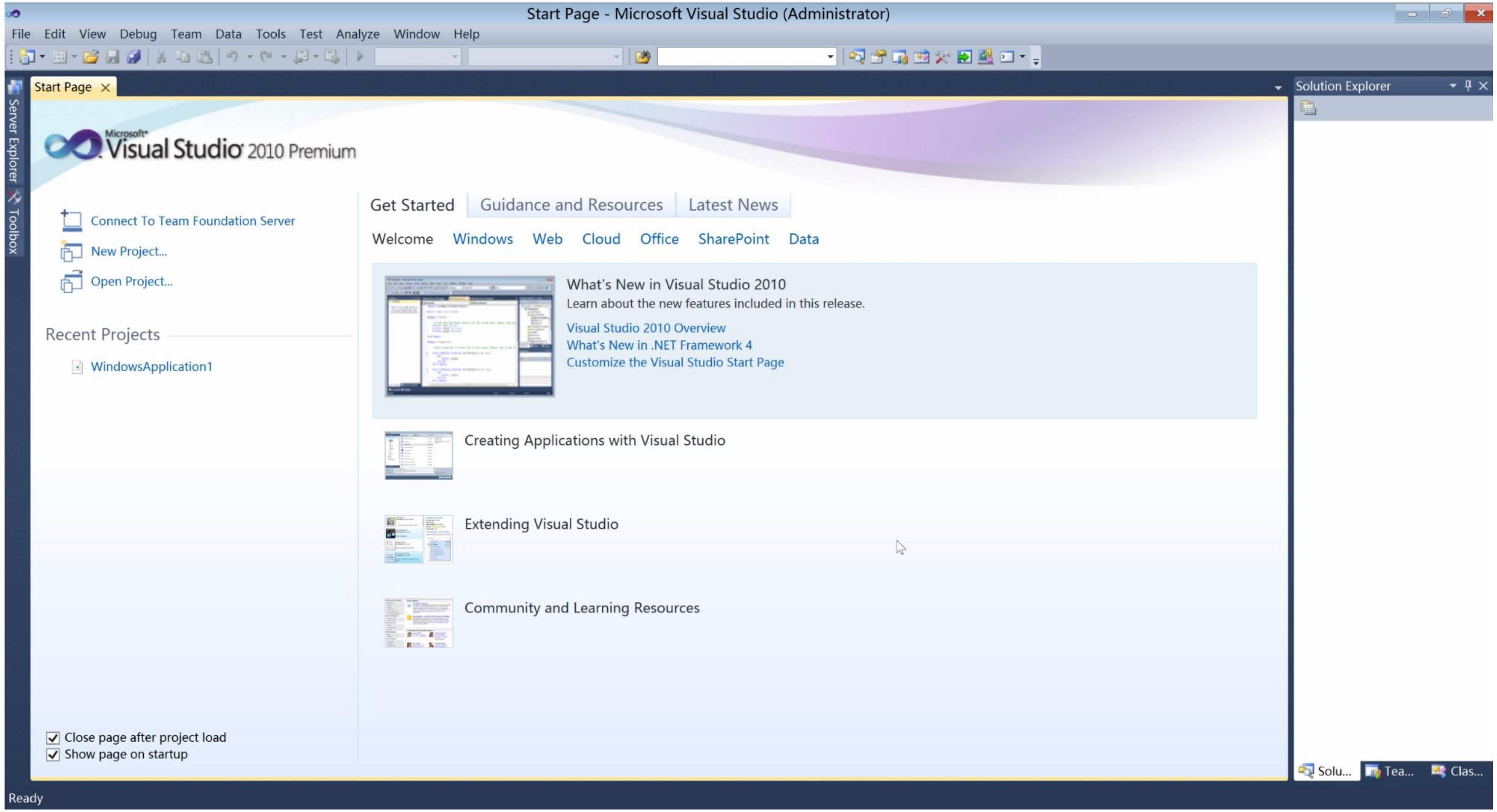
Visual Studio Community 2015 - Free

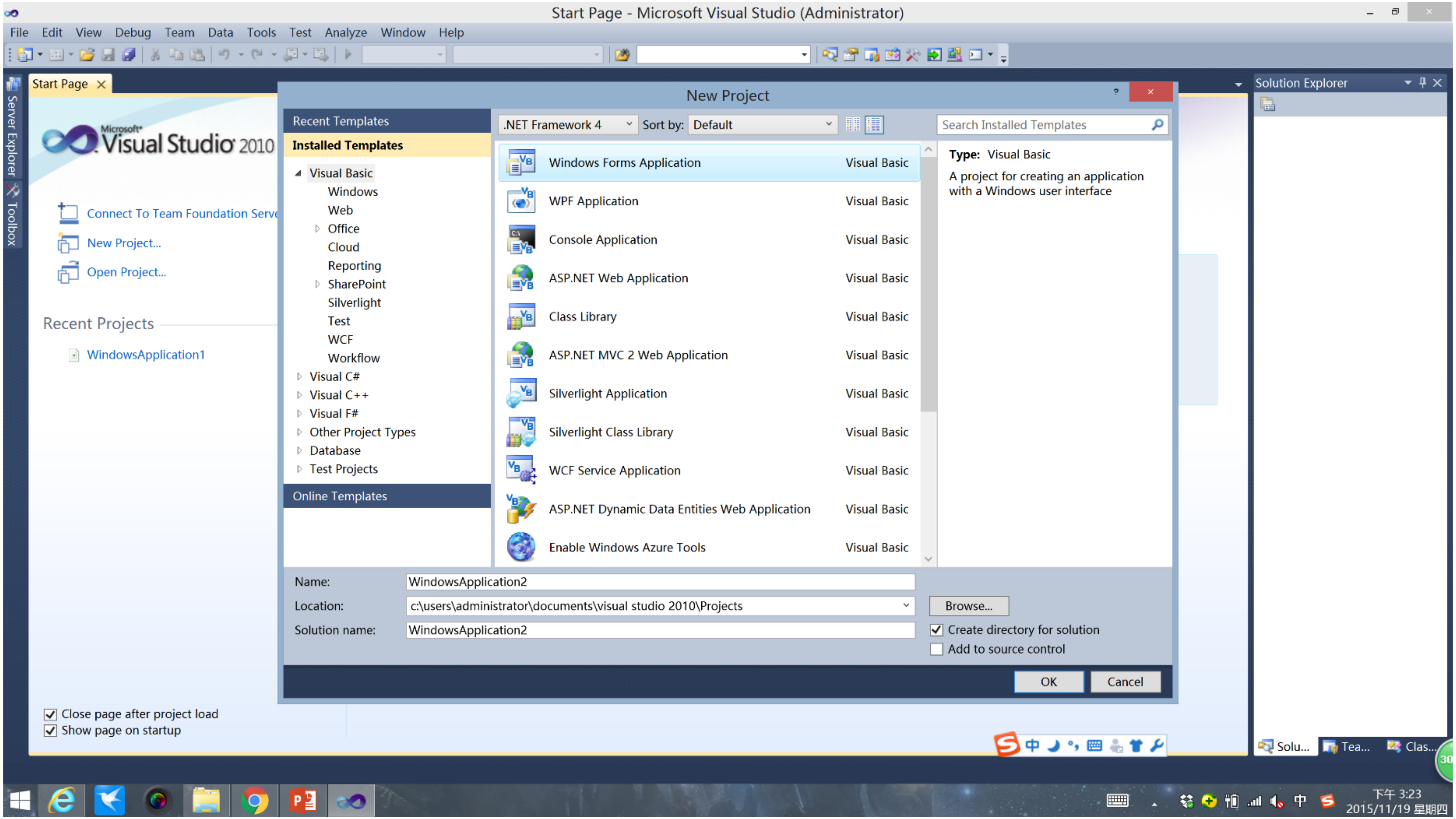
Visual Studio Community 2015 is a free, full-featured IDE with powerful coding productivity features, cross-platform mobile development tools for Windows, iOS and Android, tools for web and cloud development, and access to thousands of extensions. This edition of Visual Studio is available for free for individual developers, open

Creating a Form with a MapControl

In the step we will add a layer to the mapcontrol created in the first step .

- 1. Start Visual Studio and create a new Windows Application


Start Page - Microsoft Visual Studio (Administrator)
File Edit View Debug Team Data Tools Test Analyze Window Help
Start Page
Solution Explorer
Server Explorer
Toolbox
Microsoft Visual Studio 2010 Premium
Connect To Team Foundation Server
New Project...
Open Project...
Recent Projects
WindowsApplication1
Get Started
Guidance and Resources
Latest News
Welcome
Windows
Web
Cloud
Office
SharePoint
Data
What's New in Visual Studio 2010
Learn about the new features included in this release.
Visual Studio 2010 Overview
What's New in .NET Framework 4
Customize the Visual Studio Start Page
Creating Applications with Visual Studio
Extending Visual Studio
Community and Learning Resources
Close page after project load
Show page on startup
Solu...
Tea...
Clas...
Ready



New Project

.NET Framework 4 Sort by: Default

- Visual Basic
  - Windows
  - Web
  - Office
  - Cloud
  - Reporting
  - SharePoint
  - Silverlight
  - Test
  - WCF
  - Workflow
- Visual C#
- Visual C++
- Visual F#
- Other Project Types
- Database
- Test Projects

Windows Forms Application	Visual Basic
WPF Application	Visual Basic
Console Application	Visual Basic
ASP.NET Web Application	Visual Basic
Class Library	Visual Basic
ASP.NET MVC 2 Web Application	Visual Basic
Silverlight Application	Visual Basic
Silverlight Class Library	Visual Basic
WCF Service Application	Visual Basic
ASP.NET Dynamic Data Entities Web Application	Visual Basic
Enable Windows Azure Tools	Visual Basic

Type: Visual Basic

A project for creating an application with a Windows user interface

Name: WindowsApplication2

Location: c:\users\administrator\documents\visual studio 2010\Projects

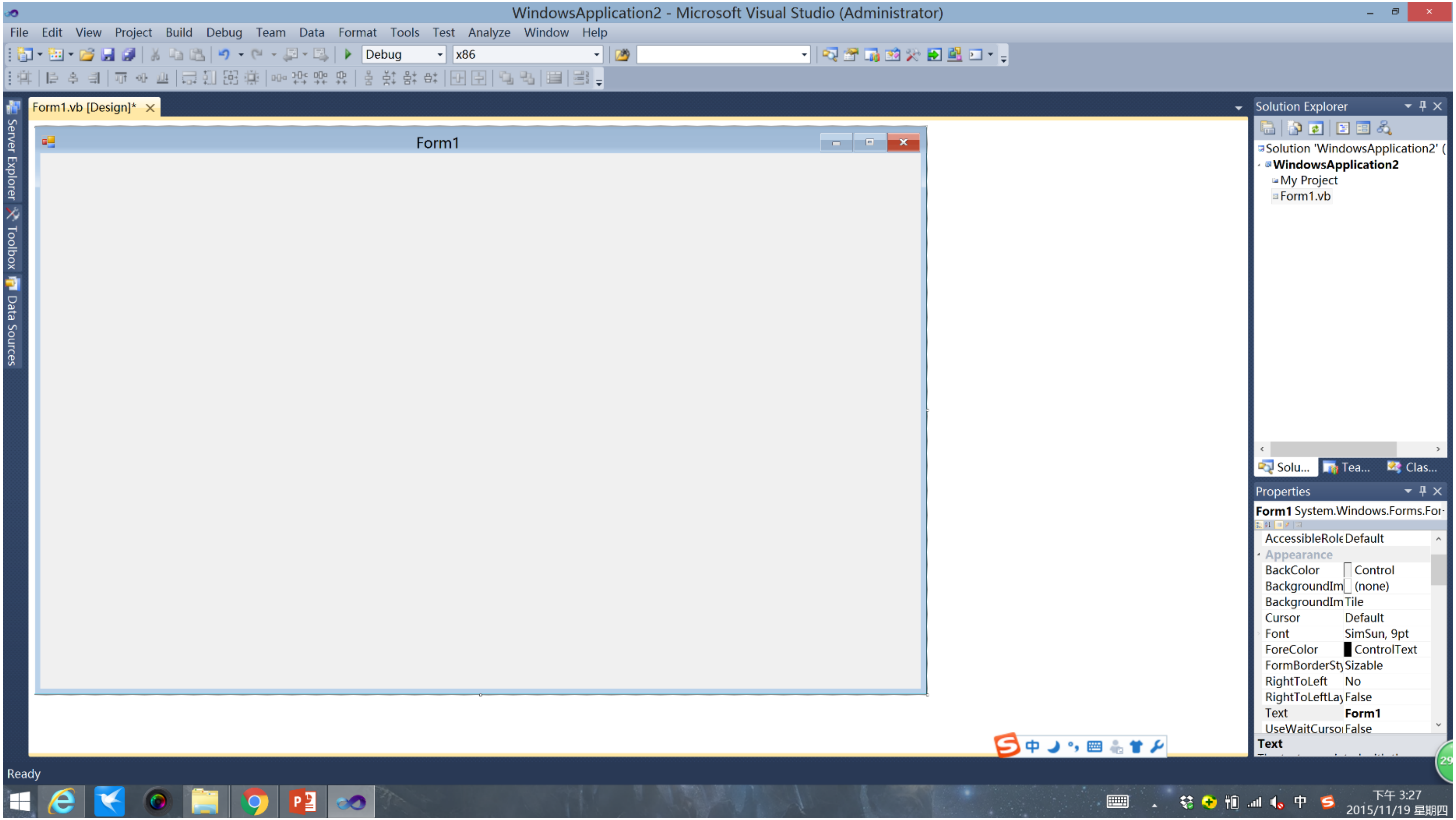
Solution name: WindowsApplication2

☑ Create directory for solution

□ Add to source control

☑ Close page after project load

☑ Show page on startup

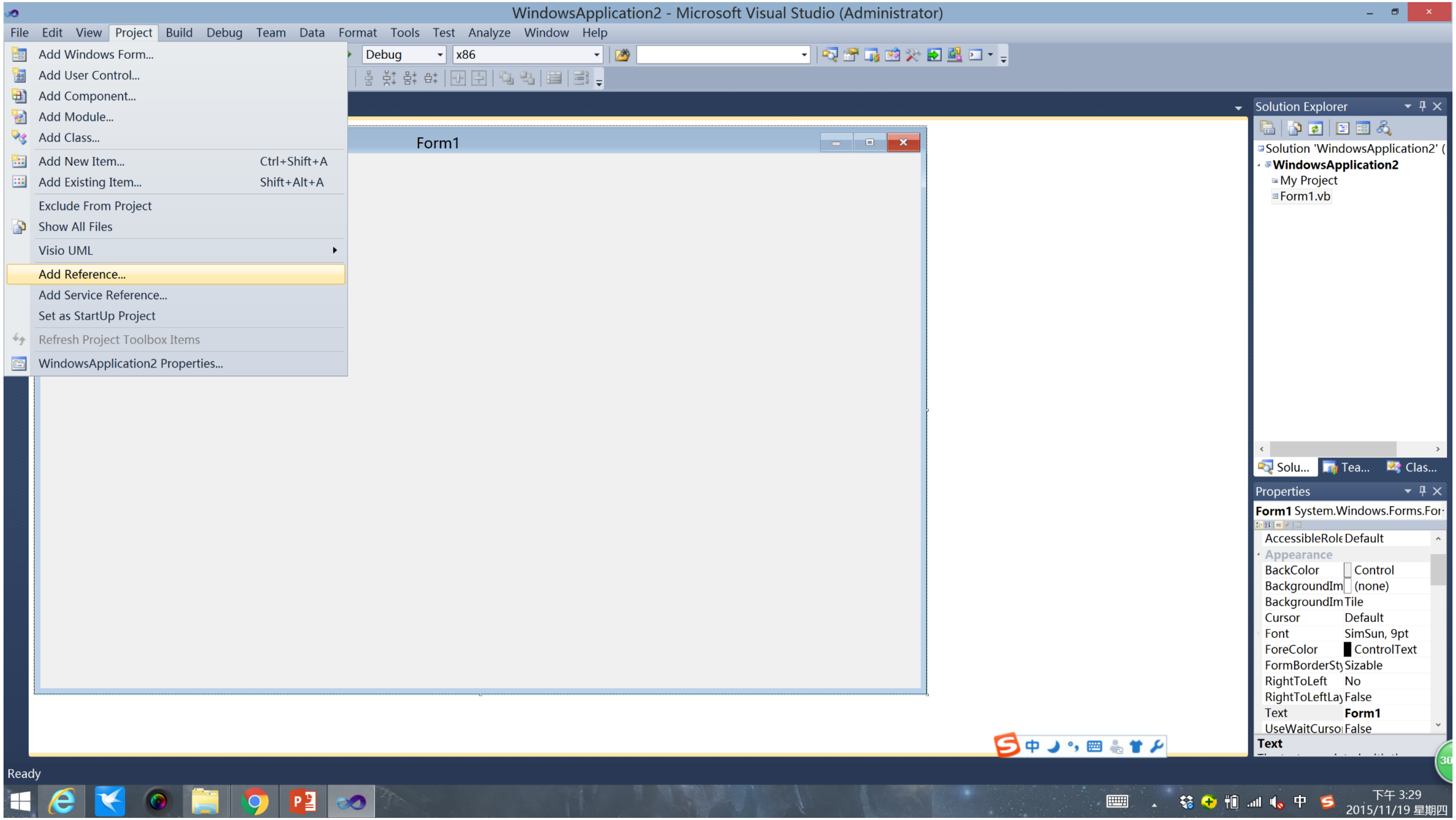


Form1 System.Windows.Forms.For

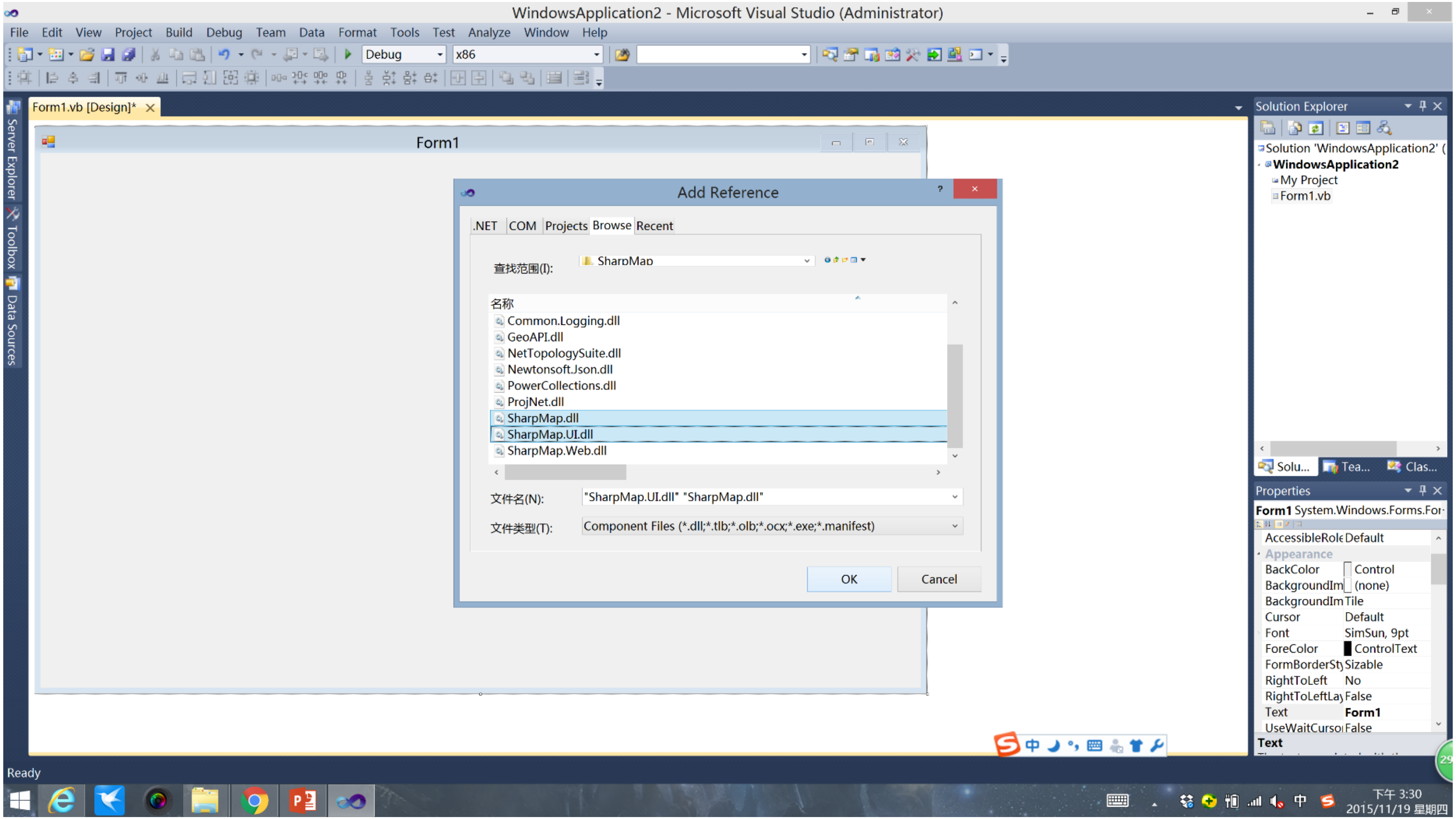
```
AccessibleRole  Default
Appearance
BackColor       Control
BackgroundIm    (none)
BackgroundIm    Tile
Cursor          Default
Font            SimSun, 9pt
ForeColor       ControlText
FormBorderSty   Sizable
RightToLeft     No
RightToLeftLa   False
Text            Form1
UseWaitCurso    False
```

Text

- 2. Add references to SharpMap and SharpMap.UI via NuGet Package Manager



AccessibleRole Default
Appearance
BackColor Control
BackgroundIm (none)
BackgroundIm Tile
Cursor Default
Font SimSun, 9pt
ForeColor ControlText
FormBorderSty Sizable
RightToLeft No
RightToLeftLa False
Text Form1
UseWaitCurso False



WindowsApplication2 - Microsoft Visual Studio (Administrator)

Add Reference

查找范围(I): SharpMap

名称
Common.Logging.dll
GeoAPI.dll
NetTopologySuite.dll
Newtonsoft.Json.dll
PowerCollections.dll
ProjNet.dll
SharpMap.dll
SharpMap.UI.dll
SharpMap.Web.dll

文件名(N): "SharpMap.UI.dll" "SharpMap.dll"

文件类型(T): Component Files (*.dll;*.tlb;*.olb;*.ocx;*.exe;*.manifest)

Solution Explorer

Solution 'WindowsApplication2' (
WindowsApplication2
My Project
Form1.vb

Properties

Form1 System.Windows.Forms.For

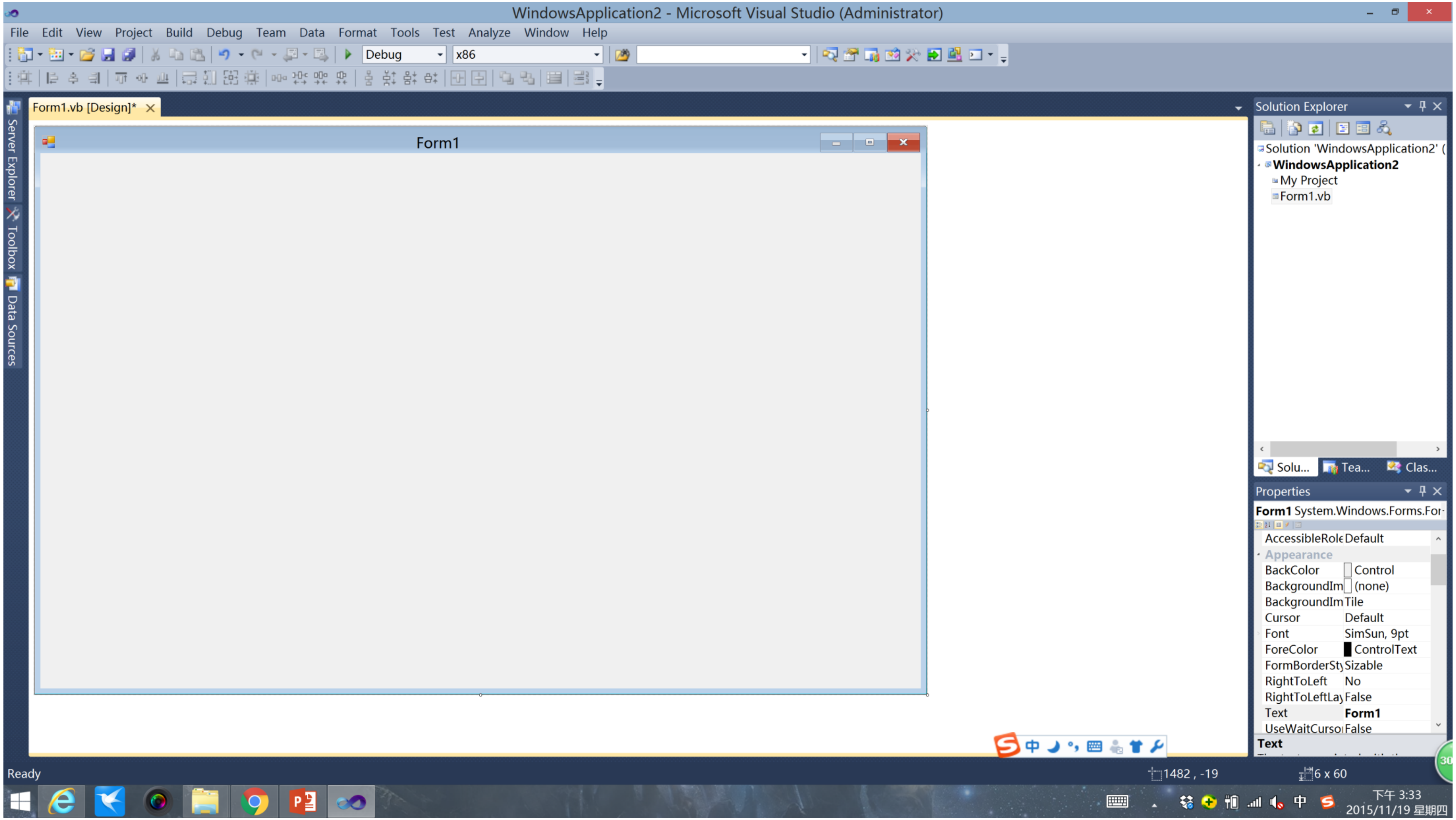
AccessibleRole	Default
Appearance	
BackColor	Control
BackgroundIm	(none)
BackgroundIm	Tile
Cursor	Default
Font	SimSun, 9pt
ForeColor	ControlText
FormBorderSty	Sizable
RightToLeft	No
RightToLeftLay	False
Text	Form1
UseWaitCursor	False

Text

Ready

下午 3:30
2015/11/19 星期四

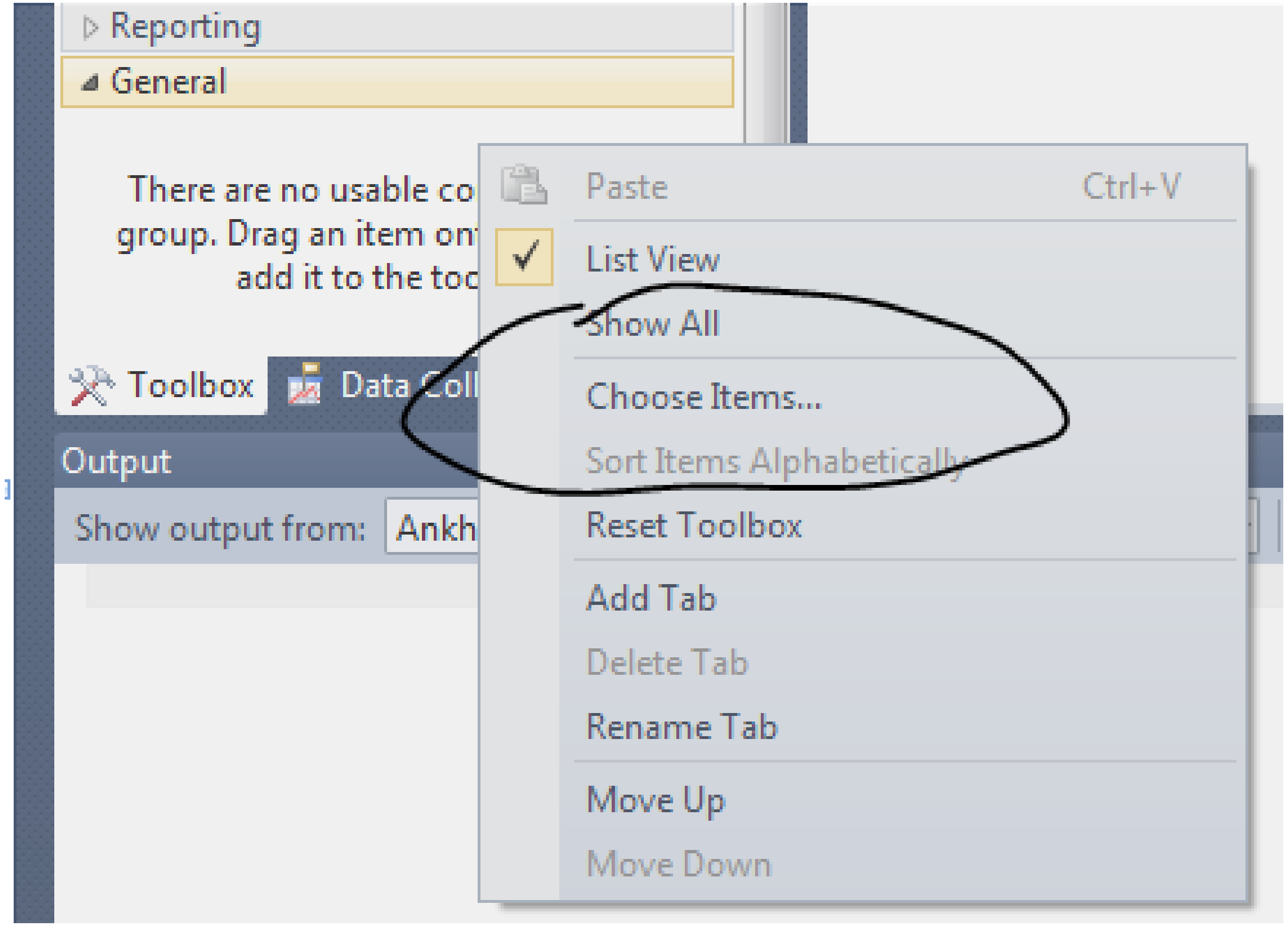
- 3. Open the designer for Form1

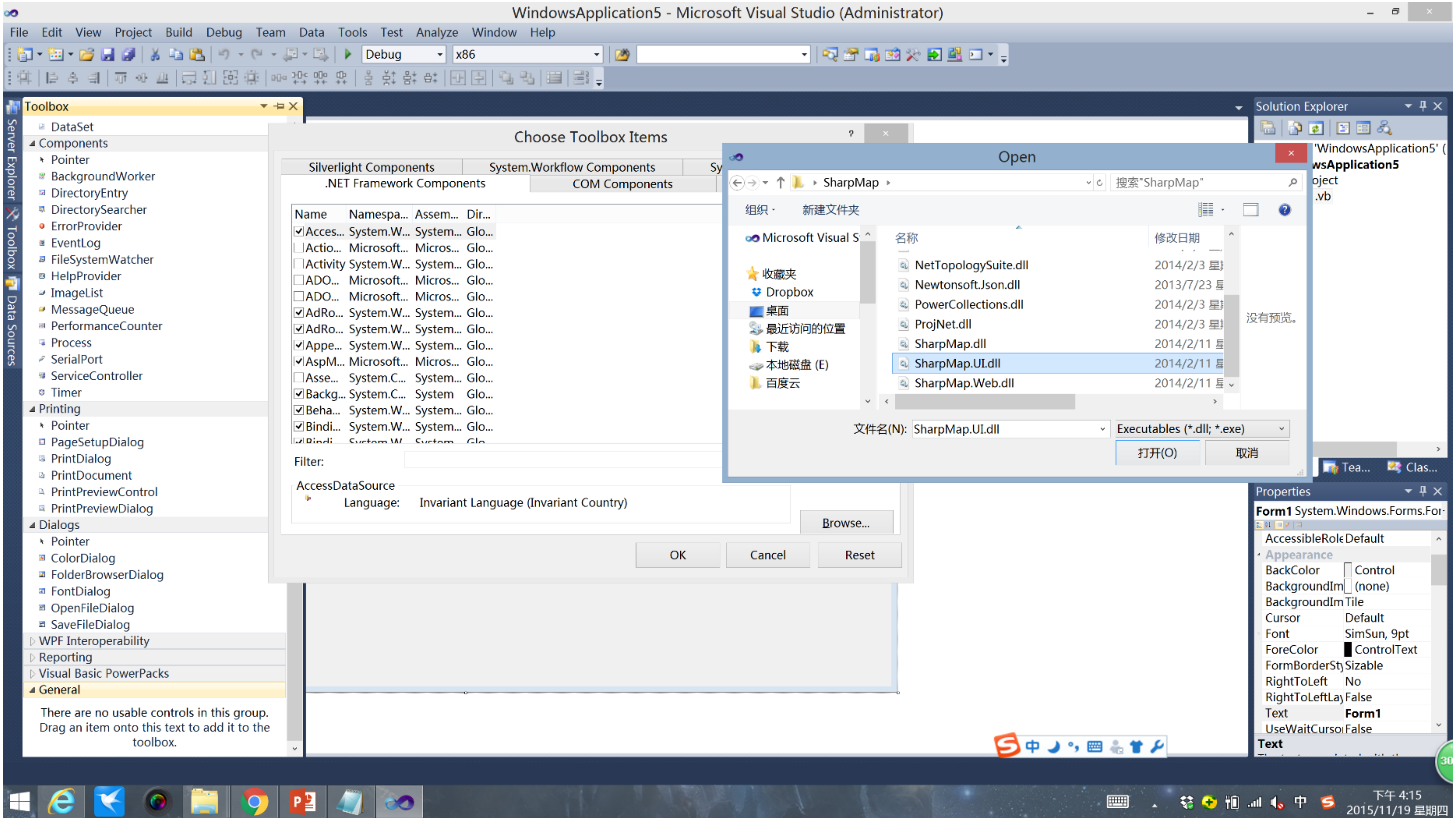

WindowsApplication2 - Microsoft Visual Studio (Administrator)
File Edit View Project Build Debug Team Data Format Tools Test Analyze Window Help
Debug
x86
Form1.vb [Design]*
Form1
Server Explorer
Toolbox
Data Sources
Solution Explorer
Solution 'WindowsApplication2' (
WindowsApplication2
My Project
Form1.vb
Solu...
Tea...
Clas...
Properties
Form1 System.Windows.Forms.For
Ready
1482 , -19
6 x 60
下午 3:33
2015/11/19 星期四

AccessibleRole	Default
Appearance	
BackColor	Control
BackgroundIm	(none)
BackgroundIm	Tile
Cursor	Default
Font	SimSun, 9pt
ForeColor	ControlText
FormBorderSty	Sizable
RightToLeft	No
RightToLeftLa	False
Text	Form1
UseWaitCurso	False

Text

- 4. In the toolbox, find the General category at the bottom and right click ans choose "Choose Items"





Name	Namespa...	Assem...	Dir...
☑ Acces...	System.W...	System...	Glo...
□ Actio...	Microsoft...	Micros...	Glo...
□ Activity	System.W...	System...	Glo...
□ ADO...	Microsoft...	Micros...	Glo...
□ ADO...	Microsoft...	Micros...	Glo...
☑ AdRo...	System.W...	System...	Glo...
☑ AdRo...	System.W...	System...	Glo...
☑ Appe...	System.W...	System...	Glo...
☑ AspM...	Microsoft...	Micros...	Glo...
□ Asse...	System.C...	System...	Glo...
☑ Backg...	System.C...	System	Glo...
☑ Beha...	System.W...	System...	Glo...
☑ Bindi...	System.W...	System...	Glo...

Filter:

AccessDataSource
Language: Invariant Language (Invariant Country)

名称	修改日期
NetTopologySuite.dll	2014/2/3 星
Newtonsoft.Json.dll	2013/7/23 星
PowerCollections.dll	2014/2/3 星
ProjNet.dll	2014/2/3 星
SharpMap.dll	2014/2/11 星
SharpMap.UI.dll	2014/2/11 星
SharpMap.Web.dll	2014/2/11 星

文件名(N): SharpMap.UI.dll
Executables (*.dll; *.exe)

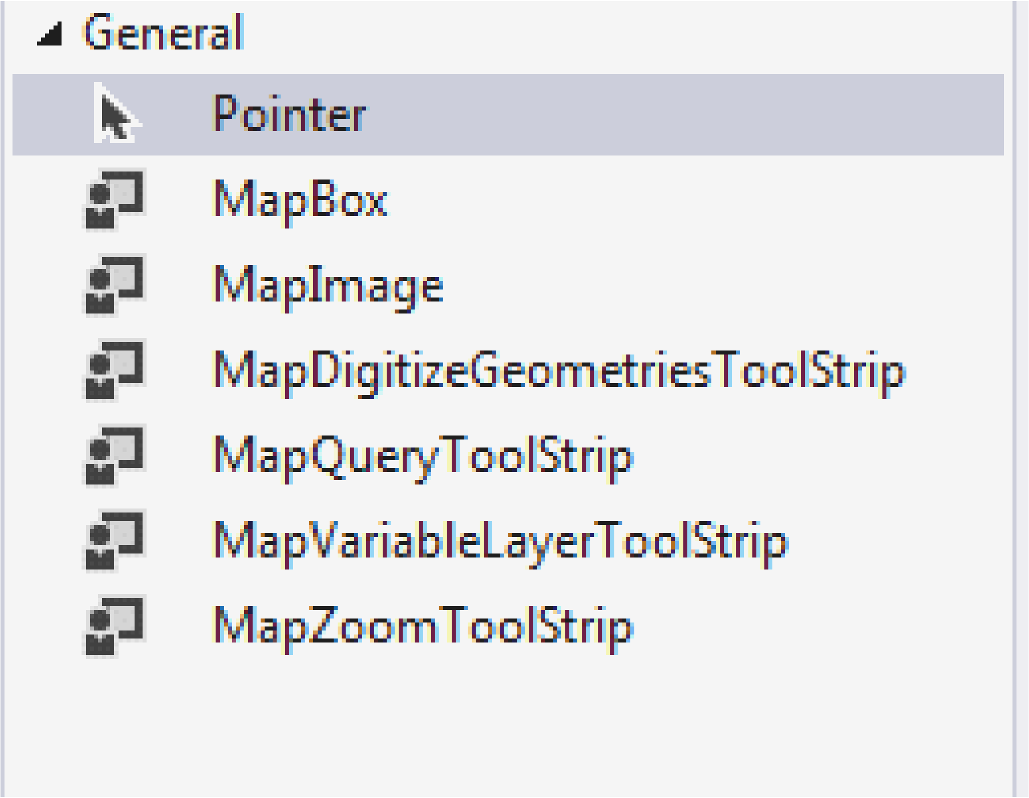
Form1 System.Windows.Forms.For

AccessibleRole	Default
Appearance	
BackColor	Control
BackgroundIm	(none)
BackgroundIm	Tile
Cursor	Default
Font	SimSun, 9pt
ForeColor	ControlText
FormBorderSty	Sizable
RightToLeft	No
RightToLeftLay	False
Text	Form1
UseWaitCursor	False

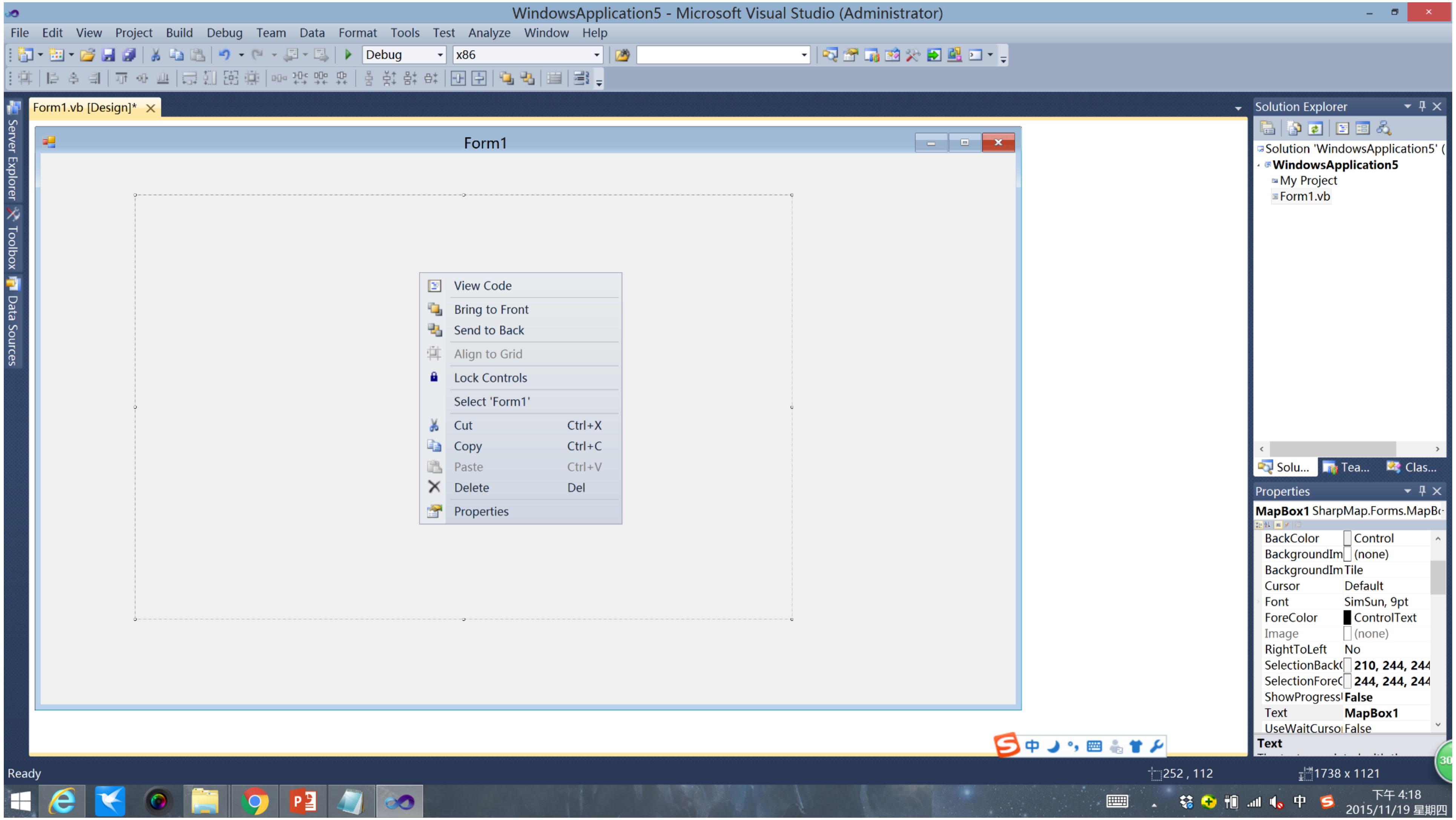
Text

- 5. Browse to SharpMap.UI.dll and add that one (its located in the solution-file directory under packages/SharpMap.UI)
- 6. Click OK

You should now see the sharpmap controls in the general category



7. Drag the MapBox control into your form and you should now have a Map on your form

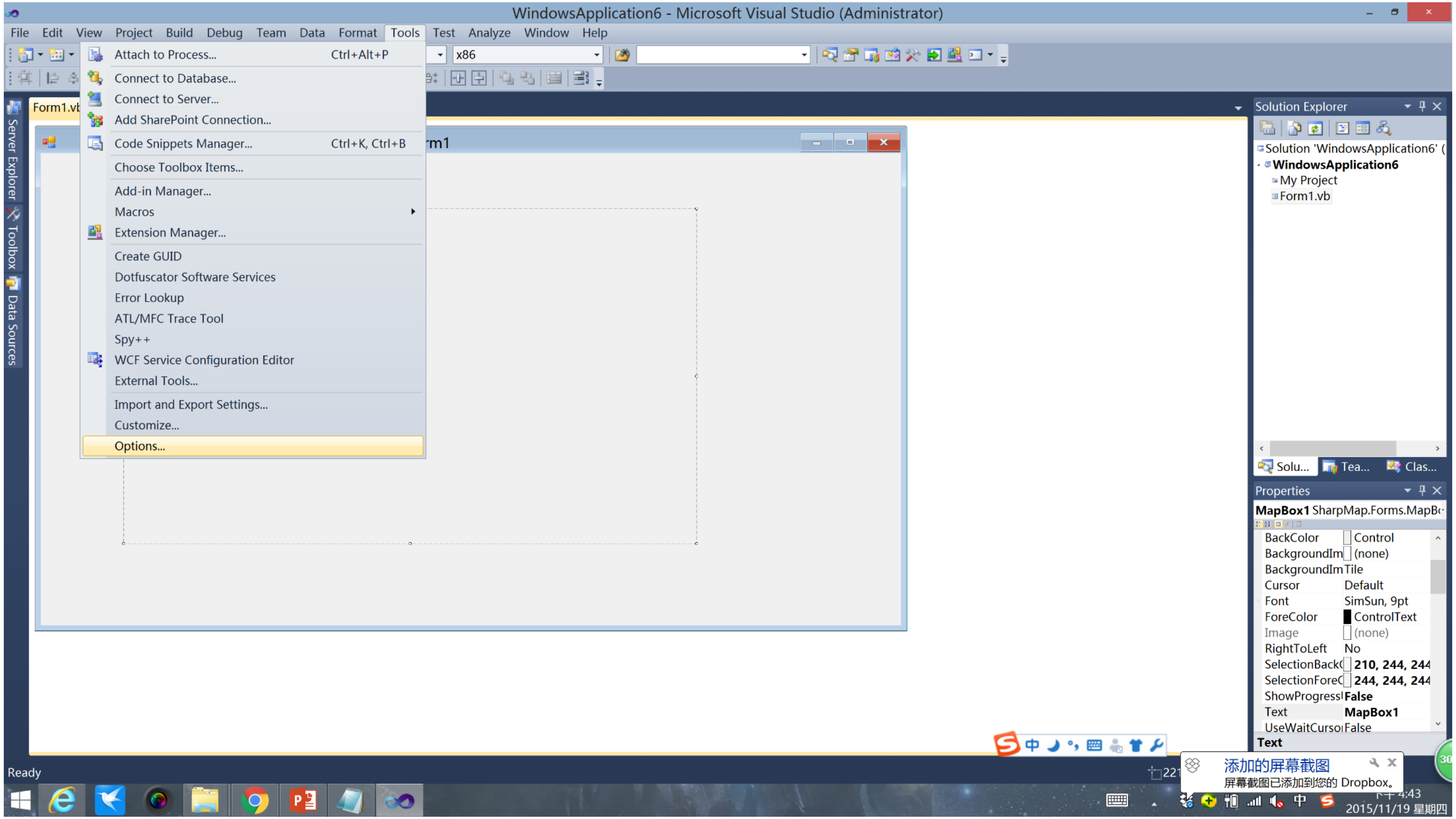


MapBox1 SharpMap.Forms.MapB

BackColor	Control
BackgroundIm	(none)
BackgroundIm	Tile
Cursor	Default
Font	SimSun, 9pt
ForeColor	ControlText
Image	(none)
RightToLeft	No
SelectionBack(	210, 244, 244
SelectionFore(	244, 244, 244
ShowProgress	False
Text	MapBox1
UseWaitCurso	False

Text

- 8. Select the control and in the properties dialog. Change the BackgroundColor to White

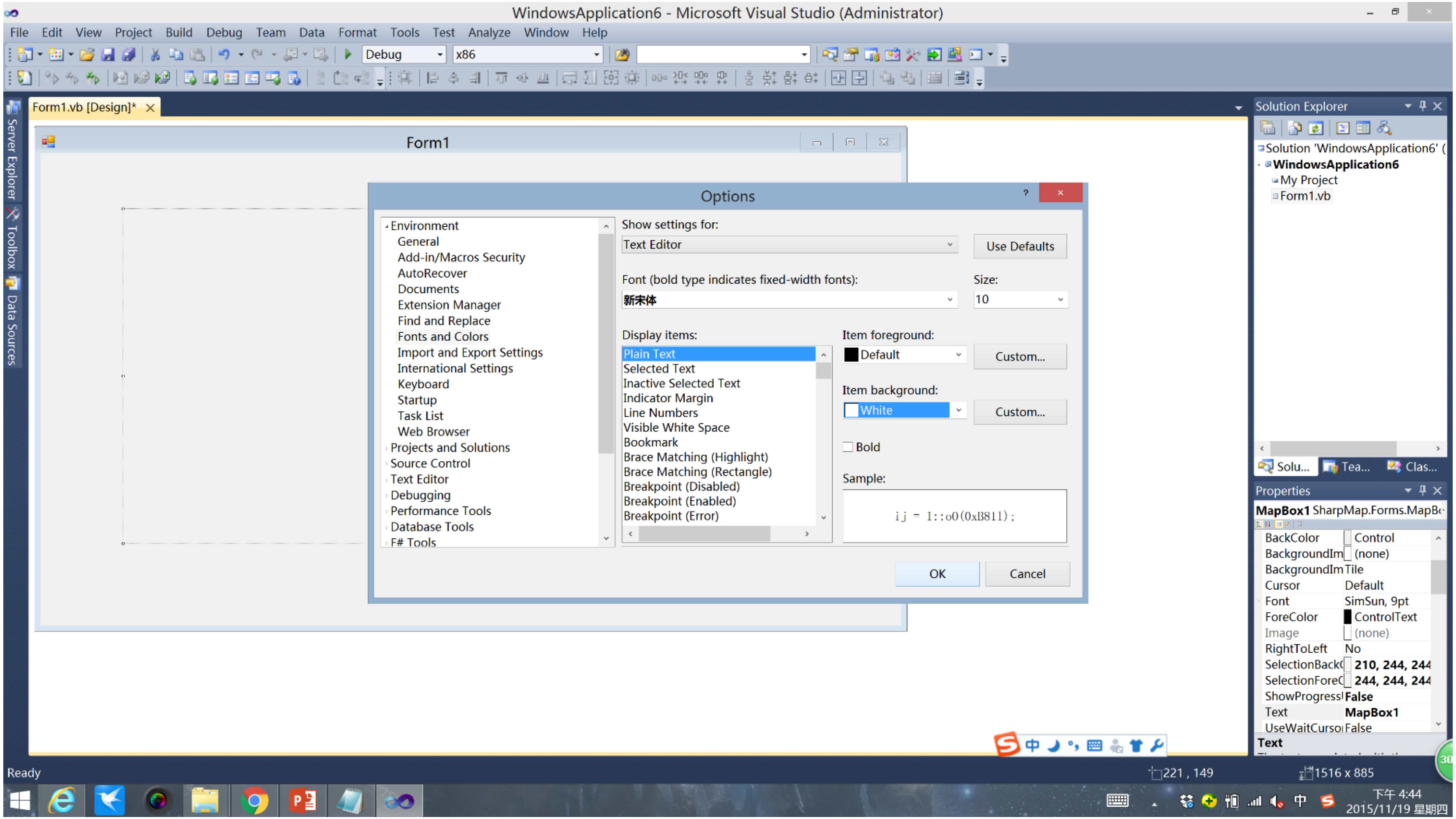

WindowsApplication6 - Microsoft Visual Studio (Administrator)
File Edit View Project Build Debug Team Data Format Tools Test Analyze Window Help
Attach to Process... Ctrl+Alt+P
Connect to Database...
Connect to Server...
Add SharePoint Connection...
Code Snippets Manager... Ctrl+K, Ctrl+B
Choose Toolbox Items...
Add-in Manager...
Macros
Extension Manager...
Create GUID
Dotfuscator Software Services
Error Lookup
ATL/MFC Trace Tool
Spy++
WCF Service Configuration Editor
External Tools...
Import and Export Settings...
Customize...
Options...
x86
Form1.vb
rm1
Server Explorer
Toolbox
Data Sources
Solution Explorer
Solution 'WindowsApplication6' (
WindowsApplication6
My Project
Form1.vb
Solu...
Tea...
Clas...
Properties
Ready
2015/11/19 星期四

MapBox1 SharpMap.Forms.MapBo

BackColor	Control
BackgroundIm	(none)
BackgroundIm	Tile
Cursor	Default
Font	SimSun, 9pt
ForeColor	ControlText
Image	(none)
RightToLeft	No
SelectionBack	210, 244, 244
SelectionFore	244, 244, 244
ShowProgress	False
Text	MapBox1
UseWaitCurso	False

Text

添加的屏幕截图
屏幕截图已添加到您的 Dropbox。



Options

- Environment
  - General
  - Add-in/Macros Security
  - AutoRecover
  - Documents
  - Extension Manager
  - Find and Replace
  - Fonts and Colors
  - Import and Export Settings
  - International Settings
  - Keyboard
  - Startup
  - Task List
  - Web Browser
- Projects and Solutions
- Source Control
- Text Editor
- Debugging
- Performance Tools
- Database Tools
- F# Tools

Show settings for: Text Editor

Font (bold type indicates fixed-width fonts): **新宋体**

Size: 10

Display items:

- Plain Text
- Selected Text
- Inactive Selected Text
- Indicator Margin
- Line Numbers
- Visible White Space
- Bookmark
- Brace Matching (Highlight)
- Brace Matching (Rectangle)
- Breakpoint (Disabled)
- Breakpoint (Enabled)
- Breakpoint (Error)

Item foreground: ■ Default

Item background: □ White

□ Bold

Sample:

```
ij = I::o0(0xB81l);
```

Solution Explorer

- Solution 'WindowsApplication6' (
  - **WindowsApplication6**
    - My Project
    - Form1.vb

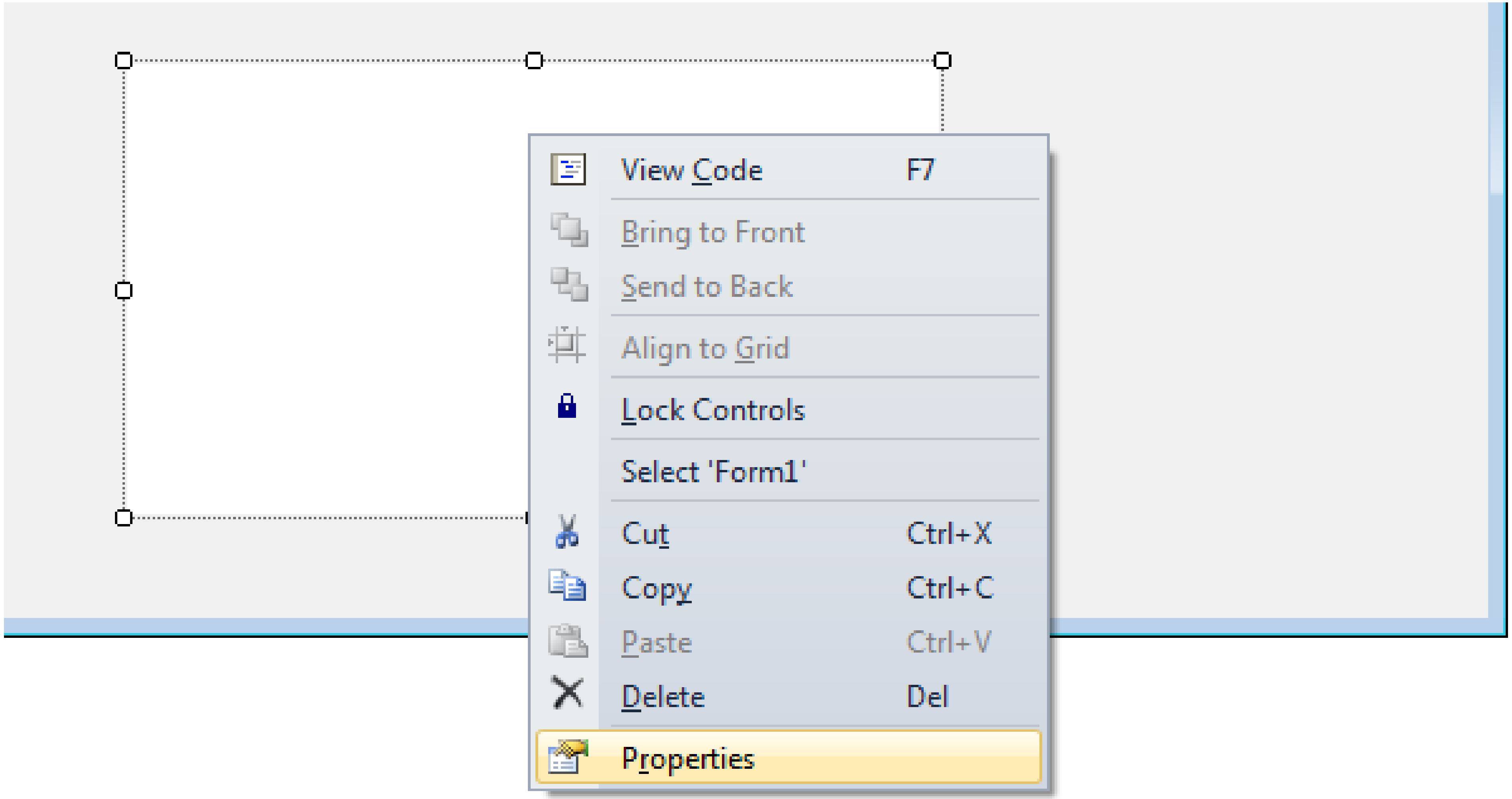
Properties

MapBox1 SharpMap.Forms.MapBo

BackColor	□ Control
BackgroundIm	□ (none)
BackgroundIm	Tile
Cursor	Default
Font	SimSun, 9pt
ForeColor	■ ControlText
Image	□ (none)
RightToLeft	No
SelectionBack(	□ **210, 244, 244**
SelectionFore(	□ **244, 244, 244**
ShowProgress	**False**
Text	**MapBox1**
UseWaitCurso	False

Text

8. Select the control and in the properties dialog. Change the BackgroundColor to White

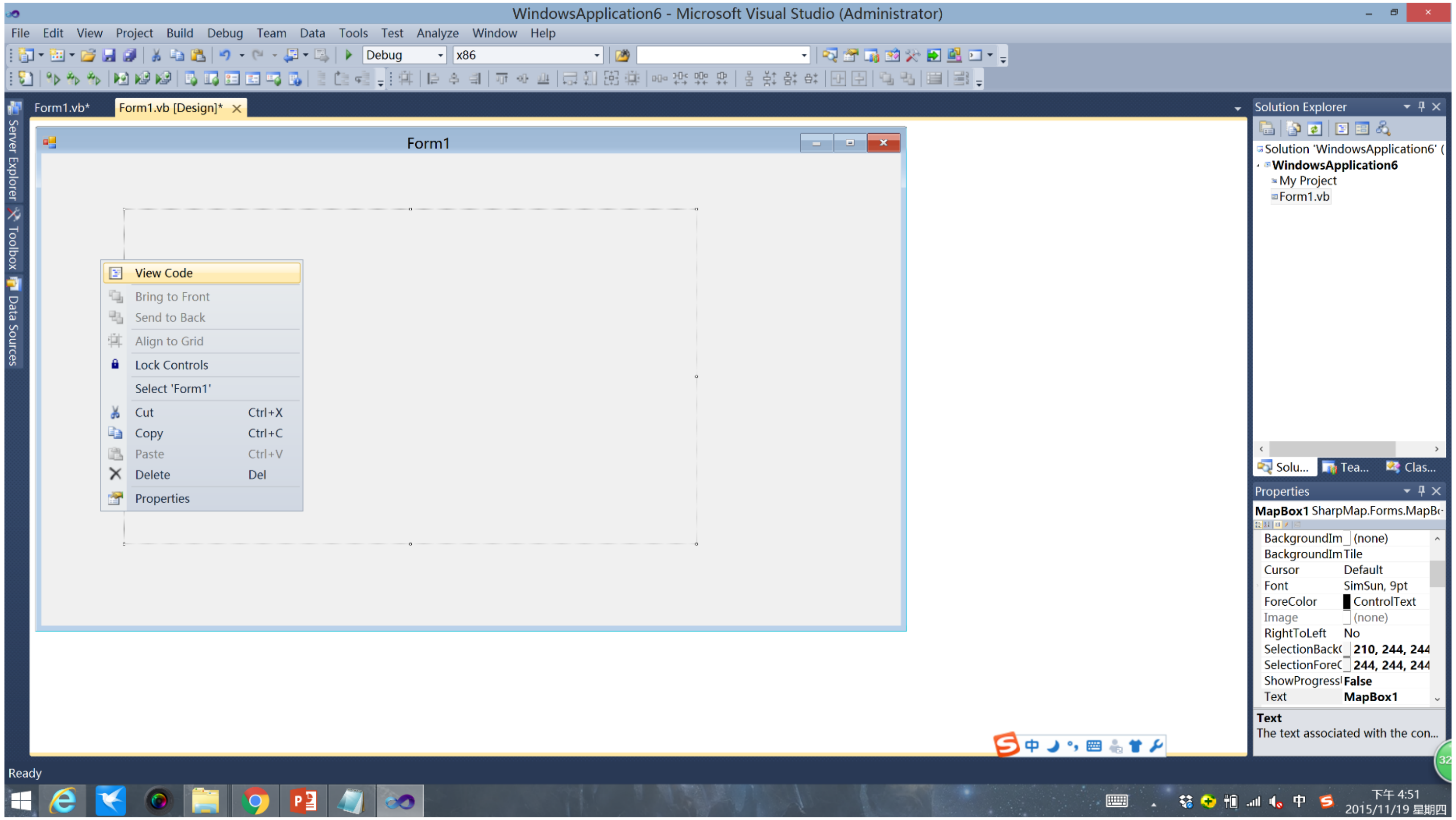


Example 1: Adding 1 layer to the Map

In the step you will add a layer to the mapcontrol created in the first step

1. Add a reference to SharpMap.dll if it's not already added

2. Open the code for the form by right-clicking the form and choose "View Code"



MapBox1 SharpMap.Forms.MapB

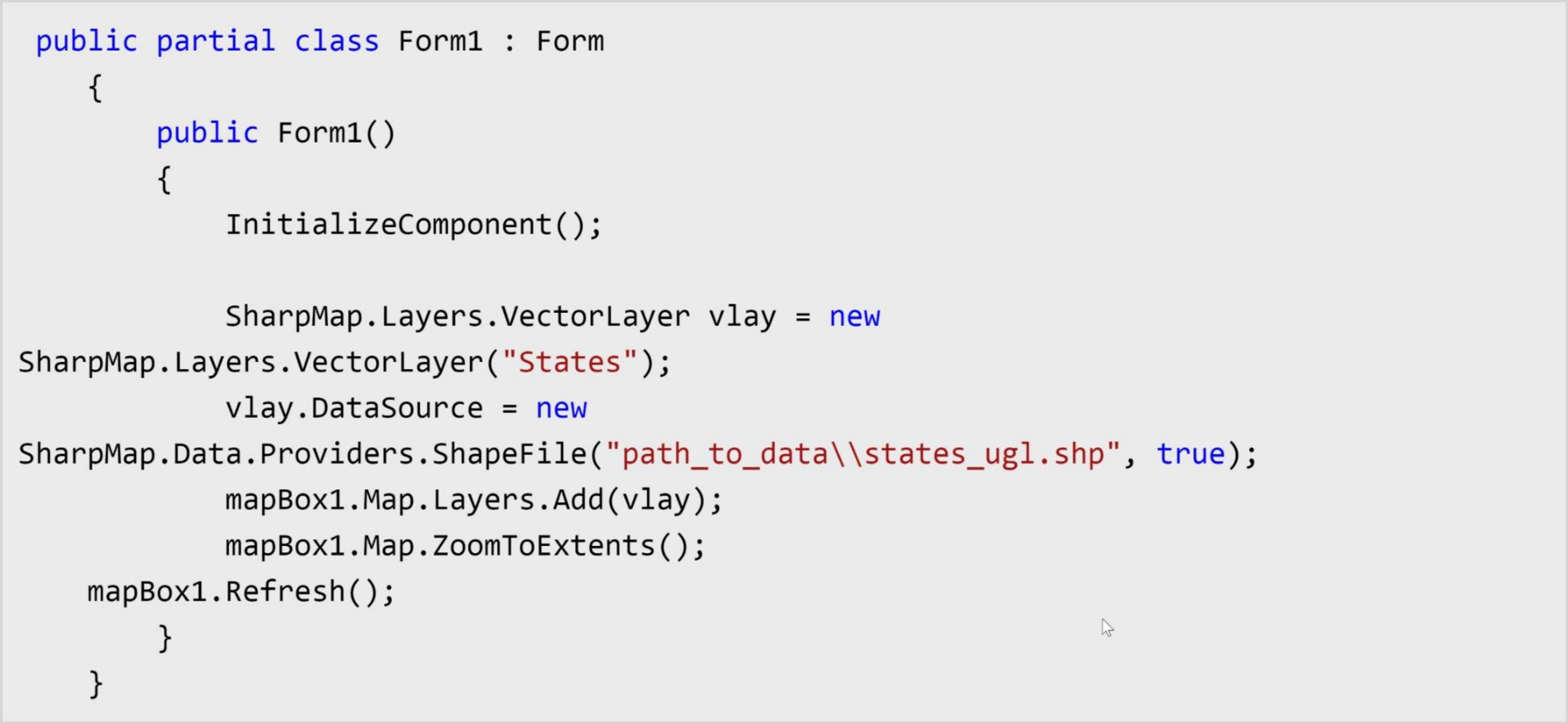
BackgroundIm	(none)
BackgroundIm	Tile
Cursor	Default
Font	SimSun, 9pt
ForeColor	ControlText
Image	(none)
RightToLeft	No
SelectionBack	210, 244, 244
SelectionFore	244, 244, 244
ShowProgress	False
Text	MapBox1

Text
The text associated with the con...

Example 1: Adding 1 layer to the Map

- 3. Add the following code to the constructor of the form

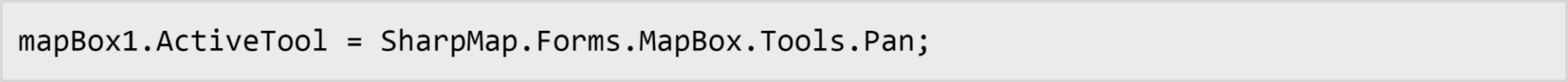
(The data: states_ugl.shp is located in the zip on the tutorial overview page)



```
 public partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();

            SharpMap.Layers.VectorLayer vlay = new
SharpMap.Layers.VectorLayer("States");
            vlay.DataSource = new
SharpMap.Data.Providers.ShapeFile("path_to_data\\states_ugl.shp", true);
            mapBox1.Map.Layers.Add(vlay);
            mapBox1.Map.ZoomToExtents();
    mapBox1.Refresh();
        }
    }
```

Example 1: Adding 1 layer to the Map

- 4. Run the application and you should now see the US states in the map
- 5. Set the Active tool to Pan



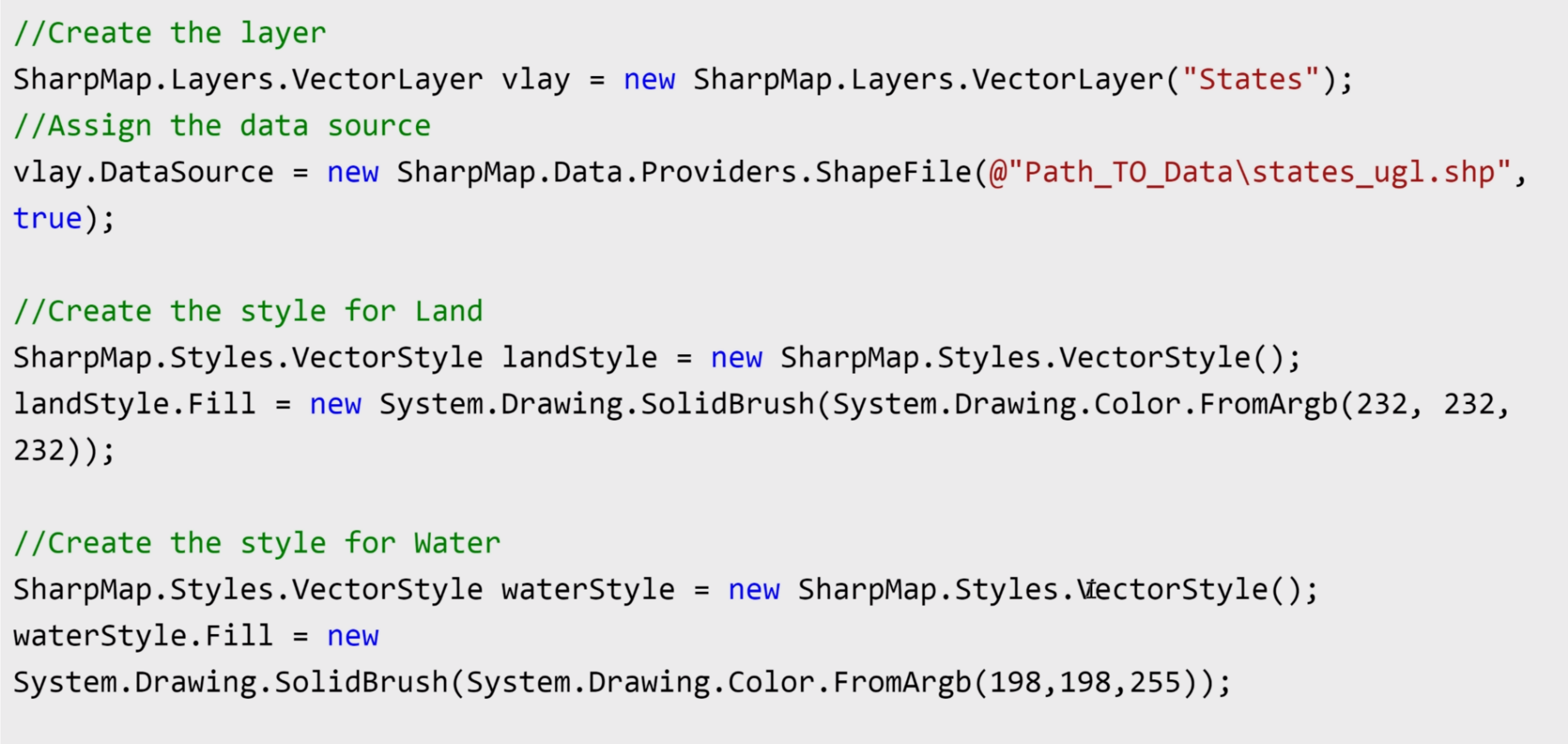
```
mapBox1.ActiveTool = SharpMap.Forms.MapBox.Tools.Pan;
```

6. Run the application again and you should now be able to pan and zoom (by scrolling the mouse-wheel) in the map

Example 2: Styling the layer with UniqueValueRenderer

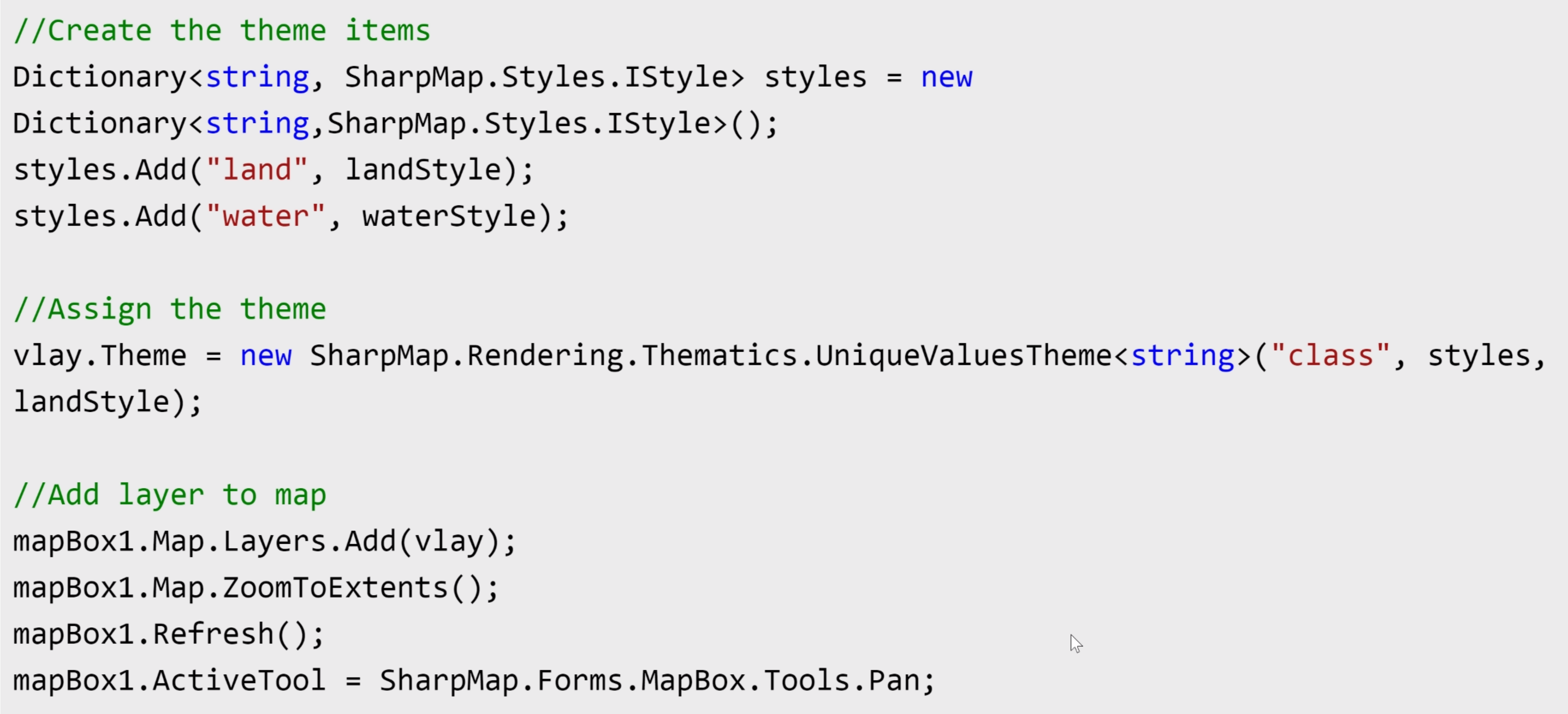
In this step we will style the map with different color dependent on attribute value

Update your maploading code and assign a Theme (UniqueValuesTheme)



```
//Create the layer
SharpMap.Layers.VectorLayer vlay = new SharpMap.Layers.VectorLayer("States");
//Assign the data source
vlay.DataSource = new SharpMap.Data.Providers.ShapeFile(@"Path_TO_Data\states_ugl.shp",
true);

//Create the style for Land
SharpMap.Styles.VectorStyle landStyle = new SharpMap.Styles.VectorStyle();
landStyle.Fill = new System.Drawing.SolidBrush(System.Drawing.Color.FromArgb(232, 232,
232));

//Create the style for Water
SharpMap.Styles.VectorStyle waterStyle = new SharpMap.Styles.VectorStyle();
waterStyle.Fill = new
System.Drawing.SolidBrush(System.Drawing.Color.FromArgb(198,198,255));
```

Example 2: Styling the layer with UniqueValueRenderer

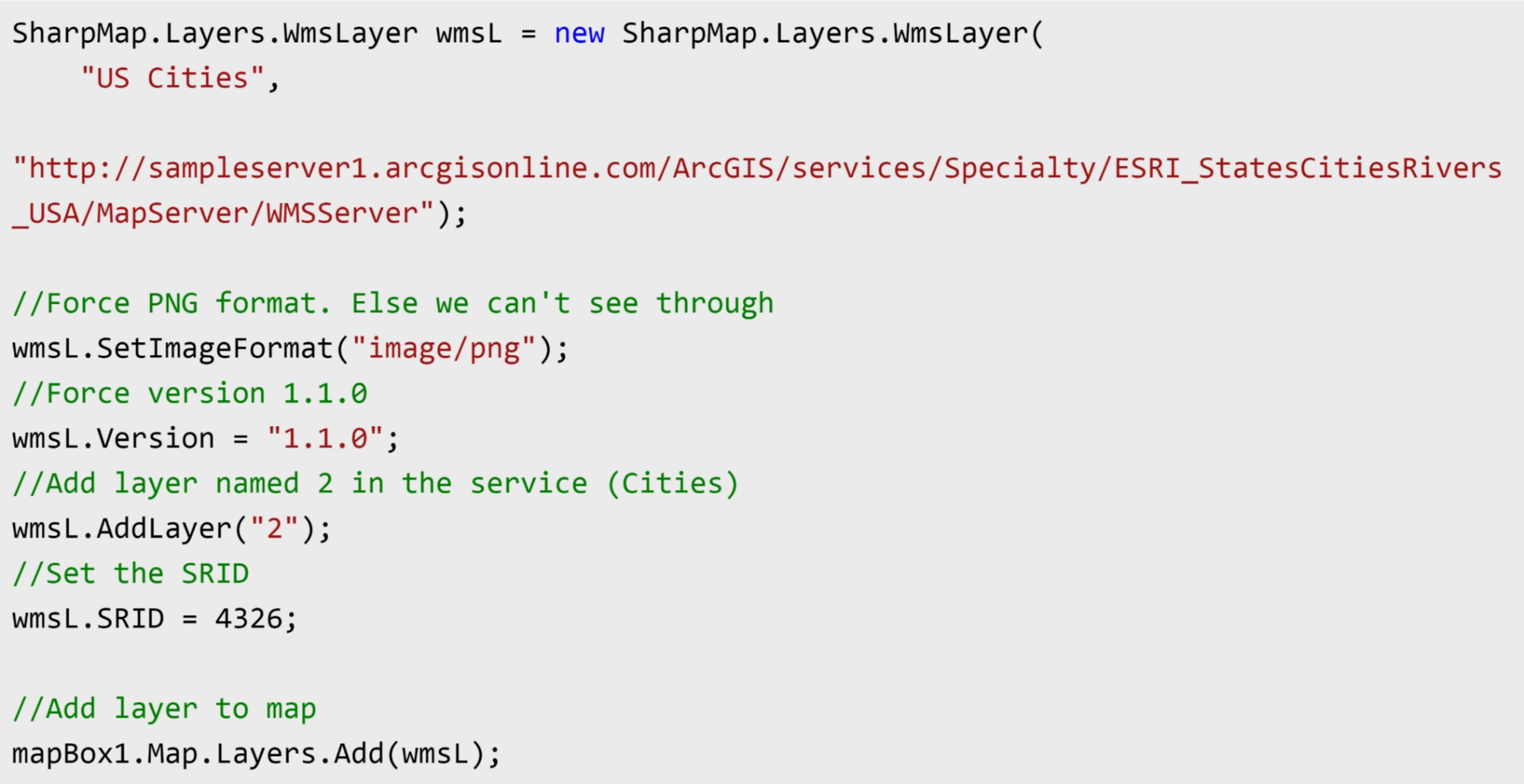


```
//Create the theme items
Dictionary<string, SharpMap.Styles.IStyle> styles = new
Dictionary<string,SharpMap.Styles.IStyle>();
styles.Add("land", landStyle);
styles.Add("water", waterStyle);

//Assign the theme
vlay.Theme = new SharpMap.Rendering.Thematics.UniqueValuesTheme<string>("class", styles,
landStyle);

//Add layer to map
mapBox1.Map.Layers.Add(vlay);
mapBox1.Map.ZoomToExtents();
mapBox1.Refresh();
mapBox1.ActiveTool = SharpMap.Forms.MapBox.Tools.Pan;
```

Example 2: Styling the layer with UniqueValueRenderer

- We can now have a map that looks something like this

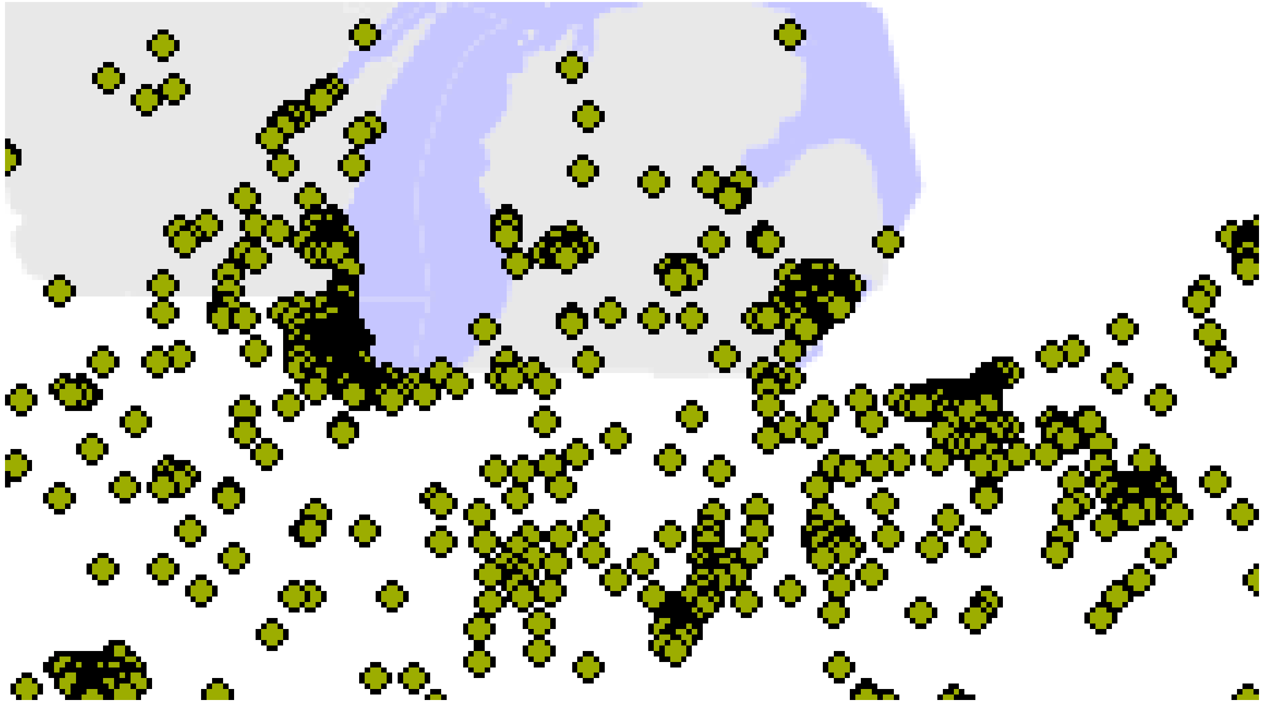
Example 3: Adding a WMS-layer to the map



```
SharpMap.Layers.WmsLayer wmsL = new SharpMap.Layers.WmsLayer(
    "US Cities",

"http://sampleserver1.arcgisonline.com/ArcGIS/services/Specialty/ESRI_StatesCitiesRivers_USA/MapServer/WMSServer");

//Force PNG format. Else we can't see through
wmsL.SetImageFormat("image/png");
//Force version 1.1.0
wmsL.Version = "1.1.0";
//Add layer named 2 in the service (Cities)
wmsL.AddLayer("2");
//Set the SRID
wmsL.SRID = 4326;

//Add layer to map
mapBox1.Map.Layers.Add(wmsL);
```

Example 3: Adding a WMS-layer to the map

- now we have a Map with cities shown on them



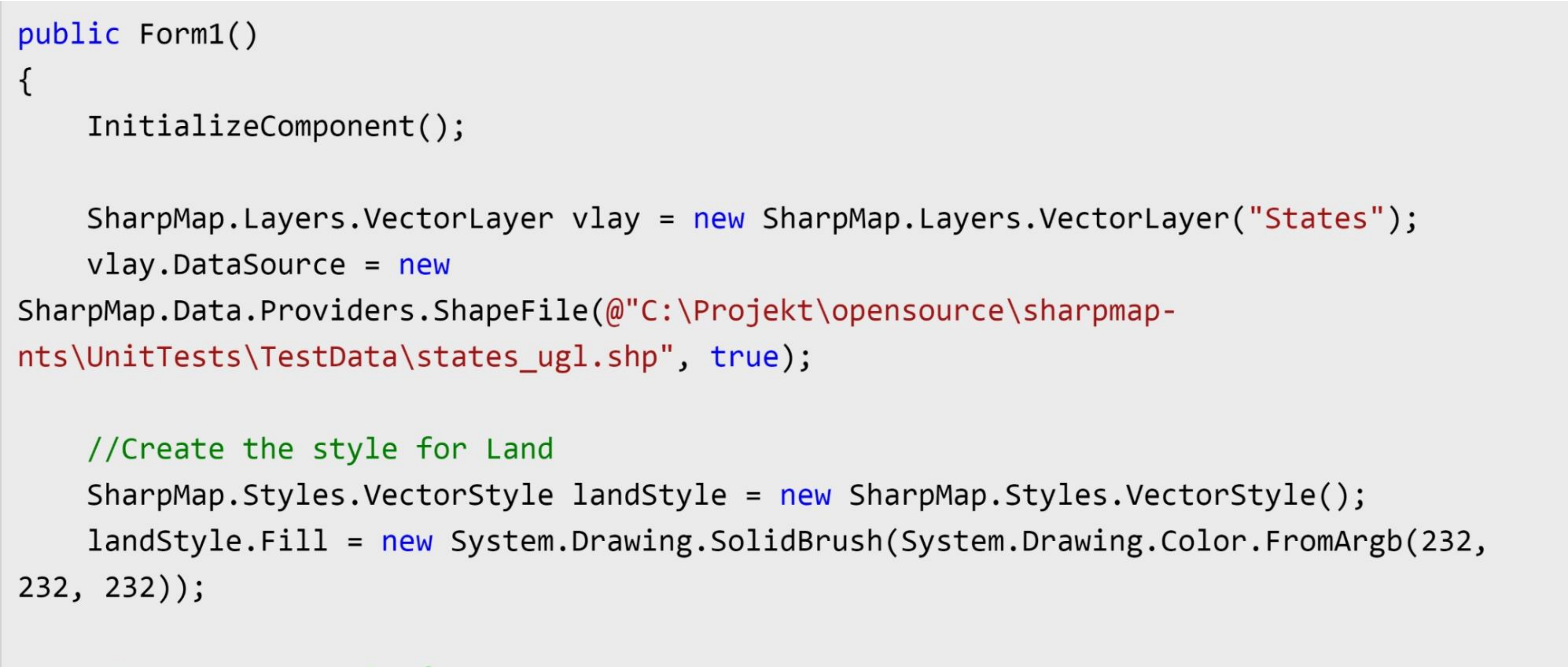
Example 4: Adding a Tiled layer as Background

In this step we will see how we can combine online tile-server data together with local data from shapefiles

1. Add references to BruTile.dll and ProjNet.dll

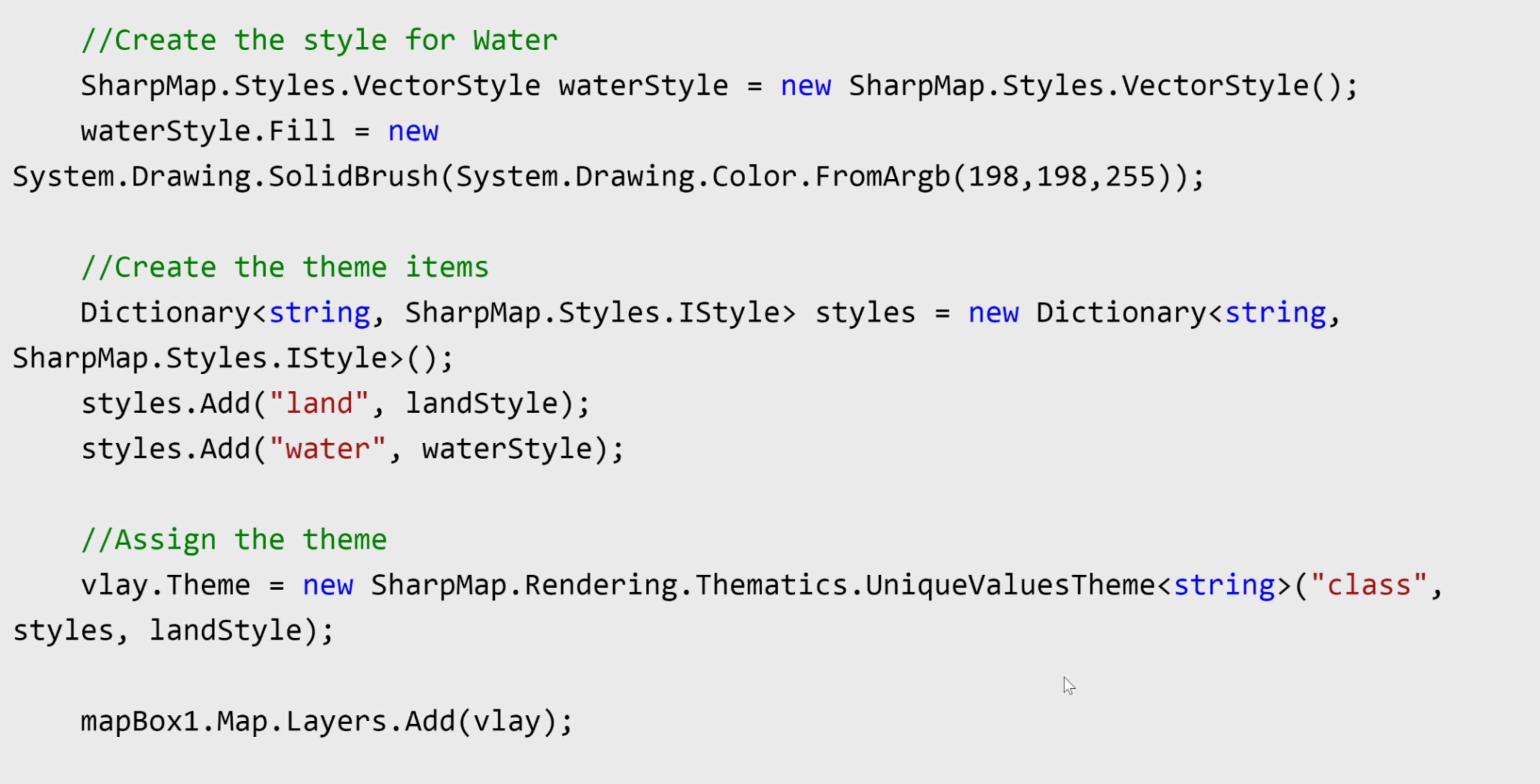
2. Modify your initialization code to add Open Street Map as a background layer in the map

we now need to set the Coordinate Transformation and Reverese Coordinate Transformation property on your vector layers for them to be reprojected and line up with the background tiles.



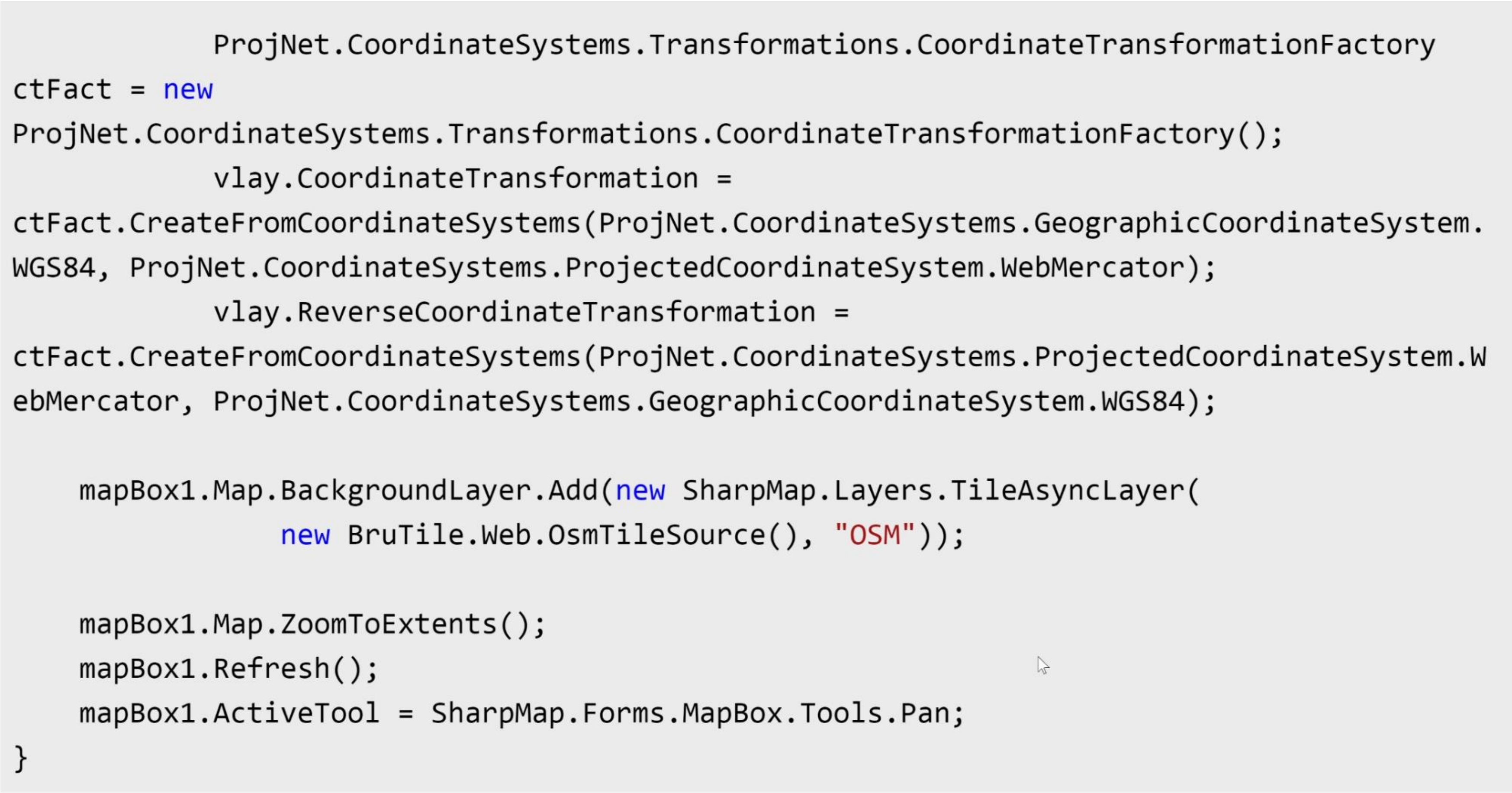
```
public Form1()
{
    InitializeComponent();

    SharpMap.Layers.VectorLayer vlay = new SharpMap.Layers.VectorLayer("States");
    vlay.DataSource = new
SharpMap.Data.Providers.ShapeFile(@"C:\Projekt\opensource\sharpmap-
nts\UnitTests\TestData\states_ugl.shp", true);

    //Create the style for Land
    SharpMap.Styles.VectorStyle landStyle = new SharpMap.Styles.VectorStyle();
    landStyle.Fill = new System.Drawing.SolidBrush(System.Drawing.Color.FromArgb(232,
232, 232));
```

Example 4: Adding a Tiled layer as Background



```
    //Create the style for Water
    SharpMap.Styles.VectorStyle waterStyle = new SharpMap.Styles.VectorStyle();
    waterStyle.Fill = new
System.Drawing.SolidBrush(System.Drawing.Color.FromArgb(198,198,255));

    //Create the theme items
    Dictionary<string, SharpMap.Styles.IStyle> styles = new Dictionary<string,
SharpMap.Styles.IStyle>();
    styles.Add("land", landStyle);
    styles.Add("water", waterStyle);

    //Assign the theme
    vlay.Theme = new SharpMap.Rendering.Thematics.UniqueValuesTheme<string>("class",
styles, landStyle);

    mapBox1.Map.Layers.Add(vlay);
```

Example 4: Adding a Tiled layer as Background



```
            ProjNet.CoordinateSystems.Transformations.CoordinateTransformationFactory
ctFact = new
ProjNet.CoordinateSystems.Transformations.CoordinateTransformationFactory();
            vlay.CoordinateTransformation =
ctFact.CreateFromCoordinateSystems(ProjNet.CoordinateSystems.GeographicCoordinateSystem.
WGS84, ProjNet.CoordinateSystems.ProjectedCoordinateSystem.WebMercator);
            vlay.ReverseCoordinateTransformation =
ctFact.CreateFromCoordinateSystems(ProjNet.CoordinateSystems.ProjectedCoordinateSystem.W
ebMercator, ProjNet.CoordinateSystems.GeographicCoordinateSystem.WGS84);

    mapBox1.Map.BackgroundLayer.Add(new SharpMap.Layers.TileAsyncLayer(
                new BruTile.Web.OsmTileSource(), "OSM"));

    mapBox1.Map.ZoomToExtents();
    mapBox1.Refresh();
    mapBox1.ActiveTool = SharpMap.Forms.MapBox.Tools.Pan;
}
```

Example 4: Adding a Tiled layer as Background

- 3. Zoom in to nothern US and se how your ShapeFile data lines up with Open Street Map

Iowa
Illinois
Indiana
Ohio
Pennsylvania