Validating Input Data

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Outline

Validation with Exceptions

Async Validation With INotifyDataErrorInfo

Validation with ValidationRules

Binding Events

Validation with IDataErrorInfo

Validation Templates

Working with DataAnnotations

Validating with Exceptions

- **Bindings normally catch exceptions thrown by get/set blocks of bound properties**

- **ValidatesOnExceptions property**
  - Causes validation error indication on control if get/set block throw exception

- **Allows the data object to reject invalid values before the property stores the value**

ValidationRules

- **Specific to WPF**
  - Does not carry over to other XAML technologies
- **Define a class that derives from ValidationRule**
- **Override Validate method**
- **Return ValidationResult based on inputs**
  - Success / Fail indication
  - Error message
- **Add to ValidationRules collection of Binding**
- **Can encapsulate reusable rules**
- **Not very good for context-specific rules**
  - Not enough information available in the rule about what is being evaluated

Validating with IDataErrorInfo

- **IDataErrorInfo interface defines API for querying an object for errors**
  - Error property – error for the object as a whole
  - Indexer – error for a single property
- **Been around since .NET 1.0**
  - Implemented by DataSet row objects
- **Very flexible and easy to use**
- **Have to allow the property to be set**
  - Accept invalid values
  - Then express displeasure with the value
- **ValidatesOnDataErrors property on Binding**
  - Binding checks bound object to see if it implements IDataErrorInfo
  - Queries it whenever binding calls get block
  - Queries it when set block is called in two way data binding
- **Limitation: One string error per property**

Validating Async with INotifyDataErrorInfo

- **INotifyDataErrorInfo interface**
  - Added in .NET 4.5
    - Moved over from Silverlight 4
- **Same concept as IDataErrorInfo with an event-driven interface that supports async notification of errors**
- **ValidatesOnNotifyDataErrors property on Binding**
- **Binding calls GetErrors when querying for errors**
- **Binding subscribes to ErrorsChanged event**
- **Binding re-queries GetErrors if event is raised**
- **Need to manage a dictionary of errors per property as part of implementation**
- **Can return multiple string errors per property**

Binding Events

- **Binding.TargetUpdated – fires when data flows from source to target**
- **Binding.SourceUpdated – fires when data flows from target to source**
- **Validation.ValidationError – fires when a validation error is added or removed to the binding errors**
- **Need to enable events on the Binding – set to true:**
    - NotifyOnTargetUpdated
    - NotifyOnSourceUpdated
    - NotifyOnValidationError

Custom Error Templates

- **Validation Class has attached properties to drive presentation of errors:**
  - HasError – flag to indicate if there are errors on the control
  - Errors – gets the collection of errors
  - ErrorTemplate – custom control template to use when there are validation errors
- **Custom display on control:**
  - Set Validation.ErrorTemplate to custom ControlTemplate
- **ToolTip:**
  - Define a Style with Trigger for Validation.HasError
  - Set ToolTip using Errors collection

Using DataAnnotations

- **System.ComponentModel.DataAnnotations**
  - Common mechanism in .NET for expressing validation rules on properties
  - Set of built-in attributes
    - Required, RegularExpression, StringLength, Range, Phone, Email, Url, CreditCard
    - CustomValidation
- **Evaluated automatically by some parts of .NET**
  - ASP.NET model binding
  - Entity Framework
  - Silverlight RIA Services
- **Need to write code to evaluate in WPF**
  - ValidationContext and Validator classes

Summary

Exceptions from set block can be used to indicate validation error

INotifyDataErrorInfo supports async validation querying of data object for errors

ValidationRules are attached to Bindings and encapsulate a rule

Validation events let you hook when validation State changes occur

IDataErrorInfo lets the Binding query the data object for errors

Validation templates put you in control of the error indications of controls

DataAnnotations are a standard way of expressing validation rules in .NET

Course Complete!

Data Binding Overview

Deep Dive into DataTemplates

Data Sources

Design Time Data Binding

Binding Core Concepts

Containers and Collection Controls

Unleashing the Full Power of Bindings

Validation

Thank You!!