

# Data Binding with Windows Forms 2.0

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## About Brian

- Microsoft Regional Director / Solution Architect MVP
- Writing
  - MSDN Magazine, CoDe Magazine, The Server Side.NET, asp.netPRO, Visual Studio Magazine
  - Data Binding in Windows Forms 2.0, Addison-Wesley, January 2006
  - Smart Client Deployment with ClickOnce, Addison-Wesley, Late Summer 2006
- Speaking
  - Microsoft TechEd US, Europe, Malaysia, Visual Studio Connections, DevTeach, DevEssentials, VSLive!, INETA Speakers Bureau, MSDN Webcasts
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## 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



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## 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



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## 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



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## 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



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## 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



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## Data Binding Control Data Sources

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



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## 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



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## 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



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## 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



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## 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



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## 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



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## Working with Data Sources Object

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



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## Demonstration #1 *demo*

Working with Data Sources



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## 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



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## 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



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## Demonstration #2 *demo*

Generating Bound Controls



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## 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



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# Demonstration #3

## *demo*

Binding to Existing Controls



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## 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



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## Custom Bound Controls Creating controls

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



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## Additional Resources

- **Data Binding in Windows Forms 2.0**, Brian Noyes, Addison Wesley, 2006.  
<http://www.amazon.com/gp/product/032126892X/104-6934263-329561?v=glance&n=283155>
- **Build a Data Access Layer with the Visual Studio 2005 DataSet Designer**, Brian Noyes, The ServerSide.NET, <http://www.theserverside.net/articles>
- **Tackle Complex Data Binding in Windows Forms 2.0**, Brian Noyes, CoDe Magazine, Sep/Oct 2005
- **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>
- **Windows Forms Object Data Binding in .NET 2.0**, 15 Seconds.com, Rocky Lhotka  
<http://www.15seconds.com/issue/040614.htm>

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