Chapter 10

VB .NET GUI Components Overview

Objectives

In this chapter, you will:
- Learn about the GUI classes in VB .NET
- Understand the code generated by VB .NET
- Handle VB .NET events
- Work with additional GUI controls

Introducing the GUI Classes in VB .NET

- Form
  - Instance of the Form class
  - Consists of GUI controls, such as
    - Buttons
    - Labels
    - Text boxes
    - Check boxes
    - Radio buttons
    - Tab pages
    - Menu items
- Form class
  - Member of the System.Windows.Forms namespace

Introducing the GUI Classes in VB .NET

- Component class
  - Base class for all GUI components
  - An instance of a component does not have a visible, graphical representation
- Control class
  - A subclass of Component
  - An instance of a control has a visible, graphical representation

Understanding the Code Generated by VB .NET

- Actions involved in visual programming
  - Creating a form
  - Setting properties of the form
  - Adding controls and components to the form
  - Setting properties of controls and components
  - Adding the code to handle events
- As the programmer adds controls and modifies properties, VB .NET generates the code
Exploring the FormDemo Program

- FormDemo program
  - Contains
    - A label
    - A button
  - When the button is pressed, a message box appears

Exploring the FormDemo Program

- FormDemo class
  - An instance of Form
  - Inherits methods from
    - ContainerControl
    - ScrollableControl
    - Control
    - Component

Exploring the FormDemo Program

- FormDemo class definition
  - Specifies that the FormDemo class inherits from the Form class
  - Defines the constructor
  - Defines the Dispose method
    - Dispose method is a destructor
      - Releases system resources when the program ends

Exploring the FormDemo Program

- FormDemo class definition (Continued)
  - Declares an instance of the IContainer class
    - IContainer: an interface that provides functionality for containers
    - Container: an object that holds other components
  - Declares controls that were created visually in Design window

Exploring the FormDemo Program

- FormDemo class definition (Continued)
  - Defines the InitializeComponent method

Handling VB .NET Events

- GUI controls have associated event procedures
- The process of creating event procedures
  - Double-click a control in the Forms Designer window
  - VB .NET inserts the method header for the most commonly used event procedure for that control
  - Supply details that determine how the procedure responds to the event
Working with Additional GUI Controls

- Look and feel
  - Style and appearance of each form in an application
- Design goals
  - Consistent look and feel for all the forms
  - Ease of use
    - Purpose of each control should be intuitive to the user
    - Layout of the form should be intuitive to the user

Design goals (Continued)

- Feedback to the user about
  - Completion of actions
    - For example: adding a record to a file
  - Data entry errors
  - Minimize the keystrokes required by the user
  - Reduces the chance of data entry errors
  - Makes forms easier to use

Naming conventions for program variables

- Benefits
  - Improve program readability
  - Facilitate program maintenance

Standards

- Developed at the outset of a project
- Enforced rigorously throughout the development process
- Deal with
  - Form design
  - Variable naming conventions

GUI controls

- Subclasses of the Control class
- Inherit properties, methods, and events from the Control class
- Have additional methods and properties

Help facility

- Contains information about the methods and properties of GUI controls

Text boxes

- Display textual information to the user
- Enable input of text from the keyboard
- Functionality provided by the TextBox class

Combo boxes

- Extend the functionality of a text box
- Allow the user to:
  - Type a value
  - Select an item from a predetermined list of values
- Functionality provided by the ComboBox class
Using Text Boxes and Combo Boxes

![Image](image_url)

Using Check Boxes and Radio Buttons

- Check boxes and radio buttons
  - Provide the ability to select from options
  - Have two states at any given point in time
    - Checked (selected)
    - Not checked (not selected)
  - Functionality provided by the CheckBox and RadioButton classes

Using Check Boxes and Radio Buttons

- A check box
  - Appears as a small white box
  - Usually includes a label that identifies its purpose
    - The caption (or label) is set by the Text property
  - When selected
    - A check mark appears in the box
  - Multiple check boxes
    - There is no requirement that any check box be checked
    - Any or all of the check boxes may be checked simultaneously

Using Check Boxes and Radio Buttons

- Radio buttons
  - Appear as small white circles
  - Have captions (or labels) that identify their purpose
  - When selected
    - A black dot appears within the circle
  - A group of radio buttons
    - Represents a set of related options
    - Options are mutually exclusive: one and only one of the options may be selected at any given time

Using Group Boxes and Panels

- Group boxes and panels
  - Containers used to visually and logically organize groups of related controls
- A group box
  - Includes a border (or frame)
  - Does not include scroll bars
  - Usually has a caption

Using Group Boxes and Panels

- A panel
  - Does not include a border by default
  - May include scroll bars
  - Does not have captions
  - Nested panels and group boxes
    - A group box or panel may contain other group boxes or panels
Using Group Boxes and Panels

- A common use of group boxes and panels
  - Can be used to group a set of radio buttons
    - Mutually exclusive behavior is enforced separately for each group

Using List Boxes and Checked List Boxes

- List boxes and checked list boxes
  - Provide the ability to select one or more items from a predetermined list of values
- List boxes
  - Instances of the ListBox class
  - Enable the user (by default) to select one item from the list
    - Selection of multiple list items can be enabled by setting the SelectionMode property

Using List Boxes and Checked List Boxes

- Checked list boxes
  - Instances of the CheckedListBox class
  - Include a check box to the left of each item in the list
  - By default, allow the selection of multiple items in the list
  - When an item is selected
    - A check mark appears in the corresponding check box

Using Tree Views and Tree Nodes

- A tree view
  - Supported by the TreeView class
  - Displays a group of hierarchically related items
  - An item (or tree node)
    - Represented as an instance of the TreeNode class
    - Appears as an expandable outline

Using Tree Views and Tree Nodes

- A date/time picker control
  - An instance of the DateTimePicker class
  - Used to
    - Select a date and time from a calendar
    - Display the date and time in a number of different formats
Using Date/Time Pickers

![Image](image.png)

Figure 11-17 Selecting a date from the date/time picker control

Object-Oriented Application Development Using VB .NET

Using Tab Controls and Tab Pages

- A tab control
  - An instance of the TabControl class
  - Provides the functionality for a set of tab pages
- Tab pages are useful when
  - A form requires a large number of controls
  - Those controls can easily be grouped into logical subsets

Object-Oriented Application Development Using VB .NET

Using Tab Controls and Tab Pages

- Each tab page
  - An instance of the TabPage class (a subclass of Panel)
  - Contains
    - A subset of the controls
    - A tab identifying its purpose

Object-Oriented Application Development Using VB .NET

Using Main Menus and Menu Items

- MainMenu and MenuItem classes
  - Used to create a set of menus and submenus for a form
- Main menu control
  - Container for the menu structure
- Menu items
  - Represent individual menu choices within the menu structure

Object-Oriented Application Development Using VB .NET

Summary

- Component is a superclass of all GUI classes
- Control is a superclass of all visible components
- Forms are containers for other components
- Text boxes can be used to display and input data
- Combo boxes can be used to
  - Display and input text
  - Select from a predefined list of values
- Check boxes and radio buttons enable users to select (deselect) from a list of options

Object-Oriented Application Development Using VB .NET

Summary

- Tree views and tree nodes display a group of hierarchically related data
- Date/time pickers enable users to select a date from a calendar
- Tab controls and tab pages are useful when a form requires a large number of controls
- Main menus and menu items allow you to create a set of menus and submenus

Object-Oriented Application Development Using VB .NET