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Top 20 Advanced Dotnet Interview Questions and Answers

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Advanced Dotnet Interview Questions and Answers

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1. What is the .NET framework?

One platform for developing software that encourages *object-oriented programming* is the .NET framework. It provides services for networking, memory management, security, and type safety.

2. What is JIT and how is it related to .Net?

Just In Time, is the abbreviation for JIT. The CLR compiler is in charge of translating .NET applications written in various languages into machine code, which allows the programs to run. It supports numerous platforms and expedites the execution of code.

3. In .Net, what does asynchronous programming mean?

ASP.NET Core makes use of the async and awaits keywords to facilitate asynchronous programming. Asynchronous programming *enhances the responsiveness* of an application by enabling the execution of numerous tasks simultaneously without interrupting the main thread.

4. In .Net, what is parallel programming?

The Parallel class and the Task Parallel Library (TPL) are two tools that ASP.NET Core provides for parallel programming. By enabling the *simultaneous execution of several tasks* across multiple processors, parallel programming enhances the performance of the application.

5. What is FCL?

The *Framework Class Library*, or FCL for short, is a group of reusable kinds that are part of the.NET Framework. These types include classes, interfaces, and data types. Because it gives access to system functions, it is utilized to construct a wide range of

applications.

6. Explain Locking and Synchronization

Many locking and synchronization mechanisms are available in ASP.NET Core, such as the Interlocked class, the Monitor class, and the lock keyword. These methods *guard against race problems* and enable several threads to *safely access* shared resources.

7. What distinguishes a heap from a stack?

Static memory is allocated via the stack, and access to it is quick and easy to manage. Heap is utilized for *run-time dynamic memory allocation* and memory allocation to variables. Compared to the stack, accessing heap memory is more difficult and takes longer.

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8. Define concurrency control in .Net.

Through the use of optimistic concurrency control (OCC) design and transactional memory, ASP.NET Core facilitates concurrency control. The use of concurrency control guarantees that *different threads can access and alter shared resources* independently of one another.

9. What distinguishes a reference type from a value type?

Value Types and Reference Types are the two types in the.NET Framework. A *value type* has its own memory allocation and is kept in the stack where it contains the data. A *reference type*, on the other hand, is kept in the heap and carries a pointer to a different memory location where the actual data is kept.

10. What distinguishes systems.StringBuilder from system.string?

System.a.string has a set length and is immutable, but *StringBuilder* allows for variable length and mutability. While the size of the *.stringbuilder* can be altered, the *.string* cannot have its size altered.

11. What is BCL?

The acronym for *Base Class Library* is BCL. Value types, interfaces, and classes are included. It serves as the basis for creating controls, components, and applications for the.NET Framework.

12. What is a cross-page posting?

When constructing a multi-page form to gather user data, cross-page posting is utilized to submit a form to an alternate page. The *PostBackURL* feature allows you to define the page to post to.

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13. Differentiate constants and read-only variables in .Net.

Although read-only variables and constants have many things in common, they also differ in a few significant ways:

- While read-only variables are evaluated at runtime, constants are evaluated during compilation.
- Read-only variables can store reference-type variables, whereas constants can only support value-type variables (strings being the lone exception).
- Read-only variables are typically used when the value of the variable is unknown before run time, and constants should be used when the value is not changing throughout run time.
- Only at declaration or in a constructor can read-only variables be initialized.

14. What is a delegate in .NET?

The equivalent of a function pointer in C or **C++** is a delegate in .NET. Programmers can encapsulate a method reference inside a delegate object by using a delegate.

This removes the requirement to know at build time which method will be called; code that receives the delegate object can then call the selected method. Furthermore, we may construct custom events inside of classes using delegates.

For example,

```
public delegate void FooDelegate();

class FooClass

{

   // custom event

   public event FooDelegate FooEvent;

}

FooClass FooObj = new FooClass()

FooObj.FooEvent += new FooDelegate();
```

15. Explain deferred execution vs. immediate execution in LINQ with an example.

Deferred execution in LINQ refers to the fact that the query is not run at the stated time. The query is expressly made a variable to accomplish this. After doing this, the query specification is kept in the variable and iteratively iterated over before the query is executed.

```
DataContext productContext = new DataContext();

var productQuery = from product in productContext.Products

    where product.Type == "SOAPS"

    select product;

foreach (var product in productQuery)  // Query executes HERE

{
```

```
    Console.WriteLine(product.Name);  }
```

A query can also be made to run immediately. If the database is updated often, for instance, this could be helpful. Additionally, the program's logic must guarantee that the results you are reading are those that were returned at the line in your code where the query was provided.

When utilizing a method like Average, Sum, Count, List, ToList, or ToArray, immediate execution is frequently imposed.

For Example,

```
DataContext productContext = new DataContext();

var productCountQuery = (from product in
productContext.Products

    where product.Type == "SOAPS"

    select product).Count();   // Query executes HERE
```

16. What are the design principles used in .NET?

.Net applies the SOLID design concept, which entails the following:

- SRP: Single responsibility principle
- OCP: Open-Closed Principle
- LSP: Liskov substitution principle
- ISP: Interface segregation principle
- DIP: Dependency inversion principle

17. What is object pooling?

The idea of object pooling allows for the best possible use of scarce resources by utilizing software features. In a pool or group, of objects in memory, the threads, connections, and objects that are ready to use are kept for later usage.

It is taken from the pool and allocated for the request when a new object is created. Pooling promotes scalability and performance improvement.

18. Explain client-side and server-side validations in web pages.

JavaScript and VBScript are used at the client end to perform client-side validations, which improve the user experience. In the user's browser, the inputs for client-side validation are verified.

On the other hand, feedback is sent through a newly created webpage that is dynamically constructed, and server-side validations are performed using PHP and **ASP.Net** at the server end.

19. What distinguishes dataset.copy from dataset.clone?

Dataset.clone does not replicate any data; instead, it copies the entire DataSet structure, including all *DataTable* schemas, relations, and constraints. *Dataset.copy* is a deep copy of the original *DataSet*, with the data and structure duplicated.

20. Can you distinguish between a Task and a Thread in .NET?

With its own stack and kernel resources, the thread emulates a true OS-level thread and provides the maximum amount of control.

In addition to setting thread-level properties like the stack size, apartment state, or culture, you may choose whether to Abort(), Suspend(), or Resume() a thread.

A TaskScheduler runs a Task class from the Task Parallel Library to produce a result and enable completion tracking.

21. If num is a positive integer, To find out if anything is a perfect square or not, write a C# function without utilizing any built-in library functions.

A function in the code called IsPerfectSquare determines whether a given number is a perfect square. The method returns false if the number is less than 1 because it is not a perfect square. The

square root of the number is then estimated by the code using a procedure. The method returns true if the square of this estimate is equal to the original number, indicating that the number is a perfect square.

```
public class Solution

{

  public bool IsPerfectSquare(int num)

  {

    if (num < 1)

    {

      return false;

    }

    long x = num;

    while (x * x > num)

    {

      x = (x + num / x) / 2;

    }

    return x * x == num;

  }

}
```

22. Describe the meaning of .NET Core Middleware.

Middleware is an essential software layer that serves as a dynamic link to handle requests and replies. The numerous delegates that make up this adaptable middleware are organized in an application pipeline.

To ensure a smooth and efficient flow of data, each delegate in the middleware pipeline is essential in deciding whether to transfer a request to the subsequent component and carry out particular tasks either before or after passing it.

Examine the potential of middleware to improve

communication effectiveness and software performance.

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End Note

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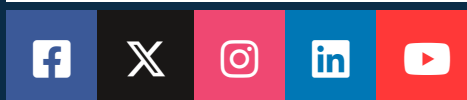Power BI

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