

Tackle Complex Data Binding in WinForms 2.0

Brian Noyes
Principal Software Architect
IDesign, Inc. (www.idesign.net)



Copyright © 2005 IDesign, Inc.

About Brian

- Microsoft MVP in ASP.NET
- Writing
 - MSDN Magazine, CoDe Magazine, The Server Side.NET, asp.netPRO, Visual Studio Magazine
 - Data Binding in Windows Forms 2.0, Addison-Wesley, expected release fall 2005
- Speaking
 - Microsoft TechEd US, Europe, Malaysia, Visual Studio Connections, DevTeach, DevEssentials, VSLive!, INETA Speakers Bureau
- Participate in Microsoft design reviews
- E-mail: brian.noyes@idesign.net
- Blog: <http://www.softinsight.com/bnoyes>



Copyright © 2005 IDesign, Inc.

Agenda

- Quick Intro to Data Binding
- Intro to Data Sources Window
- Working with Data Sources
- Generating Bound UI Controls from Data Sources
- Binding Existing Controls to Data Sources
- Customizing Bound Control Types



Copyright © 2005 IDesign, Inc.

Data Binding Intro

- One-way: Automatically populating controls with data
 - Set a few properties
 - No need to iterate yourself
- Two-way: Automatically propagating changes to data
 - From control to data source (client side)
 - No need to iterate and check for changes



Copyright © 2005 IDesign, Inc.

Data Binding .NET support

- Core capability of .NET controls since .NET 1.0
 - Web and Windows
 - Built in at base Control level
 - Derived controls can specialize for specific scenarios
 - Ex: DataGrid supports advanced DataSet features
- Interface-based



Copyright © 2005 IDesign, Inc.

Data Binding Simple and Complex

- Simple Data Binding
 - Bind a single value from a data collection to a single control property
 - Ex: CustomerName field to Text property on TextBox
- Complex Data Binding
 - Bind collection of data to control that presents multiple values from collection
 - Ex: Customers table in grid, CustomerName values in ComboBox



Copyright © 2005 IDesign, Inc.

Data Binding Control Properties

- Simple Data Binding
 - Create a Binding object
 - Ties control property to data source and data member
 - Add to DataBindings collection of control
- Complex Data Binding
 - Set data source
 - Set data member (optional)
 - DisplayMember and ValueMember for ComboBox and ListBox controls



Copyright © 2005 IDesign, Inc.

Data Binding Control Data Sources

- Direct
 - DataSet (Typed DataSet) / DataTable / DataView
 - Object collections
 - Objects
- Indirect (preferred)
 - BindingSource (new in .NET 2.0)



Copyright © 2005 IDesign, Inc.

Agenda

- Quick Intro to Data Binding
- **Intro to Data Sources Window**
- Working with Data Sources
- Generating Bound UI Controls from Data Sources
- Binding Existing Controls to Data Sources
- Customizing Bound Control Types



Copyright © 2005 IDesign, Inc.

Data Sources Window Overview

- New in Visual Studio 2005
- Primary point of control for establishing data binding
 - Bring data sources into the project
 - Add controls to forms
 - Associate data sources with controls



Copyright © 2005 IDesign, Inc.

Data Sources Window Sources

- Database
 - Launches Data Source Configuration Wizard
 - Adds Typed Data Set definition to project
 - Local SQL Express database
- Web Service
 - Interprets return type of Web service methods
- Object
 - Uses public properties and fields



Copyright © 2005 IDesign, Inc.

Data Sources Window Sources

- Handles hierarchical objects
 - Child object reference (1 : 1)
 - Child collections (1 : Many)
- Presents as tree
- Drill down to desired collection / property



Copyright © 2005 IDesign, Inc.

Agenda

- Quick Intro to Data Binding
- Intro to Data Sources Window
- **Working with Data Sources**
- Generating Bound UI Controls from Data Sources
- Binding Existing Controls to Data Sources
- Customizing Bound Control Types



Copyright © 2005 IDesign, Inc.

Working with Data Sources Databases

- Add New Data Source
 - Data menu or Data Sources Window
- Data Source Configuration Wizard
- Pick connection
- Pick database objects
- Generates typed data set definition



Copyright © 2005 IDesign, Inc.

Working with Data Sources Web Service

- Existing Web Reference types included automatically in Data Sources
- Add New Data Source – Web Service option
- Launches Add Web Reference Wizard
- Extracts return types from Web methods
- Creates Web reference in project
- Exposes Web method return types as objects for data binding



Copyright © 2005 IDesign, Inc.

Working with Data Sources Object

- Point to assembly containing type definition
- Select type from assembly
- Exposes public properties for data binding



Copyright © 2005 IDesign, Inc.

Demonstration #1

demo

Working with Data Sources



Copyright © 2005 IDesign, Inc.

Agenda

- Quick Intro to Data Binding
- Intro to Data Sources Window
- Working with Data Sources
- **Generating Bound UI Controls from Data Sources**
- Binding Existing Controls to Data Sources
- Customizing Bound Control Types



Copyright © 2005 IDesign, Inc.

Generating Bound Controls Overview

- Each data source and member has UI controls associated with it
 - Defaults set automatically based on type and location
- Drag and drop onto form generates bound controls



Copyright © 2005 IDesign, Inc.

Generating Bound Controls Default Control Types

- Collections:
 - DataGridView
 - Details (Collection of controls per field/property)
 - Custom
- Properties or fields:
 - TextBox
 - Label
 - LinkLabel
 - ComboBox
 - ListBox
 - Custom



Copyright © 2005 IDesign, Inc.

Demonstration #2

demo

Generating Bound Controls



Copyright © 2005 IDesign, Inc.

Agenda

- Quick Intro to Data Binding
- Intro to Data Sources Window
- Working with Data Sources
- Generating Bound UI Controls from Data Sources
- **Binding Existing Controls to Data Sources**
- Customizing Bound Control Types



Copyright © 2005 IDesign, Inc.

Binding Existing Controls Overview

- Data sources can also be used with existing controls on a form
- Drag data source item onto control
- Designer sets appropriate data binding properties based on the source
- Creates needed members
 - BindingSources, table adapters, data sets, navigators



Copyright © 2005 IDesign, Inc.

Demonstration #3 *demo*

Binding to Existing Controls



Copyright © 2005 IDesign, Inc.

Agenda

- Quick Intro to Data Binding
- Intro to Data Sources Window
- Working with Data Sources
- Generating Bound UI Controls from Data Sources
- Binding Existing Controls to Data Sources
- Customizing Bound Control Types



Copyright © 2005 IDesign, Inc.

Custom Bound Controls Overview

- Can create custom controls for use in Data Sources binding
- Presented controls based on Windows Forms Designer options settings
 - Select control types per data type
 - Based on controls currently in the Toolbox
 - Can include your custom controls



Copyright © 2005 IDesign, Inc.

Custom Bound Controls

Creating controls

- Requires binding attributes
 - DefaultBindingProperties – Single value control
 - LookupBindingProperties – List control
 - ComplexBindingProperties - Grid



Copyright © 2005 IDesign, Inc.

Additional Resources

- Windows Forms Object Data Binding in .NET 2.0, 15 Seconds.com, Rocky Lhotka
<http://www.15seconds.com/issue/040614.htm>
- Drag Once Data Binding, Steve Lasker, CoDe Magazine, Sep/Oct 2004
<http://www.code-magazine.com/Article.aspx?quickid=0409051>
- Drag Once Data Binding with Custom Controls, Steve Lasker, CoDe Magazine, Nov/Dec 2004
<http://www.code-magazine.com/Article.aspx?quickid=0411071>
- Tackle Complex Data Binding in Windows Forms 2.0, Brian Noyes, CoDe Magazine, May/June 2005

E-mail: brian.noyes@idesign.net



Blog: <http://www.softinsight.com/bnoyes>

Copyright © 2005 IDesign, Inc.