Session 1

What is SQL Server?

SQL Server (Microsoft SQL Server) is a relational database management system (RDBMS) developed by Microsoft. It is designed to store and manage data, as well as to provide powerful tools for querying, modifying, and managing the data using SQL (Structured Query Language). SQL Server is widely used for various applications, from small businesses to large enterprises.

Key features of SQL Server:

* Relational Database: Data is organized in tables and relationships are established between these tables.
* SQL Language: SQL Server uses SQL for querying and managing data.
* Scalability: It can handle large databases and high transaction volumes.
* Security: SQL Server offers various levels of security, such as authentication and authorization mechanisms, encryption, and auditing.
* Integration: SQL Server integrates well with various Microsoft technologies and other enterprise-level tools.

Why Use SQL Server?

1. Data Management: SQL Server provides a structured way to manage and store vast amounts of data.
2. Business Intelligence: It has built-in tools like SQL Server Reporting Services (SSRS) and SQL Server Integration Services (SSIS) to help businesses extract, transform, and analyze data.
3. Reliability: SQL Server is known for its reliability, high availability, and disaster recovery features.
4. Performance: It is optimized for high-performance querying, transaction handling, and data processing.
5. Security: It has robust security features, including user roles, permissions, and data encryption.
6. Integration with Microsoft Ecosystem: SQL Server is tightly integrated with other Microsoft products such as Azure, .NET, and Power BI.

SQL Server vs. SSMS (SQL Server Management Studio)

While SQL Server and SSMS are both related to managing databases, they serve very different roles. Here's a comparison:

1. SQL Server:

* Definition: SQL Server is the actual database engine that handles the storage, management, and processing of your data. It is where your data resides.
* Purpose: The primary role of SQL Server is to store and manage data efficiently, ensuring that it is accessible and secure. It processes SQL queries, handles transactions, enforces data integrity, and provides services for data backup, recovery, and high availability.
* Components:
  + Database Engine: Handles data storage, retrieval, and management.
  + SQL Query Processor: Executes SQL commands.
  + Replication, Security, Backup/Recovery: Offers various features for data protection, security, and distribution.

2. SSMS (SQL Server Management Studio):

* Definition: SSMS is a graphical user interface (GUI) tool for managing SQL Server databases. It allows users to interact with SQL Server using a visual interface, making database management more intuitive, especially for those who are not comfortable working purely with command-line interfaces.
* Purpose: SSMS is used to connect to SQL Server, administer databases, write and run SQL queries, and manage database objects like tables, views, and stored procedures. It provides a way to manage and interact with SQL Server visually.
* Features:
  + Query Execution: Write and run SQL queries and scripts.
  + Database Management: Create, modify, and delete databases, tables, indexes, etc.
  + Server Management: Monitor SQL Server performance, configure settings, and manage security roles.
  + Backup/Restore: Perform backup and restore operations.
  + Visual Tools: Use graphical tools to manage the database and server.

How to connect to the SQL Server using SQL Server Management Studio?

You need to follow the below to connect to the SQL Server using SQL Server Management Studio

1. First click on the start
2. Then select all Programs
3. Select the version of Microsoft SQL Server that is installed in your machine, in my case it is 2014
4. Finally, click on the SQL Server Management Studio which will open the below window.

Step1. Select Server Type

As we are going to connect with the SQL Server database, so here we need to select the Server Type as Database Engine. Along with Database Engine, the other Server Types options are available as SQL Server Analysis Services (SSAS), SQL Server Reporting Services (SSRS) and SQL Server Integration Services (SSIS). These there are called MSBI (Microsoft Business Intelligence) which we will discuss in detail in our MSBI Tutorials.

Database Engine:

1. The database engine is the core service of SQL Server which will use for storing a large amount of data, accessing the data, manipulating the data and providing security to the information.
2. In the database engine, the data will be stored in the form of a 2-D format (Tables).

Analysis Services (SSAS):

1. The SSAS (SQL Server Analysis Service) is a tool that is used under the data warehousing/ data mining environment for storing the information in the form of a 3-D format.

Reporting Services (SSRS):

1. SQL Server Reporting Service (SSRS) is a tool that is used to generate various reports such as MS-Word file format, MS-Excel format, .pdf format, XML format, .tiff file format et.
2. The report is a document that is used to store some business-related information.

Integration Services (SSIS):

1. The SQL Server Integration Service (SSIS) is a tool that is used to convert one database tables into another database understandable format. For example, SQL Server database Tables are converting into Oracle understandable table format.

The SSAS, SSRS, SSIS tools are coming under the MSBI (Microsoft Business Intelligence) tool.

Step2. Specify Server Name:

The server name is nothing but the name of the SQL Server or IP address of SQL Server. One more thing that you need to remember is if the SQL Server is installed on your machine then you can specify the server name as a dot (.) or 127.0.0.1 or local.

Server name = (local)

Step3.  Select Authentication

In SQL Server there are two types of authentication i.e. Windows Authentication and SQL Server Authentication. But it will depend on how you installed the SQL Server. That means, at the time of installation, if you select the mixed-mode authentication then you will get both Windows and SQL Server authentication to connect with the SQL Server database or else you will only have windows authentication to connect with the database.

Windows Authentication:

1. It is the default authentication mode of SQL Server.
2. In Windows authentication, we will work on user admin.
3. With Windows authentication mode there is no need to enter the user credentials i.e. user Id and password because User Id and Password are generated by the Operating System by default,

SQL Server Authentication:

1. In SQL Server authentication we will work on the current user.
2. When we will work with SQL Server authentication we should enter user Id and Password (This user Id and password are created by the user at the time of SQL Server software installation).

Once you provide the necessary details and click on the Connect button, then we will be connected to the SQL Server Database. Once you connected, now, click on the New Query option. You can find the New Query option on the top left corner of SQL Server Management Studio .