.NET > .NET Framework
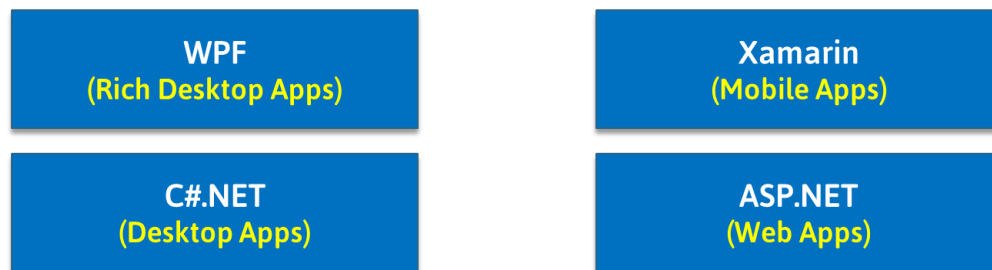
Introduction to .NET

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What is .NET?

- Application Development Platform, to build desktop, web and mobile applications.
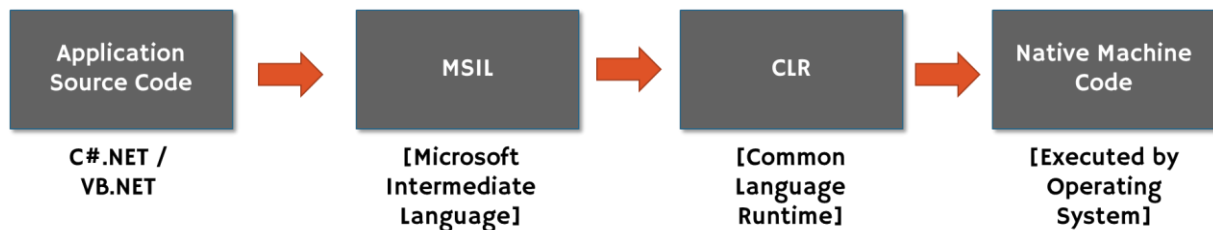- Developed by Microsoft in 2002.

Modules of .NET

WPF **(Rich Desktop Apps)**	**Xamarin** **(Mobile Apps)**
C#.NET **(Desktop Apps)**	**ASP.NET** **(Web Apps)**

Why .NET?

- Support for multiple languages
- Multi-platform support (Windows, LINUX and Mac) with .NET Core
- Consistent IDE called Visual Studio

Code Compilation Process

Application Source Code	→	MSIL	→	CLR	→	Native Machine Code
C#.NET / VB.NET		[Microsoft Intermediate Language]		[Common Language Runtime]		[Executed by Operating System]

CLR

- Common Language Runtime
- "Execution Engine" for all .net languages
- CLR must be installed on the machine to run any type of .net application.
- **Responsibilities of CLR:**
    - Class Loader: Loading classes from compiled source code to memory.
    - Memory Manager: Allocating necessary memory for objects.
    - Garbage Collector: Freeing memory of objects
    - JIT (Just-In-Time) Compiler: Convert the MSIL Code into Native Machine Language.

- Exception Manager: Raise notifications while run-time errors
- Thread Manager: Create threads (background process) to execute the code

BCL

- Base Class Library
- Set of common pre-defined classes that are needed in all .net languages and applications.

.NET Framework Architecture

C#.NET	VB.NET	VC++.NET	Others

Common Language Specification

Win Forms	ASP.NET	WPF	Others

ADO.NET

Base Class Library

Common Language Runtime

Operating System