First: - Object Oriented Programming (OOP)

1-What is the difference between a class and a structure ?

Structs are value types and classes are reference types.

The general difference is that a reference type lives on the heap, and a value type lives inline, that is, wherever it is your variable or field is defined.

A variable containing a value type contains the entire value type value. For a struct, that means that the variable contains the entire struct, with all its fields.

A variable containing a reference type contains a pointer, or a reference to somewhere else in memory where the actual value resides.

This has one benefit, to begin with:

Value types always contains a value

Reference types can contain a null-reference, meaning that they don't refer to anything at all at the moment

Internally, reference types are implemented as pointers, and knowing that, and knowing how variable assignment works, there are other behavioral patterns:

Copying the contents of a value type variable into another variable, copies the entire contents into the new variable, making the two distinct. In other words, after the copy, changes to one won't affect the other

copying the contents of a reference type variable into another variable, copies the reference, which means you now have two references to the same somewhere else storage of the actual data. In other words, after the copy, changing the data in one reference will appear to affect the other as well, but only because you're really just looking at the same data both places

When you declare variables or fields, here's how the two types differ:

variable: value type lives on the stack, reference type lives on the stack as a pointer to somewhere in heap memory where the actual memory lives (though note Eric Lipperts article series: The Stack Is An Implementation Detail.)

class/struct-field: value type lives completely inside the type, reference type lives inside the type as a pointer to somewhere in heap memory where the actual memory lives.

2-How can you prevent your class to be inherited from any other classes ?

Make it a Sealed Class

3-What is Access specifies (Modifiers) ?

Access modifiers and specifiers are keywords (private, public, internal, protected and protected internal) to specify the accessibility of a type and its members.

C# has 5 access specifier or access modifier keywords; those are private, public, internal, protected and protected Internal.

4-What is the difference between method overriding and method overloading ?

Creating more than one method or a function that has a same name but different signatures or parameters in the same class is called method overloading.

Key points

Method overloading is also called early binding or compile time polymorphism or static binding.

The compiler automatically calls the required method or the function by checking number of parameters and their type, which are passed into that method.

If the number of parameters and type doesn't match by any method signatures, then it will give the compile time error.

We can achive method overloading by changing the number of parameters used or by using different types of parameters or by changing the order of parameters

What is method overriding?

Creating a method in the derived class with same signature as a method in the base class is called method overriding

or

Method overriding means having two methods with the same name and same signature, one method in the base class and the other method in the derived class.

Key points

Method overriding is also called run time polymorphism or dynamic polymorphism or late binding.

We can override a method in the base class by creating similar function in the derived class. This can be achieved by using inheritance and using virtual & override.

Same signature means the methods must have the same name, same number of arguments and same type of arguments.

Method overriding is possible only in the derived classes, but not within the same class.

When the derived class needs a method with the same signature as in the base class, but wants to execute different code than the one provided by the base class then method overriding will be used.

Method overriding in C# is a feature like the virtual function in C++.

5-Why is the virtual keyword used in code ?

The virtual keyword is used to modify a method, property, indexer, or event declaration and allow for it to be overridden in a derived class. For example, this method can be overridden by any class that inherits it

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6-Explain the concept of constructor and destructor ?

A constructor can be used, where every time an object gets created and if we want some code to be executed automatically. The code that we want to execute must be put in the constructor. The general form of a C# constructor is as follows

The .NET framework has an in built mechanism called Garbage Collection to de-allocate memory occupied by the un-used objects. The destructor implements the statements to be executed during the garbage collection process. A destructor is a function with the same name as the name of the class but starting with the character ~.

7-What is a delegate?

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.

8-What is a namespace?

Namespaces have the following properties:

They organize large code projects.

They are delimited by using the Operator.

The using directive obviates the requirement to specify the name of the namespace for every class.

The global namespace is the "root" namespace: global::System will always refer to the .NET Framework namespace System.

9-What are abstract classes ?

An abstract class is a special type of class that cannot be instantiated. An abstract class is designed to be inherited by subclasses that either implement or override its methods. In other words, abstract classes are either partially implemented or not implemented at all. You can have functionality in your abstract class—the methods in an abstract class can be both abstract and concrete. An abstract class can have constructors—this is one major difference between an abstract class and an interface. You can take advantage of abstract classes to design components and specify some level of common functionality that must be implemented by derived classes.

10-What is a Hash table?

Spell Checkerأو Symbol Table في المترجمات ، حيث تضمن لنا هذه البنيه الوصول السريع جدا لأي بيانات نريدها مهما كان حجم تلك البيانات ، بالاضافه الى ادخال البيانات أيضا يتم في سرعه كبيره.. زمن التنفيذ لها هي (O(1)) وبالتالى تعد من أسرع هياكل البيانات على الإطلاق (مثلها مثل المصفوفه) ،، اضافه الى ميزه السرعه هناك ميزه جيده بها وهي أنها سهله التطبيق حيث أننا سنطبق هذه البنيه من خلال مصفوفه عاديه أو.vector

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11-What is Interface ?

An interface in C# contains only the declaration of the methods, properties, and events, but not the implementation. It is left to the class that implements the interface by providing implementation for all the members of the interface. Interface makes it easy to maintain a program.

12-What is the differences between an abstract class and an interface?

Abstract classes, unlike interfaces, are classes. They are more expensive to use, because there is a look-up to do when you inherit from them.
Abstract classes look a lot like interfaces, but they have something more: You can define a behavior for them. It's more about a person saying, "these classes should look like that, and they have that in common, so fill in the blanks!".

Second: - Structured Query Language (SQL)

1-What are the differences between Function and Stored Procedure?

Basic Difference

Function must return a value but in Stored Procedure it is optional (Procedure can return zero or n values).
Functions can have only input parameters for it whereas Procedures can have input/output parameters.
Function takes one input parameter it is mandatory but Stored Procedure may take o to n input parameters..
Functions can be called from Procedure whereas Procedures cannot be called from Function.
Advance Difference

Procedure allows SELECT as well as DML(INSERT/UPDATE/DELETE) statement in it whereas Function allows only SELECT statement in it.
Procedures cannot be utilized in a SELECT statement whereas Function can be embedded in a SELECT statement.
Stored Procedures cannot be used in the SQL statements anywhere in the WHERE/HAVING/SELECT section whereas Function can be.
Functions that return tables can be treated as another row set. This can be used in JOINs with other tables.
Inline Function can be thought of as views that take parameters and can be used in JOINs and other Rowset operations.
Exception can be handled by try-catch block in a Procedure whereas try-catch block cannot be used in a Function.
We can go for Transaction Management in Procedure whereas we can't go in Function.

2-What is Normalization and De-normalization?

Normalization is the process of breaking a big table into two or more smaller tables so that we can avoid the insert, update and delete anomalies that may occur. Through normalization we can achieve consistency. Good for OLTP systems.

De-normalization is the reverse process of Normalization i.e, to combine two or more tables into a single table. De-normalization increases the performance (Searching data from one table is quiet faster than searching data from multiple tables). Good for OLAP systems

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3-What is Trigger?

A trigger is a special type of stored procedure that automatically executes when an event occurs in the database server

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4-What is Cursor ?

Cursor is a database object used by applications to manipulate data in a set on a row-by-row basis, its like recordset in the ASP and visual basic.

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5-What are different Types of Join ?

(INNER) JOIN: Returns records that have matching values in both tables

LEFT (OUTER) JOIN: Return all records from the left table, and the matched records from the right table

RIGHT (OUTER) JOIN: Return all records from the right table, and the matched records from the left table

FULL (OUTER) JOIN: Return all records when there is a match in either left or right table

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6-What are the differences between clustered and a non-clustered index ?

Clustered indexes physically order the data on the disk. This means no extra data is needed for the index, but there can be only one clustered index (obviously). Accessing data using a clustered index is fastest.

All other indexes must be non-clustered. A non-clustered index has a duplicate of the data from the indexed columns kept ordered together with pointers to the actual data rows (pointers to the clustered index if there is one). This means that accessing data through a non-clustered index has to go through an extra layer of indirection. However if you select only the data that's available in the indexed columns you can get the data back directly from the duplicated index data (that's why it's a good idea to SELECT only the columns that you need and not use *)

7-What's the difference between a primary key and a unique key ?

Primary Key:

There can only be one primary key in a table

In some DBMS it cannot be NULL - e.g. MySQL adds NOT NULL

Primary Key is a unique key identifier of the record

Unique Key:

Can be more than one unique key in one table

Unique key can have NULL values

It can be a candidate key

Unique key can be NULL and may not be unique

8-What is difference between DELETE and TRUNCATE commands ?

TRUNCATE

TRUNCATE is a DDL command

TRUNCATE is executed using a table lock and whole table is locked for remove all records.

We cannot use Where clause with TRUNCATE.

TRUNCATE removes all rows from a table.

Minimal logging in transaction log, so it is performance wise faster.

TRUNCATE TABLE removes the data by deallocating the data pages used to store the table data and records only the page deallocations in the transaction log.

Identify column is reset to its seed value if table contains any identity column.

To use Truncate on a table you need at least ALTER permission on the table.

Truncate uses the less transaction space than Delete statement.

Truncate cannot be used with indexed views.

DELETE

DELETE is a DML command.

DELETE is executed using a row lock, each row in the table is locked for deletion.

We can use where clause with DELETE to filter & delete specific records.

The DELETE command is used to remove rows from a table based on WHERE condition.

It maintain the log, so it slower than TRUNCATE.

The DELETE statement removes rows one at a time and records an entry in the transaction log for each deleted row.

Identity of column keep DELETE retain the identity.

To use Delete you need DELETE permission on the table.

Delete uses the more transaction space than Truncate statement.

Delete can be used with indexed views.

DROP

The DROP command removes a table from the database.

All the tables' rows, indexes and privileges will also be removed.

No DML triggers will be fired.

The operation cannot be rolled back.

DROP and TRUNCATE are DDL commands, whereas DELETE is a DML command.

DELETE operations can be rolled back (undone), while DROP and TRUNCATE operations cannot be rolled back.

9-What is “CHECK” Constraint ?

The CHECK constraint is used to limit the value range that can be placed in a column.

If you define a CHECK constraint on a single column it allows only certain values for this column.

If you define a CHECK constraint on a table it can limit the values in certain columns based on values in other columns in the row.

10-What is “BulkCopy” tool?

BulkCopy is a tool used to copy huge amount of data from tables.

11-What is the difference between Sequence and Identity ?

A sequence is a user-defined schema-bound object that generates a sequence of numeric values according to the specification with which the sequence was created. The sequence of numeric values is generated in an ascending or descending order at a defined interval and may cycle (repeat) as requested. Sequences, unlike identity columns, are not associated with tables. An application refers to a sequence object to receive its next value. The relationship between sequences and tables is controlled by the application. User applications can reference a sequence object and coordinate the values keys across multiple rows and tables.

A sequence is created independently of the tables by using the CREATE SEQUENCE statement. Options enable you to control the increment, maximum and minimum values, starting point, automatic restarting capability, and caching to improve performance. For information about the options, see CREATE SEQUENCE.

Unlike identity column values, which are generated when rows are inserted, an application can obtain the next sequence number before inserting the row by calling the NEXT VALUE FOR function. The sequence number is allocated when NEXT VALUE FOR is called even if the number is never inserted into a table. The NEXT VALUE FOR function can be used as the default value for a column in a table definition. Use sp_sequence_get_range to get a range of multiple sequence numbers at once.

A sequence can be defined as any integer data type. If the data type is not specified, a sequence defaults to bigint.

12-What is the Database Shrink ?

Shrinking data files recovers space by moving pages of data from the end of the file to unoccupied space closer to the front of the file. When enough free space is created at the end of the file, data pages at end of the file can deallocated and returned to the file system.

13-Can we join two tables without primary foreign key relation ?

Yes, we can join two tables without primary foreign key relation as long as the column values involved in the join can be converted to one type.

14-What is the CTE ?

Introduced in SQL Server 2005, the common table expression (CTE) is a temporary named result set that you can reference within a SELECT, INSERT, UPDATE, or DELETE statement. You can also use a CTE in a CREATE

VIEW statement, as part of the view's SELECT query. In addition, as of SQL Server 2008, you can add a CTE to the new MERGE statement.

SQL Server supports two types of CTEs-recursive and nonrecursive.More Info…

15-What is the job?

Sequentially by SQL Server Agent. A job can perform a wide range of activities, including **running** Transact-SQL scripts, command prompt applications, Microsoft ActiveX scripts, Integration Services packages, Analysis Services commands and queries, or Replication tasks.

Third: - ASP.Net

1-What is the difference between HTTP Handler and HTTP Module ?

HTTP handlers are the end point objects in ASP.NET pipeline and an HTTP Handler essentially processes the request and produces the response. For example an ASP.NET Page is an HTTP Handler.

HTTP Modules are objects which also participate the pipeline but they work before and after the HTTP Handler does its job, and produce additional services within the pipeline (for example associating session within a request before HTTP handler executes, and saving the session state after HTTP handler has done its job, is basically done by an HTTP module, SessionStateModule)

Introduction to HTTP Handlers

Introduction to HTTP Modules

2-Why do you use the "App_Code" folder in ASP.NET ?

It stores the files, such as classes, typed data set, text files, and reports. If this folderis not available in the application, you can add this folder. One of the important features of the **App_Code** folder is that only one dll is created for the complete folder, irrespective of how many files it contains.

3- What is IIS?

An IIS web server accepts requests from remote client computers and returns the appropriate response.

4-What is Query String ? What are its advantages and limitations ?

The Query String helps in sending the page information to the server.
The Query String has the following advantages:
Every browser works with Query Strings.
It does not require server resources and so does not exert any kind of burden on the server.
The following are the limitations of Query String:
Information must be within the limit because URL does not support many characters.
Information is clearly visible to the user, which leads to security threats.

5-What are the various ways of authentication techniques in ASP.NET ?

- Anonymous Authentication.
- Basic Authentication.
- Digest Authentication.
- Integrated Windows Authentication.
- Certificate Authentication.
- Port Authentication.
- Forms Authentication.
- Using Cookies.

6-What is the difference between authentication and authorization ?

Authentication means confirming your own identity, while authorization means granting access to the system. In simple terms, authenticationis the process of verifying who you are, while authorization is the process of verifying what you have access to.

7-Differentiate globalization and localization ?

Globalization is making your software ready for international markets:

- Format and parse numbers, dates etc. according to the user's locale
- Handle international text
- Making your software localizable

Localization is adapting your software to a particular local market:

- Providing translations for text messages in your software
- Sometimes adjusting screen layout to fit longer text

8-What is the difference between ViewState, Session, Cookie, and Application ?

The Application Object: The Application object stores data that is shared across the application and not for a specific user. Whereas every page request gets its own Request and Response objects, all requests for ASP pages in a Web application share the same Application object. This object is created the first time an ASP page is requested from the application after the Web server starts up, and is destroyed when the Web server shuts down, or when the Web application is unloaded manually in the IIS management console. Because this object persists from one page request to another, it can be used to store data that you want to share with all other pages in your application.
Syntax: Application("varName") = value

The Session Object: The Session object is very similar to **the Application object**, as it allows you to store values that are shared between all the pages of your site. The main difference between the two is that, where a single **Application object** is shared by all pages and all clients that access your site, each client (browser) is assigned its own Session object. Thus, a Session object must be created for each user session that occurs on your Website.
Syntax: Session("username") = "Aayush Puri"

The View State: The ViewState allows ASP.NET to repopulate form fields on each postback to the server, making sure that a form is not automatically cleared when the user hits the submit button. All this happens automatically, unless you turn it off, but you can actually use the ViewState for your own purposes as well. Please keep in mind

though, that while cookies and sessions can be accessed from all your pages on your website, ViewState values are not carried between pages. StateBag implements the view state and manages the information that ASP.NETpages and embedded controls persist across successive posts of the same page instance.
Syntax: ViewState("FontSize") = value

Cookie: Cookie is one of several ways to store data about web site visitors during the time when web server and browser are not connected. Common use of cookies is to remember users between visits. Practically, cookie is a small text file sent by web server and saved by web browser on client machine.
Syntax: Response.Cookies["MyCookieName"].Value="MyCookieValue";

Querystring: Query string is used to pass the values or information form one page to another page.
Syntax: Request.QueryString(variable)[(index)|.Count]

9-Where is the ViewState information stored ?

View state data is stored in the client side(Webpage) in the form of a hidden control(HTML hidden field) named "__VIEWSTATE" and View State Data is stored in Base64 String encoded format which can be further decoded.

10-What is the default timeout for a Cookie ?

The default Expires value for a cookie is not a static time, but it creates a Session cookie. This will stay active until the user closes their browser/clears their cookies. You can override this as required.

11-Describe the complete lifecycle of a Web page ?

When an ASP.NET page runs, the page goes through a life cycle in which it performs a series of processing steps. These include initialization, instantiating controls, restoring and maintaining state, running event handler code, and rendering. It is important for you to understand the page life cycle so that you can write code at the appropriate life-cycle stage for the effect you intend. More Info…

12-What events are fired when a page loads ?

The following events fire when a page loads: Init() - Fires when the page is initializing. LoadViewState() - Fires when the view state is loading. LoadPostData() - Fires when the postback data is processing. Load() - Fires when the page is loading. PreRender() - Fires at the brief moment before the page is displayed to the user as HTML. Unload() - Fires when the page is destroying the instances of server controls.

13-What is the "appSettings" Section in the "web.config" file?

we can define user-defined values. Example below defined is "Connection String" section, which will be used through out the project for database connection.

14-What is Role-based security ?

Roles are often used in financial or business applications to enforce policy. For example, an application might impose limits on the size of the transaction being processed depending on whether the user making the request is a member of a specified role. Clerks might have authorization to process transactions that are less than a specified threshold, supervisors might have a higher limit, and vice-presidents might have a still higher limit (or no limit at all). Role-based security can also be used when an application requires multiple approvals to complete an action. Such a case might be a purchasing system in which any employee can generate a purchase request, but only a purchasing agent can convert that request into a purchase order that can be sent to a supplier.

15-What is the difference between HTML and Web server controls ?

HTML controls on an ASP.NET Web page are not available to the web server. HTML Server controls. You can add the attribute runat="server" to any HTMLcontrol, such cases it will be an HTML server control.

16-Give some examples about the validation controls ?

Validation server controls are a series of controls that help you validate the data that the user enters into the other controls that are provided with ASP.NET. **They** determine whether the form can be processed based upon the rules that you define in the validation server controls.

17-What are the different ways to send data across pages in ASP.NET ?

Query String – HttpPost - Public Properties – Controls - session - Cookies - Server.Transfer

18-What is the use of web.config ?

Web.config is an application **configuration** file of The Official Microsoft ASP.NET Site **written** in XML. It stays is the root directory of application and is responsible for controlling the application's behaviour.

19-What is the difference between machine.config and web.config ?

Web.**config** is the file for the local **settings** to be applied for a **website** which store configuration data in XML format. The **settings** of **Machine**.**config** file are applied to the whole asp.net applications on your server whereas the **settings** made **in the Web**.**config** file are applied to that particular **web** application only.

سيتم تحديث الكتاب بمشيئة الله تعالى

وطلبي الوحيد هو

الدعاء في ظهر الغيب