COM Basics

Component Object Model: It is a *binary* (programming language neutral) standard for implementing reusable *components* (dynamically pluggable objects) which serve as building blocks for *Windows applications*.

A COM component object has following characteristics

1. The class of a COM object and each of the interfaces it implements is identified by a *globally unique identifier* (GUID). A COM GUID is a 128-bit integer generated using *Windows API*.
2. The operations of a COM object can only be consumed using an interface implemented by its class. A COM interface always extends the standard *IUnknown* interface which specifies support for *querying* an interface and *adding* and *releasing* its references.

3. The interface of a COM object is directly accessible only to a thread belonging to the *apartment* (logical boundary) in which that object was activated. A COM apartment is either *multithreaded* (MTA) which is only used by thread safe objects or *single-threaded* (STA) which supports cross-thread invocations through *messaging proxies*.
4. The class of a COM object is distributed along with its *type-library* using a *server* whose path is mapped in *Windows registry* to the GUID of that class. A COM server is either a *local server* (EXE) which can also be used as a client application or an *in-process server* (DLL) which is loaded into its client application.