Structured Query Language (SQL)

SQL is Structured Query Language, which is a computer language for storing, manipulating and retrieving data stored in relational database.

SQL is the standard language for Relation Database System. All relational database management systems like MySQL, MS Access, Oracle, Sybase and SQL Server use SQL as standard database language.

SQL used to :

- Allows users to access data in relational database management systems.
- Allows users to describe the data.
- Allows users to define the data in database and manipulate that data.
- Allows users to create and drop tables.

MS ACCESS

This is one of the most popular Microsoft products. MS Access database is not only an inexpensive but also powerful database for small-scale projects.

MS Access uses the Jet database engine, which utilizes a specific SQL language (sometimes referred to as Jet SQL).

MS Access has easy-to-use graphical interface. Access 2007, a new database format was introduced ACCDB which supports complex data types such as multi valued and attachment fields.

Features:

- Users can create tables, queries, forms and reports and connect them together with macros.
- The import and export of data to many formats including Excel, Outlook, FoxPro, SQL Server, Oracle, etc.
- There is also the Jet Database format (MDB or ACCDB in Access 2007), which can contain the application and data in one file. This makes it very convenient to distribute the entire application to another user, who can run it in disconnected environments.
- Microsoft Access offers parameterized queries. These queries and Access tables can be referenced from other programs like VB6 and .NET through DAO or ADO.

SQL Commands:

The standard SQL commands to interact with relational databases are CREATE, SELECT, INSERT, UPDATE, DELETE and DROP. These commands can be classified into groups based on their nature:

DDL -Data Definition Language:

Command	Description
CREATE	Creates a new table, a view of a table, or other object in database
ALTER	Modifies an existing database object, such as a table.
DROP	Deletes an entire table, a view of a table or other object in the database.

DML -Data Manipulation Language:

Command	Description
INSERT	Creates a record
UPDATE	Modifies records
DELETE	Deletes records

DCL -Data Control Language:

Command	Description
GRANT	Gives a privilege to user
REVOKE	Takes back privileges granted from user

DQL Data Query Language:

Command	Description
SELECT	Retrieves certain records from one or more tables

Create Table

The general format for the CREATE TABLE command is:

CREATE TABLE <tablename>

(

ColumnName Datatype Optional Column Constraint,

ColumnName Datatype Optional Column Constraint,

Optional table Constraints

)

Tablename is the name of the database table such as **Employee**. Each field in the CREATE TABLE has three parts (see above):

1. ColumnName
2. Data type
3. Optional Column Constraint

```
CREATE TABLE Person
(
LastName text(30),
FirstName text(30),
Address text(150),
Age (Number)
)
```

INSERT INTO

The *INSERT statement* adds rows to a table.

format**:**

INSERT INTO table_name

VALUES (value1, value2,....)

This "Persons" table:

LastName	FirstName	Address	City
Pettersen	Kari	Storgt 20	Stavanger

This example uses INSERT to add a record to the Persons table.

```
INSERT INTO Persons
VALUES ('Hetland', 'Camilla', 'Hagabakka 24', 'Sandnes')
```

LastName	FirstName	Address	City
Pettersen	Kari	Storgt 20	Stavanger
Hetland	Camilla	Hagabakka 24	Sandnes

This following example illustrates how to insert a partial row into the Persons table with a column list.

ex: INSERT INTO table_name (column1, column2,...)

VALUES (value1, value2,....)

```
INSERT INTO Persons (LastName, Address)
VALUES ('Rasmussen', 'Storgt 67')
```

LastName	FirstName	Address	City
Pettersen	Kari	Storgt 20	Stavanger
Hetland	Camilla	Hagabakka 24	Sandnes
Rasmussen		Storgt 67	

SELECT

The SELECT statement, or command, allows the user to extract data from tables, based on specific criteria. It is processed according to the following sequence:

format:

SELECT column name(s)

FROM table(s)

WHERE predicate

GROUP BY field(s)

ORDER BY fields

The database table "Persons":

LastName	FirstName	Address	City
Hansen	Ola	Timoteivn 10	Sandnes
Svendson	Tove	Borgvn 23	Sandnes
Pettersen	Kari	Storgt 20	Stavanger

1:

SELECT column_name(s)
FROM table_name

ex: SELECT LastName, FirstName FROM Persons

LastName	FirstName
Hansen	Ola
Svendson	Tove
Pettersen	Kari

ex: SELECT * FROM Persons

LastName	FirstName	Address	City
Hansen	Ola	Timoteivn 10	Sandnes
Svendson	Tove	Borgvn 23	Sandnes
Pettersen	Kari	Storgt 20	Stavanger

SELECT DISTINCT

"Orders" table

Company	OrderNumber
Sega	3412
W3Schools	2312
Trio	4678
W3Schools	6798

ex: SELECT Company FROM Orders

Company
Sega
W3Schools
Trio
W3Schools

ex: SELECT DISTINCT Company FROM Orders

Company
Sega
W3Schools
Trio