

Build Custom Data Bound Objects and Collections

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About Brian

- Chief Architect, IDesign Inc. (www.idesign.net)
- Microsoft Regional Director / MVP
- Writing
 - Data Binding in Windows Forms 2.0, Addison Wesley, January 2006
 - Smart Client Deployment with ClickOnce, Addison Wesley, Fall 2006
 - MSDN Magazine, MSDN Online, CoDe Magazine, The Server Side .NET, asp.netPRO, Visual Studio Magazine
- Speaking
 - Microsoft TechEd US, Europe, Malaysia, Visual Studio Connections, DevTeach, INETA Speakers Bureau, MSDN Webcasts
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Agenda

- Business Entities and Collection Overview
- Key Data Binding Interfaces
- Defining Custom Business Entity Types
- Defining Custom Entity Collections
- Enhancing the Framework Collections
- Binding to Custom Objects in Windows Forms 2.0

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Business Entity Type Overview

- Custom types that you write
- Contain business entity data
 - Instance data that transitions more than one layer in your architecture
 - Logically related data supporting one or more use case in your application
- Classes with:
 - Fields / Member Variables (Data holders)
 - Properties (Data API)
 - Operations / Methods (Validation, custom logic, etc.)
 - Interface implementations (supporting usage scenarios)

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Business Entity Collection Overview

- Containers for zero to many instances of business entity types
- Should be type safe and homogeneous containers for a given type
- Implement specific interfaces for specific scenarios
- Based on generic collection types in .NET 2.0

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Key Data Binding Collection Interfaces

- **IEnumerable**
 - Basic iteration pattern in .NET
 - Implement IEnumerable / IEnumerator
 - Use iterators in C# 2.0 for more compact code
- **IList**
 - Ordered, indexed collection that supports Windows Forms complex data binding
- **IBindingList**
 - Supports change notification, sorting, searching
- **IBindingListView**
 - Supports advanced sorting (multi-property) and filtering

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Key Data Binding Entity Interfaces

- **INotifyPropertyChanged**
 - Change notifications to clients or containers
- **IEditableObject**
 - Transacted changes to object
- **IDataErrorInfo**
 - Error containment and notification

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Creating Entity Types

- Declare class
- Implement properties
 - Code snippets
- Implement interfaces
 - Requires property modifications
- Implement logic
 - Often requires property modifications
 - May cause bound controls not to sync properly
- Automate!!
 - Base Classes
 - Code Snippets
 - CodeRush
 - CodeSmith

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Custom Entity Collections

- Prior to .NET 2.0
 - CollectionBase + lots of work + lots of duplicated code!!
- .NET 2.0 – Generic collections
 - List<T> - IList implementation
 - BindingList<T> - partial IBindingList implementation
- Derive a custom type from the generic collection
 - Cleaner API, somewhere to add behavior



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Extending BindingList<T>

- **Sorting, Searching not implemented**
 - Stubbed out and overridable
- **Custom construction for objects sometimes needed**
 - IBindingList.AddNew override needed
 - Default implementation just calls default constructor

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Extending BindingList<T>

- Implementation of IBindingListView may be desirable
 - Multi-property sorts
 - Filtering of contained data
- Some things generalizable, some not
- My BindingListView<T> class gets you most of the way there

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Putting the code to work

- BindingSource component binds well to custom objects and collections
 - If they support the right interfaces
- Data Sources window in Visual Studio supports drag and drop data binding of custom objects as well

Summary

- Bindable objects and collections much easier in .NET 2.0
- Harness the power of generic collections
- Automate business entity type declarations

Resources

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