

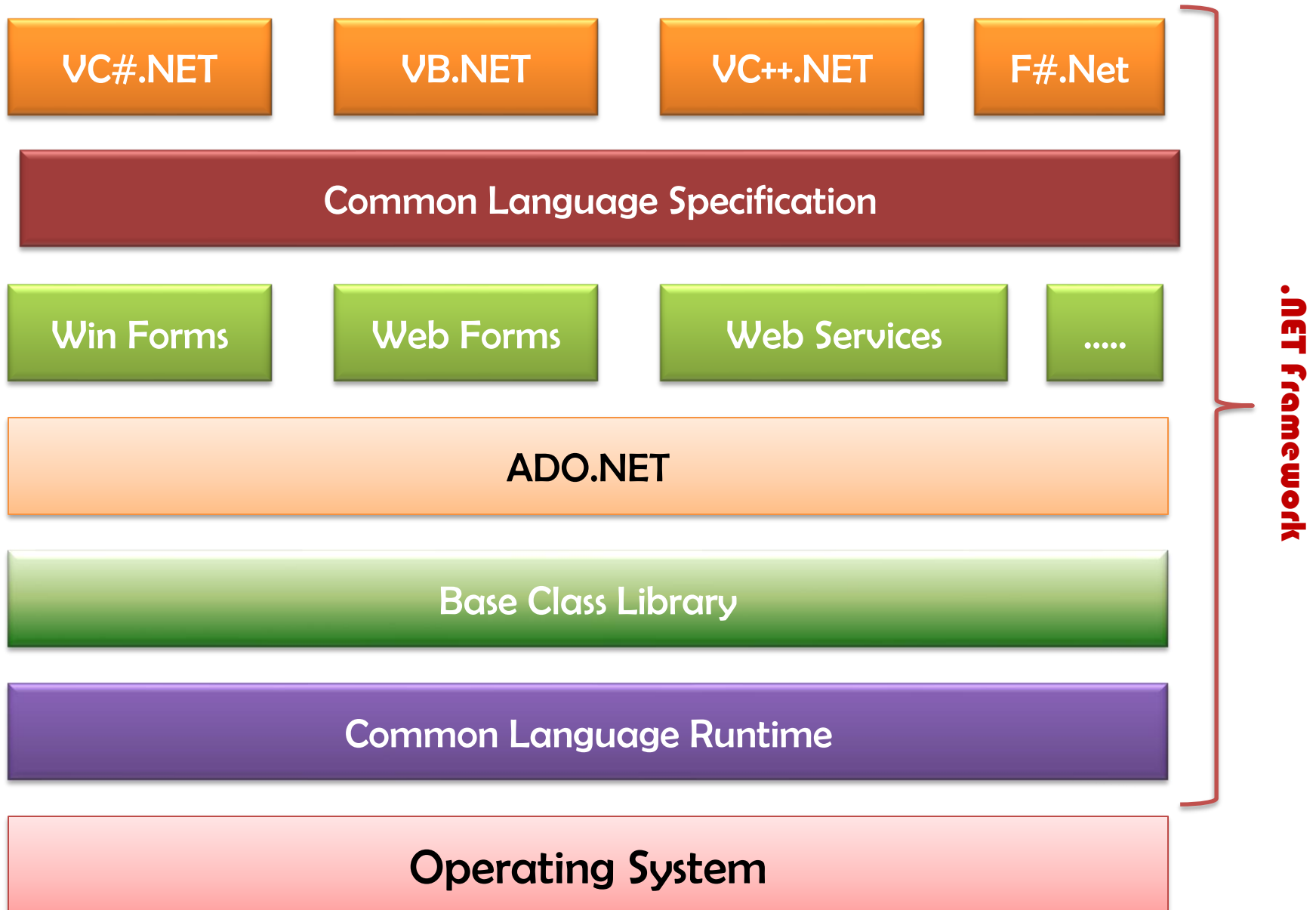
.NET

- ❑ An “Application Development Platform”.
- ❑ It is developed by Microsoft Corporation in the year 2000.
- ❑ .NET Stands for Network Enabled Technology.
- ❑ .NET is a Package or SDK or Framework also called as ".NET Framework".
- ❑ Used for powerful software application development.
- ❑ It provides necessary environment (Languages, compilers, run time engines, libraries) for developing efficient and powerful applications for the end-users.
- ❑ .NET provides a distributed object oriented platform for building
 - ❑ Stand-alone Applications(Console & Winforms)
 - ❑ Web-based Applications
 - ❑ Mobile-applications
 - ❑ Webservices

.NET FRAMEWORK

- ❑ .NET Framework is a set of components, which are essential for develop any application in .NET Environment.
- ❑ .NET Framework is a common Architecture for all .NET Applications.
- ❑ .NET Framework Consist of following Components.
 - ❑ Languages
 - ❑ Technologies
 - ❑ Base Class Libraries
 - ❑ CLR[Common Language Runtime]

.NET Framework Architecture



Languages

- .NET gives choice of languages includes VB.NET, C#, F#, VC++ for developing diff kind on Applications. All of these compile to a Common Intermediate language.

MSIL

- MSIL stands for Microsoft Intermediate Language.
- On compiling any .NET language, you will get MSIL.

- Ex: C#.NET $\xrightarrow[\text{VBC}]{\text{CSC}}$ MSIL
- Ex: VB.NET $\xrightarrow[\text{VCC}]{\text{VBC}}$ MSIL
- Ex: VC++.NET $\xrightarrow{\text{VCC}}$ MSIL



- MSIL is a compile code of any .NET Language.
- Also Called as Common Intermediate Language or Assembly.
- Its file extension can be either ".exe" or ".dll".
- EXE file are directly executable files.
- A DLL file shares the common code among many projects.

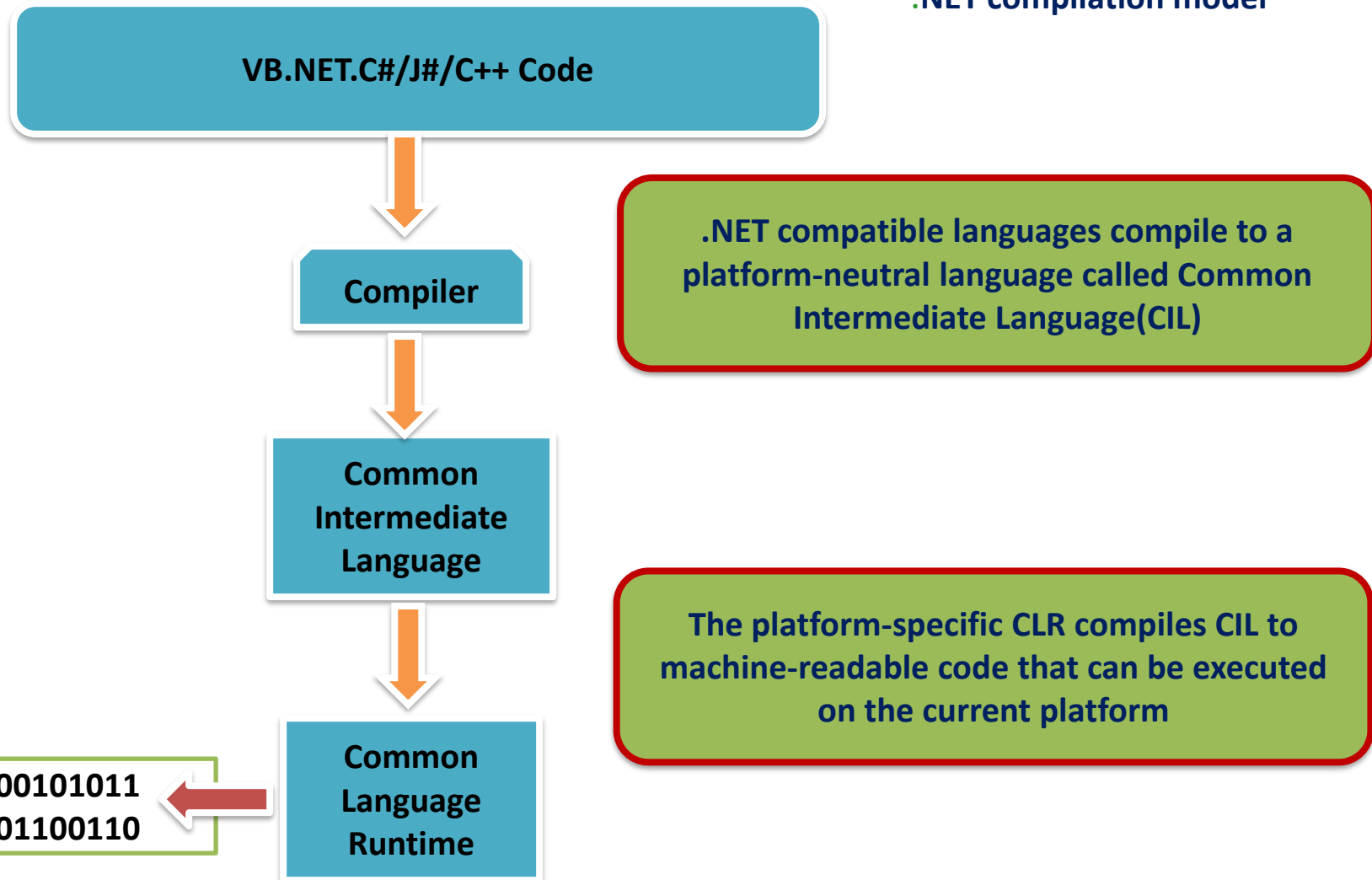
CLR

- Common Language Runtime is the core component for .NET framework
- CLR is Common Runtime Engine for all .NET Applications
- All the .NET program execution is managed by CLR.
- CLR uses Just-In-Time (JIT) compiler to compile CIL code into the machine understandable code(Native code).

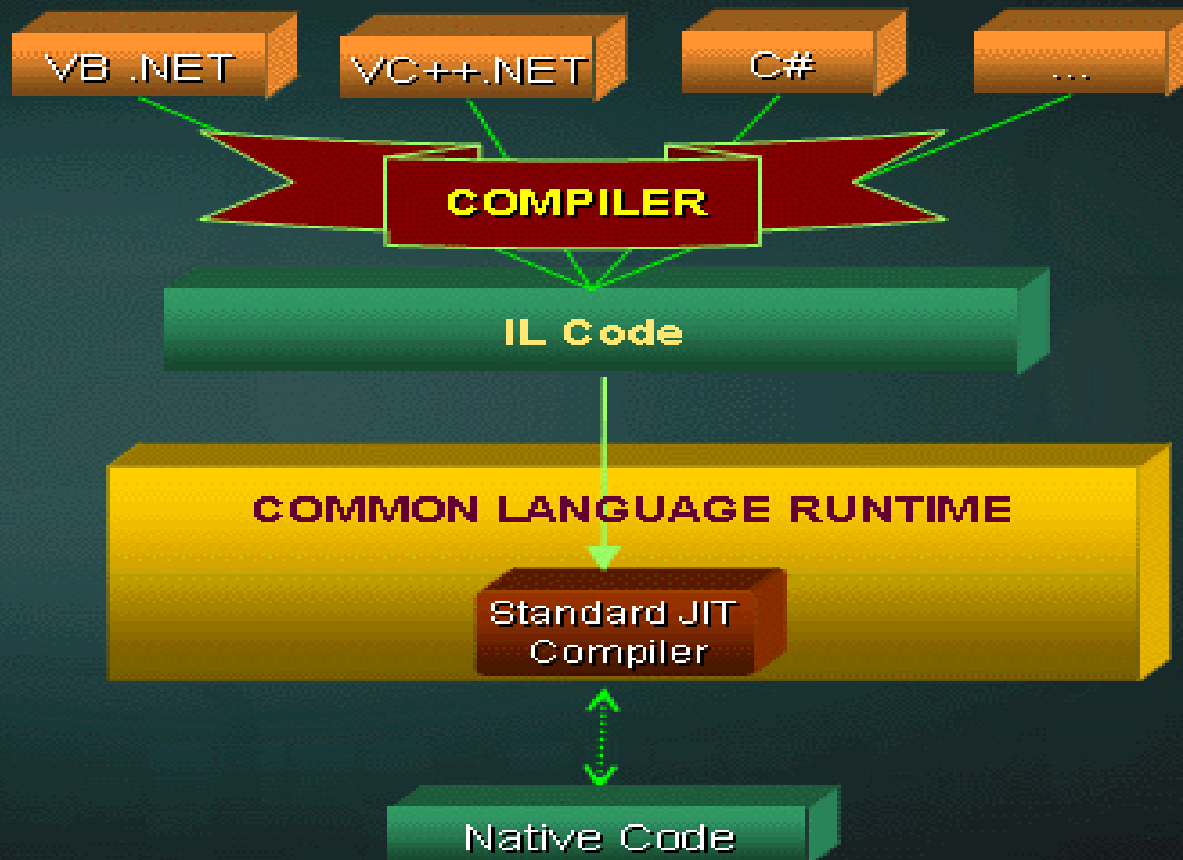


Common Runtime Engine and CIL(Compilation Model)

.NET compilation model



➡ CLR Execution Model



Base Class Libraries

- Base Class Libraries are Standard Libraries common to all .NET languages.
- Base Class Libraries provides some set of Common classes , which are useful for development of .NET applications.
- Base Class Libraries are Predefined Libraries comes with .NET framework
- All Base class Libraries are in the form of .dll(dynamic link libraries)
- The Base class Libraries also called Assemblies or Namespaces.

Base Class Libraries

- **Important DLL files of BCL**
- System.IO.dll-work with files and Directories
- System.Threading.dll-base library for Threading
- System.Data.dll-base library for ADO.NET
- System.Web.dll -base library for ASP.NET
- Note: System is the Base Library in .NET Framework.
- Adding a Library to the Application
- using System. Web-----C#
- Imports System.Web-----VB.NET

Core Features of .NET

- Language Independence
- Multi Application Support
- Multi Server Support
- Common CLR to All the Languages.
- Common Intermediate Language CIL(MSIL)
- Base Class Library
- Interoperability
- Data Access
- Web Application Development
- Memory Management

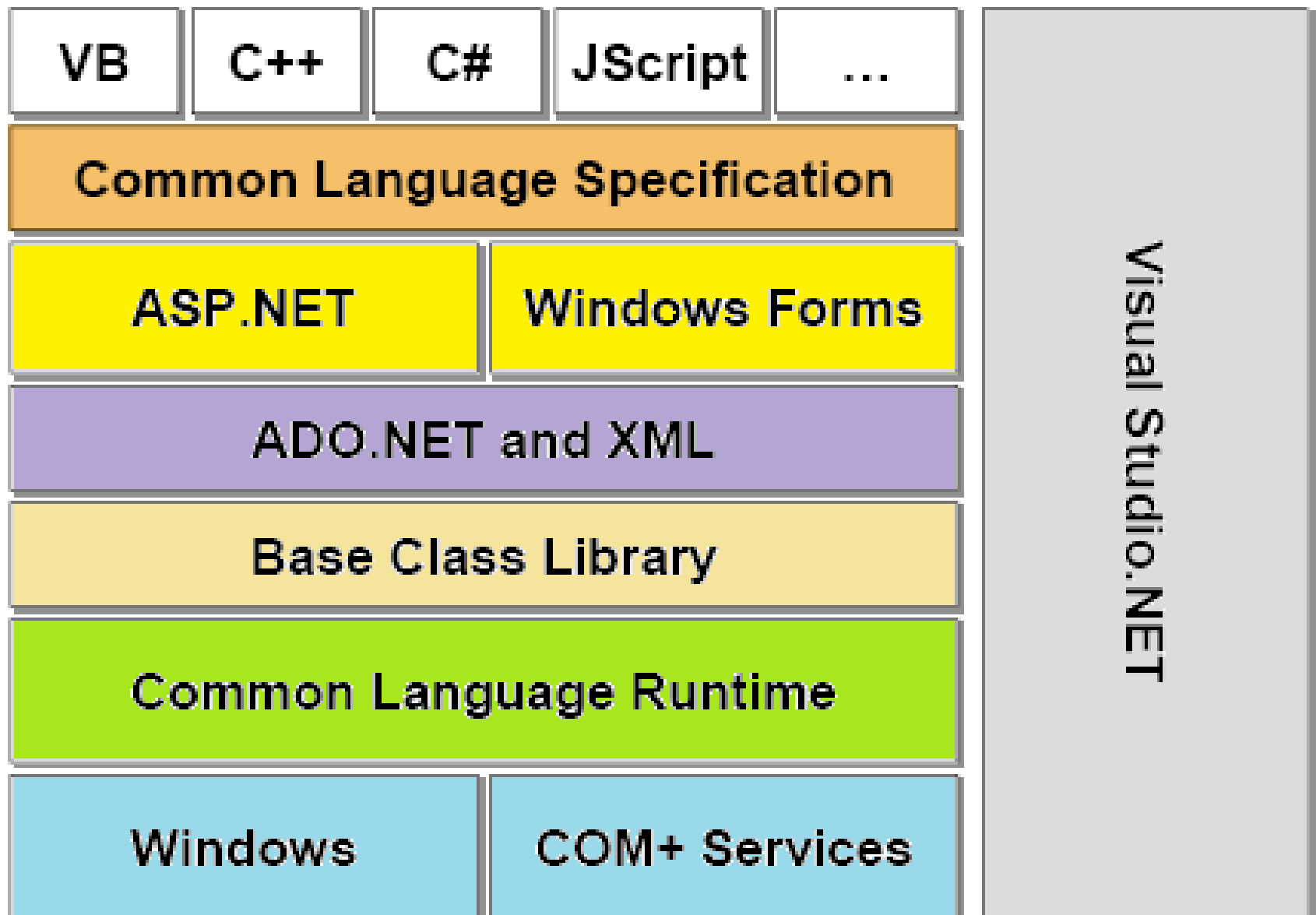
Visual Studio

- IDE for creating .NET applications which are
 - Console based
 - Web based
 - Windows form based
 - Web services
- Features
 - Page design
 - Automatic error detection
 - Debugging tools
 - IntelliSense (IntelliSense helps in auto completion by providing functions/methods names parameters etc.)

■

Visual Studio

- Visual Studio 6.0
- Visual Studio .NET (2002)
- Visual Studio .NET 2003
- Visual Studio 2005
- Visual Studio 2008
- Visual Studio 2010
- Visual Studio 2012
- Visual Studio 2013
- Visual Studio 2015
- Visual Studio 2017
- Visual Studio 2019
- Visual Studio 2022



.NET framework versions

[NET Framework 4.8](#)

[.NET Framework 4.7.2](#)

[.NET Framework 4.7.1](#)

[.NET Framework 4.7](#)

[.NET Framework 4.6.2](#)

[.NET Framework 4.6.1](#)

[.NET Framework 4.6](#)

[.NET Framework 4.5.2](#)

[.NET Framework 4.5.1](#)

[.NET Framework 4.5](#)

[.NET Framework 4](#)

[.NET Framework 3.5](#)

[.NET Framework 3.0](#)

[.NET Framework 2.0](#)

[.NET Framework 1.1](#)

[.NET Framework 1.0](#)

Environment setup

- Windows Platform
- Visual Studio.NET
- SQL Server
- Web Server