

DBMS

- A Database Management system is a software used to manage the database.

A DBMS basically serves as an interface between the database and its end-users or programs, allowing users to define (create, modify and delete definition), retrieve, update and manage how the information is organized and optimized.

4 Types of DBMS

- Hierarchical DBMS = shows predecessors and successors
- Relational DBMS = allows access based on relations
- Network DBMS = supports many to many relations
- Object Oriented = DBMS focused more on software

SQL – Structured Query Language, is a standardized programming language which is used for managing relational databases.

With SQL, you can modify databases, add, update, or delete rows of data, retrieve subsets of information from a database and much more.

- Relational databases like MySQL Database, Oracle, MS SQL Server, Sybase etc, use SQL.

Queries and other SQL operations are written as statements. Example: SELECT, INSERT, ADD, UPDATE, DELETE, CREATE, ALTER, TRUNCATE.

What is SQL Server?

- Microsoft SQL server is a relational database management system.
- Supports the Structured Query Language and comes with its own implementation of the SQL language which is called the “transact-sql (t-sql)”.
- It has an integrated environment to handle SQL databases, which is the SQL server management studio

Key Components of SQL Server are:

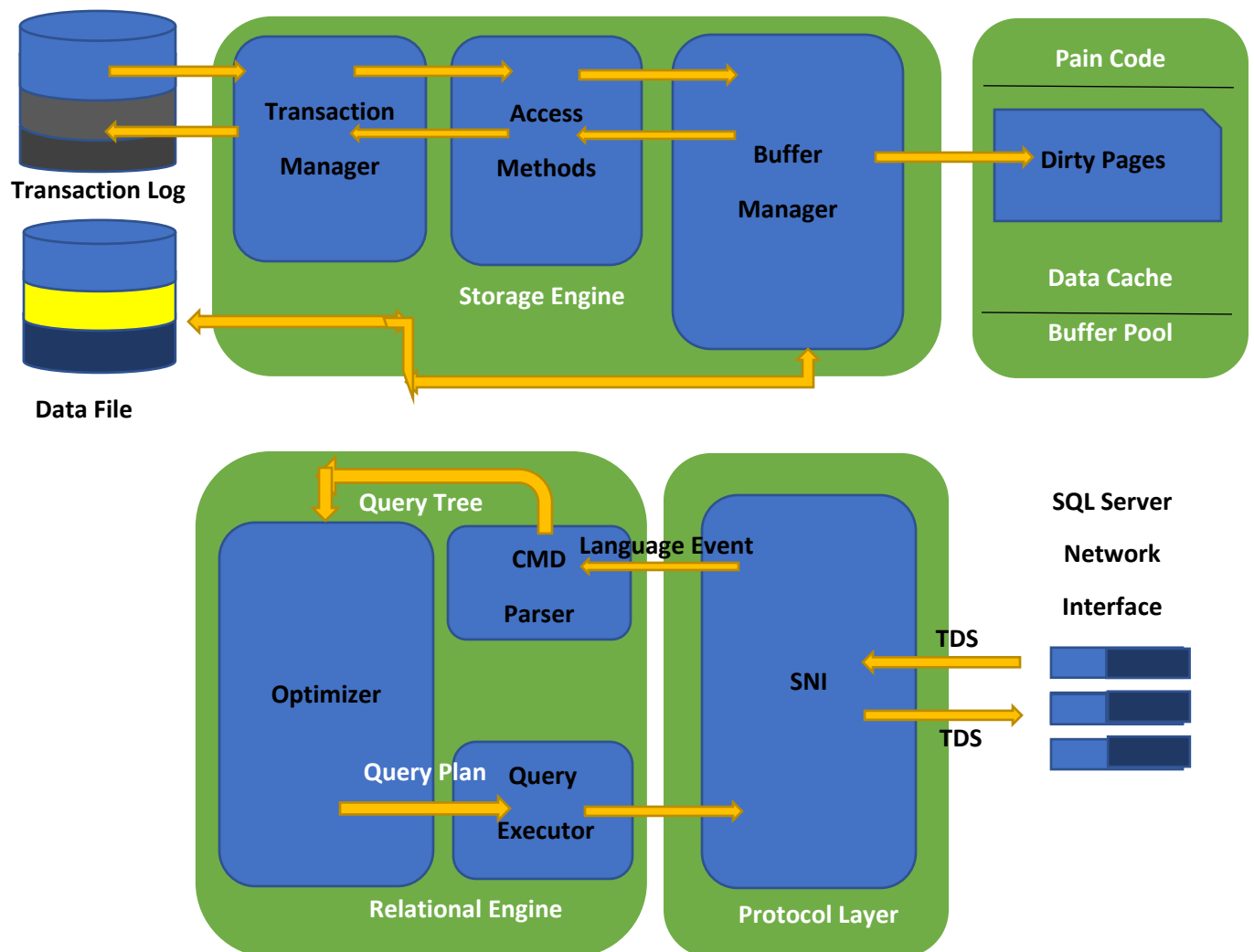
- Database Engine: handles database storage, rapid transaction, processing and security
- SQL Server: start, stop, pause and continue the instance of ms-sql server
- SQL Server Agent: Task scheduler and is triggered by any event
- SQL Server Browser: Connect incoming request to desired server instance
- SQL Server Full -Text Search: let user run full text query
- SQL Server VSS Writer: allows backups and restoration of data file when sql server doesn't run
- SQL Server Analysis Services (SSAS): used to provide data analysis, data mining and machine learning capabilities
- SQL Server Reporting Services (SSRS): Provides features and decision-making capabilities including integration
- SQL Server Integration Services (SSIS): Used to perform allocation of different types of data from multiple sources

Features of SQL Server

- **User Experience**, can be used on various operating systems via docker just deploy from on premises onto cloud can use azure directory data studio.
- **Availability**, provides high availability and disaster recovery on data and load balancing.
- **Performance**, can get great performance of data.
- **Analytics**, with help of business intelligence and other data analysis tools.
- **Security**, provides less vulnerability, secure compliance.
- **Business Intelligence**, gain insight and build great visualization and dimension reports.

Install SQL Server => **Connect to SQL Server using SSMS** => **Access Database Engine**

SQL Server Architecture



SQL Command Categories

1. Data Definition Language Commands:

Consist of the commands used to define the schema.

2. Data Manipulation Language Commands:

Deals with the manipulation of data present in the database.

3. Data Control Language Commands

Deals with the rights, permissions and controls of the database system.

4. Transaction Control Language Commands

Consists of commands which deal with the transactions of the database.

08 SQL Server Data Types

- I. **Exact Numeric** (Numbers, Integers)
- II. **Approximate Numeric** (Decimal, Floats)
- III. **Date and Time** (Date, Day, Time)
- IV. **Character Strings** (Char, Var, Text)
- V. **Unicode Character Strings** (nChar, nVar)
- VI. **Binary Strings** (Var Binary etc)
- VII. **Other Data Types**