Chapter 2

The Visual Studio .NET Development Environment

Objectives

In this chapter, you will:

• Explore the Visual Studio .NET development environment
• Create a project using Visual Basic .NET
• Compile and execute a VB .NET program
• Use the visual form designer
• Explore the debugging tool
• Explore the help facility

Exploring the Visual Studio .NET Development Environment

• VB .NET is a language supported by Microsoft’s Visual Studio .NET integrated development environment
• Integrated development environment (IDE) helps programmers code, test, and document programs

Getting Started with VB .NET

• To start VB .NET in Windows XP Professional:
  – Click the Start button
  – Point to All Programs
  – Point to Microsoft Visual Studio .NET
  – Click Microsoft Visual Studio .NET
• The Microsoft Development Environment (MDE) window opens

Figure 2-2 The Microsoft Development Environment
Exploring the MDE

- MDE includes a menu bar, toolbars, and windows
- The menu bar is used to perform tasks such as:
  - Opening and closing files
  - Opening and closing projects
  - Compiling, executing, and debugging programs
  - Accessing help facilities

Many toolbars are available in MDE
- Toolbars can be revealed or hidden
- MDE includes a number of windows, such as:
  - Document window
  - Solution Explorer window
  - Properties window

Start Page appears as a tabbed page within a document window
- Tabs along the side of the screen identify hidden windows

Start Page contains a number of links to resources
- Clicking the Get Started link displays a list of recent projects
  - To open a project on the list, click the project name

The Get Started link also displays two buttons, Open Project and New Project:
  - Open Project button is clicked to work on a project not on the list of recent projects
  - New Project button is clicked to create a new project

Figure 2-6: The Start Page
Creating a Project Using VB .NET

- To create a VB .NET project, identify:
  - Type of project
  - Template to use
  - Project name and location
- To create a Visual Basic project, project type must be Visual Basic
- A template is a pattern for creating a specific type of application

Understanding the Way VB .NET Organizes Your Programs

- Solution Explorer window shows hierarchical arrangement of items that make up the solution
- In VB .NET, programs are named with a .vb file extension
- By default, VB .NET names programs as Module1.vb, Module2.vb, and so on
- More descriptive names can be assigned by programmer

Understanding the Way VB .NET Organizes Your Programs

- A project is a mechanism for grouping related files, for example:
  - Program files
  - Image files
  - Other miscellaneous items
- A solution is a container for one or more projects
  - Solution file appears at the top of the hierarchy in Solution Explorer window

Understanding the Way VB .NET Organizes Your Programs

- If a solution contains more than one project, the startup project must be designated
- Startup project is the project that will be executed first

Using the Text Editor

- Visual Studio .NET text editor provides:
  - Standard text editing capabilities
  - Color-coding feature
  - Code indentation feature
  - Code completion feature

Renaming Module1.vb

- Descriptive names should be assigned to programs
- By default, VB .NET names programs as Module1.vb, Module2.vb, and so on
- File Name property in Properties window is used to rename programs
Setting the Startup Object

- After changing the module name within the source code, project properties must be changed to identify the new name as the startup object
- Startup object is the module where execution begins

Compiling and Executing a VB .NET Program

- A program can be compiled and executed using:
  - Options on Build and Debug menus or toolbars
  - Shortcut key combinations
- To compile and execute a program using menu options:
  - Click Debug on menu bar
  - Click Start Without Debugging

Using the Visual Form Designer

- A Windows application is one that runs in the Windows environment
- When creating Windows applications, a visual form editor can be used
- In a visual editor:
  - Programmer places icons representing various components on the screen
  - VB .NET generates required programming statements

Using the Visual Form Designer

- The visual form editor in MDE is Windows Forms Designer
- Toolbox contains visual components
- Elements can be selected from Toolbox to dynamically design forms
- Properties window is used to adjust properties of components on the form

Creating a Windows Application

- In a Windows application, Windows Forms Designer can be used to create an input form
- In a new Windows application, Windows Forms Designer appears as a tabbed document labeled Form1.vb [Design]

Creating a Windows Application

- Properties window shows properties of a form that is open
- Background of the form shows a grid to help align components
- Along the outer edges of the form are handles used to resize the form
Creating a Windows Application

Customizing the Appearance of a Form

- Size of the form can be changed using the handles along its outer edges

Customizing the Appearance of a Form

- To change title of the form, use Text property in Properties window

Customizing the Appearance of a Form

- To change background color of the form, use BackColor property in Properties window

Adding Components to a Form

- Toolbox contains components which can be added to a form

Adding Components to a Form

- To add a message to a form, use Label component
- Color of label text is changed using ForeColor property in Properties window
Adding Components to a Form

- To change label font, use Font property in Properties window

Adding Components to a Form

- To center label text within the area occupied by label, use TextAlign property in Properties window

Adding Components to a Form

- To add a button to the form, double-click Button component of Toolbox
- A button’s appearance can be changed by using Properties window
- Text editor can be used to add code to make a button work

Exploring the Debugging Tools

- A debugger helps isolate errors that keep a program from running as intended
- A debugger can be used to set breakpoints
- A breakpoint is a flag that tells the debugger to temporarily suspend execution of program at a particular point

Getting Started with the Debugger

- Debugger is used to identify errors in the program that occur while the program is running
- Debugger cannot find coding errors that prevent the program from being built successfully
Setting Breakpoints

- To set a breakpoint:
  - In code window, right-click statement
  - Click Insert Breakpoint on shortcut menu

Exploring the Help Facility

- In VB .NET development environment, programmer can:
  - Search for help on a specific item
  - Browse a table of contents
  - Scroll through an alphabetized index of topics
- VB .NET also includes:
  - Dynamic help
  - Context-sensitive help

Accessing Help

- Most help features can be accessed through options on Help menu

Accessing Help

- On Help menu:
  - Contents option displays a list of help topics in a format resembling a table of contents
  - Index option displays a list of help topics in alphabetical order
  - Search option allows programmer to search the database of help pages
  - Dynamic Help option dynamically identifies help topics in response to actions taken by programmer

Exploring Context-Sensitive Help

- Context-sensitive help can be invoked by pressing the F1 key
- F1 key can be pressed to obtain help on virtually any keyword, component, window, or other element of VB .NET

Summary

- Visual Studio .NET is an integrated development environment (IDE)
- An IDE is a set of software tools that helps you code, debug, and test a system as you develop it
- Visual Basic .NET is a programming language supported by Visual Studio .NET IDE
- VB .NET text editor supports color-coding, indentation, and code completion features
- Windows Forms Designer is a visual development tool that generates code from icons
Summary

- VB .NET uses a hierarchical arrangement of solutions and projects
- A debugger is a tool that helps identify problems that prevent a program from running as intended
- A breakpoint is a flag that instructs debugger to temporarily suspend execution of a program
- Help facilities of VB .NET include Contents window, Index window, Search window, Dynamic Help, and context-sensitive help