

Getting to Know .NET

Approaches and Tools for Documenting .NET APIs

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Does Everyone Have the .NET Framework?

- Free download from Microsoft
- Distributed with many applications
- But what is it?
- How can I document it?
- How can I upgrade existing documentation?

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Here's What Microsoft Says

"Microsoft® .NET is a **vision and set of Microsoft software technologies** for connecting information, people, systems, and devices. It enables a high level of software integration through the use of **XML Web services**—small, discrete, building-block applications that connect to each other as well as to other, larger applications over the Internet. Microsoft Visual Studio® .NET and the Microsoft .NET Framework allow developers to develop **XML Web services** quickly and integrate them easily with other applications."

MSDN Library, emphasis added

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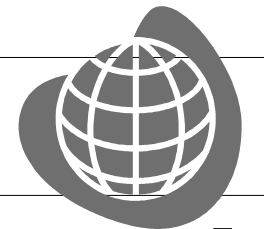
The Vision

For now:

XML Web services are only a small part of .NET

In future:

Distributed applications covering the globe?

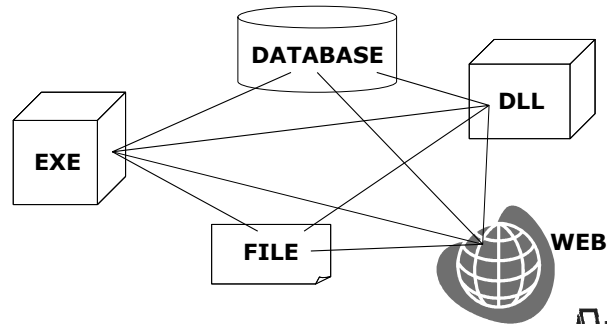


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So What is .NET Really?

- New Windows component architecture
- Replacing COM (ActiveX)



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Visual Studio .NET

- Development Environment
- .NET Languages
 - Visual Basic .NET
 - Visual C# .NET
 - Visual C++ .NET
 - Visual J# .NET

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Comparison of VB .NET and C#

Visual Basic .NET

```
Dim Str As String
Str = "hello"
MsgBox(Str)
```

Visual C#

```
string Str;
Str = "hello";
MessageBox.Show(Str);
```

- Both are new languages
- VB .NET derives from the Basic/VB6 family
- C# derives from the C/C++/Java family
- No pointers
- Similar capabilities

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Performance

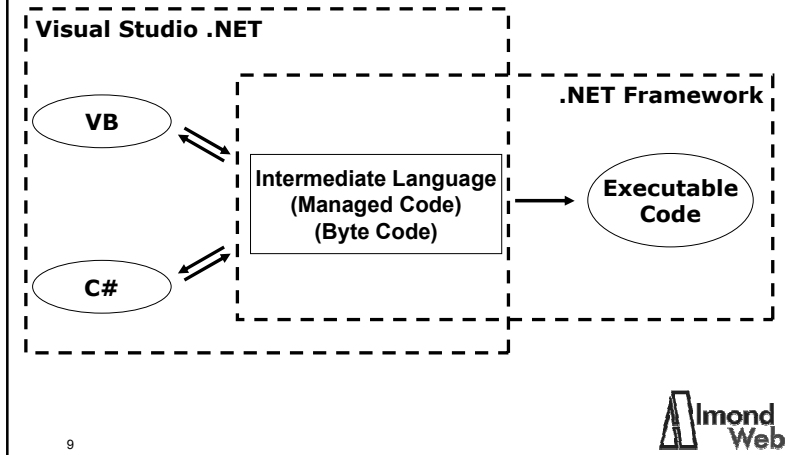
Roughly:

VC++ > C# ~ VB .NET > VB6

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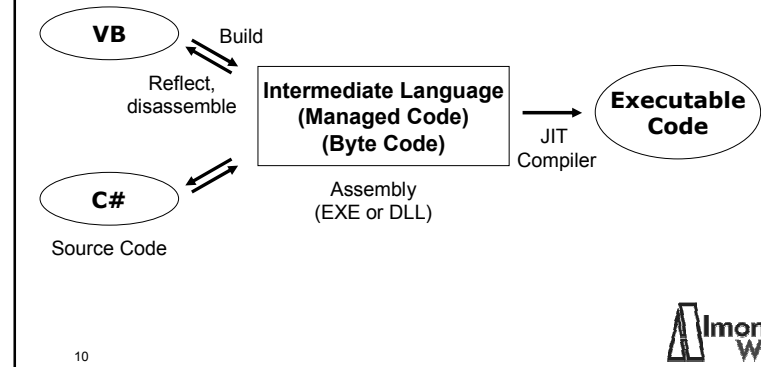
Two-Stage Compilation



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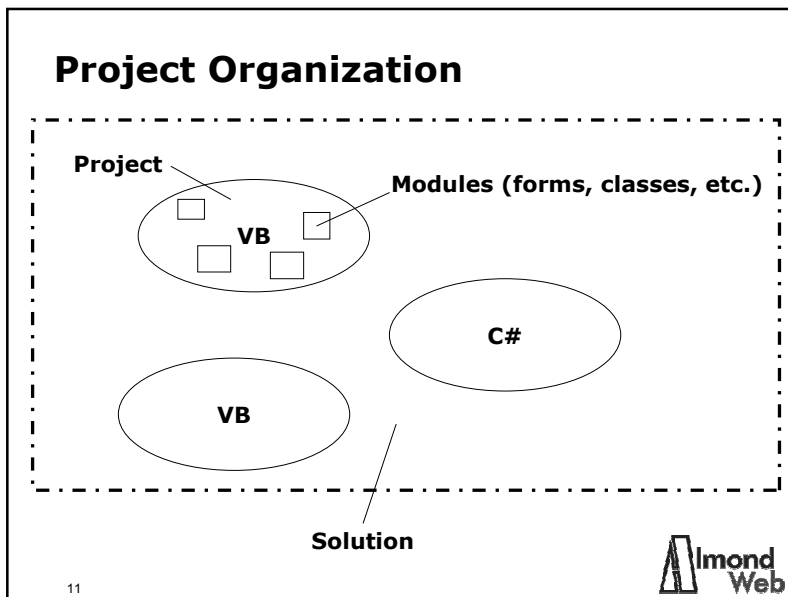
.NET Terminology



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Project Organization



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.NET Framework

- Common Language Runtime
- System requirement
- Free
- Object-oriented Windows API
 - The way .NET applications interact with Windows
 - Replacing the Win32 API
- Large set of namespaces and classes
 - System namespace
 - System.Exception class
 - System.Reflection namespace
 - System.Windows.Forms namespace
 - System.Windows.Forms.ListBox class

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.NET API Documentation Needs



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Developer's Guide

- Concepts
 - What you can do with the API
 - How it works
- Tutorial
 - “Hello, World” program
- How to ...
 - Programming guidelines
 - Code examples
 - Application design examples



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Object-Model Reference

- Online help
- One help topic per object
- Typically one help topic per property or method
- Thousands of links



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The screenshot shows a web browser window titled "Service Optimization .NET API Reference". The left sidebar contains a tree view with the following structure:

- Service Optimization .NET /
- Legal Notice
- Service Optimization .NET /
- ClickSchedule Client-Side /
- Objects
- Properties
- Methods
- Generic Interfaces
- Enumerated Constants
- DLL Files
- ClickSchedule Server-Side
- ClickSchedule User-Interface
- SXP Utilities
- Time-Zone Support
- Shared Client-Side and Server-Side

The main content area displays the documentation for the **W6CBFTask Object**. The text includes:

- Declared in:** #6CBFObjModLib.dll
- Qualified Name:** W6CBFObjModLib.W6CBFTask
- Description:** A W6CBFTask object contains the data that define a task. For a general discussion of tasks and their properties, see the *ClickSchedule Users Guide*.
- Properties:** AppointmentFinish, AppointmentStart, Calendar, CallID, City, ConfirmationDate, ContactDate, ContactName, ContactPhoneNumber, ContractType, CountryID, Customer
- Methods:** GetAssignments, GetDuration, GetObjectType, GetProperty, GetPropertyByName, GetPropertyCount, GetPropertyID, GetPropertyName, GetPropertyType, Serialize, SetDuration, SetProperty
- Implements:** IW6CPObject
- See also:** W6CBFAs, W6CBFEF, W6CBFTa

Object Topic

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Property Topic

Service Optimization .NET API Reference
ClickSchedule Client-Side Business API

AppointmentFinish Property

Read/Write

Type

Date

Description

The end of an appointment for the task, that is, the latest time that is permitted for an assignment start.

The [WBCBFAppOptions](#) object uses this property to book appointments.

When you afterwards schedule the task, you should use a time rule to enforce the appointment, that is, ensure that the task is assigned before the [AppointmentFinish](#) time.

Applies to

[WBCBFTask](#)

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Method Topic

Service Optimization .NET API Reference
ClickSchedule Client-Side Business API

GetDuration Method

Syntax

```
Sub GetDuration( _
    ByRef varDays As Object, _
    ByRef varHour As Object, _
    ByRef varMinute As Object, _
    ByRef varSecond As Object)
```

Description

This method retrieves the [Duration](#) property of a task, in units of days : hours : minutes : seconds.

Parameters

[varDays](#)
(Out) Days.

[varHour](#)
(Out) Hours.

[varMinute](#)
(Out) Minutes.

[varSecond](#)
(Out) Seconds.

Applies to See also

[WBCBFTask](#) [SetDuration](#)

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Tools for .NET API Documentation

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Link Automation in Word and WebWorks

- Source text is same as target title
 - Link from "GetDuration" to "GetDuration Method"
- Automate the match of source with target
- Example:
 - Customization of WebWorks Publisher for Word
 - 20 Word documents
 - 1,700 help topics
 - 12,200 autolinks
 - 0 Word hyperlinks
 - 0 Word bookmarks to be maintained
 - 0 link errors

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Innovasys Document! X

- Generates help topics from source code or from assemblies
- The help contains the API syntax
- You add the explanations
- Can generate CHM or .NET Help (HTML Help 2)
 - .NET Help integrates into Visual Studio .NET
 - Context-sensitive help for .NET APIs
- Proprietary internal format
- Standardized help layout

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Object Browser of Visual Studio

Objects

Members of "ListBox"

- SelectedIndices() As System.Windows.Forms
- SelectedItem() As Object
- SelectedItems() As System.Windows.Forms.L
- SelectionMode() As System.Windows.Forms.
- SetBoundsCore(ByVal Integer, ByVal Integer, **Object**)
- SetItemCore(ByVal Integer, ByVal Object)
- SetItemsCore(ByVal System.Collections.IList)
- SetSelected(ByVal Integer, ByVal Boolean)**
- Sort()
- Sorted() As Boolean
- TabIndex() As Integer

Public Sub **SetSelected**(ByVal *index* As Integer, ByVal *value* As Boolean)

Member of: System.Windows.Forms.ListBox

Summary:
Selects or clears the selection for the specified item in a System.Windows.Forms.ListBox .

Object

Method

Syntax (copy to doc)

Comment

Lutz Roeder's .NET Reflector

Lutz Roeder's .NET Reflector

File View Tools Help

Visual Basic

Disassembler

Protected Overrides Sub RefreshItem(ByVal Integer, ByVal Object)

Private Sub RefreshItems()

Private Sub ResetItemHeight()

Protected Overrides Sub SetBoundsCore(ByVal Integer, ByVal Integer, ByVal Integer, ByVal Integer)

Protected Overrides Sub SetItemCore(ByVal Integer, ByVal Object)

Protected Overrides Sub SetItemsCore(ByVal System.Collections.IList)

Public Sub SetSelected(ByVal index As Integer, ByVal value As Boolean)

Protected Overridable Sub Sort()

Public Overrides Function ToString() As String

Private Sub UpdateHorizontalExtent()

Private Sub UpdateMaxItemWidth(ByVal Integer)

<SecurityPermission(SecurityAction.LinkDemand, SecurityPermissionFlags.ControlFlow, SecurityPermissionFlags.Demand)

Protected Overridable Sub WmReflectCommand(ByRef m As IntPtr)

Private Sub WmReflectDrawItem(ByRef m As IntPtr)

Private Sub WmReflectMeasureItem(ByRef m As IntPtr)

<SecurityPermission(SecurityAction.LinkDemand, SecurityPermissionFlags.ControlFlow, SecurityPermissionFlags.Demand)

Protected Overrides Sub WndProc(ByRef m As IntPtr)

Public Class **ListBox**

Inherits ListControl

Name: System.Window

Assembly: System.Window, Version=1.0.50

Properties

Public Overrides Property BackColor As Color

<Browsable(False), EditorBrowsable(EditorBrowsableState.Never)

Public Overrides Property BackgroundImage As Image

Upgrading API Documentation from COM to .NET

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Updating Visual Basic Code Samples

VB 6

```
Dim objFruit As Variant
Set objFruit = New Apple
Call objFruit.Eat("sour")
objFruit.MakeSauce "sweet"
```

VB .NET

```
Dim objFruit As Object
objFruit = New Apple
objFruit.Eat("sour")
objFruit.MakeSauce("sweet")
```

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COM Interoperability

- "Interop" features
- .NET projects can reference COM DLLs
 - .NET creates "interop.DLLName.dll"
- COM project can reference .NET DLLs
 - .NET creates "DLLName.tlb"
 - Special coding requirements

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VB 6 (Before Upgrade Wizard)

```
Option Explicit
```

```
Private Sub cmdHello_Click()
    Call MsgBox("Hello, World")
End Sub
```



3 lines code, 1 line boilerplate

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VB .NET (After Upgrade Wizard)

```
Option Strict Off
Option Explicit On
Friend Class Form1
    Inherits System.Windows.Forms.Form
#Region "Windows Form Designer generated code "
    Public Sub New()
        MyBase.New()
        If m_vb6FormDefInstance Is Nothing Then
            If m_InitializingDefInstance Then
                m_vb6FormDefInstance = Me
            Else
                Try
                    'For the start-up form, the first instance created is the default instance.
                    If System.Reflection.Assembly.GetExecutingAssembly.EntryPoint.DeclaringType Is
                        m_vb6FormDefInstance = Me
                End If
                Catch
                End Try
            End If
        End If
        'This call is required by the Windows Form Designer.
        InitializeComponent()
    End Sub
    'Form overrides dispose to clean up the component list.
    Etc.
    Etc.
    Etc.
```

3 lines code, 93 lines boilerplate

You need to document only the 3 lines

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