**What is the difference between an ARRAY and a LIST?**

|  |  |
| --- | --- |
| Array | List |
| 1. Array is collection of homogeneous elements. | 1. List is collection of heterogeneous elements. |
| 2. For Array memory allocated is static and continuous. | 2. For List memory allocated is dynamic and Random. |
| 3. User need not have to keep in track of next memory allocation. | 3. User has to keep in Track of next location where memory is allocated. |

**Functions of the Common Type System:**

* To establish a framework that helps enable cross-language integration, type safety, and high performance code execution.
* To provide an [object-oriented](http://en.wikipedia.org/wiki/Object-oriented) model that supports the complete implementation of many programming languages.
* To define rules that languages must follow, which helps ensure that objects written in different languages can interact with each other.
* The CTS also defines the rules that ensure that the data types of objects written in various languages are able to interact with each other.
* The CTS also specifies the rules for type visibility and access to the members of a type, i.e. the CTS establishes the rules by which assemblies form scope for a type, and the Common Language Runtime enforces the visibility rules.
* The CTS defines the rules governing [type inheritance](http://en.wikipedia.org/wiki/Type_inheritance), virtual methods and object lifetime.
* Languages supported by .NET can implement all or some common data types.

### DELETE:

The DELETE command is used to remove rows from a table. A WHERE clause can be used to only remove some rows. If no WHERE condition is specified, all rows will be removed. After performing a DELETE operation, you need to COMMIT or ROLLBACK the transaction to make the changes permanent or to undo it. Note that this operation will cause all DELETE triggers on the table to fire.

### TRUNCATE:

TRUNCATE removes all rows from a table. The operation cannot be rolled back, and no triggers will be fired. As such, TRUCATE is faster and doesn't use as much undo space as a DELETE.

### DROP:

The DROP command removes a table from the database. All the table’s rows, indexes and privileges will also be removed. No DML triggers will be fired. The operation cannot be rolled back.

### [Difference between TRUNCATE and DELETE commands](http://www.orafaq.com/faq/difference_between_truncate_delete_and_drop_commands#comment-1869):

1. TRUNCATE is a DDL command whereas DELETE is a DML command.

2. TRUNCATE is much faster than DELETE.

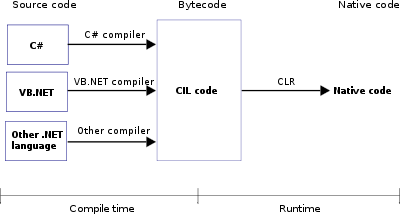
Reason: When you type DELETE. All the data get copied into the Rollback Table space first. Then delete operation get performed. That’s why when you type ROLLBACK after deleting a table, you can get back the data (The system gets it for you from the Rollback Table space). All this process takes time. But when you type TRUNCATE, it removes data directly without copying it into the Rollback Table space. That's why TRUNCATE is faster. Once you truncate you can’t get back the data.

3. You can’t rollback in TRUNCATE but in DELETE you can rollback. TRUNCATE removes the record permanently.

4. In case of TRUNCATE, Trigger doesn't get fired. But in DML commands like DELETE, Trigger get fired.

5. You can’t use conditions (WHERE clause) in TRUNCATE. But in DELETE you can write conditions using WHERE clause.

# Common Language Runtime:



The Common Language Runtime (CLR) is the [virtual machine](http://en.wikipedia.org/wiki/Virtual_machine) component of [Microsoft's](http://en.wikipedia.org/wiki/Microsoft) [.NET framework](http://en.wikipedia.org/wiki/.NET_framework) and is responsible for managing the execution of .NET programs. In a process known as [just-in-time (JIT)](http://en.wikipedia.org/wiki/Just-in-time_compilation) compilation, the CLR compiles the intermediate language code known as [Common Intermediate Language (CIL)](http://en.wikipedia.org/wiki/Common_Intermediate_Language) into the machine instructions that in turn are executed by the computer's [CPU](http://en.wikipedia.org/wiki/CPU). The CLR provides additional services including [memory management](http://en.wikipedia.org/wiki/Memory_management), [type safety](http://en.wikipedia.org/wiki/Type_safety) and [exception handling](http://en.wikipedia.org/wiki/Exception_handling). All programs written for the .NET framework, regardless of programming language, are executed by the CLR. It provides exception handling, Garbage collection and thread management.

The CLR is Microsoft's implementation of the [Common Language Infrastructure](http://en.wikipedia.org/wiki/Common_Language_Infrastructure) (CLI) standard.

**Design features Of .NET Framework:**

**Interoperability:**

Because computer systems commonly require interaction between newer and older applications, the .NET Framework provides means to access functionality implemented in programs that execute outside the .NET environment. Access to COM components is provided in the System.Runtime.InteropServices and System.EnterpriseServices namespaces of the framework; access to other functionality is provided using the P/Invoke feature.

**Common Language Runtime Engine:**

The Common Language Runtime (CLR) is the execution engine of the .NET Framework. All .NET programs execute under the supervision of the CLR, guaranteeing certain properties and behaviors in the areas of memory management, security, and exception handling.

**Language Independence:**

The .NET Framework introduces a Common Type System, or CTS. The CTS specification defines all possible data types and programming constructs supported by the CLR and how they may or may not interact with each other conforming to the Common Language Infrastructure (CLI) specification. Because of this feature, the .NET Framework supports the exchange of types and object instances between libraries and applications written using any conforming .NET language.

**Base Class Library:**

The Base Class Library (BCL), part of the Framework Class Library (FCL), is a library of functionality available to all languages using the .NET Framework. The BCL provides classes that encapsulate a number of common functions, including file reading and writing, graphic rendering, database interaction, XML document manipulation, and so on.

**Simplified Deployment:**

The .NET Framework includes design features and tools which help manage the installation of computer software to ensure it does not interfere with previously installed software, and it conforms to security requirements.

**Security:**

The design is meant to address some of the vulnerabilities, such as buffer overflows, which have been exploited by malicious software. Additionally, .NET provides a common security model for all applications.

**Portability:**

While Microsoft has never implemented the full framework on any system except Microsoft Windows, the framework is engineered to be platform agnostic and cross-platform implementations are available for other operating systems (see Silver light and the Alternative implementations section below). Microsoft submitted the specifications for the Common Language Infrastructure (which includes the core class libraries, Common Type System, and the Common Intermediate Language the, C# language, and the C++/CLI language to both ECMA and the ISO, making them available as official standards. This makes it possible for third parties to create compatible implementations of the framework and its languages on other platforms.

**What is Dataset object? Explain the various objects in Dataset.**

The Dataset object is a disconnected storage. It is used for manipulation of relational data. The Dataset is filled with data from the store we fill it with data fetched from the data store. Once the work is done with the dataset, connection is reestablished and the changes are reflected back into the store.

Dataset has a collection of Tables which has DataTable collection which further has DataRow DataColumn objects collections.

It also has collections for the primary keys, constraints, and default values called as constraint collection.

A DefaultView object for each table is used to create a DataView object based on the table, so that the data can be searched, filtered or otherwise manipulated while displaying the data.

**Explain differences between e.g. new () and malloc ()?**

|  |  |
| --- | --- |
| new () | malloc () |
| New () allocates continuous space for the object instance. | Malloc () allocates distributed space for the object instance. |
| New () is castless, meaning that allocates memory for this specific type. | Malloc (), calloc () allocate space for void \* that is casted to the specific class type pointer. |

**Encapsulation:**

The wrapping up of data & functions into a single unit (called Class) is known as encapsulation.

**Abstraction:**

Abstraction refers to the act of representing essential features without including the background details or explanations.