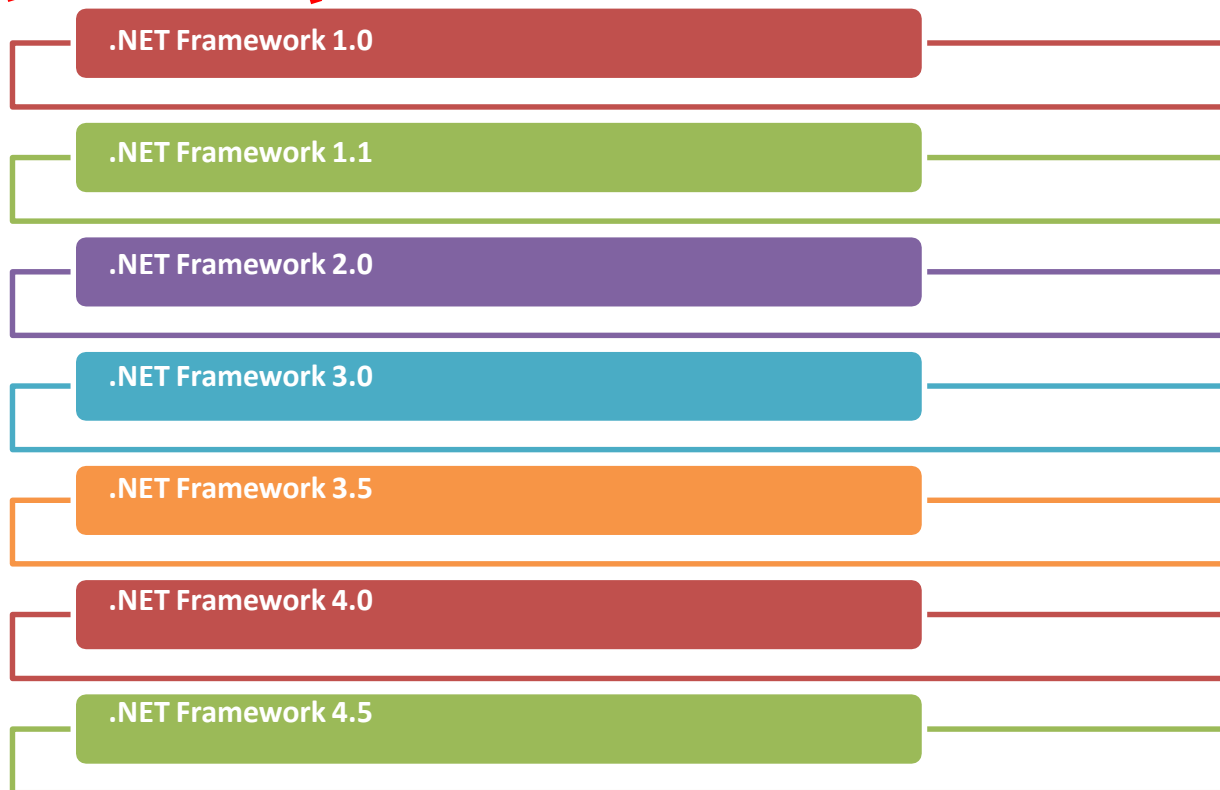


- ◆ The .NET Framework is an infrastructure that is used to:
 - ▮ Build, deploy, and run different types of applications and services using .NET technologies.
 - ▮ Minimize software development, deployment, and versioning conflicts.

The .NET Framework Architecture 7-8

- ◆ Microsoft has released different versions of the .NET Framework to include additional capabilities and functionalities with every newer version.
- ◆ Following are the versions of the .NET Framework:



- ◆ A programmer can develop applications using one of the languages supported by .NET.
- ◆ These applications make use of the base class libraries provided by the .NET Framework.

Example

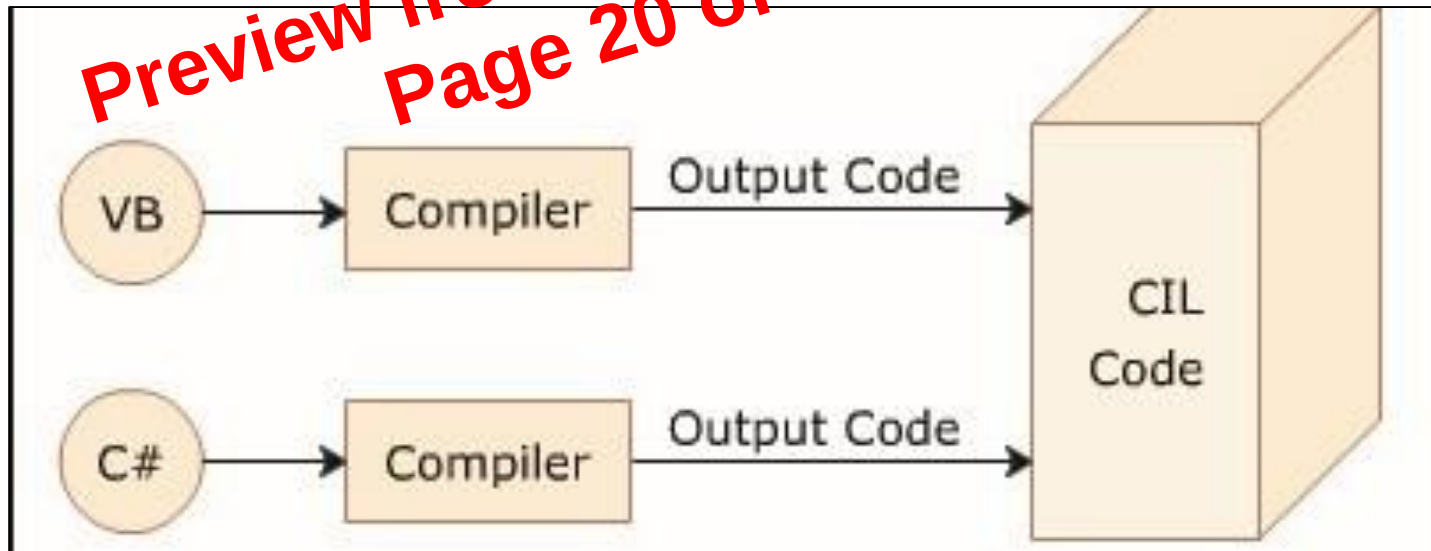
- ◆ To display a text message on the screen, the following command can be used:

```
System.Console.WriteLine(".NET Architecture");
```

- ◆ The same `WriteLine()` method will be used across all .NET languages.
- ◆ This is done by making the Framework Class Library as a common class library for all .NET languages.

Common Intermediate Language (CIL) 2-2

- ◆ The following figure depicts the concept of CIL:



- ◆ Dynamic Language Runtime (DLR):
 - ▮ Is a runtime environment built on top of the CLR to enable interoperability of dynamic languages such as Ruby and Python with the .NET Framework.
 - ▮ Allows creating and porting dynamic languages to the .NET Framework.
 - ▮ Provides dynamic features to the existing statically typed languages. For example, C# relies on the DLR to perform dynamic binding.
- ◆ The .NET Framework languages, such as C#, VB, and J# are statically typed languages.
- ◆ In dynamic languages, programmers are not required to specify object types in the development phase.

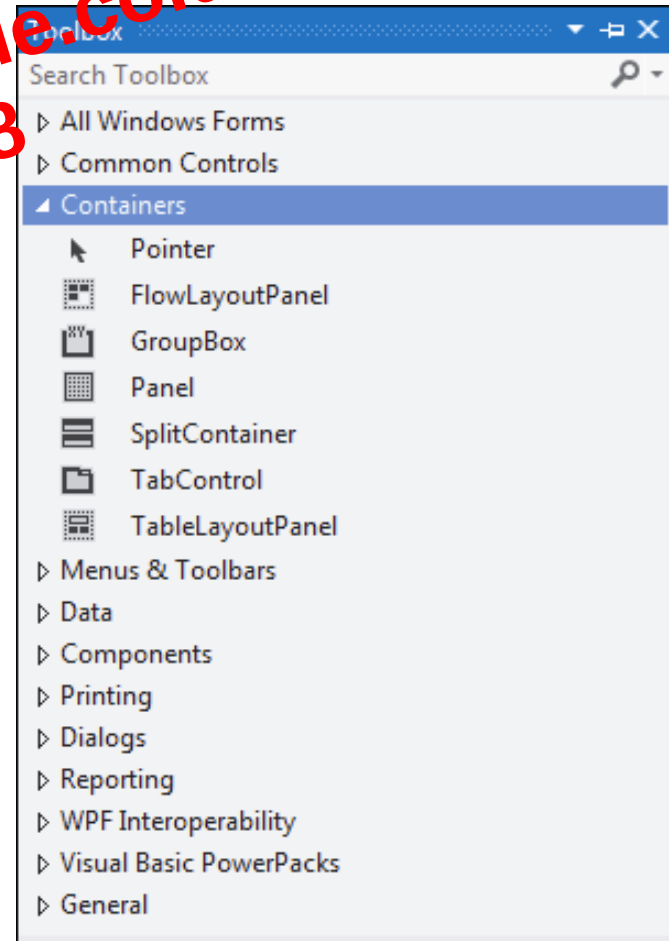
◆ Visual Studio 2012 Environment:

- ▮ Provides the environment to create, deploy, and run applications developed using the .NET framework.
- ▮ Comprises the Visual Studio Integrated Development Environment (IDE), which is a comprehensive set of tools, templates, and libraries required to create .NET framework applications.
- ▮ Is a complete set of development tools for building high performance desktop applications, XML Web Services, mobile applications, and ASP Web applications.
- ▮ Is also used to simplify team-based design, development, and deployment of enterprise solutions.
- ▮ Is an IDE used to ease the development process of .NET applications such as Visual C# 2012 and Visual Basic 2012.
- ▮ Uses the same IDE, debugger, Solution Explorer, Properties tab, Toolbox, standard menus, and toolbars for all the .NET compatible languages.

◆ Toolbox:

- ▮ Displays the controls and components that can be added to the Design mode of the form.
- ▮ Displays the contents of the Toolbox window and change according to the type of form the user is creating or editing.

For example, if the user is adding tools onto a Web form, the Toolbox displays the server controls, HTML controls, data controls, and other components that the Web form may require.



- ◆ To use the controls or components from the toolbox:
 - ▮ The user can drag and drop the required control or component onto a form.
 - ▮ If the user is creating or editing codes in the code editor, the Toolbox contains only a Clipboard Ring.
 - ▮ The Clipboard Ring contains the last 20 items that have been cut or copied so that they can be pasted into the document, if necessary.
 - ▮ To paste the text from the Clipboard Ring, click the text and drag it to the place where it is to be inserted.

- ◆ Console applications that are created in C# run in a console window. This window provides simple text-based output.
- ◆ The `csc` (C Sharp Compiler) command can be used to compile a C# program.
- ◆ Following are the steps to compile and execute a program:
 1. **Create a New Project.**
 2. **Compile a C# Program.**
 3. **Execute the Program.**