SQL? (Structure Query Language)

SQL is a standard language for storing, manipulating and retrieving data in databases.

Our SQL tutorial will teach you how to use SQL in: MySQL, SQL Server, MS Access, Oracle, Sybase, Informix, Postgres, and other database systems.

SQL is a database computer language designed for the retrieval and management of data in a relational database. SQL stands for Structured Query Language. This tutorial will give you a quick start to SQL. It covers most of the topics required for a basics understanding of SQL and to get a feel of how it works.

Basic SQL statements for storing, retrieving, and manipulating data in a relational database.

In this section, we discuss the following SQL commands, which are frequently used in SQL queries. By the end of this section, you will learn the basics of retrieving data from the database using SQL.

What is SSMS?

SQL Server Management Studio (SSMS) is an integrated environment for managing any SQL infrastructure. Use SSMS to access, configure, manage, administer, and develop all components of SQL Server, Azure SQL Database, and SQL Data Warehouse. SSMS provides a single comprehensive utility that combines a broad group of graphical tools with a number of rich script editors to provide access to SQL Server for developers and database administrators of all skill levels.

SSMS require to connect the SQL server database.

SQL Server

SQL Server is Microsoft's relational database management system (RDBMS). It is a full-featured database primarily designed to compete against competitors Oracle Database (DB) and MySQL. Like all major RBDMS, SQL Server supports ANSI SQL, the standard SQL language. However, SQL Server also contains T-SQL, its own SQL implementation.

SQL Server Management Studio (SSMS) is SQL Server's main interface tool, and it supports 32-bit and 64-bit environments.

SQL Server is offered in several editions with different feature set and pricing options to meet a variety of user needs, including the following:

- **Enterprise**: Designed for large enterprises with complex data requirements, data warehousing and Web-enabled databases. Has all the features of SQL Server, and its license pricing is the most expensive.
- **Standard**: Targeted toward small and medium organizations. Also supports e-commerce and data warehousing.
- **Workgroup**: For small organizations. No size or user limits and may be used as the backend database for small Web servers or branch offices.

- **Express**: Free for distribution. Has the fewest number of features and limits database size and users. May be used as a replacement for an Access database.

How to check which service are in your system.

1. Window+S
2. SQL Server Configuration Manager
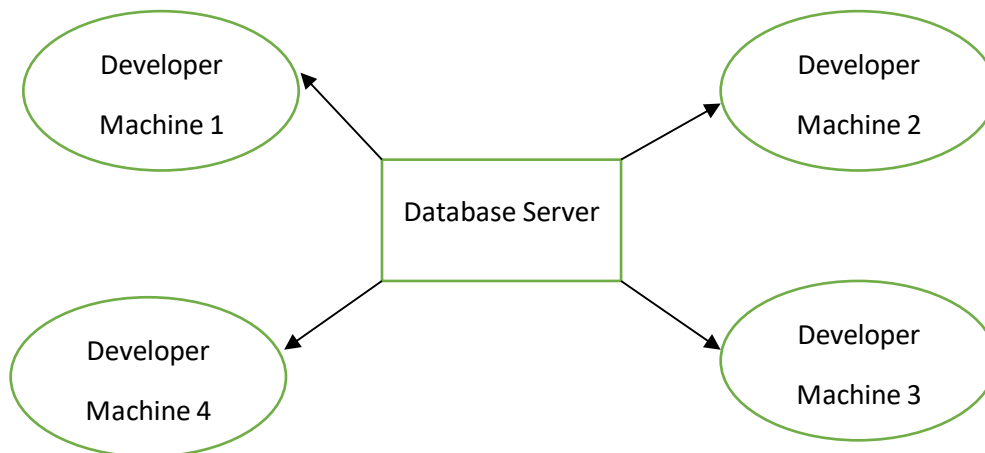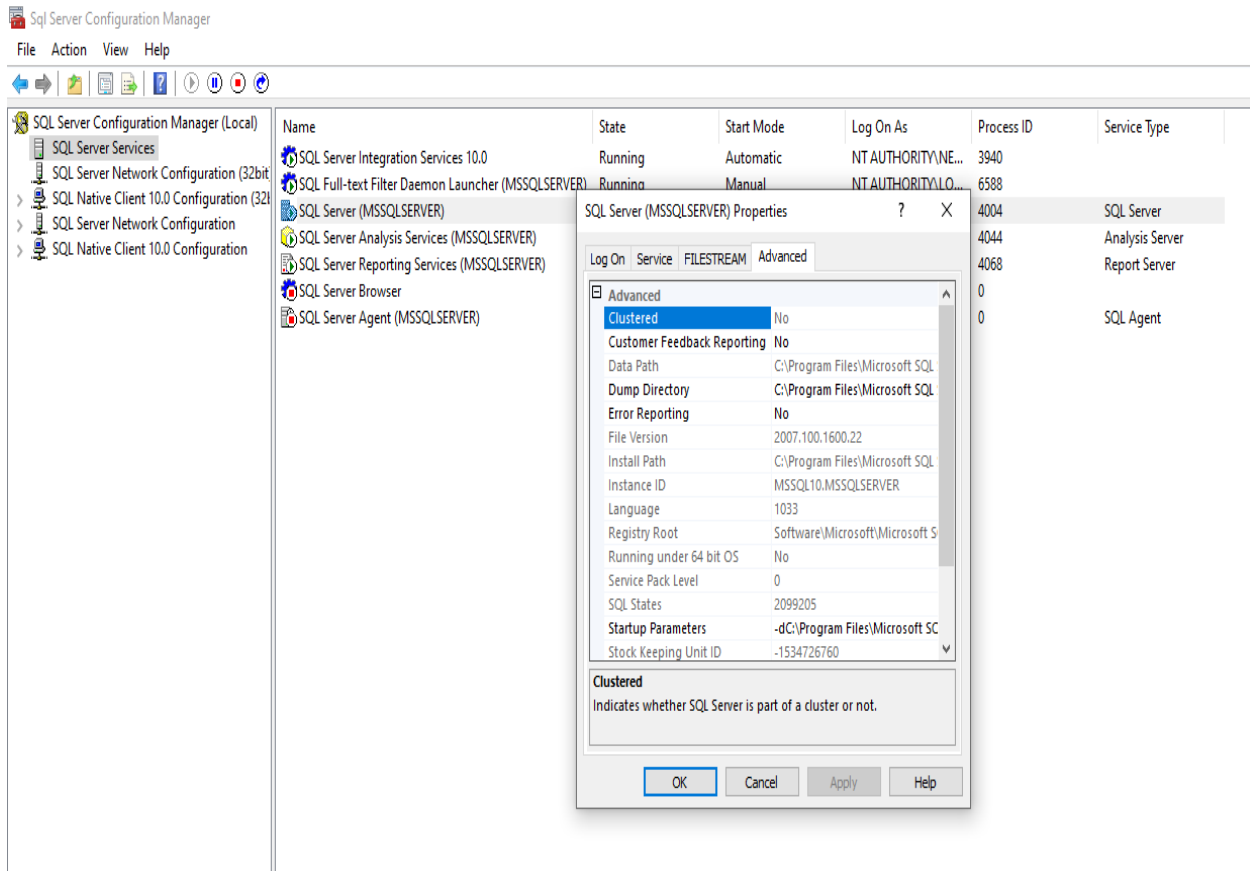
Data Base Creation

- SQL server can be create, alter and delete by using two ways
    - Graphically SSMS or
    - Using Query

Create Database using Query

Create database student

Alter Database using Query

Alter database student modify name= students;

Delete Database

Drop database students

Dropping the database, delete the LDF and MDF Files.

When create the database two file get generated?

.MDF File – (**Master Data File**) contain actual data

.LDF File – **Transaction Log file** (use to recover data)

MDF – It stands for Master Database File. It contains all the main information of the database that are part of the server. This extension also points to various other files. It plays a crucial role in information storage. Overall it is very important for safe and secure supervision of data. In case this file gets damaged, an MDF recovery procedure is conducted to recover it. Doing so is important in order to save the data from going missing

LDF – This file stores information related to transaction logs for main data file. It basically keeps track of what all changes have been made in the database. The information that this file stores ranges from date/time of change, details of the changes made, as well as information related to whoever made the changes. Information related to computer terminals where changes took place is also stored in the logs.

LDF stores changes related to inserts, deletion, updates, addition, etc. Transaction logs kept in the server help in identifying activities related to unauthorized changes as well as where an error is originating. Log information can sometimes come handy in fixing errors, recovering important data, and identifying anomalies.

SQL Operations where LDF Files Play an Important Role

Primarily LDF files are important in three major SQL operations:

1. Recovering incomplete transactions when server is started.

2. Recovering individual transactions.

3. Recovering database in times of failures.

Comparison between MDF and LDF Files

1. MDF file is the primary file in SQL server database. The LDF is a supporting file. The latter stores the information related to transaction logs.

2. MDF contains database record data. LDF, on the other hand records information related to changes made in the server as well as all the actions performed.

3. Unlike MDF, LDF is primarily about three major operations that were mentioned earlier.

4. LDF files can go on to consume a lot of storage space depending on the number of changes made in the server as well as the number of transactions that took place. MDF, on the other hand can vary in its file size with the change of the table and record data.

SQL Commands:

SQL commands are instructions, coded into SQL statements, which are used to communicate with the database to perform specific tasks, work, functions and queries with data.

SQL commands can be used not only for searching the database but also to perform various other functions like, for example, you can *create tables*, add data to tables, or modify data, drop the table, set permissions for users. SQL commands are grouped into four major categories depending on their functionality:

- **Data Definition Language (DDL)** - These SQL commands are used for creating, modifying, and dropping the structure of database objects. The commands are CREATE, ALTER, DROP, RENAME, and TRUNCATE.

- **Data Manipulation Language (DML)** - These SQL commands are used for storing, retrieving, modifying, and deleting data.
  These Data Manipulation Language commands are: SELECT, INSERT, UPDATE, and DELETE.

- **Transaction Control Language (TCL)** - These SQL commands are used for managing changes affecting the data. These commands are COMMIT, ROLLBACK, and SAVEPOINT.

- **Data Control Language (DCL)** - These SQL commands are used for providing security to database objects. These commands are GRANT and REVOKE

Data type	Description
CHARACTER(n)	Character string. Fixed-length n
VARCHAR(n) or CHARACTER VARYING(n)	Character string. Variable length. Maximum length n
BINARY(n)	Binary string. Fixed-length n
BOOLEAN	Stores TRUE or FALSE values
VARBINARY(n) or BINARY VARYING(n)	Binary string. Variable length. Maximum length n
INTEGER(p)	Integer numerical (no decimal). Precision p
SMALLINT	Integer numerical (no decimal). Precision 5

INTEGER	Integer numerical (no decimal). Precision 10
BIGINT	Integer numerical (no decimal). Precision 19
DECIMAL(p,s)	Exact numerical, precision p, scale s. Example: decimal(5,2) is a number that has 3 digits before the decimal and 2 digits after the decimal
NUMERIC(p,s)	Exact numerical, precision p, scale s. (Same as DECIMAL)
FLOAT(p)	Approximate numerical, mantissa precision p. A floating number in base 10 exponential notation. The size argument for this type consists of a single number specifying the minimum precision
REAL	Approximate numerical, mantissa precision 7
FLOAT	Approximate numerical, mantissa precision 16
DOUBLE PRECISION	Approximate numerical, mantissa precision 16
DATE	Stores year, month, and day values
TIME	Stores hour, minute, and second values
TIMESTAMP	Stores year, month, day, hour, minute, and second values
INTERVAL	Composed of a number of integer fields, representing a period of time, depending on the type of interval
ARRAY	A set-length and ordered collection of elements
MULTISET	A variable-length and unordered collection of elements
XML	Stores XML data

Ques Difference between MYSQL and SQL Server

1. MySQL is Available for free. MySQL is an open source.
2. SQL Server is not open source payment has to be made for use of SQL server.
3. MySQL offers only updateable view
4. SQL Server offers indexed view which are much more powerful performance wise.
5. MySQL does not support XML.
6. SQL server supports XML.
7. User defined function are not supported in MySQL.
8. User defined functions are supported in SQL server.
9. MySQL provide only table level security.
10. SQL server provide column level security.
11. MySQL does not for offer any security certification.
12. SQL server has C2 compliant certification. Database security verified by third party.
13. Earlier versions of MySQL does not support triggers. Only MySQL 5.0 supports triggers.
14. SQL server provides trigger.
15. Cursor feature not available in MySQL.
16. Cursor features available in SQL server.
17. Stored procedures and full join facility is not offered in MySQL.
18. Stored procedures and full join facility offered in SQL.
19. Import and export functions have very limited support in Mysql.
20. Import and export functions have extensively support in SQL server.
21. Transaction support is very limited in MySQL.
22. Transaction support is extensively and fully offered in SQL Server.
23. Job scheduling and profiling are not available in MySQL.