

## REVIEW LESSON

MTA Course: Windows Development Fundamentals

Lesson name: Windows Development Fundamentals 2.4A

Topic: Implement user input (One 50-minute class period)

File name: WinDevFund\_RL\_2.4A

### **Lesson Objective:**

**2.4:** Validate and implement user input. *This objective may include but is not limited to:* implementing the correct user input model based on application design and requirements; accepting keyboard and mouse input; validating user input through GUI controls such as text boxes and dialog controls.

### **Preparation Details**

#### **Prerequisite student experiences and knowledge**

This MTA Certification Exam Review lesson is written for students who have learned about Windows<sup>®</sup> 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<sup>®</sup> resources and Web links at the end of this review lesson.

Specifically, students should be well versed in events and event handling in Windows Forms applications; see Lesson 2.1A and Lesson 2.1B for additional information.

#### **Instructor preparation activities**

- Make copies of the Student Activities.

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

- WinDevFund\_PPT\_2.4A
- WinDevFund\_SA\_2.4A\_1
- WinDevFund\_SA\_2.4A\_2

- WinDevFund\_SA\_2.4\_2\_Key
- Microsoft 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:**

**event**—an action or occurrence, often generated by the user, to which a program might respond; for example, key presses, button clicks, or mouse movements.

**event handler**—a method (or procedure) within a program that is called automatically whenever a particular event occurs.

**input validation**—the process of verifying that input received from a user is valid or correct.

**mask**—a string that specifies which characters can be entered at any given position in a *MaskedTextBox*.

**Windows message**—a signal sent to an application by the operating system in response to user input.

### **Lesson Sequence**

#### **Activating prior knowledge/lesson staging (Anticipatory Set—5 minutes)**

1. *Student prompt (available in PowerPoint® file):* “Explain how events (and event handlers) work in a Windows Forms application.”
  - The intent is for students to remember what they know about event handlers, since their understanding of event handlers is integral to understanding handling user input.

#### **Lesson activity (20 minutes)**

1. Teacher Instruction
  - Using the Microsoft PowerPoint presentation, review user input.
  - Provide students with the “User Input Reference” handout and discuss any mouse or keyboard events they have questions about.

**Assessment/lesson reflection (25 minutes)**

1. Provide students with the “User Input Review” worksheet. In Part 1, they will answer questions about user input events and validation. In Part 2, they will use Visual Studio to create a form that responds to mouse events.

**Microsoft resources and Web links**

**MSDN Library: User Input in Windows Forms**

(<http://msdn.microsoft.com/en-us/library/ms171532.aspx>)

**MSDN Library: Using Keyboard Events**

(<http://msdn.microsoft.com/en-us/library/ms171536.aspx>)

**MSDN Library: Mouse Input in a Windows Forms Application**

(<http://msdn.microsoft.com/en-us/library/ms171540.aspx>)

**Additional activities (homework or enrichment):**

- You can easily add to Part 2 of the Student Activity by assigning other events. For example, you may have students create text boxes that change color when users begin typing, or disappear when a key is held down and reappear when it is released.