

**REVIEW LESSON**

MTA Course: Windows Development Fundamentals

Lesson name: Windows Development Fundamentals 2.3A

Topic: Understand how to create new controls and extend existing controls (One 50-minute class period)

File name: WinDevFund\_RL\_2.3A

**Lesson Objective:**

**2.3:** Understand how to create new controls and extend existing controls. *This objective may include but is not limited to:* creating a new GUI control or inheriting functionality from an existing control.

**Preparation Details****Prerequisite student experiences and knowledge**

This MTA Certification Exam Review lesson is written for students who have learned about Windows application programming. Students who do not have the prerequisite knowledge and experiences cited in the objective will find additional learning opportunities using resources such as those listed in the Microsoft® resources and Web links at the end of this review lesson.

**Instructor preparation activities**

- Review the included Microsoft Visual Studio® program example (LabeledTextBox) or create your own example.

**Resources, software, and additional files needed for this lesson:**

- WinDevFund\_PPT\_2.3A
- WinDevFund\_VB\_2.3A (Microsoft Visual Basic® project files)
- WinDevFund\_CS\_2.3A (C#® project files)

- Visual Studio 2008, or
  - Microsoft Visual Basic 2008, Express Edition  
(<http://www.microsoft.com/express/downloads/#2008-Visual-Basic>)
  - Microsoft Visual C# 2008, Express Edition  
(<http://www.microsoft.com/express/downloads/#2008-Visual-CS>)

### **Teaching Guide**

#### **Essential Vocabulary:**

**custom control**—a general term for any developer-created control; it is sometimes used to refer specifically to a control that extends the `Control` class.

**constituent control**—a control contained within a user control.

**inherited control**—a control that derives from an existing Windows Forms control, such as a `Button`, `TextBox`, or `ComboBox`; also referred to as an *extended control*.

**user control**—a collection of Windows Forms controls encapsulated into a common container; also referred to as a *composite control*.

### **Lesson Sequence**

#### **Activating prior knowledge/lesson staging (Anticipatory Set—10 minutes)**

1. Discussion prompts (available in the Microsoft PowerPoint® file): “With a partner, create a list of controls that are often used together in a Windows Form, or sets of controls that are commonly used on multiple forms.”
2. As a class, discuss some of the ideas the students came up with. Responses will likely be examples of user controls.

#### **Lesson activity (35 minutes)**

##### **1. Teacher instruction (15 minutes)**

- Using the PowerPoint presentation, review the different types of developer-designed controls.
- If possible, give examples from previous assignments of controls that could be customized.

##### **2. “Follow Along” Activity (20 minutes)**

- Lead students through the creation of a user control called `LabeledTextBox`.

- Be sure to add a property (called `LabelText` in the provided sample) to allow access to the `Text` property of the `Label`. See the sample source code provided or the resource listed below: “Walkthrough: Authoring a Composite Control.”

### **Assessment/lesson reflection (10 minutes)**

1. As indicated in the presentation, direct the students as follows:
  - Create a user control that combines two buttons, OK and Cancel.
  - Add the control to two different forms within your project.

### **Microsoft resources and Web links**

#### **MSDN Library: Varieties of Custom Controls**

(<http://msdn.microsoft.com/en-us/library/ms171725.aspx>)

#### **MSDN Library: Control Type Recommendations**

(<http://msdn.microsoft.com/en-us/library/yah0tcw1.aspx>)

#### **How to: Author Composite Controls**

(<http://msdn.microsoft.com/en-us/library/3sf86w5h.aspx>)

#### **How to: Inherit from Existing Windows Forms Controls**

(<http://msdn.microsoft.com/en-us/library/7h62478z.aspx>)

#### **WindowsClient.net: WinForms-Inheriting Controls**

(<http://windowsclient.net/learn/video.aspx?v=19491>)

#### **MSDN Library: Developing Windows Forms Controls at Design Time**

(<http://msdn.microsoft.com/en-us/library/w29y3h59.aspx>)

#### **Walkthrough: Authoring a Composite Control with Visual Basic**

(<http://msdn.microsoft.com/en-us/library/c316f119.aspx>)

#### **Walkthrough: Authoring a Composite Control with Visual C#**

(<http://msdn.microsoft.com/en-us/library/a6h7e207.aspx>)

### **Additional notes to the teacher:**

- It is important to note that Objective 2.4 includes information that is not reviewed in this lesson due to time constraints. This presentation covers different varieties of custom controls, but only `User Controls` are reviewed in detail. It is recommended that students also study controls that inherit from existing controls (such as a `Button` or `TextBox`) as well as controls that extend the `Control` class. See the resources and Web links for detailed information.