Question 1: What is meant by CLR?

**Answer:** CLR is a runtime provided by .NET. It allows us to execute the program on the .Net platform. The CLR provides "S*imple Application Performance, Safety, Multiple Language Support, Good Performance, etc*".

Question 2: What is meant by ASP.NET?

**Answer:**ASP.NET is open source server-side web application framework designed for web development to produce dynamic web pages.

Question 3: What is the difference between STORED PROCEDURES and FUNCTIONS?

**Answer**

|  |  |
| --- | --- |
| **Function** | **Stored Procedures** |
| It supports only Input Parameters. | It supports both Input and Output Parameters. |
| We can write any T-SQL statements which will not modify the existing Data-Base. | We can write any T-Sql statements.ex: .dml,.dql,.ddl |
| We can call Functions using Select statement. using Select Statement. | We can not call Stored Procedures |
| Functions can be called from Stored Procedures. | Stored Procedures can not call from Functions. |

Question 4: What is the difference between ABSTRACT CLASS and INTERFACE?

**Answer**

|  |  |
| --- | --- |
| **Abstract Class** | **Interface** |
| It has Constants, Members without Method Body. | It has only Constants without Method Body. |
| We can use any Access Modifiers for Visibility [Public, Private, Internal, Protected]. | The methods of an Interface must be Public only. |
| Abstract contains Constructors. | Interface does not contain Constructors. |

Question 5: What is the difference between AS and IS keywords?

**Answer**

|  |  |
| --- | --- |
| **IS** | **AS** |
| Is Operator is used to Check the Compatibility of an Object with a given Type and it returns the result as a Boolean (True Or False). | As Operator is used for Casting Object to a given type Or Class. |

Question 6: What is the difference between QUEUE and STACK?

**Answer**

|  |  |
| --- | --- |
| **Stack** | **Queue** |
| A Stack is a Last-In First-Out (LIFO) container. | A Queue is a First-In First-Out (FIFO) container. |
| Stack is a collection of items. | Queue is an ordered collection of items. |

Question 7: What is the difference between a STRUCT and a CLASS?

**Answer**

|  |  |
| --- | --- |
| **Struct** | **Class** |
| Structs are value types. | Classes are reference types. |
| Structs cannot support inheritance. | Classes can support inheritance |
| Structs are passed by value (like integers). | Classes are reference (pointer) types. |

Question 8: What do you mean by AUTHENTICATION and AUTHORIZATION?

**Answer:**Authentication is the process of validating a user on the credentials (username and password) and Authorization performs after Authentication. After Authentication a user will be verified for performing the various tasks, access is limited and it is known as Authorization.

Question 9: What is the global assembly cache (GAC)?

**Answer:**GAC is a machine-wide cache of assemblies that allows .NET applications to share libraries. GAC solves some of the problems associated with dll’s (DLL Hell).

Question 10: What is Boxing/Unboxing?

**Answer:**Boxing is used to convert value types to object.

1. **int** x = 1;
2. **object** obj = x ;

Unboxing is used to convert the object back to the value type.

1. **int** y = (**int**)obj;

**Note:**Conversion of Boxing and UnBoxing reduces Application Performance.

Question 11: What is garbage collection?

**Answer:** Garbage collection is the process of managing the allocation and release of memory in your applications.  
  
**NOTE:**We can also call Garbage Collection explicitly.

Question 12: What is meant by overloading and overriding?

**Answer:**Overloading is when you have multiple methods, with the same name but different signatures. Overriding is a principle that allows you to change the functionality of a method in a child class.

Question 13: How to find the 2nd Highest salary using Query?

**Answer**  
  
**Method 1**

1. **select** \* **from** employees emp1 **where** 1 = (**select** count(**DISTINCT**(emp2.salary)) **from** employees emp2 **where** emp2.salary > emp1.salary)

**Method 2**

1. **select** **top** 2 salary **from** employees emp **order** **by** sal **desc**

Question 14: Write a program to print \* ?

\* \*  
\* \* \*  
\* \* \* \*  
  
**Answer**

1. Static **void** main(**string**[] Args)
2. {
3. **int** num = 1;
4. **for** (**int** i = 0; i < 4; i++)
5. {
6. **for** (**int** j = 0; j < num; j++)
7. {
8. console.write("\*");
9. }
10. num++;
11. console.writeline();
12. }
13. console.readline();
14. }

Question 15: Explain ViewState?

**Answer:**It is a .NET mechanism to store the posted data among postbacks. It allows the state of objects to be stored in a hidden field on the page, saved on client side and transported back to server whenever required.

Question 16: Difference between Response.Redirect and Server.Transfer?

**Answer  
  
Response.Redirect**  
A new request is generated from client-side for redirected page. It's a kind of additional round trip. As new request is generated from client, so the new URL is visible to user in browser after redirection.  
  
**Server.Transfer**  
  
A request is transferred from one page to another without making a round trip from client. For the end user, URL remains the same in browser even after transferring to another page.

Question 17: What are value types and reference types?

**Answer:**Value types are stored in the Stack whereas Reference types stored on heap.

**Value Types:** int,enum,byte,decimal,float,long.  
**Reference Types:**String,class,interface,object.

Question 18: What is the difference between application exception and system exception?

**Answer:** The difference between application exception and system exception is that system exceptions are thrown by CLR and application exceptions are thrown by applications.

Question 19: What is the difference between Primary key and unique key?

**Answer:**Primary key does not allow the null values but unique key allows one null value. Primary key will create clustered index on column but unique key will create non-clustered index by default.

Question 20: What is the difference between constants, read-only and, static?

**Answer**  
**Constants:** The value can’t be changed.  
**Read-only:** The value will be initialized only once from the constructor of the class.  
**Static:** Value can be initialized once.

Question 21: What is the default timeout for a Cookie?

**Answer:** The default time duration for a Cookie is 30 minutes.

Question 22: What is a Cookie? Where is it used in ASP.NET?

**Answer:**Cookie is a lightweight executable program, which the server posts to client machines. Cookies store the identity of a user at the first visit of the Web site and validate them later on the next visits for their authenticity. The values of a cookie can be transferred between the user's request and the server's response.

Question 23: How many types of Cookies are available in ASP.NET?

**Answer:**There are two types of Cookies available in ASP.NET,

* **Session Cookie:** Resides on the client machine for a single session until the user does not log out.
* **Persistent Cookie:** Resides on a user's machine for a period specified for its expiry, such as 10 days, one month, and never.  27)What is the use of the Global.asax file?

The Global.asax file executes application-level events and sets application-level variables.

Question 24: What events are fired when a page loads?

**Answer:**The following events fire when a page loads,

* Page\_Init() - Fires when the page is initializing.
* Page\_LoadViewState() - Fires when the view state is loading.
* Page\_LoadPostData() - Fires when the postback data is processing.
* Page\_Load() - Fires when the page is loading.
* Page\_PreRender() - Fires at the brief moment before the page is displayed to the user as HTML.
* Page\_Unload() - Fires when the page is destroying the instances of server controls.

Question 25: What is meant by Cursor in C#?

**Answer:**Cursor is an icon and it displays when a user moves a mouse, trackball or a pen. It can be managed in C# by Cursors class. It is present System.Windows.Forms namespace.

**C# Code**  
*button1.Cursor = Cursors.Hand;  
listBox1.Cursor =Cursors.No;*  
  
**Creating a Cursor:** Cursor is not a typical Windows Forms control. It is used as a helper control and does not have a user interface or design view. The Cursor class represents a cursor and it is created either using the Cursors class or load a cursor from a file. The following code snippet creates a cursor.  
  
*Cursor cur = Cursors.WaitCursor;  
this.Cursor = cur;*

Question 26: What is meant by COLLECTIONS in C#?

**Answer:**Collection classes are normally used to hold collections of values or objects in memory. In collection classes, elements are inserted using either the Add orInsert method, and deleted using the RemoveAt method. Finally, collections can be iterated over using the foreach statement.

1. ArrayList
2. HashTable
3. SortedList
4. BitArray
5. Queue

Question 27: What are the various types of Authentication?

**Answer:**There are 3 types of Authentication namely Windows, Forms and Passport Authentication:

* **Windows authentication:** It uses the security features integrated in Windows NT and Windows XP OS to authenticate and authorize Web application users.
* **Forms authentication:** It allows you to create your own list of users and validate their identity when they visit the Web site.
* **Passport authentication:** It uses the Microsoft centralized authentication provider to identify users. Passport allows users to use a single identity across multiple Web applications.

Question 28: What are the various session state management options provided by ASP.NET?

**Answer:** ASP.NET provides two session state management:

* **In-Process state management:**In-Process stores the session in memory on the web server.
* **Out-of-Process state management:**Out-of-Process stores data in an external data source. This data source may be a SQL Server or a State Server service.

Question 29: What are the validation controls available in ASP.NET?

**Answer:**ASP.NET validation controls are the following:

* **RequiredFieldValidator:** This validates controls if controls contain data.
* **CompareValidator:** This allows checking if data of one control match with other control.
* **RangeValidator**: This verifies if entered data is between two values.
* **RegularExpressionValidator**: This checks if entered data matches a specific format.
* **CustomValidator:**Validate the data entered using a client-side script or a server-side code.
* **ValidationSummary:** This allows developer to display errors in one place.

1. What is the sequence of execution of the ASP.NET page life cycle?

The simple way is to remember SILVER.

* S (It is not counted)
* I (Init)
* L (Load)
* V (Validate)
* E (Event)
* R (Render)

Read more [here](https://msdn.microsoft.com/en-us/library/ms178472(v=vs.85).aspx).

2. What is the difference between a Hash Table and a Dictionary?

The main differences are listed below.

Dictionary,

* Returns an error if the key does not exist
* No boxing and unboxing
* Faster than a Hash table

Hashtable,

* Returns NULL even if the key does not exist
* Requires boxing and unboxing
* Slower than a Dictionary

3. How to use View state?

1. **string** str = "Sibeesh Passion";
2. **if**(ViewState["SampleText"]==**null**)
3. {
4. ViewState["SampleText"] = str;
5. }

4. What are the state management techniques used in .NET?

**Client-side**

* Hidden Field
* View State
* Cookies
* Control State
* Query Strings

**Server-side**

* Session  
    
  1. In Proc mode
  2. State Server mode
  3. SQL Server mode
  4. Custom mode
* Application.

Read [here](http://www.codeproject.com/Articles/492397/State-Management-in-ASP-NET-Introduction).

5. How can we create a new table in SQL with only the structure?

Here is the query to do that.

**Select \* Into<B>From<A>Where1 = 2**

Points to be noted:

* A is the source table.
* B is the destination table.
* The condition 1=2 is to prevent the data from being copyied.

6. How to add a button dynamically to a grid view?

1. Button myButton = newButton();
2. myButton.Text = "Hai";
3. myGrid.Controls.Add(myButton);

7. How to find a control inside a GridView?

1. Button btnTest = (Button) myGrid.Rows[0].Cells[1].Controls[1].FindControl("myButton ");

Here we are finding the control myButton from the 0th row first cell.

8. What are abstract and interface? Provide actual examples.

Please read [here](http://www.codeproject.com/Questions/43970/Real-world-examples-of-abstract-classes-and-interf).

9. What is partial class?

There are the following situations of when splitting a class definition is desirable:

* To work with large projects.
* To split the class definitions as we needed with the keyword partial.

10. How to use a partial class?

1. **public** partial **class** DailyExpenses
2. {
3. To make it more real, let us consider **this** **class** **is** used by the Husband .
4. He will add his expenses (**in** programming life , his codes )
5. **public** **void** AddExpensesByHus()
6. {
7. }
8. }
9. **public** partial **class** DailyExpenses
10. {
11. To make it more real, let us consider **this** **class** **is** used by the Wife.
12. She will add his expenses (**in** programming life , her codes )
13. **public** **void** AddExpensesByWife()
14. {
15. }
16. }

11. How to remove a constraint from a table in SQL Server?

1. **ALTER** **TABLE** MyTab **DROP** **CONSTRAINT** myConstraint

12. How to create Table Variables In T-SQL?

Normally the syntax to create a table variable is the same as to create a table statement.

1. **DECLARE**@tabVar **TABLE**
2. (
3. Your fields here
4. )

13. How can you delete a duplicate record from a table in SQL?

There are so many ways to do this. Here I am sharing what I use when I get that kind of situation.

I will create a temp table.

Copy the distinct data from the existing table to the temp table.

Empty the data in the existing table.

Insert the data from the temp table to the source table.

Here is the query to do that:

1. select distinct \* into #tempTab From Address\_Tab
2. delete from Address\_Tab
3. insert into Address\_Tab
4. select \* from # tempTab
5. drop table # tempTab

14. When to use an override and new in C#?

* We can use override when there is virtual/abstract/override type of method in base class.
* We can use New when there is no virtual/abstract/override type of method in base class.

## ****1. What is the .Net framework and how does it work?****

It is a virtual machine that executes a managed code. The code is compiled from C# or VB .NET and is executed by the CLR (Common Language Runtime).

Its working is as follows:

* You create a program in C # or VB.Net and compile it. The code is then translated to CIL (Common Intermediate Language).
* The program is assembled into bytecode to generate a CLI (Common Language Infrastructure) assembly file of.exe or .dll format.
* When you run the program (or the DLL), it is executed by the .Net framework CLR (Common Language Runtime). Since the code isn’t directly run by the operating system, it is called “Managed Code”.
* The .Net Framework CLR, through the JIT (Just-In-Time) Compiler, is responsible for compiling this code managed in the intermediate language. The compiled code is then sent to the native machine language assembler for the CPU to execute it.

The CIL (Common Intermediate Language) is the language that understands the.Net Framework.

C # and VB .Net are languages that we understand as humans.

C # and VB .Net are translated to CIL.

## ****2. What is Heap and what is Stack?****

* Both are memory locations, wherein Heap is global and Stack is local.
* The Heap is application level while the Stack is thread-level.
* The Stack has a defined first-in-first-out stack structure, while the Heap does not have a defined data structure.
* Its size is defined at the time of its creation. For Heap, the size is defined when starting the application and for Stack, when creating a thread.
* Both can grow dynamically.
* The Stack is faster than the Heap. A stack is in “cache” and doesn’t have to synchronize with other threads like the Heap.
* The Stack stores values while the Heap stores objects.

## ****3. What is Garbage Collector?****

Garbage Collector is an automatic process of memory release. When memory goes low, it goes through the Heap and eliminates the objects no longer in use. It frees up memory, reorganizes remaining threads and adjusts pointers to these objects, both in Heap and Stack.

* [Asp.Net core 2.0 web API basic authentication tutorial step by step](https://beetechnical.com/rest-api/how-to-validate-rest-api-using-basic-authentication-in-web-api-net-core/)
* [How to use Global Query Filter in Entity Framework core 2.0](https://beetechnical.com/entity-framework/how-to-use-global-query-filter-in-entity-framework-core-2-0/)
* [ASP.NET Dependency Injection – How to Create & Use?](https://beetechnical.com/design-patterns/dependency-injection-in-asp-net-core/)
* [Routing in MVC | Attribute routing in MVC](https://beetechnical.com/web-api/multiple-ways-to-build-routing-in-asp-net-core/)

## ****4. What is a delegate?****

It is the definition of a method that encapsulates certain arguments and type of return. It allows passing a method as an argument of a function, as long as it matches its specific signature.

**[Related:  MYSQL Interview Questions and Answers for Developers - Part 2](https://beetechnical.com/recent/mysql-questions-and-answers-for-the-interview-part-2/" \t "_blank)**

### **5. What is LINQ?**

It is standardization to consult data and convert it into objects, regardless of the source. It is a query manager for databases, XML and enumerable collections using a single language.

### **6. How does LINQ work?**

Internally build the correct query (in the case of databases) or generate the corresponding operations on the collections or parse the XML and returns the relevant data. It encapsulates all these behaviors and provides a single implementation, in this way, we can use the same queries, the same language, independently of the underlying data source.

### **7. What are the deferred execution and the immediate execution in LINQ?**

A deferred execution encapsulates a query’s definition without executing it till the data is used at runtime. However, an immediate implementation calls the query at the same moment of its definition.

By default, the executions are deferred but we can do them immediately by calling “To List ()”. For example, in this way, a list of objects will be executed and returned to us when we define it.

### **8. What are an object and a class?**

An object is an instance of a class, and a class is a template for creating objects. Class is the definition of an object, the description of its characteristics and operations, its properties and its methods. An object has an identity because its characteristics have values.

### **9. What are an inheritance, polymorphism, and encapsulation?**

Inheritance is the ability to reuse definitions from one class in another and to base one class on another.

Polymorphism helps declare the same method within a class with different arguments or return types.

Encapsulation is to be able to expose only the methods, property and arguments necessary to use the operations of a class. However, the detailed implementation remains private, hidden to other objects.

### **10. What is the difference between an abstract class and an interface?**

* An abstract class can contain both public and private constructors, methods, and fields. On the contrary, the interface contains only methods and public properties.
* You can only inherit from an abstract class, but implement many interfaces.
* An interface defines behavior, something that the class that implements it can do. Contrary, an abstract class defines what the class is and what it represents.
* You can’t instantiate anyone.
* An abstract class is useful when creating components, making a partial initial implementation and a specific definition. This leaves you free to implement other methods.

### **11. Difference between public and static modifiers.**

To invoke a method, field, or static property, you don’t need to instantiate the class.

On the other hand, to invoke a public method, you need an instance of a class.

* [Four ways to select second highest salary in SQL](https://beetechnical.com/interview-questions/four-ways-to-select-second-highest-salary-in-sql/)
* [Top 10 Business Analyst Interview(BA) Questions & Answers 2019](https://beetechnical.com/interview-questions/business-analyst-interview-questions-you-should-know-about/)
* [5 Must have DevOps Skills that Organizations are Looking for](https://beetechnical.com/interview-questions/devops-interview-here-are-the-must-have-skills/)
* [Microsoft Machine Learning | ML.NET 0.6, Is there anything new?](https://beetechnical.com/interview-questions/ml-net-0-6-how-is-it-better-than-the-previous-versions/)
* [Popular Questions from IT interviews on the C ++ language](https://beetechnical.com/interview-questions/popular-questions-from-it-interviews-on-the-c-language/)

**[Related:  Interface vs Abstract class in C#](https://beetechnical.com/recent/interface-vs-abstract-class-in-c/" \t "_blank)**

### **12. What is a sealed class?**

It is a class that is not inheritable. A sealed class comes in use for a super specialized class, by design, and prevents modification by overwriting.

### **13. What is a “jagged array”?**

It is an arrangement of arrangements.

### **14. What is serialization?**

Serialization converts an object to a data stream. However, for this, you must implement ISerialize.

### **15. What is the difference between constants and read-only variables?**

For constants, the compilation contains declaration and initialization. Its value cannot change. For read-only variables, the runtime execution contains the assignment of values.

### **16. Explain Mutex**

Threads share a mutually exclusive resource manager, Mutex. It ensures that only one thread at a time makes use of one resource (one object) at a time. It is like a moderator that controls the microphone and gives the word to one person at a time. Thus, Mutex grants access to resources one thread at a time. For this, it puts the threads that want to access resources “on hold” until those are in use.

### **17. What is immutability, what is it for and how is it codified?**

The ability of objects not to change their state, once created, helps improve the maintainability of the code. When a mutable object encapsulates its changes without being explicit in the code, following the flow becomes difficult. The level of difficulty increases in case of multi-threaded applications. To create immutable objects, pass the arguments for their creation in the constructor; make their properties read-only later.

### **18. What is the difference between Override and Overload in a method?**

Override is to overwrite the method with the same signature (parameters and return type) but different functionality. Overwriting requires a “virtual” declaration of the method.

On the other hand, overloading refers to coding several versions of the same method. Though the “virtual” declaration for a method is not necessary to overload, it requires a different signature (parameters and/or return value).

### **19. What is the difference between struct and class?**

A class is a definition of an object and is inheritable. A structure, on the other hand, defines a type of data and is non-inheritable.

### **20. What is the difference between ODBC and ADO?**

Open Database Connectivity is a standard for managing database operations in applications. The standard uses the same methods for Oracle as for Mysql. For example, it declares the connection with particularity at the user or operating system level.

ADO is a set of .Net libraries for data management, including ODBC connections. For ADO, ODBC is a driver.

### **21. What is the difference between encrypting a password and applying a hashing?**

It is quite difficult (almost impossible) to decrypt a hashing (MD5 or SHA1, for example). The process of password validation compares the password in plain text with a hash to the stored one.

**[Related:  Ace up Your Next Interview with these oops interview questions and answers](https://beetechnical.com/oops/oops-interview-questions-and-answers/" \t "_blank)**

Conversely, one can decrypt an encrypted password with access to the keys and the encryption algorithms (such as Triple-DES).

* [Factory design pattern Complete guide 2019](https://beetechnical.com/design-patterns/factory-design-pattern-complete-guide-2019/)
* [ASP.NET Dependency Injection – How to Create & Use?](https://beetechnical.com/design-patterns/dependency-injection-in-asp-net-core/)
* [How to implement repository pattern in c# | Repository pattern in MVC 5](https://beetechnical.com/net/implement-repository-pattern-in-net/)
* [State Design Pattern – Use, Advantages, & Disadvantages](https://beetechnical.com/design-patterns/state-design-patterns-when-to-use-pros-and-cons/)
* [What is Domain model in Domain Driven Design?](https://beetechnical.com/net/domain-model-in-domain-driven-design/)

### **22. What is Reflection and what is it for?**

It is the ability to read, instantiate, and invoke the properties & methods of an assembly’s classes. It is especially useful when we do not have the source code for classes, only their assembly.

### **23. What is a design pattern and what is it for? Give some examples**

It is a reusable template to solve a common problem at the design level. It is not the code but best practices to codify a solution. Some examples are Singleton, Abstract Factory, Observer or Pub/Sub, Model View Controller, Model View Presenter, and Model-View View-Model.

### **24. Why do we use the “using” statement?**

We use the “using” statement to make sure that we release the resources of the object in use. It always calls “Dispose of” when it finishes its block of code.

### **25. What is a variable of implicit type and what is its scope?**

It is a variable that doesn’t require type declaration since the compiler automatically determines its type. Its scope is local, within a method. It only allows inferring the kind the first time it assigns a value to the second. However, if the type is different, it throws an error.

[](https://i1.wp.com/beetechnical.com/wp-content/uploads/2018/09/6.jpg?ssl=1)

### **26. What is an anonymous method and how is it different from a lambda expression?**

For an anonymous method, the declaration comes before its use and implementation through a delegate. Also, this method doesn’t require a name.

A lambda expression refers to an anonymous method in a single line, elegantly replacing the representative for this function.

### **27. What is the Native Image Generator?**

It is a tool that compiles the .Net assemblies to machine code for a specific processor. In this way, it improves its performance since the JIT no longer intervenes.

### **28. Is the JIT an interpreter?**

No, the JIT is not an interpreter. It is a compiler at runtime that improves performance compiling method by method only once. If the method is called a new account, the native code already compiled is used. However, an interpreter executes the same every block of code.