

Lecture 2

Introduction to Visual Basic.NET

SIT 221

Event Driven Programming



Windows Applications with VB



- Windows Graphical User Interface
- Window = Form
- Toolbox of elements called Controls
 - Text Box, Label, Check Box, Button, etc.

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
 - `Form.Text`, `TextBox.Text`
 - Object dot Method
 - `Form.Hide()`, `TextBox.Focus()`
- To reference an object's events use an underscore instead of a dot
 - `Button_Click`, `ListBox_TextChanged`



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 = pedal (gas, break) is pushed

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/Define the User Interface
- Plan/Set the Properties
- Plan/Write the Code
- Test and Debug



VB Application Files

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



- Integrated Development Environment (IDE)
- Form Designer
- Editor for entering code
- Compiler
- Debugger
- Object Browser

Visual Studio IDE Start Page



Start Page

Start

Get Started

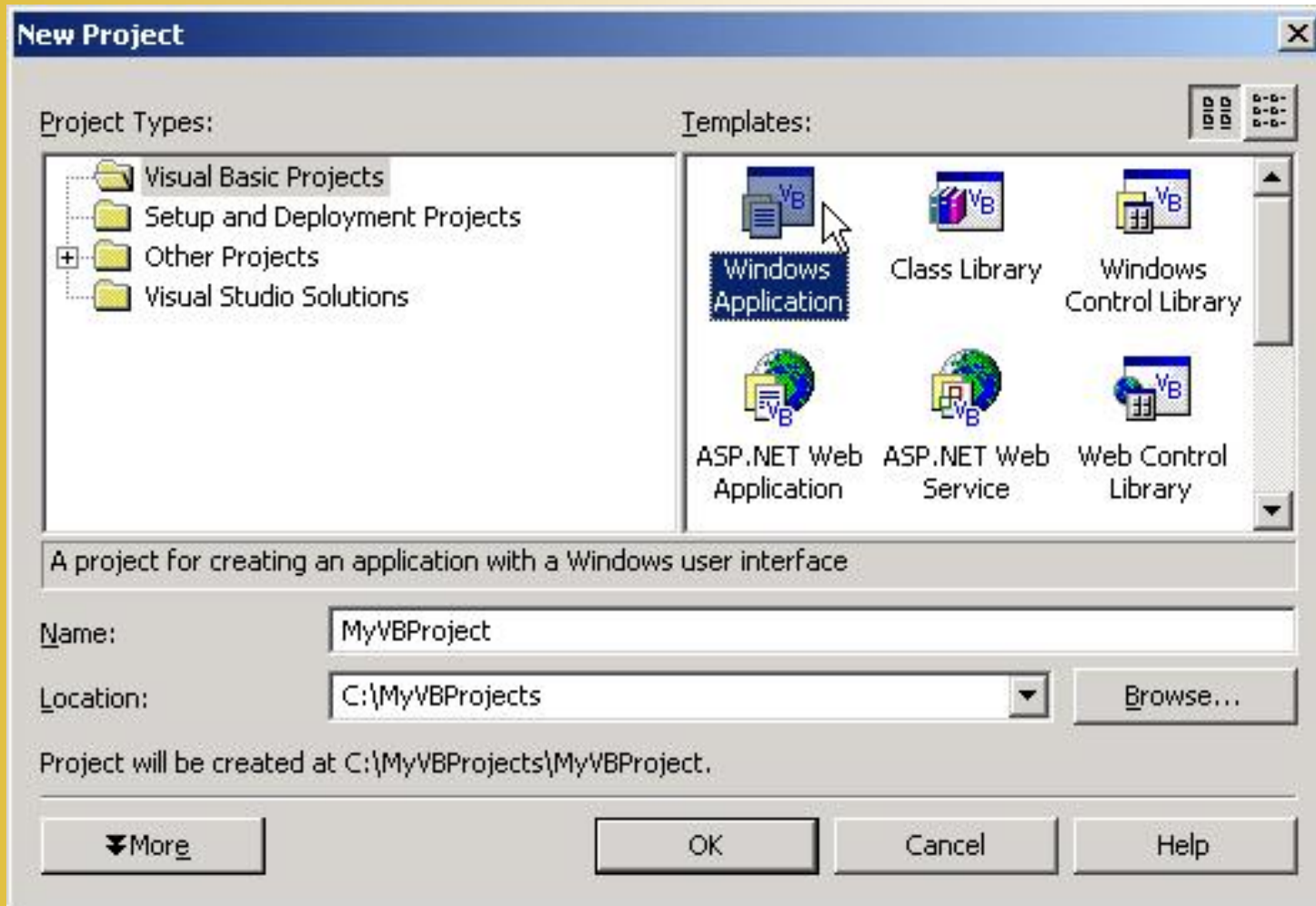
- What's New
- Online Community
- Headlines
- Search Online
- Downloads
- XML Web Services
- Web Hosting
- My Profile

Projects **Find Samples**

Name	Modified
HelloWorld	Today
Light	Today
Ch0201	Today

Open Project **New Project**

IDE New Project Dialog

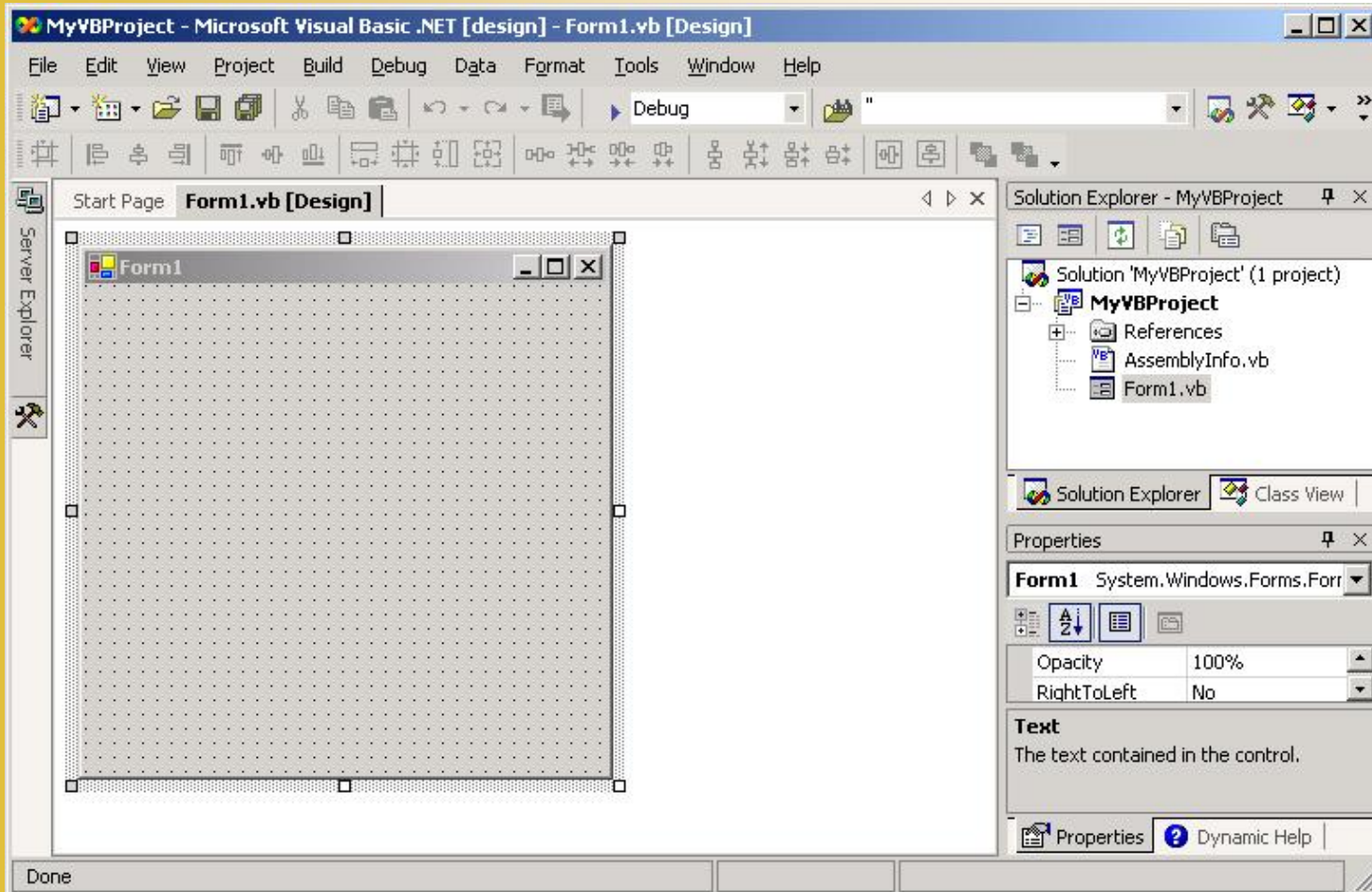


IDE Main Window



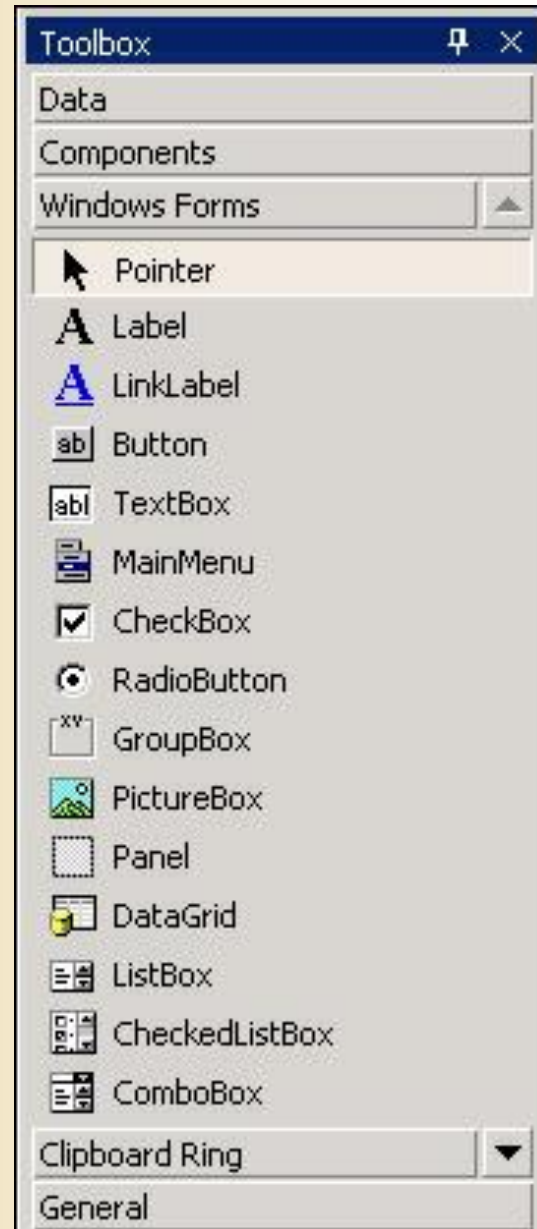
- Toolbars
- Document Window
- Form Designer
- Solution Explorer
- Properties Window
- Toolbox

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

Modes



- Design Time
- Run Time
- Break Time

“Look at the Title Bar”

Naming Rules



- Always use standard names for objects
- No spaces or punctuation marks
- 3 letter lowercase prefix identifies control type
 - Button-btn
 - Label-lbl
 - Form-frm
- If multiple words capitalize 1st letter of each word

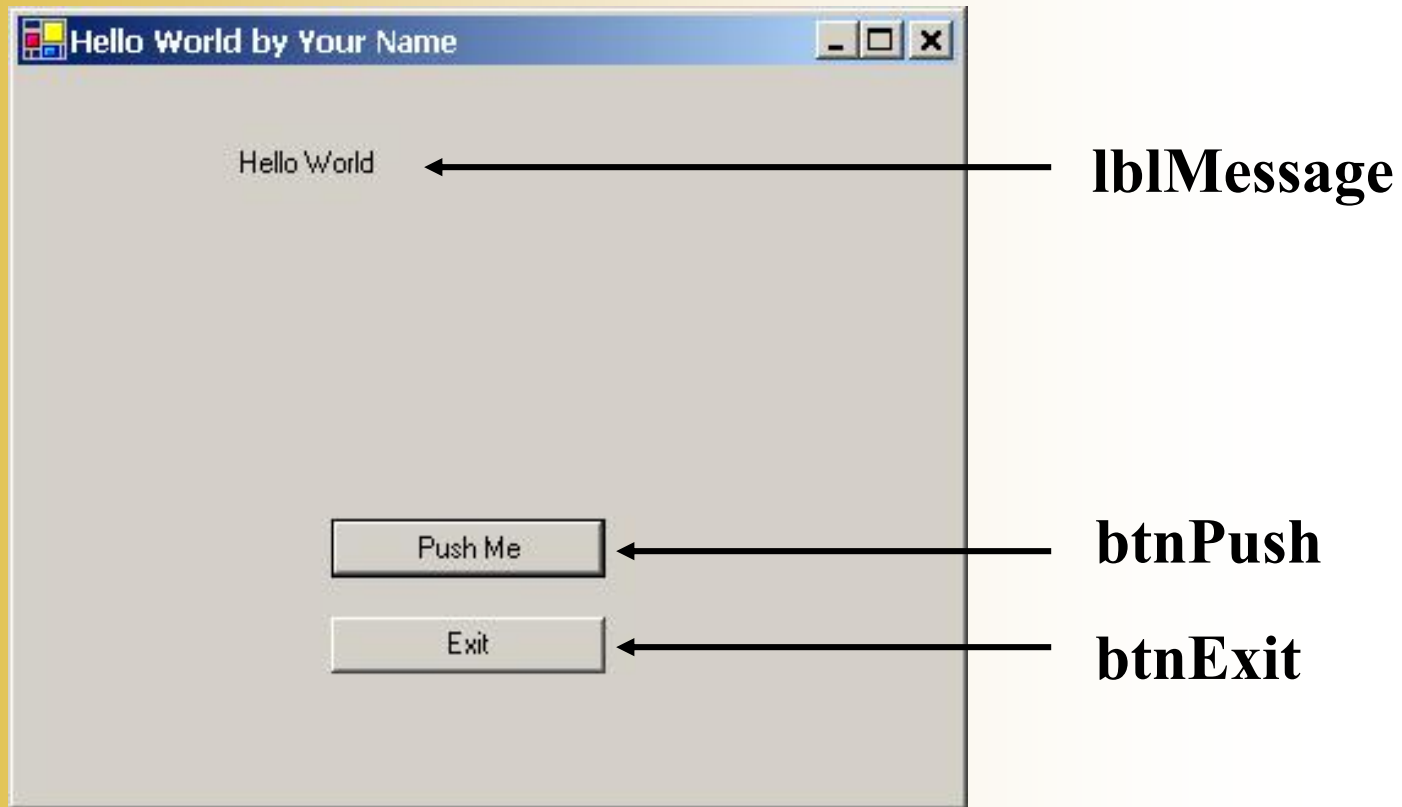
Recommended Naming Conventions for VB Objects



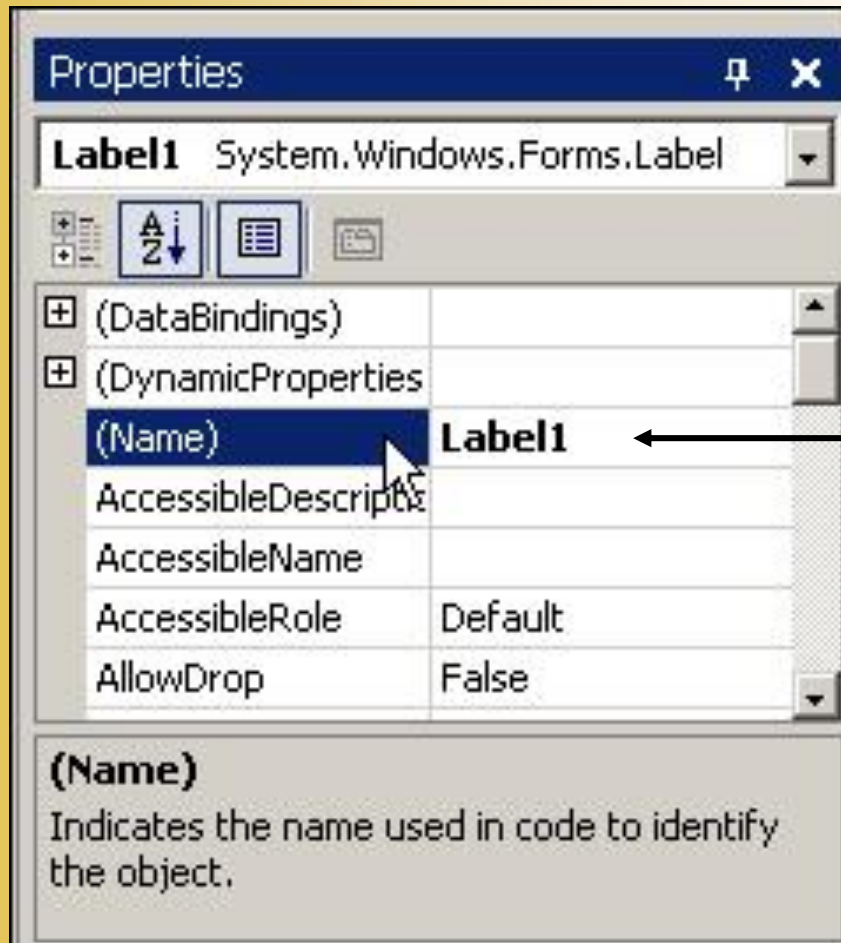
Object Class	Prefix	Example
Form	frm	frmDataEntry
Button	btn	btnExit
TextBox	txt	txtPaymentAmount
Label	lbl	lblTotal
Radio Button	rad	radBold
CheckBox	chk	chkPrintSummary
Horizontal ScrollBar	hsb	hsbRate
Vertical ScrollBar	vsb	vsbTemperature
PictureBox	pic	picLandscape
ComboBox	cbo	cboBookList
ListBox	lst	lstIngredients

Hello World Project (p 13)

Design the User Interface



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 Configuration Manager...

Common Properties

- General
- Build
- Imports
- Reference Path
- Designer Defaults

Configuration Properties

Assembly name: HelloWorld

Output type: Windows Application Startup object: Form1

Root namespace: frmHello

Sub Main

Information

Project folder: C:\Docs\VBDotNet\Figures\ProgramsForFigures\HelloWorld1\
Project 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, the events you want to respond with code
- 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

```
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)
    End Sub
End Class
```



Remark Statement

- Also known as Comment, used for documentation
- Non-executable
- 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 (" ")

lblMessage.Text="Hello World"

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**

```
Me.Close( )
```

Test and Debug



- Save Project - File Menu, Save All
- Run Project

- Debug Menu, Start
- Start Without Full Compile
- Start With Full Compile



(F5)

(CTRL F5)

- Correct any Errors and Rerun
 - Syntax errors
 - Compile errors
 - Run-Time Errors
 - Logic errors

"Help is always available from the Help Menu or by pressing F1."

Print the Code



- File Menu, Print
- Prints complete code listing
- Uses arrow symbol ✓ to denote line continuation