Asp.Net

Ch. 01

Framework

Overview of ASP.NET :

- ASP.NET is the next generation for Classic ASP.
- It is not an upgraded version of Classic ASP (Active Server Pages), but it is an entirely new technology used for server side scripting.
- It is new written and is not backward compatible with Classic ASP.
- It is a major part of Microsoft's .NET framework.

Overview of ASP.NET :

- ASP.NET is a compiled, .NET based environment language with which we can create applications for any .NET compatible language, including VB.NET, C# and Jscript .NET.
- ASP.NET is designed to work with WYSIWYG (What You See Is What You Get), HTML editors and other programming tools.
- It also includes Microsoft Visual Studio.

Overview of ASP.NET :

- ASP.NET is developed for Web Developers from Microsoft.
- It is not simply the next generation tool of ASP in fact, it is completely re-engineered and enhanced web technology which offers much more than the traditional ASP.
- As it is evolved from ASP, it looks quite similar to it.
- Some items would look familiar but concepts like Web Forms, Web Services or Server Controls gives Asp.NET the control to develop real web applications.

Features of ASP.NET :

(1) Easy Programming Model :

- In ASP.NET we can easily build real world web applications.
- Many features likes displaying data. Validating user inputs, and uploading files are supported in ASP.NET.
- ASP.NET pages work in all browsers.

(2) Flexible Language Options :

- Unlike ASP. Which only supports VB Script and Jscript, ASP.NET now supports more than 25 .NET languages.

Features of ASP.NET :

(3) Rich Class Framework :

- External application features that are hard to implement or which requires a 3rd Party Components, can be easily added in .NET framework now.
- The .NET framework provides over 4500 classes that have rich functionality like XML, data access, file upload, regular expression, image generation and many more.

Features of ASP.NET :

(4) Easy Deployment and Dynamic update of Running Application :

- ASP.NET has taken out the extra need for deploying of server application.
- With ASP.NET we can easily deploy an entire application, by just copy the entire application on to the server.
- ASP.NET lets us update compiled application or pages of application without restarting the web server again and again.
- We have to just replace the page in which changes are done.

Features of ASP.NET :

(5) XML Web Services :

- With XML Web Services, our web applications are able to communicate and share data over internet, regardless of operating system or programming language.
- Any class can be easily converted into a XML based Web Service with few line of code, and can be called by SOAP (Simple Object Access Protocol) Client.

Features of ASP.NET :

(6) Mobile Web Device Support :

- ASP.NET mobile controls are developed. Its targets are cell phones, PDAs and over 80 mobile Web devices.
- We can write our application just once, and mobile controls automatically generate its respective mobile files which are required by the device which we are using.

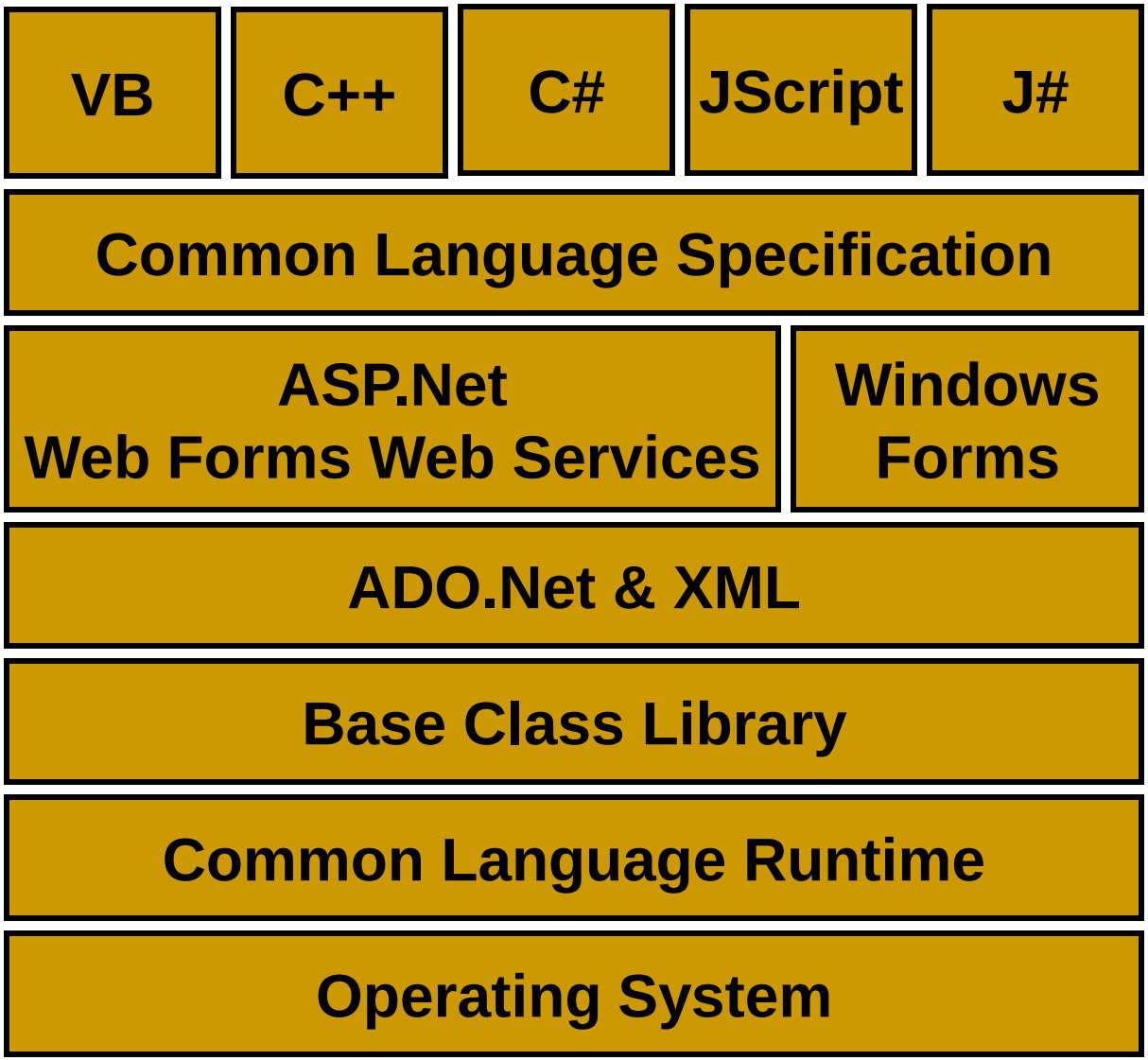
.NET Framework :

- .NET is a framework which is used for developing web based and window based application within the Microsoft environment.
- It provides a large library and supports all the programming languages available in the market.
- It also allows language interoperability (ક્રિયાશીલતા) which is one of the most important features of .NET.

.NET Framework :

- Programs that are written in .NET framework are executed in a software environment, known as **Common Language Runtime** (CLR).
- CLR is a virtual machine that provides services such as security, memory management and exception handling.
- The Class library and the CLR together constitute (રચના) the .NET framework.

.NET Framework :



.NET Framework :

- The .NET Framework's Base Class Library provides user interface, data access, database connectivity, cryptography, web application development, numeric algorithms, and network communications.
- Programmers produce software by combining their own source code with the .NET Framework and other libraries.
- Microsoft also produces an integrated development environment largely for .NET software called Visual Studio.

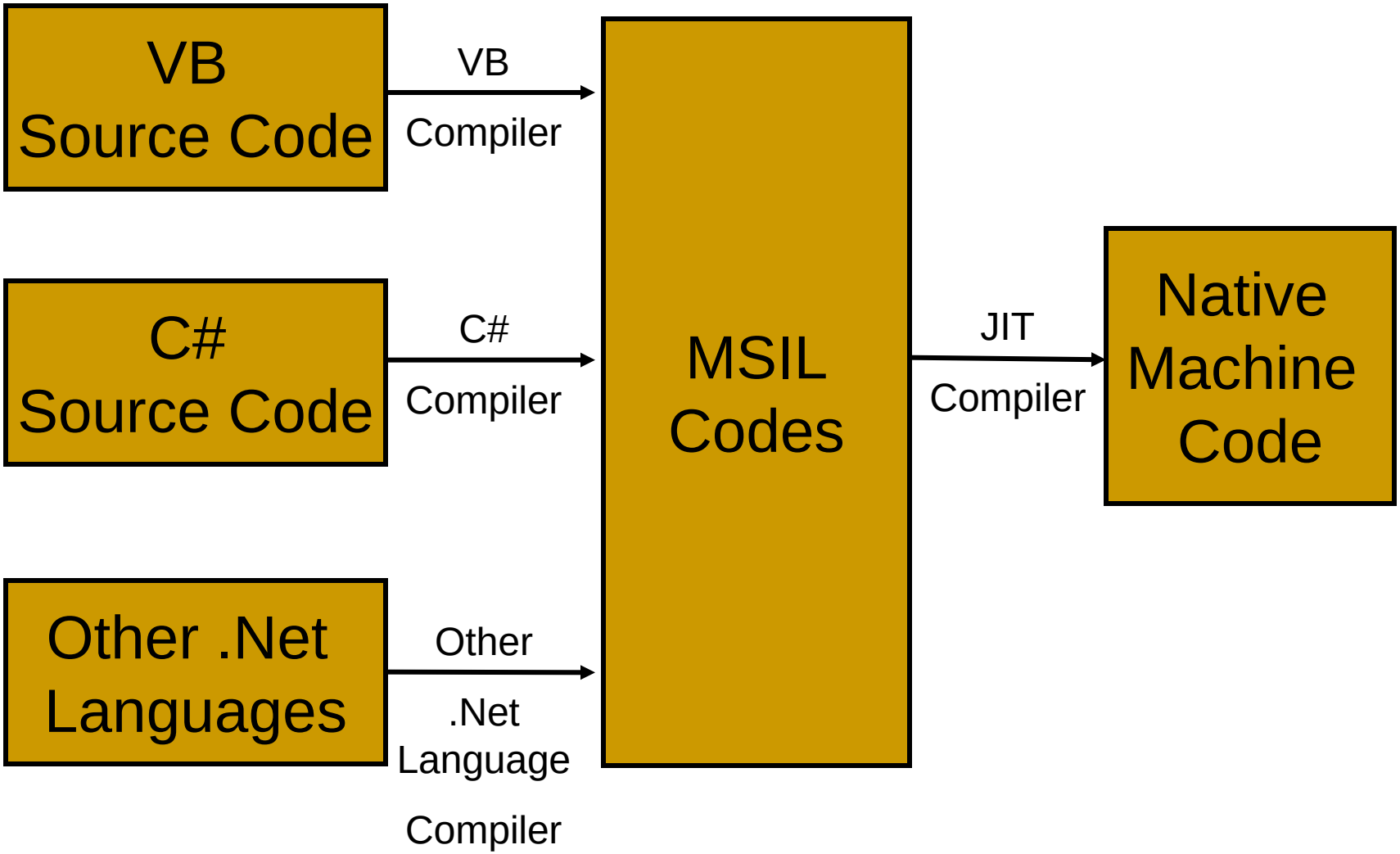
Components of .NET Framework :

- Common Language Runtime (CLR) :
- Common Language Runtime (CLR) manages the execution of .NET code.
- It provides various functionalities like memory management, exception handling, security, thread execution, verification, compilation and many other.
- The code which is executed by CLR is known as Managed Code. And the code which is not executed by CLR is known as Unmanaged Code.

Components of .NET Framework :

- The CLR is the one which facilities the interoperability between different .NET languages by providing a common environment for execution of code.
- Whenever you first run any .NET application, the compiler first compiler the code into an intermediate code called **Microsoft Intermediate Language** (MSIL) code.

Components of .NET Framework : CLR



Components of .NET Framework :

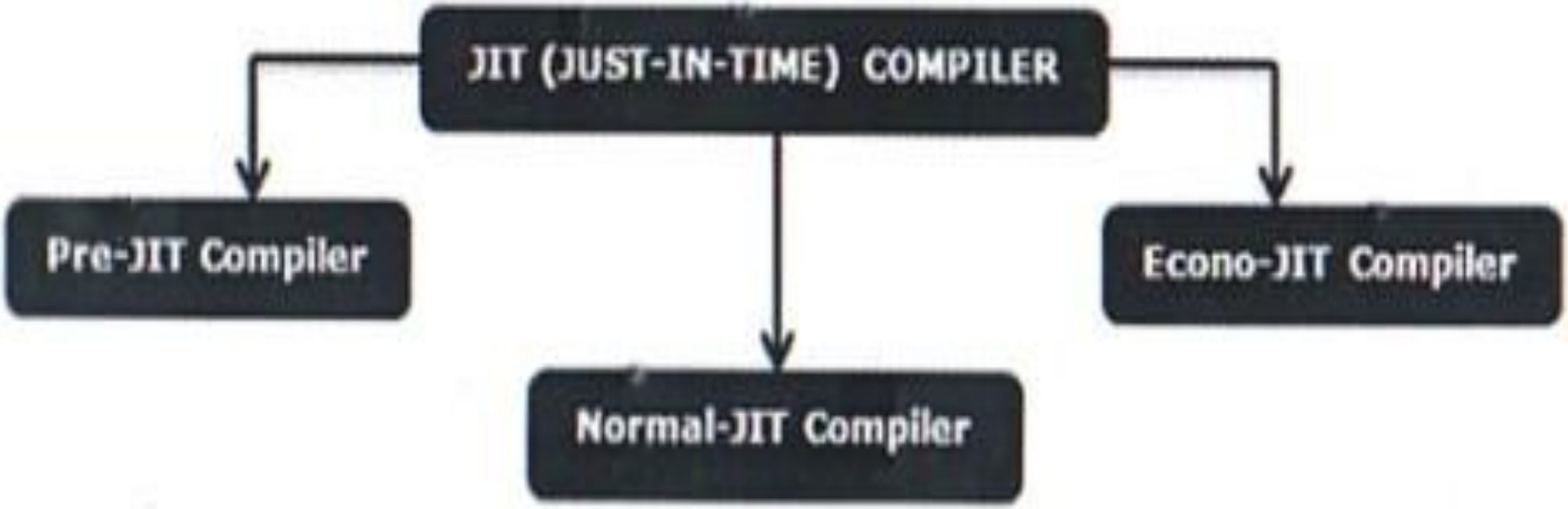
- Then this MSIL Code is given to Just in Time (JIT) Compiler which produces the Native machine code for given code.
- It stores the resulting native code so that it can be accessible for subsequent calls.
- If a code which is executing on target machine calls a non native method, the JIT compiler first converts the MSIL of that method into native code.
- JIT enforces the feature of type safety in run time environment.

Components of .NET Framework :

- It also checks the values for the parameters passed in any method.
- In short JIT is a compiler which converts MSIL code into native or machine code that can be processed by machine.
- Microsoft .NET framework relies on JIT compilation for high speed code execution.
- JIT does not compile whole code; only the code is to be executed is compiled.

Components of .NET Framework :

- The .NET Common Language Runtime (CLR) provides three different classes of JIT.



Components of .NET Framework :

1. PreJIT :

- This compiler compiles complete source code into native code in a single compilation cycle.
- This is basically done at time of deployment of the application.

2. Normal - JIT :

- This compiler compiles only those methods that are called at runtime.
- These methods would be only compiled for the first time, and then they are stored in cache.

Components of .NET Framework :

- When these same methods are called again, the compiled code from cache is used for execution.

3. Econo-JIT :

- This compiler would convert MSIL code into native code without any optimizations.
- It only compiles those methods that are called at runtime.
- Also compiled methods are removed from memory when they are not required.

Components of .NET Framework :

4. Base Class Library :

- Base Class library are a huge library made up of a number of namespaces.
- Namespaces are program elements which are designed to organize our programs.
- They provide assistance in avoiding names collision between two sets of code.
- A namespace can contain both namespaces and types.

Components of .NET Framework :

- Each namespace has its own classes, structures, enumerations and delegates.
- The name of namespace defines its functionality.
- For example, System.Data has the functionality for accessing database.
- In ASP.NET, System is the namespace which is the root for the most commonly used types.

Components of .NET Framework :

- In .NET environment, namespaces represent a logical organization of code.
- The physical location of the code is organized and structured in assemblies.
- An assembly is identical to a DLL.
- An assembly is a binary file that contains .NET executable code complied into MSIL
- The assembly contain one of more namespaces, and one namespace can be contained by one or more assemblies.
- Each assembly can be configured with a root namespace.

Components of .NET Framework :

5. ADO .NET and XML

- ADO .NET is the technology that is used for working with data and databases of all types.
- It provides access to various data sources such as MS SQL Server, and data sources exposed through OLEDB and XML.
- We use ADO .NET to retrieve, manipulate and update data.

Components of .NET Framework :

- XML is a cross platform, hardware and software independent language which enables us to store data in a structured format by using some meaningful tags.
- XML enables us to store structured data in the form of XML documents that similar to databases.
- .NET provides extensive supports for working with XML document.
- It provides namespace like System.XML which could easily communicate with XML documents.

Components of .NET Framework :

6. ASP.NET

- The platform that you use to create Web applications and Web services under Internet Information Services (IIS) is ASP.NET.
- ASP.NET at a higher level is a collection of .NET classes which collaborate to process an HTTP request and generate HTTP response.
- High level of consistency across server-side framework.

Components of .NET Framework :

8. Common Language Specification (CLS) :

- Common Language Specifications provides a basic set of rules, which enables interoperability between any two .NET compliant languages.
- These rules are guidelines for third party compiler, designers and library builders.
- CLS is sub part of CTS.
- Thus the language which supports CLS can use other class libraries just like their own.

Components of .NET Framework :

- It is used to build applications based on HTML, XML, HTTP and SOAP.
- Building of HTML based Web applications are supported by ASP.NET.

7. Windows Forms :

- Windows Forms provides namespace which helps in developing Window based Application.
- It creates a form which is used develop application based on the user requirement.

Different Types of Files in ASP.NET

- Many different types of files structure are supported by ASP.NET. Some of their extension can be given as :

1. .aspx :

- It is basic file structure of web pages that you create in ASP.NET.
- They contain the GUI (Graphical User Interface) for any web pages.
- They are also known as Presentation Logic File.

Different Types of Files in ASP.NET

2. .ascx :

- It is file that is used to create custom control.
- With this you can create custom controls.
- Once created, then this control you can reuse the same control again and again as per our requirement.

3. .asmx :

- It is file that is used to create Web Service.

4. .ashx :

- They are known as Handler file.

Different Types of Files in ASP.NET

5. .cs :

- C# code. It can also be . vb , .js form. VB code it is of the form .vb for javascript it of the form .js.

6. .Web.Config :

- It is a XML based configuration file.

7. .Global.asax :

- It is global application file. It is used define global variable and global events for given application.

Different Types of Controls in ASP.NET :

- Those controls which are not executed on the Server Side are called Client Controls. All the basic HTML controls are Client Controls.
- But they can be converted to Server Side Controls by adding runat attribute to the code.
- The ASP.NET framework contains many controls.
- These controls are divided into different nine groups:

Different Types of Controls in ASP.NET :

1. Standard Controls:

- The Standard controls are the standard form controls such as Buttons, Labels, TextBox and many others.
- They have same functionalities as that of HTML controls but they have more properties and methods which makes them more reliable than HTML Controls.
- All Standards controls have two important attributes ID and Runat.

Different Types of Controls in ASP.NET :

2. Validation Controls :

- Validation controls were given first in ASP.Net.
- They are set of controls, which validates input controls against user defined rules or set of values.
- They enable us to validate form data before you submit data to server.

3. Rich Controls :

- As the name, suggest Rich Control means control which provide some extra facilities.

Different Types of Controls in ASP.NET :

- They are advanced controls which built with multiple HTML elements and provide rich functionality.
- Some of Rich controls are Calendar Control, File Upload Control, Ad Rotator controls and many others.

4. Data Controls :

- For working with data such as database, Data Controls are used.

Different Types of Controls in ASP.NET :

5. Navigation Controls :

- Navigation controls are used to navigate through the data or application.
- Menus, Tree Views are some of the examples of Navigation controls.

6. Login Controls.

- Login controls enable us to display login form, change password forms and registration forms.
- Form authentication is supported by Login Controls.

Different Types of Controls in ASP.NET :

7. Web Part Controls :

- For building personalizes portal applications, you are using Web Part Controls.

8. HTML Controls :

- HTML controls works same as the Standard Controls and can be converted into Server Side control easily by adding attribute “runat=server”.

Different Types of Controls in ASP.NET :

9. ASP.NET Mobile Controls :

- These controls are somewhat similar to Standard Controls but they are customized to work on mobiles.