



Programming the .NET Framework 4.5

Module 01 - Introduction

In This Course

- ✦ Module 01 – Introduction
 - ✦ Module 02 – Memory Management
 - ✦ Module 03 – Streams and File I/O
 - ✦ Module 04 – Serialization
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 - ✦ Module 06 – Application Domains
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In This Module

- ✦ Overview of the .NET Framework
 - ✦ Overview of the .NET Type System
 - ✦ Visual Studio and Framework Versions
 - ✦ Compatibility
 - ✦ Visual Studio Multi-Targeting
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.NET Framework Overview

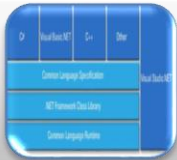


What is the .NET Framework?

What is the .NET Framework?



.NET Application



Base Class Library



Common Language Runtime



Execution Engine



Operating System

.NET Application Execution



Source Code



Language Compiler (C#, VB.NET...)



Microsoft Intermediate Language (IL)



Just-In-Time Compiler (JIT)



Native Code Execution

.NET Type System Overview

System.Object

```
graph TD;
    SO[System.Object] --- RT[Reference types];
    SO --- VT[Value types];
    RT --- C[Classes];
    RT --- I[Interfaces];
    RT --- D[Delegates];
    RT --- A[Arrays];
    RT --- S[Strings];
    VT --- ST[Structures];
    VT --- E[Enums];
    VT --- INT[Int16, Int32, Int64];
    VT --- CB[Char, Boolean];
    VT --- SD[Single, Double];
```

Reference types

- Classes
- Interfaces
- Delegates
- Arrays
- Strings

Value types

- Structures
- Enums
- Int16, Int32, Int64
- Char, Boolean
- Single, Double

Visual Studio and Framework Versions

Visual Studio 2002/2003

- .NET 1.0/1.1
- CLR 1.0/1.1
- VB.NET 7.0
- C# 1.0

Visual Studio 2005

- .NET 2.0
- CLR 2.0
- VB.NET 8.0
- C# 2.0

Extensions for Visual Studio 2005

- .NET 3.0
- CLR 2.0

Visual Studio 2008

- .NET 3.5
- CLR 2.0
- VB.NET 9.0
- C# 3.0

Visual Studio 2010

- .NET 4.0
- CLR 4.0
- VB.NET 10.0
- C# 4.0

Visual Studio 2012

- .NET 4.5
- CLR 4.5
- VB.NET 11.0
- C# 5.0

Visual Studio 2013

- .NET 4.5.1
- CLR 4.5.1
- VB.NET 11.0
- C# 5.0

Compatibility

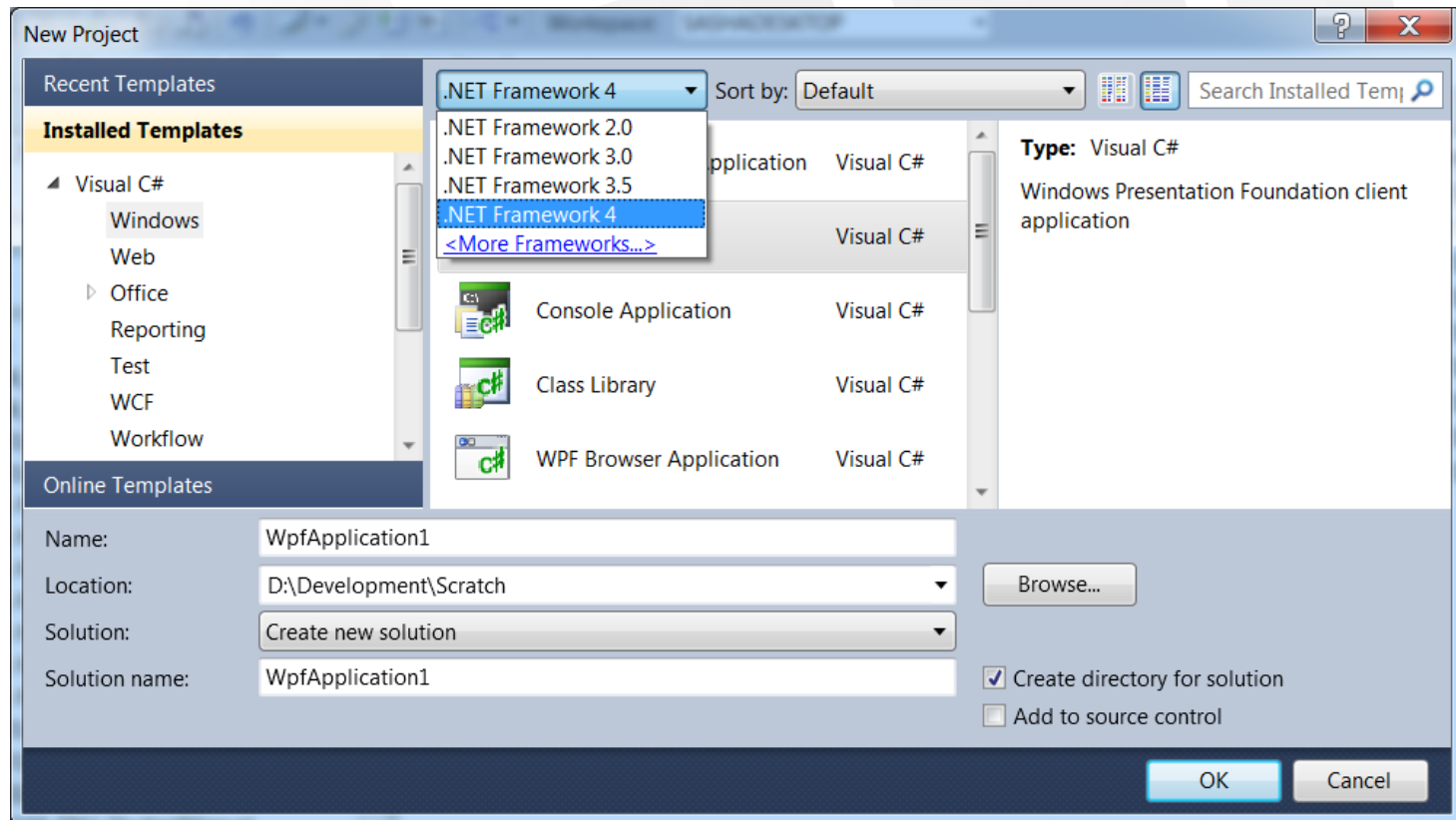
- ✦ The BCL is *usually* fully backwards-compatible
- ✦ The CLR is *not always* backwards-compatible



- CLR 4.0 allows side-by-side execution

Visual Studio Multi-Targeting

- Specify the framework version to target



Summary

- ✦ Overview of the .NET Framework
 - ✦ Overview of the .NET Type System
 - ✦ Visual Studio and Framework Versions
 - ✦ Compatibility
 - ✦ Visual Studio Multi-Targeting
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Questions

