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**Question 1**

**Write a short note on the evolution of .Net Framework and C# (100 words)**

The .NET Framework and C# have undergone significant evolution since their inception. Launched by Microsoft in 2002, .NET Framework initially focused on Windows applications. Over time, it expanded to support cross-platform development with the introduction of .NET Core in 2016. In 2020, .NET 5 was released, unifying .NET Core and Framework into a single, versatile platform. C#, the primary language for .NET, has seen continuous enhancements in features, performance, and versatility. With the advent of .NET 6 in 2021, the ecosystem further embraced open-source collaboration and cloud-native development, solidifying .NET's position as a modern, cross-platform framework for diverse application types.

**Question 2**

**Explain the following terms, Mono, Xamarin, COM, .Net Core, Unity C#, REST**

1. **Mono**: Mono is an open-source implementation of the .NET framework, allowing developers to run .NET applications on various platforms, including Linux, macOS, and UNIX. It was developed by Xamarin, which was later acquired by Microsoft. Mono enables cross-platform compatibility for .NET applications.

2. **Xamarin:**Xamarin is a cross-platform app development framework that utilizes the Mono runtime. It allows developers to create native mobile applications for iOS, Android, and Windows using C# and the .NET framework. Xamarin facilitates code sharing across different platforms, streamlining the development process.

3. **COM (Component Object Model):** COM is a binary-interface standard for software components introduced by Microsoft. It enables inter-process communication and object-oriented programming in a Windows environment. COM components can be developed in various languages and can be used by applications written in different languages.

4. .**NET Core:** .NET Core is an open-source, cross-platform framework for building modern, cloud-based, and internet-connected applications. It is a modular and lightweight version of the .NET framework designed for cross-platform development. .NET Core is the predecessor to .NET 5 and later versions, which were unified into a single platform.

5. **Unity C#** Unity C# refers to the programming language C# being used in the Unity game development engine. Unity supports several programming languages, but C# is the most commonly used one. It provides a powerful and flexible scripting environment for developing interactive and dynamic behaviour in Unity-based games and applications.

6. **REST (Representational State Transfer):** REST is an architectural style for designing networked applications. It uses a stateless communication model, and interactions between clients and servers are based on standard HTTP methods (GET, POST, PUT, and DELETE).

**Question 3**

**Critically, explain ANY three key functions of CLR (50 words)**

1. **Memory Management**: CLR allocates and deallocates memory for objects, manages memory fragmentation, and performs automatic memory cleanup through garbage collection.

2. **Exception Handling**: CLR provides a robust mechanism for handling exceptions, enabling structured error handling, and ensuring proper cleanup of resources in case of an error.

3. **Security**: CLR enforces code access security, verifies the permissions required to access resources, and ensures that code running in the .NET environment operates within the defined security constraints.