ISYS – 165

Structured Programming and
LAN Administration

Errors, Debugging, and Using Visual Basic .NET Help

By

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Errors, Debugging and Using VB .NET Help

<u>Learning Objectives</u>

At the end of this lecture session, you will be able to:

1. Identify the various VB .NET programming error types

2. Identify and use the various debugging options provided
   by VB .NET programming software.

3. Identify and use the different VB .NET Help options.

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Error Types in Visual Basic .NET

<u>Definition of the word 'Error':</u>

The word 'error' can be defined as:

- An act, assertion, or belief that unintentionally deviates from what is correct, right, or true

- An act that through ignorance, deficiency, or accident, departs from or fails to achieve what should be done

Errors in programming can lead to a program not to run at all or run in unintended behavior.

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Error Types in Visual Basic .NET

<u>VB .NET Programming Error Types:</u>

1. Syntax Errors

2. Logical Errors

3. Runtime Errors

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Error Types in Visual Basic .NET

VB .NET Programming Error Types (contd…)

1. Syntax Errors

● Occurs when the rules of VB .NET language
   (syntax) are violated.

Error Types in Visual Basic .NET

VB .NET Programming Error Types (contd…)

1. Syntax Errors (contd…)

● The syntax errors are identified during:

  a. Design Time by:

     1. Placing wavy blue lines on the code that has violated VB
         .NET syntax.

     2. A tool tip that displays the error type when the cursor is
         placed on the error.

     3. A Task List window that displays the error type and the
        location of the error in the program through line numbers

Debugging Options in Visual Basic .NET

VB .NET Programming Error Types (contd…)

1. Syntax Errors (contd…)

● The syntax errors are identified during:

  b. Run Time by:

   Issuing warning whether or not to continue to run the program

   with the syntax error (continue or break)

Microsoft Development Environment

⚠ There were build errors. Continue?

Yes   No

● The user can take corrective action based on the above information.
■■■

Error Types in Visual Basic .NET

VB .NET Programming Error Types (contd…)

1. Syntax Errors (contd…)

  Examples of syntax errors:

  i. Using a keyword as a variable name

   Dim sub As String

  ii. Incorrect use of an assignment statement

   $a + 2 = z$

  Programming Example: Syntax Error
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Error Types in Visual Basic .NET

VB .NET Programming Error Types (contd…)

1. Syntax Errors (contd…)

   Examples of syntax errors:

   iii. An If statement structure without an End If
        statement

      If (5 > 6) then
      Textbox1.Text = "Yes"

▪▪▪

Error Types in Visual Basic .NET

VB .NET Programming Error Types (contd…)

2. Runtime Errors:

● Occurs when conditions arise during runtime
  that the compiler does not know how to handle.

● They are also called exceptions.

● They are identified through a diagnostic message box:

   1. that displays the error type

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Debugging Options in Visual Basic .NET

VB .NET Programming Error Types (contd…)

2. Runtime Errors (contd…):

● They are identified through a diagnostic message box (contd…):

   2. that prompts the user to press the continue or break buttons:

      a. If the user presses the continue button, the program stops execution.

      b. If the user presses the break button, the program highlights the line that contains the error.

      At this point the user may take the appropriate actions

…   (explained in detail in subsequent slides).

Error Types in Visual Basic .NET

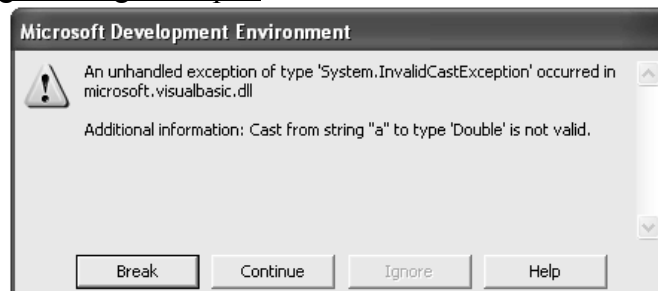VB .NET Programming Error Types (contd...)

2. Runtime Errors (contd…)

Example:

Illegal mathematical operations such as an attempt to multiply two strings. *Textbox1.Text = "a" * "b"*

Programming Example: Runtime Error

Microsoft Development Environment

⚠ An unhandled exception of type 'System.InvalidCastException' occurred in microsoft.visualbasic.dll

Additional information: Cast from string "a" to type 'Double' is not valid.

[Break] [Continue] [Ignore] [Help]

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Error Types in Visual Basic .NET

VB .NET Programming Error Types (contd…)

3. Logical Errors

It occurs when the program does not behave as intended, due to poor logic or incorrect implementation.

Programming Example: Logical Error

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Debugging Options in Visual Basic .NET

Debugging Definition

It is the process of identifying and fixing programming errors.

VB .NET provides several options for debugging the various programming error types.

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Debugging Options in Visual Basic .NET

Debugging Options:

The following methods can be used to debug programming errors:

1. Setting Breakpoints

2. Using Stepping Into option

3. Using the Watch window

4. Using the Immediate window

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Debugging Options in Visual Basic .NET

Debugging Options (contd…):

1. Setting Breakpoints

They are used to pause the program execution to allow the user to watch the contents of variables at the breakpoint.
 Breakpoints must be set at an executable statement.

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Debugging Options in Visual Basic .NET

Debugging Options (contd…):

2. Using Stepping Into option

- This option is used along with Breakpoint option.

- When the program encounters the breakpoint, it stops execution at that point

- From the breakpoint on, the user can execute one line of code at a time using the 'Stepping Into' option to debug errors.

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Debugging Options in Visual Basic .NET

Debugging Options (contd…):

3. Using the Watch Window

The user can monitor the contents of a variable(s) when stepping through the program by setting expressions in a watch window prior to running the application.

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Debugging Options in Visual Basic .NET

Debugging Options (contd…):

4. Using the Immediate Window

It is used for evaluating expressions, executing statements, printing variable values, etc. when the program execution is paused using a breakpoint.

Note: The immediate window does not work during design time.

Programming Example: Logical Error

Visual Basic .NET Help

Programming Example: Debugging Demo

1. Setting Breakpoints

2. Using Stepping Into Option

3. Using Watch Window

4. Using Immediate Window

Visual Basic .NET Help

Visual Basic .NET Help Options:

1. Dynamic help (Demonstration)

2. Content Sensitive Help (Demonstration)

3. Microsoft Developer Network (MSDN)
   Library Help (Demonstration)

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Questions??