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

SQL SELECT DISTINCT Statement

This chapter will explain the SELECT DISTINCT statement.

The SQL SELECT DISTINCT Statement

In a table, some of the columns may contain duplicate values. This is not a problem, however, sometimes you will want to list only the different (distinct) values in a table.
The DISTINCT keyword can be used to return only distinct (different) values.
SQL SELECT DISTINCT Syntax

```
SELECT DISTINCT column_name(s)
FROM table_name
```

SELECT DISTINCT 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 only the distinct values from the column named "City" from the table above.
We use the following SELECT statement:

```
SELECT DISTINCT City FROM Persons
```

The result-set will look like this:

City
Sandnes
Stavanger

SQL WHERE Clause

The WHERE clause is used to filter records.

The WHERE Clause

The WHERE clause is used to extract only those records that fulfill a specified criterion.
SQL WHERE Syntax

```
SELECT column_name(s)
FROM table_name
WHERE column_name operator value
```

WHERE Clause 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 only the persons living in the city "Sandnes" from the table above.
We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE City='Sandnes'
```

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

Quotes Around Text Fields

SQL uses single quotes around text values (most database systems will also accept double quotes).
Although, numeric values should not be enclosed in quotes.
For text values:

```
This is correct:

SELECT * FROM Persons WHERE FirstName='Tove'

This is wrong:

SELECT * FROM Persons WHERE FirstName=Tove
```

For numeric values:

```
This is correct:

SELECT * FROM Persons WHERE Year=1965

This is wrong:

SELECT * FROM Persons WHERE Year='1965'
```

SQL AND & OR Operators

The AND & OR operators are used to filter records based on more than one condition.

The AND & OR Operators

The AND operator displays a record if both the first condition and the second condition is true.
The OR operator displays a record if either the first condition or the second condition is true.

AND Operator 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 only the persons with the first name equal to "Tove" AND the last name equal to "Svendson":
We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE FirstName='Tove'
AND LastName='Svendson'
```

The result-set will look like this:

P_Id	LastName	FirstName	Address	City
2	Svendson	Tove	Borgvn 23	Sandnes

OR Operator Example

Now we want to select only the persons with the first name equal to "Tove" OR the first name equal to "Ola":
We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE FirstName='Tove'
OR FirstName='Ola'
```

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

Combining AND & OR

You can also combine AND and OR (use parenthesis to form complex expressions).
Now we want to select only the persons with the last name equal to "Svendson" AND the first name equal to "Tove" OR to "Ola":
We use the following SELECT statement:

```
SELECT * FROM Persons WHERE
LastName='Svendson'
AND (FirstName='Tove' OR FirstName='Ola')
```

The result-set will look like this:

P_Id	LastName	FirstName	Address	City
2	Svendson	Tove	Borgvn 23	Sandnes

SQL ORDER BY Keyword

The ORDER BY keyword is used to sort the result-set.

The ORDER BY Keyword

The ORDER BY keyword is used to sort the result-set by a specified column.
The ORDER BY keyword sort the records in ascending order by default.
If you want to sort the records in a descending order, you can use the DESC keyword.
SQL ORDER BY Syntax

```
SELECT column_name(s)
FROM table_name
ORDER BY column_name(s) ASC|DESC
```

ORDER BY 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
4	Nilsen	Tom	Vingvn 23	Stavanger

Now we want to select all the persons from the table above, however, we want to sort the persons by their last name.
We use the following SELECT statement:

```
SELECT * FROM Persons
ORDER BY LastName
```

The result-set will look like this:

P_Id	LastName	FirstName	Address	City
1	Hansen	Ola	Timoteivn 10	Sandnes
4	Nilsen	Tom	Vingvn 23	Stavanger
3	Pettersen	Kari	Storgt 20	Stavanger
2	Svendson	Tove	Borgvn 23	Sandnes

ORDER BY DESC Example

Now we want to select all the persons from the table above, however, we want to sort the persons descending by their last name.
We use the following SELECT statement:

```
SELECT * FROM Persons
ORDER BY LastName DESC
```

The result-set will look like this:

P_Id	LastName	FirstName	Address	City

2	Svendson	Tove	Borgvn 23	Sandnes
3	Pettersen	Kari	Storgt 20	Stavanger
4	Nilsen	Tom	Vingvn 23	Stavanger
1	Hansen	Ola	Timoteivn 10	Sandnes

SQL INSERT INTO Statement

The INSERT INTO statement is used to insert new records in a table.

The INSERT INTO Statement

The INSERT INTO statement is used to insert a new row in a table.

SQL INSERT INTO Syntax

It is possible to write the INSERT INTO statement in two forms.
The first form doesn't specify the column names where the data will be inserted, only their values:

```
INSERT INTO table_name
VALUES (value1, value2, value3,...)
```

The second form specifies both the column names and the values to be inserted:

```
INSERT INTO table_name (column1, column2, column3,...)
VALUES (value1, value2, value3,...)
```

SQL INSERT INTO Example

We have the following "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 insert a new row in the "Persons" table.
We use the following SQL statement:

```
INSERT INTO Persons
VALUES (4,'Nilsen', 'Johan', 'Bakken 2', 'Stavanger')
```

The "Persons" table will now 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
4	Nilsen	Johan	Bakken 2	Stavanger

Insert Data Only in Specified Columns

It is also possible to only add data in specific columns.
The following SQL statement will add a new row, but only add data in the "P_Id", "LastName" and the "FirstName" columns:

```
INSERT INTO Persons (P_Id, LastName, FirstName)
VALUES (5, 'Tjessem', 'Jakob')
```

The "Persons" table will now 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
4	Nilsen	Johan	Bakken 2	Stavanger
5	Tjessem	Jakob		

SQL UPDATE Statement

The UPDATE statement is used to update records in a table.

The UPDATE Statement

The UPDATE statement is used to update existing records in a table.
SQL UPDATE Syntax

```
UPDATE table_name
SET column1=value, column2=value2,...
WHERE some_column=some_value
```

Note: Notice the WHERE clause in the UPDATE syntax. The WHERE clause specifies which record or records that should be updated. If you omit the WHERE clause, all records will be updated!

SQL UPDATE 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
4	Nilsen	Johan	Bakken 2	Stavanger
5	Tjessem	Jakob		

Now we want to update the person "Tjessem, Jakob" in the "Persons" table.
We use the following SQL statement:

```
UPDATE Persons
SET Address='Nissestien 67', City='Sandnes'
WHERE LastName='Tjessem' AND FirstName='Jakob'
```

The "Persons" table will now 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
4	Nilsen	Johan	Bakken 2	Stavanger
5	Tjessem	Jakob	Nissestien 67	Sandnes

SQL UPDATE Warning

Be careful when updating records. If we had omitted the WHERE clause in the example above, like this:

```
UPDATE Persons
SET Address='Nissestien 67', City='Sandnes'
```

The "Persons" table would have looked like this:

P_Id	LastName	FirstName	Address	City
1	Hansen	Ola	Nissestien 67	Sandnes
2	Svendson	Tove	Nissestien 67	Sandnes
3	Pettersen	Kari	Nissestien 67	Sandnes
4	Nilsen	Johan	Nissestien 67	Sandnes
5	Tjessem	Jakob	Nissestien 67	Sandnes

SQL DELETE Statement

The DELETE statement is used to delete records in a table.

The DELETE Statement

The DELETE statement is used to delete rows in a table.

SQL DELETE Syntax

```
DELETE FROM table_name
WHERE some_column=some_value
```

Note: Notice the WHERE clause in the DELETE syntax. The WHERE clause specifies which record or records that should be deleted. If you omit the WHERE clause, all records will be deleted!

SQL DELETE 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
4	Nilsen	Johan	Bakken 2	Stavanger
5	Tjessem	Jakob	Nissestien 67	Sandnes

Now we want to delete the person "Tjessem, Jakob" in the "Persons" table.
We use the following SQL statement:

```
DELETE FROM Persons
WHERE LastName='Tjessem' AND FirstName='Jakob'
```

The "Persons" table will now 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
4	Nilsen	Johan	Bakken 2	Stavanger

Delete All Rows

It is possible to delete all rows in a table without deleting the table. This means that the table structure, attributes, and indexes will be intact:

```
DELETE FROM table_name

or

DELETE * FROM table_name
```

Note: Be very careful when deleting records. You cannot undo this statement!

SQL TOP Clause

The TOP Clause

The TOP clause is used to specify the number of records to return.

The TOP clause can be very useful on large tables with thousands of records. Returning a large number of records can impact on performance.
Note: Not all database systems support the TOP clause.
SQL Server Syntax

```
SELECT TOP number|percent column_name(s)
FROM table_name
```

SQL SELECT TOP Equivalent in MySQL and Oracle
MySQL Syntax

```
SELECT column_name(s)
FROM table_name
LIMIT number
```

Example

```
SELECT *
FROM Persons
LIMIT 5
```

Oracle Syntax

```
SELECT column_name(s)
FROM table_name
WHERE ROWNUM <= number
```

Example

```
SELECT *
FROM Persons
WHERE ROWNUM <=5
```

SQL TOP 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
4	Nilsen	Tom	Vingvn 23	Stavanger

Now we want to select only the two first records in the table above.
We use the following SELECT statement:

```
SELECT TOP 2 * FROM Persons
```

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

SQL TOP PERCENT 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
4	Nilsen	Tom	Vingvn 23	Stavanger

Now we want to select only 50% of the records in the table above.
We use the following SELECT statement:

```
SELECT TOP 50 PERCENT * FROM Persons
```

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

SQL LIKE Operator

The LIKE operator is used in a WHERE clause to search for a specified pattern in a column.

The LIKE Operator

The LIKE operator is used to search for a specified pattern in a column.

SQL LIKE Syntax

```
SELECT column_name(s)
FROM table_name
WHERE column_name LIKE pattern
```

LIKE Operator 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 persons living in a city that starts with "s" from the table above.

We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE City LIKE 's%'
```

The "%" sign can be used to define wildcards (missing letters in the pattern) both before and after the pattern.
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

Next, we want to select the persons living in a city that ends with an "s" from the "Persons" table.
We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE City LIKE '%s'
```

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

Next, we want to select the persons living in a city that contains the pattern "tav" from the "Persons" table.
We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE City LIKE '%tav%'
```

The result-set will look like this:

P_Id	LastName	FirstName	Address	City
3	Pettersen	Kari	Storgt 20	Stavanger

It is also possible to select the persons living in a city that NOT contains the pattern "tav" from the "Persons" table, by using the NOT keyword.
We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE City NOT LIKE '%tav%'
```

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

SQL Wildcards

SQL wildcards can be used when searching for data in a database.

SQL Wildcards

SQL wildcards can substitute for one or more characters when searching for data in a database.
SQL wildcards must be used with the SQL LIKE operator.
With SQL, the following wildcards can be used:

Wildcard	Description
%	A substitute for zero or more characters
_	A substitute for exactly one character
[charlist]	Any single character in charlist
[^charlist] or [!charlist]	Any single character not in charlist

SQL Wildcard Examples

We have the following "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

Using the % Wildcard

Now we want to select the persons living in a city that starts with "sa" from the "Persons" table.
We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE City LIKE 'sa%'
```

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

Next, we want to select the persons living in a city that contains the pattern "nes" from the "Persons" table.
We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE City LIKE '%nes%'
```

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

Using the _ Wildcard

Now we want to select the persons with a first name that starts with any character, followed by "la" from the "Persons" table.
We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE FirstName LIKE '_la'
```

The result-set will look like this:

P_Id	LastName	FirstName	Address	City
1	Hansen	Ola	Timoteivn 10	Sandnes

Next, we want to select the persons with a last name that starts with "S", followed by any character, followed by "end", followed by any character, followed by "on" from the "Persons" table.
We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE LastName LIKE 'S_end_on'
```

The result-set will look like this:

P_Id	LastName	FirstName	Address	City
2	Svendson	Tove	Borgvn 23	Sandnes

Using the [charlist] Wildcard

Now we want to select the persons with a last name that starts with "b" or "s" or "p" from the "Persons" table.
We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE LastName LIKE '[bsp]%'
```

The result-set will look like this:

P_Id	LastName	FirstName	Address	City
2	Svendson	Tove	Borgvn 23	Sandnes
3	Pettersen	Kari	Storgt 20	Stavanger

Next, we want to select the persons with a last name that do not start with "b" or "s" or "p" from the "Persons" table.
We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE LastName LIKE '[!bsp]%'
```

The result-set will look like this:

P_Id	LastName	FirstName	Address	City
1	Hansen	Ola	Timoteivn 10	Sandnes

SQL IN Operator

The IN Operator

The IN operator allows you to specify multiple values in a WHERE clause.

SQL IN Syntax

```
SELECT column_name(s)
FROM table_name
WHERE column_name IN (value1,value2,...)
```

IN Operator 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 persons with a last name equal to "Hansen" or "Pettersen" from the table above.

We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE LastName IN ('Hansen','Pettersen')
```

The result-set will look like this:

P_Id	LastName	FirstName	Address	City
1	Hansen	Ola	Timoteivn 10	Sandnes
3	Pettersen	Kari	Storgt 20	Stavanger

SQL BETWEEN Operator

The BETWEEN operator is used in a WHERE clause to select a range of data between two values.

The BETWEEN Operator

The BETWEEN operator selects a range of data between two values. The values can be numbers, text, or dates.

SQL BETWEEN Syntax

```
SELECT column_name(s)
FROM table_name
WHERE column_name
BETWEEN value1 AND value2
```

BETWEEN Operator 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 persons with a last name alphabetically between "Hansen" and "Pettersen" from the table above.
We use the following SELECT statement:

```
SELECT * FROM Persons
WHERE LastName
BETWEEN 'Hansen' AND 'Pettersen'
```

The result-set will look like this:

P_Id	LastName	FirstName	Address	City
1	Hansen	Ola	Timoteivn 10	Sandnes

Note: The BETWEEN operator is treated differently in different databases.
In some databases, persons with the LastName of "Hansen" or "Pettersen" will not be listed, because the BETWEEN operator only selects fields that are between and excluding the test values).
In other databases, persons with the LastName of "Hansen" or "Pettersen" will be listed, because the BETWEEN operator selects fields that are between and including the test values).
And in other databases, persons with the LastName of "Hansen" will be listed, but "Pettersen" will not be listed (like the example above), because the BETWEEN operator selects fields between the test values, including the first test value and excluding the last test value.
Therefore: Check how your database treats the BETWEEN operator.

Example 2

To display the persons outside the range in the previous example, use NOT BETWEEN:

```
SELECT * FROM Persons
WHERE LastName
NOT BETWEEN 'Hansen' AND 'Pettersen'
```

The result-set will look like this:

P_Id	LastName	FirstName	Address	City
2	Svendson	Tove	Borgvn 23	Sandnes
3	Pettersen	Kari	Storgt 20	Stavanger

SQL Alias

With SQL, an alias name can be given to a table or to a column.

SQL Alias

You can give a table or a column another name by using an alias. This can be a good thing to do if you have very long or complex table names or column names.
An alias name could be anything, but usually it is short.

SQL Alias Syntax for Tables

```
SELECT column_name(s)
FROM table_name
AS alias_name
```

SQL Alias Syntax for Columns

```
SELECT column_name AS alias_name
FROM table_name
```

Alias Example

Assume we have a table called "Persons" and another table called "Product_Orders". We will give the table aliases of "p" an "po" respectively.
Now we want to list all the orders that "Ola Hansen" is responsible for.
We use the following SELECT statement:

```
SELECT po.OrderID, p.LastName, p.FirstName
FROM Persons AS p,
Product_Orders AS po
WHERE p.LastName='Hansen' AND p.FirstName='Ola'
```

The same SELECT statement without aliases:

```
SELECT Product_Orders.OrderID, Persons.LastName, Persons.FirstName
FROM Persons,
Product_Orders
WHERE Persons.LastName='Hansen' AND Persons.FirstName='Ola'
```

As you'll see from the two SELECT statements above; aliases can make queries easier to both write and to read.

```
SELECT column_name(s) FROM table_name1
UNION
SELECT column_name(s) FROM table_name2
```

Note: The UNION operator selects only distinct values by default. To allow duplicate values, use UNION ALL.

SQL UNION ALL Syntax

```
SELECT column_name(s) FROM table_name1
UNION ALL
SELECT column_name(s) FROM table_name2
```

PS: The column names in the result-set of a UNION are always equal to the column names in the first SELECT statement in the UNION.

SQL SELECT INTO Statement

The SQL SELECT INTO statement can be used to create backup copies of tables.

The SQL SELECT INTO Statement

The SELECT INTO statement selects data from one table and inserts it into a different table.
The SELECT INTO statement is most often used to create backup copies of tables.

SQL SELECT INTO Syntax

We can select all columns into the new table:

```
SELECT *
INTO new_table_name [IN externaldatabase]
FROM old_tablename
```

Or we can select only the columns we want into the new table:

```
SELECT column_name(s)
INTO new_table_name [IN externaldatabase]
FROM old_tablename
```

SQL SELECT INTO Example

Make a Backup Copy - Now we want to make an exact copy of the data in our "Persons" table.
We use the following SQL statement:

```
SELECT *
INTO Persons_Backup
FROM Persons
```

We can also use the IN clause to copy the table into another database:

```
SELECT *
INTO Persons_Backup IN 'Backup.mdb'
FROM Persons
```

We can also copy only a few fields into the new table:

```
SELECT LastName,FirstName
INTO Persons_Backup
FROM Persons
```

SQL SELECT INTO - With a WHERE Clause

We can also add a WHERE clause.
The following SQL statement creates a "Persons_Backup" table with only the persons who lives in the city "Sandnes":

```
SELECT LastName,Firstname
INTO Persons_Backup
FROM Persons
WHERE City='Sandnes'
```

SQL Data Types

Data types and ranges for Microsoft Access, MySQL and SQL Server.

Microsoft Access Data Types

Data type	Description	Storage
Text	Use for text or combinations of text and numbers. 255 characters maximum	
Memo	Memo is used for larger amounts of text. Stores up to 65,536 characters. **Note:** You cannot sort a memo field. However, they are searchable	
Byte	Allows whole numbers from 0 to 255	1 byte
Integer	Allows whole numbers between -32,768 and 32,767	2 bytes
Long	Allows whole numbers between -2,147,483,648 and 2,147,483,647	4 bytes
Single	Single precision floating-point. Will handle most decimals	4 bytes
Double	Double precision floating-point. Will handle most decimals	8 bytes
Currency	Use for currency. Holds up to 15 digits of whole dollars, plus 4 decimal places. **Tip:** You can choose which country's currency to use	8 bytes
AutoNumber	AutoNumber fields automatically give each record its own number, usually starting at 1	4 bytes
Date/Time	Use for dates and times	8 bytes
Yes/No	A logical field can be displayed as Yes/No, True/False, or On/Off. In code, use the constants True and False (equivalent to -1 and 0).**Note:** Null values are not allowed in Yes/No fields	1 bit
Ole Object	Can store pictures, audio, video, or other BLOBs (Binary Large OBjects)	up to 1GB
Hyperlink	Contain links to other files, including web pages	
Lookup Wizard	Let you type a list of options, which can then be chosen from a drop-down list	4 bytes