

UNIT-1 INTRODUCTION

Life Cycle Phases, Events, Global Application Class, State Management etc.

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1. Introduction of IDE.
2. Introduction of web forms & Page event life cycle.
3. Global application class & web.config file.
4. Advantages and features of asp.net.
5. State management using view state, query string, session and cookies.

1. Introduction of IDE.

An integrated development environment (IDE), also known as integrated design environment and integrated debugging environment, is a type of computer software that assists computer programmers to develop software.

Description of all the components:

Toolbox: It is a window that contains icons for various items and controls that you can add to a .NET application to design the user interface of the application. The icons in Toolbox are logically grouped under various tabs.

Properties Window: The different web pages of a website have various attributes or properties associated with them. The properties window is used to display the associated attributes.

Solution Explorer: A .NET application is contained in a solution, which contains one or more projects, files, web pages and other resources. The projects and files of a solution are displayed in a visual studio IDE Window, called Solution Explorer. It always displays the projects and files in a hierarchical manner.

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Design Page: This page is used to display all the dragged controls on the web page along with their different views such as: Design, Split and Code.

Code behind Page: This page consists of the coding for all the event handlers available in the web page. This page consists of c-sharp/visual basic code depending upon the choice of the programmer. The code written in this executes on the server side.

Server Explorer: It is the window that you can use to connect to a database file, database server, and other services on a computer. It allows you to not only add tables but also to create, modify, query, and close connections to databases.

The Output Window: When you compile or execute .NET applications, several messages are generated and displayed in the Output Windows. It shows successful or Unsuccessful messages.

2. Introduction of web forms & Page event life cycle.

[1] INTRODUCTION OF WEB-FORMS

Definition of Web Form: ASP.NET Web Forms is a part of the ASP.NET web application framework and is included with Visual Studio.

ASP.NET Web Forms are:

- Based on Microsoft ASP.NET technology, in which code that runs on the server dynamically generates Web page output to the browser or client device.
- Compatible with any browser or mobile device. An ASP.NET Web page automatically renders the correct browser-compliant HTML for features such as styles, layout, and so on.

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- Compatible with any language supported by the .NET common language runtime, such as Microsoft Visual Basic and Microsoft Visual C#.
- Built on the Microsoft .NET Framework. This provides all the benefits of the framework, including a managed environment, type safety, and inheritance.
- Flexible because you can add user-created and third party controls to them.

Features of ASP.NET Web Forms

- **Server Controls** - ASP.NET Web server controls are objects on ASP.NET Web pages that run when the page is requested and that render markup to the browser.
- **Master Pages** - ASP.NET master pages allow you to create a consistent layout for the pages in your application. A single master page defines the look and feel and standard behavior that you want for all of the pages (or a group of pages) in your application.
- **Working with Data** - ASP.NET provides many options for storing, retrieving, and displaying data.
- **Membership** - ASP.NET Identity stores your users' credentials in a database created by the application. When your users log in, the application validates their credentials by reading the database.
- **Client Script and Client Frameworks** - You can enhance the server-based features of ASP.NET by including client-script functionality in ASP.NET Web Form pages.
- **Routing** - URL routing allows you to configure an application to accept request URLs that do not map to physical files.
- **State Management** - ASP.NET Web Forms includes several options that help you preserve data on both a per-page basis and an application-wide basis.
- **Security** - An important part of developing a more secure application is to understand the threats to it.

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- **Performance** - Performance can be a key factor in a successful Web site or project. ASP.NET Web Forms allows you to modify performance related to page and server control processing, state management, data access, application configuration and loading, and efficient coding practices.
- **Internationalization** - ASP.NET Web Forms enables you to create web pages that can obtain content and other data based on the preferred language setting for the browser or based on the user's explicit choice of language.
- **Debugging and Error Handling** - Debugging and error handling are well supported within ASP.NET Web Forms so that your applications compile and run effectively.
- **Deployment and Hosting** - Visual Studio, ASP.NET, Azure, and IIS provide tools that help you with the process of deploying and hosting your Web Forms application.

Advantages of a Web Forms-Based Web Application

The Web Forms-based framework offers the following advantages:

- The Web Forms-based application provides dozens of events that are supported in hundreds of server controls.
- It uses a Page Controller pattern that adds functionality to individual pages.
- It uses view state or server-based forms, which can make managing state information easier.
- It works well for small teams of Web developers and designers who want to take advantage of the large number of components available for rapid application development.
- In general, it is less complex for application development, because the components (the **Page** class, controls, and so on) are tightly integrated and usually require less code than the MVC model.

[2] ASP.NET PAGE EVENT LIFE CYCLE:

Following are the page life cycle events:

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- **PreInit** . PreInit is the first event in page life cycle. It checks the IsPostBack property and determines whether the page is a postback. It sets the themes and master pages, creates dynamic controls and gets and sets profile property values. This event can be handled by overloading the OnPreInit method or creating a Page_PreInit handler.
- **Init** . Init event initializes the control property and the control tree is built. This event can be handled by overloading the OnInit method or creating a Page_Init handler.
- **InitComplete** . InitComplete event allows tracking of view state. All the controls turn on view-state tracking.
- **LoadViewState** . LoadViewState event allows loading view state information into the controls.
- **LoadPostData** . during this phase, the contents of all the input fields defined with the <form> tag are processed.
- **PreLoad** . PreLoad occurs before the post back data is loaded in the controls. This event can be handled by overloading the OnPreLoad method or creating a Page_PreLoad handler.
- **Load** . the Load event is raised for the page first and then recursively for all child controls. The controls in the control tree are created. This event can be handled by overloading the OnLoad method or creating a Page_Load handler.
- **LoadComplete** . the loading process is completed, control event handlers are run and page validation takes place. This event can be handled by overloading the OnLoadComplete method or creating a Page_LoadComplete handler.
- **PreRender** . the PreRender event occurs just before the output is rendered. By handling this event, pages and controls can perform any updates before the output is rendered.
- **PreRenderComplete** . as the PreRender event is recursively fired for all child controls, this event ensures the completion of the pre-rendering phase.
- **SaveStateComplete** . State of control on the page is saved. Personalization, control state and view state information is saved. The HTML markup is generated. This stage can be handled by overriding the Render method or creating a Page_Render handler.
- **Unload** . the UnLoad phase is the last phase of the page life cycle. It raises the UnLoad event for all controls recursively and lastly for the page itself. Final cleanup is done and all resources and references, such as database connections, are freed.

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This event can be handled by modifying the OnUnLoad method or creating a Page_UnLoad handler.

3.Global application class & web.config file.

[1] GLOBAL APPLICATION CLASS

Definition: Global.asax file is helpful in ASP.NET projects. With it we can store variables that persist through requests and sessions. We store these variables once and use them often. We add static fields to our Global.asax file.

Example

The Global.asax is an optional file. Use it only when there is a need for it.

If a user requests the Global.asax file, the request is rejected. External users cannot view the file.

The Global.asax file is parsed and dynamically compiled by ASP.NET. You can deploy this file as an assembly in the \bin directory of an ASP.NET application.

How to create Global.asax?

Adding a Global.asax to your web project is quite simple.

Open Visual Studio 2005 or 2008 > Create a new website > Go to the Solution Explorer > Add New Item > Global Application Class > Add.

Examining the methods related to the events in Global.asax

There are 2 'set' of methods that fire corresponding to the events. The first set which gets invoked on each request and the second set which does not get invoked on each request. Let us explore these methods.

Methods corresponding to events that fire on each request

Application_BeginRequest() – fired when a request for the web application comes in.

Application_AuthenticateRequest –fired just before the user credentials are authenticated. You can specify your own authentication logic over here.

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Application_AuthorizeRequest() – fired on successful authentication of user's credentials. You can use this method to give authorization rights to user.

Application_ResolveRequestCache() – fired on successful completion of an authorization request.

Application_AcquireRequestState() – fired just before the session state is retrieved for the current request.

Application_PreRequestHandlerExecute() - fired before the page framework begins before executing an event handler to handle the request.

Application_PostRequestHandlerExecute() – fired after HTTP handler has executed the request.

Application_ReleaseRequestState() – fired before current state data kept in the session collection is serialized.

Application_UpdateRequestCache() – fired before information is added to output cache of the page.

Application_EndRequest() – fired at the end of each request

Methods corresponding to events that do not fire on each request

Application_Start() – fired when the first resource is requested from the web server and the web application starts.

Session_Start() – fired when session starts on each new user requesting a page.

Application_Error() – fired when an error occurs.

Session_End() – fired when the session of a user ends.

Application_End() – fired when the web application ends.

Application_Disposed() - fired when the web application is destroyed.

[2] WEB.CONFIG FILE (WEB CONFIGURATION)

- Asp.net contains two files of configuration setting.
- ASP.Net stores configuration setting in XML.
- Advantages of ASP.Net configuration over ASP file is we can update it while server is running, they are easily accessed, editable.
- You can add your own custom configuration settings:

(1) Web.Config

(2) Machine.Config

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(1) Web.Config:

Each and every asp.net application has its own copy of configuration file stored in a file called web.config file.

There can be multiple web.config file in your applications.

Web.config file does not have any visual representation.

The following configuration setting stored in web.config file.

<Configuration>

The root element of a web.config file is always a <Configuration> tag.

<AppSetting>

The appsetting section provides a way to define custom application setting for an asp.net application.

<ConnectionString>

It stores all kinds of connection string information.

<ConnctionString>

<Add Name="ConnectionString"

ConnectionString="DataSource='/'SQLExpress.AttachdbFileName=/DataDirectory|abc

.dbf;integrated security=True;User Instance=True; Provider

Name="System.Data.SqlClient">

</ConnctionString>

<System.Web>

It is fixed area of web.config file

Programmer can't change or add elements in this area.

<Compilation>

Different options like debug, assemblies, default language, dynamic compilations and other compiler options are included in this area.

<Authentication>

Authentication is a process of indentifying a user.

Authorization is a process of determining if an authenticated user has access to the resource they are requested.

ASP.net provides three ways for authenticate a user:

Form Authentication

Provide information regarding application specific form.

Windows Authentication

Default option in authentication

Passport Authentication

It is a centralize authentication service provided

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(2) Machine.Config: (remain)

4. Advantages and features of asp.net.

Definition of ASP.net:

ASP.NET stands for Active Server Pages .NET and is developed by Microsoft.

ASP.NET is used to create web pages and web technologies and is an integral part of Microsoft's .NET framework vision.

The following are important advantages ASP.NET offers over other Web development models:

1. ASP.NET drastically reduces the amount of code required to build large applications.
2. With built-in Windows authentication and per-application configuration, your applications are safe and secured.
3. It provides better performance by taking advantage of early binding, just-in-time compilation, native optimization, and caching services right out of the box.
4. The ASP.NET framework is complemented by a rich toolbox and designer in the Visual Studio integrated development environment. WYSIWYG editing, drag-and-drop server controls, and automatic deployment are just a few of the features this powerful tool provides.
5. Provides simplicity as ASP.NET makes it easy to perform common tasks, from simple form submission and client authentication to deployment and site configuration.
6. The source code and HTML are together therefore ASP.NET pages are easy to maintain and write. Also the source code is executed on the server. This provides a lot of power and flexibility to the web pages.

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7. All the processes are closely monitored and managed by the ASP.NET runtime, so that if process is dead, a new process can be created in its place, which helps keep your application constantly available to handle requests.

8. It is purely server-side technology so, ASP.NET code executes on the server before it is sent to the browser.

9. Being language-independent, it allows you to choose the language that best applies to your application or partition your application across many languages.

10. ASP.NET makes for easy deployment. There is no need to register components because the configuration information is built-in.

11. The Web server continuously monitors the pages, components and applications running on it. If it notices any memory leaks, infinite loops, other illegal activities, it immediately destroys those activities and restarts itself.

12. Easily works with ADO.NET using data-binding and page formatting features. It is an application which runs faster and counters large volumes of users without having performance problems

5.State management using view state, query string, session and cookies.

There are four ways to manage states.

- View State
- Hidden Form Fields
- Cookies
- Query String

View State

In this method, the ViewState property that is inherited from the base Control class is used to automatically save the values of the page and of each control prior to rendering of the

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page. ViewState is implemented with a hidden form field called the `_VIEWSTATE`, which is automatically created in every Web Form page. When ASP.Net executes a Web page on a Web Server, the values stored in the ViewState property of the page and controls on it are collected and formatted into a single encoded string.

Hidden Form Fields

In ASP.Net we can use the HTML standard hidden fields in a Web Form to store page-specific information. A hidden field does not render in a Web browser. However, we can set the properties of the hidden field. When a page is submitted to the server, the content of the hidden field is sent in the HTTP Form collection along with values of other controls.

Cookies

A cookie is a small data structure used by a Web server to deliver data to a web client. A cookie contains page specific information that a Web server sends to a client along with Page output. Cookies are used to keep track of each individual user who accesses the web page across a HTTP connection.

Query String

The Query string is a part of the request that appears after the Question mark (?) character in the URL. A query string provides a simple way to pass information from one page to another.

