SQL is a standard language for accessing and manipulating databases.

## What is SQL?

* SQL stands for Structured Query Language
* SQL lets you access and manipulate databases
* SQL is an ANSI (American National Standards Institute) standard

## 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

## SQL is a Standard - BUT....

Although SQL is an ANSI (American National Standards Institute) standard, there are many different versions of the SQL language.

However, to be compliant with the ANSI standard, they all support at least the major commands (such as SELECT, UPDATE, DELETE, INSERT, WHERE) in a similar manner.

**Note:** Most of the SQL database programs also have their own proprietary extensions in addition to the SQL standard!

## Using SQL in Your Web Site

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

* An RDBMS database program (i.e. MS Access, SQL Server, MySQL)
* A server-side scripting language, like PHP or ASP
* SQL
* HTML / CSS

## RDBMS

RDBMS stands for Relational Database Management System.

RDBMS is the basis for SQL, and for all modern database systems like 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.

## 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.

Below is an example of a table called "Persons":

| **P\_Id** | **LastName** | **FirstName** | **Address** | **City** |
| --- | --- | --- | --- | --- |
| 1 | Hansen | Ola | Timoteivn 10 | Sandnes |
| 2 | Svendson | Tove | Borgvn 23 | Sandnes |
| 3 | Pettersen | Kari | Storgt 20 | Stavanger |

The table above contains three records (one for each person) and five columns (P\_Id, LastName, FirstName, Address, and City).

## SQL Statements

Most of the actions you need to perform on a database are done with SQL statements.

The following SQL statement will select all the records in the "Persons" table:

| SELECT \* FROM Persons |
| --- |

In this tutorial we will teach you all about the different SQL statements.

## Keep in Mind That...

* SQL is not case sensitive

## 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.

We are using MS Access and SQL Server 2000 and we do not have to put a semicolon after each SQL statement, but some database programs force you to use it.

## SQL DML and DDL

SQL can be divided into two parts: The Data Manipulation Language (DML) and the Data Definition Language (DDL).

The query and update commands form the DML part of SQL:

* **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

The DDL part of SQL permits database tables to be created or deleted. It also define indexes (keys), specify links between tables, and impose constraints between tables. The most important DDL statements in SQL are:

* **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

# SQL SELECT Statement



This chapter will explain the SELECT and the SELECT \* statements.

## The SQL SELECT Statement

The SELECT statement is used to select data from a database.

The result is stored in a result table, called the result-set.

### SQL SELECT Syntax

| SELECT column\_name(s) FROM table\_name |
| --- |

and

| SELECT \* FROM table\_name |
| --- |

**Note:** SQL is not case sensitive. SELECT is the same as select.

## An SQL SELECT Example

The "Persons" table:

| **P\_Id** | **LastName** | **FirstName** | **Address** | **City** |
| --- | --- | --- | --- | --- |
| 1 | Hansen | Ola | Timoteivn 10 | Sandnes |
| 2 | Svendson | Tove | Borgvn 23 | Sandnes |
| 3 | Pettersen | Kari | Storgt 20 | Stavanger |

Now we want to select the content of the columns named "LastName" and "FirstName" from the table above.

We use the following SELECT statement:

| SELECT LastName,FirstName FROM Persons |
| --- |

The result-set will look like this:

| **LastName** | **FirstName** |
| --- | --- |
| Hansen | Ola |
| Svendson | Tove |
| Pettersen | Kari |

## SELECT \* Example

Now we want to select all the columns from the "Persons" table.

We use the following SELECT statement:

| SELECT \* FROM Persons |
| --- |

**Tip:** The asterisk (\*) is a quick way of selecting all columns!

The result-set will look like this:

| **P\_Id** | **LastName** | **FirstName** | **Address** | **City** |
| --- | --- | --- | --- | --- |
| 1 | Hansen | Ola | Timoteivn 10 | Sandnes |
| 2 | Svendson | Tove | Borgvn 23 | Sandnes |
| 3 | Pettersen | Kari | Storgt 20 | Stavanger |

## Navigation in a Result-set

Most database software systems allow navigation in the result-set with programming functions, like: Move-To-First-Record, Get-Record-Content, Move-To-Next-Record, etc.

Programming functions like these are not a part of this tutorial. To learn about accessing data with function calls, please visit our [ADO tutorial](http://www.w3schools.com/ado/default.asp) or our [PHP tutorial](http://www.w3schools.com/php/default.asp).