Chapter 1
Introduction to Visual Basic.NET

Programming In Visual Basic.NET

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Writing Windows Applications with VB

- Windows uses a Graphical User Interface to interact with the user
- Visual Basic terms a Window = Form
- In the VB editor the Toolbox holds all of the Controls you will use in order to build a form
  - Text Box
  - Label
  - Check Box
  - Button
Programming Languages

- Procedural
  - Program specifies exact sequence

- Event Driven (VB 6.0 and previous)

- Object Oriented Programming (VB.NET)
  - User controls sequence
    - Click event
    - Double Click event
    - Change event
Object Model

• Object ==> Noun
  – Form and Controls

• Property ==> Adjective
  – Color of a Form

• Method ==> Verb
  – Move a Form
Object Model (cont.)

- Event ==> Occur when the user takes action
  - User clicks a button, User moves a form
- Class ==> Template to create new object
  - Each control added is an Instance of a Class
Dot Notation

- Used to reference object's properties and methods in code
  - Object dot Property
    - Form1.Text
    - TextBox1.Text
  - Object dot Method
    - Form1.Hide()
    - TextBox1.Focus()
Object Model Analogy

- **Class** = automobile
- **Properties** = make, model, color, year
- **Object** = each individual car
  - Object is also an Instance of the automobile class
- **Methods** = start, stop, speedup, slowdown
- **Events** = car arrives, car crashes
Visual Basic.NET

- Included in Visual Studio.NET
  - Visual Basic (can also be purchased separately)
  - C++
  - C#
  - .NET Framework
- Complete rewrite from VB Version 6
Visual Studio.NET Editions

- Academic
- Professional
- Enterprise Developer
- Enterprise Architect
Steps for Writing VB Projects

- Design and Create the User Interface
- Set the Properties for the controls
- Write the Code for the events
- Test and Debug
Open this file directly to work on a Project

- One Solution File .sln
- Solution User Options File .suo
- Project Files .vbproj
- Project User Options File .vbproj.user
- Form Files .vb
- Resource File for the Form .resx
Visual Studio Environment

• The environment consist of the following:
  – Integrated Development Environment (IDE)
  – Form Designer
  – Editor for entering code
  – Compiler
  – Debugger
  – Object Browser
IDE New Project Dialog

A project for creating an application with a Windows user interface

Name: MyVBProject
Location: C:\MyVBProjects

Project will be created at C:\MyVBProjects\MyVBProject.
IDE Main Window

• Toolbars
• Document Window
• Form Designer
• Solution Explorer
• Properties Window
• Toolbox
IDE Main Window
VB Toolbox

- Holds the tools you place on a form
Visual Studio Help

- Extensive Help feature
- Includes Microsoft Developer Network library (MSDN)
- Entire reference manual
- Coding examples
3 Different Modes of Operation

- Design Time
- Run Time
- Break Time

“Look at the Title Bar”
Naming Rules (p 51-52)

• Always use standard names for objects
• No spaces or punctuation marks are allowed
• 3 letter lowercase prefix identifies the control type
  • Button - btn
  • Label  - lbl
  • Form  - frm
• If the identifier contains multiple words capitalize the 1st letter of each word
  – txtFirstName
## Recommended Naming Conventions for VB Objects

<table>
<thead>
<tr>
<th>Object Class</th>
<th>Prefix</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>frm</td>
<td>frmDataEntry</td>
</tr>
<tr>
<td>Button</td>
<td>btn</td>
<td>btnExit</td>
</tr>
<tr>
<td>TextBox</td>
<td>txt</td>
<td>txtPaymentAmount</td>
</tr>
<tr>
<td>Label</td>
<td>lbl</td>
<td>lblTotal</td>
</tr>
<tr>
<td>Radio Button</td>
<td>rad</td>
<td>radBold</td>
</tr>
<tr>
<td>CheckBox</td>
<td>chk</td>
<td>chkPrintSummary</td>
</tr>
<tr>
<td>Horizontal ScrollBar</td>
<td>hsb</td>
<td>hsbRate</td>
</tr>
<tr>
<td>Vertical ScrollBar</td>
<td>vsb</td>
<td>vsbTemperature</td>
</tr>
<tr>
<td>PictureBox</td>
<td>pic</td>
<td>picLandscape</td>
</tr>
<tr>
<td>ComboBox</td>
<td>cbo</td>
<td>cboBookList</td>
</tr>
<tr>
<td>ListBox</td>
<td>lst</td>
<td>lstIndegredients</td>
</tr>
</tbody>
</table>
Hello World Project

Design the User Interface

• Create a new project and set the Project Name to HelloWorld
• Add the controls on the form like you see them below
Properties Window-Label1

Rename Label1 to lblMessage
Set the Properties

- **Label**
  - Name: `lblMessage`
  - Text: leave blank

- **Button 1**
  - Name: `btnPush`
  - Text: Push Me

- **Button 2**
  - Name: `btnExit`
  - Text: Exit

- **Form**
  - Name: `frmHello`
  - Text: Hello World by *your name*
Set the Project's Startup Object

• The default startup object is Form1
• The name of the form should always be changed to adhere to naming rules
• Using Project menu, Properties change the startup object to match the new name
Project Property Page Dialog

HelloWorld Property Pages

Configuration: N/A
Platform: N/A

Assembly name:
HelloWorld

Output type:
Windows Application

Startup object:
Form1

Root namespace:
frmHello

Information
Project folder: C:\Docs\VBDotNet\Figures\ProgramsForFigures\HelloWorld1\nProject file: HelloWorld.vbproj
Output name: HelloWorld.exe

OK Cancel Apply Help
Write the Code

- While the project is running the user can perform actions
- Each action by the user causes an Event to occur
- Write code for the events you care about, in other words the events you want to respond to
- Code is written as event procedures
- VB will ignore events for which you do not write code
Editor Window

- Declarations Section
- Class list
- Method list

```vbnet
Public Class frmHello
    Inherits System.Windows.Forms.Form

    Windows Form Designer generated code

    Private Sub btnPush_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles btnPush.Click
        ' Code here
    End Sub
End Class
```
Remark Statement

• Also known as Comment, you use a remark for documentation
• They are Non-executable lines
• All remarks will be removed from the code inside the exe
• Automatically colored Green in Editor
• Begins with an apostrophe ( ' )
  – On a separate line from executable code
  – At the right end of a line of executable code

' Display the Hello World message
Assignment Statement

- Assigns a value to a property or variable
- Operates from right to left
- Enclose text strings in quotation marks (" ")
- Add the code below to your project

```vbnet
Private Sub btnPush_Click(ByVal ... , ByVal ...) Handles btnPush.Click
    'Display the Hello World message
    lblMessage.Text = "Hello World"
End Sub
```
Ending a Program

- Execute the Close Method of the Form
- Methods always have parentheses (this will help you distinguish them from Properties which never have parentheses)
- Current Form may be referenced as Me
- Add the code below to your project

```vbnet
Private Sub btnExit_Click(ByVal ..., ByVal ...) Handles btnExit.Click
    'Exit the project
    Me.Close()
End Sub
```
Print the Code

- File Menu, Print
- Prints complete code listing
- Uses arrow symbol ↳ to denote line continuation
- Examine sample output on page 37
Finding and Fixing Errors
Pages 47-51

• Syntax Errors
• Run-Time Errors
• Logic Errors