

ASP.NET interview questions and answers

1. Explain how a web application works.

A web application resides in the server and serves the client's requests over internet. The client access the web page using browser from his machine. When a client makes a request, it receives the result in the form of HTML which are interpreted and displayed by the browser.

A web application on the server side runs under the management of Microsoft Internet Information Services (IIS). IIS passes the request received from client to the application. The application returns the requested result in the form of HTML to IIS, which in turn, sends the result to the client.

2. Explain the advantages of ASP.NET.

Following are the advantages of ASP.NET.

Web application exists in compiled form on the server so the execution speed is faster as compared to the interpreted scripts.

ASP.NET makes development simpler and easier to maintain with an event-driven, server-side programming model.

Being part of .Framework, it has access to all the features of .Net Framework.

Content and program logic are separated which reduces the inconveniences of program maintenance.

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

To develop program logic, a developer can choose to write their code in more than 25 .Net languages including VB.Net, C#, JScript.Net etc.

Introduction of view state helps in maintaining state of the controls automatically between the postbacks events.

ASP.NET offers built-in security features through windows authentication or other authentication methods.

Integrated with ADO.NET.

Built-in caching features.

3. Explain the different parts that constitute ASP.NET application.

Content, program logic and configuration file constitute an ASP.NET application.

Content files

Content files include static text, images and can include elements from database.

Program logic

Program logic files exist as DLL file on the server that responds to the user actions.

Configuration file

Configuration file offers various settings that determine how the application runs on the server.

4. Describe the sequence of action takes place on the server when ASP.NET application starts first time?

Following are the sequences:

IIS starts ASP.NET worker process>> worker process loads assembly in the memory>>IIS sends the request to the assembly>>the assembly composes a response using program logic>> IIS returns the response to the user in the form of HTML.

5. Explain the components of web form in ASP.NET

Server controls.

The server controls are Hypertext Markup Language (HTML) elements that include a `runat=server` attribute. They provide automatic state management and server-side events and respond to the user events by executing event handler on the server.

HTML controls.

These controls also respond to the user events but the events processing happen on the client machine.

Data controls

Data controls allow to connect to the database, execute command and retrieve data from database.

System components

System components provide access to system-level events that occur on the server.

6. Describe in brief .NET Framework and its components.

.NET Framework provides platform for developing windows and web software. ASP.NET is a part of .Net framework and can access all features implemented within it that was formerly available only through windows API. .NET Framework sits in between our application programs and operating system.

The .Net Framework has two main components:

.Net Framework Class Library: It provides common types such as data types and object types that can be shared by all .Net compliant language.

The Common language Runtime: It provides services like type safety, security, code execution, thread management, interoperability services.

7. What is an Assembly? Explain its parts?

An assembly exists as a .DLL or .EXE that contains MSIL code that is executed by CLR.

An assembly contains interface and classes, it can also contain other resources like bitmaps, files etc. It carries version details which are used by the CLR during execution. Two assemblies of the same name but with different versions can run side-by-side enabling applications that depend on a specific version to use assembly of that version. An assembly is the unit on which permissions are granted. It can be private or global. A private assembly is used only by the application to which it belongs, but the global assembly can be used by any application in the system.

The four parts of an assembly are:

Assembly Manifest - It contains name, version, culture, and information about referenced assemblies.

Type metadata - It contains information about types defined in the assembly.

MSIL - MSIL code.

Resources - Files such as BMP or JPG file or any other files required by application.

8. Define Common Type System.

.Net allows developers to write program logic in at least 25 languages. The classes written in one language can be used by other languages in .Net. This service of .Net is possible through CTS which ensure the rules related to data types that all language must follow. It provides set of types that are used by all .NET languages and ensures .NET language type compatibility.

9. Define Virtual folder.

It is the folder that contains web applications. The folder that has been published as virtual folder by IIS can only contain web applications.

10. Describe the Events in the Life Cycle of a Web Application

A web application starts when a browser requests a page of the application first time. The request is received by the IIS which then starts ASP.NET worker process (aspnet_wp.exe). The worker process then allocates a process space to the assembly and loads it. An application_start event occurs followed by Session_start. The request is then processed by the ASP.NET engine and sends back response in the form of HTML. The user receives the response in the form of page.

The page can be submitted to the server for further processing. The page submitting triggers postback event that causes the browser to send the page data, also called as view state to the server. When server receives view state, it creates new instance of the web form. The data is then restored from the view state to the control of the web form in Page_Init event.

The data in the control is then available in the Page_load event of the web form. The cached event is then handled and finally the event that caused the postback is processed. The web form is then destroyed. When the user stops using the application, Session_end event occurs and session ends. The default session time is 20 minutes. The application ends when no user accessing the application and this triggers Application_End event. Finally all the resources of the application are reclaimed by the Garbage collector.

11. What are the ways of preserving data on a Web Form in ASP.NET?

ASP.NET has introduced view state to preserve data between postback events. View state can't avail data to other web form in an application. To provide data to other forms, you need to save data in a state variable in the application or session objects.

12. Define application state variable and session state variable.

These objects provide two levels of scope:

Application State

Data stored in the application object can be shared by all the sessions of the application.

Application object stores data in the key value pair.

Session State

Session State stores session-specific information and the information is visible within the session only. ASP.NET creates unique sessionId for each session of the application. SessionIDs are maintained either by an HTTP cookie or a modified URL, as set in the application's configuration settings. By default, SessionID values are stored in a cookie.

13. Describe the application event handlers in ASP.NET

Following are the application event handlers:

Application_Start: This event occurs when the first user visits a page of the application.

Application_End: This event occurs when there are no more users of the application.

Application_BeginRequest: This occurs at the beginning of each request to the server.

Application_EndRequest: occurs at the end of each request to the server.

Session_Start: This event occurs every time when any new user visits.

Session_End: occurs when the users stop requesting pages and their session times out.

14. What are the Web Form Events available in ASP.NET?

Page_Init
Page_Load
Page_PreRender
Page_Unload
Page_Disposed
Page_Error
Page_AbortTransaction
Page_CommitTransaction
Page_DataBinding

15. Describe the Server Control Events of ASP.NET.

ASP.NET offers many server controls like button, textbox, DropDownList etc. Each control can respond to the user's actions using events and event handler mechanism.

There are three types of server control events:

Postback events

This events sends the web page to the server for processing. Web page sends data back to the same page on the server.

Cached events

These events are processed when a postback event occurs.

Validation events

These events occur just before a page is posted back to the server.

16. How do you change the session time-out value?

The session time-out value is specified in the web.config file within sessionstate element. You can change the session time-out setting by changing value of timeout attribute of sessionstate element in web.config file.

17. Describe how ASP.NET maintains process isolation for each Web application?

In ASP.NET, when IIS receives a request, IIS uses aspnet_isapi.dll to call the ASP.NET worker process (aspnet_wp.exe). The ASP.NET worker process loads the Web application's assembly, allocating one process space, called the application domain, for each application. This is the how ASP.NET maintains process isolation for each Web application.

18. Define namespace.

Namespaces are the way to organize programming code. It removes the chances of name conflict. It is quite possible to have one name for an item accidentally in large projects those results into conflict. By organizing your code into namespaces, you reduce the chance of these conflicts. You can create namespaces by enclosing a class in a Namespace...End Namespace block.

You can use namespaces outside your project by referring them using References dialog box. You can use Imports or using statement to the code file to access members of the namespaces in code.

19. What are the options in ASP.NET to maintain state?

Client-side state management

This maintains information on the client's machine using Cookies, View State, and Query Strings.

Cookies.

A cookie is a small text file on the client machine either in the client's file system or memory of client browser session. Cookies are not good for sensitive data. Moreover, Cookies can be disabled on the browser. Thus, you can't rely on cookies for state management.

View State

Each page and each control on the page has View State property. This property allows automatic retention of page and controls state between each trip to server. This means control value is maintained between page postbacks. Viewstate is implemented using `_VIEWSTATE`, a hidden form field which gets created automatically on each page. You can't transmit data to other page using view state.

Querystring

Query strings can maintain limited state information. Data can be passed from one page to another with the URL but you can send limited size of data with the URL. Most browsers allow a limit of 255 characters on URL length.

Server-side state management

This kind of mechanism retains state in the server.

Application State

The data stored in the application object can be shared by all the sessions of the application. Application object stores data in the key value pair.

Session State

Session State stores session-specific information and the information is visible within the session only. ASP.NET creates unique sessionId for each session of the application. SessionIDs are maintained either by an HTTP cookie or a modified URL, as set in the application's configuration settings. By default, SessionID values are stored in a cookie.

Database

Database can be used to store large state information. Database support is used in combination with cookies or session state.

20. Explain the difference between Server control and HTML control.

Server events

Server control events are handled in the server whereas HTML control events are handled in the page.

State management

Server controls can maintain data across requests using view state whereas HTML controls have no such mechanism to store data between requests.

Browser detection

Server controls can detect browser automatically and adapt display of control accordingly whereas HTML controls can't detect browser automatically.

Properties

Server controls contain properties whereas HTML controls have attributes only.

21. What are the validation controls available in ASP.NET?

ASP.NET validation controls are:

RequiredFieldValidator: This validates controls if controls contain data.

CompareValidator: This allows checking if data of one control match with other control.

RangeValidator: This verifies if entered data is between two values.

RegularExpressionValidator: This checks if entered data matches a specific format.

CustomValidator: Validate the data entered using a client-side script or a server-side code.

ValidationSummary: This allows developer to display errors in one place.

22. Define the steps to set up validation control.

Following are the steps to set up validation control

Drag a validation control on a web form.

Set the ControlToValidate property to the control to be validated.

If you are using CompareValidator, you have to specify the ControlToCompare property.

Specify the error message you want to display using ErrorMessage property.

You can use ValidationSummary control to show errors at one place.

23. What are the navigation ways between pages available in ASP.NET?

Ways to navigate between pages are:

Hyperlink control

Response.Redirect method

Server.Transfer method

Server.Execute method

Window.Open script method

24. How do you open a page in a new window?

To open a page in a new window, you have to use client script using onclick="window.open()" attribute of HTML control.

25. Define authentication and authorization.

Authorization: The process of granting access privileges to resources or tasks within an application.

Authentication: The process of validating the identity of a user.

26. Define caching.

Caching is the technique of storing frequently used items in memory so that they can be accessed more quickly. Caching technique allows to store/cache page output or application data on the client on the server. The cached information is used to serve subsequent requests that avoid the overhead of recreating the same information. This enhances performance when same information is requested many times by the user.

27. Define cookie.

A cookie is a small file on the client computer that a web application uses to maintain current session information. Cookies are used to identify a user in a future session.

28. What is delegate?

A delegate acts like a strongly type function pointer. Delegates can invoke the methods that they reference without making explicit calls to those methods. It is type safe since it holds reference of

only those methods that match its signature. Unlike other classes, the delegate class has a signature. Delegates are used to implement event programming model in .NET application. Delegates enable the methods that listen for an event, to be abstract.

29. Explain Exception handling in .Net.

Exceptions or errors are unusual occurrences that happen within the logic of an application. The CLR has provided structured way to deal with exceptions using Try/Catch block. ASP.NET supports some facilities to handling exceptions using events such as Page_Error and Application_Error.

30. What is impersonation?

Impersonation means delegating one user identity to another user. In ASP.NET, the anonymous users impersonate the ASPNET user account by default. You can use <identity> element of web.config file to impersonate user. E.g. <identity impersonate="true"/>

31. What is managed code in .Net?

The code that runs under the guidance of common language runtime (CLR) is called managed code. The versioning and registration problem which are formally handled by the windows programming are solved in .Net with the introduction of managed code. The managed code contains all the versioning and type information that the CLR use to run the application.

32. What are Merge modules?

Merge modules are the deployment projects for the shared components. If the components are already installed, the modules merge the changes rather than unnecessarily overwrite them. When the components are no longer in use, they are removed safely from the server using Merge modules facility.

33. What is Satellite assembly?

Satellite assembly is a kind of assembly that includes localized resources for an application. Each satellite assembly contains the resources for one culture.

34. Define secured sockets layer.

Secured Socket Layer (SSL) ensures a secured web application by encrypting the data sent over internet. When an application is using SSL facility, the server generates an encryption key for the session and page is encrypted before it sent. The client browser uses this encryption key to decrypt the requested Web page.

35. Define session in ASP.NET.

A session starts when the browser first request a resources from within the application. The session gets terminated when either browser closed down or session time out has been attained. The default time out for the session is 20 minutes.

36. Define Tracing.

Tracing is the way to maintain events in an application. It is useful while the application is in debugging or in the testing phase. The trace class in the code is used to diagnose problem. You can use trace messages to your project to monitor events in the released version of the application. The trace class is found in the System.Diagnostics namespace. ASP.NET introduces tracing that enables you to write debug statements in your code, which still remain in the code even after when it is deployed to production servers.

37. Define View State.

ASP.NET preserves data between postback events using view state. You can save a lot of coding using view state in the web form. ViewState serialize the state of objects and store in a hidden field on the page. It retains the state of server-side objects between postbacks. It represents the status of the page when submitted to the server. By default, view state is maintained for each page. If you do not want to maintain the ViewState, include the directive `<%@ Page EnableViewState="false" %>` at the top of an .aspx page or add the attribute `EnableViewState="false"` to any control. ViewState exist for the life of the current page.

38. What is application domain?

It is the process space within which ASP.NET application runs. Every application has its own process space which isolates it from other application. If one of the application domains throws error it does not affect the other application domains.

39. List down the sequence of methods called during the page load.

Init() – Initializes the page.

Load() – Loads the page in the server memory.

PreRender() - the brief moment before the page is displayed to the user as HTML

Unload() – runs just after page finishes loading.

40. What is the importance of Global.asax in ASP.NET?

The Global.asax is used to implement application and session level events.

41. Define MSIL.

MSIL is the Microsoft Intermediate Language. All .Net languages' executable exists as MSIL which gets converted into machine specific language using JIT compiler just before execution.

42. Response.Redirect vs Server.Transfer.

Server.Transfer is only applicable for aspx files. It transfers page processing to another page without making round-trip back to the client's browser. Since no round trips, it offers faster response and doesn't update client url history list.

Response.Redirect is used to redirect to another page or site. This performs a trip back to the client where the client's browser is redirected to the new page.

43. Explain Session state management options in ASP.NET.

ASP.NET provides In-Process and Out-of-Process state management. In-Process stores the session in memory on the web server. Out-of-Process Session state management stores data in an external data source such as SQL Server or a State Server service. Out-of-Process state management requires that all objects stored in session are serializable.

44. How to turn off cookies for a page?

Cookie.Discard Property when true, instructs the client application not to save the Cookie on the user's hard disk when a session ends.

45. How can you ensure a permanent cookie?

Setting Expires property to MinValue and restrict cookie to get expired.

46. What is AutoPostBack?

AutoPostBack automatically posts the page back to the server when state of the control is changed.

47. Explain login control and form authentication.

Login controls encapsulate all the features offered by Forms authentication. Login controls internally use FormsAuthentication class to implement security by prompting for user credentials validating them.

48. What is the use of Web.config file?

Following are the setting you can incorporate in web.config file.

- Database connections
- Error Page setting
- Session States
- Error Handling
- Security
- Trace setting
- Culture specific setting

49. Explain in what order a destructors is called.

Destructors are called in reverse order of constructors. Destructor of most derived class is called followed by its parent's destructor and so on till the topmost class in the hierarchy.

50. What is break mode? What are the options to step through code?

Answer - Break mode lets you to observe code line to line in order to locate error. VS.NET provides following option to step through code.

Step Into
Step Over
Step Out
Run To Cursor
Set Next Statement

51. Explain how to retrieve property settings from XML .config file.

Create an instance of AppSettingsReader class, use GetValue method by passing the name of the property and the type expected. Assign the result to the appropriate variable.

52. Explain Global Assembly Cache.

Global Assembly Cache is the place holder for shared assembly. If an assembly is installed to the Global Assembly Cache, the assembly can be accessed by multiple applications. In order to install an assembly to the GAC, the assembly must have to be signed with strong name.

53. Explain Managed code an Un-managed code.

Managed code runs under the safe supervision of common language runtime. Managed code carries metadata that is used by common language runtime to offer service like memory management, code access security, and cross-language accessibility.

Unmanaged code doesn't follow CLR conventions and thus, can't take the advantages of .Framework.

54. What is side-by-side execution?

This means multiple version of same assembly to run on the same computer. This feature enables to deploy multiple versions of the component.

55. Define Resource Files.

Resource files contains non-executable data like strings, images etc that are used by an application and deployed along with it. You can changes these data without recompiling the whole application.

56. Define Globalization and Localization.

Globalization is the process of creating multilingual application by defining culture specific features like currency, date and time format, calendar and other issues.

Localization is the process of accommodating cultural differences in an application.

57. What is reflection?

Reflection is a mechanism through which types defined in the metadata of each module can be accessed. The System.Reflection namespaces contains classes that can be used to define the types for an assembly.

58. Define Satellite Assemblies.

Satellite Assemblies are the special kinds of assemblies that exist as DLL and contain culture-specific resources in a binary format. They store compiled localized application resources. They can be created using the AL utility and can be deployed even after deployment of the application.

Satellite Assemblies encapsulate resources into binary format and thus makes resources lighter and consume lesser space on the disk.

59. What is CAS?

CAS is very important part of .Net security system which verifies if particular piece of code is allowed to run. It also determines if piece of code have access rights to run particular resource. .NET security system applies these features using code groups and permissions. Each assembly of an application is the part of code group with associated permissions.

60. Explain Automatic Memory Management in .NET.

Automatic memory management in .Net is through garbage collector which is incredibly efficient in releasing resources when no longer in use.

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