



# **SNS COLLEGE OF ENGINEERING**

Kurumbapalayam (Po), Coimbatore – 641 107

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING(IoT and  
Cybersecurity Including BCT)**

**COURSE NAME : 19SB504 DATABASE MANAGEMENT SYSTEMS**

**III YEAR / V SEMESTER**

**Unit II-SQL**

**Topic :Basics of SQL**



## What is SQL?

- SQL stands for Structured Query Language
- SQL lets you access and manipulate databases
- SQL became a standard of the American National Standards Institute (ANSI) in 1986, and of the International Organization for Standardization (ISO) in 1987



## What Can SQL do?

- SQL can execute queries against a database
- SQL can retrieve data from a database
- SQL can insert records in a database
- SQL can update records in a database
- SQL can delete records from a database
- SQL can create new databases
- SQL can create new tables in a database
- SQL can create stored procedures in a database
- SQL can create views in a database
- SQL can set permissions on tables, procedures, and views



## Using SQL in Your Web Site

To build a web site that shows data from a database, you will need:

- An RDBMS database program (i.e. MS Access, SQL Server, MySQL)
- To use a server-side scripting language, like PHP or ASP
- To use SQL to get the data you want
- To use HTML / CSS to style the page



## RDBMS

RDBMS stands for Relational Database Management System.

RDBMS is the basis for SQL, and for all modern database systems such as MS SQL Server, IBM DB2, Oracle, MySQL, and Microsoft Access.

The data in RDBMS is stored in database objects called tables. A table is a collection of related data entries and it consists of columns and rows.

Look at the "Customers" table:

### **Example**

```
SELECT * FROM Customers;
```



## Database Tables

A database most often contains one or more tables.

Each table is identified by a name (e.g. "Customers" or "Orders").

Tables contain records (rows) with data.



CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Maria Anders	Obere Str. 57	Berlin	12209	Germany
2	Ana Trujillo Emparedados y helados	Ana Trujillo	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Antonio Moreno	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbköp	Christina Berglund	Berguvsvägen 8	Luleå	S-958 22	Sweden



## Keep in Mind That...



- SQL keywords are NOT case sensitive: **select** is the same as **SELECT**  
In this tutorial we will write all SQL keywords in upper-case.

## Semicolon after SQL Statements?

Some database systems require a semicolon at the end of each SQL statement.

Semicolon is the standard way to separate each SQL statement in database systems that allow more than one SQL statement to be executed in the same call to the server.

In this tutorial, we will use semicolon at the end of each SQL statement.





## Some of The Most Important SQL Commands

- **SELECT** - extracts data from a database
- **UPDATE** - updates data in a database
- **DELETE** - deletes data from a database
- **INSERT INTO** - inserts new data into a database
- **CREATE DATABASE** - creates a new database
- **ALTER DATABASE** - modifies a database
- **CREATE TABLE** - creates a new table
- **ALTER TABLE** - modifies a table
- **DROP TABLE** - deletes a table
- **CREATE INDEX** - creates an index (search key)
- **DROP INDEX** - deletes an index



## DDL and DML

### DDL

- Data Definition Language
- A collection of commands called DDL are used to specify a database's structure.
- Database objects including tables, views, indexes, and constraints can be created, modified, and deleted using these commands.
- DDL statements specify how the data is arranged and accessed rather than altering the data that is stored in the database.



## DDL statements, as examples, include:

- **CREATE TABLE** – Used to create a new table in the database.
- **ALTER TABLE** – Used to modify the structure of an existing table in the database.
- **DROP TABLE** – Used to delete a table and all its data from the database.
- **CREATE INDEX** – Used to create an index on one or more columns in a table.
- **CREATE VIEW** – Used to create a virtual table based on the result of a query.

During the design and upkeep of a database, DDL statements are often executed by database administrators or developers.



## Uses of DDL Commands

Following are the uses of DDL commands:

- **Table creation** – To add new tables to a database, use DDL commands like CREATE TABLE. The columns and data types of the data that will be stored in the database are specified by tables.
- **Table modification** – To change the structure of an existing table, use DDL statements like ALTER TABLE. For instance, you can alter the data type of a column, add a constraint, or add additional columns to a table.
- **Table deletion** – To remove tables from a database, use DDL commands like DROP TABLE. Moreover, this operation clears off all of the table's data.



•**Making indexes** – To make indexes on one or more table columns, use DDL statements like CREATE INDEX. The performance of queries that look for specific values in the indexed columns is enhanced by indexes.

•**View creation** – Virtual tables are created depending on the results of queries using DDL commands like CREATE VIEW. Views are helpful for limiting access to particular columns or rows of data and simplifying complex queries.



## DML Commands



A collection of instructions known as DML (Data Manipulation Language) is used to alter database-stored data.

Data from tables in a database can be inserted, updated, deleted, and retrieved using DML statements.

These statements alter the data that is stored in the database, not the database's structure.

DML statements, as examples, include:

**INSERT** – Used to add new data to a table.

**UPDATE** – Used to modify existing data in a table.

**DELETE** – Used to remove data from a table.

**SELECT** – Used to retrieve data from one or more tables in a database.



## Uses of DML Commands

Following are the uses of DML commands:

- **Data insertion** – To add new data to a table in a database, DML operations like INSERT are employed. With this command, you can update records in a database.
- **Data updating** – To change current data in a table, DML operations like UPDATE are utilised. The values of particular columns in a table can be changed with the help of this command.



- **Data deletion** – To remove data from a table, use DML commands like DELETE. This command can be used to remove obsolete or pointless data from a database.
- **Data retrieval** – To get data from one or more tables in a database, DML operations like SELECT are employed.
- **Filtering data** – Data obtained by a SELECT statement is filtered using DML commands like WHERE. This command can be used to only retrieve the info that is relevant.





## Differences: DDL and DML Commands in DBMS



Comparison Basis	DDL	DML
Basic	It deals with how data is stored in the database and aids in defining the structure or schema of a database.	It enables us to manipulate the data that is kept in the database, including retrieve, update, and delete.
Full-Form	Data Definition Language is the full name of this language.	Data Manipulation Language is the full name of this language.



## Differences: DDL and DML Commands in DBMS



Categorization	There is no additional categorisation for the DDL instructions.	The DML commands are divided into declarative and procedural (non-procedural) DMLs.
Command uses	The commonly used commands under DDL language are: <ul style="list-style-type: none"><li>•CREATE</li><li>•DROP</li><li>•ALTER</li><li>•TRUNCATE</li><li>•RENAME</li></ul>	The commonly used commands under DML language are: <ul style="list-style-type: none"><li>•INSERT</li><li>•UPDATE</li><li>•DELETE</li><li>•SELECT</li></ul>



## Differences: DDL and DML Commands in DBMS



Auto-commit	DDL commands automatically commit changes made to the database, making them permanent.	Database modifications are not irreversible since DML commands are not automatically committed.
Rollback	We cannot undo these statements since DDL instructions rendered the modifications permanent.	Because DML instructions do not permanently change the status of the data, they provide for the option of rollback.



Any Query????

Thank you.....