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**COURSE CODE –** COM316

**COURSE TITLE –** PROGRAMMING USING C#

**ASSIGNMENT QUESTION -**

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

2. Explain the following terms;

Mono, Xamarin, COM, .Net Core, Unity C#, REST

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

**Write a short note on the evolution of .Net Framework and C#**

C# is a general-purpose, type-safe, object-oriented programming language. The goal of the language is programmer productivity. To this end, C# balances simplicity, expressiveness, and performance. The chief architect of the language since its first version is Anders Hejlsberg (creator of Turbo Pascal and architect of Delphi). The C# language is platform-neutral and works with a range of platform-specific compilers and frameworks, most notably the Microsoft .NET Framework for Windows.

C# is a rich implementation of the object-orientation paradigm, which includes *encapsulation*, *inheritance*, and *polymorphism*.

**Unified type system**

The fundamental building block in C# is an encapsulated unit of data and functions called a *type*. C# has a *unified type system*, where all types ultimately share a common base type.

**Classes and interfaces**

In a traditional object-oriented paradigm, the only kind of type is a class. In C#, there are several other kinds of types, one of which is an *interface*. An interface is like a class, except that it only *describes* members.

**Memory management**

C# relies on the runtime to perform automatic memory management. The Common Language Runtime has a garbage collector that executes as part of your program, reclaiming memory for objects that are no longer referenced. This frees programmers from explicitly deallocating the memory for an object, eliminating the problem of incorrect pointers encountered in languages such as C++.

**Explain the following terms;**

1. Mono

2. Xamarin

3. COM

4. .Net Core

5. Unity C#

6. REST

1. **Mono**

Mono is a software platform designed to allow developers to easily create cross platform applications. Sponsored by Microsoft, Mono is an open source implementation of Microsoft's .NET Framework as part of the .NET Foundation and based on the ECMA standards for C# and the Common Language Runtime.

1. **Xamarin**

Xamarin is a .**NET developer platform** made up of tools, programming languages, and libraries for building many different types of application

1. **COM**

The .com domain extension in a URL stands for "commercial." It's the most widely recognized and commonly used top-level domain (TLD). The .com domain is often used by companies, e-Commerce websites and businesses of various sizes and type

1. **.Net Core**

NET Core is **a new version of .NET Framework**, which is a free, open-source, general-purpose development platform maintained by Microsoft.

1. **Unity C#**

A real-time 3D development platform for building 2D and 3D application, like games and simulations, using. NET and the C# programming language.

1. **REST**

REST is an acronym that stands for **Representational State Transfer**, and it refers to a software architecture for creating web services.

**Critically, explain any three key functions of CLR**

The Common Language Runtime (CLR) is a component of the Microsoft .NET Framework that manages the execution of .NET applications. It is responsible for loading and executing the code written in various .NET programming languages, including C#, VB.NET, F#, and others.

When a C# program is compiled, the resulting executable code is in an intermediate language called Common Intermediate Language (CIL) or Microsoft Intermediate Language (MSIL). This code is not machine-specific, and it can run on any platform that has the CLR installed. When the CIL code is executed, the CLR compiles it into machine code that can be executed by the processor.

The CLR provides many services to .NET applications, including memory management, type safety, security, and exception handling. It also provides Just-In-Time (JIT) compilation, which compiles the CIL code into machine code on the fly as the program runs, optimizing performance.

Additionally, the CLR provides a framework for developing and deploying .NET applications, including a set of libraries, called the .NET Framework Class Library, which provides access to a wide range of functionality, such as input/output operations, networking, database connectivity, and user interface design.