

Overview of the Visual Studio .NET(IDE)



- Introduction to .NET Framework
- Common Language Runtime
- Introduction to Visual Studio.NET IDE
- Menu Bar and Tool Bar
- Design Window, Code Editor, Server Explorer, Solution Explorer, Toolbox, Properties Window, Object Browser, Class view Window
- Working with windows forms and events, Adding different controls of Toolbox to forms(Text Box, Label, Check Box, Radio Button, Button, Frame, List Box, Combo Box, Picture Box, Progress Bar, Timer)

What is .Net Framework?



- Microsoft .NET is not a programming language and not an operating system.
- It lies between operating system and programming language.
- It is a framework that supports programming languages such as Microsoft Visual Basic .NET, Microsoft Visual J#.Net, Microsoft Visual C#.Net, and so on.
- Microsoft .NET enables you to develop applications for different environments and devices. For example, you can build a web application for the internet and create a window application that can run on any device such as a PC, mobile device.
- It provides a powerful integrated development environment (IDE) that supports a drop and drag feature.

What is .Net Framework?



- The application programming code is first compiled by language compiler into Microsoft intermediate code and Microsoft intermediate language code is compiled by CLR(common language runtime) at run time and converted into native code for running application.
- So .NET is only framework (developed by Microsoft) it is not a operating system and programming language.

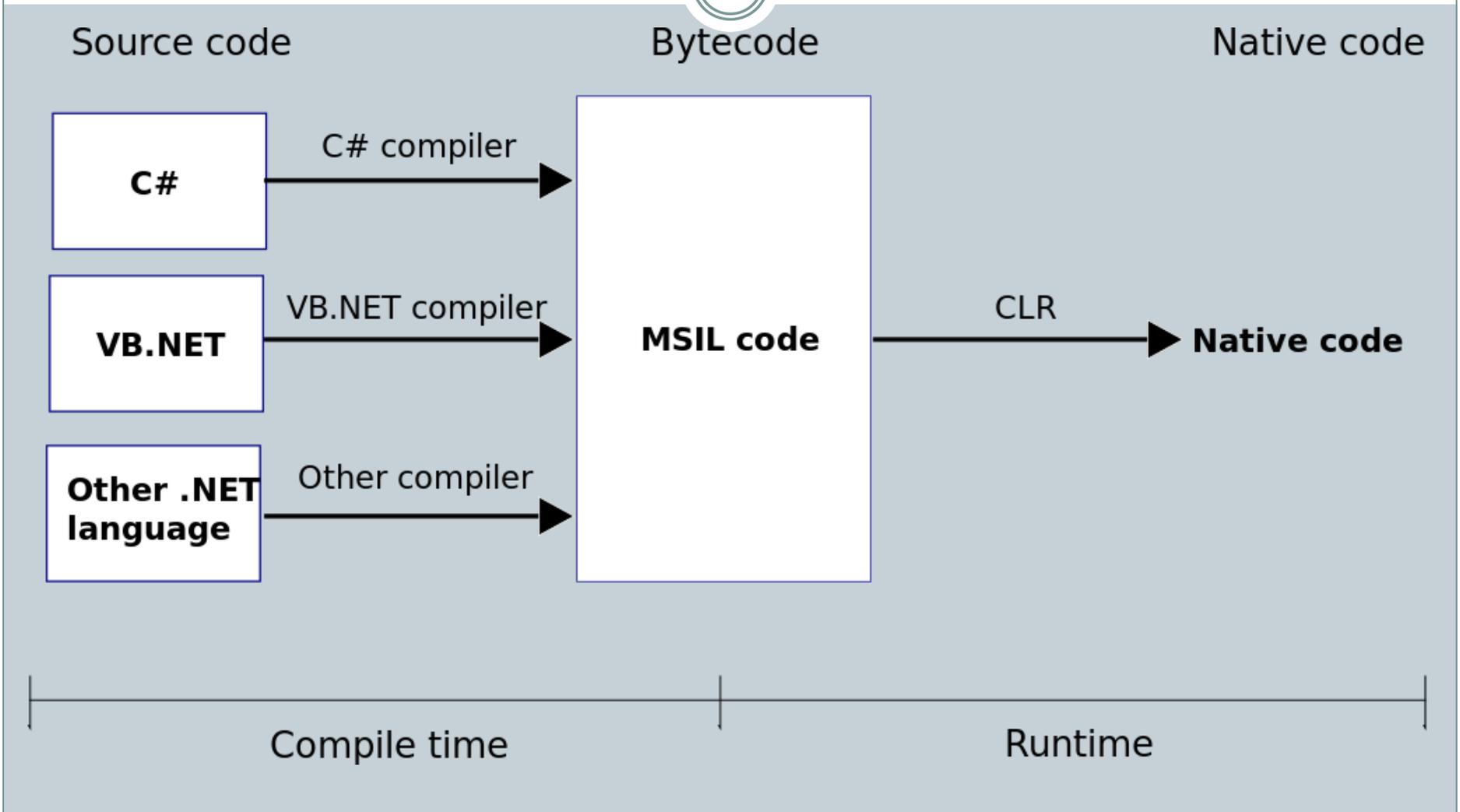
.NET Framework version



- .Net Framework 1.0(released in 2002)
- .Net Framework 1.1
- .Net Framework 2.0
- .Net Framework 3.0
- .Net Framework 3.5
- .Net Framework 4.0
- .Net Framework 4.5
- .Net Framework 4.8(latest Version)

Each version of .Net Framework contain the common language runtime(CLR) as its core component and include additional component such as base class libraries or other managed libraries.

General Diagram



Visual Studio Version(IDE)



- Visual Studio 2002-> .Net Framework 1.0
- Visual Studio 2003-> .Net Framework 1.1
- Visual Studio 2005-> .Net Framework 2.0
- Visual Studio 2008-> .Net Framework 3.0,3.5
- Visual Studio 2010-> .Net Framework 4.0
- Visual Studio 2010,2012-> .Net Framework 4.5
- Visual Studio 2015-> .Net Framework 4.6
- Visual Studio 2017-> .Net Framework 4.7

Features of .Net Framework



1) Language Interoperability:-

- It means code written in one language can be used by other language.
- It helps to maximize code reusability and improve the efficiency of development process.
- This can be achieved because all the .Net code is compiled to intermediate language.

2) Common Language Runtime(CLR):-

- It is actually a virtual machine component of .Net Framework.
- All program run under CLR ensure some specific properties and behaviour in the area of memory management , security and exception handling.

Features of .Net Framework



○ CLR consist of following:-

- ✦ Load the intermediate code of program into runtime.
- ✦ Compile intermediate language code into native code.
- ✦ Execute and manage the code.
- ✦ Enforce security, type safety and provide thread scope.
- ✦ The code that run within CLR is called managed code whereas the code that run outside the CLR is called unmanaged code.
- ✦ The CLR also provide interoperability layer which allow both managed and unmanaged code to interact with each other.
- ✦ The main function of CLR to convert managed code into native code and then execute the program.

Features of .Net Framework



3) Language independence:-

- It makes the power of various languages in one platform.
- It means programmer can develop application in any of language supported by .NET .
- After compilation of source code of all languages converted into common intermediate language code that enhance the language independence.

4) Base Class Libraries:-

- It is a library of functionality available to all languages using .NET framework.
- It provides classes that encapsulate a number of common function including file reading and writing database interaction, XML documentation so on.

Features of .Net Framework



5) Automatic memory management (Garbage collection)

- The garbage collection take care of freeing unused memory at appropriate level.
- The major feature of .NET framework CLR is that running garbage collector automatically to handle the allocation and release of object memory reference that is the garbage collector is responsible for collecting object no longer referenced by application.

6) Security:-

- Security such as type safety, code access security and role based authentication make overall application more secure.

Features of .Net Framework



7) Easy development of web application:-

- With the help of ASP.NET available on .NET, it become easy to develop web application and web services.
- It provide advance user interface element such as calendar, grid view and various controls like check box, list box that saves a lot of time and code from the programmer side.

8) Type safety:-

- During the program execution the type checker ensure that all the object and values, reference to these object have a valid type.
- For example it ensure that only an integer value is assigned to integer variable.

Features of .Net Framework



9) Managed multithreading support:-

- Application running in CLR can utilize managed multithreading support that is .NET framework allow a single process to be divided into sub process can contain one or more thread.

10) Common Type System:-

- This provide the necessary data type and object type which you need to develop application in a different language. All language share type system.
- It means string in visual basic .NET is same as string in visual C# language.

.NET LANGUAGES



- .NET Framework supports more than 60 programming languages in which 11 programming languages are designed and developed by Microsoft. The remaining Non-Microsoft Languages which are supported by .NET Framework but not designed and developed by Microsoft.

11 Programming Languages which are designed and developed by Microsoft are:

- C#.NET
- VB.NET
- C++.NET
- J#.NET
- F#.NET
- JSCRIPT.NET
- WINDOWS POWERSHELL
- IRON RUBY
- IRON PYTHON
- C OMEGA
- ASML(Abstract State Machine Language)