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**Course Title:** C#

**Course Code:** Com316

**Question**

1. The evolution of .Net framework and C#
2. Explain the following terms;
3. Mono
4. Xamarin
5. COM
6. .Net core
7. Unity C#
8. Rest
9. Critically explain the three functions of CLR

**Answer**

1. The evolution of .Net Framework and C# has marked by continuous updates and introduction of new features.

C# and .Net we’re born out of the need for a modern and powerful programming language and framework. In the late 1990s, Microsoft recognized the limitation of existing programming language and set out to create a language that could leverage the full potential of the windows platform.

C# was first introduced in 2000 as part of the .Net initiative up until 2002, when .Net officially appeared such as a component model was com (Component Object Model)

C#2.0 was released in 2005 brought several enhancements to the language. It introduced features like generics billable type.

Net framework 3.0 was released in 2007, introducing two grounds breaking features language integrated Query (LINQ) and anonymous types.

Net framework work 4.0 was released 2010 introducing parallel Extention for improved support of parallel programming and dynamic language runtime

.Net framework 6.0 was released in 2021 further enhancing performance productivity and adding new capabilities.

1. **Explaining the following terms;**

* **Mono:** it is a free and open source. Net framework compatible software framework. It is a system platform designed to allow developers to easily create cross platform applications.
* **Xamarin**: is an open source platform for building modern and performant application for (iOS, Android and windows) with .Net. It is an abstraction layer that manages communication of shared code with underlying platform codes. It’s a software company started in 2011. It offers a single language C# and runtime which works on three mobile platform.
* **COM**: (Component Object Model) is s binary interface of software component introduced by Microsoft in 1993. It is used to enable interprocess Communication (IPC) Object creation in a large range of programming language. Com is the basis of several other Microsoft technologies and framework which includes window runtime, window shell.
* **.Net core**: is a free, open source, modular cross platform framework developed by Microsoft for building modern high performance application. It is a implementation of .Net framework to be more lightweight, modular and flexible. It include a runtime a set of libraries and a development environment that support multiple programming language such as C#, Visual Basic.
* **Unity C#**: The language that’s used in unity is called C#. All the language that unity operates with are Object Oriented Scripting language have syntax or part of speech and primary part are called variable function and classes.
* **REST**: is an application programming interface (API) that conforms to the constraints of REST architectural style and allow for interact with RESTful web services. REST stands for representational state transfer was created by computer scientist Roy Fielding

1. **Key Function of CLR**

* **Debugging Support**: it is essential for identifying and fixing errors in software. Debuggers in programming environments allow developers to inspect variable, set breakpoints and trace code execution. Effective debugging accelerate the development process, enhances codes quality, and ensures robust, error free application.
* **Performance Optimization**: it involve refining code to enhance efficiency and reduce resource consumption. It encompasses techniques like algorithmic improvements, efficient data structure and code profiling. Critical for achieving faster execution lower memory usage and a more responsive user experience, optimization aims to maximize software performance.
* **Manage Code Interoperability:** refers to the ability of the Common Language Runtime (CLR) to facilitate communication between manage (.Net) and unmanage (non.Net) code. This allow seamless integration of components, written in different language, fostering, compatibility and enabling gradual migration from older technologies to the .Net ecosystem.