

# .NET FRAME WORK

**Q. What is Dot Net Framework?**

A. Dot.net Framework is the collection of tools and classes that are required to create a web development application.

**Q. What is CLR? What are various responsibilities of CLR?**

A. CLR handles the execution of code at Runtime. Responsibilities of CLR are:

1. Convert IL code to Machine Code through JIT Compiler
2. Garbage Collection
3. Code Access Security
4. Strict Type Cast
5. Exception handling

**Q. What is IL or MSIL or CIL?**

A. All .NET source code (of any language) is compiled to IL during development. IL is Platform (Processor) Independent Code. The IL is then converted to machine code at the point where the software is installed, or (more commonly) at run-time by a Just-In-Time (JIT) compiler.

**Q. What are CTS and CLS?**

A. **CTS:** In Order to run multiple languages simultaneously CLR has CTS. The common type system (CTS) defines how types are declared, used, and managed in the common language runtime, and is also an important part of the runtime's support for cross-language integration.

**CLS:** The Common Language Specification (CLS) is an agreement among language designers and class library designers to use a common subset of basic language features that all languages have to follow.

**Q. What is Managed Code?**

A. The code that runs under CLR environment is called **Managed Code**. This Code is understandable by CLR. It is executed under the instructions of CLR.

**Q. What is Unmanaged Code?**

A. Code that is directly executed by the Operating System is known as un-managed code. Unmanaged code typically targets the processor architecture and is always dependent on the computer architecture. The CLR cannot understand the code. The CLR cannot instruct the code.

**Q. What Is JIT? Explain various types of JIT (Pre, Econo, and Normal)**

- A. JIT (Just in time) compiler converts IL code into Machine Code. Three types of JIT compilers are:
- 1. Pre-JIT:** Per-JIT compiler compiles source code into native code in a single compilation cycle.
  - 2. Econo-JIT:** Econo-JIT compiles methods that are called at runtime.
  - 3. Normal JIT:** Normal JIT only compiles the methods which are called at runtime. These methods are compiled the first time they're called and then they're stored in cache. When the same method is called again, the compilation code from cache is used for execution.

**Q. Explain Base Class Library?**

- A. The .NET Framework includes classes, interfaces, and value types that optimize the development process and provide access to system functionality.

**Q. What is strong name?**

- A. A name that consists of an assembly's identity—its simple text name, version number, and culture information (if provided)—strengthened by a public key and a digital signature generated over the assembly.

**Q. Which is the base class for .net Class library?**

- A. System.Object

**Q. Explain Page Development Life Cycle of Asp.Net.**

- A. → Initialization → Load View State → Load Post Back Data → Page Load → Fire Post Back Event → Save View State → Render Page

**Q. What is Metadata?**

- A. Metadata is data about data. It is descriptive information about a particular data set, object, or resource, including how it is formatted, and when and by whom it was collected.

**Q. What is garbage collector?**

- A. It releases the memory from unused object.

**Q. How we can forcefully run garbage collector?**

- A. `system.gc.collect ()`

**Q. What is the difference between a private assembly and a shared assembly?**

A. A private assembly is normally used by a single application, and is stored in the application's directory. Shared assemblies are used by many applications. e.g. the .NET framework classes. A shared assembly is normally stored in the global assembly cache.

**Q. What is the difference between a Struct and a Class?**

A. → A struct is a value type, while a class is a reference type.  
→ Structure cannot have default (parameterless) constructor.  
→ It is an error to initialize an instance field in a struct.  
→ There is no inheritance for structs as there is for classes.

**Q. What is difference between abstract class and an interface?**

A. → An Abstract class is a class with some common/certain implementations and defines abstraction for other services which are implemented in its concrete sub classes, whereas interface only have method declaration with zero implementations.  
→ If you call Abstract class then you have to call all method of that particular Abstract class but if you call an Interface then it is not necessary that you call all method of that particular interface.  
→ The main difference between them is that a class can implement more than one interface but can only inherit from one abstract class.

**Q. What is Web.config?**

A. Web.config file is a collection of settings (i.e. database connection string, Session State) that are common to entire Project.

**Q. What is the difference between a.Equals(b) and a == b?**

A. a == b is used to compare the references of two objects  
a. Equals(b) is used to compare two objects.

**Q. What is the difference between Finalize and Dispose?**

A.  
→ Finalize () is called by the runtime. Dispose () is called by the user.  
→ Finalize is a C# equivalent of destructor, called by Garbage Collector when the object goes out of scope.  
→ Implement it when you have unmanaged resources in your code. Same purpose as finalize, to free unmanaged resources. However, implement this when you are writing a custom class that will be used by other users.  
→ Since, Finalize () is called by the Garbage Collector, it is non-deterministic. Dispose() method is called explicitly in the code itself.

- Q. Can we use two partial classes in different assemblies represent the same Class?**
- A. We cannot have two partial classes referring to the same class in two different assemblies (projects).
- Q. What is a garbage collector?**
- A. A garbage collector performs periodic checks on the managed heap to identify objects that are no longer required by the program and removes them from memory.
- Q. What is an assembly?**
- A. An assembly is a collection of one or more .exe or DLL's. An assembly is the fundamental unit for application development and deployment in the .NET Framework.
- Q. What are the contents of assembly?**
- A. A static assembly can consist of four elements:
- 1) Assembly manifest
  - 2) Type metadata - Binary information that describes a program
  - 3) Microsoft intermediate language (MSIL) code
  - 4) Set of resources
- Q. What are the different types of assembly?**
- A. Private, Shared and Satellite Assembly.
- Q. What is a dynamic assembly?**
- A. A dynamic assembly is created dynamically at run time when an application requires the types within these assemblies.



# ADO .NET

**Q. Which class is used for SQL connectivity?**

**A.** SQL Connection Class

**Q. What is connected and disconnected approach?**

**A. Connected Approach:** In these cases the application stays connected to the database system during transactions (Even when it is not using any Database Operations).

**Disconnected Approach:** In disconnected approach dataset is used for retrieving data from database. Then no need for maintaining the connection. Data Adapter Fill data into dataset and then Connection is closed. We can now fetch data from dataset.

**Q. What is the difference between SqlDataReader and SqlDataAdapter?**

**A. SqlDataReader:** It holds the connection open until you are finished (don't forget to close it!). It is not as useful for updating back to the database. Only has one record in memory at a time rather than an entire result set (this can be huge).

**SqlDataAdapter/Dataset:** It lets you close the connection as soon it's done loading data. All of the results are available in memory. It has some built-in facilities for updating back to the database. Much higher memory is use. You wait until all the data is loaded before using any of it.

**Q. What is the difference between DataSet and RecordSet?**

**A.** Dataset is connectionless and it retrieves and stores more than one table information at a single fetch whereas record set is connection oriented and stores only single table data.

**Q. What is Typed and Untyped Dataset?**

**A. Typed Dataset:** Typed Dataset contains Schema structure. So it will take datatype for fields automatically.

**Untyped Dataset:** Untyped Dataset doesn't contain Schema. We have to explicitly specify data row and Data column types.

**Q. What is difference between ExecuteNonQuery, ExecuteScalar, and ExecuteReader?**

**A. →ExecuteReader:** It is used for accessing data. It provides a forward-only, read-only, connected record set. It returns a connected record set. It is forward only and un-editable at the same time.

**→ExecuteNonQuery:** It is used for data manipulation, such as Insert, Update, andv Delete. It doesn't return any record sets. It is ideal for insert, update and delete queries where no record sets are returned. However, it also returns the no. of records affected by

the Query.

→**ExecuteScalar**: It is used for retrieving single cell value. It is faster than other ways of retrieving a single value from DB. This returns one value only, no record sets.

**Q. What are the Different layers in ADO.Net?**

**A.** Presentation Layer, Business logic Layer, Database access layer.

**Q. Explain three tier architecture of asp.net?**

**A.** Three-tier architecture generally contains UI or Presentation Layer, Business Access Layer (BAL) or Business Logic Layer and Data Access Layer (DAL).

**Presentation Layer (UI)**: Presentation layer contains pages like .aspx or windows form where data is presented to the user or input is taken from the user.

**Business Access Layer (BAL) or Business Logic Layer**: BAL contains business logic, validations or calculations related with the data.

**Data Access Layer (DAL)**: DAL contains methods that helps business layer to connect the data and perform required action, might be returning data or manipulating data (insert, update, delete etc).

**Q. What is dataset? How to fill data with dataset?**

**A. Dataset**: A data set (or dataset) is a collection of data, usually presented in tabular form. A dataset can contain more than one table.

**Q. What are the components of .Net Data Providers?**

**A.** ConnectionObject, CommandObject, DataReaderObject, DataAdapterObject

**Q. Difference between Ado and Ado.net?**

**A.** 1. ADO used connected data usage, while ADO.net used disconnected data environment.  
2. In ADO, Record set, is like a single table or query result, while in ADO.net Dataset, can contain multiple tables from any data source.

**Q. How you can update records in database using data reader?**

**A.** Well, You cannot update. DataReader is just used for reading the data in forward only mode. You can achieve this using Dataset but not by DataReader.

**Q. What is DataView in Ado.Net?**

**A.** The DataView provides different views of the data stored in a DataTable. That is we can customize the views of data from a DataTable. DataView can be used to sort, filter, and search the data in a DataTable. Additionally we can add new rows and modify the content in a DataTable.

**Q. Name classes that are contained in system.data namespace?**

A. DataSet, DataTable, DataColumn, DataRow, DataRelation, Constraint

**Q. Name the classes that are found in system.data.common namespace?**

A. 1) DataColumnMapping  
2) DataTableMapping

**Q. Which ADO.NET Object's fill method is used to fill the data from database into either DataSet or DataTable?**

A. Data Adapter

**Q. What is the difference between DataReader, Dataset and Data table?**

A. **DataReader:** It is a predefined class that accesses the data forward only and read only mode, and it belongs to connected architecture.

**Dataset:** It is a buffer location between database and application. All the manipulations are done here rather than directly database. It belongs to disconnected architecture.

**DataTable:** It is the collection of rows and columns in the dataset. In other sentence, the table in the dataset is called DataTable.

**Q. We all know that Dataset is purely disconnected architecture, but we also know that changes made to the dataset can be updated in the backend database. When there is no connection how does the update happen?**

A. Yes dataset have drawback. It is not updated in database automatically. We have to use data adapter update method (dataset\_object,Table\_name). It can be updated via using da.Update(ds), It will internally create Insert/Update/Delete Command for DataAdapter .

**Q. What must be added to the connection string to perform asynchronous data access?**

A. Asynchronous=true

**Q. You are working with a DataSet and want to be able to display data, sorted different ways. How do you do so?**

A. Use a DataView object for each sort.

**Q. What is connection Pooling?**

A. Pooling enables an application to use a connection from a pool of connections that do not need to be reestablished for each use. Once a connection has been created and placed in a pool, an application can reuse that connection without performing the complete connection process.

**Data pooling:** A centralized database where all resources are located, where all application can use it in a standardized manner

**Q. To improve the performance and scalability of your .NET application. Which technique would help?**

A. Connection Pooling.

**Q. Which method is used to get the name of the specified column using DataReader?**

A. GetName()

**Q. Which method is used to get a value indicating whether the column contains non-existent or missing values?**

A. IsDBNull

**Q. Which is the best method to get the single value from Database?**

A. ExecuteScalar()

**Q. Which method is used to commit all changes in the DataSet or DataTable?**

A. AcceptChanges()

**Q. Which method is used to create a new row in a Table?**

A. NewRow()

**Q. Best Method to retrieve two values from Database (SQL Server)?**

A. ExecuteNonQuery()

**Q. How to add auto increment column in the DataTable?**

A. 

```
// create columns for the DataTable
DataTable dt = new DataTable();
DataColumn auto = new DataColumn("AutoID", typeof(System.Int32));
dt.Columns.Add(auto);
auto.AutoIncrement = true;
auto.AutoIncrementSeed = 1;
auto.ReadOnly = true;
```

**Q. How to create column in DataTable?**

A. 

```
DataTable dt = new DataTable();
DataColumn name = new DataColumn("Name", typeof(string));
dt.Columns.Add(name);
```

**Q. How to add new row in DataTable?**

**A.** `DataTable dt = new DataTable();  
DataRow row = null;  
for (int i = 0; i < 5; i++)  
{  
row = dt.NewRow ();  
row["Name"] = i + " - Raja";  
row["Address"] = "USA";  
dt.Rows.Add(row);  
}`

**Q. Difference between OLEDB Provider and SqlClient?**

**A.** SQLClient .NET classes are highly optimized for the .net /SQL server combination and achieve optimal results. The SqlClient data provider is fast. It's faster than the Oracle provider, and faster than accessing database via the OLEDB layer. It's faster because it accesses the native library (which automatically gives you better performance), and it was written with lots of help from the SQL Server team.

**Q. What are the major components of a data provider in ADO.net?**

**A.** Connection, Command, Data Reader, Data Adapter.

**Q. What is the difference between Dataset and Datatable?**

**A.** A dataset can hold the data of multiple tables, whereas data table can have only one table's data.

**Q. What is the use of command Object?**

**A.** Command object is used to connect the connection object to data reader or dataset and is used to execute queries and stored procedures which are defined in the command text property. The main methods for command object property are:

- 1) ExecuteNonQuery();
- 2) ExecuteReader();
- 3) ExecuteScalar();

**Q. What is the difference between a Dataset and DataReader? Can dataReader hold data from multiple tables?**

**A. Data reader:** It is a read only and forward only data access to data. You can access one table at time. It can't persist the data. It comes under connected architecture. One of the most advantage is it is much faster than Data Adapter.

**Data set:** It can access multiple tables at a time. It can persist the data. It is a disconnected architecture. It can't define without data adapter.

Yes, Data reader holds data from multiple tables.

**Q. What is Event Bubbling or bubble Events?**

**A.** Raise event of any child control through its parent control is called **Event Bubbling**.

**Q. What are Attributes to DataSet?**

**A. Dataset has 2 collections**

1. DataTable(s) Collection
2. DataRelations Collection

**DataTable has again 3 collections**

1. DataColumn Collection
2. DataRow Collection
3. DataConstraint Collection

**Q. What is SQL Native Client?**

**A.** SQL NATIVE CLIENT is a Provider used to Connect with the SQL Server database.

**Q. What provider ADO.net use by default?**

**A.** SQL Client

**Q. How to store XML data in Dataset?**

**A.** ds.ReadXml();

**Q. Which method is used to do sorting in DataView?**

**A.** dv.sort()



# ASP.NET

**Q. What are various data controls available in asp.net?**

**A.** Gridview, Listview, Datalist, Repeater, Formview, Detailview

**Q. Difference between Property and variable?**

**A.** A Property can be read only or Write Only. We can

**Q. If we assign a value in textbox on Page\_UnLoad event, will it display?**

**A.** No

**Q. How can we achieve paging in Repeater and Datalist?**

**A.** By using PagedDataSource Class or Custom Paging.

**Q. What is Caching?**

**A. Caching a page**

In order to cache a page's output, we need to specify a @OutputCache directive at the top of the page. The syntax is as shown below:

```
<%@ OutputCache Duration=5 VaryByParam="None" %>
```

As you can see, there are two attributes to this directive. They are:

**Duration** - The time in seconds of how long the output should be cached. After the specified duration has elapsed, the cached output will be removed and page content generated for the next request. That output will again be cached for 10 seconds and the process repeats.

**VaryByParam** - This attribute is compulsory and specifies the querystring parameters to vary the cache.

In the above snippet, we have specified the VaryByParam attribute as **None** which means the page content to be served is the same regardless of the parameters passed through the querystring.

If there are two requests to the same page with varying querystring parameters, e.g.:  
.../PageCachingByParam.aspx?id=12 and .../PageCachingByParam.aspx?id=15] and separate page content is generated for each of them, the directive should be:

```
<%@ OutputCache Duration=5 VaryByParam="id" %>
```

The page content for the two requests will each be cached for the time specified by the Duration attribute.

To specify multiple parameters, use semicolon to separate the parameter names. If we specify the `VaryByParam` attribute as `*`, the cached content is varied for all parameters passed through the querystring.

Some pages generate different content for different browsers. In such cases, there is provision to vary the cached output for different browsers. The `@OutputCache` directive has to be modified to:

```
<%@ OutputCache Duration=5 VaryByParam="id" VaryByCustom="browser"
%>
```

This will vary the cached output not only for the browser but also its major version. I.e., IE5, IE 6, Netscape 4, Netscape 6 will all get different cached versions of the output.

### **Caching page fragments**

Sometimes we might want to cache just portions of a page. For example, we might have a header for our page which will have the same content for all users. There might be some text/image in the header which might change every day. In that case, we will want to cache this header for duration of a day.

The solution is to put the header contents into a user control and then specify that the user control content should be cached. This technique is called fragment caching.

To specify that a user control should be cached, we use the `@OutputCache` directive just like we used it for the page.

```
<%@ OutputCache Duration=10 VaryByParam="None"%>
```

With the above directive, the user control content will be cached for the time specified by the `Duration` attribute [10 secs]. Regardless of the querystring parameters and browser type and/or version, the same cached output is served.

### **Data Caching**

ASP.NET also supports caching of data as objects. We can store objects in memory and use them across various pages in our application. This feature is implemented using the `Cache` class. This cache has a lifetime equivalent to that of the application. Objects can be stored as name value pairs in the cache. A string value can be inserted into the cache as follows:

```
Cache["name"]="Smitha";
```

**The stored string value can be retrieved like this:**

```
if (Cache["name"] != null)
Label1.Text= Cache["name"].ToString();
```

To insert objects into the cache, the Add method or different versions of the Insert method of the Cache class can be used. These methods allow us to use the more powerful features provided by the Cache class. One of the overloads of the Insert method is used as follows:

```
Cache.Insert("Name", strName, new  
CacheDependency(Server.MapPath("name.txt"), DateTime.Now.AddMinutes(2),  
TimeSpan.Zero);
```

The first two parameters are the key and the object to be inserted. The third parameter is of type CacheDependency and helps us set a dependency of this value to the file named name.txt. So whenever these files change, the value in the cache is removed. We can specify null to indicate no dependency. The fourth parameter specifies the time at which the value should be removed from cache. The last parameter is the sliding expiration parameter which shows the time interval after which the item is to be removed from the cache after its last accessed time.

The cache automatically removes the least used items from memory, when system memory becomes low. This process is called scavenging. We can specify priority values for items we add to the cache so that some items are given more priority than others:

Collapse

```
Cache.Insert("Name", strName, new  
CacheDependency(Server.MapPath("name.txt"), DateTime.Now.AddMinutes(2),  
TimeSpan.Zero, CacheItemPriority.High, null);
```

The CacheItemPriority enumeration has members to set various priority values. The CacheItemPriority.High assigns a priority level to an item so that the item is least likely to be deleted from the cache.

**Q. What is Globalization and Localization?**

**A. Localization** means "process of translating resources for a specific culture".

**Globalization** means "process of designing applications that can adapt to different cultures".

**Q. Can we have nested gridview?**

**A. Yes**

**Q. What is the difference between authentication and authorization?**

**A. Both Authentication and Authorization** are concepts of providing permission to users to maintain different levels of security, as per the application requirement.

**Authentication** is the mechanism whereby systems may securely identify their users.

Authentication systems depend on some unique bit of information known only to the individual being authenticated and the authentication system.

**Authorization** is the mechanism by which a system determines what level of access a particular authenticated user should have to secure resources controlled by the system.

**Q. What is StateManagement?**

**A.** A new instance of the Web page class is created each time the page is posted to the server. In traditional Web programming, this would typically mean that all information associated with the page and the controls on the page would be lost with each round trip. For example, if a user enters information into a text box, that information would be lost in the round trip from the browser or client device to the server.

To overcome this inherent limitation of traditional Web programming, ASP.NET includes several options that help you preserve data on both a per-page basis and an application-wide basis. These features are as follows:

- View state
- Control state
- Hidden fields
- Cookies
- Query strings
- Application state
- Session state

View state, control state, hidden fields, cookies, and query strings all involve storing data on the client in various ways. However, application state, session state, and profile properties all store data in memory on the server. Each option has distinct advantages and disadvantages, depending on the scenario.

**Q. What is view state?**

**A.** View state is used to hold the page values during Post Back. It is a client side State Management. Its scope is on same page only.

**Q. Where view state data is stored?**

**A.** Hidden Field named \_\_View state

**Q. What are Hidden fields?**

**A.** 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.

**Q. Can we store objects in View state?**

A. Yes, we can store objects in View State.

**Q. What is query string?**

A. The Query string is a part of the reQt 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. In this the data is concatenated with the URL.

**Q. What is limitation and scope of query string?**

A. Following are the benefits of using query string for state management:

→ No server resources are required. The query string containing in the HTTP reQts for a specific URL

→ All browsers support query strings

→ Scope is up to next Page

**Following are limitations of query string:**

→ Query string data is directly visible to user thus leading to security problems.

→ Most browsers and client devices impose a 255-character limit on URL length

→ Only string data can be transmitted. You cannot send Objects.

**Q. What are namedvaluecollections()?**

A. Represents a collection of associated String keys and String values that can be accessed either with the key or with the index.

**Q. What are cookies?**

A. 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.

**Q. How many cookies can be created per site?**

A. 20

**Q. What is the minimum and maximum size of cookie?**

A. Minimum 4096 bytes per cookie

**Q. What are temporary and permanent cookies?**

A. **Persistent Cookie or Permanent Cookie:** Persistent cookie is a cookie which is stored in a cookie file permanently on the browser's computer.

**Session cookies or Temporary Cookies:** These are temporary cookie files, which are erased when you close your browser.

**Q. What is synchronous and asynchronous postback?**

**A.** In synchronous postback whole page is sent to the server. In Asynchronous PostBack some portion of page is sent to server using Ajax technology.

**Q. How to create own regular expression in asp.net?**

**A.** Using regular expression Validator.

**Q. What Is AppSettings?**

**A.** You can provide settings that are common to a website in App Settings under WebConfig File.

**Q. What is xml?**

**A.** It stands for Extensible Markup Language. It is concerned with how data will be stored. It Provide the structure of Data.

**Q. What class is underneath the SortedList class?**

**A.** A sorted HashTable.

**Q. What is the .NET collection class that allows an element to be accessed using a unique key?**

**A.** HashTable.

**Q. What is the difference between the System.Array.Clone() and System.Array.CopyTo()?**

**A.** The Clone() method returns a new array (a shallow copy) object containing all the elements in the original array. The CopyTo() method copies the elements into another existing array. Both perform a shallow copy. A shallow copy means the contents (each array element) contains references to the same object as the elements in the original array. A deep copy (which neither of these methods performs) would create a new instance of each element's object, resulting in a different, yet identical object.

**Q. What is the top .NET class that everything is derived from?**

**A.** System.Object.

**Q. How to configure a .NET Remoting object via XML file?**

A. It can be done via machine.config and application level .config file (or web.config in ASP.NET). Application-level XML settings take precedence over machine.config.

**Q. What is Singleton activation mode?**

A. A single object is instantiated regardless of the number of clients accessing it. Lifetime of this object is determined by lifetime lease.

**Q. What security measures exist for .NET Remoting?**

A. None.

**Q. In .NET Remoting, What are channels?**

A. Channels represent the objects that transfer the other serialized objects from one application domain to another and from one computer to another, as well as one process to another on the same box. A channel must exist before an object can be transferred.

**Q. What are remotable objects in .NET Remoting?**

A. 1. They can be marshaled across the application domains.  
2. You can marshal by value, where a deep copy of the object is created and then passed to the receiver. You can also marshal by reference, where just a reference to an existing object is passed.

**Q. Give your idea when deciding to use .NET Remoting or ASP.NET Web Services?**

A. 1. Remoting is a more efficient communication exchange when you can control both ends of the application involved in the communication process.  
2. Web Services provide an open-protocol-based exchange of information. Web Services are best when you need to communicate with an external organization or another (non-.NET) technology.

**Q. Explain what relationship is between a Process, Application Domain, and Application?**

A. A process is an instance of a running application. An application is an executable on the hard drive or network. There can be numerous processes launched of the same application (5 copies of Word running), but 1 process can run just 1 application.

**Q. What's typical about a Windows process in regards to memory allocation?**

A. Each process is allocated its own block of available RAM space. No process can access another process' code or data. If the process crashes, it dies alone without taking the entire OS or a bunch of other applications down.

**Q. What's a Windows process?**

**A:** It's an application that's running and had been allocated memory.

**Q. What is main difference between Global.asax and Web.Config?**

**A.** ASP.NET uses the global.asax to establish any global objects that your Web application uses. The .asax extension denotes an application file rather than .aspx for a page file. Each ASP.NET application can contain at most one global.asax file. The file is compiled on the first page hit to your Web application. ASP.NET is also configured so that any attempts to browse to the global.asax page directly are rejected. However, you can specify application-wide settings in the web.config file. The web.config is an XML-formatted text file that resides in the Web site's root directory. Through Web.config you can specify settings like custom 404 error pages, authentication and authorization settings for the Web site, compilation options for the ASP.NET Web pages, if tracing should be enabled, etc

**Q. What is the difference between the value-type variables and reference-type variables in terms of garbage collection?**

**A.** The value-type variables are not garbage-collected, they just fall off the stack when they fall out of scope, the reference-type objects are picked up by GC when their references go null.

**Q. Where do the reference-type variables go in the RAM?**

**A.** The references go on the stack, while the objects themselves go on the heap.

**Q. To test a Web service you must create a windows application or Web application to consume this service?**

**A.** The web service comes with a test page and it provides HTTP-GET method to test.

**Q. What is the transport protocol you use to call a Web service?**

**A.** SOAP is the preferred protocol.

**Q. Can you give an example of what might be best suited to place in the Application Start and Session Start subroutines?**

**A.** This is where you can set the specific variables for the Application and Session objects.

**Q. Where do you store the information about the user's locale?**

**A.** System.Web.UI.Page.Culture

**Q. Where does the Web page belong in the .NET Framework class hierarchy?**

**A.** System.Web.UI.Page

- Q. Name two properties common in every validation control?**  
A. ControlToValidate property and Text property
- Q. What property must you set, and what method must you call in your code, in order to bind the data from some data source to the Repeater control?**  
A. You must set the DataSource property and call the DataBind method.
- Q. How can you provide an alternating color scheme in a Repeater control?**  
A. Use the AlternatingItemTemplate
- Q. Which template must you provide, in order to display data in a Repeater control?**  
A. ItemTemplate
- Q. Can you edit data in the Repeater control?**  
A. No, it just reads the information from its data source.
- Q. Which method do you invoke on the DataAdapter control to load your generated dataset with data?**  
A. The .Fill() method
- Q. Describe the difference between inline and code behind.**  
A. Inline code written alongside the html in a page. Code-behind is code written in a separate file (.cs file) and referenced by the .aspx page.
- Q. What is the role of global.asax?**  
A. Store global information about the application.
- Q. Can the action attribute of a server-side <form> tag be set to a value and if not how can you possibly pass data from a form page to a subsequent page?**  
A. No, You have to use Server.Transfer to pass the data to another page.
- Q. What is the difference between Server.Transfer and Response.Redirect?**  
A. 1. Server.Transfer() performs server side redirection of the page avoiding extra round trip. While The Response .Redirect () method can be used to redirect the browser to specified url.  
2. Server.Transfer is used to post a form to another page. Response.Redirect is used to redirect the user to another page or site.

**Q. What is smart navigation?**

**A.** Smart navigation is cursor position is maintained when the page gets refreshed due to the server side validation.

**Q. What is the difference between Literal and Lable Control?**

**A.** We use literals control if we want text using HTML formatting and without using property. We type HTML code in .cs file when used literals.

Label control when we want to display already formatted text. Text cannot be formatted in .cs file.

**Q. What are the 2 Layouts supported by a Web form in ASP.NET?**

**A.** 1. Grid layout: Pages using grid layout will not always display correctly in non-Microsoft browsers, and controls are placed exactly where they draw.

2. Flow layout: Controls relative to other elements on the page.

Controls that appear after the new element move down if you add elements at run time.

**Q. Can you specify authorization settings both in Web.config and in IIS?**

**A.** Yes.

**Q. How do you determine, what is the role of the current user?**

**A.** The User object provides an IsInRole method to determine the role of the current user, as shown in the following example:

```
if(User.IsInRole("Administrators"))  
{  
}
```

**Q. How do you get a User Identity?**

**A.** Using the User object's Identity property. The Identity property returns an object that includes the user name and role information, as shown in the following code:

1) User.Identity.IsAuthenticated.ToString();

2) User.Identity.Name;

) User.Identity.AuthenticationType;

**Q. What is the default authentication method when you create a new Web application project?**

**A.** Windows authentication

**Q. What is a Master Page in Asp.Net?**

A. For consistent layout for the pages in application used Master Pages. 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. Then user creates individual content pages that share all the information and lay out of a Master Page.

**Q. From the content page code how can you reference a control on the master page?**

A. Use the FindControl() method as shown in the code sample below.

```
ContentPlaceHolder ContPlaceHldr = (ContentPlaceHolder)Master.FindControl  
("ContentPlaceHolder1");
```

**Q. Can you dynamically assign a Master Page?**

A. PreInit stage using the Page class MasterPageFile property as shown in the code sample below. Using this you can assign a master page dynamically.

```
void Page_PreInit(Object sender, EventArgs e)  
{  
this.MasterPageFile = "~/MasterPage.master";  
}
```

**Q. How do you identify a Master Page and how do you bind a Content Page to a Master Page?**

A. The master page is identified by a special @ Master directive that replaces the @ Page directive that is used for ordinary .aspx pages.

MasterPageFile attribute of a content page's @ Page directive is used to bind a Content Page to a Master Page.

**Q. What are the 2 important parts of a master page and file extension for a Master Page?**

A. The following are the 2 important parts of a master page

1. The Master Page itself. The file extension for Master Page is ".master".
2. One or more Content Pages

**Q. What are the Session State Modes? Define each Session State mode supported by ASP.NET.**

A. ASP.NET supports three Session State modes:

1. InProc: This mode stores the session data in the ASP.NET Inline memory objects.
2. State Server: Sessions are maintained on a different server and stored in memory in a separate process.
3. SQL Server: Session data is stored in SQL Server.

**Q. What are the disadvantages of using Session State?**

- A.
1. It is not advisable to use session state when working with large sum of data because Data in session state is stored in server memory.
  2. Too many variables in the memory effect performance. Because session state variable stays in memory until you destroy it.
  3. Slow as compare to Inproc.

**Q. What are the advantages of using Session State?**

- A. Advantages:
1. It is easy to implement.
  2. Ensures platform scalability, works in the multi-process configuration.
  3. Ensures data durability, since session state retains data even if ASP.NET work process restarts as data in Session State is stored in other process space.

**Q. What is the Session Identifier?**

- A. Session Identifier is:
1. To identify session.
  2. It has SessionID property.
  3. When a page is requested, browser sends a cookie with a session identifier.
  4. Session identifier is used by the web server to determine if it belongs to an existing session or not. If not, then Session ID is generated by the web server and sent along with the response.

**Q. What is SessionID?**

- A. SessionID is used to identify the request from the browser. SessionId value is stored in a cookie.

**Q. Describe Server – Side State Management?**

- A. Sever side state management provides better security, reduced bandwidth.
1. Application State: This State information is available to all pages, regardless of which user requests a page.
  2. Session State – Session State information is available to all pages opened by a user during a single visit.

**Q. Describe Client – Side State Management?**

- A. Client side state management has:
- a. View State
  - b. Hidden Fields.

- c. Query Strings.
- d. Cookie.

To store the state information at the client end terms are:

1. **View State:** View state is used to hold the page values during PostBack. Its scope is on same page only.
2. **Control State:** When user creates a custom control that requires view state to work properly, you should use control state to ensure other developers don't break your control by disabling view state.
3. **Hidden fields:** Like view state, hidden fields store data in an HTML form without displaying it in the user's browser. The data is available only when the form is processed.
4. **Cookies:** Cookies are used to store user information on User Machine only. Cookies are text files that store user information on user computer only. It can store only string values.
5. **Query Strings:** Query strings store values in the URL that are visible to the user. Use query strings when you want a user to be able to e-mail or instant message state data with a URL.

**Q. What is Authentication and Authorization?**

- A.** Authentication is to check whether the user is a valid user of our website or not. Once the system knows who the user is through authentication, authorization is how the system decides what the user can do. Authorization is to check whether the user has authority to do a particular task or not.

**Q. Define State management?**

- A.** All asp.net pages are stateless pages, it means all the values of variable lost when the request goes to server. In order to maintain the state of stateless pages, Asp.Net uses the concept of State Management.

**Two types of State Management:**

1. Client side state management: This stores information on the client's computer by embedding the information into a Web page, uniform resource locator (url), or a cookie.
2. Server side state management: There are two states of server side management. One is Application State and other is Session State.

**Q. Whether we can use vbscript and javascript combination for validation?**

- A.** We can't use them together, since compilers are different.

**Q. What is GAC and name of the utility used to add an assembly into the GAC?**

- A.** GAC (Global Assembly Cache) for an effective sharing of assemblies. GAC refers to the machine-wide code cache in any of the computers that have been installed with common

language runtime. Global Assembly Cache in .NET Framework acts as the central place for private registering assemblies.

"gacutil.exe" utility used to add assembly in GAC

**Q. What is the Purpose of System.Collections.Generic?**

**A.** For more safety and better performance strongly typed collections are useful for the user.

**Q. What is the use of Global.asax File in ASP.NET Application?**

**A.** It provides more security in comparison to other.

It handles two events:

1. Application-level events
2. Session-level events

**Global.asax** contains five defaults methods, Those methods are:

1. Application\_Start
2. Application\_End
3. Session\_Start
4. Session\_End
5. Application\_Error

**Q. What is the Default Expiration Period for Session and Cookies, and maximum size of view state?**

**A.** The default Expiration Period for Session is 20 minutes. The default Expiration Period for Cookie is 30 minutes. The maximum size of the view state is 25% of the page size.

**Q. Difference between Session object and Profile object in ASP.NET?**

**A. Profile object:**

1. Profile object is persistent
2. Its uses the provider model to store information
3. Strongly typed
4. Anonymous users used mostly

**Session object:**

1. Session object is non-persistent
2. Session object uses the In Proc, Out Of Process or SQL Server Mode to store information
3. Not strongly typed
4. Only allowed for authenticated users

**Q. What are the two levels of variable supported by Asp.net?**

**A.** 1. **Page level variable:** String, int, float

2. **Object level variable:** Session level, Application level.

**Q. Explain the aim of using EnableViewState property?**

**A.** When the page is posted back to the server, the server control is recreated with the state stored in viewstate. EnableViewState Property allows the page to save the users input on a form across postbacks. It saves all the server side values for a given control into View State, which is stored as a hidden value on the page before sending the page to the clients browser.

**Q. Why the exception handling is important for an application?**

**A.** Exception handling prevents the unusual error in the asp.net application, when application is executed. If the exceptions are handled properly, the application will never get terminated abruptly.

**Q. Define Error Events in Asp.Net?**

**A.** In ASP.Net when any unhandled exception occurs in application then an event occurs, that event called Error event. Two types of Event:

1. Page\_Error: When exception occurs in a page then this event raised.
2. Application\_error: Application\_Error event raised when unhandled exceptions in the ASP.NET application and is implemented in global.asax.

**The error event has two methods:**

1. GetLastError: Returns the last exception that occurred on the server.
2. ClearError: This method clear error and thus stop the error to trigger subsequent error event.

**Q. How to create Multivalued Cookie?**

**A.** Response.Cookies ["preferences"]["first Name"] = txtFirstName.Text;  
Response.Cookies ["preferences"]["last Name"] = txtLastName.Text;  
Response.Cookies ["preferences"]["favorite Color"] = txtFavoriteColor.Text;  
Response.Cookies ["preferences"].Expires = DateTime.MaxValue;

**Q. How do you require authentication using the Web.config file?**

**A.** Include the following <authorization> element to require authentication:

```
<authorization>  
  <deny users="*" />  
</authorization>
```

**Q. What is the difference between web.config and Machine.config files?**

- A.**
1. Usually on a web server there is only one Machine.config file whereas in a web application there is no. of files, but in the root directory.
  2. Web.config file settings will override machine.config settings.
  3. Machine.config file specifies configuration settings for all of the websites on the web server. Web.config file specify configuration settings for a particular web application, and is located in the applications root directory.

**Q. What is the main difference between the Button server control and the Button HTML control?**

- A.** The Button HTML control triggers the event procedure indicated in the button's onclick attribute, which runs on the client.  
When clicked, the Button server control triggers an ASP.NET Click event procedure on the server.

**Q. Differences between Web and Windows applications?**

- A. Web Forms:** Web applications are displayed in a browser. Web forms are instantiated on the server, sent to the browser, and destroyed immediately.  
**Windows Forms:** Windows forms are instantiated, exist for as long as needed, and are destroyed. Windows applications run on the same machine they are displayed on.

**Q. Describe the property of cookie in Asp.Net?**

- A.** Properties:
1. **Domain:** The domain associated with the cookie for example, aspx.superexpert.com
  2. **Expires:** The expiration date for a persistent cookie.
  3. **HasKeys:** A Boolean value that indicates whether the cookie is a cookie dictionary.
  4. **Name:** The name of the cookie.
  5. **Path:** The path associated with the Cookie. The default value is /.
  6. **Secure:** A value that indicates whether the cookie should be sent over an encrypted connection only. The default value is False.
  7. **Value:** The value of the Cookie.

**Q. Write the code that creates a cookie containing the user name R4R and the current date to the user computer. Set the cookie to remain on the user computer for 30 days?**

- A.** Code:
- ```
HttpCookie cookUserInfo = new HttpCookie("UserInfo");  
CookUserInfo["Name"] = "R4R";  
CookUserInfo["Time"] = DateTime.Now.ToString();
```

```
cookUserInfo.Expires = DateTime.Now.AddDays(30);  
Response.Cookies.Add(cookUserInfo);
```

**Q. What classes are needed to send e-mail from an ASP.NET application?**

**A.** Following Classes use to send email from ASP.Net application:

1. MailMessage
2. SmtMail

Both are classes defined in the .NET Framework Class Library's "System.Web.Mail" namespace.

**Q. Do Web controls support Cascading Style Sheets?**

**A.** All Web controls inherit a property named `CssClass` from the base class "System.Web.UI.WebControls.WebControl" which can be used to control the properties of the web control.

**Q. What is Data Binding?**

**A.** Data binding is binding controls to data from databases. Using Data binding a control to a particular column in a table from the database or we can bind the whole table to the data grid.

**Q. What are the ASP.NET validation controls?**

**A.** Validation controls applied on client side scripting. List of Validations:

1. **RequiredFieldValidator**
2. **RangeValidator**
3. **CompareValidator**
4. **RegularExpressionValidator**
5. **CustomValidator**
6. **ValidationSummary**

**Q. What is the difference between Text and Error Message Property of a Validator?**

**A.** Text is displayed in validator itself and Error message is displayed in Validation Summary.

**Q. Explain the differences between server-side and client-side code in Asp.Net?**

**A.** In Asp.Net Environment Server side code or scripting means the script will be executed by server as interpreted needed.

Client side scripting means that the script will be executed immediately in the browser such as form field validation, clock, email validation, etc. Client side scripting is usually done in VBScript or JavaScript.

**Q. What is Postback in Asp.net?**

**A.** When First time request to the server PostBack is False. When request or an action occurs (like button click), the page containing all the controls within the <FORM... > tag performs an HTTP POST, while having itself as the target URL. This is called Postback. We can say it's a mechanism to allow the communication between client side and server side.

**Q. Explain Web Services?**

**A.** Web services are programmable business logic components that provide access to functionality through the Internet. Web services are given the .asmx extension. Standard protocols like HTTP can be used to access them. Web services are based on the Simple Object Access Protocol (SOAP), which is an application of XML. In .Net FrameWork Web services convert your application in to Web Application which published their functionality to whole world on internet. Web Services like a software system that designed to support interoperable machine-to-machine interaction over Internet.

**Q. Explain Namespace?**

**A.** There are many classes in Asp.Net. Microsoft divided the classes in the Framework into separate namespaces.

**Q. What are the advantages and disadvantage of Using Cookies?**

**A.** Advantage:

1. Cookies do not require any server resources since they are stored on the client.
2. Cookies are easy to implement.
3. Cookies to expire when the browser session ends (session cookies) or they can exist for a specified length of time on the computer (persistent cookies).

**Disadvantage:**

1. Users can delete cookies.
2. Users browser can refuse cookies, so your code has to anticipate that possibility.
3. Cookies exist as plain text on the client machine and there may be security risk as anyone can open and tamper with cookies.

**Q. What is Asp.Net?**

**A.** ASP.NET built on .net framework. Asp.net is a web development tool. Asp.net is offered by Microsoft. We can build dynamic websites by using asp.net. It is the successor of Microsoft's ASP. Asp.Net Framework consists of many class libraries; support multiple languages and a common execution platform. Asp.net is a program run in IIS server.

**Q. What are ASP.Net Versions?**

- A.** ASP.NET version 1.0 was first released in January 2002  
 ASP .NET version 1.1 released in April 2003 (ASP .NET 2003)  
 ASP .NET version 2.0 released in November 2005 (ASP .NET 2005)  
 ASP .NET version 3.5 released in November 2007 (ASP .NET 2008)  
 ASP .NET version 4.0 (ASP .NET 2010)

**Q. What are the difference between ASP and Asp.Net?**

- A.** 1. Asp.net is compiled while asp is interpreted.  
 2. ASP is mostly written using VB Script and HTML while asp.net can be written in C#, J# and VB etc.  
 3. Asp.net has 4 built in classes session, application, reQt response, while asp.net have more than 2000 built in classes.  
 4. ASP does not have any server side components whereas Asp.net has server side components such as Button, Text Box etc.  
 5. ASP does not have page level transaction while Asp.net has page level transaction.  
 6. ASP.NET pages only support one language on a single page, while Asp supports multiple languages on a single page.  
 7. Page functions must be declared as <script runat=server> in ASP.net while in Asp page function is declared as <% %>.

**Q. What is the difference between an EXE and a DLL?**

- A. DLL:** It is a Dynamic Link Library. There are many entry points. The system loads a DLL into the context of an existing thread. DLL cannot run on its own.  
**EXE:** Exe can run on its own. Exe is an executable file. When a system launches new exe, a new process is created. The entry thread is called in context of main thread of that process.

**Q. What is the difference between thread and process?**

- A.** Process is a program in execution where thread is a separate part of execution in the program.  
 Thread is a part of process. Process is the collection of thread.

**Q. Define Life Cycle of Page in ASP.NET?**

- A.**

```
protected void Page_PreLoad (object sender, EventArgs e)
{
Response.Write("<br>"+"Page Pre Load");
}
protected void Page_Load(object sender, EventArgs e)
```

```
{
  Response.Write("<br>" + "Page Load");
}
protected void Page_LoadComplete(object sender, EventArgs e)
{
  Response.Write("<br>" + "Page Complete");
}
protected void Page_PreRender(object sender, EventArgs e)
{
  Response.Write("<br>" + "Page Pre Render");
}
protected void Page_Render(object sender, EventArgs e)
{
  Response.Write("<br>" + "Pre Render");
}
protected void Page_PreInit(object sender, EventArgs e)
{
  Response.Write("<br>" + "Page Pre Init");
}
protected void Page_Init(object sender, EventArgs e)
{
  Response.Write("<br>" + "Page Init");
}
protected void Page_InitComplete(object sender, EventArgs e)
{
  Response.Write("<br>" + "Page Pre Init Complete");
}
```

**Q. What is caching? What are different ways of caching in ASP.NET?**

**A.** Caching is a technique of persisting the data in memory for immediate access to requesting program calls. This is considered as the best way to enhance the performance of the application.

**Q. What are the types of Caching in ASP.NET?**

**A.** Caching in ASP.NET can be of the following types

- 1) Page Output Caching
- 2) Page Fragment Caching
- 3) Data Caching

**Q. Explain in brief each kind of caching in ASP.NET. ?**

**A. Page Output Caching**

This type of caching is implemented by placing OutputCache directive at the top of the .aspx page at design time.

For example:

```
<%@OutputCache Duration= "30" VaryByParam= "DepartmentId"%>
```

The duration parameter specifies for how long the page would be in cache and the VaryByParam parameter is used to cache different version of the page.

The VaryByParam parameter is useful when we require caching a page based on certain criteria.

**Page Fragment Caching:** This technique is used to store part of a Web form response in memory by caching a user control.

**Data Caching:** Data Caching is implemented by using Cache object to store and quick retrieval of application data.

**Q. What is Post Cache substitution?**

**A.** Post cache substitution is used when we want to cache the whole page but also need some dynamic region inside that cached page Post-cache substitution can be achieved by two means:

- Call the new Response.WriteSubstitution method, passing it a reference to the desired substitution method callback.
- Add a <asp:Substitution> control to the page at the desired location, and set its methodName attribute to the name of the callback method.

**Q. How do we enable SQL Cache Dependency in ASP.NET 2.0?**

**A.** Below are the broader steps to enable a SQL Cache Dependency:-

- Enable notifications for the database.
- Enable notifications for individual tables.
- Enable ASP.NET polling using -web.config|| file
- Finally use the Cache dependency object in your ASP.NET code

**Q. What are various Data Controls?**

- **GridView:** Limited in design and works like an html table. More in built functionality like edit/update, page, sort. Lots of overhead.
- **DataGrid:** Old version of the GridView. A gridview is a super datagrid.
- **Datalist:** It is more customizable version of the GridView. Also has some overhead. More manual work is required as you have to design it yourself.

- **ListView:** The new Datalist :). Almost a hybrid of the datalist and gridview where you can use paging and build in Gridview like functionality, but have the freedom of design. One of the new controls in this family
  - **Repeater:** Very light weight. No built in functionality like Headers, Footers. It has the least overhead.

The ListView control is a new data presentation control that was added to .Net 3.5 you may wonder why it is added to the framework, and what it provides.

The List View control was added to provide the following functionalities:

1. A very flexible and customizable layout.
2. A built in data paging support with the Data Pager control.
3. Support data grouping (repeating items).
4. Built in support for deleting, inserting, paging, sorting, and updating the data.

Now, to compare the ListView control with the dataList, GridView and repeater control, let's look at the table below:

|                | <b>Supported Functionalities</b> |                      |                                |                       |               |                |
|----------------|----------------------------------|----------------------|--------------------------------|-----------------------|---------------|----------------|
| <b>Control</b> | <b>Paging</b>                    | <b>Data Grouping</b> | <b>Provide Flexible Layout</b> | <b>Update, Delete</b> | <b>Insert</b> | <b>Sorting</b> |
| List View      | Supported                        | Supported            | Supported                      | Supported             | Supported     | Supported      |
| GridView       | Supported                        | Not Supported        | Not Supported                  | Supported             | Not Supported | Supported      |
| Data List      | Not Supported                    | Supported            | Supported                      | Not Supported         | Not Supported | Not Supported  |
| Repeater       | Not Supported                    | Not Supported        | Supported                      | Not Supported         | Not Supported | Not Supported  |

**The GridView:** It supports paging but it doesn't provide a flexible layout, since it is mainly used to display the data in a table based layout. And if we looked at data inserting, the Gridview doesn't have a built in support for inserting data (since it doesn't call the insert method of it underlying data source when you click on a button with a CommadName set to "Insert").

**The DataList:** It supports data grouping (through its RepeatColumns property), but it doesn't have a built in support for paging, inserting, deleting, updating the data and if you looked at its layout, you will find that by default the datalist renders as html table and you will have to set its flowLayout to "Flow" to stop that behavior.

**The Repeater control:** You will find that it provides a flexible layout but it doesn't support data grouping, inserting, deleting, updating and paging through the data.



# LINQ

**Q. What is LINQ?**

**A.** It stands for Language Integrated Query. LINQ is collection of standard query operators that provides the query facilities into .NET framework language like C#, VB.NET.

**Q. What are the three main components of LINQ or Language Integrated Query?**

- A.**
1. Standard Query Operators
  2. Language Extensions
  3. LINQ Providers

**Q. How are Standard Query Operators implemented in LINQ?**

**A.** Standard Query Operators are implemented as extension methods in .NET Framework. These Standard Query Operators can be used to work with any collection of objects that implements the IE enumerable interface.

**Q. How are Standard Query Operators useful in LINQ?**

- A.** Standard Query Operators in LINQ can be used for working with collections for any of the following and more.
1. Get total count of elements in a collection.
  2. Order the results of a collection.
  3. Grouping.
  4. Computing average.
  5. Joining two collections based on matching keys.
  6. Filter the results

**Q. List the important language extensions made in C# to make LINQ a reality?**

- A.**
1. Implicitly Typed Variables
  2. Anonymous Types
  3. Object Initializers
  4. Lambda Expressions

**Q. Why Select clause comes after from clause in LINQ?**

**A.** The reason is LINQ is used with C# or other programming languages, which requires all the variables to be declared first. From clause of LINQ query just defines the range or conditions to select records. So that's why from clause must appear before Select in LINQ.

**Q. What is the extension of the file, when LINQ to SQL is used?**

**A.** The extension of the file is **.dbml**

**Q. What is the LINQ file extension that interacts with Code Behind's objects?**

**A.** its **.dbml**

**Q. What is the benefit of using LINQ on Dataset?**

**A.** The main aim of using LINQ to Dataset is to run strongly typed queries on Dataset. Suppose we want to combine the results from two Datasets, or we want to take a distinct value from the Dataset, then it is advisable to use LINQ. Normally you can use the SQL queries to run on the database to populate the Dataset, but you are not able to use SQL query on a Dataset to retrieve a particular values. To get this you need to use ADO.NET functionalities. But, in case of LINQ, it provides more dignified way of querying the Dataset and provides some new features as compared to ADO.NET.

**Q. What are the advantages of LINQ over Stored Procedures?**

**A.** Below are the three advantages of LINQ over stored procedures:

→**Debugging:** As debug point concern, as LINQ is part of .NET, we can use the visual studio's debugger to debug the queries but it is tough to debug the Stored procedure as it will not support the visual studio debugger.

→**Deployment:** In case of deployment, we need to provide an additional script for stored procedures to execute but in case of LINQ, it will compile into single DLL hence deployment becomes easier.

→**Type Safety:** As LINQ is type safe, the queries errors are type checked at compile time. Better suggest using LINQ because it helps to encounter an error at the compile time rather than at runtime exception.

**Q. What is the disadvantage of LINQ over stored procedures?**

**A.** The disadvantage with LINQ is, it is not a precompiled statement where as stored procedures are precompiled. In case of LINQ the queries need to be compiled before the execution. So according to this, we can say stored procedures are faster in performance as compared to LINQ.

**Q. What are Quantifiers?**

**A.** They are LINQ Extension methods which return a Boolean value

1) All

2) Any

3) Contains

4) SequenceEqual



# SILVER LIGHT

**Q. Can I add more than one .xaml pages in Silverlight application?**

**A.** Yes, you can have multiple .xaml files in a single project.

In the App.xaml, in the method Application\_Startup you can choose, which page you want to initially display.

**Q. What is Silverlight Tool Kit?**

**A.** Silverlight Tool kit is nothing but is a collection of Silverlight Tools, Components etc. It includes source code describing the all you need to develop an application.

**Q. What are the main components of Silverlight application?**

**A.** The main components of Silverlight application are:

- a) Input: It handles input from devices like keyboard, mouse etc.
- b) UI core: It manages rendering of bitmap images, vector graphics, text and animations.
- c) Media: It handles the playback of MP3, WMA Standard, WMV7, WMV8 streams.
- d) XAML: This manages UI layout to be created by XAML markup language

**Q. What is story Board in Silverlight?**

**A.** A Storyboard in the Silverlight is a container where we can put animation objects. We need to make the Storyboard a resource that is available to the objects that we want to animate.

**Q. What happens if we press F5 in Visual Studio to run a Silverlight Application?**

**A.** The following happens if we press F5 in Visual Studio to run a Silverlight Application.

- a) A new folder is created in website project. (It happens only first time)
- b) The name of the folder is Clientbin.
- c) The folder contains the packages with .xap extension.

**Q. What is Downloader Object in Silverlight?**

**A.** Silverlight exposes an object named Downloader Object which is used to download content, like scripts, media or other data, as required by the application.

**Q. When would a customer use Silverlight instead of ASP.NET AJAX?**

**A.** Silverlight integrates with existing Web applications, including ASP.NET AJAX applications. Consequently, ASP.NET AJAX and Silverlight are designed to be complementary technologies. In the broader sense, Silverlight can talk to any AJAX

application, both client-side and server-side. ASP.NET AJAX can additionally be used to control Silverlight-based visualization of data or delivery of rich experiences.

**Q. Is Silverlight free?**

**A.** Yes, Microsoft has made the Silverlight browser plug-in freely available for all supported platforms and browsers.

**Q. What are the design files and the code-behind files in Silverlight?**

**A.** The user interface elements of Silverlight applications are defined in XAML files. The logic and functionality of Silverlight applications is implemented using managed code-behind files that share the same class with the XAML file.

**Q. Can I consume WCF and ASP.NET Web Services in Silverlight?**

**A.** Yes

**Q. What is the Silverlight official name?**

**A.** Silverlight was formerly code-named "WPF/E."

**Q. What are the new features of Silverlight 4?**

**A.**

1. Printing Support
2. Design implication
3. Support WebCam/ Microphone
4. RichTextArea Control
5. Events right mouse button
6. Access to the Clipboard
7. Support UDP / multicast network
8. Hosting Silverlight in HTML 4
9. Brush HTML
10. Access to Local Files
11. ViewBox
12. Support for Google Chrome

**Q. Do I need to have the .NET Framework installed in order to use Silverlight?**

**A.** The answer is no - a cross platform version of the .NET Framework is included in the 6 MB Silverlight 4 download, which means you do not need to have anything extra installed on the client in order to access Silverlight application in the browser.

**Q. What are the different Layout controls available in Silverlight Application?**

**A.** Three main controls that can be used for layout management in Silverlight are:

- Canvas Control
- StackPanel Control
- Grid Control

**Q. What is the difference between Silverlight and Flash?**

- A.** Silverlight aims to give .NET developers a better option for creating rich web content. Silverlight provides a browser plug-in with many similar features to Flash but for one that's designed from the ground up for .NET. Silverlight natively supports the C# language and uses a range of .NET concepts. As a result, developers can write client-side code for Silverlight in the same language they use for server-side code (such as C# and VB), and use many of the same abstractions (including streams, controls, collections, generics, and LINQ).

**Q. What is the difference between WPF and Silverlight?**

- A.** That main difference is that WPF uses full .Net library works only on Windows system, while Silverlight uses only a subset of the .Net library because Silverlight run-time was designed to work as Browser plug-in (although now it also works out of browser) in cross-platform environment.

**Q. What is the goal of SilverLight?**

- A.** The goal of Silverlight is to let you efficiently develop visually appealing web applications.

**Q. What is XAML?**

- A.** Extensible Application Markup Language (XAML) is a declarative language. XAML is just XML that Microsoft has developed to describe objects. Silverlight relies on XAML to store and represent visual objects to be displayed and animated on HTML pages. XAML is a XML file which defines the UI elements.

**Q. Which language is Silverlight developed in?**

- A.** C# and C++.

**Q. What are the main features and benefits of Silverlight?**

- A. The following are the features of Silver Light:**

1. Built in CLR engine is available for delivered a super high performance execution environment for the browser.
2. Includes rich power framework of built-in class library for using with browser-based applications.

3. Supports WPF User interface programming model.
4. Provides a managed HTML DOM API which is used for HTML enabled programs of a browser using .NET technology.
5. Silverlight supports PHP or Linux environment. Hence does not require ASP.NET.

**The following are the benefits of Silverlight:**

1. Supports high quality videos
2. Supports cross-platform and cross-browser applications
3. Features are available for developers with Visual Studio for developing applications very quickly.
4. Most inexpensive way for video streaming over internet at the best possible quality.
5. Supports third party languages such as Ruby, Python, EcmaScript.
6. Supports remote debugging.
7. Provides copy protection.
8. Flexible Programming Model with Collaboration Tools.
9. High-quality media, low-cost delivery.

**Q. What is the use of ClientBin folder?**

**A.** The ClientBin folder is used for placing .xap file of a Silverlight application.

**Q. What is Silverlight.js file?**

**A.** Silverlight.js file is a Java Script helper file. Silverlight.js is a helper file which enables Web sites to create advanced Silverlight installation and instantiation experiences.

**Q. What is .xap file?**

**A.** xap file is an application package (.xap) that is generated when the Silverlight project is built. A .xap file has an application manifest file (AppManifest.xaml) and the necessary DLL's needed by the application.

**Q. What is Silverlight SDK?**

**A.** Silverlight SDK is a set of tools, documentation, samples and templates for the web developers to help them easily develop Silverlight enabled applications.

**Q. What is Silverlight Runtime?**

**A.** Silverlight CLR is a subset of the .NET Framework that contains components and libraries, including data integration, extensible Windows controls, networking, base class libraries, garbage collection, and the common language runtime (CLR).

**Q. What is the difference between Silverlight 1.0 and 2?**

**A.** Silverlight 1 is pure AJAX and Javascript based. All the code has to be written in Javascript and XAML. Silverlight 2 supports managed code. In Silverlight 2, however, the embedded object references an XAP package that contains the XAP file, assemblies, and resources necessary to run the Silverlight application.

**Q. What is Moonlight?**

**A.** Moonlight was built by Novell in collaboration with Microsoft which provided Novell with test suites, specifications, open source code and Media Codec's to create an entirely open sourced Silverlight-compatible implementation for Unix systems.

Access to licensed Media Codecs (MP3, WMV, and VC-1) is provided by Microsoft to Moonlight 1.0 and 2.0 users. The first time that you access a web site that requires these codecs, Moonlight will prompt you to download the codecs from Microsoft and install those on your system.

\* To run Silverlight applications on Linux.

\* To provide a Linux SDK to build Silverlight applications.

\* To reuse the Silverlight engine we have built for desktop applications.

**Q. Which browsers Silverlight supports?**

**A.** Supported browsers: Microsoft Internet Explorer 6, Windows Internet Explorer 7, Mozilla Firefox 1.5.0.8, and Firefox 2.0.x.

**Q. Which platforms Silverlight supports?**

- A.**
- \* Mac OS
  - \* Windows Vista
  - \* Windows XP SP2
  - \* Windows 2000
  - \* Windows Server 2003
  - \* Linux (Moonlight)

**Q. Can you provide a list of Layout Management Panels and when you will use them?**

**A.** → **Canvas Panel:** Use a canvas for simple layouts and when there is no need to resize panel. Controls can overlap each other when resizing the panel.

→ **Stack Panel:** Use this for grouping controls in a stack (horizontal/vertical). Controls

do not Overlapped.

→ **Grid Panel:** Most flexible, multi row/columns layouts. Similar to a HTML table

**Q. Which language is used to design the layout in Silverlight?**

**A.** To design the layout of the Silverlight application, XAML language is used.

**Q. Which programming language can be used to write the backend of the Silverlight application?**

**A.** We can either use Visual C# or Visual Basic to code the backend of the Silverlight application.

**Q. How to perform Event handling in silver light?**

**A.** Silverlight 1.0 uses JavaScript, while Silverlight 2.0 uses C# (managed code) for event handling.

**Q. What is RIA?**

**A.** RIA means rich internet applications. They are web applications with rich features. Rich features include built in AJAX support, animations, layouts, audio and video components. Silverlight applications are examples of RIA.

**Q. What is Silverlight runtime?**

**A.** It is basically a component that is responsible for downloading the .xap file from the server and helps the users to see the Silverlight content's output in a web page .xap file is basically a file that connects the Silverlight functionality with .aspx page .xap file is used for referencing the Silverlight resources on .aspx page.



C#

**Q. What is difference between web Farm and web garden?**

**A.** For big sites where there are millions of daily users we need to host the sites on multiple servers. This is called **Web Farms**.

All IIS Request are processed by worker process (w3wp.exe). By default each and every application pool contains single worker process. But an application pool with multiple worker process is called **Web Garden**.

**Q. What is Abstract or Must Inherit Class?**

**A.** An abstract class is the one that is not used to create objects. An abstract class is designed to act as a base class (to be inherited by other classes). Abstract classes are similar to interfaces. After declaring an abstract class, it cannot be instantiated on it's own, it must be inherited

**Q. What are Static functions?**

**A.** A static function is one that can be called directly using class name; without creating its object.

**Q. What is Static or Shared Class?**

**A.** A static class is one in which all data members and member functions are static. We can call the functions of this class directly without creating its object.

**Q. What is an Interface?**

**A.** Interfaces help to define the various properties, methods and events that classes are able to implement. For developers these fine a small group of closely related properties, methods, and events. Additional feature and functionality can be added at any by adding additional interfaces and implementations.

**Q. What is sealed class?**

**A.** Sealed class is a class that we cannot inherit. A class, which restricts inheritance for security reason is declared, sealed class. A sealed class cannot be an abstract class.

**Q. What is a constructor?**

**A.** It is a method in the class which gets executed automatically when the object of class is created. Usually we put the initialization code in the constructor. Constructor name is same as the Class Name.

**Q. What is the need of declaring a method with keyword virtual?**

**A.** The method or property can be overridden.

**Q. What are Parameterized Constructors?**

A. Parameterized constructors (or more simply "constructors") allow you to create a new instance of a class while simultaneously passing arguments to the new instance.

**Q. Can Static class have Constructor?**

A. Yes, Static class can have only static constructors. A static constructor is used to initialize any static data, or to perform a particular action that needs to be performed once only. It is called automatically before the first instance is created or any static members are referenced.

**Q. What is Structure?**

A. A struct is a simple user-defined type. Structures are value Type. It's a lightweight alternative to a class. They may implement an Interface. They can be instantiated without using a new operator.

**Q. What is the difference between Structure and Class?**

A. Structs are value types and classes are reference types.

1. The general different is that a reference type lives on the heap, and a value type lives inline (i.e. wherever your variable or field is defined).
2. A variable containing a value type contains the entire value type value. A variable containing a reference type contains a pointer or a reference to somewhere else in memory where the actual value resides.

**Q. Can structures have default constructor?**

A. No

**Q. What is function overloading?**

A. C# allows us to define multiple functions with the same name differing in the number type and order of arguments. This is termed as function overloading.

**Q. What is Function Overriding?**

A. Method overriding in C# is a feature like the virtual function in C++. Method overriding is a feature that allows you to invoke functions (that have the same signatures) that belong to different classes in the same hierarchy of inheritance using the base class reference. C# makes use of two keywords: virtual and overrides to accomplish Method overriding.

**Q. What is Virtual Functions?**

A. If we want override the definition of base class function in derived class, then we have to declare the function in base class as **virtual**.

**Q. How can we achieve multiple inheritance in C#.Net?**

A. We can achieve multiple inheritance in C# through Interfaces.

**Q. What are delegates and Events?**

A. A delegate in C# is similar to a function pointer in C or C++. Using a delegate allows the programmer to encapsulate a reference to a method inside a delegate object. The delegate object can then be passed to code which can call the referenced method, without having to know at compile time which method will be invoked. Events are associated with Delegates. Events fires automatically when a delegate is called.

**Q. What if an error occurs in Catch block, how can you prevent it?**

A. We can insert a new try-catch block inside the catch block. Try-catch blocks are used for handling errors in c#.

**Q. What properties we used to call stored procedure in C#?**

A. `cmd.CommandType=CommandType.StoredProcedure;`  
`cmd.CommandText="Name Of StoreProcedure";`  
`cmd.Executenonquery();`

**Q. Which collection will you use to store different types of objects collection like... int, employee, student, object etc?**

A. We would use array list. Every element in an array list is of object type. Since object class is base class of all the types in .net or any custom class so it will be possible to store different types of objects like int, employee(Custom class), student(custom class), object (base class itself) into an Array list collection.

**Q. What is abstraction and data hiding?**

A. **Abstraction:** Abstraction refers to removal/reduction of irrelevant data or unnecessary data or confidential data from a Class.

**Data Hiding:** Data hiding is a feature provided by the abstraction for hiding the data from the class.

**Q. What in Data Encapsulation?**

A. Encapsulation is defined as the process of wrapping up the data members and member functions together into a single unit called class. It can also be defined as the concept that an object totally separates its interface from its implementation. The concept of Encapsulation hides the implementation details behind its interface.

**Q. Can multiple catch blocks be executed?**

A. No

**Q. When an object of derived class is created which constructor will be called first (base class or derived class)?**

**A.** Base Class Constructor

**Q. How can we forcefully throw exception?**

**A.** Using throw keyword. E.g. throw new exception (“Your Exception”)

**Q. What is the use of Interface?**

**A.** In big companies, project manager understand the client requirement and make interfaces. These interfaces are then distributed to the under developers. Since interfaces are just outline of the method, so developers must use them in their class and code them. Developers need only concentration on coding. He need not worry about which methods he uses to achieve client requirement. So interfaces provide only outline to the developer to get the goal.

**Q. What is Polymorphism?**

**A.** „Polymorphism" means one name multiple forms. In it we can use the same thing for different purposes.

**1) Compile Time Polymorphism.**

- i. Operator Overloading.
- ii. Function Overloading.

**2) Run Time Polymorphism.**

- i. Virtual Functions

**Q. What is TimeSpan in C#?**

**A.** TimeSpan is the datatype in C#.which contain day,hour,min,sec  
TimeSpan myTimeSpan = new TimeSpan (2,12,0,12 );

**Q. Difference between string and stringbuilder?**

**A.** System.String is immutable. System.StringBuilder was designed with the purpose of having a mutable string where a variety of operations can be performed.

**Q. How to make a class non-inheritable other than sealed?**

**A.** There are two ways:

- 1: Make the base class as static.
- 2: Declare a private constructor in the base class.

**Q. Can we define a variable with the access modifier private in an interface?**

**A.** No you cannot.

1. Because an interface cannot contain fields.

2. For methods also, you cannot give an access modifier. By default, the methods will be public

**Q. What are the pillars of OOPs in c#?**

**A.** The four pillars of oops is:  
Abstraction, encapsulation, polymorphism, inheritance

**Q. What are properties and indexer?**

**A.** Using an object like an array is called Indexer. Indexer is similar to properties. Indexer is a collection of set and gets procedures. Indexer name must be "this" only. One class can have only one indexer.

1. An index is identified by its signature. But a property is identified its name.
2. An indexer is always an instance member, but a property can be static also.
3. An indexer is accessed through an element access. But a property is through a member access.

**Q. What does the term immutable means?**

**A.** It means that this object can't be changed but if you want another value to the same object another instance of the object is created and leaves the current instance unchanged. An example of immutable is STRING. String Builder is Mutable.

**Q. Can interface inherits another interface?**

**A.** Yes interface inherits interface only.

**Q. I have a class declared as below**

```
public class a
{
    public void add()
    {}
}
```

**What is the difference between**

**a a1 =new a;**

**and simply**

**a a1;**

**A.** In a a1=new a memory is allocated to the main function to execute. a a1; At this stage, a1 is of type a, but it does not actually contain the object data yet. To contain the object data, you need to use the new keyword to create a new instance of the a class, this process is known as object instantiation: a a1 = new a();

**Q. What is boxing and UnBoxing?**

A. Converting value type to object and vice versa.

**Q. What is Serialization?**

A. Serialization is process of converting an object into stream of bytes so that it can be stored or transferred across the network.

**Q. What are collections in c sharp?**

A. Collection Classes have the following properties:

→Collection classes are defined as part of the System.Collections  
or

**System.Collections.Generic**

namespace

e

→Most collection classes derive from the interfaces **ICollection**,  
**IComparer**, **IEnumerable**, **IList**,  
**IDictionary**, and **IDictionaryEnumerator** and their generic equivalents.

→Using generic collection classes provides increased type-safety and in some cases can provide better performance, especially when storing value types.

**Q. How to sort array elements in descending order?**

A. Elements of an array may not be sorted by default. To sort them in descending order, the Sort() method is first called. Next, to descend the order, call the Reverse() method.

**Q. What are partial classes?**

A. A partial class, or partial type, is a feature of some object oriented computer programming languages in which the declaration of a class may be split across multiple source-code files, or multiple places within a single file. In this Code is partially divided among different classes.

# MS-SQL SERVER

**Q. What is NewId()?**

**A.** The following example uses NEWID() to assign a value to a variable declared as the uniqueidentifier data type. The value of the uniqueidentifier data type variable is printed before the value is tested.

-- Creating a local variable with DECLARE/SET syntax.

```
DECLARE @myiduniqueidentifier
```

```
SET @myid = NEWID()
```

```
PRINT 'Value of @myid is: '+ CONVERT(varchar(255), @myid)
```

**Q. What is Scope\_Identity()?**

**A.** It returns the last IDENTITY value produced on a connection and by a statement in the same scope, regardless of the table that produced the value.

SCOPE\_IDENTITY(), like @@IDENTITY, will return the last identity value created in the current session, but it will also limit it to your current scope as well. In other words, it will return the last identity value that you explicitly created, rather than any identity that was created by a trigger or a user defined function.

**Q. What is difference between storeprocedures and functions?**

**A. Stored Procedure**

- have to use EXEC or EXECUTE
- return output parameter
- can create table but won't return Table Variables
- you cannot join SP
- can be used to change server configuration
- can be used with XML FOR Clause
- can have transaction within SP

**Functions**

- can be used with Select statement
- Not returning output parameter but returns Table variables
- You can join UDF
- Cannot be used to change server configuration
- Cannot be used with XML FOR clause
- Cannot have transaction within function

**Q. Can we call store procedure with in a function?**

**A.** No, We cannot call store procedure with in a function.

**Q. Can functions return table?**

**A.** Yes a function can return table.

```
CREATE FUNCTION dbo.fnEmployeeList ()
RETURNS TABLE AS
RETURN (SELECT id, name, city FROM Employee) GO
```

**Q. How to create temporary table in SQL?**

**A.** CREATE TABLE #MyTempTable (cola INT PRIMARY KEY) INSERT INTO #MyTempTable VALUES (1)  
SELECT \* FROM #MyTempTable

**Q. What are various types of joins?**

**A. INNER JOIN:** An inner join (sometimes called a simple join) is a join of two or more tables that returns only those rows that satisfy the join condition.

1) select bookstudent.BookId, Book.BookName, student.sname from Book  
**inner join** BookStudent on Book.BookId=BookStudent.BookId  
**inner join** student on student.sid=BookStudent.studentid

**SELF JOIN:** When we join a table to itself it is called Self Join.

Select p1.iPageId, p1.sPageName as Parent, p2.sPageName as Sub from PageMgmt p1  
join PageMgmt p2 on p1.iPageId=p2.iParentid

**OUTER JOIN:** An outer join extends the result of a simple join. An outer join returns all rows that satisfy the join condition and also returns non matching rows based on Outer join type.

- **Left Outer Join:** It brings all the records from the table on left hand side and matching records from table on right hand side and return null where no match found.  
Select \* from table1 **left outer join** table2 on table1.Id=table2.Id

- **Right Outer Join:** It brings all the records from the table on right hand side and matching records from table on left hand side and return null where no match found.  
Select \* from table1 **right outer join** table2 on table1.Id=table2.Id

- **Full Outer Join:** It brings all the records from both the table and return null where no match found.  
Select \* from table1 **full outer join** table2 on table1.Id=table2.Id

- **Cross Join:** A cross join that does not have a WHERE clause produces the Cartesian product of the tables involved in the join. The size of a Cartesian product result set is the number of rows in the first table multiplied by the number of rows in the second table.

**Q. What is a subquery? What are co-related sub queries?**

**A. SubQueries** -A subquery is usually added in the WHERE Clause of the SQL statement. Most of the time, a subquery is used when you know how to search for a value using a SELECT statement, but do not know the exact value.

**List of Customers that have placed atleast one Order:**

```
Select iCustomerId,sCustomerName from tbCustomers cu where iCustomerId in(Select iCustomerId from tbOrder)
```

### **CO-RELATED SUB QUERY**

First Outer Query is compiled, then inner according to output of outer and then again the Outer according to the Output Of inner.

### **RECORD OF CUSTOMER FROM ORDER TABLE WHEN THE CUSTOMER PLACED THE FIRST ORDER**

```
Select o1.iCustomerId,o1.iOrderId,o1.dOrderDate from tbOrder o1
where o1.dOrderDate=(select min(o2.dOrderDate) from tbOrder o2
where o2.iCustomerID=o1.iCustomerId)
Order By iCustomerID
```

**Q. What are views?**

**A.** The view is a virtual table, which can have the multiple columns from the one or more table. It can be used like the normal table. Normally view cannot store the data permanently in the table. When we create the view it stores the view definition schema as object under the concern database.

**Q. If we insert or update view, will data be inserted into table also?**

**A.** Yes

**Q. What are triggers?**

**A.** Triggers are the storedprocedures which fires automatically whenever an Insert, Update or Delete command fires.

### **DeleteTrigger**

```
1) Create trigger DeleteTrigger on Employee3 for delete
as
if((select EmpId from deleted)>5)
begin
print 'U Cannot delete Id greater than 5'
rollback transaction
end
```

```
2) Alter trigger DeleteTrigger on Employee3 for delete
as
begin
Insert into employee2 select * From deleted
end
```

**CHECK USING TRUNCATE AND DELETE STATEMENT-----TRUNCATED STATEMENT WILL NOT BE ROLLED BACK.....BUT DELETED RECORDS CAN BE ROLLEDBACK**

```
truncate table employee3
delete from employee3
```

### **UPDATE TRIGGER**

#### **TRIGGER FOR NOT UPDATING ANY RECORD IN TABLE**

```
CREATE trigger UpdateTrigger on Employee2
for UPDATE as begin
if(select empId from inserted)>0
begin
print 'u Cant Update Id'
rollback transaction
end
end
```

if u hav 2 values then old value will be availabe in deleted table and new value will be avaliabel in inserted table

```
4) CREATE trigger UpdateTrigger on Employee2 for UPDATE
as
begin
if(select empId from inserted)=17
begin
print 'u Cant Update Id'
rollback transaction
end
end
```

### **INSERT TRIGGER**

```
CREATE trigger InsertTrigger
on Employee2
for Insert
as
begin
if(select empId from inserted)<1
or(select empId from inserted)>100
begin
print 'u Cant INsert. Id must be between 1 to 100'
rollback transaction
end
end
```

**Q. What are cursors?**

**A.** Cursor is a database object used by applications to manipulate data in a set on a row-by-row basis, instead of the typical SQL commands that operate on all the rows in the set at one time.

In order to work with a cursor we need to perform some steps in the following order: Declare cursor, Open cursor, Fetch row from the cursor, Process fetched row, Close cursor, Deallocate cursor.

**Q. What are indexes?**

**A.** An index makes it easier for us to retrieval and presentation of the data. An Index is a system which provides faster access to rows and for enforcing constraints. If we don't create any indexes then the SQL engine searches every row in table (also called as table scan). As the table data grows to thousand, millions of rows and further then searching without indexing becomes much slower and becomes expensive.

**Q. Difference between clustered and non clustered indexes?**

**A. Clustered index** is a special type of index that reorders the way records in the table are physically stored. Therefore table can have only one clustered index. The leaf nodes of a clustered index contain the data pages.

**Non Clustered Index** is a special type of index in which the logical order of the index does not match the physical stored order of the rows on disk. The leaf node of a Non Clustered Index does not consist of the data pages. Instead, the leaf nodes contain index rows.

**Q. Can store procedures return values?**

**A.** Store procedure may or may not return value.

**Q. What are various ranking methods?**

**A. Ranking Methods are:**

- 1) Rank
- 2) Ntile
- 3) Dense Rank
- 4) Row Number

**Q. How can we deal with Null values in SQL?**

**A.** Null is a special marker used in Structured Query Language (SQL) to indicate that a data value does not exist in the database

**DEALING WITH NULL**

Keep age null in employee age column(not all)

- 1) `select IsNULL(cast(Age as varchar),'Not Given') from employee`

**Q. How to create temporary tables in SQL?**

**A.** `declare @TempPageMgmt table`

```
(
  PageName varchar(50),
  ParentId int
)
```

`insert into @ TempPageMgmt`

`select PageName,ParentId from pagemanagement where PageId between 1 and 5`

`select * from @ TempPageMgmt`

**Q. How to use select case statement in SQL?**

**A.** It is used when we have multiple options available.

`selectsName,iAge,Rank=`

`case`

`when iAge>1 and iAge<33 then 'Third'`

`when iAge>33 and iAge<60 then 'second'`

`when iAge>60 and iAge<100 then 'First'`

`else 'SomethingElse'`

`end`

`from tbStudent`

**Q. What are various aggregate functions available in SQL?**

**A.** Aggregate Function

- 1) Sum
- 2) Avg
- 3) Min
- 4) Max

5) Count

**Q. What are the various operators in SQL?**

**A. Operator**

- =,<,>,<=,>=,<>,!<,>,>=,<=
- AND,OR ,NOT
- BETWEEN
- Like
- In
- Is
- All,Any,Some
- Exists

**Q. What is the difference between All,Any and some?**

**A. ALL**

ALL compares a single value against a set of data from a query. Each value from the query's results is combined with the scalar value to generate a single scalar expression. If all of the scalar expressions evaluate to true then the result of the ALL expression will be true. Otherwise the result will be false.

```
SELECT iStudentId, sName, iAge FROM tbStudent  
WHERE NOT iAge>= ALL (SELECT iRollNo FROM tbStudent)
```

### **SOME and ANY**

The SOME and ANY operators provide equivalent functionality. The SOME and ANY operators return true if at least one of the generated expressions evaluates as true.

```
SELECT iStudentId, sName, iAge,iRollNo FROM tbStudent WHERE iAge < ANY  
(SELECT iRollNo FROM tbStudent)
```

As the ANY and SOME operators are equivalent, you can interchange the two keywords without affecting the results.

**Q. Where we can use “Is” Operator?**

**A.** It is used to deal with NULL values.

```
Select * from tbEmployee where Salary is NULL
```

**Q. What are Normalization and various forms of Normalization?**

**A.** In the design of a relational database management system (RDBMS), the process of organizing data to minimize redundancy is called normalization. The goal of database normalization is to decompose relations with anomalies in order to produce smaller, well-structured relations. Normalization usually involves dividing large tables into smaller

(and less redundant) tables and defining relationships between them. The objective is to isolate data so that additions, deletions, and modifications of a field can be made in just one table and then propagated through the rest of the database via the defined relationships.

**Types of Normalization:**

- 1 NF
- 2 NF
- 3 NF
- BCNF - Boyce Code Normal Form
- 5 NF

**Q. What do you mean by Group By clause?**

**A.** The Group by clause can be used in a SELECT statement to collect data across multiple records and group the results by one or more columns. Remember when we use Group by every column in the select list has to either part of the group by or it must be an aggregate.

1) select orderid, sum(quantity) total  
from [order details] group by orderid

2) select iOrderId, Avg(iQuantity) from tborderdetail where iorderId between 10248 and 10250 group by iorderId

**Having Clause:** It is used in a SELECT statement to filter the records that a GROUP BY returns.

Select iorderId, sum(iquantity) total  
from tborderdetail group by iorderId  
having sum(iquantity) > 300

**Q. What is the difference between “Having” and “Where”?**

**A.** The difference is that **WHERE** operates on individual rows, while **HAVING** operates on groups.

**HAVING** specifies a search condition for a group or an aggregate function used in SELECT statement.

**Q. What is RollUp and Cube?**

**A.** **ROLLUP** enables a SELECT statement to calculate multiple levels of subtotals across a specified group of dimensions. It also calculates a grand total. ROLLUP is a simple extension to the GROUP BY clause, so its syntax is extremely easy to use. The ROLLUP extension is highly efficient, adding minimal overhead to a query.

**CUBE** takes a specified set of grouping columns and creates subtotals for all of their possible combinations. In terms of multidimensional analysis, CUBE generates all the subtotals that could be calculated for a data cube with the specified dimensions. If you

have specified CUBE(time, region, department) the result set will include all the values that would be included in an equivalent ROLLUP statement plus additional combinations.

**Q. Calculate three highest and three lowest salary using subQuery?**

**A. Maximum 3 Salaries**

```
select * from Employee where Salary>=(select max(Salary) from Employee where salary
<(select max(salary) from employee where salary <(select max(salary) from employee)))
```

**Minimum 3 Salaries**

```
select * from Employee where Salary<=(select min(Salary) from Employee where salary
>(select min(salary) from employee where salary >(select min(salary) from employee)))
```

**Q. What are Rules and Defaults?**

**A. Rules:**Used to specify rules to be applied on particular columns.

- a) create Rule Salary as @Salary>5000
- b) sp\_bindrule Salary,'Customers.Salary'
- c) sp\_unbindrule 'Customers.Salary'
- d) drop rule Salary

**Defaults: Used to assign default values to a column.**

- a) create default Age as 20
- b) sp\_bindefault Age,'Customers.Age'
- c) sp\_unbindefault 'Customers.Age'
- d) drop default Age

**Q. What are various constraints in SQL server?**

**A. NOT NULL, UNIQUE, PRIMARY KEY, FOREIGN KEY, CHECK, DEFAULT**

**Q. What are various keys available in SQL server?**

**A. A key allows us to identify a set of attributes and thus distinguishes entities from each other.**

**Different types of keys:**

- 1) Super Key
- 2) Candidate Key
- 3) Primary Key
- 4) Unique Key
- 5) Foreign Key

**Q. Can we have more than one primary key on single table?**

A. Yes

**Q. What are composite Keys?**

A. If you have more than one primary key in a table, they are jointly called Composite Key.

**Q. Difference between Set and Select?**

A.

- Set is a ANSI standard for variable assignment
- Select is a Non-ANSI standard when assigning variables
- Set can assign only one variable at a time
- Select can assign multiple variable at a time
- When assigning from a query that returns more than one value, SET will fail with an error
- When assigning from a query that returns more than one value, SELECT will assign the last value returned by the query and hide the fact that the query returned

**Q. What is the difference between Varchar and NVarchar?**

A. An nvarchar column can store any Unicode data. A varchar column is restricted to an 8-bit codepage.

**Q. What are Sparse columns in SQL 2008?**

A. Sparse column is a tool that helps to reduce amount of physical storage used in a database.

**Q. What is Order BY Clause?**

A. It specifies the sort order used on columns returned in a SELECT statement.

**Q. What is difference between Caste and Convert Method?**

A. Cast and Convert perform datatype conversion. Convert also does some date formatting conversions that cast doesn't offer.

**Q. What are Store Procedures and its Uses?**

A. Stored procedures are compiled objects. You can execute multiple statements in stored procedures.

**Q. What are cursors?**

A. Cursors help us to do an operation on a set of data one row at a time. For example: If we have duplicate records in a table we can remove it by declaring a cursor which would

check the records during retrieval one by one and remove rows which have duplicate values.

**Q. When do we use the UPDATE\_STATISTICS command?**

**A.** This command is basically used when we do a large processing of data. If we do a large amount of deletions any modification or Bulk Copy into the tables, we need to basically update the indexes to take these changes into account. UPDATE\_STATISTICS updates the indexes on these tables accordingly.

**Q. Which TCP/IP port does SQL Server run on?**

**A.** SQL Server runs on port 1433 but we can also change it for better security.

**Q. From where can you change the default port?**

**A.** From the Network Utility TCP/IP properties → Port number, both on client and the server.

**Q. Can you tell me the difference between DELETE & TRUNCATE commands?**

**A.** Deleted data can be rolled back, but data one truncated cannot be rolled back.

**Q. Can we use truncate command on a table which is referenced by FOREIGN KEY?**

**A.** No. We cannot use truncate command on a table with Foreign Key because of referential integrity.

**Q. What is the use of DBCC commands?**

**A.** DBCC stands for database consistency checker. We use these commands to check the consistency of the databases, i.e., maintenance, validation task and status checks.

**Q. What command do we use to rename a db?**

**A.** sp\_renamedb 'oldname', 'newname'

**Q. What is the difference between a HAVING CLAUSE and a WHERE CLAUSE?**

**A.** Having Clause is basically used only with the GROUP BY function in a query and WHERE clause is applied to each row before they are part of the GROUP BY function in a query.

**Q. What do you mean by COLLATION?**

**A.** Collation is basically the sort order. There are three types of sort order Dictionary case sensitive, Dictionary - case insensitive and binary.

**Q. What is a Linked Server?**

A. Linked Servers is a concept in SQL Server by which we can add other SQL Server to a Group and query both the SQL Server database using T-SQL Statements.

**Q. Which stored procedure will be running to add a linked server?**

A. sp\_addlinkedserver, sp\_addlinkedsrvlogin

**Q. What are the authentication modes in SQL Server?**

A. Windows mode and mixed mode (SQL & Windows).

**Q. Where do you think the user's names and passwords will be stored in SQL server?**

A. They get stored in master db in the sysxlogins table.

**Q. What is log shipping?**

A. In logshipping the transactional log file from one server is automatically updated into the backup database on the other server. If one server fails, the other server will have the same db and we can use this as the DR (disaster recovery) plan.

**Q. What is BCP? When do we use it?**

A. BulkCopy is a tool used to copy huge amount of data from tables and views. But it won't copy the structures of the same.

**Q. What should we do to copy the tables, schema and views from one SQL Server to another?**

A. We have to write some DTS packages for it.

**Q. What is referential integrity? What are the advantages of it?**

A. Referential integrity is a database constraint that ensures that references between data are indeed valid and intact.

**Advantages of Referential integrity** are:

- **Referential integrity** is usually enforced by the combination of a primary key and a foreign key. For referential integrity to hold, any field in a table that is declared a foreign key can contain only values from a parent table's primary key field.
- **Referential integrity** is a feature provided by relational database management systems that prevents users or applications from entering inconsistent data.
- **Referential integrity** is a database management safeguard that ensures every foreign key match a primary key.

**Q. What is the difference between a local and a global variable?**

A. Difference between a local and a global variable

- A **local temporary table** exists only for the duration of a connection or, if defined inside a compound statement, for the duration of the compound statement.
- A **global temporary table** remains in the database permanently, but the rows exist only within a given connection. When connections are closed, the data in the global temporary table disappears. However, the table definition remains with the database for access when database is opened next time.

**Q. Can a stored procedure call another stored procedure? If yes at what level it will be controlled?**

**A.** Yes. When one stored procedure calls another stored procedure (SP) you have what is called stored procedure nesting. We can have recursive stored procedures upto 32 nest levels.

**Q. Can a stored procedure call itself(recursive)?**

**A.** Yes

**Q. Explain DBMS, RDBMS?**

**A.** DBMS Stands for "Database Management System." In short, a DBMS is a database program. Technically speaking, it is a software system that uses a standard method of cataloging, retrieving, and running queries on data. The DBMS manages incoming data, organizes it, and provides ways for the data to be modified or extracted by users or other programs.

**Relational Database Management System (RDBMS)** is a database management system (DBMS) that is based on the relational model as introduced by E. F. Codd. A short definition of an RDBMS is: a DBMS in which data is stored in tables and the relationships among the data are also stored in tables.

**Q. What are primary keys and foreign keys?**

**A. Primary Key:** The primary key of a relational table uniquely identifies each record in the table

**Foreign Key:**A foreign key is a field (or fields) that points to the primary key of another table

**Q. How would you update the rows which are divisible by 10, given a set of numbers in column?**

**A.** UPDATE table\_name  
SET column1=value WHERE column1= value/10

**Q. How many to many relationships are implemented?**

**A.** We have to create a third table that contains foreign keys of primary tables.

**Q. How can you get @@error and @@rowcount at the same time?**

**A.** If @@Rowcount is checked after Error checking statement then it will have 0 as the value of @@Recordcount as it would have been reset.

And if @@Recordcount is checked before the error-checking statement then @@Error would get reset. To get @@error and @@rowcount at the same time do both in same statement and store them in local variable. `SELECT @RC = @@ROWCOUNT, @ER = @@ERROR`

**Q. What is SQL Injection?**

**A.** SQL injection is an attack in which malicious code is inserted into strings that are later passed to an instance of SQL Server for parsing and execution. Any procedure that constructs SQL statements should be reviewed for injection vulnerabilities because SQL Server will execute all syntactically valid queries that it receives. Even parameterized data can be manipulated by a skilled and determined attacker.

**Q. What is Cascading?**

**A.** Cascading referential integrity constraints are foreign key constraints that tell SQL Server to perform certain actions when a primary key field in a primary key-foreign key relationship is updated or deleted. There are two types of Cascades

- 1) Delete Cascade
- 2) Update Cascade

**Q. What are different types of Collation Sensitivity?**

**A.**

- **Case** sensitivity A and a, B and b, etc.
- **Accent** sensitivity a and á, o and ó, etc.
- **Kana** Sensitivity When Japanese kana characters Hiragana and Katakana are treated differently, it is called Kana sensitive.
- **Width** sensitivity when a single-byte character (half-width) and the same character when represented as a double-byte character (full-width) are treated differently than it is width sensitive.

**Q. What's the difference between a primary key and a unique key?**

**A.** Both primary key and unique key enforce uniqueness of the column on which they are defined. But by default primary key creates a clustered index on the column; where as unique key creates a nonclustered index by default. Another major difference is that, primary key doesn't allow NULLs, but unique key allows one NULL only.

**Q. How to implement one-to-one, one-to-many and many-to-many relationships while designing tables?**

**A.**

- **One-to-One relationship** can be implemented as a single table and rarely as two tables with primary and foreign key relationships.
- **One-to-Many relationships** are implemented by splitting the data into two tables with primary key and foreign key relationships.
- **Many-to-Many relationships** are implemented using a junction table with the keys from both the tables forming the composite primary key of the junction table.

**Q. What is a NOLOCK?**

**A.** Using the **NOLOCK** query optimizer hint is generally considered good practice in order to improve concurrency on a busy system. When the **NOLOCK** hint is included in a **SELECT** statement, no locks are taken when data is read. The result is a Dirty Read, which means that another process could be updating the data at the exact time you are reading it. There are no guarantees that your query will retrieve the most recent data. The advantage to performance is that your reading of data will not block updates from taking place, and updates will not block your reading of data.

**Q. Difference between Function and Stored Procedure?**

**A.**

- UDF can be used in the SQL statements anywhere in the WHERE/HAVING/SELECT section where as Stored procedures cannot be.
- UDFs that return tables can be treated as another rowset. This can be used in JOINS with other tables.
- Inline UDF's can be thought of as views that take parameters and can be used in JOINS and other Rowset operations.

**Q. What kind of User-Defined Functions can be created?**

**A.** There are three types of User-Defined functions in SQL Server 2000 and they are Scalar, Inline Table-Valued and Multi-statement Table-valued.

**Q. What is the difference between a local and a global variable?**

**A.**

- A **local temporary** table exists only for the duration of a connection or, if defined inside a compound statement, for the duration of the compound statement.
- A **global temporary** table remains in the database permanently, but the rows exist only within a given connection. When connection is closed, the data in the

global temporary table disappears. However, the table definition remains with the database for access when database is opened next time.

**Q. What are three SQL keywords used to change or set someone's permissions?**

**A.** GRANT, DENY, and REVOKE.

**Q. What is the STUFF function and how does it differ from the REPLACE function?**

**A.**

- **STUFF** function to overwrite existing characters. Using this syntax, STUFF(string\_expression, start, length, replacement\_characters), string\_expression is the string that will have characters substituted, start is the starting position, length is the number of characters in the string that are substituted, and replacement\_characters are the new characters interjected into the string.
- **REPLACE** function to replace existing characters of all occurrences. Using this syntax REPLACE(string\_expression, search\_string, replacement\_string), where every incidence of search\_string found in the string\_expression will be replaced with replacement\_string.

**Q. Using query analyzer, name 3 ways to get an accurate count of the number of records in a table?**

**A.** → select sum(1) from tbRanking  
→ select count(\*) from tbRanking  
→ update tbRanking set Id = Id; select @@rowcount

**Q. What is data integrity? Explain constraints?**

**A.** Data integrity is an important feature in SQL Server. When used properly, it ensures that data is accurate, correct, and valid. It also acts as a trap for otherwise undetectable bugs within applications.

- A **PRIMARY KEY** constraint is a unique identifier for a row within a database table.
- A **UNIQUE** constraint enforces the uniqueness of the values in a set of columns, so no duplicate values are entered
- A **FOREIGN KEY** constraint prevents any actions that would destroy links between tables with the corresponding data values. A foreign key in one table points to a primary key in another table.
- A **CHECK** constraint is used to limit the values that can be placed in a column. The check constraints are used to enforce domain integrity.

- A **NOT NULL** constraint enforces that the column will not accept null values. The not null constraints are used to enforce domain integrity, as the check constraints.

**Q. What are the properties of the Relational tables?**

**A. Relational tables have six properties:**

Values are atomic.

Column values are of the same kind.

Each row is unique.

The sequence of columns is insignificant.

The sequence of rows is insignificant.

Each column must have a unique name.

**Q. What is Identity?**

**A.** Identity (or AutoNumber) is a column that automatically generates numeric values. A start and increment value can be set, but most DBA leave these at 1.

**Q. Which virtual table does a trigger use?**

**A.** Inserted and Deleted.

**Q. List few advantages of Stored Procedure.**

**A.**

- **Stored procedure** can reduced network traffic and latency, boosting application performance.
- **Stored procedure** execution plans can be reused, staying cached in SQL Server's memory, reducing server overhead.
- **Stored procedures** help promote code reuse.
- **Stored procedures** can encapsulate logic. You can change stored procedure code without affecting clients.
- **Stored procedures** provide better security to your data.

**Q. What is OLTP(OnLine Transaction Processing)?**

**A.** In OLTP (online transaction processing) systems relational database design use the discipline of data modeling and generally follow the Codd rules of data normalization in order to ensure absolute data integrity. Using these rules complex information is broken down into its most simple structures (a table) where all of the individual atomic level elements relate to each other and satisfy the normalization rules.

**Q. What are Transactions?**

**A.** A transaction is a group of operations combined into a logical unit of work. Developers use transactions to control and maintain the consistency and integrity of each action in a transaction, despite errors that might occur in the system.

**Q. What are ACID Properties of a Transaction?**

- A.**
- 1) Atomicity
  - 2) Consistency
  - 3) Isolation
  - 4) Durability