# SQL

### What is normalization?

Database normalization is a data design and organization process applied to data structures based on rules that help build relational databases. In relational database design, the process of organizing data to minimize redundancy. Normalization usually involves dividing a database into two or more tables and defining relationships between the tables. The objective is to isolate data so that additions, deletions, and modifications of a field can be made in just one table and then propagated through the rest of the database via the defined relationships.

### What is De-normalization?

De-normalization is the process of attempting to optimize the performance of a database by adding redundant data. It is sometimes necessary because current DBMSs implement the relational model poorly. A true relational DBMS would allow for a fully normalized database at the logical level, while providing physical storage of data that is tuned for high performance. De-normalization is a technique to move from higher to lower normal forms of database modeling in order to speed up database access.

### What are different normalization forms?

***1NF: Eliminate Repeating Groups***

The [domain](http://en.wikipedia.org/wiki/Data_domain) of each [attribute](http://en.wikipedia.org/wiki/Column_(database)) contains only [atomic](http://en.wikipedia.org/wiki/First_normal_form#Atomicity) values, and the value of each attribute contains only a single value from that domain

***2NF: Eliminate Redundant Data***  
No non-prime attribute in the table is [functionally dependent](http://en.wikipedia.org/wiki/Functional_dependency) on a [proper subset](http://en.wikipedia.org/wiki/Proper_subset) of any [candidate key](http://en.wikipedia.org/wiki/Candidate_key)

|  |  |  |  |
| --- | --- | --- | --- |
| Electric Toothbrush Models | | | |
| **Manufacturer** | **Model** | **Model Full Name** | **Manufacturer Country** |
| Forte | X-Prime | Forte X-Prime | Italy |
| Forte | Ultraclean | Forte Ultraclean | Italy |
| Dent-o-Fresh | EZbrush | Dent-o-Fresh EZbrush | USA |

To make the design conform to 2NF, it is necessary to have two tables:

|  |  |
| --- | --- |
| Electric Toothbrush Manufacturers | |
| **Manufacturer** | **Manufacturer Country** |

|  |  |  |
| --- | --- | --- |
| Electric Toothbrush Models | | |
| **Manufacturer** | **Model** | **Model Full Name** |

***3NF: Eliminate Columns Not Dependent On Key***

Every non-prime attribute is non-transitively dependent on every candidate key in the table. The attributes that do not contribute to the description of the primary key are removed from the table. In other words, no transitive dependency is allowed. All attributes must be directly dependent on the primary key  
***BCNF: Boyce-Codd Normal Form***  
If there are non-trivial dependencies between candidate key attributes, separate them out into distinct tables.  
***4NF: Isolate Independent Multiple Relationships***  
No table may contain two or more 1:n or n:m relationships that are not directly related.  
***5NF: Isolate Semantically Related Multiple Relationships***   
There may be practical constrains on information that justify separating logically related many-to-many relationships.  
***ONF: Optimal Normal Form***  
A model limited to only simple (elemental) facts, as expressed in Object Role Model notation.  
***DKNF: Domain-Key Normal Form***  
A model free from all modification anomalies.

Remember, these normalization guidelines are cumulative. For a database to be in 3NF, it must first fulfill all the criteria of a 2NF and 1NF database.

### What is data integrity? Explain constraints?

Data integrity is an important feature in SQL Server. When used properly, it ensures that data is accurate, correct, and valid. It also acts as a trap for otherwise undetectable bugs within applications.

A **PRIMARY KEY** constraint is a unique identifier for a row within a database table. Every table should have a primary key constraint to uniquely identify each row and only one primary key constraint can be created for each table. The primary key constraints are used to enforce entity integrity.

A **UNIQUE** constraint enforces the uniqueness of the values in a set of columns, so no duplicate values are entered. The unique key constraints are used to enforce entity integrity as the primary key constraints.

A **FOREIGN KEY** constraint prevents any actions that would destroy links between tables with the corresponding data values. A foreign key in one table points to a primary key in another table. Foreign keys prevent actions that would leave rows with foreign key values when there are no primary keys with that value. The foreign key constraints are used to enforce referential integrity.

A **CHECK** constraint is used to limit the values that can be placed in a column. The check constraints are used to enforce domain integrity.

A **NOT NULL** constraint enforces that the column will not accept null values. The not null constraints are used to enforce domain integrity, as the check constraints.

### What is RDBMS?

Relational Data Base Management Systems (RDBMS) are database management systems that maintain data records and indices in tables. Relationships may be created and maintained across and among the data and tables. In a relational database, relationships between data items are expressed by means of tables. Interdependencies among these tables are expressed by data values rather than by pointers. This allows a high degree of data independence. An RDBMS has the capability to recombine the data items from different files, providing powerful tools for data usage.

Relational tables have six properties:

* Values are atomic.
* Column values are of the same kind.
* Each row is unique.
* The sequence of columns is insignificant.
* The sequence of rows is insignificant.
* Each column must have a unique name.

**SQL Server**

### Differencebetween SQL Server 2008 and SQL Server 2012

1. In SQL Server 2012, uses **48 bit** precision for spatial.
2. In SQL server 2012, has unlimited concurrent connections are available.
3. In SQL server 2012, by default supports 15,000 partitions in DB.
4. In [SQL server 2012](http://aspdotnetblogspot.blogspot.in/2013/08/difference-between-sql-server-2008-and.html), available new string function CONCATE to strings.
5. In SQL server 2012, available new string function FORMAT to strings.
6. In SQL server 2012, available new conversion functions are PARSE ,TRY\_CONVERT, and TRY\_PARSE.

### What is Identity?

Identity (or AutoNumber) is a column that automatically generates numeric values. A start and increment value can be set, but most DBA leave these at 1. A GUID column also generates numbers, the value of this cannot be controled. Identity/GUID columns do not need to be indexed.

### How to check all objects in database?

SELECT\*FROMsys.objectsWHEREtype='U'

List Of types:

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•C: Check constraint

•D: Default constraint

•F: Foreign Key constraint

•L: Log

•P: Stored procedure

•PK: Primary Key constraint

•RF: Replication Filter stored procedure

•S: System table

•TR: Trigger

•U: User table

•UQ: Unique constraint

•V: View

•X: Extended stored procedure

### What is Stored Procedure?

A stored procedure is a named group of SQL statements that have been previously created and stored in the server database. Stored procedures accept input parameters so that a single procedure can be used over the network by several clients using different input data. And when the procedure is modified, all clients automatically get the new version. Stored procedures reduce network traffic and improve performance.

**List few advantages of Stored Procedure.**

* Stored procedure can reduced network traffic and latency, boosting application performance.
* Stored procedure execution plans can be reused, staying cached in SQL Server’s memory, reducing server overhead.
* Stored procedures help promote code reuse.
* Stored procedures can encapsulate logic. You can change stored procedure code without affecting clients.
* Stored procedures provide better security to your data.

### What is Trigger?

A trigger is a SQL procedure that initiates an action when an event (INSERT, DELETE or UPDATE) occurs. Triggers are stored in and managed by the DBMS.**Triggers are used to maintain the referential integrity of data by changing the data in a systematic fashion.** A trigger cannot be called or executed; the DBMS automatically fires the trigger as a result of a data modification to the associated table.

*Nested Trigger:* A trigger can also contain INSERT, UPDATE and DELETE logic within itself, so when the trigger is fired because of data modification it can also cause another data modification, thereby firing another trigger. A trigger that contains data modification logic within itself is called a nested trigger.

### What is View?

A simple view can be thought of as a subset of a table. It can be used for retrieving data, as well as updating or deleting rows. Rows updated or deleted in the view are updated or deleted in the table the view was created with. The data accessed through a view is actually constructed using standard T-SQL select command and can come from one to many different base tables or even other views.

The **WITHCHECK** OPTION for a view prevents data modifications (to the data) that do not confirm to the WHERE clause of the view definition. This allows data to be updated via the view, but only if it belongs in the view.

### What is Index?

An index is a physical structure containing pointers to the data. Indices are created in an existing table to locate rows more quickly and efficiently. It is possible to create an index on one or more columns of a table, and each index is given a name. The users cannot see the indexes, they are just used to speed up queries. Effective indexes are one of the best ways to improve performance in a database application. A table scan happens when there is no index available to help a query. In a table scan SQL Server examines every row in the table to satisfy the query results. Table scans are sometimes unavoidable, but on large tables, scans have a terrific impact on performance.

***Clustered indexes*** define the physical sorting of a database table’s rows in the storage media. For this reason, each database table may have only one clustered index.  
***Non-clustered indexes*** are created outside of the database table and contain a sorted list of references to the table itself.

### What is a table called, if it does not have neither Cluster nor Non-cluster Index? What is it used for?

Unindexed table or ***Heap***. Microsoft Press Books and Book On Line (BOL) refers it as Heap.  
A heap is a table that does not have a clustered index and, therefore, the pages are not linked by pointers. The IAM pages are the only structures that link the pages in a table together.  
Unindexed tables are good for fast storing of data. Many times it is better to drop all indexes from table and than do bulk of inserts and to restore those indexes after that.

### What is the difference between clustered and a non-clustered index?

**A *clustered index*** is a special type of index that reorders the way records in the table are physically stored. Therefore table can have only one clustered index. The leaf nodes of a clustered index contain the data pages.

**A *nonclustered index*** is a special type of index in which the logical order of the index does not match the physical stored order of the rows on disk. The leaf node of a nonclustered index does not consist of the data pages. Instead, the leaf nodes contain index rows.

### What is cursors?

Cursor is a database object used by applications to manipulate data in a set on a row-by-row basis, instead of the typical SQL commands that operate on all the rows in the set at one time.

In order to work with a cursor we need to perform some steps in the following order:

* Declare cursor
* Open cursor
* Fetch row from the cursor
* Process fetched row
* Close cursor
* Deallocate cursor

### What’s the difference between a primary key and a unique key?

Both primary key and unique enforce uniqueness of the column on which they are defined. But by default primary key creates a clustered index on the column, where are unique creates a non-clustered index by default. Another major difference is that, primary key doesn’t allow NULLs, but unique key allows one NULL only.

### What is difference between DELETE & TRUNCATE commands?

Delete command removes the rows from a table based on the condition that we provide with a WHERE clause. Truncate will actually remove all the rows from a table and there will be no data in the table after we run the truncate command.

***TRUNCATE***  
TRUNCATE is faster and uses fewer system and transaction log resources than DELETE.  
TRUNCATE removes the data by deallocating the data pages used to store the table’s data, and only the page deallocations are recorded in the transaction log.  
TRUNCATE removes all rows from a table, but the table structure and its columns, constraints, indexes and so on remain. The counter used by an identity for new rows is reset to the seed for the column.  
You cannot use TRUNCATE TABLE on a table referenced by a FOREIGN KEY constraint.  
Because TRUNCATE TABLE is not logged, it cannot activate a trigger.  
TRUNCATE can not be Rolled back using logs.  
TRUNCATE is DDL Command.  
TRUNCATE Resets identity of the table.

***DELETE***  
DELETE removes rows one at a time and records an entry in the transaction log for each deleted row.  
If you want to retain the identity counter, use DELETE instead. If you want to remove table definition and its data, use the DROP TABLE statement.  
DELETE Can be used with or without a WHERE clause  
DELETE Activates Triggers.  
DELETE Can be Rolled back using logs.  
DELETE is DML Command.  
DELETE does not reset identity of the table.

### Difference between Function and Stored Procedure?

* UDF can be used in the SQL statements anywhere in the WHERE/HAVING/SELECT section where as Stored procedures cannot be.
* UDFs that return tables can be treated as another rowset. This can be used in JOINs with other tables.
* Inline UDF’s can be thought of as views that take parameters and can be used in JOINs and other Rowset operations.

### What types of Joins are possible with Sql Server?

Joins are used in queries to explain how different tables are related. Joins also let you select data from a table depending upon data from another table.  
Types of joins:

* INNER JOINs,
* OUTER JOINs, -LEFT OUTER JOINS, RIGHT OUTER JOINS and FULL OUTER JOINS.
* CROSS JOINs - A cross join that does not have a WHERE clause produces the Cartesian product of the tables involved in the join.

### What is the difference between a HAVING CLAUSE and a WHERE CLAUSE?

Specifies a search condition for a group or an aggregate. HAVING can be used only with the SELECT statement. HAVING is typically used in a GROUP BY clause. When GROUP BY is not used, HAVING behaves like a WHERE clause. Having Clause is basically used only with the GROUP BY function in a query. WHERE Clause is applied to each row before they are part of the GROUP BY function in a query. HAVING criteria is applied after the the grouping of rows has occurred.

### What is sub-query? Explain properties of sub-query.

A subquery is a SELECT statement that is nested within another T-SQL statement. A subquery SELECT statement if executed independently of the T-SQL statement, in which it is nested, will return a result set. A sub-query is executed by enclosing it in a set of parentheses. Sub-queries are generally used to return a single row as an atomic value, though they may be used to compare values against multiple rows with the IN keyword.

A subquery SELECT statement can return any number of values, and can be found in, the column list of a SELECT statement, a FROM, GROUP BY, HAVING, and/or ORDER BY clauses of a T-SQL statement. A Subquery can also be used as a parameter to a function call. Basically a subquery can be used anywhere an expression can be used.

***Properties of Sub-Query***  
A subquery must be enclosed in the parenthesis.  
A subquery must be put in the right hand of the comparison operator, and  
Asubquery cannot contain a ORDER-BY clause.  
**What are types of sub-queries?**  
Single-row subquery, where the subquery returns only one row.  
Multiple-row subquery, where the subquery returns multiple rows,.and  
Multiple column subquery, where the subquery returns multiple columns.

### What is the STUFF function and how does it differ from the REPLACE function?

**STUFF** function to overwrite existing characters. Using this syntax,

**STUFF(string\_expression, start, length, replacement\_characters)**

string\_expression is the string that will have characters substituted, start is the starting position, length is the number of characters in the string that are substituted, and replacement\_characters are the new characters interjected into the string.  
**REPLACE** function to replace existing characters of all occurrence. Using this syntax

**REPLACE(string\_expression, search\_string, replacement\_string)**

where every incidence of search\_string found in the string\_expression will be replaced with replacement\_string.

### What is the difference between a local and a global variable?

A *local temporary* table exists only for the duration of a connection or, if defined inside a compound statement, for the duration of the compound statement.

A *global temporary* table remains in the database permanently, but the rows exist only within a given connection. When connection are closed, the data in the global temporary table disappears. However, the table definition remains with the database for access when database is opened next time.

### How to implement one-to-one, one-to-many and many-to-many relationships while designing tables?

One-to-One relationship can be implemented as a single table and rarely as two tables with primary and foreign key relationships.  
One-to-Many relationships are implemented by splitting the data into two tables with primary key and foreign key relationships.  
Many-to-Many relationships are implemented using a junction table with the keys from both the tables forming the composite primary key of the junction table.

### What are the different types of replication? Explain.

The SQL Server 2000-supported replication types are as follows:

* ***Snapshot replication*** distributes data exactly as it appears at a specific moment in time and does not monitor for updates to the data. Snapshot replication is best used as a method for replicating data that changes infrequently or where the most up-to-date values (low latency) are not a requirement. When synchronization occurs, the entire snapshot is generated and sent to Subscribers.
* ***Transactional replication***, an initial snapshot of data is applied at Subscribers, and then when data modifications are made at the Publisher, the individual transactions are captured and propagated to Subscribers.
* ***Merge replication*** is the process of distributing data from Publisher to Subscribers, allowing the Publisher and Subscribers to make updates while connected or disconnected, and then merging the updates between sites when they are connected.

### What is @@ERROR?

The @@ERROR automatic variable returns the error code of the last Transact-SQL statement. If there was no error, @@ERROR returns zero. Because @@ERROR is reset after each Transact-SQL statement, it must be saved to a variable if it is needed to process it further after checking it.

### What is RaiseError?

Stored procedures report errors to client applications via the RAISEERROR command. RAISEERROR doesn’t change the flow of a procedure; it merely displays an error message, sets the @@ERROR automatic variable, and optionally writes the message to the SQL Server error log and the NT application event log.

### How do SQL server 2000 and XML linked? Can XML be used to access data?

***FOR XML (RAW, AUTO, EXPLICIT)***  
You can execute SQL queries against existing relational databases to return results as XML rather than standard rowsets. These queries can be executed directly or from within stored procedures. To retrieve XML results, use the FOR XML clause of the SELECT statement and specify an XML mode of RAW, AUTO, or EXPLICIT.

***OPENXML***  
OPENXML is a Transact-SQL keyword that provides a relational/rowset view over an in-memory XML document. OPENXML is a rowset provider similar to a table or a view. OPENXML provides a way to access XML data within the Transact-SQL context by transferring data from an XML document into the relational tables. Thus, OPENXML allows you to manage an XML document and its interaction with the relational environment.

**What is a CTE?**

A common table expression (CTE) is a temporary named result set that can be used within other statements like SELECT, INSERT, UPDATE, and DELETE. It is not stored as an object and its lifetime is limited to the query. It is defined using the WITH statement as the following example shows:

WITH ExampleCTE (id, fname, lname)

AS

(SELECT id, firstname, lastname FROM table)

SELECT \* FROM ExampleCTE

A CTE can be used in place of a view in some instances.

### What is the use of DBCC commands?

DBCC stands for database consistency checker. We use these commands to check the consistency of the databases, i.e., maintenance, validation task and status checks.  
E.g. DBCC CHECKDB – Ensures that tables in the db and the indexes are correctly linked.  
DBCC CHECKALLOC – To check that all pages in a db are correctly allocated.  
DBCC CHECKFILEGROUP – Checks all tables file group for any damage.

**What is a Linked Server?**  
Linked Servers is a concept in SQL Server by which we can add other SQL Server to a Group and query both the SQL Server dbs using T-SQL Statements. With a linked server, you can create very clean, easy to follow, SQL statements that allow remote data to be retrieved, joined and combined with local data.  
Storped Procedure sp\_addlinkedserver, sp\_addlinkedsrvlogin will be used add new Linked Server.

**What is Collation?**Collation refers to a set of rules that determine how data is sorted and compared. Character data is sorted using rules that define the correct character sequence, with options for specifying case-sensitivity, accent marks, kana character types and character width.

**What are different type of Collation Sensitivity?**  
*Case sensitivity*  
A and a, B and b, etc.

*Accent sensitivity*  
a and á, o and ó, etc.

*Kana Sensitivity*  
When Japanese kana characters Hiragana and Katakana are treated differently, it is called Kana sensitive.

*Width sensitivity*  
When a single-byte character (half-width) and the same character when represented as a double-byte character (full-width) are treated differently then it is width sensitive.

**What is a NOLOCK?**  
Using the NOLOCK query optimiser hint is generally considered good practice in order to improve concurrency on a busy system. When the NOLOCK hint is included in a SELECT statement, no locks are taken when data is read. The result is a Dirty Read, which means that another process could be updating the data at the exact time you are reading it. There are no guarantees that your query will retrieve the most recent data. The advantage to performance is that your reading of data will not block updates from taking place, and updates will not block your reading of data. SELECT statements take Shared (Read) locks. This means that multiple SELECT statements are allowed simultaneous access, but other processes are blocked from modifying the data. The updates will queue until all the reads have completed, and reads requested after the update will wait for the updates to complete. The result to your system is delay(blocking).

**When is the use of UPDATE\_STATISTICS command?**  
This command is basically used when a large processing of data has occurred. If a large amount of deletions any modification or Bulk Copy into the tables has occurred, it has to update the indexes to take these changes into account. UPDATE\_STATISTICS updates the indexes on these tables accordingly.

**What is SQL Profiler?**  
SQL Profiler is a graphical tool that allows system administrators to monitor events in an instance of Microsoft SQL Server. You can capture and save data about each event to a file or SQL Server table to analyze later. For example, you can monitor a production environment to see which stored procedures are hampering performance by executing too slowly.

Use SQL Profiler to monitor only the events in which you are interested. If traces are becoming too large, you can filter them based on the information you want, so that only a subset of the event data is collected. Monitoring too many events adds overhead to the server and the monitoring process and can cause the trace file or trace table to grow very large, especially when the monitoring process takes place over a long period of time.

**What is User Defined Functions?**  
User-Defined Functions allow to define its own T-SQL functions that can accept 0 or more parameters and return a single scalar data value or a table data type.

**What kind of User-Defined Functions can be created?**  
There are three types of User-Defined functions in SQL Server 2000 and they are Scalar, Inline Table-Valued and Multi-statement Table-valued.

***Scalar User-Defined Function***  
A Scalar user-defined function returns one of the scalar data types. Text, ntext, image and timestamp data types are not supported. These are the type of user-defined functions that most developers are used to in other programming languages. You pass in 0 to many parameters and you get a return value.

***Inline Table-Value User-Defined Function***  
An Inline Table-Value user-defined function returns a table data type and is an exceptional alternative to a view as the user-defined function can pass parameters into a T-SQL select command and in essence provide us with a parameterized, non-updateable view of the underlying tables.

***Multi-statement Table-Value User-Defined Function***  
A Multi-Statement Table-Value user-defined function returns a table and is also an exceptional alternative to a view as the function can support multiple T-SQL statements to build the final result where the view is limited to a single SELECT statement. Also, the ability to pass parameters into a T-SQL select command or a group of them gives us the capability to in essence create a parameterized, non-updateable view of the data in the underlying tables. Within the create function command you must define the table structure that is being returned. After creating this type of user-defined function, It can be used in the FROM clause of a T-SQL command unlike the behavior found when using a stored procedure which can also return record sets.

**Which TCP/IP port does SQL Server run on? How can it be changed?**  
SQL Server runs on port 1433. It can be changed from the Network Utility TCP/IP properties –> Port number.both on client and the server.

**What are the authentication modes in SQL Server? How can it be changed?**  
Windows mode and mixed mode (SQL & Windows).

To change authentication mode in SQL Server click Start, Programs, Microsoft SQL Server and click SQL Enterprise Manager to run SQL Enterprise Manager from the Microsoft SQL Server program group. Select the server then from the Tools menu select SQL Server Configuration Properties, and choose the Security page.

### Where are SQL server users names and passwords are stored in sql server?

They get stored in master db in the sysxlogins table.

### What command do we use to rename a db?

sp\_renamedb‘oldname’ , ‘newname’  
If someone is using db it will not accept sp\_renmaedb. In that case first bring db to single user using sp\_dboptions. Use sp\_renamedb to rename database. Use sp\_dboptions to bring database to multi user mode.

### What is sp\_configure commands and set commands?

Use sp\_configure to display or change server-level settings. To change database-level settings, use ALTER DATABASE. To change settings that affect only the current user session, use the SET statement.

### What are three SQL keywords used to change or set someone’s permissions?

GRANT, DENY, and REVOKE.

### What is the basic functions for master, msdb, model, tempdb databases?

The ***Master*** database holds information for all databases located on the SQL Server instance and is the glue that holds the engine together. Because SQL Server cannot start without a functioning master database, you must administer this database with care.  
The ***msdb***database stores information regarding database backups, SQL Agent information, DTS packages, SQL Server jobs, and some replication information such as for log shipping.  
The ***tempdb*** holds temporary objects such as global and local temporary tables and stored procedures.  
The ***model*** is essentially a template database used in the creation of any new user database created in the instance.

**How to get @@error and @@rowcount at the same time?**If @@Rowcount is checked after Error checking statement then it will have 0 as the value of @@Recordcount as it would have been reset.  
And if @@Recordcount is checked before the error-checking statement then @@Error would get reset. To get @@error and @@rowcount at the same time do both in same statement and store them in local variable. SELECT @RC = @@ROWCOUNT, @ER = @@ERROR

**What is a Scheduled Jobs or What is a Scheduled Tasks?**   
Scheduled tasks let user automate processes that run on regular or predictable cycles. User can schedule administrative tasks, such as cube processing, to run during times of slow business activity. User can also determine the order in which tasks run by creating job steps within a SQL Server Agent job. E.g. Back up database, Update Stats of Tables. Job steps give user control over flow of execution. If one job fails, user can configure SQL Server Agent to continue to run the remaining tasks or to stop execution.

**Can we rewrite subqueries into simple select statements or with joins?**   
Subqueries can often be re-written to use a standard outer join, resulting in faster performance. As we may know, an outer join uses the plus sign (+) operator to tell the database to return all non-matching rows with NULL values. Hence we combine the outer join with a NULL test in the WHERE clause to reproduce the result set without using a sub-query.

**Which virtual table does a trigger use?**  
Inserted and Deleted.

### What is an execution plan? When would you use it? How would you view the execution plan?

An execution plan is basically a road map that graphically or textually shows the data retrieval methods chosen by the SQL Server query optimizer for a stored procedure or ad-hoc query and is a very useful tool for a developer to understand the performance characteristics of a query or stored procedure since the plan is the one that SQL Server will place in its cache and use to execute the stored procedure or query. From within Query Analyzer is an option called “Show Execution Plan” (located on the Query drop-down menu). If this option is turned on it will display query execution plan in separate window when query is ran again.

### **What are temp tables? What is the difference between global and local temp tables?**

Temporary tables are temporary storage structures. You may use temporary tables as buckets to store data that you will manipulate before arriving at a final format. The hash (#) character is used to declare a temporary table as it is prepended to the table name. A single hash (#) specifies a local temporary table.

CREATE TABLE #tempLocal( nameidint, fnamevarchar(50), lnamevarchar(50) )

Local temporary tables are available to the current connection for the user, so they disappear when the user disconnects.

Global temporary tables may be created with double hashes (##). These are available to all users via all connections, and they are deleted only when all connections are closed.

CREATE TABLE ##tempGlobal( nameidint, fnamevarchar(50), lnamevarchar(50) )

Once created, these tables are used just like permanent tables; they should be deleted when you are finished with them. Within SQL Server, temporary tables are stored in the Temporary Tables folder of the tempdb database.

### **How are transactions used?**

Transactions allow you to group SQL commands into a single unit. The transaction begins with a certain task and ends when all tasks within it are complete. The transaction completes successfully only if all commands within it complete successfully. The whole thing fails if one command fails. The BEGIN TRANSACTION, ROLLBACK TRANSACTION, and COMMIT TRANSACTION statements are used to work with transactions. A group of tasks starts with the begin statement. If any problems occur, the rollback command is executed to abort. If everything goes well, all commands are permanently executed via the commit statement.

### What does the SQL Server Agent Windows service do?

SQL Server Agent is a Windows service that handles scheduled tasks within the SQL Server environment (aka jobs). The jobs are stored/defined within SQL Server, and they contain one or more steps that define what happens when the job runs. These jobs may run on demand, as well as via a trigger or predefined schedule. This service is very important when determining why a certain job did not run as planned -- often it is as simple as the SQL Server Agent service not running.

**Which command using Query Analyzer will give you the version of SQL server and operating system?**

**SELECT SERVERPROPERTY('productversion'), SERVERPROPERTY ('productlevel')**

**How to list out the available database in the sql server current connection?**

Method**1 :** SP\_DATABASES

Method**2 :**SELECTnameFROMSYS.DATABASES

Method**3 :**SELECTnameFROMSYS.MASTER\_FILES

Method**4 :**SELECT\*FROMSYS.MASTER\_FILES-- Type=0 for .mdf and type=1 for .ldf

The sp\_databases is a system stored procedure it can be listed the database with the size.

The sys.databases will list the databases, created date, modified date and database id along with the other information

The SYS.MASTER\_FILES  will query the database details like the database id, size, physical storage path and list the both mdf and ldf.

**How to list the user tables in the database?**

The following method can be used to get the list of user tables in the sql server.

Method**1 :**SELECTnameFROMSYS.OBJECTSWHEREtype='U'

Method**2 :**SELECTNAMEFROM SYSOBJECTS WHERExtype='U'

Method 3 :SELECTnameFROMSYS.TABLES

Method**4 :**SELECTnameFROMSYS.ALL\_OBJECTSWHEREtype='U'

Method**5 :**SELECTtable\_nameFROMINFORMATION\_SCHEMA.TABLESWHERE TABLE\_TYPE='BASE TABLE'

Method**6 :** SP\_TABLES

**How to list out the Stored Procedures in the database?:**

Method 1 :SELECTnameFROMSYS.OBJECTSWHEREtype='P'

Method 2 :SELECTnameFROMSYS.PROCEDURES

Method 3 :SELECTnameFROMSYS.ALL\_OBJECTSWHEREtype='P'

Method 4 :SELECTNAMEFROM SYSOBJECTS WHERExtype='P'

Method 5 **:**SELECTRoutine\_nameFROMINFORMATION\_SCHEMA.ROUTINESWHERE ROUTINE\_TYPE='PROCEDURE'   
  
The SYS.OBJECTS table has the common table that has the list for all the procedure, table, triggers, views,etc.., Here procedure can be filtered using the type='p'.  
  
The Information\_schema.routines is a view that has used in the sql server 7.0 version. Now exclusive table avaiable for the stored procedure.   
 **How to list all Views in the database?**

Method**1 :**SELECTnameFROMSYS.OBJECTSWHEREtype='V'

Method**2 :**SELECTnameFROMSYS.ALL\_OBJECTSWHEREtype='V'

Method**3 :**SELECT TABLE\_NAME FROMINFORMATION\_SCHEMA.VIEWS

Method**4 :**SELECTnameFROMSYS.VIEWS

**How to listout the Functions in the database?**

Method**1 :**SELECTnameFROMSYS.OBJECTSWHEREtype='IF'-- inline function

Method**2 :**SELECTnameFROMSYS.OBJECTSWHEREtype='TF'-- table valued function

Method**3 :**SELECTnameFROMSYS.OBJECTSWHEREtype='FN'-- scalar function

Method**4 :**SELECTnameFROMSYS.ALL\_OBJECTSWHEREtype='IF'-- inline function

Method**5 :**SELECTnameFROMSYS.ALL\_OBJECTSWHEREtype='TF'-- table valued function

Method**6 :**SELECTnameFROMSYS.ALL\_OBJECTSWHEREtype='FN'-- scalar function

Method**7 :**SELECTRoutine\_nameFROMINFORMATION\_SCHEMA.ROUTINESWHERE ROUTINE\_TYPE='FUNCTION'

**Note:** IF - Inlined Function, TF- Table valued function, FN- Scalar Function

**How to get the Triggers in the database?:**

Method**1 :**SELECT\*FROMSYS.TRIGGERS

Method**2 :**SELECT\*FROMSYS.OBJECTSWHEREtype='TR'

**How to get the triggers in a table?**

Method**1 :** SP\_HELPTRIGGER Products

Method**2 :**SELECT\*FROMSYS.TRIGGERSWHEREparent\_id=object\_id('products')

**How to get the columns in a table?**

Method**1 :** SP\_HELP Products

Method 2 : SP\_COLUMNS Products

Method**3 :**SELECT\*FROMSYS.COLUMNSWHEREobject\_id=object\_id('Products')

Method**4 :**SELECTCOLUMN\_NAME,Ordinal\_position,Data\_Type,character\_maximum\_lengthFROM

                     INFORMATION\_SCHEMA.COLUMNSWHERE TABLE\_NAME='Products'

**How to find the Columns in the table?**

Method**1 :**SELECT O.name FROMSYS.OBJECTS O INNERJOINSYS.COLUMNS C ONC.Object\_ID=

                     O.Object\_ID  WHERE C.name LIKE'%ShipName%'

Method**2 :**SELECTOBJECT\_NAME(object\_id)AS [Table Name] FROMSYS.COLUMNSWHEREnameLIKE

                     '%ShipName%'

Method**3 :**SELECT TABLE\_NAME FROMINFORMATION\_SCHEMA.COLUMNSWHERE COLUMN\_NAME

                     LIKE'%ShipName%'

**How to get the Total rows in the table?**

Method**1 :**SELECTCOUNT(@@ROWCOUNT)FROM Products

Method**2 :**SELECTCOUNT(ProductID)FROM Products

Method**3 :**SELECTOBJECT\_NAME(id)AS [Table Name],rowcntFROM SYSINDEXES

                     WHEREOBJECTPROPERTY(id,'isUserTable')=1 ANDindid< 2 ORDERBYrowcntDESC

Method**4 :**SELECT  rowcntFROMsysindexesWHERE id =OBJECT\_ID('Products')AND  indid< 2

Method**5 :**SELECTOBJECT\_NAME(OBJECT\_ID)TableName,row\_countFROMsys.dm\_db\_partition\_stats

                     WHEREobject\_id=object\_id('Products')AND  index\_id< 2

**How to get the Check Constraints in the database?**

Method**1 :**SELECT\*FROMSYS.OBJECTSWHEREtype='C'

Method**2 :**SELECT\*FROMsys.check\_constraints

### How to find the Indexes in the table?

Method**1 :**sp\_helpindex Products

Method**2 :**SELECT\*FROMsys.indexesWHERE  object\_id=object\_id('products')

### How to view the View schema definition?

Method**1 :**  SELECTOBJECT\_NAME(id)AS [View Name],textFROM SYSCOMMENTS WHERE id IN(SELECT

                      object\_idFROMSYS.VIEWS)

Method**2 :**SELECT\*FROMsys.all\_sql\_modulesWHEREobject\_idIN(SELECTobject\_idFROM

                     SYS.VIEWS)

Method**3 :**SP\_HELPTEXTViewName

**How to find the table used in the stored procedure?**

Method**1 :**SELECTOBJECT\_NAME(id)FROM SYSCOMMENTS S

                     INNERJOINSYS.OBJECTS O ONO.Object\_Id= S.id

                    WHERES.textLIKE'%Products%'

                    ANDO.type='P'