Ramki Consultancy

Interview Questions

Contents

C# (C Sharp)

1. What is basic difference between Delegates and Events in C#

Delegates and events both play an important role in the event-driven program. The delegates can refer to a method, and it is quite similar to the function pointer in C++. Events notify that some action has been performed. The basic difference between delegates and events is that delegates hold the reference of the methods and event provides a way to access that method using delegates.

BASIS FOR COMPARISON	DELEGATES	EVENTS
Basic	A delegate holds the reference of a method.	The event is an over-layered abstraction provided to the delegates.
Syntax	delegate return_type delegate_name(parameter_list);	event event_delegate event_name;
Keyword	A delegate is declared using a keyword "delegate."	An Event is declared using a keyword "event".
Declaration	A delegate is declared outside any class.	An event is declared inside a class.
Invoke	To invoke a method it has to be referred to the delegate.	To invoke a method it has to be assigned to the event.
Covariance and Contravariance	They provide flexibility to the delegates.	No such concept.
Event Accessor	No such concept.	Manages the list of the event handlers.
Dependency	Delegates are independent of events.	The event can not be created without delegates.

2. What is a deadlock?

A deadlock is a situation in which two computer programs sharing the same resource are effectively preventing each other from accessing the resource, resulting in both programs ceasing to function.

3. Name some of the most common places to look for a Deadlock in C#.

For recognizing deadlocks, one should look for threads that get stuck on one of the following:

- .Result, .GetAwaiter().GetResult(), WaitAll(), and WaitAny() (When working with Tasks)
- Dispatcher.Invoke() (When working in WPF)
- Join() (When working with Threads)
- lock statements (In all cases)
- WaitOne() methods (When working with AutoResetEvent/EventWaitHandle/Mutex/Semaphore

4. **Give a brief explanation on Thread Pooling in C#.**
   A collection of threads, termed as a Thread Pool in C#. Such threads are for performing tasks without disturbing the execution of the primary thread. After a thread belonging to a thread pool completes execution, it returns to the thread pool. Classes that manage the thread in the thread pool, and its operations, are contained in the System.Threading.ThreadPool namespace
5. **Explain different states of a Thread in C#?**
   A thread in C# can have any of the following states:
   - Aborted – The thread is dead but not stopped
   - Running – The thread is executing
   - Stopped – The thread has stopped execution
   - Suspended – The thread has been suspended
   - Unstarted – The thread is created but has not started execution yet
   - WaitSleepJoin – The thread calls sleep, calls wait on another object, and calls join on some other thread

ASP.Net and dot net

6. What is ASpP.net and is it same as .net

ASP.**NET** is a technology, which **works** on the .**Net** framework that contains all web-related functionalities. ... An **ASP**.**NET** web application is made of pages. When a user requests an **ASP**.**NET** page, the IIS delegates the processing of the page to the **ASP**.**NET** runtime system.

In a nutshell, the .**NET** Framework is a software framework developed by Microsoft to create, run and deploy desktop applications and server based applications, whereas **ASP**.**NET** is the extension of the **ASP** which is part of the .**NET** Framework that simplifies the structure and creation of web applications.

7. What is the basic architecture of ASP.NET

ASP.Net is a framework which is used to develop a Web-based application. The basic architecture of the ASP.Net framework is as shown below.

The architecture of the.Net framework is based on the following key components
Language – A variety of languages exists for .net framework. They are VB.net and C#. These can be used to develop web applications.
Library - The .NET Framework includes a set of standard class libraries. The most common library used for web applications in .net is the Web library. The web library has all the necessary components used to develop.Net web-based applications.
Common Language Runtime - The Common Language Infrastructure or CLI is a platform. .Net programs are executed on this platform. The CLR is used for performing key activities. Activities include Exception handling and Garbage collection.

Below are some of the key characteristics of the ASP.Net framework
Code Behind Mode – This is the concept of separation of design and code. By making this separation, it becomes easier to maintain the ASP.Net application. The general file type of an ASP.Net file is aspx. Assume we have a web page called MyPage.aspx. There will be another file called MyPage.aspx.cs which would denote the code part of the page. So Visual Studio creates separate files for each web page, one for the design part and the other for the code.
State Management – ASP.Net has the facility to control state management. HTTP is known as a stateless protocol. Let's take an example of a shopping cart application. Now, when a user decides what he wants to buy from the site, he will press the submit button.
The application needs to remember the items the user choose for the purchase. This is known as remembering the state of an application at a current point in time. HTTP is a stateless protocol. When the user goes to the purchase page, HTTP will not store the information on the cart items. Additional coding needs to be done to ensure that the cart items can be carried forward to the purchase page. Such an implementation can become complex at times. But ASP.Net can do state management on your behalf. So ASP.Net can remember the cart items and pass it over to the purchase page.
Caching – ASP.Net can implement the concept of Caching. This improve's the performance of the application. By caching those pages which are often requested by the user can be stored in a temporary location. These pages can be retrieved faster and better responses can be sent to the user. So caching can significantly improve the performance of an application.

ASP.Net is a development language used for constructing web-based applications. ASP.Net is designed to work with the standard HTTP protocol.

8. Explain State management in ASP .Net.

- State Management means maintaining the state of the object. The object here refers to a web page/control.
- There are two types of State management, Client Side, and Server side.
- Client Side – Storing the information in the Page or Client's System. They are reusable, simple objects.
- Server Side – Storing the information on the Server. It is easier to maintain the information on the Server rather than depending on the client for preserving the state.

9. What is MVC?

- MVC stands for Model View Controller. It is an architectural model for building the .Net applications.
- Models – Model objects store and retrieve data from the database for an application. They are usually the logical parts of an application that is implemented by the application's data domain.
- View – These are the components that display the view of the application in the form of UI. The view gets the information from the model objects for their display. They have components like buttons, drop boxes, combo box, etc.
- Controllers – They handle the User Interactions. They are responsible for responding to the user inputs, work with the model objects, and pick a view to be rendered to the user.

10. Explain CAS (Code Access Security).

- .Net provides a security model that prevents unauthorized access to resources. CAS is a part of that security model. CAS is present in the CLR. It enables the users to set permissions at a granular level for the code.
- CLR then executes the code depending on the available permissions. CAS can be applied only to the managed code. Unmanaged code runs without CAS. If CAS is used on assemblies, then the assembly is treated as partially trusted. Such assemblies must undergo checks every time when it tries to access a resource.

The different components of CAS are Code group, Permissions, and Evidence.

- Evidence– To decide what permissions to give, the CAS and CLR depend on the specified evidence by the assembly. The examination of the assembly provides details about the different pieces of evidence. Some common evidence include Zone, URL, Site, Hash Value, Publisher and Application directory.
- Code Group – Depending on the evidence, codes are put into different groups. Each group has specific conditions attached to it. Any assembly that matches those condition is put into that group.
- Permissions – Each code group can perform only specific actions. They are called Permissions. When CLR loads an assembly, it matches them to one of the code groups and identifies what actions those assemblies can do. Some of the Permissions include Full Trust, Everything, Nothing, Execution, Skip Verification, and the Internet.

Windows application server

11. What is an Active Directory?

1. Active Directory (https://www.educba.com/course/active-directory/) (AD) is a directory service which is used in a directory to store objects like user profiles, network information, computers. It helps to manage the network effectively with the help of Domain Controllers which are present at different locations with the Active Directory database.

Some of the functions include

- central administration with multiple geographical locations,
- authentication of users and computers in a windows domain,
- replicating Active Directory from any Domain Controller which in turn will be replicated to all other Domain Controller's.

12. What do Forests, Trees, and Domains mean in AD

- The logical divisions of an Active Directory network are known as forests, trees, and domains.
- A logical group of network objects for example computers, users, devices etc which share the same active directory database is known as a domain.
- The collection of one or more domains is known as a tree. This may also include a contiguous namespace linked in a transitive trust hierarchy.
- The collection of domains is known as the forest which shares a common global catalogue, logical structure, directory configuration and directory schema. It also defines the security boundaries for users, groups, and computers.

13. Explain what is the primary function of the domain controller?

- Primary function of the domain controller is to validate users to the networks, it also provide a catalogue of Active Directory Objects.

14. Explain what is LDAP?

- To look up for the information from the server, e-mail and another program follows or uses the internet protocol. This protocol is referred as LDAP or Lightweight Directory Access Protocol.

15. Explain what is RAID in Windows Server?

- For storing same data at a di□erent place RAID or Redundant Array of Independent Disks strategy is used.
- It is a strategy for building fault tolerance and increase the storage capacity. On separate drives it allows you to combine one or more volumes so that they are accessed by a single drive letter

SQL SERVER

16. What is recursive stored procedure?

- SQL Server supports recursive stored procedure which calls by itself. Recursive stored procedure can be defined as a method of problem solving wherein the solution is arrived repetitively.
- It can nest up to 32 levels

17. What is CHECK constraint?

- A CHECK constraint can be applied to a column in a table to limit the values that can be placed in a column.
- Check constraint is to enforce integrity.

18. What is sub query and its properties?

- A sub-query is a query which can be nested inside a main query like Select, Update, Insert or Delete statements. This can be used when expression is allowed.

Properties of sub query can be defined as

- A sub query should not have order by clause
- A sub query should be placed in the right hand side of the comparison operator of the main query
- A sub query should be enclosed in parenthesis because it needs to be executed first before the main query
- More than one sub query can be included

19. How exceptions can be handled in SQL Server Programming?

- Exceptions are handled using TRY----CATCH constructs and it is handles by writing scripts inside the TRY block and error handling in the CATCH block.

20. What are the differences between Stored Procedure and the dynamic SQL?

- Stored Procedure is a set of statements which is stored in a compiled form. Dynamic SQL is a set of statements that dynamically constructed at runtime and it will not be stored in a Database and it simply execute during run time.

Android development

21. What is the basic tool required to develop Android application

- To develop a mobile application, Android developers require some tools and this requirement is satisfied by “Android SDK” which is a set of tools that are used for developing or writing apps.
- It has a Graphical User Interface that emulates the Android environment. This emulator acts like an actual mobile device on which the developers write their code and then debug/test the same code to check if anything is wrong.

22. Briefly describe Android architecture.

Android architecture is in the form of software stack components.

- **Linux Kernel**: Linux Kernel is placed at the bottom of the software stack and is the foundation of the Android architecture. Using Linux kernel, Android provides a

connection between the other layers of the software. It helps to develop drivers like the keypad, display, audio for device manufacture, etc.

- **Hardware Abstraction Layer (HAL)**: HAL provides an interface between device drivers and API framework. It consists of library modules that are specific to the hardware component.
- **Android Runtime**: Linux kernel provides a multi-tasking execution environment so that multiple processes can execute each process runs on its own instance of Android Runtime (ART). Android has core runtime libraries like Dalvik VM specific libraries, Java Interoperability Libraries, Android Libraries, and C/C++ libraries.

23. Provide the important core components of Android.

The core components of Android operating systems are:

- Activity
- Intents
- Services
- Content Provider
- Fragment

24. Which are the dialog boxes supported by the Android platform?

Android supports four types of dialog boxes:

- AlertDialog: It has a maximum of 3 buttons and sometimes AlertDialog includes checkboxes and Radio buttons to select the element.
- ProgressDialog: It displays the progress bar or wheels.
- TimePickerDialog: Using this dialog box, a user selects the Time.
- DatePickerDialog: Using this dialog box, a user selects the Date

25. What is the AndroidManifest XML?

- Every application must have an **AndroidManifest**.**xml** file (with precisely that name) in its root directory.
- The **manifest** presents essential information about the application to the Android system, information the system must have before it can run any of the application's code.

Database Design

26. What Are the Steps To Design A Physical Model?

The steps for physical data model

- design are as follows:
- Convert entities into tables.
- Convert relationships into foreign keys.
- Convert attributes into columns.
- Modify the physical data model based on physical constraints / requirements.

27. What is an ERD?

- An entity relationship diagram (ERD) is a representation of data within a domain. It consists of entities as well as relationships between entities.

28. What is an UML?

- UML, short for Unified Modelling Language, is a standardized modelling language consisting of an integrated set of diagrams, developed to help system and software developers for specifying, visualizing, constructing, and documenting the artefacts of software systems, as well as for business modelling and other non-software systems

29. What is the difference between UML and ERD?

- The main **difference between UML and ERD** is that **UML** is a modelling language that represents a system or a software visually while **ERD** is a diagram that represents the entities and their relationships **in a** database. **UML** is a standard modelling language that helps to get a pictorial understanding of the software.

30. What are the major difference between Oracle and SQL Server?

Key Difference between Oracle vs SQL Server

- MS server used transact SQL whereas Oracle makes use of PL/SQL Procedural Language and a Structured Query Language. The main difference lies in the variables, syntax, and procedure handling along with built-in functions.

Parameters	Ms- SQL Server	Oracle
Parent Company	It is owned by Microsoft Corporation.	It is owned by Oracle Corporation.
Syntax	Simpler and easier syntaxes.	Complex and more efficient syntaxes.
Download	120 or 180 days evaluation version are available from www. Micrsoft.com/sqlserver	Opensource version can be download from otn.oracle.com
Platform support	Can install on Windows server only. But version 2017 onwards can be installed on Linux	Run on a wide variety of platforms
Language	MS-SQL uses transact SQL or T-SQL.	PL/SQL or is used by Oracle Corporation.
Job scheduling	Job Scheduling via the SQL Server Agent	Job scheduling via Oracle scheduler or OEM

Bit map indexes	No bitmap indexes base on reverse keys and functions.	Uses bitmap, indexes based on functions, and reverse keys.
Query optimization	No query optimization.	Uses Star query optimization.
Triggers	Mostly uses "after" triggers.	Uses both "after" and "before" Triggers.
Support & Trouble Shooting	Provides technical notes, bug descriptions, scripts, patches, and download at a not additional charge.	Support call which is chargeable for each support case.
Roll back	Not allowed in the transaction process.	Rollback is allowed during the transaction process.
Concurrent accesses	Concurrent accesses are not allowed when a writer is in progress which increase the wait time.	Concurrent accesses are permitted and waits time are generally less.
Change of Value	Values are changed even before commit.	Values do not change before commit.
Method	Use Row or Page blocking method. It never allows a read while the page is blocked.	Use a copy of the record so while modifying it allows reads of original data while doing the modification.
Error handling	SQL Server executes each command separately, so it will be quite difficult to make changes if any errors are encountered during the process.	Oracle treats each new database connection as a new transaction.
Human Intervention	Follows Global memory allocation so less intrusion of Database admin. Therefore, very few chances of human errors.	Follows Dynamic memory allocation. DBA has to interrupt more. So higher chances or human errors.
Parallel execution	In MS SQL server INSERT, UPDATE, DELETE statements are executed serially.	Oracle will execute INSERT, UPDATE, DELETE, and MERGE statement in parallel.
Automation support	SQL upgrade advisor is available for automation.	Database upgrade assistant available for automation.
Redo stream	Redo streams are unique to each user and database.	One redo stream at the database level.
Schemas	"Schemas" within each use database.	Many "schemas" with the instance.
Protection	Logins authenticated at the instance level and database level.	User authenticated via database credential and OS roles.
Sharability	Every database has its own, unshared disk file on the server.	All the database objects are grouped by schemas. Subset collection of database objects and all the database objects are shared between all schemas and users.
Backups	It allows full, partial and incremental backups	It allows Database, full, file level, incremental & differential backups.
Maintenance	Tables usually stored Index-organized.	Automatically update statistics and identify SQL issue

Cloud computing

31. What is a Cloud?

A cloud is a collaboration of networks, hardware, services, storage, and interfaces that help in delivering computing as a service. It has three users:

- End users
- Business management users
- Cloud service providers

32. What are the benefits of Cloud Computing?

The main benefits of Cloud Computing are:

- Data backup and storage of data
- Powerful server capabilities
- Incremented productivity
- Cost-effective and time-saving

33. What are the cloud service models?

- Infrastructure as a Service (IaaS)
- Platform as a Service (PaaS)
- Software as a Service (SaaS)

34. What are the components of Windows Azure?

Windows Azure Platform Services

- Cloud
- SQL Azure
- App Fabric: Allows fabric cloud

35. How do we migrate from our old version to new version and to cloud?

- Have some idea
- Have no idea

Cloud Computing (basics)

Ask general questions on knowledge and awareness

Troubleshooting Process

Ask general questions on knowledge and awareness

Improvement Experience

Ask general questions on knowledge and awareness

Technical communication

Assess based on the response to various questions.