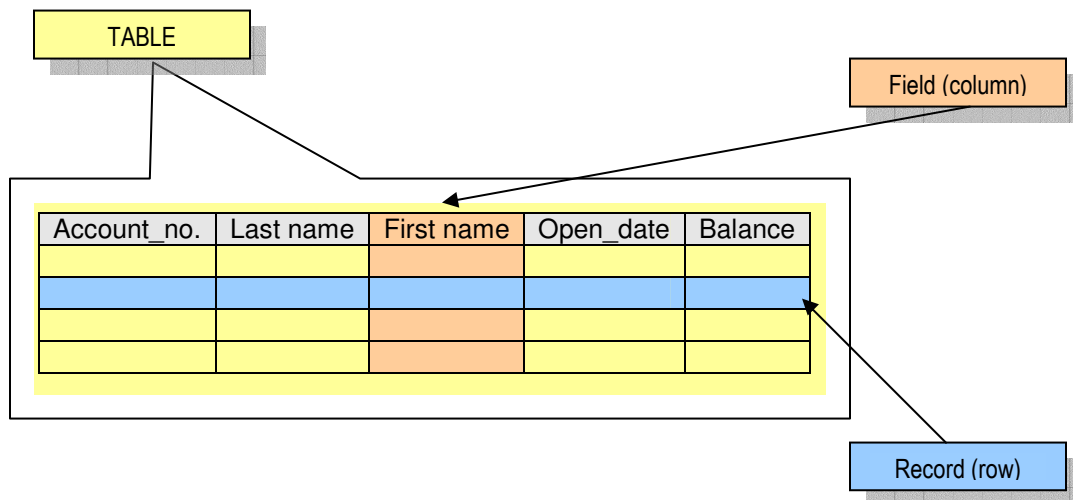


SQL TUTORIAL: How we modify a Table Structure?

CREATING TABLES: Brief explanation

The basic forms where data is store in a database are **tables**. Tables are divided into rows and columns, each row represent a unit of data (**record**) and a column is an attribute of that unit (**fields**).

(1) Fig. 1. CLIENTS Table structure



SQL provides the user with a command giving the flexible way to fit the needs to store the user's data; the tables are created using the **CREATE TABLE** (ref-1) statement. As we show next:

Example 1: For example, we need to create a table that stores the client's information, to manage the accounts for each client.

(2) The SQL syntax for this is:

```
CREATE TABLE clients
(Account_no varchar(12),
Lastname varchar(25),
Firstname varchar(20),
Open_date date,
Balance number(10));
```

The result is this:

Account_no.	Last name	First name	Open_date	Balance

The complete structure of a table is formed by field names, field types (ref-1), also the key fields (indexes) to access or sort the records in the table.

(3) You can specify primary keys by adding the words PRIMARY KEY after the data type.

```
CREATE TABLE clients
(Account_no varchar(12) PRIMARY KEY,
Lastname varchar(25),
Firstname varchar(20),
Open_date date,
Balance number(10));
```

Modifying Table Structure: Syntax

After a table is created using the CREATE TABLE statement, the table structure can be modified using the ALTER TABLE statement (ref-3).

Statement syntax:

```
ALTER TABLE <table name>
{ADD {COLUMN <field name> <field type>[<size>] [NOT NULL]
[CONSTRAIN <index>] | [CONSTRAIN <multi field index>] |
DROP {COLUMN <field name> | CONSTRAINT <index name>}}
```

Modifying Table Structure: Adding a new column (field)

ALTER TABLE is used to add or drop a column inside the table structure.

Example 2: Suppose that you need to add a new filed CREDIT to the table CLIENTS, How can this be done?

(4) Here is the correct syntax to do this:

```
ALTER TABLE clients
ADD COLUMN credit number(16);
```

The result is this:

Account_no.	Last name	First name	Open_date	Balance	Credit

New added column

For the added column you must specify the data type or <field type>, SQL provides various data types (ref-4).

The statement optional value for a column can be to use the NOT NULL clause, as follows:

(5) Specifying a not null column:

```
ALTER TABLE clients
  ADD COLUMN credit number(16) NOT NULL;
```

This will tell that this field can't be NULL or empty when the user inputs its data, this can be helpful on the case that this field is used as a Primary Key to create indexes.

Modifying Table Structure: Dropping columns

Now what if we don't need a field in a table anymore?... the way to drop a column is shown next.

Account_no.	Last name	First name	Open_date	Balance	Credit

Drop column

(6). Syntax:

```
ALTER TABLE clients
  DROP COLUMN balance;
```

The result:

Account_no.	Last name	First name	Open_date	Credit

The CONSTRAINT clause is used to add/drop indexes for the table as an example you can add a column and specify the constrain as follows:

```
ALTER TABLE clients  
  ADD CONSTRAINT account_no PRIMARY KEY account_no;
```

This will specify Account number as the Primary Key for the CLIENTS table.

On-line References:

SQL Course

<http://www.w3schools.com/sql/default.asp>

ALTER TABLE statement

<http://jeff-lab.queensu.ca/stat/sas/sasman/sashtml/proc/zertable.htm>

Data Types in SQL

http://www.connx.com/products/connx/Connx%208.5%20UserGuide/oracle_d.htm