



SQL

By
K.Karthikeyan

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What is SQL?

- SQL is Structured Query Language, which is a computer language for storing, manipulating and retrieving data stored in a relational database.
- SQL is the standard language for Relational Database System. All the Relational Database Management Systems (RDMS) like MySQL, MS Access, Oracle, Sybase, Informix, Postgres and SQL Server use SQL as their standard database language

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- they are using different dialects, such as –
- MS SQL Server using T-SQL,
- Oracle using PL/SQL,
- MS Access version of SQL is called JET SQL (native format) etc

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Why SQL?



- SQL is widely popular because it offers the following advantages –
- Allows users to access data in the relational database management systems.
- Allows users to describe the data.
- Allows users to define the data in a database and manipulate that data.
- Allows to embed within other languages using SQL modules, libraries & pre-compilers.
- Allows users to create and drop databases and tables.
- Allows users to create view, stored procedure, functions in a database.
- Allows users to set permissions on tables, procedures and views.

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A Brief History of SQL



- **1970** – Dr. Edgar F. "Ted" Codd of IBM is known as the father of relational databases. He described a relational model for databases.
- **1974** – Structured Query Language appeared.
- **1978** – IBM worked to develop Codd's ideas and released a product named System/R.
- **1986** – IBM developed the first prototype of relational database and standardized by ANSI. The first relational database was released by Relational Software which later came to be known as Oracle.

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SQL Process



These components are –

Query Dispatcher

Optimization Engines

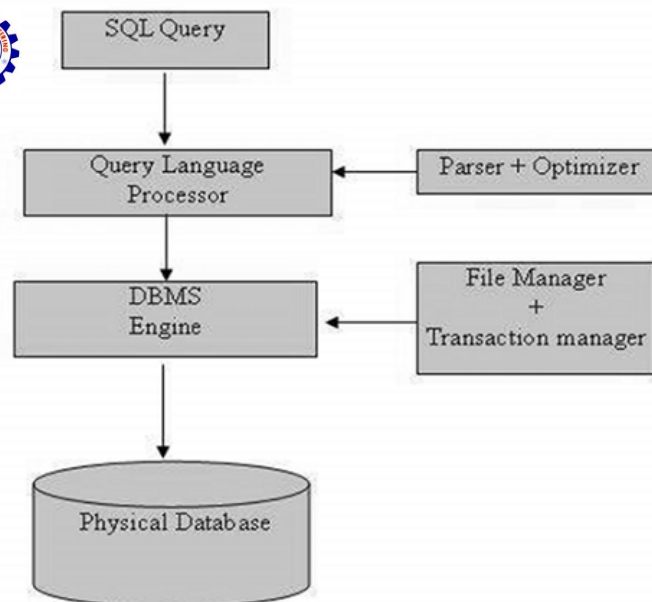
Classic Query Engine

SQL Query Engine, etc.

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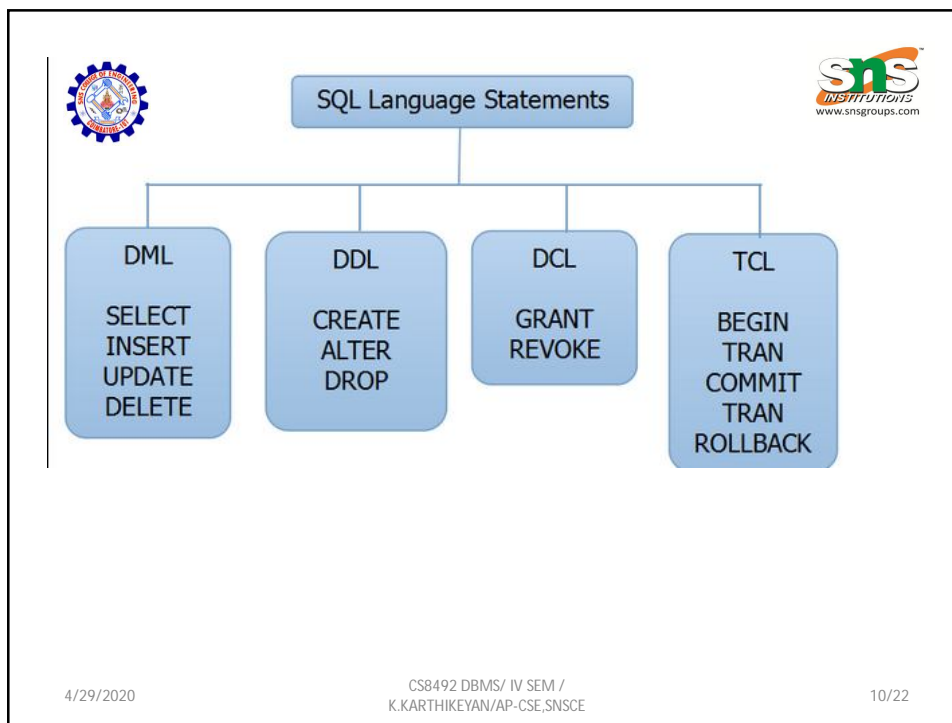
SQL Commands



- DDL - Data Definition Language
- DML - Data Manipulation Language
- DCL - Data Control Language
- TCL - TCL (Transaction Control Language)

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DDL (Data Definition Language)



- DDL statements are used to alter/modify a database or table structure and schema. These statements handle the design and storage of database objects.
- **CREATE** – create a new Table, database, schema
- **ALTER** – alter existing table, column description
- **DROP** – delete existing objects from database

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DML (Data Manipulation Language)



- DML statements affect records in a table. These are basic operations we perform on data such as selecting a few records from a table, inserting new records, deleting unnecessary records, and updating/modifying existing records.
- DML statements include the following:
- **SELECT** – select records from a table
- **INSERT** – insert new records
- **UPDATE** – update/Modify existing records
- **DELETE** – delete existing records

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DCL (Data Control Language)



- DCL statements control the level of access that users have on database objects.
- **GRANT** – allows users to read/write on certain database objects
- **REVOKE** – keeps users from read/write permission on database objects

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TCL (Transaction Control Language)



- TCL statements allow you to control and manage transactions to maintain the integrity of data within SQL statements.
- **BEGIN Transaction** – opens a transaction
- **COMMIT Transaction** – commits a transaction
- **ROLLBACK Transaction** – ROLLBACK a transaction in case of any error

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Syntax for DDL



- Example syntax

Create table student

(Reg_no varchar2(10),

Name char(30),

DOB date,

Address varchar2(50));

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Column name	Data type	Size
Reg_no	varchar2	10
Name	char	30
DOB	date	
Address	varchar2	50

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- **The DROP Command**

- **Syntax:**

DROP TABLE <table_name>

- **Example:**

DROP TABLE Student;

- It will destroy the table and all data which will be recorded in it.

- **The TRUNCATE Command**

- **Syntax:**

TRUNCATE TABLE <Table_name>

- **Example:**

TRUNCATE TABLE Student;

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- **The RENAME Command**

- **Syntax:**

RENAME <OldTableName> TO <NewTableName>

- **Example:**

RENAME <Student> TO <Stu>

- The old name table was Student now new name is the Stu.

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- **The ALTER Table Command**
 - By The use of ALTER TABLE Command we can **modify** our exiting table.
 - **Adding New Columnns**
 - **Syntax:**
 - ALTER TABLE <table_name>
 - ADD (<NewColumnName> <Data_Type>(<size>),.....n)
 - **Example:**
 - ALTER TABLE Student ADD (Age number(2), Marks number(3));
- The Student table is already exist and then we added two more columns **Age** and **Marks** respectively, by the use of above command.

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- **Dropping a Column from the Table**
- **Syntax:**
- ALTER TABLE <table_name> DROP COLUMN <column_name>
- **Example:**
- ALTER TABLE Student DROP COLUMN Age;
- This command will drop particular column
- **Modifying Existing Table**
- **Syntax:**
- ALTER TABLE <table_name> MODIFY (<column_name> <NewDataType>(<NewSize>))
- **Example:**
- ALTER TABLE Student MODIFY (Name Varchar2(40));
- The Name column already exist in Student table, it was char and size 30, now it is modified by Varchar2 and size 40.
- **Restriction on the ALTER TABLE**
- Using the ALTER TABLE clause the following tasks cannot be performed.
- Change the name of the table
- Change the name of the column
- Decrease the size of a column if table data exists

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EVALUATION



- Write a syntax for DDL in SQL .

1. CREATE _____

2. INSERT _____

3. ALTER _____

4. DROP _____



THANK YOU