**Managed code and unmanaged code in .NET**

**What is Managed Code ?**

*The code, which is developed in .NET framework, is known as managed code. This code is directly executed by CLR with help of managed code execution. Any language that is written in .NET Framework is managed code.*

Managed code uses CLR which in turns looks after your applications by managing memory, handling security, allowing cross - language debugging, and so on.

Managed code is the code that is written to target the services of the managed runtime execution environment such as Common Language Runtime in .Net Technology.

The Managed Code running under a Common Language Runtime cannot be accessed outside the runtime environment as well as cannot call directly from outside the runtime environment. It refers to a contract of cooperation between natively executing code and the runtime. It offers services like garbage collection, run-time type checking, reference checking etc. By using managed code you can avoid many typical programming mistakes that lead to security holes and unstable applications, also, many unproductive programming tasks are automatically taken care of, such as type safety checking, memory management, destruction of unused Objects etc.

**What is Unmanaged Code ?**

*Unmanaged code compiles straight to machine code and directly executed by the Operating System.* *The generated code runs natively on the host processor and the processor directly executes the code generated by the compiler.* It is always compiled to target a specific architecture and will only run on the intended platform. So, if you want to run the same code on different architecture then you will have to recompile the code using that particular architecture.

This approach typically results in fastest code execution, but diagnosing and recovery from errors might difficult and time consuming in most cases. The memory allocation, type safety, security, etc needs to be taken care of by the programmer and this will lead unmanaged code prone to memory leaks like buffer overruns, pointer overrides etc.

**All code compiled by traditional C/C++ compilers are Unmanaged Code.** COM components, ActiveX interfaces, and Win32 API functions are examples of unmanaged code. Managed code is code written in many high-level programming languages that are available for use with the Microsoft .NET Framework, including VB.NET, C#, J#, JScript.NET etc. Since Visual C++ can be compiled to either managed or unmanaged code it is possible to mix the two in the same application.