Name of Subject : Visual Basic.NET

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Unit:I Introduction to .NET and .NET Framework

Part-2

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- ## **Introduction to .NET and .NET Framework**

- .NET is a developer platform made up of tools, programming languages, and libraries for building many different types of applications.

- *.NET* (pronounced dot *net*) is a *framework* that provides a programming guidelines that can be used to develop a wide range of applications

- .NET Framework is a software development framework for building and running applications on Windows.

- .NET Framework is part of the .NET platform, a collection of technologies for building apps for Linux, macOS, Windows, iOS, Android, and more.

- The .NET framework wraps the operating system with its own code.

- The VB.NET programs deal with .NET code instead of dealing with the operating system itself.

- It is specially designed to make working with the Internet easy.

Architecture of .NET Framework

- Microsoft .NET is based on the .NET Framework, which consists of two major components: the Common Language Runtime (CLR) and an extensive set of Framework Class Libraries (FCL).

- .NET applications are written in the C#, F#, or Visual Basic programming language.

- Code is compiled into a language-Common Intermediate Language (CIL).

- Compiled code is stored in assemblies—files with a .dll or .exe file extension.

- When an app runs, the CLR takes the assembly and uses a just-in-time compiler (JIT) to turn it into machine code that can execute on the specific architecture of the computer it is running on.
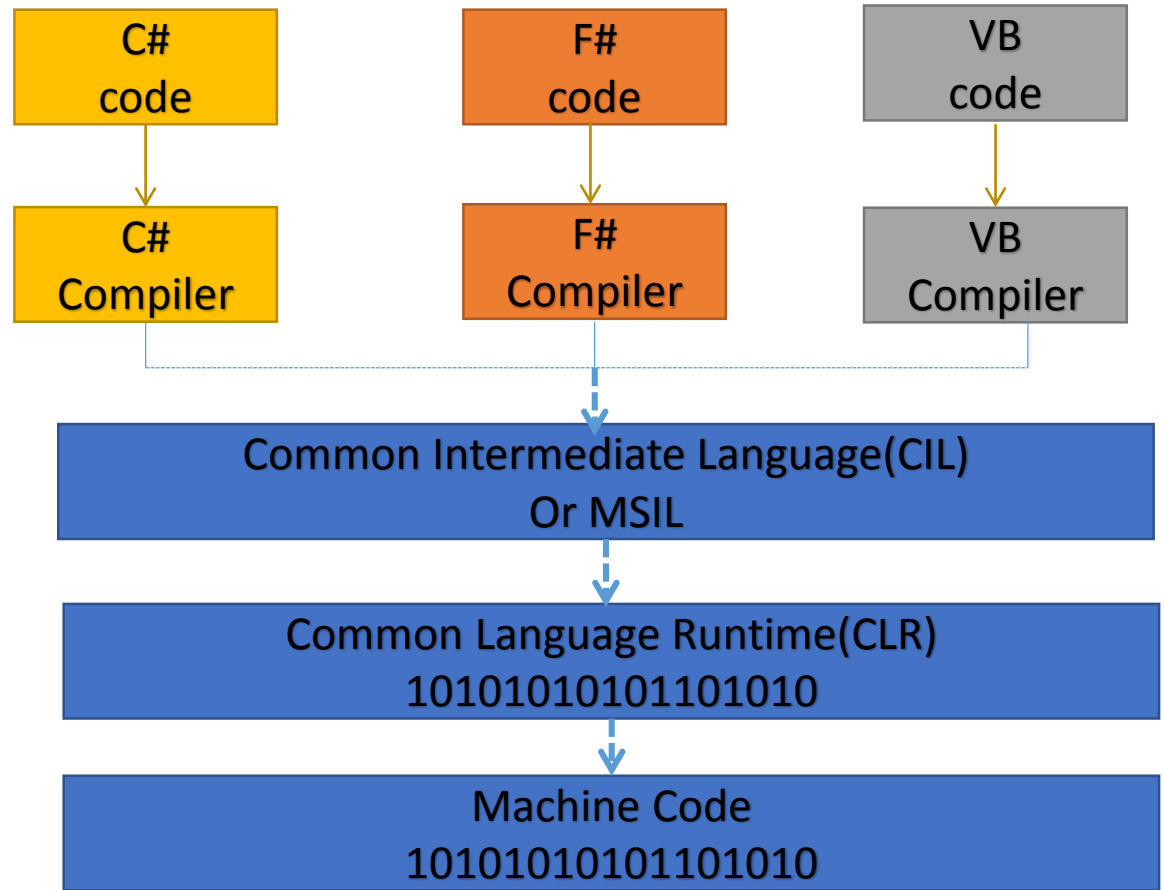
```
C# code        F# code        VB code
   |              |              |
   v              v              v
C# Compiler    F# Compiler    VB Compiler
```

Common Intermediate Language(CIL) Or MSIL

Common Language Runtime(CLR)
1010101010101101010

Machine Code
1010101010101101010

Figure :Architecture of .NET Framework

- **Common Language Runtime(CLR)**

- The CLR defines a common programming model and a standard type system for cross-platform, multi-language development.

- At the base of the .NET framework is the **Common Language Runtime (CLR)** .

- The .NET Framework provides a run-time environment called the CLR, which runs the code written in ANY .NET Language and provides services that make the development process easier.

- **CLR** is the execution engine that handles running applications.

- The CLR manages memory, thread execution, code execution, code safety verification, compilation, exception handling, and other system services.

- **Framework Class Libraries (FCL)**

- The FCL holds an immense amount of prewritten code that all the application you create with VB,VC++,and other Visual Studio languages are build on.

- The FCL is a comprehensive collection of reusable types including classes, interfaces and data types included in the .NET Framework to provide access to system functionality.

- FCL acts as a standard library, which can be used in a consistent manner by all the .NET languages. The Class Library includes APIs for reading and writing files, connecting to databases, drawing, and more.

- The FCL has numerous cross-language technologies, including file I/O, networking, text management, and diagnostics.

- The FCL has CLR support in the areas of built-in types, exception handling, security, and threading.

- **FCL...**

- You are working on a machine that has the .NET framework i.e. the CLR and the .NET FCL ,installed .

- The code for all elements use in VB.NET application like forms, buttons, and all the rest comes from class library .

- And other Visual Studio applications use the same class library ,making it easy to mix languages in your programming ,even in the same application.

- The .NET framework organizes its classes into namespaces e.g.Microsoft.VisualBasic, Microsoft. JScript etc.

- When you want to use a windows form, you must use System.Windows.Forms.form class.

- A button in a windows form comes from the System.Windows.Forms.Button class and so on.

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Unit No.	Contents	Rem.
I	**Introduction:** Introduction to .NET and .NET Framework, Difference between CUI & GUI, Event Driven Programming, the VB IDE, Operators, Conditional statements and looping statements. Sub Procedure, functions and exception handling	
II	**Windows Forms :** General Properties, Events handling events like mouse, keyboard, Types of forms MDI, adding removing controls at run time. **Controls** : The control class, Text Box, Rich Text Box, Label, Buttons, Checkbox, Radio Button, Panels, Group Boxes, List Box, Combo Box, Picture Box, Scroll Bars, Splitters, Track Bars, Pickers, Timer.	
III	**Object-Oriented Programming :** Class and Object, Class Vs. Object Members, Creating Classes, Objects, Structures, Modules, Constructors, Data Members, Methods, Properties, Event	
BOOKS	1) Visual Basic .NET Programming Black Book" by Steven Holzner,Dreamtech Press 2) "Mastering in Visual Basic .NET" by Evangelos Petroutsos, Sybex Publication.	

- **Difference between CUI & GUI**

Character User Interface (CUI)	Graphical User Interface(GUI)
Developed console based application	Developed windows applications
User interacts with computer using commands like text.	User interacts with computer using Graphics like images, icons.
Peripherals used only Keyboard	Peripherals used Keyboard, mouse or any other pointing device.
CUI is of high speed.	GUI is of low speed.
Low memory requirement.	High memory requirement.
CUI appearance is not easily changeable.	GUI is highly customizable.
Usage is difficult, requires expertise.	Usage is easy.
Little flexible user interface.	Highly flexible user interface.
OS:MS-DOS	OS: Windows

Thank you !