Contents

Access

Introduction

Before we begin, let's look at some of the advantages of a database.

- Access to data more quickly and easily.
- All the data is in a single place; in your database
- Able group together data that comes from several sources.
- Easy to make Ad hoc searches or analysis. Ex: How many of product X do we have in stock? Who are top ten customers at the moment? What products is selling best? Who are my best salespersons? My worst ?
- Better follow-up on data.
- Better data management.
- Better data analysis.
- Better decision-taking.
- Better able to meet the needs of the clientele.
- Automation of certain repetitive tasks.

Why learn how to use a relational database?

This type of database has several advantages compared with a simple database also called" flat file". It uses much less space because it removes the repetition or the redundancy of the data. To understand better the advantages of a relational database management system (RDBMS), let us use an example of invoices to compare these two types of database and to show certain basic concepts of a RDBMS.

Let's look at some of the data you would normally find on an invoice:
Ex: Date, Invoice number, Salesperson ID Number, Product ID, Quantity sold, Unit price, Product description, Subtotal, Taxes, Total...

Here are some of these data in one simple database.

Invoice No.	Customer	Product	Description	Unit price
1001	ABC	415	TRIANGLE	12.75
1002	ABC	416	SQUARE	10.00
1003	XYZ	415	TRIANGLE	12.75

The idea of a relational database is to distribute the data into many identifiable distinct databases or tables and then to create connections, common info, links, **relations** among each of them. Here is how fields of an invoice could be divided in a relational database.

Invoice	**Customer**	**Employee**	**Inventory**
Invoice No.	Customer ID	Employee ID	Product ID
Product ID	Address	Last name	Description
Qty sold	Postal code	Prénom (first name)	Unit price
Employee ID	Phone no.	Social Security No.	Available qty
No. Customer	Person in charge	Hiring date	Ordered qty

In the previous tables, the table Customer ID field fetches the data about the customer in the **Customer** table. It's useless to rewrite the data of the customer several times ! The database can fetch the data on the customer thanks to a relation between these two tables on the Customer ID field. The same thing occurs for the necessary data for the tables **Employee** (salesperson) and **Inventory** by their common fields Employee ID and Product ID respectively.

Because of the relations between the tables, it's useless to rewrite the redundant or repetitive data. This preserves more space for other data. To some extent, it also avoids errors while rewriting the same data like "typos". For the three invoices of the example, you save space and time by not having to rewrite the data about the customer ABC nor the description and the unit price of the product 415. And this is just about three invoices ! Image the savings when you have hundreds and thousands of invoices per day !

Definition

The use of a database brings also new terms to be understood. Here is the list of the terms that will be used for all the pages in Access's section.

Field: A necessary data about a person, a thing or an event. Ex: color, size, model, date, name, Prénom (first name), telephone, addresses, description, comments etc.

Record: A group fields that describes a person, a thing or an event. Ex: name, Prénom (first name), date of birth, telephone, number of social security number,company employee ID, address, telephone, fax, person in charge, department...

The field phone number can be used by three different ways. It can be the phone number of an employee, a person in another department or another company.

Table: A group of records that have a subject a common. Ex: employees, inventory, customer, suppliers, vehicles, contacts etc.

Database: A group of tables, queries, forms, reports and programming that constitutes a complete data system. Ex: management for invoicing, management for inventory, registration of vehicles, bookings etc.

The definition of a **database** now takes a larger role than it had previously. It's not just what we now call a table anymore; a file that contains of the useful data for the user. It now contains the queries, the forms, the states, the macro and the modules to develop an "application" or a complete "system" that answers to the specific needs of the user.

What are the components of Access?

Tables: Structure of the table, list of fields and the data the user enters are stored there.

Queries: Search for data that answers certain criteria determined by the user.

Form: Presentation of the data on the screen in a practical way for the user to view, enter and modify data.

État: Presentation of the data about paper in a practical way for the user.

Macro: Development of routines to automate certain tasks.

Modules: Programming

Create a database

To help you to understand the creation of a database, this page will demonstrate the stages to be followed. To avoid repeating the text of this section of the site, you'll be asked to go and read the text of the other pages on tables and relations. The exercise will consist in creating a database for the invoicing of a company.

The first stage of the creation of a database is the *analysis*. It's without a doubt the most important stage. In fact, it's also true for any application or document that you create. Think first ! If you pass too quickly on this stage, you'll then lose a lot of time and efforts to redo what should have been carried out previously.

Before creating your database, it's necessary that you have a clear idea of what your needs will be. It's necessary to prepare a *detailed* analysis of your needs. What are the data that you'll need? Ex: What data I need on my customers, on my suppliers, on my inventory, on my staff etc.

A technique, among others, than you can use consists in working from the " top-down ". Think of the forms and reports that you'll need. Knowing the results that you need, it's necessary to find what are the necessary fields to reach these results. For example, it's necessary to know the quantities sold and the unit price before knowing the total of sales.

You can also use the " bottom-up " technique. From the base, you determine all the data that are necessary for your queries, forms and reports of your database. You can use both techniques toinsure that you have all the necessary data.

For the purpose of the exercise, take a moment and write on a sheet of paper with the fields you can find on an invoice. try to find as many fields as you can.

To avoid cheating, I put the list of the fields that I found at the bottom of this page. You can compare with my results *after* having done the exercise. Press this link to see the list.

The second stage: group together the data into tables.

It's then necessary to group together the fields into entities in a table that have a common theme. Ex: Will the fields "Discount" or "Terms of payment" go to the table "Invoice" or with "Customer"? It all depends on your conditions you have to fulfill.

To start things off, I'm going to demonstrate first my technique to group together fields into tables and to determine the relations between these tables. Later, we will look at the normalization technique. My technique is a little more simplistic and asks for a little of experience. The use of the technique of the normalization is, in a way, more difficult to carry out. But it's infallible when you understand and apply it correctly. These two ways try to reach the same result: to group together fields in tables in the most efficient way possible. For starters ... My technique.

The concept is to distribute fields in the biggest number of possible tables. But there are certain rules that should be followed:

- Regroup fields into tables that have something in common: an object, a person or an event for example.
- Fields should not apper twince, unless there fields that help link two different tables.
- No double, or triple, data entry.
- No fields that you can determine by using other field in the database. . Ex.: Total = Qty * Unit price

It's necessary to group the fields into tables. What are the fields can be grouped together? To help you in this task, base yourselves on elements of your everyday

life, something concrete. For the invoice, you can find elements that are on the invoice, the customer, the products and the salesperson. That makes four tables that will be used: Invoice, Customer, Product, Employee.

Make sure that fields are in the right table. There should be no tables hidden inside another. Each is distinct.

With the exception of fields in common that are used for "connecting" the tables together, a field should not be in several tables. Again, let's take for example, the field Telephone number. Although, in this example, it could be in the Employee and Customer table, it's not the same thing. One is the number of an employee, the other of a customer. They have the same name but don't carry the same information.

Determine the primary keys

A primary key is a field, or a series of fields, that allows to differentiate a recording of the others. For example, although you can have several invoices with the same date, the same quantity bought, to the same customer with the same salesperson, *there will not be two invoices with the same invoice number*. A primary key is not compulsory for a table. It does becomes essential when you want to connect two tables. At least one of the two tables must have a primary key.

Try to determine that field would be suited for a primary key for the **Employees** table. Certainly not the field Sex. Unless there is only a man and a woman in the company. This limits a little the growth of the company! Smoker or not ? Same thing. There are only two possible values (M or F, Yes or No...). Because one cannot enter the same value twice in a primary key, these fields are not a good choice.

It's possible to use the field **Last name** until two persons have the same name. Then, it's always possible to create a primary key using of two fields: **Last name** and **Prénom (first name)**. This key will work correctly until two employees have the same first and last name. To solve this problem, it's possible to create a primary key using of the **Last name**, **Prénom (first name)** and the **date of birth**. This primary key will work correctly until... This can continue for a long time.

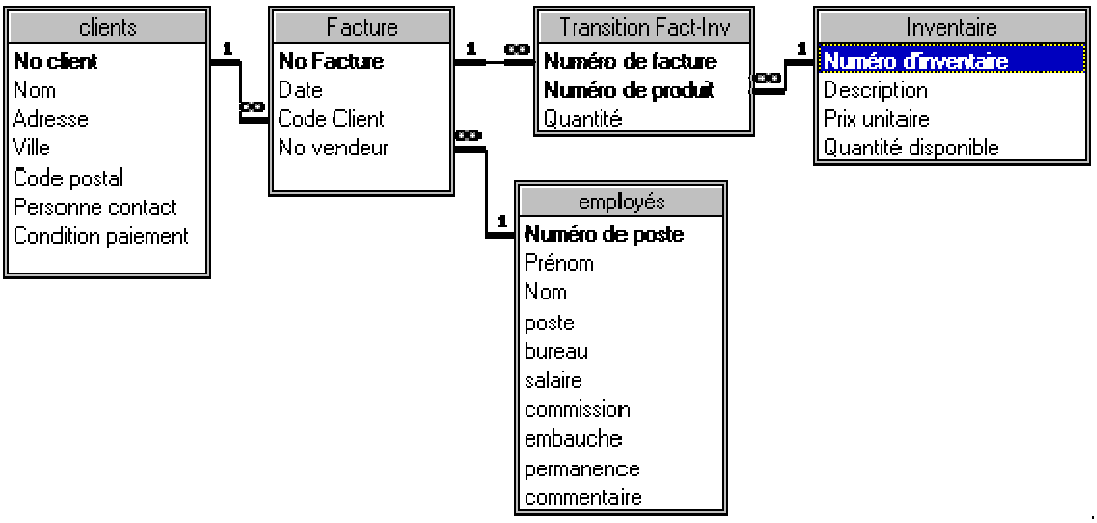
After a certain point, you'll see that it's better to have a field named Employee's ID number or Social security number to distinguish each of the records of the table. But there are occasions where it's necessary to have a primary key that consists of several fields. One of these situations will be explained a little farther on this page.

Take a moment to try to determine that fields in the tables would be best suited as the primary key or be part of the primary key. The explanation to apply the primary key to one or several fields of the table is on the following Web page on tables.

Determine the relations between tables

Determine the types of relations (cardinality)

There are three types of relations: 1 to 1 , 1 to Many and Many to Many.



The image above demonstrates the list of tables with the fields that compose them. The lines indicates the relations between these tables. A many to many relation, like between **Invoice** and **Products**, requires a compound or intermediary table, with at least the primary key of both tables to be included. That's the reason for the new table **Transition Fact-Inv**.

The normalization and the normal forms.

The advantage of a relational database is to avoid as much as possible the repetition of data. The normalization serves at separating the list of fields into several tables so you can have a more efficient database. The normal forms gradually removes some the problems that you can find in databases. You can use various normal forms (1^{st} , 2^{nd} , 3^{rd}...) For the moment, we are going only to look at the first three normal forms.

Before showing how to carry out you the first normal forms by using the list of fields that one finds in an invoice, here are the rules that the tables in your database should follow so that you have an efficient database.

The first normal firm is necessary to eliminate the repetitive groups by separating them in several tables.

The work to be carried out to reach the first normal form is to avoid completely the repetition in data entry.

But it's also necessary to implement this form to make sure that the user is not going to enter several times the same data. For example, it would not be efficient to have a table "Invoice" that would contain fields " Name of the customer " , " Address of delivery " , " person in charge ". It would not pass in the first normal form. The reason is that it would be necessary that the user enters for every invoice the same data that he already has entered in the previous invoices for the same customer. After all, how many times can you enter the same address? That's not really efficient! It's for that reason that it's necessary "to cut" the list of the fields that you need into several tables to have an efficient form for data entry.

The second normal form helps eliminate partial dependences. Make sure that all the fields of the table belong to the same primary key. Otherwise, it will be necessary to split the fields and to create a new table.

The third normal form is eliminate the transitive dependences (the what???) make sure that there are no tables that are hidden from the others.

Also, tables should not contain calculated fields. For example, a table should not have the fields "Subtotal", "Total", " GST ", " TVQ ", "VAT" (value added tax in Europe) or other taxes " because it's possible to calculate them from the data that are already in tables. For example, it's possible to have the "Subtotal" by multiplying " Quantities sold " by "Unit price". So, it's useless to take that space for subtotals in tables.

The third stage is to determine the relations between the various tables. It's necessary to look that are the possible relations between the entities. To have a relation, two tables should have at least a field in common. You can connect an invoice to a customer with the field " Client ID". You can also connect a product to an invoice by the field " Product ID " etc. You should have to at this moment notice that certain fields would be better placed in another entity. Make the changes in the tables if necessary. When you'll have grouped the fields together and determined the relations, you'll have your base for the creation of tables.

Now that you have the entities (tables) and the fields that compose them, think of what your forms and your reports should look like. Do the fields that you chose answer all your needs? Take all the time required for this analysis. It will cost you a lot more time and effort if you pass too quickly on the creation process and forget important elements.

Warning !

If you are in the computer lab to create your first database, make sure to save the file in drive **A:** of your PC. Do *not* create your database on the hard drive. Otherwise, a technician will be obliged to come to help you to move it on to your floppy disk. Every school semester, a student "loses" his database that he, or she, created on the hard drive instead of his or her personal floppy disk.

- From the **File** menu, select the **New** option.

Access will ask you the name that you wish to give to the new database and where (drive, diskette, folder ...) you want to place it.

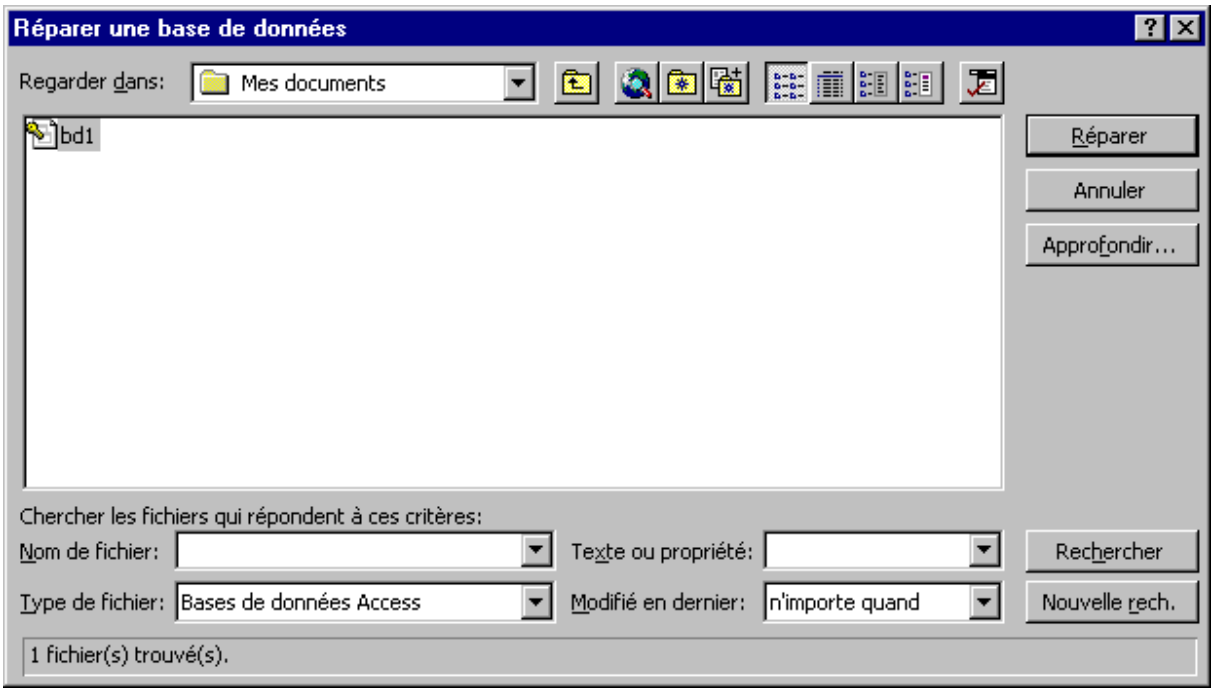
- For the purpose of this demonstration, call it **ACCESS1.MDB**.
- Press the **OK** button.

Now you created the database, it remains you still have to create tables, enter the data, create the queries, forms, reports, macros and the modules for your database. So, there's still a lot of work to do. But it's a start.

Repair a database

It can happen that you accidentally removed the floppy disk that contains your database before having closed it in Access. Or, the floppy disk has a problem that can wreck a database. This can damage a database. Access offers you a way for repairing a damaged database. The procedure is made in two stages: repair and compact the database. The first one isolates the problem and the second removes the problematic parts from the database.

- Open Access but don't open any database.
- From the **Tools** menu, select the **Utility** option.
- Select the **Repair database** option.
- Select the database that needs to be repaired on your hard drive or diskette.



- Press the **Repair** button.

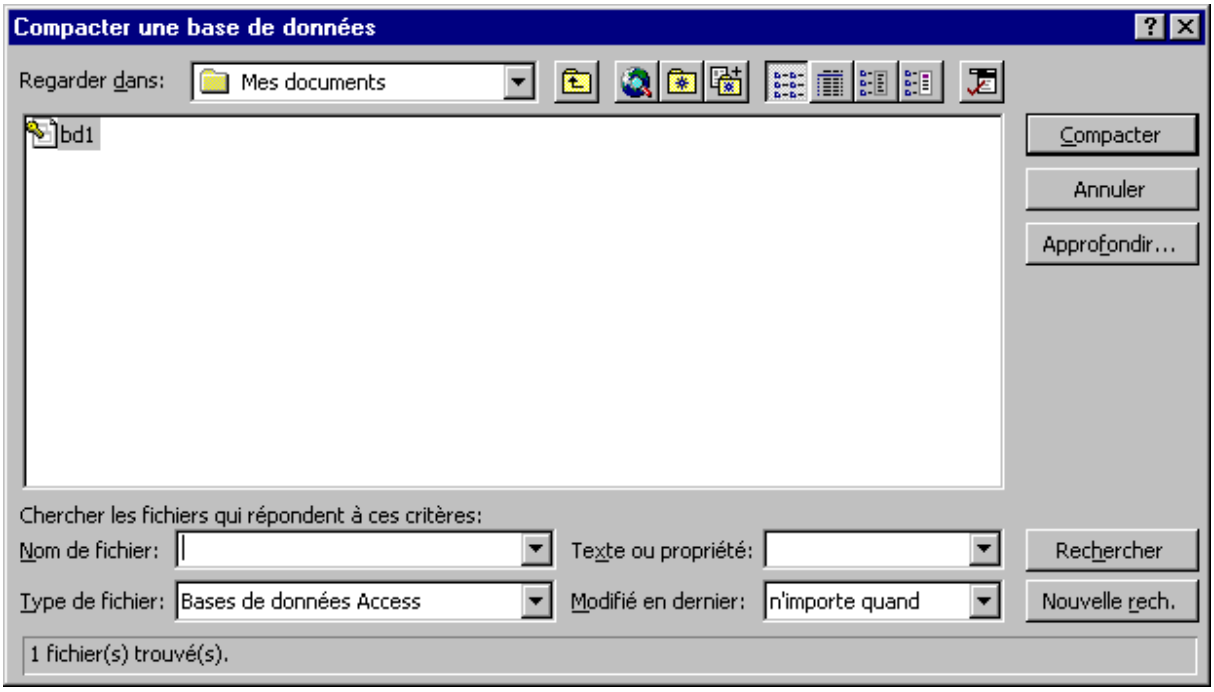
Access will take a few moments to repair your database. If everything works well, Access will show you a message indicating that the database was repaired successfully.

Compact a database

The last stage isolated the problem. But it's still in the database. The compact operation will remove the records, the tables, the queries and the states that you removed from your database, but also the problem. Although they are not accessible anymore, they are still in the database file.

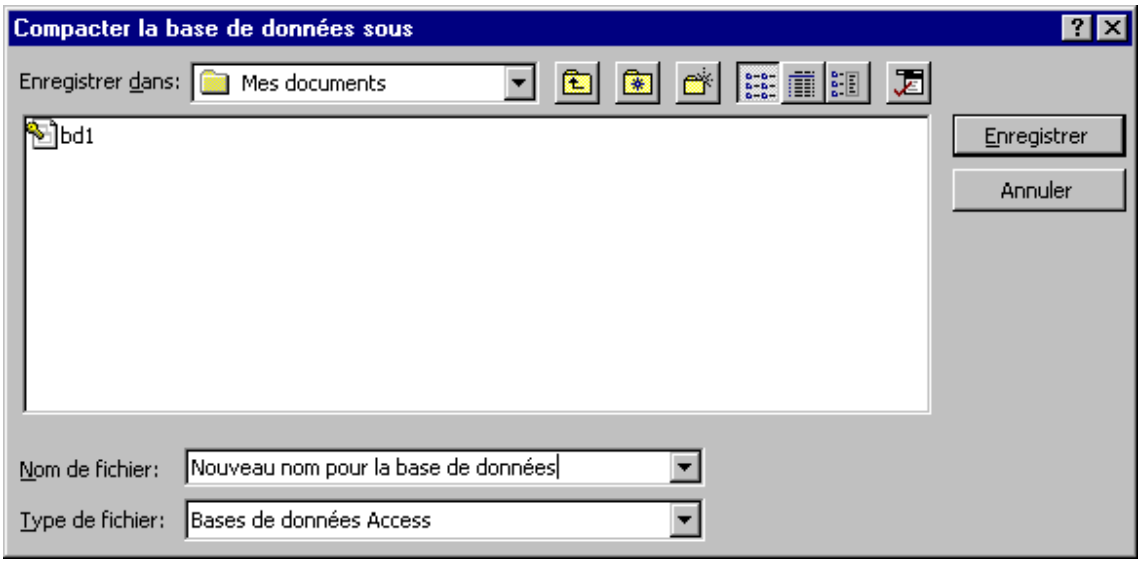
- Open Access but don't open any database.
- From the **Tools** menu, select the **Utility** option.

- Select the **Compress a database** option.
- Select the file to compress the hard drive or the diskette.



- Press the **Compress** button.

The operation to compact a database consists in creating a new database with only the elements that are still useful. Access will ask you for the name of the new database.



- Enter a name for the new database of your choice in the **Name of file** box.
- Press the **Enter** key or the **Save** button.

In spite of this procedure, it's always possible that the database is too damaged to be repaired. For that reason, as much for Access's databases as for any other document, that you should have a copy of your documents. Don't forget that with Access, it's impossible to make a copy while the database is opened. You can copy the file of the database only after having closed Access.

List of fields

At the beginning of this page, I asked you to determine the list of fields that you would find on an invoice. Here is the list of fields that I found. There are probably even more.

Date, Invoice ID Number, Customer's ID number, Customer's address, City, Phone number, Fax Number, E-mail Address, Address for delivery, Person in charge, Terms of payment, Number of product, Description of the product, Unit price of the product, Quantity bought, Total for the item, Subtotal, GST (Goods and Services Tax, sales tax of 7 % on the total), TVQ (Taxe of vente du Quebec, 7,5 % sales tax of the total and the GST), Grand total, Discount, Order form, Employee ID number, Name of the salesperson...

Wow! It's a little more than you might have though. click here to return following text.

Access - Tables

Introduction

It is in the tables that you find the information of the data base. These tables are structured. The structure contains the list of fields as well as the properties or the characteristics of these fields. This page gives you not only the information about the creation of a table, but also about the addition and the modification of this one.

To do it, the first part of this page consists in the creation of a table to keep certain information about the employees of a company. You go to see in this way all the stages for the creation and the management of a table.

At the time of the creation of your tables for your needs, don't especially forget the phase of analysis. A good analysis in depth of your needs and the data that you need to reach your expectations can at the end save you time and escalations a lot. This phase is explained in more details on Access's introduction page.

Before we begin, here are some explanations on the fields of the table Employees. Every recording of the table should have the name and the Prénom (first name) of the person. The post is the occupation that the person occupies in the company. For this example, there are only two types of occupation: the managers and the salesmen. The field office(desk) indicates the office location. For this company, there are employees in Montreal and in Quebec. The managers work according to a salary whereas the salesmen work only on commission. To end, it is necessary to have the date of hiring of the employee.

Here is the list of the fields of the table Employees so that the compulsory characteristics. Besides giving a name to the field, it is necessary to determine it a type and, in most of the cases, the size. It is necessary to indicate the size of fields according to the number of characters that you want to keep in these fields.

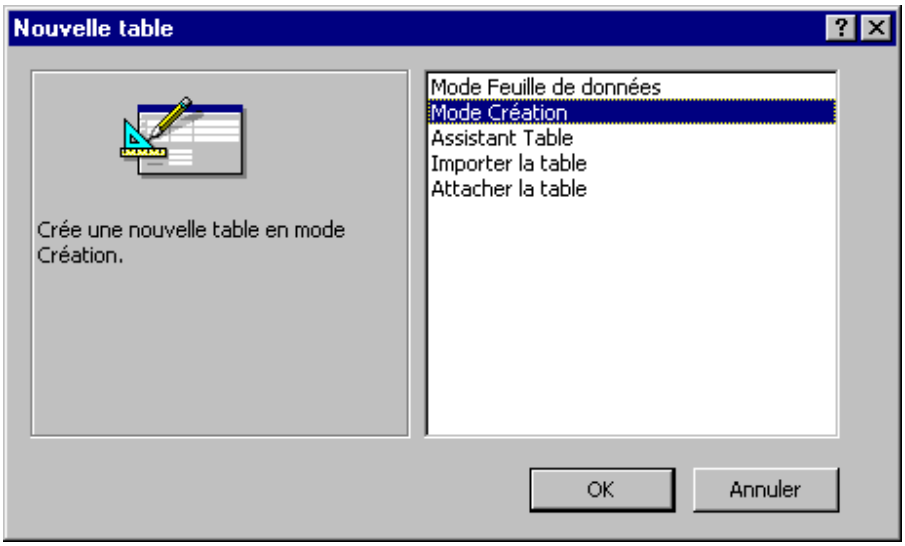
Name of the field	**Type of field**	**Size**	**Format**
Prénom (first name)	Text	15	
Name	Text	15	
Occupation	Text	10	
Office	Text	15	
Salary	Monetary		
Commission	Monetary		
Hiring	Date		Abbreviated date

Create a table

This exercise consists in creating a table that contains of the information about the employees of a company. Before even entering of the information, it is necessary to give a structure to this table. It is necessary to determine a list of fields as well as the characteristics of these fields. It is only after this stage that it will be possible to enter of the information.

- Click on the **Tables** tab 

.
- Press on the **New** button.

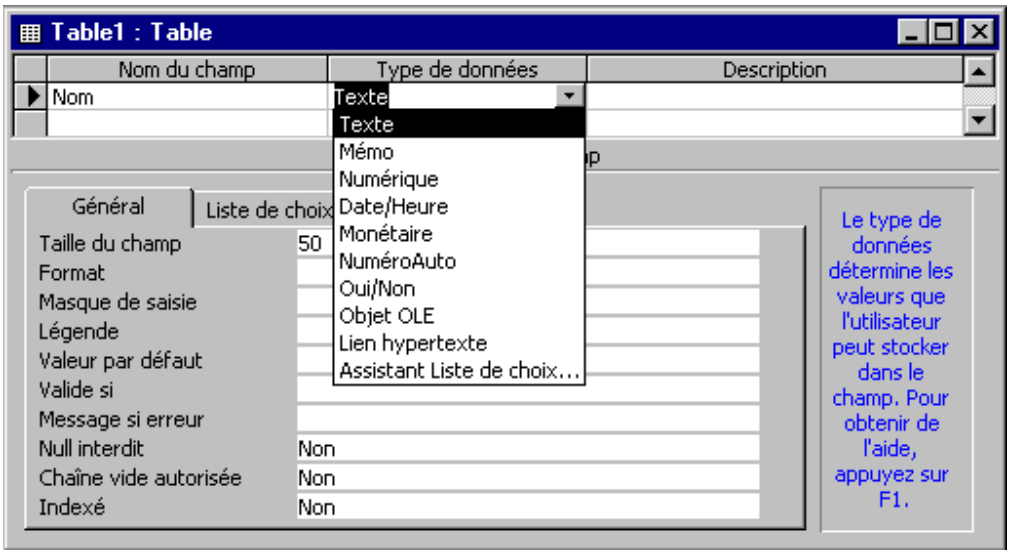


Access offers you several ways to create a table of data. The mode worksheet shows you a grid in that you write simply the information that you want to keep. You can then choose the mode creation to change the options that Access had determined for you. The mode creation contains all the options to create and personalize the structure of a table of data. The assistant Banks gives you of the assistant to the creation of a table by asking you to choose among a list of fields that you will find mostly in a table. You can also import a table from another base of datum of Access or even a working sheet of Excel. The last option allows you to make(do) a link for another table of another data base and to reach its information.

- Of the list of choices, select the **Creation mode** option.

1. Give a name to the field

During the addition of a field in the structure of a table, it is necessary to give it a name and a type of field. According to the type of field, it is also necessary to indicate to Access the number of characters that you want to protect in the field. You can also, in your choice, add a comment to give more information about the contents of the field.



The types of fields

Access the choice between several types of field gives you

Text Can contain figures or letters. By default, Access indicates that the size of the field is 50 characters. You can always modify the size of the field according to your needs. The maximum is 255 characters.

Memo Useful to register comments. The size of the field is not definite. The maximum is 65 535 characters.

Numeric Can contain figures only. You can also determine the name of figures after the decimal according to your needs.

Date/Time Can contain or show dates or even of the hour. Although a date or one hour is shown, Access keeps these data in the form of figure. Every figure represents a day. Figure 1 is by January 1, 1900. The figure 2 by January 2... Access keeps the hour, the minutes and the seconds in fractions of day. So 0,5 is the equivalent of noon, 0,75 of the 18 hours(o'clock) etc. It is also easier to make(do) the difference between two dates.

Monetary It is about a type of numeric field. The size(format) of the field is already ready to show the sign $.

NuméroAuto Whole numeric field that increases automatically by one (1) in every new recording that you add to the table. Formerly called meter. It is ideal for addition of new invoices, commands(orders) or customers.

Yes/No Logical field. Determine if a case applies or not. Ex: smoker, no-smoking. Access keeps the information under numeric format. 0 =

false, 1 = really.

Object OLE A link for an object resulting from applications Windows allows to make(do). It is capable of managing by binding(connecting) or by implanting in the data base (Object Linking and Embedding).

Hypertext link A hypertext link for another object allows to make(do) or for one of the services of the internet that allows the URL (Uniform Ressource Locator) such as FTP, to gopher, and newsgroups.

Assisting list of choice This assistant allows you to reach a list of predetermined choice that is contained in another table or query. This list can be the contents of one tables, of a query or what you prepared even you.

In the choice of the user, it is also possible to add a description. This is practical when you return some months later and want to know why you chose to have these fields in the table. This description is also going to appear in the left lower corner of the window at the time of the entry or the modification of the data.

The properties of the field

At the bottom of the screen, there are the characteristics or the properties of the field. Each is practical under the circumstances. The next part explains each of these properties and when these are practical. You can also fetch more information about one of the properties below by placing the pointer on this one and by pressing on the key F1.

Size: Determine the number of character that can be contained in a field. This property is only valid for the fields of type Text. The other types of fields already have a predetermined size.

Format: Determine the way that the information will be shown in the field.

Mask of seizure: Determine the way that the information will have entered the field.

Legend: Text that will be shown in the worksheet, the forms and the states in the place of the name of the field.

Value by default: Determine an initial value during the addition of new records.

Valid yes: Place of the borders or limits on the kind of information that can have entered a field. For example, few persons would be ready of working for a negative salary.

Message if error: View this message if the contents of the field don't respect the limitations of the **valid** property **yes**.

Null Interdit: If active, does not allow to have an empty contents in the field.

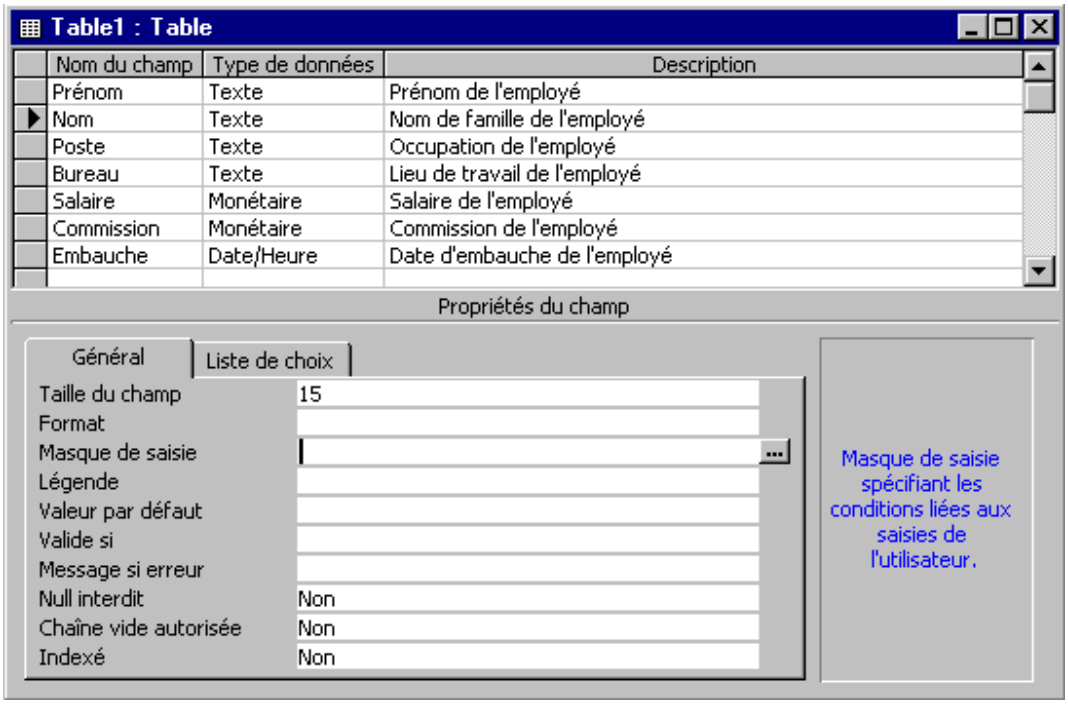
Authorized empty chain(channel): Allows to insert spaces " " into a field.

Being indexed: This property is to show the information in increasing order during the posting. It is also necessary during the creation of relations with the other tables.

These last properties are those that are available for the fields of type Text. Here are some available supplementary properties for the other types of fields.

Decimals (Numeric, monetary): Determine the number of decimals that will be kept with the figure.

New Values (NuméroAuto): Determine if the next figure will be the answer of the series (Incrément) or a (at random unpredictable) figure.



To have more information about the properties of fields:

Place the pointer in the property for that you want more information. Press the **F1** key.

Access's assistant will show you the information that it possesses on this property.

Primary key

A primary key is a field, or a series of fields, that helps to differentiate a recording of all the others of the table. For example, one can use the number of social assurance to differentiate each from the employees of the company. There is no two that are identical. One can also use a number of inventory to differentiate each of the products of the others etc.

A primary key can also consist of several fields. As long as the combination of field differentiates a recording of the others. For example, one can add a booking knowing that there will be two persons who are going to appear at the same time with the same name. If it would be the case, it would be necessary to add another field to the primary key to differentiate them. Or, one could simply create a field **No. of booking** to solve the problem. The use of several fields to compose a primary key is very rare but possible.

The method to insert the primary key on one or several fields of the table will be explained a little farther on this page; at the time of the modification of the table.

Secondary key

A secondary key is a field that is connected with the primary key of another table. For example, the field of the table **Charges** can be connected with the key **No. of customer** of the table **Customers**.

Save the structure of the table

Having created a table, it is necessary to keep it.

Press the  button.
OR
From the **File** menu, select the **Save** option.

Access will ask you that is the name of the new table.

Enter the name of your choice. For this exercise, enter the name **Employees** and press the **OK** button.

Access goes possiblement to ask you if you want to add a primary key to your table. For the moment, this table does not need primary key. It will be added a little farther on this page.

Press the **No** button.

Data entry

Now the structure of the table is defined, it is possible to enter of the useful information for the user; data. To begin, there are data on the four employees of the office(desk) of Montreal. The next stage consists in entering these data the table.

- Press the  button.

OR

- From the **View** menu, select the **Data mode** option.

Access will show you a grid to enter the data just like this one but without the data.

	Prénom	Nom	poste	bureau	salaire	commission	embauche
▶	Roger	Lepage	gérant	montréal	50 000 $	0 $	92-01-01
	Denis	Lambert	vendeur	montréal	0 $	45 000 $	92-01-01
	Suzanne	Rémi	vendeur	montréal	0 $	65 000 $	93-01-01
	Éric	Gendron	vendeur	montréal	0 $	23 000 $	93-06-06
*					0 $	0 $	

- Enter the following information about the employees of the company.

Prénom (first name)	Name	Occupation	Office	Salary	Commission	Hiring
Roger	Lepage	Manager	Montreal	50000		92-01-01
Denis	Lambert	Salesman	Montreal		43000	92-01-01
Suzanne	Being Rémi	Salesman	Montreal		65000	93-01-01
Éric	Gendron	Salesman	Montreal		23000	93-06-06

Note: The last line of a table or a query always shows one "*" in the grey box to the left of the line. This is to indicate the end of this one. enter figures without the signs $. In the laboratory, enter dates size(format) year (2 figures), month, day with a hyphen among each.

Insert a mask of seizure

A mask of seizure is to indicate to Access the way that the information entered a table. You can force the user to enter the data in a certain way. For example, it is unthinkable to have letters in a phone number or a social number of assurance. Also,

a postal code is a series of letters and figures. How to make sure that the data will have entered in a right way? It is for that reason that there are the masks of seizure.

Access already has some sizes (models) for the data that you will find mostly in a data base. The next part is to demonstrate how to reach you these models. You will apply it according to your needs in your own tables.

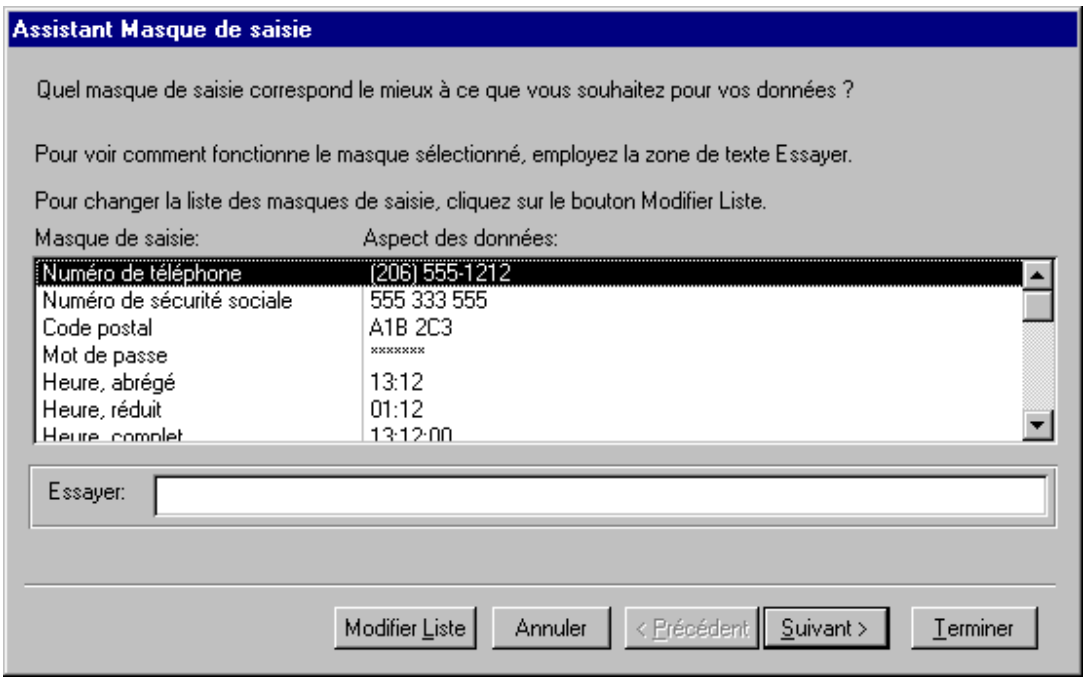
- Place the cursor on the field that you want to add a mask of seizure.
- Among the list of properties, click that of the **mask of seizure**.

At the end of the box, a button with three little dots inside has just appeared.

- Press this button.

Access is maybe going to ask you to protect your table before being able to continue. protect it. If Access asks you also for a primary key, for the needs of the exercise, don't add it for the moment.

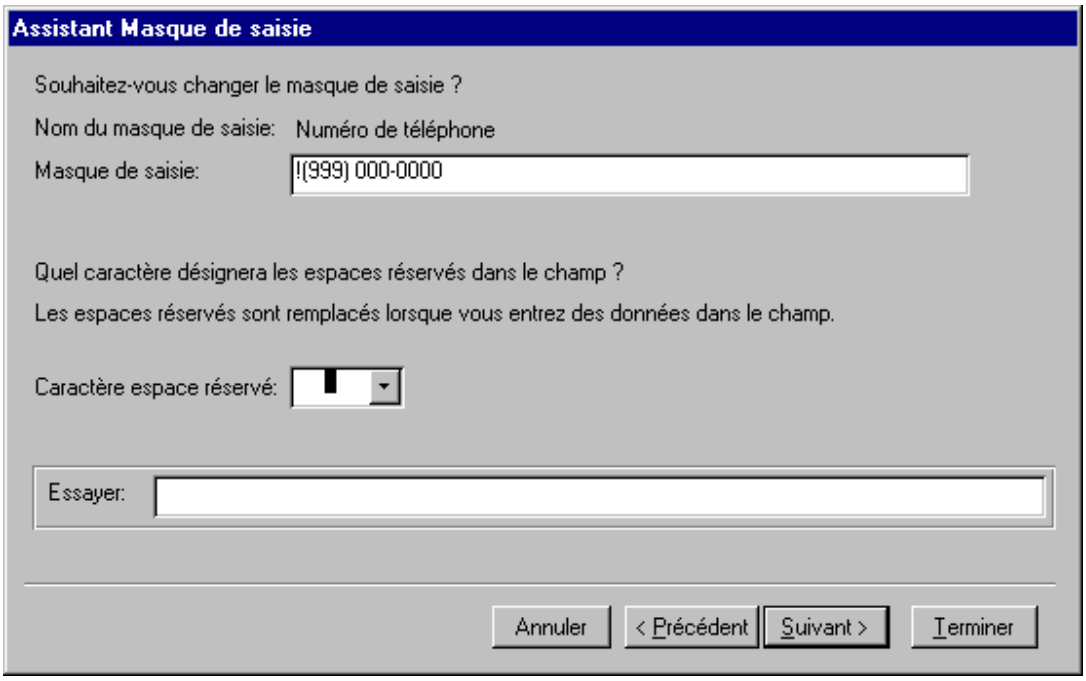
The window with the list of the models has just appeared.



There are several models. Each is for a different occasion. You can use them to enter a phone number up to a password.

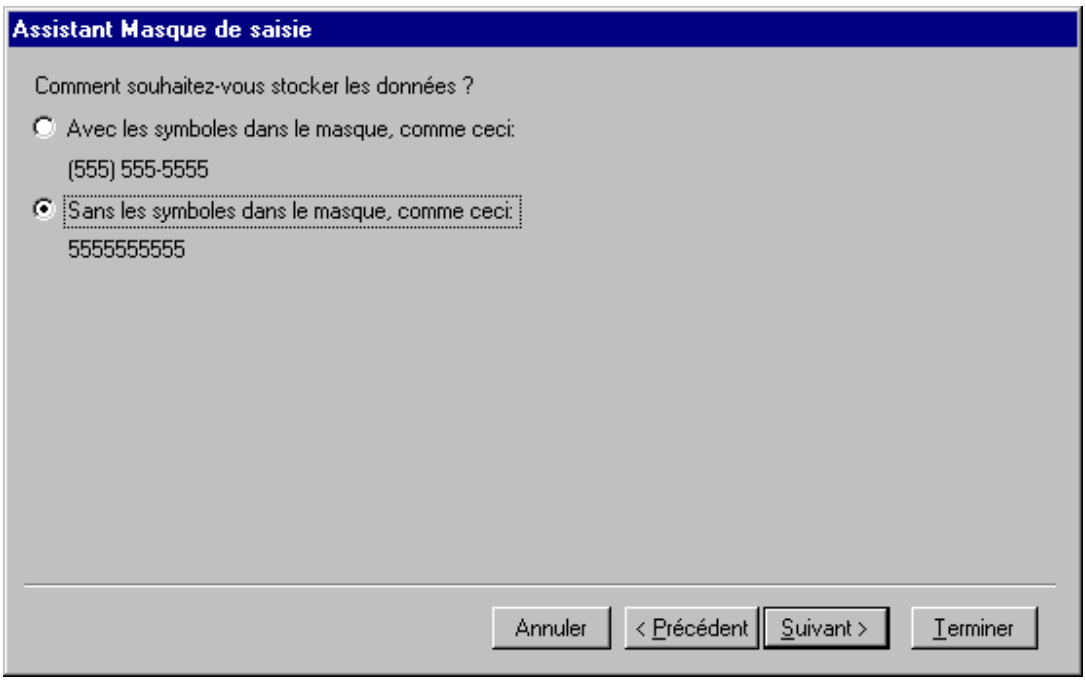
- When you will have chosen mask of seizure, press the **Next** button.

The following window will appear.



This window shows you the mask of seizure. You can experiment by writing of the text in the box **To try**. It is possible to you to change the size(format) of the mask of seizure better to answer your needs. By placing the cursor in the box **Masks of seizure** and by pressing on the key F1, you will have a list of the possibilities for the size(format) of the mask of seizure. This list is very detailed and should be read attentively.

When you will have determined the mask of seizure, press the **Next** button.



Access asks you then how that the information will be stored in the field: with or without the symbols of the mask of seizure (the brackets, the spaces as well as the hyphens).

- Select and press the **Next** button.

A last window should appear to indicate you that the creation of the mask of seizure is ended.

- Unless you wanted to change an option by pressing on the **Previous** button, press the **End** button.

Add a mask of seizure

The previous option how showed to use the masks of existing seizures. But, it is also possible to you to add your own masks of seizures better to answer your needs. The text that follows shows the stages to be followed to create a new mask of seizure. The next exercise will create a new mask of seizure for a code of inventory. This code consists of three letters, a hyphen and four figures.

- Enter the mode of mask of seizure by pressing on the button (....)
- Press the Modifier Liste button located in the left lower corner of the window.
- Press the ▶✳ button to return you to the end of the list of the masks of seizures and be able to add a new of it.

A window will appear of whom(that,what) all the boxes will be empty. It is to you to enter the name of the mask of seizure, its presentation, if there are reserved spaces. You can even add an example of the mask of seizure.

- For the purpose of the example, enter the text following in the appropriate boxes.

- After you entered the wanted options, press the **Close** button.

You can add as many masks of seizure as you want.

Insert a Valid if

The property Confirms If allows to put limits or borders in the entered of data. For example, there are very few persons who like working for a salary or a negative commission. The exercise consists in demonstrating ValideSi's functioning by using it not to allow negative values fields **Salary** and **Commission**.

- Open the **Employees** table in creation mode.
- Place the pointer on the **Salary** field.

The properties of the field are going to appear in the section of bottom.

- Place the pointer in the **Valid** box **Yes**.

It is in this box that you put the criteria of validation. You can use various operators (= >, <, < =, > =, < >, Among and, or, Not...) to create the criterion of validation. For the exercise, it is necessary to make sure that the value that entered the field is not negative.

- In the **Valid If** box , enter the following criterion: **> = 0**.

In the exercise, it is possible that a person earns no salary or no commission according to the occupation of the employee in the company. The managers earn only a salary whereas the salesmen earn only a commission on sales. So, it is possible to have a salary or a commission equal to zero.

The box **Message if error** is the text that will appear to the screen when the contents of the field respect the criteria of validation. In that case, if the user enters a negative figure.

- In the box Message if error, enter the following text: **An employee of the company can not have a negative salary. enter a positive figure or a zero.**
- repeat the operation for the field **Commission**.

The next time that you will enter or will modify the contents of the records, try to enter a negative value to see the result.

Modify the table

After a while, you will notice that changes are necessary for a table. It needs new fields. Or, certain fields need to be modified or simply eliminated.

- From the mode worksheet, press the  button

OR

- From the **View** menu, select the **creation mode** option.

OR

- From the main menu, select the table and press the **Modify** button.

For the example, it is necessary to add four new fields: **Numéro of poste (Employee's ID number)**, **status**, **permanent status** and **comments**. The field **Numéro of poste (Employee's ID number)** will be used to differentiate each of the records. It will be the primary key of the table. Furthermore, the field Numéro of poste (Employee's ID number) will be inserted at the beginning of the structure of the table. The field **Status** will serve for saving the marital status of the employee. This field will be the Numeric type. It's going to keep the marial status according to a number: 1 = bachelor(single woman), 2 = married without dependent, 3 = married with dependent, 4 = divorced, 5 = divorced with family allowance. So, the only valid rags are 1 and 5. It will be also used during the creation of a form. The field **Permanent** will be the type Yes/No. It's going to determine if the person with receipt its permanent status in the company. The field **Comment** will be of type memo. It will be possible to write comments, about the performance of each from the employees of the company.

Name of the field	**Type of field**	**Size**	**Format**	**Other**
Numéro of poste (Employee's ID number)	Meter			
Prénom (first name)	Text	15		
Name	Text	15		
Occupation	Text	10		
Office	Text	15		
Salary	Monetary			
Commission	Monetary			
Hiring	Date		Abbreviated date	
Status	Numeric	Whole length		**Valid yes**: Between 1 and 5
Permanent	Yes/No			
Comments	Memo			

Insert a field

- Place the pointer on the line that you want to insert a new field at the table. For the exercise, place the pointer on the first line of the table, that is the line of the **Prénom (first name)** field.
- From the **Edit** menu, select the option **Insert line**.

OR

- Press the  button.

A new free line will appear. The other lines will be moved downward.

- write the name of the field. For the exercise, it is about **Numéro of poste (Employee's ID number)**.
- Select the type of field **Text** with a lenght of **15 characters**.

- insert the new fields **Status**, **Hiring** and **Comments** at the end of the table with their properties that are described in the table above.

Move a field

To change the order of presentation of fields

- Click the grey box to the left of the name of the field.
- While pressing the **left** mouse button , move the field upward or to the bottom according to your needs.

The field will re-fit into the structure of the table between both fields among that the line that separates it is more thick as soon as you will release the mouse button.

Delete a field

- Click the line of the field that you want to delete. Press the **Delete** button  .

OR

- From the menu **Edit,** select the **Delete lines** option**.**

Place the primary key 

The primary key is a field, or a series of fields, that allows to distinguish each of the records. Every person in its social number of assurance, a number of customer or employee. It can consist of letters or figures. One of the things that Access verifies later is to make sure that there are two records that will have the same information in the field. For example, two persons can have the same number of social assurance or two products the same number of products.

Access will not allow the creation of the primary key if two records have the same information in the chosen field. If you need absolutely that both records have the same information, it would be necessary to consider another field, or combination of fields, for the primary key of the table.

A table is not obliged to have a primary key. It needs however a primary key if the other tables want to reach the information of this table. For example, the table **Charges** its address and the other information could, thanks to the relations between tables, reach the information of the table **Customers** to know the name of the customer. So, to find more quickly the information and to make sure that there are two customers with the customers' same number, it is necessary that the field Customer's number of the table **Customers** is the primary key of this table.

For this exercise, the new field **Numéro of poste (Employee's ID number)** will be the primary key of the table.

- Place the pointer on the line of the field that will be the primary key of the table. For the exercise, it is about the field **Numéro of poste (Employee's ID number)**.
- Press the button.

	Nom du champ	Type de données
🔑	Numéro de poste	NuméroAuto

The key placed in the box intoxicates to the left of the field **Numéro of poste (Employee's ID number)** confirms that the primary key is on this field.

If by mistake, you chose the bad field as the primary key, press the button for désélectionner the field as the primary key.

Place a primary key on several fields

A primary key can also consist of several fields. There are even occasions where it is necessary to have a primary key in this way. For this exercise, the primary key will consist of fields **Prénom (first name)**, **Name** and **Date of hiring**.

- Click the small grey box to the left of the **Prénom (first name)** field.
- By keeping one owes on the **CTRL** key, then click the grey boxes to the left of fields **Name** and **Hiring**.
- Press the button.

Here is the final result.

	Nom du champ	Type de données
	Numéro de poste	NuméroAuto
🔑	Prénom	Texte
🔑	Nom	Texte
	poste	Texte
	bureau	Texte
	salaire	Monétaire
	commission	Monétaire
🔑	embauche	Date/Heure
	statut	Numérique
	permanence	Oui/Non
	commentaire	Mémo

The key placed in the grey box confirms that the primary key consists of fields **Prénom (first name)**, **Name** and **Hiring**. It means that it is possible to register

several times the same value in one of the fields. But it is impossible to register several times the same values in all the fields that compose the primary key at the same time. For example, it is impossible to have two persons with the same Prénom (first name) and name that are hired at the same time.

For the purpose of the next exercises, replace the primary key on the field **Numéro of poste (Employee's ID number)**.

Adding records

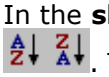
bring the additions to the already created records and add the other records to your table.

Numéro of poste (Employee's ID number)	Prénom (first name)	Name	Occupation	Office	Salary	Commission	Hiring	Status	Permanent	Comments
1	Roger	Lepage	Manager	Montreal	50000		92-01-01	2	Yes	
2	Denis	Lambert	Salesman	Montreal		43000	92-01-01	1	Yes	
3	Suzanne	Being Rémi	Salesman	Montreal		65000	93-01-01	1	Yes	
4	Éric	Gendron	Salesman	Montreal		23000	93-06-06	5	No	
5	Roger	Dubuc	Manager	Quebec	43000		93-01-01	1	Yes	
6	Elects	Laviguer	Salesman	Quebec		47000	93-06-01	2	Yes	
7	Paul	Gendron	Salesman	Quebec		22000	93-01-	1	No	

							06			

Sorting the records

At the time of showing the contents of the table in mode sheet of data, the option of the sorting shows the records in increasing or lessening order according to a field.

In the **sheet of data** mode, you will find in the toolbar the following buttons:  . These

- Place the cursor in the column that you want to show in increasing or lessening order.
- Press one of the buttons to show the table according to this field in the order that you want.

All the records will be shown according to the order for that you asked on the field where is the pointer at this moment.

The filter

The option of the filter allows only to show a part of the records: the one that answers the criteria that you determined previously. This is very advantageous when the user wants to find quickly some records among a lot of data.

From the **sheet of data** mode, you will find buttons to create, activate and deactivate the filter on a table or a query:  .

Creating a filter

Determine the criteria of selection. You can choose only to show a part of the records; those that answer certain criteria.

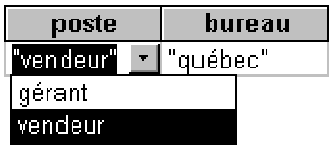
- From the mode worksheet, press the  button.

The list of the fields of the table will appear the one next to another.

- To remove the previous filters, press the  button.

It remains only to put the criteria only to show the records that answer these conditions. The exercise consists of showing only the salesmen of the region of Quebec. So, will be needed two criteria: the one for the **Occupation** field and the other one for the **Office** field.

- Place the pointer in the box **Occupation**.
- Press the triangle pointing down at the end of the box.
- From the list, select the **salesman** occupation.



- Place the pointer in the **Office** box.
- Select **Quebec** from the list.

The list of choices makes easy to find the information. It only shows what is contained in the field. But, it is also possible to create its own criteria. For example, it is possible to know that earns a salary superior to 45 000 $ by putting the operation **> 45000** below the **Salary** field.

It is also possible to combine criteria. In this exercise, two criteria are combined. Occupation equals to salesman **AND** Office equals in Quebec.

Activate a filter

- To activate the filter, press the  button.

OR

- From the **Filter** menu, select the **Apply the filter** option.

Access will show you the records that answer the criteria that you chose.

Deactivate a filter

- Press the  button.

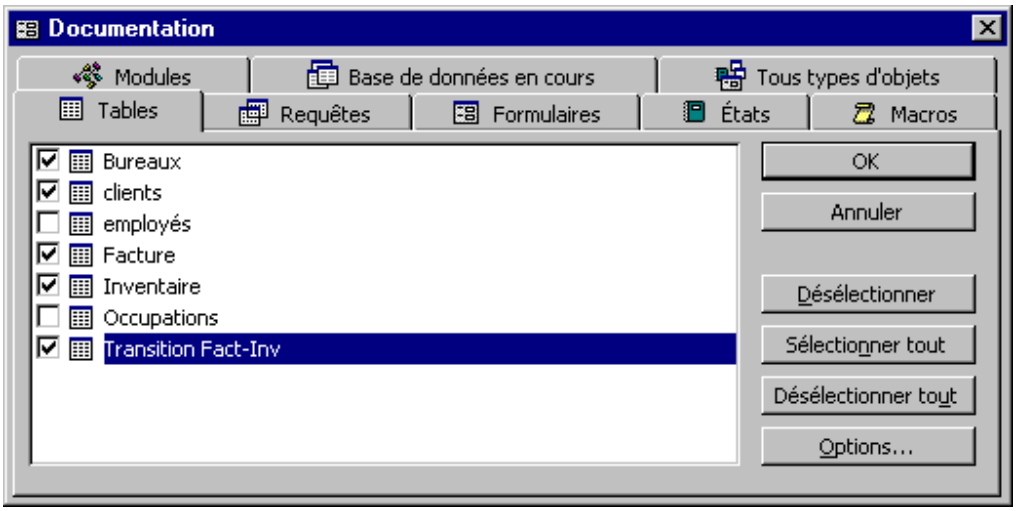
OR

- From the **Record** menu, select the option **View all the records**.

Print the structure of a table

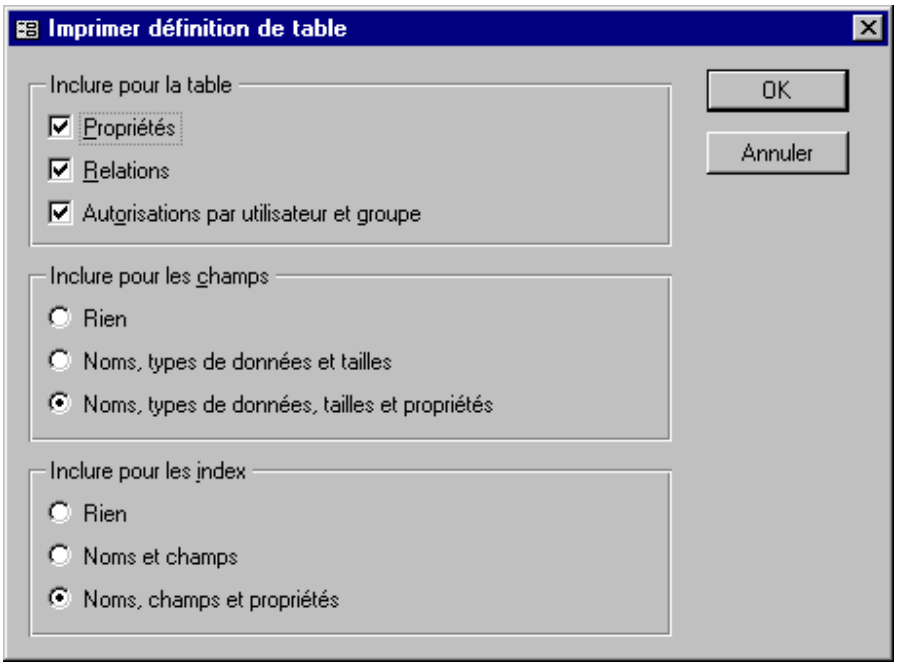
- From the **Tools** menu, select the **analyzes** option.
- Select the **documentation** option.

The following window will appear.



- Select one or several tables the structure of that you want to print.
- Press the **Options...** button.

The following window will appear.



- Select the options that you need.
- Press the **OK** button.

- Once having returned to the window of documentation, press the **OK** button.

Access will generate the state for that you asked. You can see it in the screen or print it:

- By pressing on the  button.

OR

- From the **File** menu, select the option **Print**.

OR

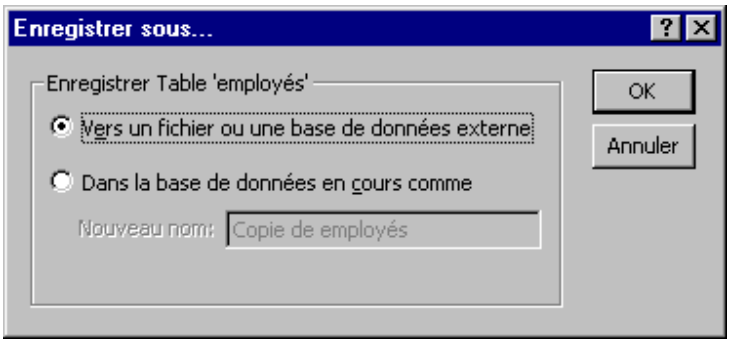
- Press the **CTRL** and **P** keys.

Export a table

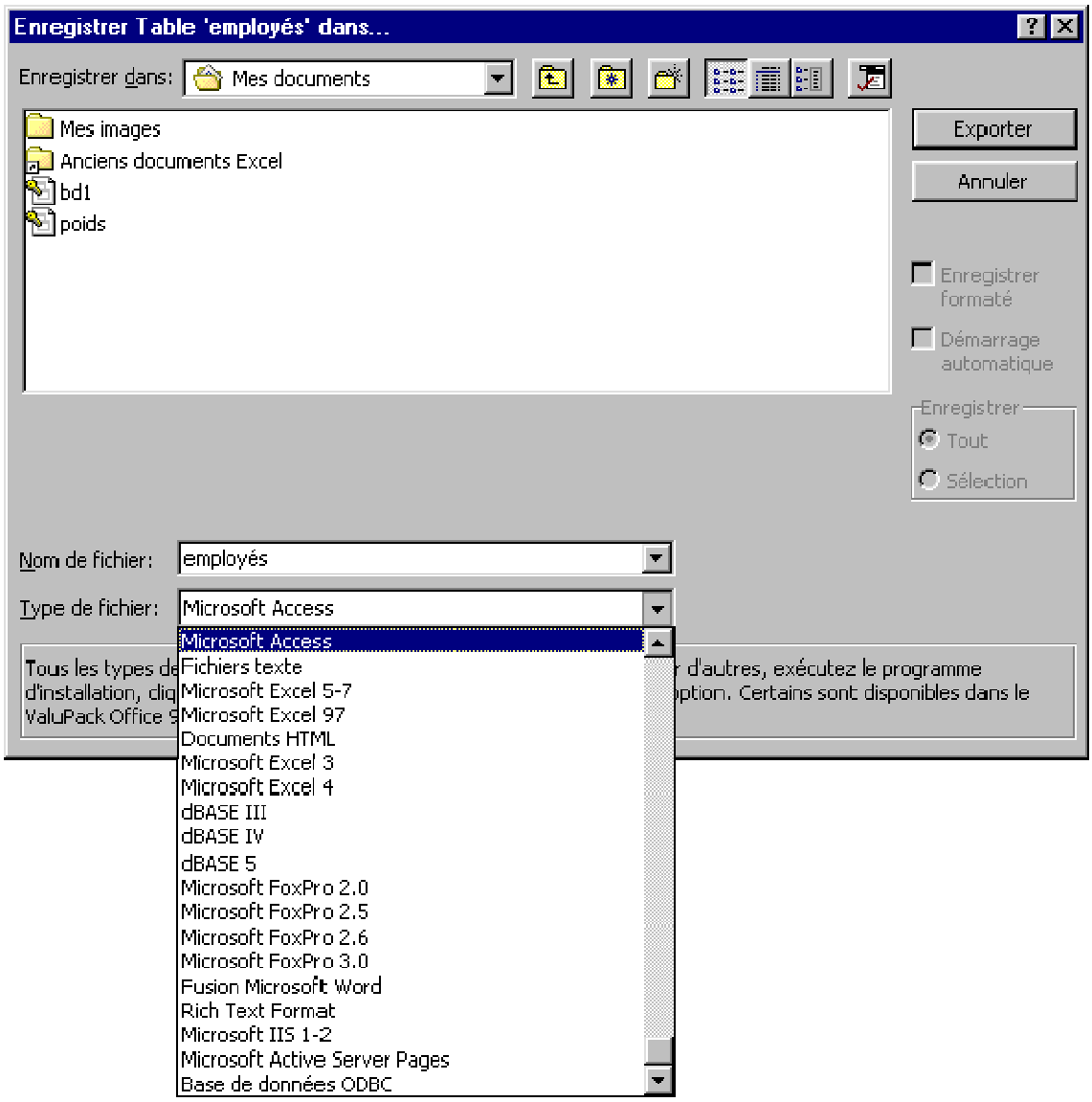
Access gives you the possibility of exporting the data of tables. These can be exported towards other data bases or in the size(format) of the other applications such as Excel or Word. You can in this way take advantage of the possibilities of these for calculations, analyses or mailing for example. It's to note however that it's better to export from the queries if you need only a part of the records and not the whole.

- From the main menu, select the **Tables** tab 

.
- Click on the table that you want to export.
- From the **File** menu, select the **Export Record** option.



- Select the **To an external file or a data base** option.
- Press the **OK** button.



- Select the name of your choice.
- Select the type of file format that answers your needs.
- Press the **Export** button.

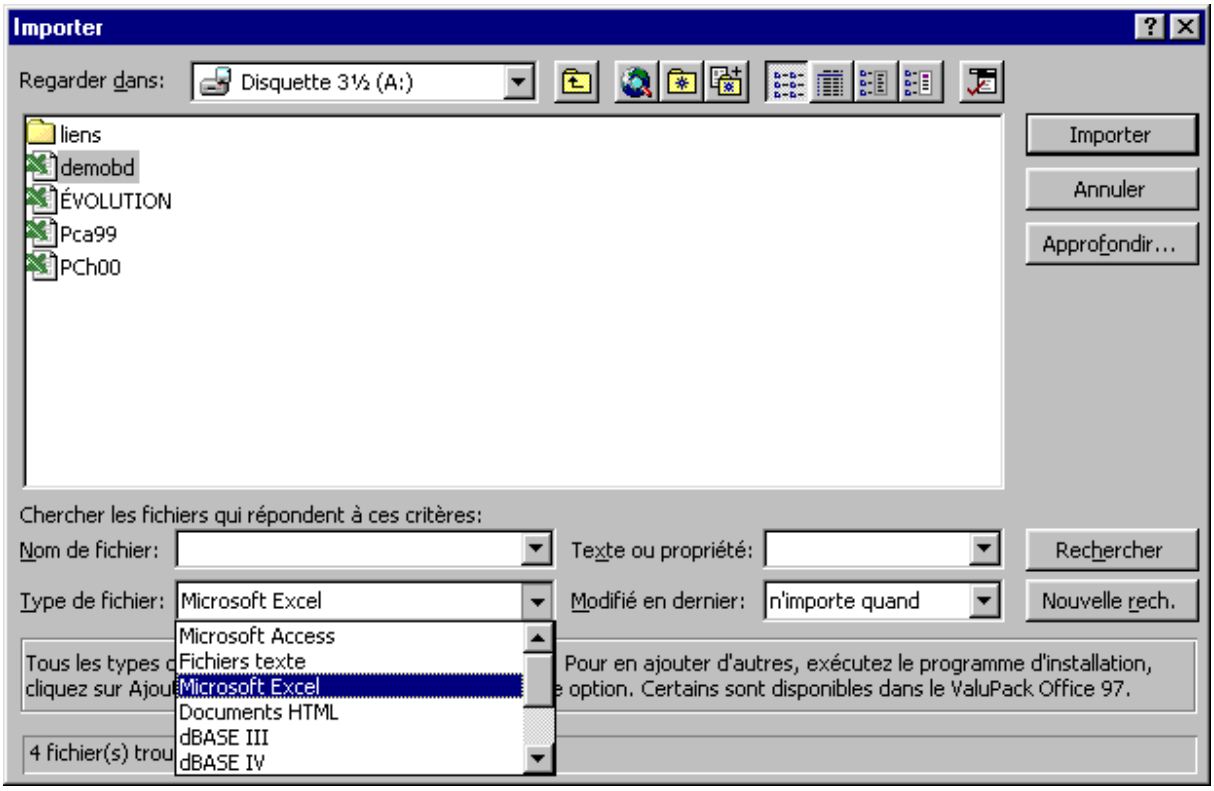
Access will create a new document with the data of tables in the size(format) that you chose.

Import a table

Importer's option allows you to go look for data resulting from the other data bases or from the other applications and to add them to your data base. The next exercise consists in importing data from a file Excel. If you have not already made it, protect the file **demodb.xls** from the page of the demonstration files on a floppy disk.

- From the main menu, select the **Tables** tab 

.
- Click on the table that you want to export.
- From the **File** menu, select the **External Data** and **Import** .

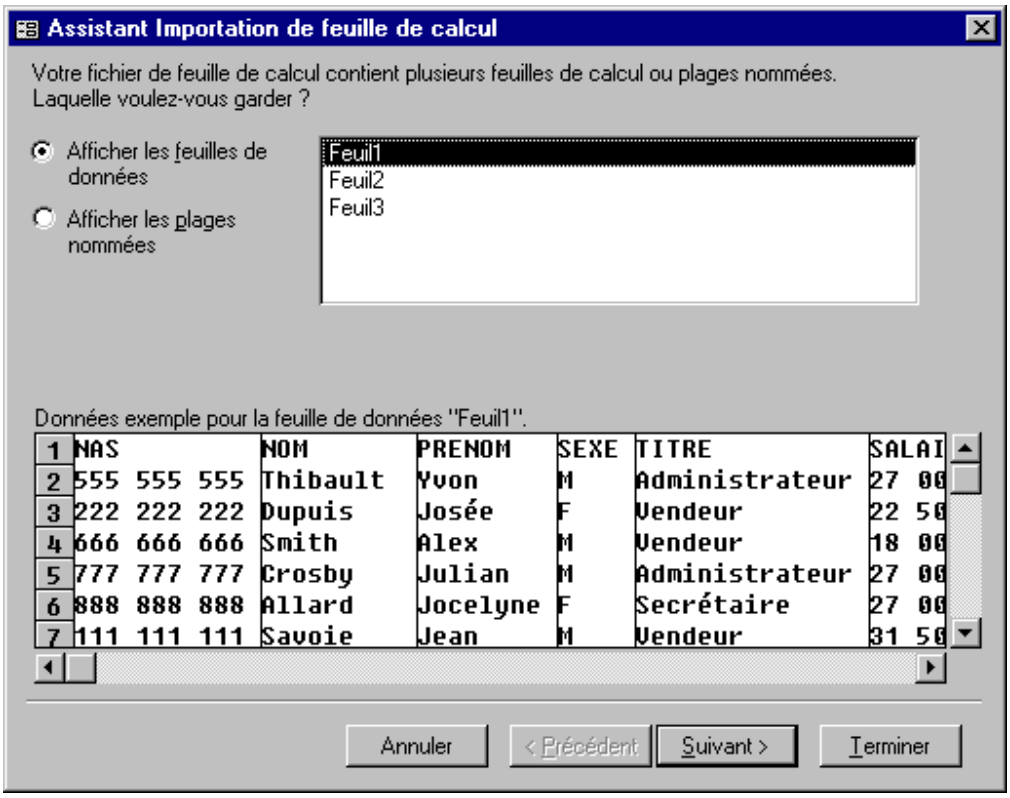


The next part presumes that you have to protect the file **demodb.xls** on a floppy disk.

- Of the available list of the drives box, select **Floppy disk 3 ½ (A)**.
- Of the list of the **Type menu of file**, select the **Microsoft Excel** option.
- Among the list of files on the floppy disk, select the **demodb** file.
- Press the button **Import**.

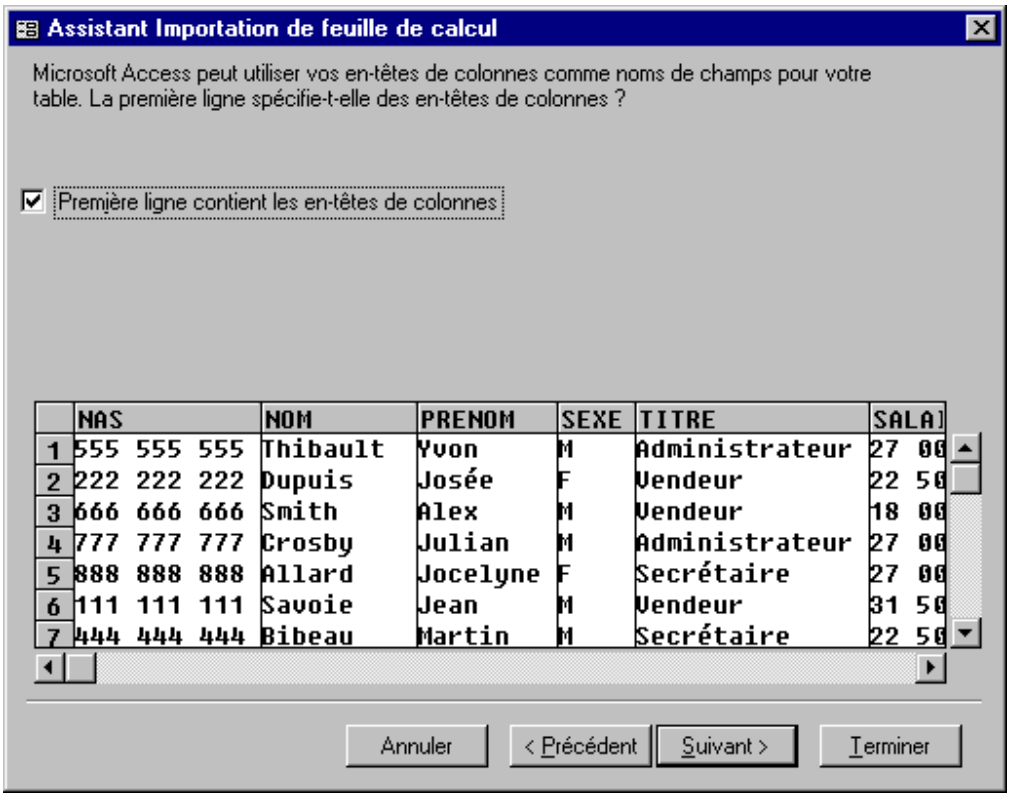
OR

- Double-click on the **demodb.xls** file.



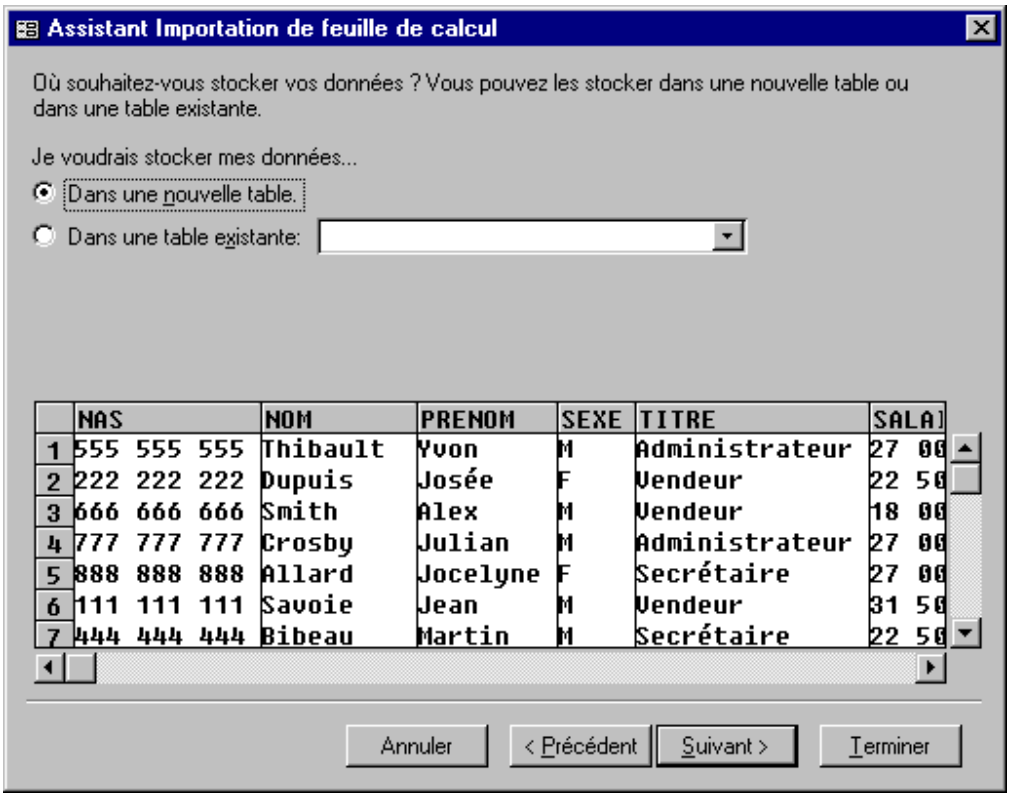
Access needs to know from the worksheet of Excel about that you will find the data to be imported. For the exercise, these data on the sheet of work named **Sheet1**. There is no other information about this sheet other than the data to be imported. Otherwise, it would have been necessary to give a name to the block of cells containing the data to be imported. The assistant of import calls it the option " View the named(appointed) beaches ".

- Select the **View the worksheets** option.
- Select the worksheet named **Sheet1**.
- Press the **Next** button.



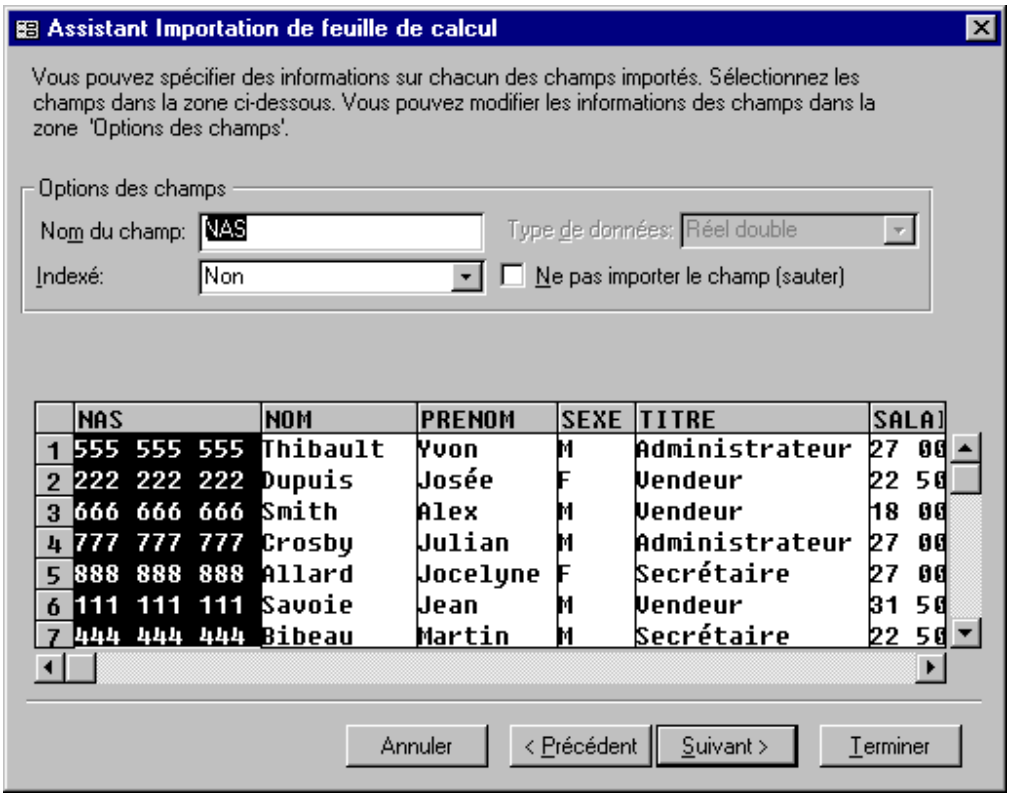
Access asks you if the data of the first line of the working sheet are the names of the fields of the table to matter. In that case, it is true that the data of the first line are the names of fields.

- Click on the option **First line contains headings columns**.
- Press the **Next** button.



Access asks you if you want to create a new table to store these data and add them to a table that already exists. For the exercise, the data will be kept in a new table.

- Select the option **In a new table**.
- Press the **Next** button.

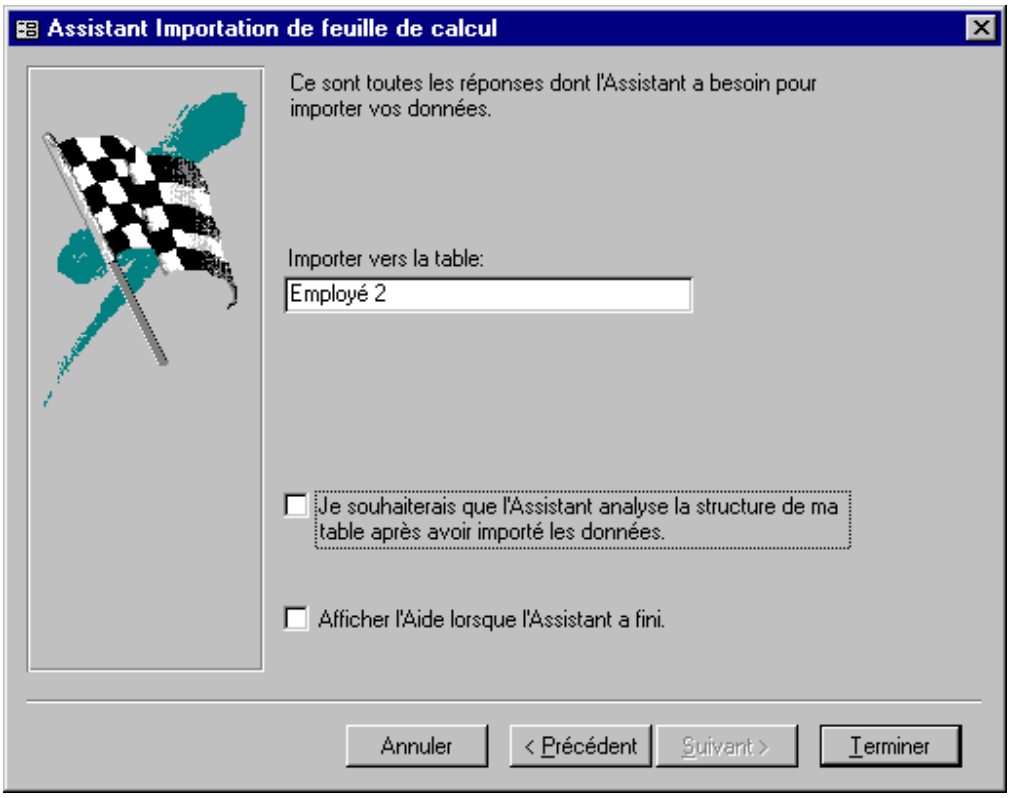


Access asks you now for more information about each of the fields, or columns, the data to matter. To change the properties of each of the fields, it is enough to click the grey box containing the name of the field. You can then change some properties such as the name, the indexation and if you want to import the field or not.

If the first line of the data to be imported was not that with the name of fields, you can change it now by entering the name of your choice the box **Name of the field**. Even if you answered yes the question two windows previously, you can again change the name better to answer your needs.

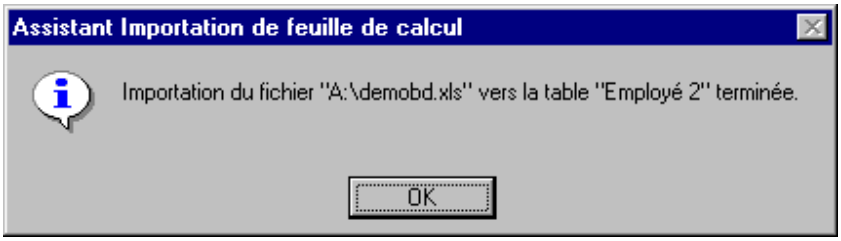
Access asks you also if you want to index the field. Choices are not, yes with doubloon and yes without doubloon. This helps to sort out recording and so necessary during the relations between tables. It accelerates the access to the data in the connected tables. place a sorting only on the necessary fields for your needs. You slow down the presentation of the data when you place the sorting on several fields of the table.

A last option gives you importer's choice only the fields that you need. It is still possible to you to exclude a field of the import. It is enough to choose the name of the field and to tick the box **not to import the field**.



Access asks you then for that name you go to look to the table that you import. This implies that you don't import the data in a table that already exists.

You have also the possibility of activating the assistant of analysis of structure. It analyzes the data and looks for halvings information. He asks you then if he can cut the data in several tables to have the most optimal possible structure of tables. For the purpose of the exercise, don't activate this option. You can also have of the supplementary assistant when the assistant in ended his work.



Access will confirm you the import of the data according to the choices for that you asked.

●Press the **OK** button.

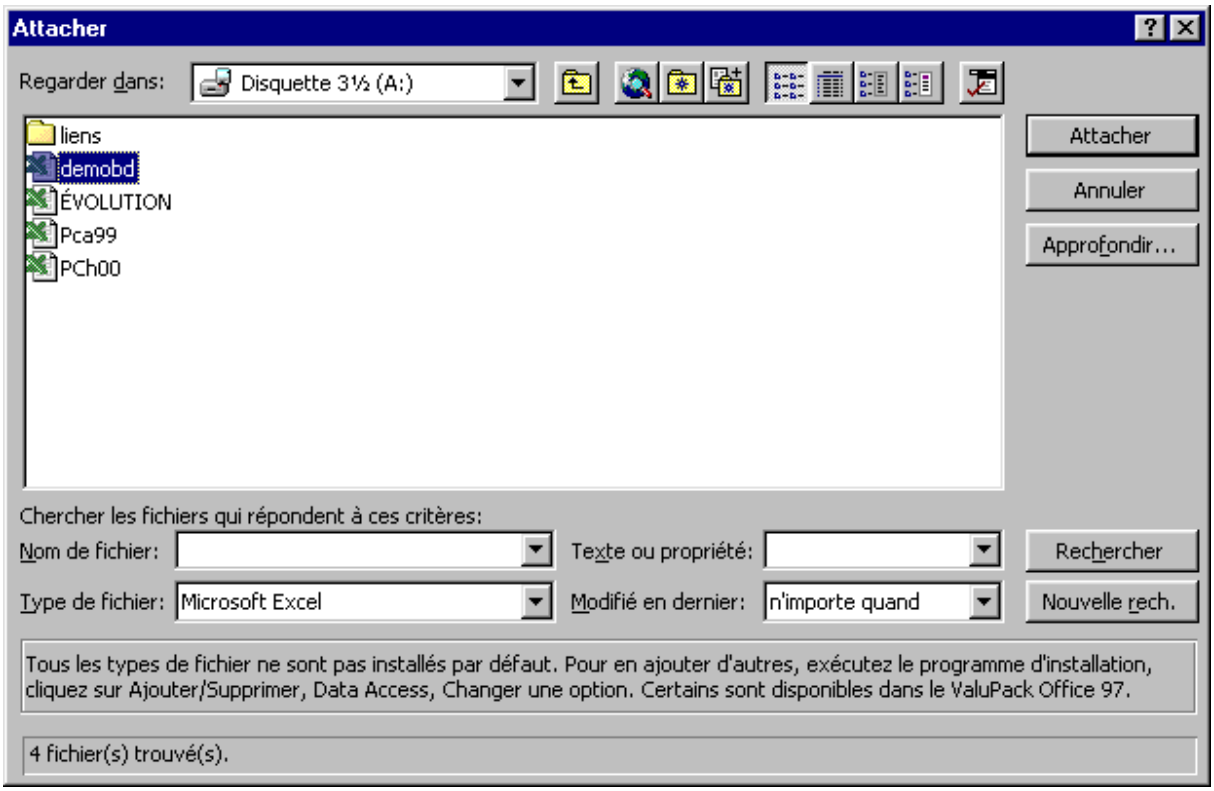
NAS	NOM	PRENOM	SEXE	TITRE	SALAIRE	CATÉGORIE
101010101	Lalonde	Karl	M	Ouvrier	37 100,00 $	4
111111111	Savoie	Jean	M	Vendeur	31 500,00 $	4
123456789	St-Pierre	Aline	F	Secrétaire	22 500,00 $	2
222222222	Dupuis	Josée	F	Vendeur	22 500,00 $	2
249456456	Bibeau	Rita	F	Administrateur	27 000,00 $	3
333333333	Gingras	Marc	M	Administrateur	40 500,00 $	4
343456987	Cardinal	Paul	M	Ouvrier	20 000,00 $	2
345456324	Thibault	Gratien	M	Administrateur	32 000,00 $	4
444444444	Bibeau	Martin	M	Secrétaire	22 500,00 $	2
456434234	Dupuis	Carole	F	Vendeur	22 900,00 $	2
555555555	Thibault	Yvon	M	Administrateur	27 000,00 $	3
666666666	Smith	Alex	M	Vendeur	18 000,00 $	1
777777777	Crosby	Julian	M	Administrateur	27 000,00 $	3
888888888	Allard	Jocelyne	F	Secrétaire	27 000,00 $	3
999999999	Allard	Benoit	M	Ouvrier	22 500,00 $	2

Here is the result of the import if you open the table Employee 2.

Linking a table

To link a table to the data base the advantage gives you to reach data that are outside of this one without enlarging it for all that. You can also add or remove data of the outside table. The disadvantage is that you can not change the structure of this table. The next exercise consists in binding(connecting) the same table as you mattered in the previous exercise. Some of the stages to be followed to link a data base external look like those of the import.

- From the **File** menu, select the options **external data** and **Link**.

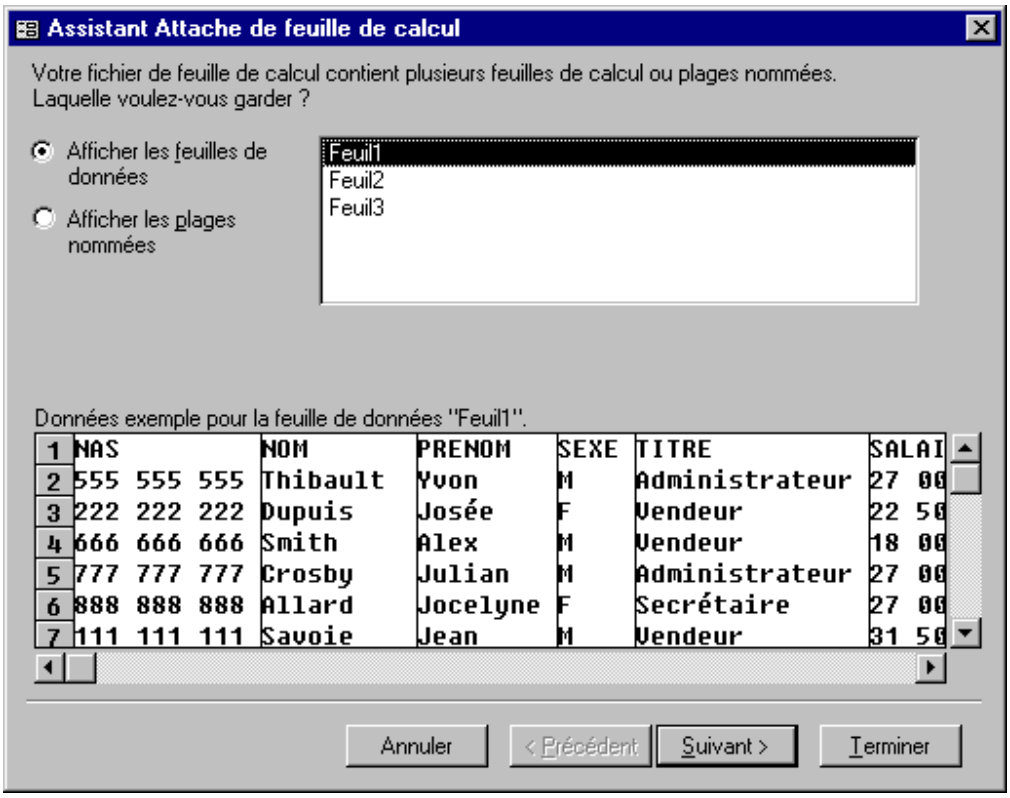


The next part presumes that you have to protect the file **demodb.xls** on a floppy disk.

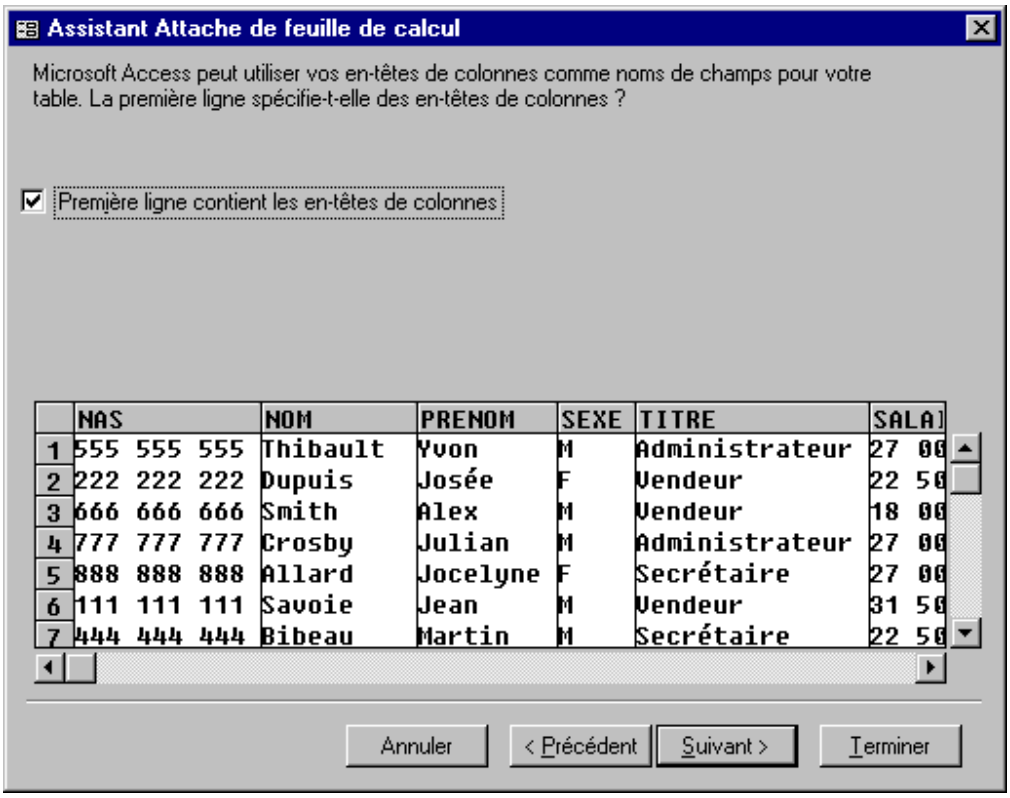
- Of the available list of the readers of the **Drive**, select **Floppy disk 3½ (A)**.
- Of the list of the Type menu of file, select the option **Microsoft Excel**.
- Among the list of files on the floppy disk, select the **demodb** file.
- Press the **Paste** button.

OR

- Double-click on the **demodb.xls** file.

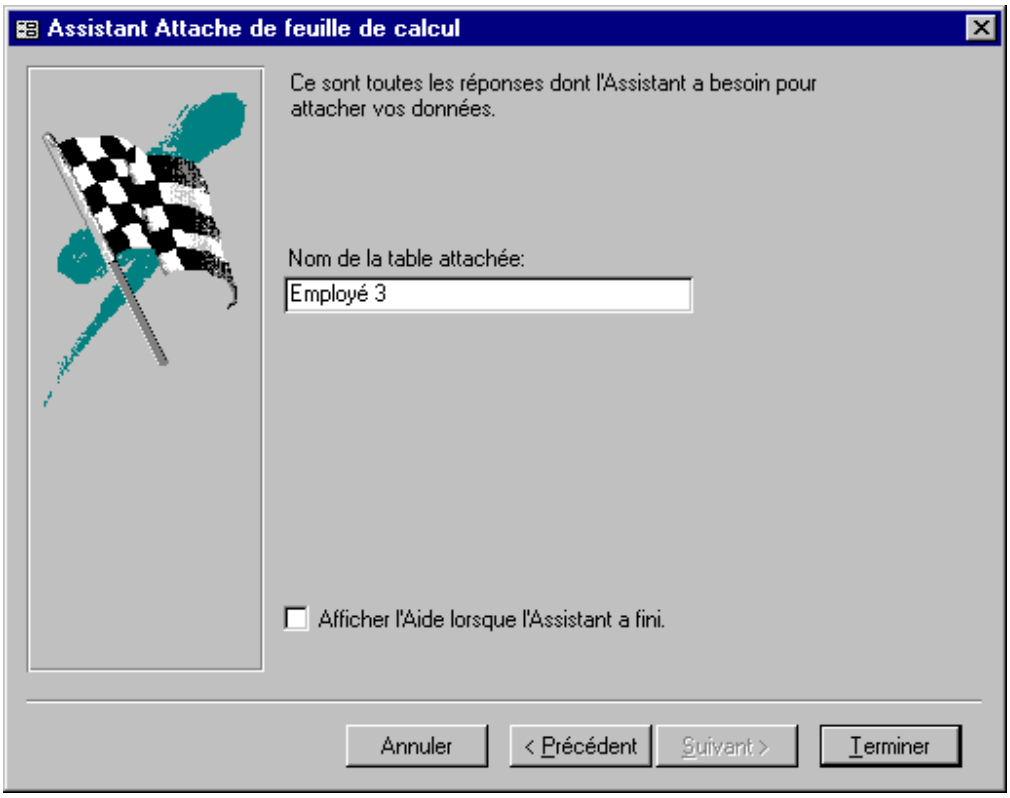


- Select the option **View the worksheet**.
- Select the worksheet named **Sheet1**.
- Press the **Next** button.



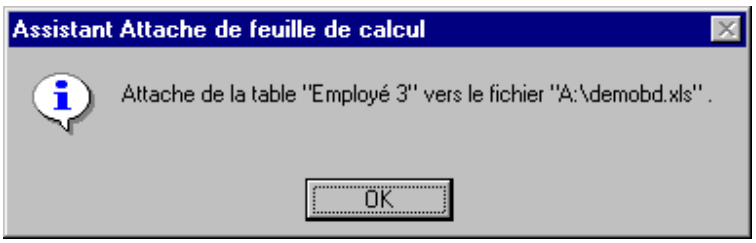
Access asks you if the data of the first line of the working sheet are the names of the fields of the table to matter. In that case, it is true that the data of the first line are the names of fields.

- Click on the option **First line contains headings columns**.
- Press the **Next** button.

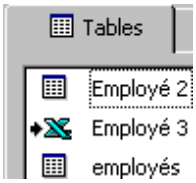


To end, Access asks you that is the name that you want to give to the attached table.

- For the purpose of the exercise, write in the **Name of the attached table** box: **Employees 3**.
- Press the **End** button.



Access confirms you that the data of the working sheet Sheet1 of the file demodb.xls are now accessible from your data base.



To differentiate the tables of the data base of those that are attached, Access places an arrow in front of the attached table. Because the data result from the Excel spreadsheet, the icon of the application appears also.

Access - Queries

Introduction

One of the most powerful elements of a data base is the capacity to make a search on a mass of data stored in the data base. It is then possible to make analyses and to take out of it trends. For example, you don't need to see all the list of the customers if you need only the phone number of one of them. There are also queries for certain queries of action such as the update and the deletion of data.

The next section consists in learning the procedure on creating a query by creating one that will give information about the employees. It is first required to have created the table "employee" of the page of creation of tables.

If you have no time to create the table, you can copy the data base ***demoacc1.mdb*** (for Access 97) or ***demoa2k1.mdb*** (for Access on 2000) containing the table "Employees" and to begin at once the creation of the queries. These files are on the page of the demonstrations files that contains all the files used during my demonstrations and the exercises of this site. click here to return you on this page then to return. Later, there are explanations for the possible options of a query. The following Web page consists of exercises to look more and more in depth at the possibilities of the queries.

Steps to make an Access query

1. Choose one or several tables or queries
2. Choose the type of query
3. Choose one or several required fields
4. Determine if fields need to be sorted out
5. Hide fields from the need
6. Determine the criteria of selection
7. Execute the query
8. Specialized options: grouping, expression generator
9. Connect tables

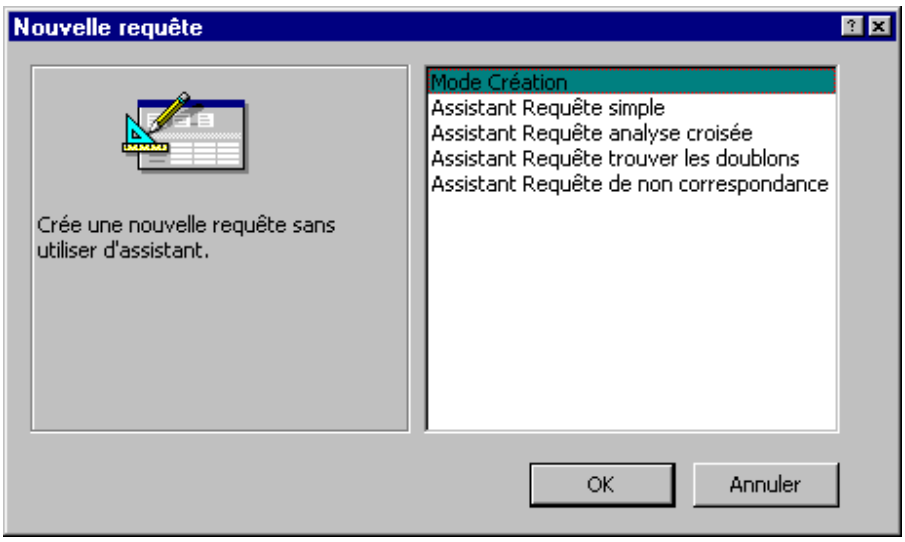
The next stage consists in creating a query. It is a question of showing the Prénom (first name) and the name from all the employees whose Prénom (first name) is Roger.

- Click on the queries tab 

.
- Press the **New** button.

1. Choose one or several tables and the required queries.

Access offers you several ways to create a query: by using one of the assistants that Access offers you or by building it from the beginning to the end in creation mode.



- The Creation mode is the one that allows you all the options to create a query. However, there is no assistant to help you. It is partially for that reason that this page exists; to demonstrate the full potential of the queries.
- The simple query assistant asks you for the list of the fields that you want to see and shows the result. There are no criteria of selection. It shows only the fields you asked for all the records.
- The crosstab query assistant asks you for some questions to create a crossed image. You can easily know the number, the sum, the average and the other operations of a field with regard to another. For example, you can know the number from employees that works in the company by office location and by occupation. Or, that types of products buy the various customers of the company. It can become a tool of analysis powerful.
- The find doubles query assistant is also very interesting when you have difficulties creating relations between tables. One of the reasons so that Access refuses to create a relation between tables is that there is an illegal doubloon in one of the tables. This query would allow you to know that recording has a contents of a field in double to allow you to correct the situation.
- The assistant query of not correspondence is also useful for the relations between tables. To what is of use a relation if there is no equivalent datum in the other table? This query allows to find the records that have no equivalent, or value in common, in the other connected table. This allows to make sure that all the records are connected with the information of another table.

- For the example, select the **Creation mode** option.
- Press the **OK** button.

You can create a query from a table or even from another query. It is even possible to have a query that consists of fields resulting from several tables or from queries. Access will ask you of the list of tables and queries to choose who or that one you want to add to your new query. select, one at the same moment, tables and queries and press the button add. When you will have selected the table, the query or a combination of both that you need, press the **Close** button.

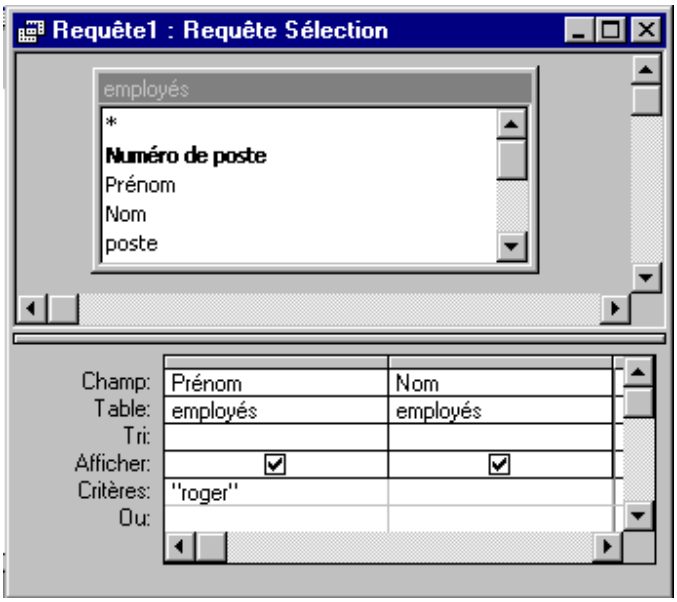
- Select the **Employees** table.
- Press the **Add** button.

- Because there are the other tables or the queries to be chosen, press the **Close** button.

It is possible to create a query from several tables or from queries or a combination of both. If, for a reason or the other one, you forgot a table or a query, you can add it in creation mode by pressing on the button. It will then be required to repeat the operation above.

For training purposes, the next queries will be all consisted from the **Employees** table.

You are now in the screen for the creation of query. The part of the height contains tables and queries for that you asked previously. The part of bottom is the one that is the most important. It is there that you decide on fields that you need as well as options that you want.



The first line serves to select the fields that you need for your query. The second line is to determine the order of view of the data. The third line is to determine if the field should be shown or not. For certain conditions, it's better don't show a field. The fourth line and the following lines serve for determining the criteria to show a recording.

2. Choose the type of query

Access offers you six kinds of queries. Each is specialized for a certain kind of query or operation.

Request query: View the records that answer the wanted criteria. It is the type that you go to use mostly. It shows only the records that answer the selected criteria.

Crostab query : View a image of synthesis according to the wanted fields.

New query: Creating a new table with the fields you asked according to the wanted criteria.

Updated query: Update of the records according to the wanted criteria.

Add query: Add records of another table according to the wanted criteria.

Deletion query: Eliminate records according to the wanted criteria. It is possible to erase at the same time a group of records that answer the wanted criteria.

For the moment, it is about a query of type selection. It is the one that you use to carry out searches in a data base. For the exercises number 1 until 21, it is the

query of type selection that will be used. The following exercises use another type of queries.

3. Choose one or several required fields

Among tables and the queries that you chose, you should choose the fields that you need for your new query. It means that you are not obliged to use all the fields; only those necessities for the query. So, the character **"*"** located at the beginning of every table that meets itself in a query indicates that you can add all the fields of this one in the query in the order that they are at present in the table. This applies also to the other queries that you can add to your query.

There are three ways to choose a field:

1. Double-click on the field
2. Choose from the list
3. "Drag" a field and insert it in the right place

1. Double-click on the field

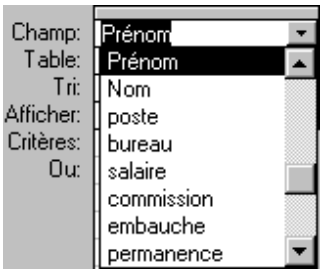
- Place the pointer over the field that you need.
- **Double-click** by using the **left** mouse button.

The selected field will be added at the end of the list of fields already selected.

- Repeat the operation until you have all the fields required for the query.

2. Choose from the list

- Place the pointer in the white cell next to the word Field:.
- Click in the cell.
- Click on then the black arrow pointing downward the right-hand side of the cell.



- From the list of fields, select the field that you need.
- Repeat the action with the cell to the right-hand side until you chose all the required fields to end your new query.

3. "Drag" a field and insert it in the right place

- From the list of tables and queries that you selected, place the pointer on one of the fields that you want in your new query.
- Keep your finger on the **left** mouse button.

A small white box will appear. This is to indicate that you are "holding" the field of your choice. It remains only to put it in the zone of the criteria.

- While pressing the **left** mouse button, move the pointer on the line where you want to insert the field.

This last method is very practical to insert a field between two others. Once chosen, these fields will be shown in the same order as you chose them from left to right. It is also possible to move fields in the query.

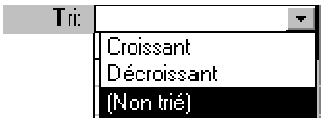
- Place the pointer on the small grey box above the name of the field.
- Click on this box.
- Keep your finger on the **left** mouse button.
- Move the mouse towards the left-hand or the right-hand side until the selected field is in its new location.
- Release the mouse button.

For the creation of your first query, use the technique that you prefer to put on the line of fields the Prénom (first name) followed by the field name.

4. Determine if fields need to be sorted out

When you chose the required fields to complete your new query, you should determine if these fields need to be shown in a definite order. Do you want the list of the customers in alphabetical order, in order according to their figure of affair(business) with your company, according to their geographic place or a combination of these orders?

Below every name of the field is the option to activate the sorting on this one. You can decide not to activate it, the sorting or the resources in increasing or lessening order.



- Click in the box of the sortings.
- Press the button with the triangle pointing down.
- From the list, you can select the type of sorting that you want (ascending, descending, none).

The priority of the sortings.

It is however required to pay attention. The field sorted out most to the left in the priority on the others whom is for its right-hand side. So, if fields Prénom (first name) and name are sorted out, it will be first in order of Prénom (first name) followed by the name. Ex:

Alain Lacasse

Alain Lemire

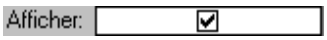
Being Josée Lacasse .

For the creation of your first query, it is useless to sort out the shown fields.

5. Hide fields from the need

Normally, all the fields that you select will be shown. It happens by moments however when you need a field for the query but when you don't want to show this one. For example, you want the Prénom (first name) and name of the persons gaining(winning) an income superior to 50 000 $ but you don't want to show this amount.

To hide a field of the view



Click on the square of view below the option of the sorting.

One "X" in the box indicates that the field will be shown during the presentation of the records.

For the creation of your first query, it is useless to hide fields.

6. Determine the criteria of selection

Select fields and having placed in the order of your choice, having sorted out on certain fields, having decided to show or not certain fields, it is required to determine that are the criteria of selection. If you write no criterion, all the records are going to appear.

The criteria serve for filtering the records only to show those that you need. For that purpose, Access offers you several operators for various situations. Here is the list so that a short description of each.

The operators

= <,>, <=>, =	Unless another operator is chosen, the criterion is always equal to the contents of the criterion.
? *	These operators replace a character (?) or a series of characters (*).
And	It is possible to combine criteria to limit the number of records that answer the criteria.
Or	It is possible to combine criteria to have most possible records.
Among and	View the records that are among such and such criteria. These are including.
Not or <>	View all the records EXCEPT those that answer the criteria.
Is null	View the records of that the contents of a certain field are empty.
Calculated field	It is possible to create calculated fields that give the result of a formula that uses the contents of the fields of the recording. **Ex: Total: [Quantity] * [Prix_Unitaire]**

Operations	Allow to have the sum, the average, the number so the other mathematical operations on the records that answer the wanted criteria.
Generator of expression	Allow to use at most the queries. Use the functions integrated into Access.

The operators, the operations as well as the expression generators are explained besides details in the exercises of the next Web page.

- For the example, write **roger** for the criterion under the field "Prénom (first name)".

7. Execute the query

- Press the  button.

OR

- From the **View** menu, select the **Worksheet** option.

The records that answer the criteria will be shown.

- To return then to the mode creation, press the  button.

OR

- From the **View** menu, select the **Creation** option.

8. Specialized options: the functions, the expression generator and the operations

Access offers you much more to create complex queries. It offers you a long series of functions that you can use in the queries, the forms or the states. To help you to use these functions, Access offers you the expression generators that gives you access to all the available resources from the software. That it is, fields, tables, queries, forms, states, macro, modules or integrated functions, they are all available from the expression generators. To end, it is also possible to group together the records to make operations such as the sum on a field, to count, to find the average the others.

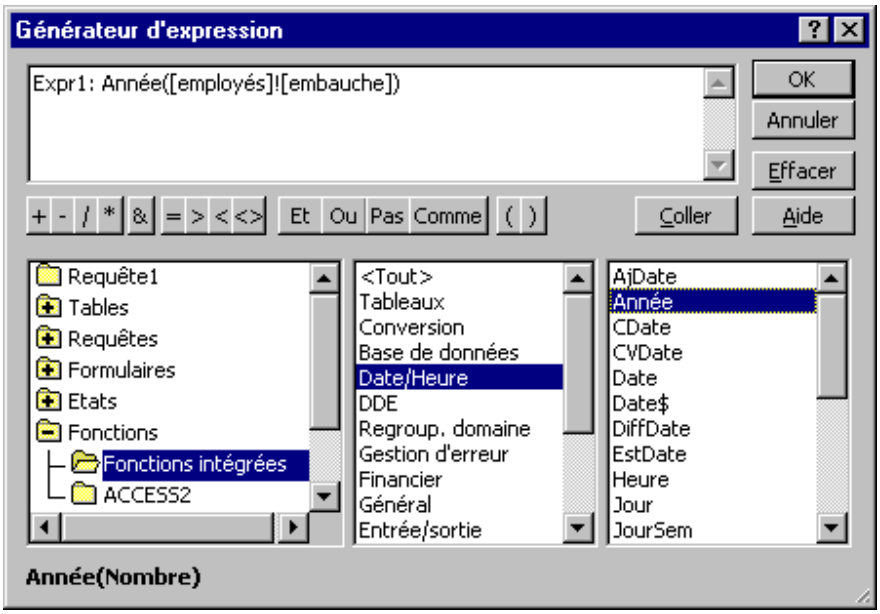
The functions

Besides the calculated fields, Access possesses functions predetermined to help you to realize queries and more complex analyses. There are 176 functions of available that are grouped together(included) in 16 categories. Here is the list of the categories and the number of functions in each of the categories.

Name of it Category	Number of Functions(offices)

Table	2
Conversion	31
Data base	13
Date/Time	23
DDE	6
Regroup. Domain	10
Management of error	4
Financial	13
General	10
Input-output	14
Inspection	5
Mathematics	12
Messages	3
Prog progress	3
Grouping SQL	9
Text	28

There is a function for almost all the occasions. It is enough to press the  button to show the expression generator. From this window, you have access to all the resources available on Access. To see the list of the functions:



- **Double-click** on the **Functions** folder located in the first column of the window.
- Click on the **Integrated functions** folder.

The contents of the second and the third column are going to fill up. The second column contains the list of the categories of functions. The third column contains the list of the available functions.

To have more information about one of the functions:

- Click on the function that interests you.
- Press the **Help** button.

A description of the function will appear in a window.

The operations

Besides examining with criteria or functions integrated by Access, it is also possible to group together fields to make(do) operations such as the sum, the numeric average of fields. Among the other operations, it is also possible to count the number of records that answer certain criteria.

- To reach the operations, press the Σ button.

OR

- From the **View** menu, select the **Operations** option.

Here is the list of the operations and it that you can carry out by using them.

Name of the operations	**Description**

Group	Group together the values of a field.
Sum	Find the sum a grouping of records. Only for a field of numeric or monetary type.
Average	Find the average of a grouping of records. Only for a field of numeric or monetary type.
Min	Find the smallest value for the field.
Max	Find the biggest value for a field.
Count	Count the number of records that answer the wanted criteria.
EcartType	Find the standard deviation of a grouping of records. Only for a field of numeric or monetary type.
The Var	Find the variance of a grouping of records. Only for a field of numeric or monetary type.
First	Find the first recording registered in the table that answers the wanted criteria.
Last	Find the last recording registered in the table that answers the wanted criteria.
Expression	Enter the own Formulas or fields calculations for a grouping.
Where	Enter criteria without that they are considered for the grouping.

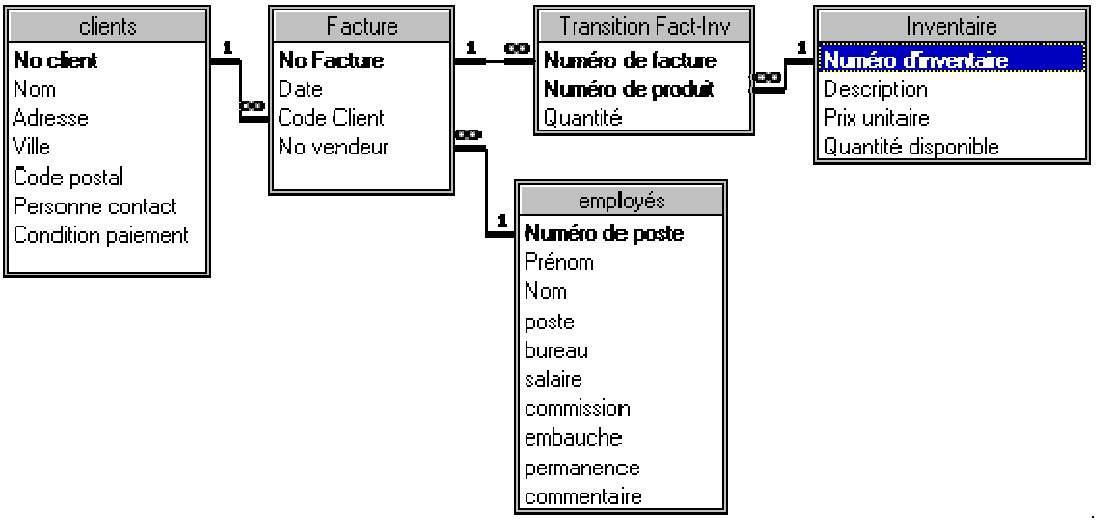
Not all the operations apply to all type of fields. For example, it is unthinkable to make(do) an average on a field of type Text. Here is a list of the operations and on that type of fields they can apply.

Operations	**Text**	**Memo**	**Numeric Date/Time Monetary NuméroAuto Yes/No**	**OLE**
Sum			X	
Average			X	
Min	X		X	

Max	X		X	
Count	X	X	X	X
Écartype			X	
The Var			X	
The first one	X	X	X	X
The last one	X	X	X	X

9. Connect tables.

If your query requires fields that you will find on several fields, you *should* connect them on fields in common. It's as possible as you need the other tables to create links "indirect" between two tables. For example, in the structure of the relations between the tables that compose an invoice that one sees on the page on the relations, one notices that there are no direct relations between the table **Customers** and that of the **inventory** of the company.



But there is a relation among **Customers** and **Facture**. It there also another relation among **Facture** and **Transition Fact-Inv** and a last one between **Transition Fact-Inv** and **Inventory**. Although there is no "direct" relation among **Customers** and **Inventory**, it is always possible "to connect" them by using the other tables such as **Invoice** and **Transition Fact-Inv**.

Modify a query

After your first outline of the result of the query, it is possible that you want to modify one or several elements of the query. Some possible reasons are that you had no expected result or that it misses or that there are too many fields in the

query. So you maybe want to change the order of presentation of fields in the query. The next part consists in seeing how inserting a new column between fields, deleting a field of the list and how to move a field in the order of fields shown in the query.

Insert a column

It is possible to insert to insert a column between two fields into the list of the fields of the query. It is advantageous when you want to insert a field calculated between two fields that are in the query.

- Click on the column placed in the right-hand side of the column that you want to add.
- From the **Insert** menu, select the **Columns** option.

Delete a column

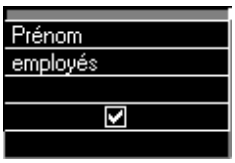
You don't need any more a field for a query. It is easy to remove it by following the following instructions.

- Click on the column to be deleted.
- From the **Edit** menu, select the **Delete column** option.

Move a column

It is also always possible to change the order of presentations of fields in the query. Before we beginthe operation, take note that it is the point of the arrow that is used to select the column of the field and to move it.

- Click on the small grey box over the name of the field to be moved.



The column completely should be selected.

- Place the pointer over of the grey box of the field to be moved.
- While pressing the **left** mouse button, move the field towards the left or to the right according to your needs.

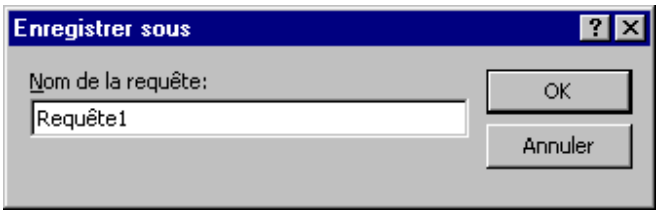
The field will re-fit into the query in the place where there is a vertical bar between fields as soon as you will release the **left** mouse button.

Export the data

As for tables, Access can export the result of a query towards other applications. This option is more advantageous than for tables because you can ask for the records that answer your needs. The export allows you to take advantage of opportunities that offer the other applications.

Before being able to export the data, it is first required to register(record) the query in the data base Access.

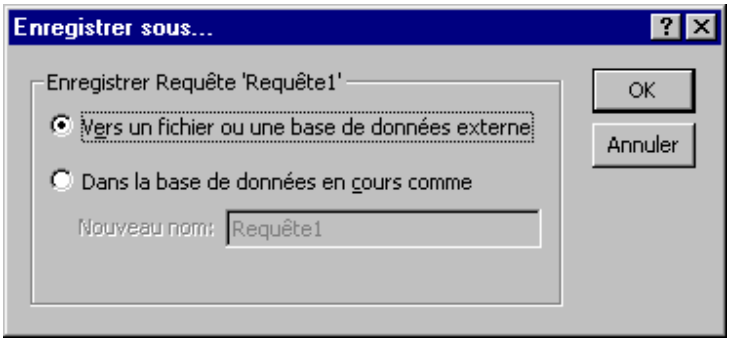
- From the **File** menu, select the **Save** option.



- Enter the name of your choice.
- Press the **OK** button.

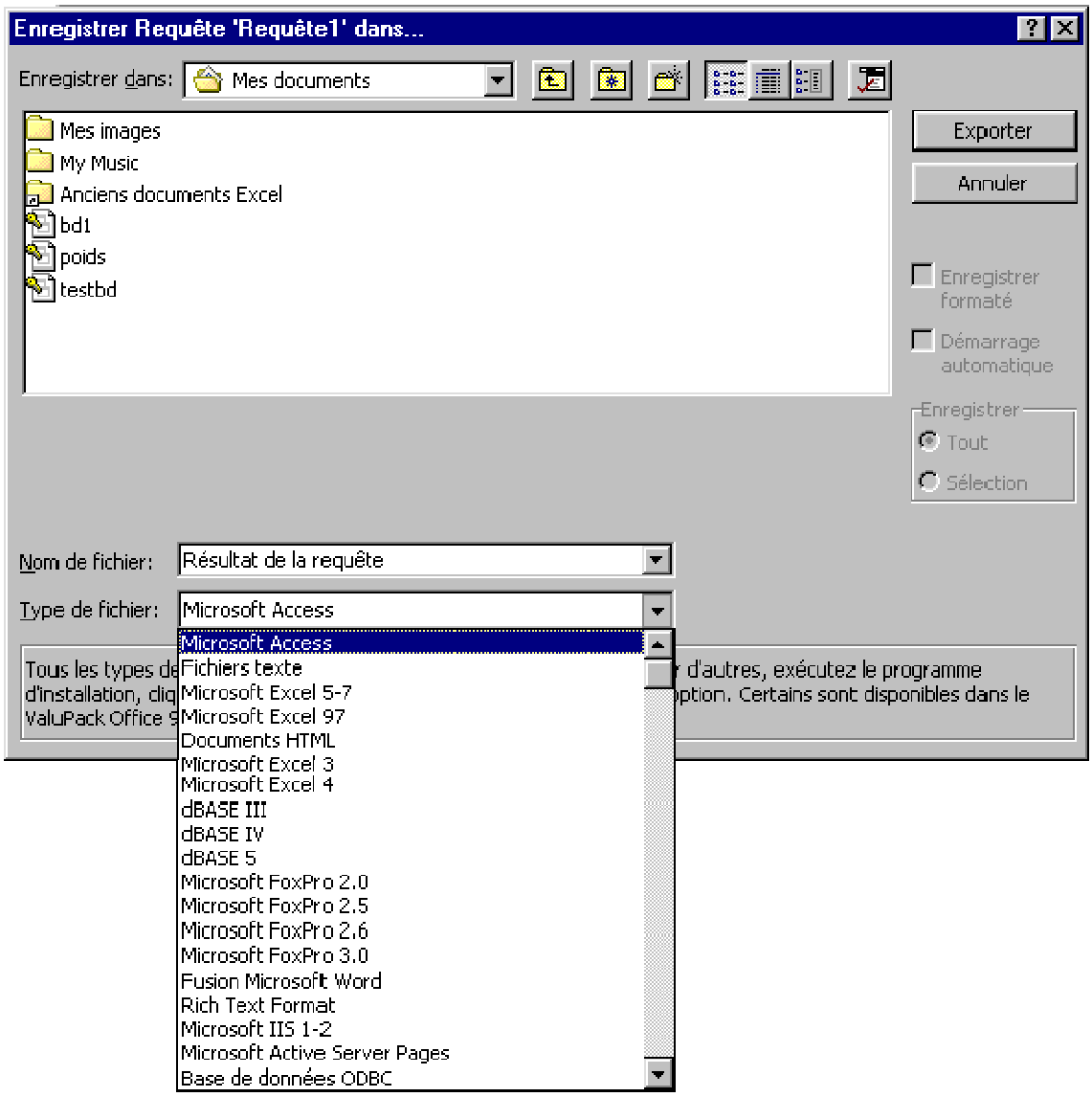
When the query is recorded, it is then possible to export the result to another file format.

- After you are satisfied with results of the query, select of the **File** menu the **Save as** option.



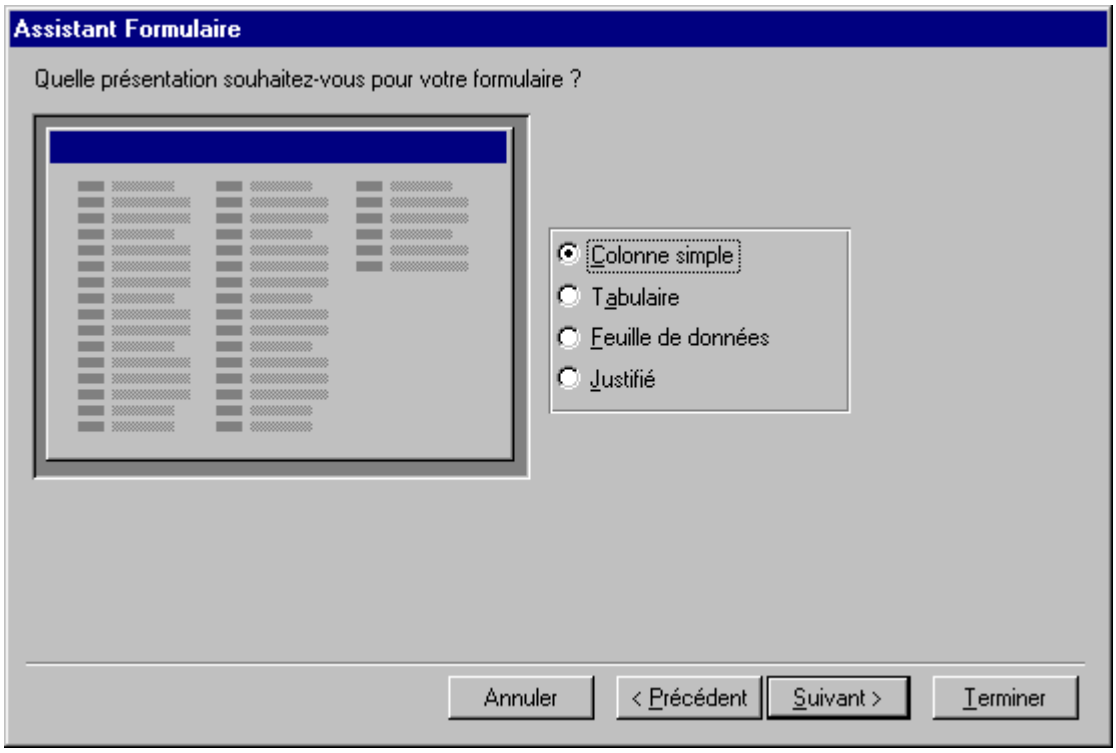
Access a choice offers you: to save the result in a file or as a query in the data base.

- Select, the **Save as a file or in the database as** option.
- Press the **OK** button.



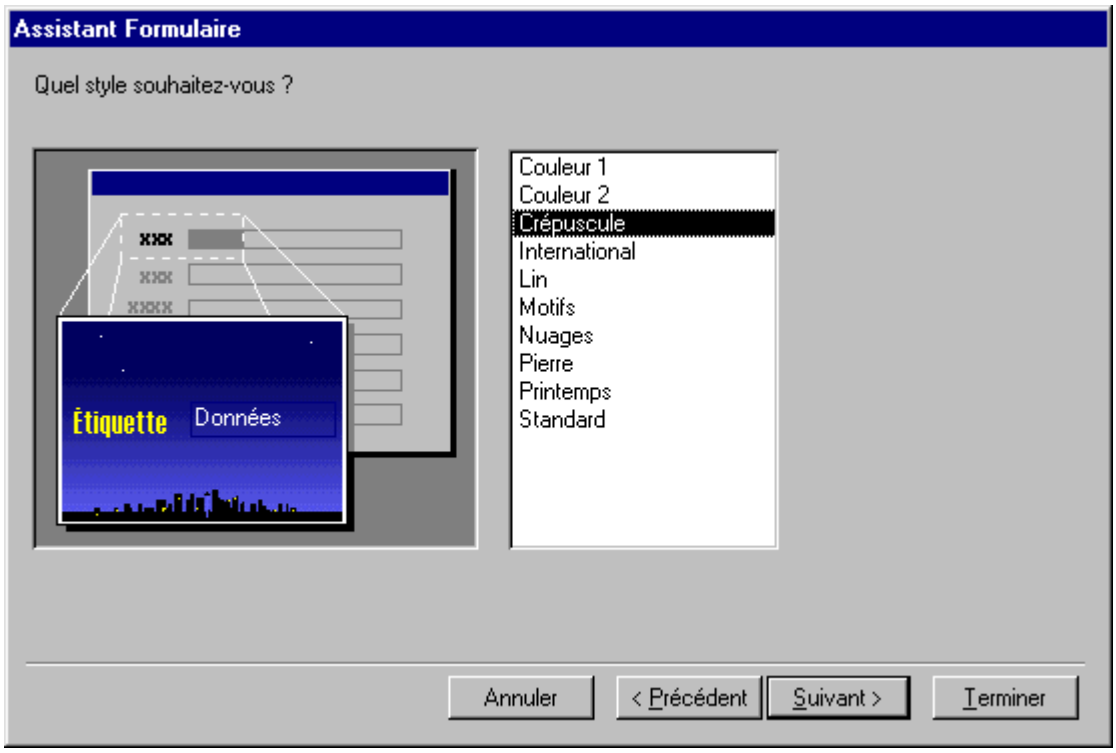
- In the **Name of the file** box, enter the name of your choice.
- From the list of the **Type of file**, select the file format that answers your needs.
- Press the **Export** button.

Access will create a file in the chosen format. You can then use it to answer your requirements.



- For this exercise, select the option **single Colunm**.
- Press the **Next** button.

The next window asks you that is the thorough image of your form. You can decide not to put a bottom of form by selecting the Standard option.



- For this exercise, select the option **Twilight**.
- Press the **Next** button**.**

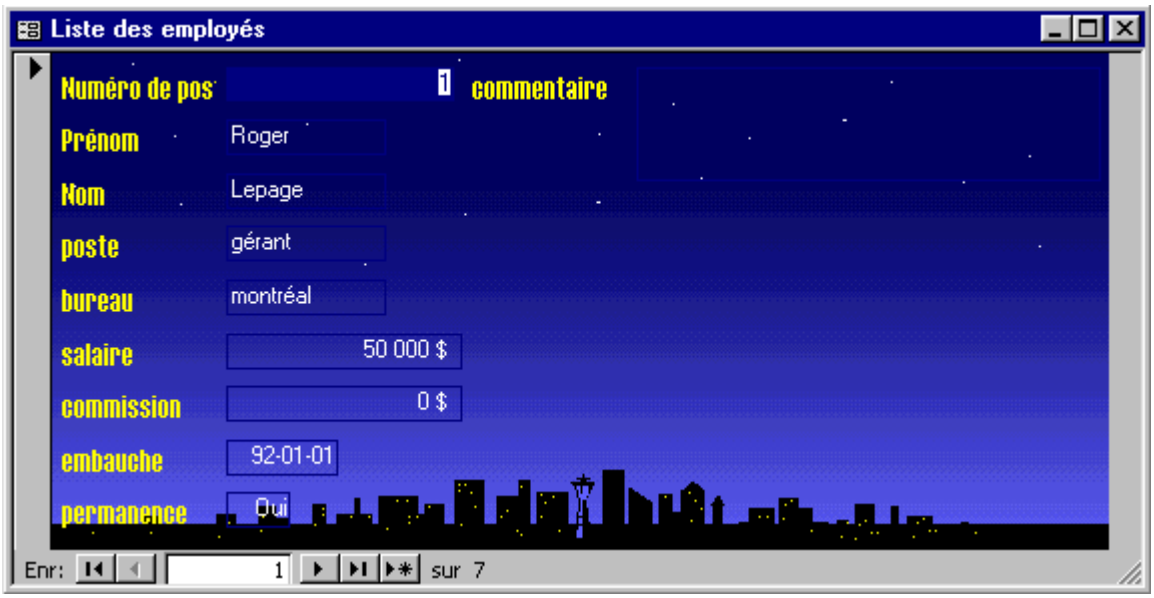
The last window asks you first for the title of the form.

- Change the title to "**Liste des employés**".

Access will asks for to you what you want to do. You can see the form or modify the form at once.

- For this exercise, select the option **Open the form to show or enter information**.
- Press the **Finish** button.

Here is a preview of the form once completed.



Enter of the data

It's now possible for you to add or to modify the records of the table as you have it sheet of data during the creation of the table can be made in mode. However, the presentation of the data is more understandable for a new user than by using the data sheet mode.

Movement in the form

To move in the form, use the following the keys:

- Use the **Tab** and **Shift Tab** keys to move you in the next field or the previous field.
- Use the keys **PageUp** and **PageDown** to move you from the previous or next record.
- You can also use the navigation bar located in the left lower corner of the window to move you from a record to another or in the first and last record of the table.

- Use arrows towards the left or to the right to pass in the previous or following record.
- Use arrows with a vertical bar to return you to the first one or to the last record of the table or the query.
- Use the arrow with the star (*) to add a record to the table or to the query.
- place the cursor in the white box and write the number of the record that you want to reach follow-up of the **Enter** key.

- To add a record to the table, go to the last record and press the key PageDown. An empty record will appear. Then, enter the news given to your choice.

OR

- From the toolbar, press the button  .

Modify a record

It's very easy to modify the contents of a field if this one is not "locked".

- Use the the keys of the keyboard or the navigation bar to return you to the record that you want to modify.
- Place the cursor in the field on that you want to bring modifications.
- Change the contents of the field your choice.

Delete a record 

- Use the the keys of the keyboard or the navigation bar to return you to the record that you want to modify.
- From the **Edit** menu, select the option **Delete the record**.

OR

- From the toolbar, press the  button.

Look for a record

Access allows you to find quickly a record thanks to a query on the contents one of the fields of the record.

- Place the cursor in the field on that you go to carry out the query.
- From the **Edit** menu, select the option Look for.

OR

- Press the keys **Ctrl** and **F**.

OR

- From the toolbar, press the button.

- Enter the value, the date or the name that you are looking for.
- Press the **Search** button.

Personalize a form

- Enter creation mode by pressing on the button.

You can change, add and delete objects in your form. Access calls every object of your form a "control"; whether it's for text, a field or any other object on the form.

Delete a field

It's always possible to delete a control (object) of the form. It can be a title, a line, a box or another element of the form; including fields. The exercise that follows consists in removing the field Poste of the form. The following exercise will put it back in the form.

- Select the field to be deleted. For this exercise, select the field **Poste**.
- Press the **Delete** key .

OR

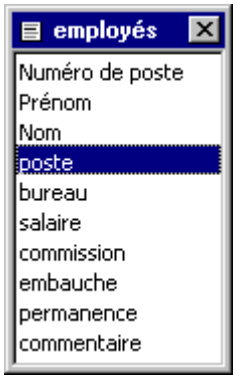
- From the **Edit** menu, select the **Delete** option.

Add a field

The previous exercise consisted in removing a field Poste of the form. It's always possible to you to add or to put back a field that was on the base of the form. This exercise consists in putting back(handing) the field posts that had been removed in the form from the place where it was placed.

- Press the button.

The list of the fields of the table or the query at the source of the form will appear.



- From the list of fields, click the wished field. For this exercise, select the field **Poste**.
- Press and hold the **left** mouse button and move the field in the place wished in the form. For this exercise, replace the field **Poste** in the original place.
- Release the mouse button.

It's enough to pay attention to the order of presentation of fields. This option is covered farther on this page; see order of tabulation.

Move a control (object)

- Make sure before having pressed on the button .
- Click on the control to be moved.
- Place the cursor on the border of the object. The cursor should be transformed into a small hand.
- Press and hold the **left** mouse button and move the control towards your choice.

If you had chosen a zone of text (field) or a title, the associated element (field or title) is also going to move. Only to move one or the other one:

- Make sure before having pressed on the button .
- Click on the control to be moved.
- Place the cursor on the big black square located in the upper left corner of the control. The cursor should be transformed into a small hand with the index on the square.
- Press and hold the **left** mouse button and move the control towards your choice.

In this last case, only the title or the zone of chosen text will move. In this way, it's possible for example to put the field below the title.

Move a series of controls (objects)

To move several elements at the same moment, it's first necessary to select them: with a block by using the mouse or with a combination of mouse clicks and the Shift key.

With a block of mouse:

- Make sure before having pressed on the button  .
- Press and hold the **left** mouse button and move there to surround all the elements that you want to select.

This technique is practical if elements are close one to another and than there are no controls that should not be moved from these. To be more selective in your choices of controls, use the following technique.

- Make sure before having pressed on the button  .
- While pressing on the **Shift** key, click the controls to be moved.

When elements are chosen, use the technique explained above to move a series of controls instead of the only one.

Change the presentation of a control (object), change colors.

From the second toolbar, it's possible to change the presentation of the text and the fields. The following part of the toolbar  allows to change respectively the thorough color, to change the color of the text, to change the color of the outline, to change the type of outline and to put an effect of relief in the controls (objects) located on the form.

Change the size of a control (object).

Any time, it's possible to you to modify the size

The toolbar 

- Press the button  to show the toolbar.

The toolbar offers you the access to several controls that you can add to your form. The next part explains each of these tools and gives an example of the functioning of each in a form.

select a control 

While pressing on the button  , it's possible to you to select one or several controls (objects) to move them then or change one of their properties.

Activate the assistants

This option allows you to activate or not the assistants for the various controls of the toolbar. leave the "active" assistants. This will help you during the addition of certain controls in your form.

Add a "title" or a free text.

So formerly being called labels, they serve for describing fields or for adding of the supplementary data about the form. A title appears every time you add a field to the form. To use it:

- Press the button .
- Click on the form where you want to place the title.
- Write the text of your choice.

Add a " zone of text " or an independent field

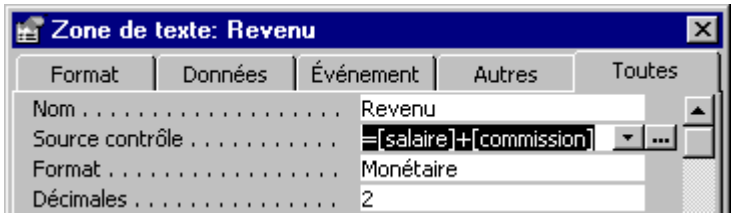
As for the queries, it's possible to add fields calculated from the other data in a form or a report. So, you can carry out calculations directly in the form with a zone of text (i.e. field). For example, the total of an invoice would look like this: = [SousTotalProduits] + [SousTotalServices] + [Taxes]. The only difference enters a zone of text containing a field of a calculated field is that it's necessary to put the character **"="** at the beginning of the formula.

The next part consists in adding a calculated field that calculates the total of incomes (salaire+commission) from employees. The exercise consists in adding a zone of text to the form to determine the income (salary and commission) from the employee shown in the screen.

- Press the button to add a zone of text.
- Click in the place where you want the independent field.

The zone of text and the title are going to appear.

- Place the cursor inside the box of zone of text.
- Enter the following formula: **= [salary] + [commission])**.
- Show the form in Form mode by pressing on the button .



If the returned field shows ***Nom?** There is an error in the formula. watch to return to the creation mode and to verify the formula.

- enter a number the box salary or commission and press the **Enter** key.

As soon as you have, press the **Enter** key, or move the cursor in another field, Returned independent field that you have just created updated with the new total of the sum fields Salary and Commission.

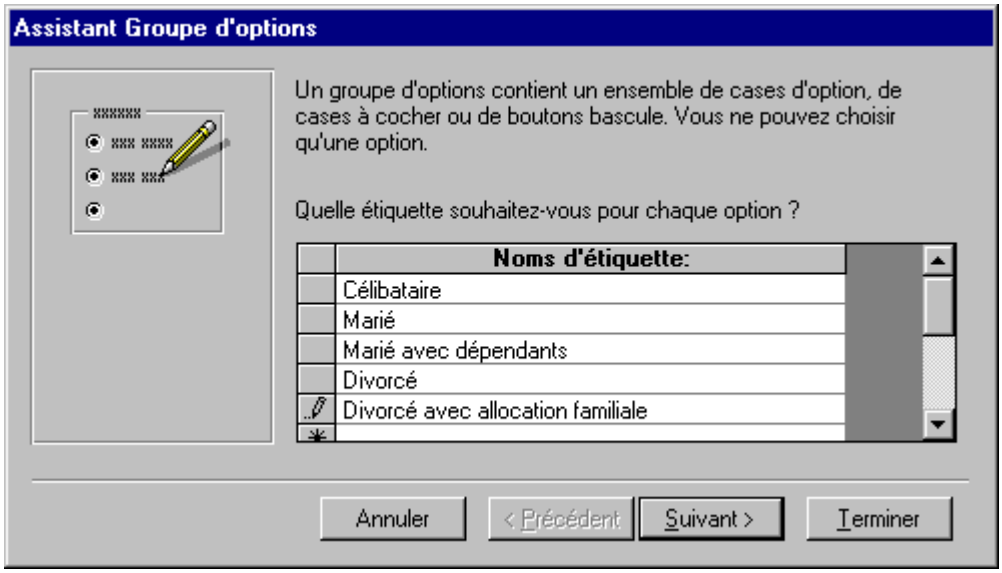
You can create your own Formulas to calculate almost anything. You can calculate the GST and the TVQ on an invoice, the commission of a salesman on an invoice or use the functions of Access for the other calculations. In fact, you should use a field calculated in a query, a form or a report in every occasion that you have.

Add a group of options

A group of options allows you, as for the zone of modifiable list and the zone of list, to choose among a predetermined list. One of the differences between a group of options and is both others that all the options appear to the screen. For both others, it's necessary to press a button in the right-hand side of the box to see the other possibilities. Another difference is that you should write the description, called a label in Access's jargon, instead of choosing among a list that meets itself in a table or a query. The last difference is that it's necessary to determine the value that will be kept in the field for each of the labels that you wrote.

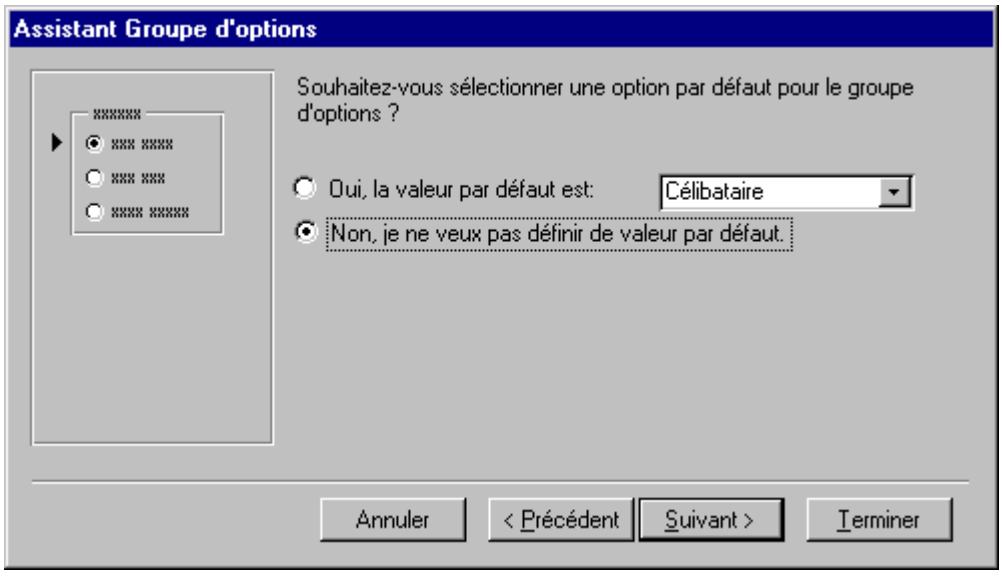
The exercise consists in creating a group of options that serves for determining the social status of the employee. The value that will be chosen will be kept in the field **Status** of the **Employees** table.

- Press the button .
- Click on the form in the place where you want to put a group of options.



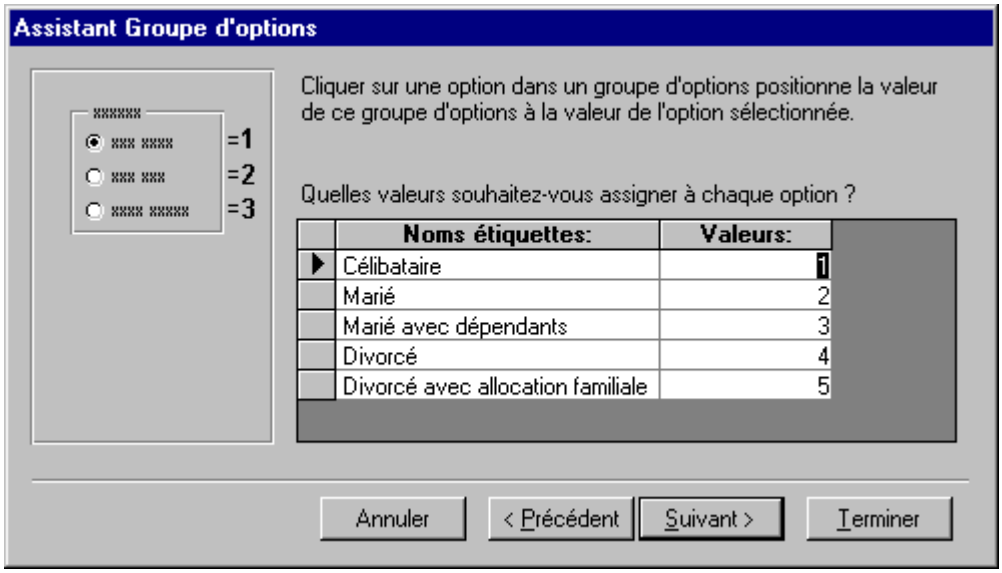
In the first window, the assistant of group of options will ask you for the list of labels, or descriptions, for the choices that you want to offer to the user of the form.

- Write then the list of the possibilities. For this exercise, write the same labels, or descriptions, as those shown in the window above.
- Press the **Next** button.



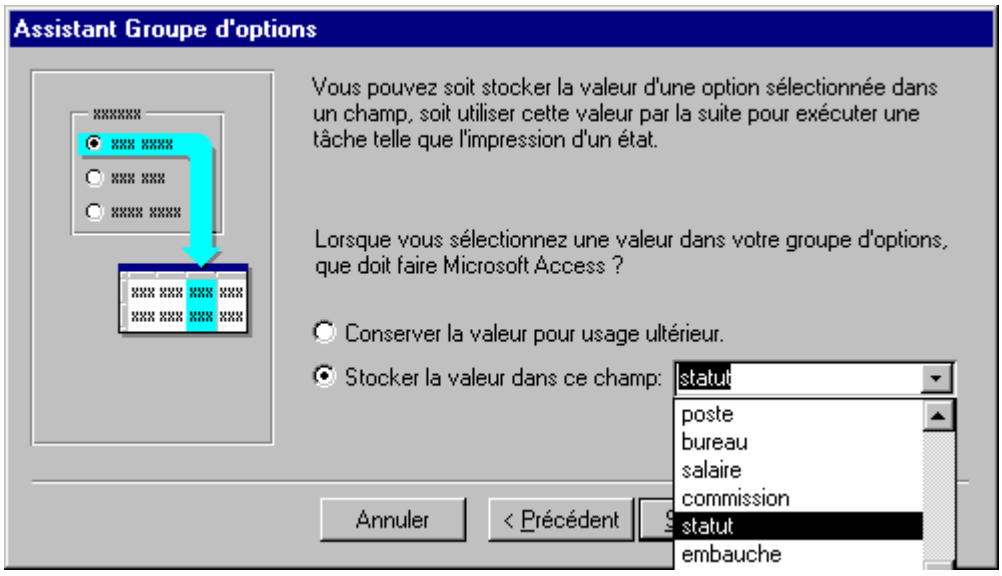
The assistant for the group of options asks you then if one of the values should be the value by default. What means that there would be a predetermined value. If no other value is chosen, it's the one that will be the value of the field.

- For this exercise, select the option: " No, I don't want to define of value by default. "
- Press the **Next** button.



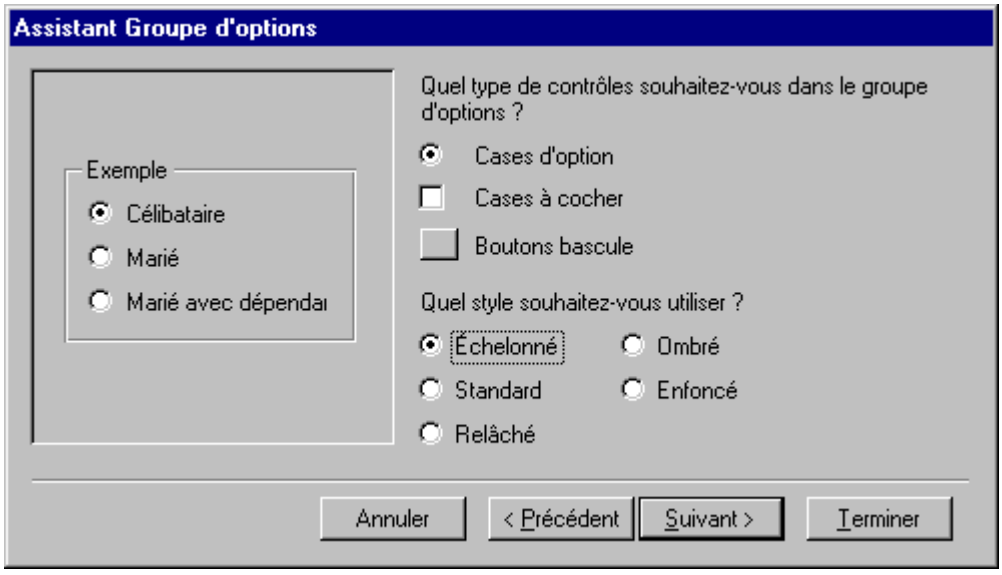
Having entered labels, it's necessary to give a value to each of these. By default, Access shows a number next to each of these labels. It's also possible to you to put of the text instead of figures. This window allows you to modify these values to those of your choice.

- For this exercise, leave the values to those shown initially in the window.
- Press the **Next** button.



The assistant asks you then that to make with the selected value. It offers to save it in an independent field (to save the value for a later user) or to place this value in a field of a table.

- For this exercise, select the option " **Store the value in this field:** " and select the field **Status**.
- Press the **Next** button.



The assistant asks you then of the data about the style of presentation of the group of options that you prefer. It offers you the choice for the presentation of labels (descriptions) and of the border that surrounds the group. The left part of the window offers you a preview of the group of options with your choices of options.

- For this exercise, select the option " **Compartment of option** " for the presentation of labels.
- Select the option **"Spread out"** for the choice of the border.
- Press the **Next** button.

The last element that the assistant needs to end the creation of the group is the title for the group of options. This title will appear at the top of the group of options. For this exercise:

- Write the text following in the box: **social Status**.
- Press the **Finish** button.

Access will take a moment to generate the group of options with the options that you chose. Here is the result of the exercise.

With a group of options, it's only possible to choose one of the choices offered in the box at the same moment. How in this example, it's impossible to be unmarried and married at the same time!

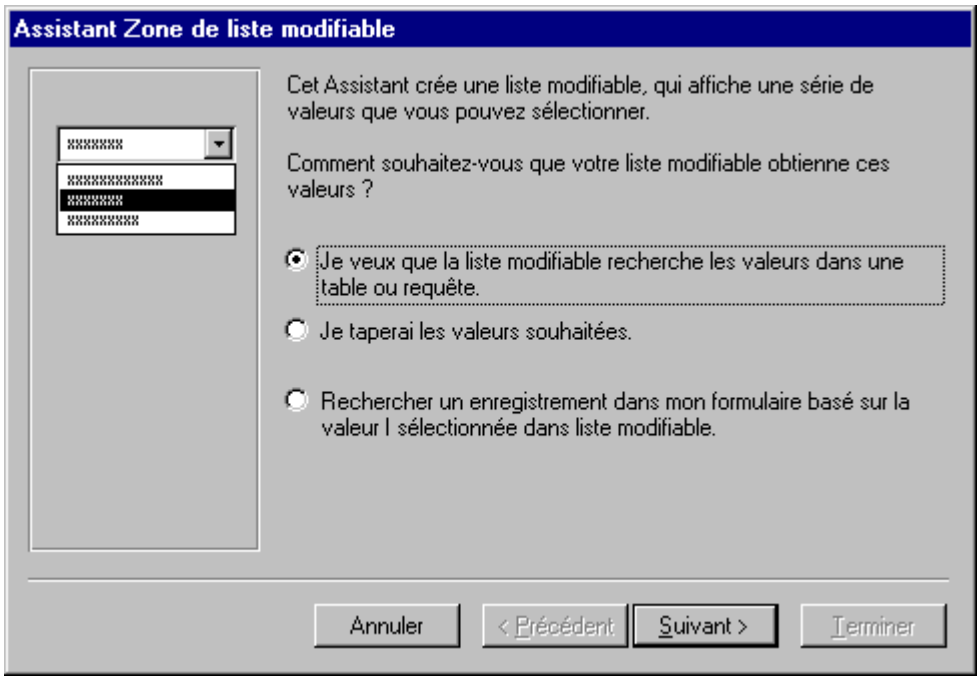
Button falls over 	The button falls over, as for the button of option and the button hook are used for the fields of type Yes/No. It's necessary to press the button to say "yes" or "to activate" the option or the field.
Button of option (radio) 	The button of option (formerly called radio button) can be used with a field of type Yes/No. It's necessary "to darken" the button to activate it or to say the equivalent of Yes.
Button hook 	The button hook can be used with a field of type Yes/No. It's necessary to makee "X" in the box to activate it or say the equivalent of Yes.

Zone of modifiable list 

As a group of options and a zone of list, a zone of modifiable list allows you to select a value among a predetermined list. It's also possible to you to add the other values to the so necessary list. It's an element that group of options and the zone of list does not allow you. A list has also the advantage to avoid errors of spelling during the retranscription of the data. The last advantage of a modifiable list is that it's possible to show several fields at the same time. This has the advantage to give a better reference at the time of choosing for a value of the list.

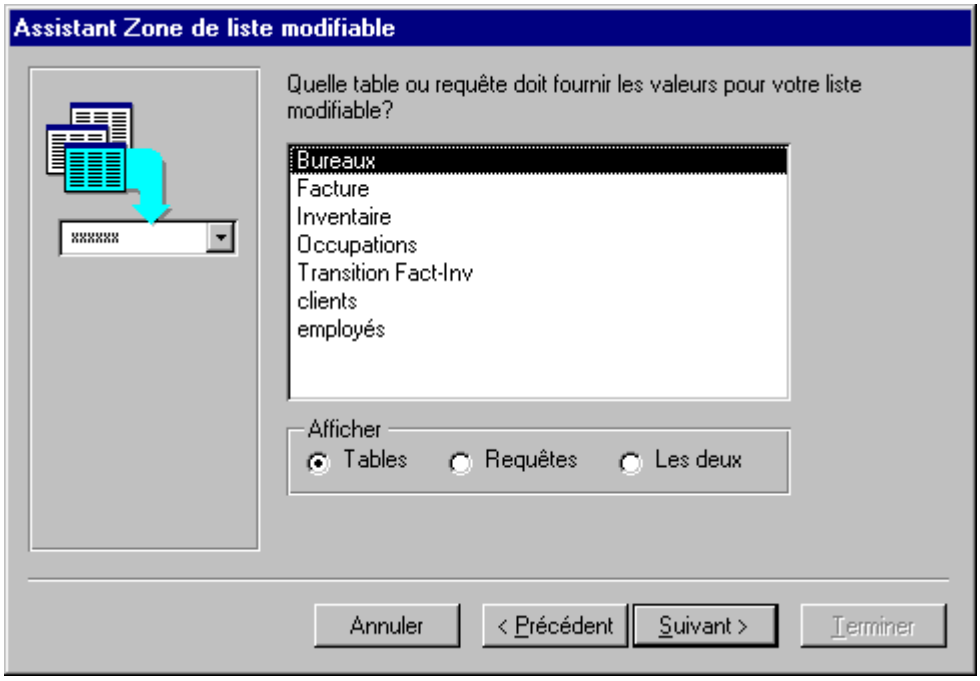
The exercise consists in creating a zone of modifiable list for the field office that represents the office location of the employees. The source of the modifiable list will be the table **office** that contains the name of cities as well as the addresses of each of the offices(desks) of the company.

- From the form, select the field **office** and erase it.
- From the toolbar, press the button  .
- Place the zone of modifiable list by clicking in the place where the field **office** was located.



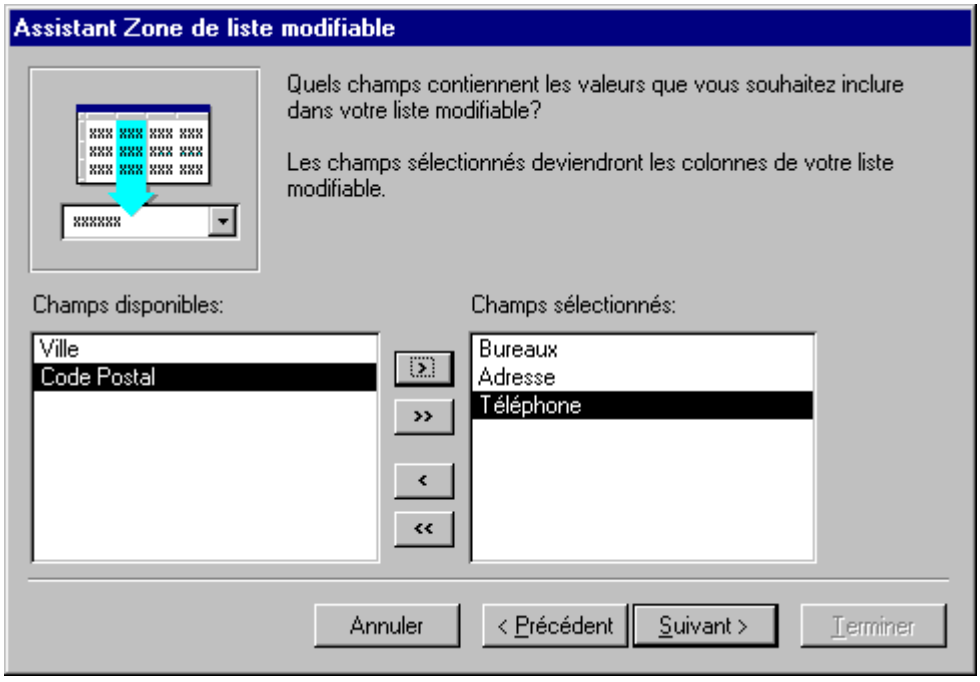
The assistant offers you three ways to determine the source for the modifiable list. Among choices to determine the source, you can choose the contents of a table or a query. You can also write the values of your choice. These will be then kept in a new table. The last possibility allows you to go to a record according to the choice of this modifiable list.

- For this exercise, select the first option: **I want that the modifiable list looks for...**
- Press the **Next** button.



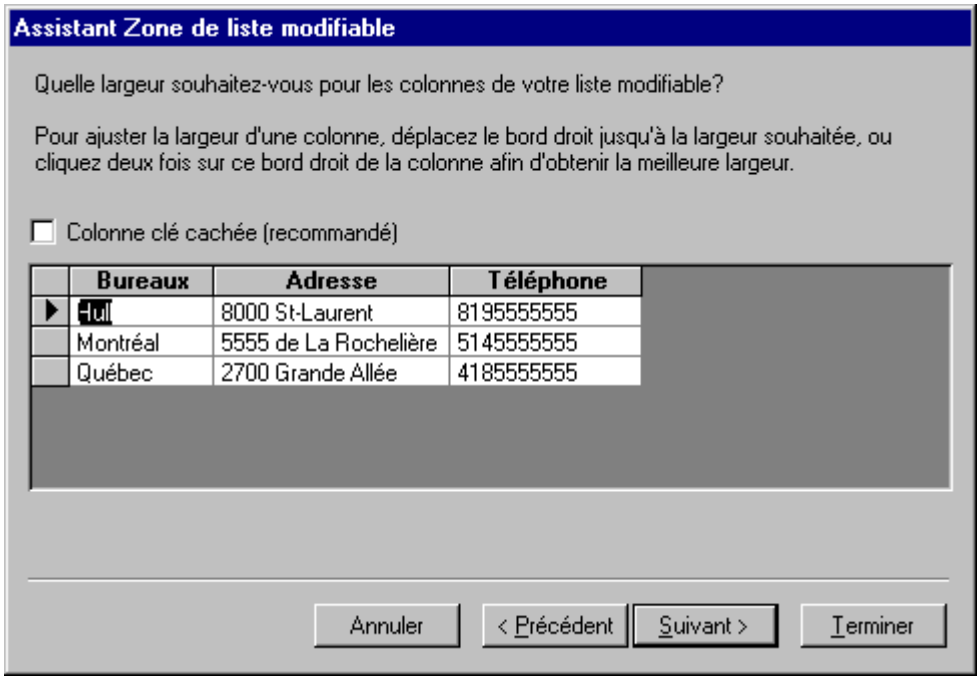
The assistant will ask you for the name of the table or the query that will be used for the source of the modifiable zone. It shows you even the list of these.

- For this exercise, select the table **office**.
- Press the **Next** button.



The following window asks you to choose from the list of the fields of the query those that you want to show in the screen. These give you a supplementary reference during the selection of the value of the modifiable list. Fields will be shown according to the order that they you will find in the box " selected Fields ".

- For this exercise, select in the order the following fields: **Offices(desks)**, **Address**, **Telephone**.
- Press the **Next** button.



The next window asks you to determine the width of each of the columns of the fields that you selected in the previous window. It's this width that will be used

when it will be the time to show the modifiable list. So, this window allows you to show or to hide the key column; the first selected in the previous window. For this case, it's about the field **Offices(desks)**.

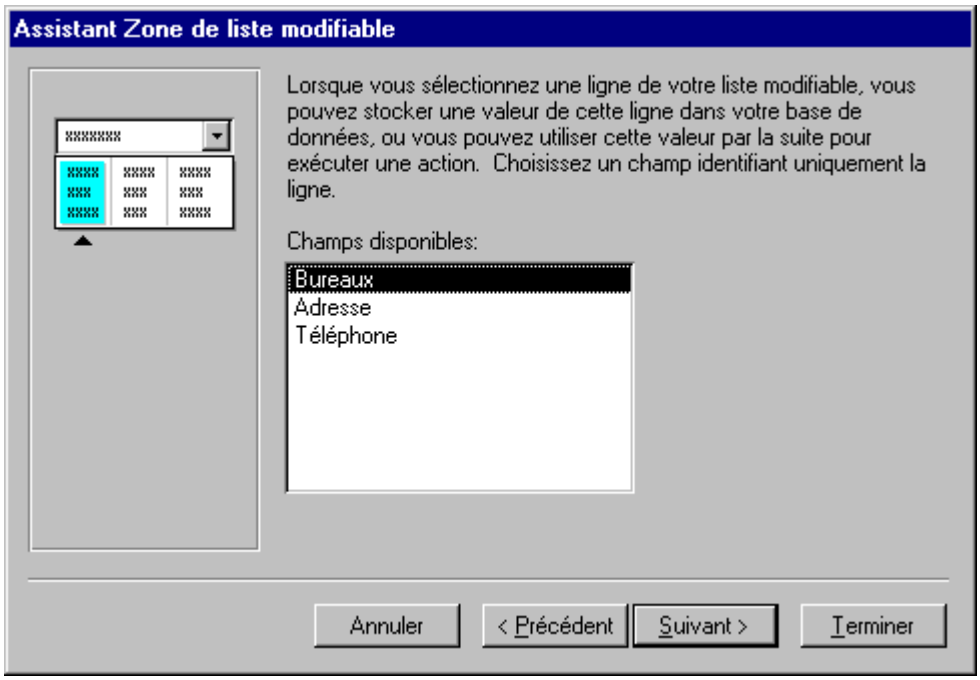
- For this exercise, deactivate the option **hidden key Column**.

To adjust the width of columns:

It's intéssant to be capable of adjusting the width of columns containing of the data. You can make sure that all the data of the field appears in the box.

- Place the cursor at the end of the column or between two columns.
- Press and hold the **left** mouse button and move this one towards the left or to the right to reduce or widen the column.

- For this exercise, adjust the width of columns to show all the contents of these.
- Press the **Next** button.

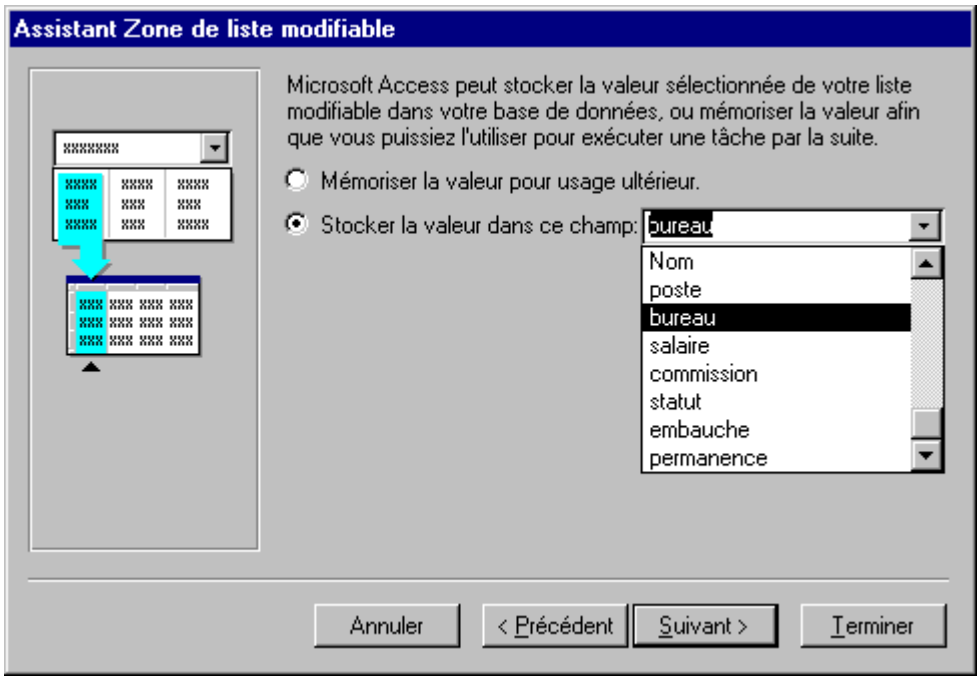


If there are only two fields in the list of the available fields:

- Press the **Previous** button.
- deactivate the option of hidden key column.
- Press e **Next** button.

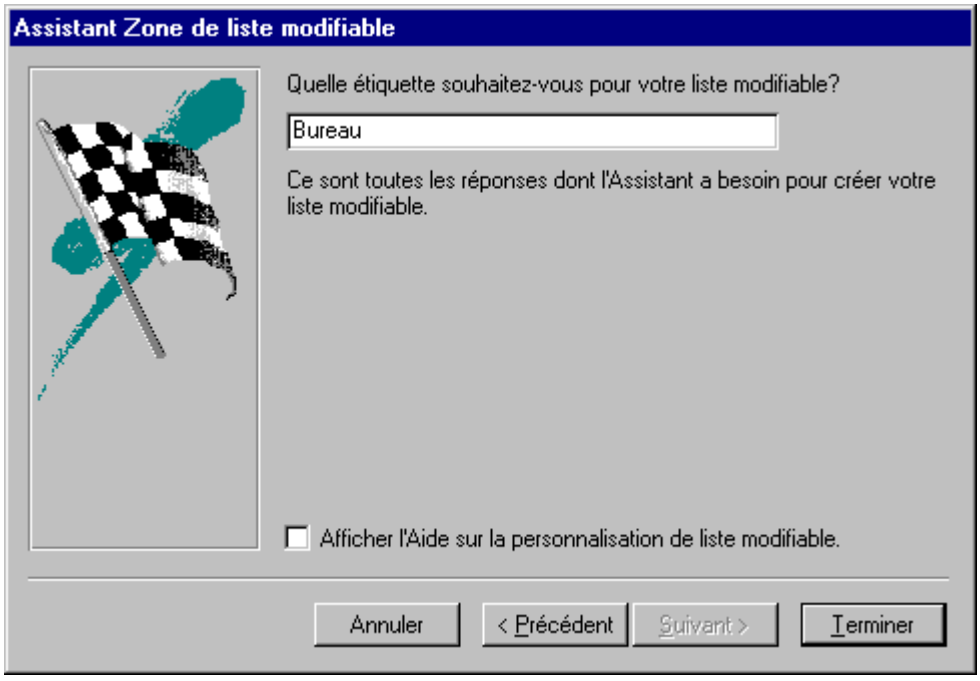
Because you chose several fields in the posting, the assistant would like to know the value of that field he should save in the modifiable zone.

- For this exercise, select the field **Offices(desks)**.
- Press the **Next** button.



The assistant asks you then for the place where you want to save the datum. You can save it in an independent field (Remember the value for later use) or put it in one of the fields of the table.

- For this exercise, store the date in the field **office**.
- Press the **Next** button.



The last question is to know that is the text of the label that will describe the modifiable list.

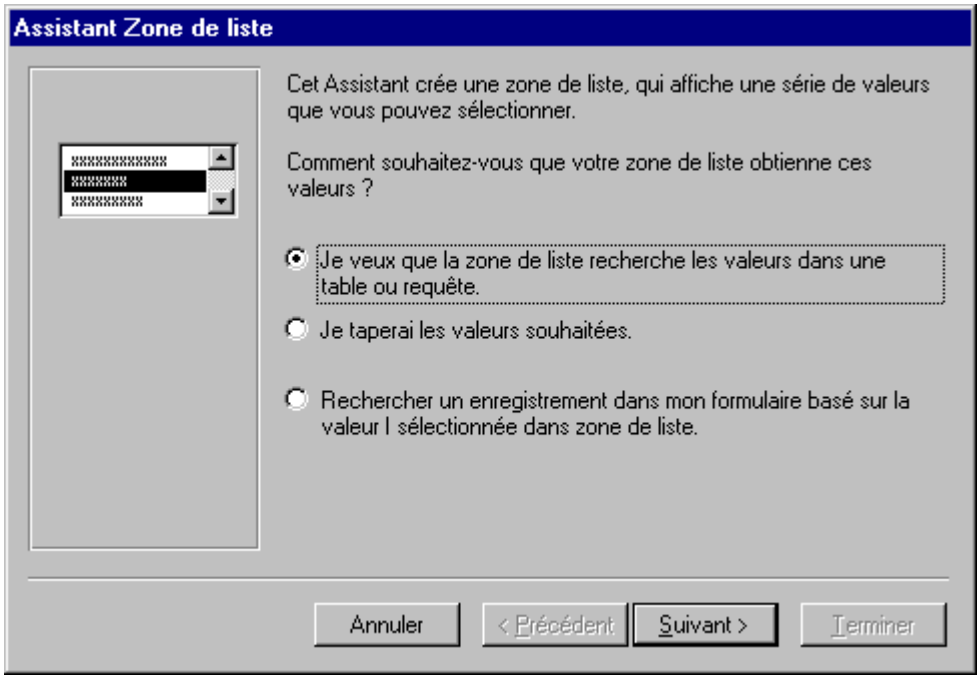
- For this exercise, write **"Office("desk")** in the box.
- Press the **Finish** button.

Here is a preview of the modifiable list ended time.

Zone of list

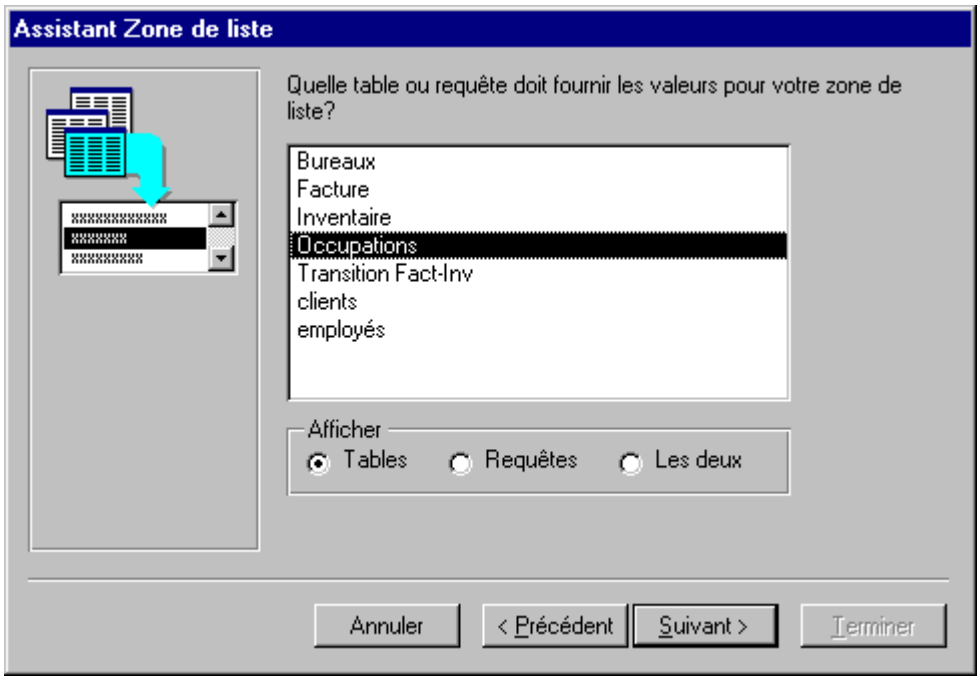
A zone of list offers to the user of the form a choice of certain values for a field. The exercise that follows consists in creating a zone of list and to show a list for the possible activities(occupations) in the company.

- Press the button **Bums around of list** .



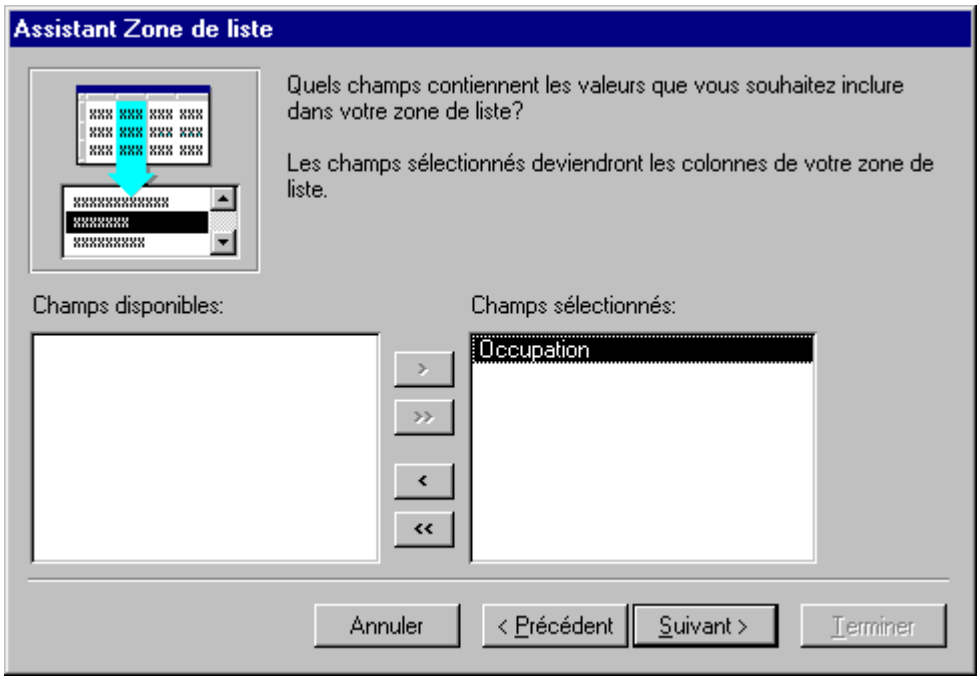
In this database, there is a table that contains the list of the activities(occupations) of the company. This table is called moreover Activities(occupations). You can also create your own list by selecting the option " I would type the wished values. "

- For this exercise, select the first option: **I want that the zone of list looks for the values in a table or the query**.
- Press the **Next** button.



Access will ask you for the name of the table or the query that contains the field with the data to be put in the zone of list. Of the list of tables and queries of the database, select the one that contains the data that you want to show in the zone of list.

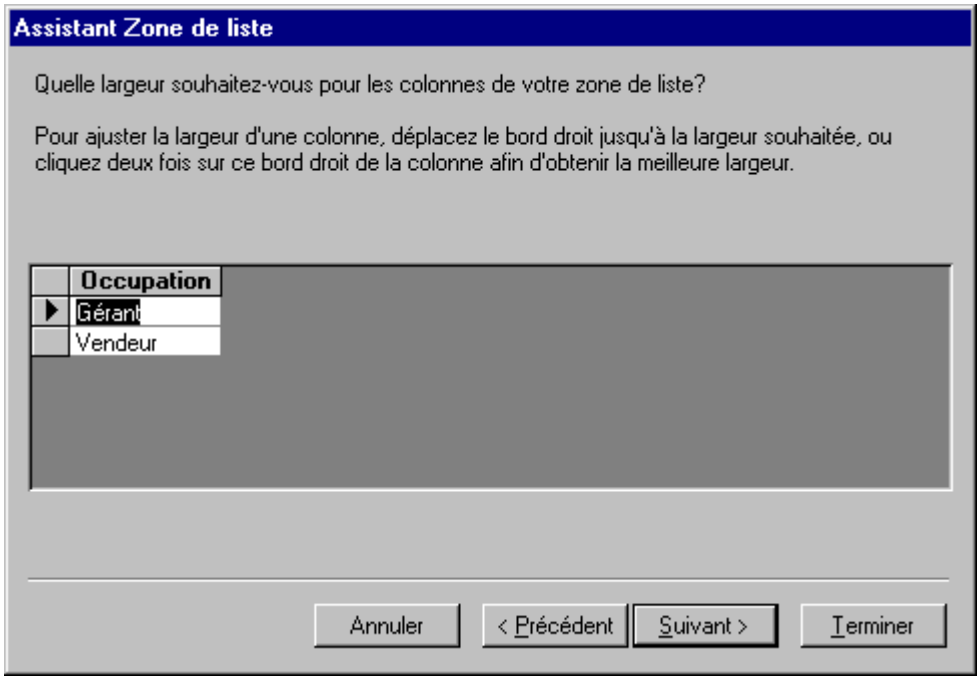
- For this exercise, select the table **Activities(occupations)**.
- Press the **Next** button.



The table contains that a single field: Activity(occupation). In this table, there is at present that two possible activities(occupations): manager and salesman. If you wanted to add another Poste to the list, it would be necessary to add a record to this table. Contrary to a zone of modifiable list, it's impossible to add a record directly in the zone of list.

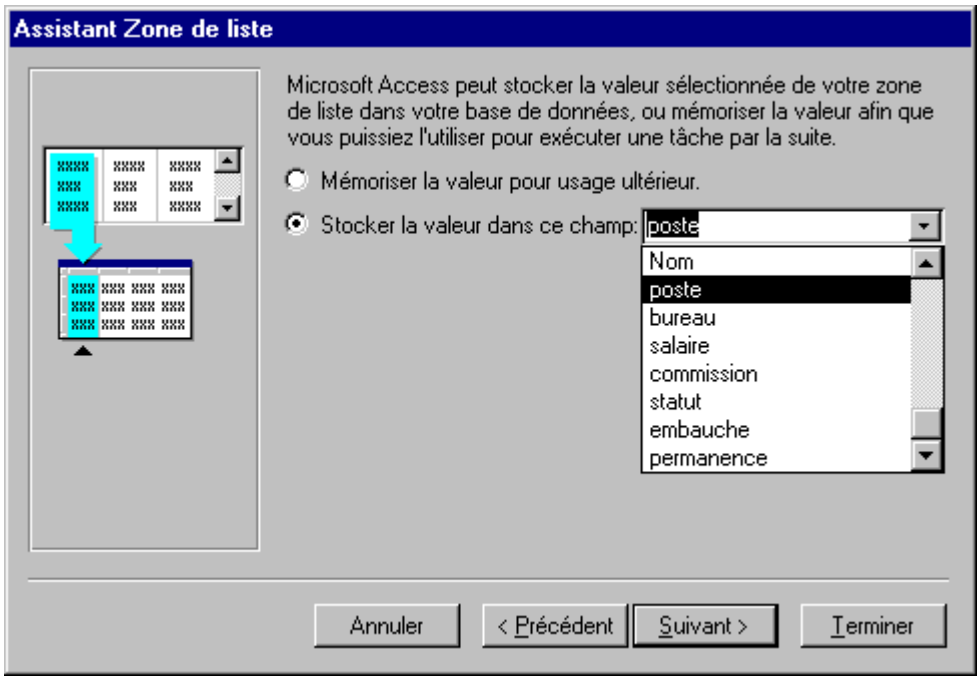
There is also another table that would have been able to be chosen. It's the table Employees. There is in this one the field posts that already contains a list of the activities(occupations) of the employees. But, in most of the cases, you'll want to use the data resulting from another table.

- Select the field occupation.
- Press the button > to transfer the field Activity(occupation) in the zone of the selected Fields.
- Press the **Next** button.



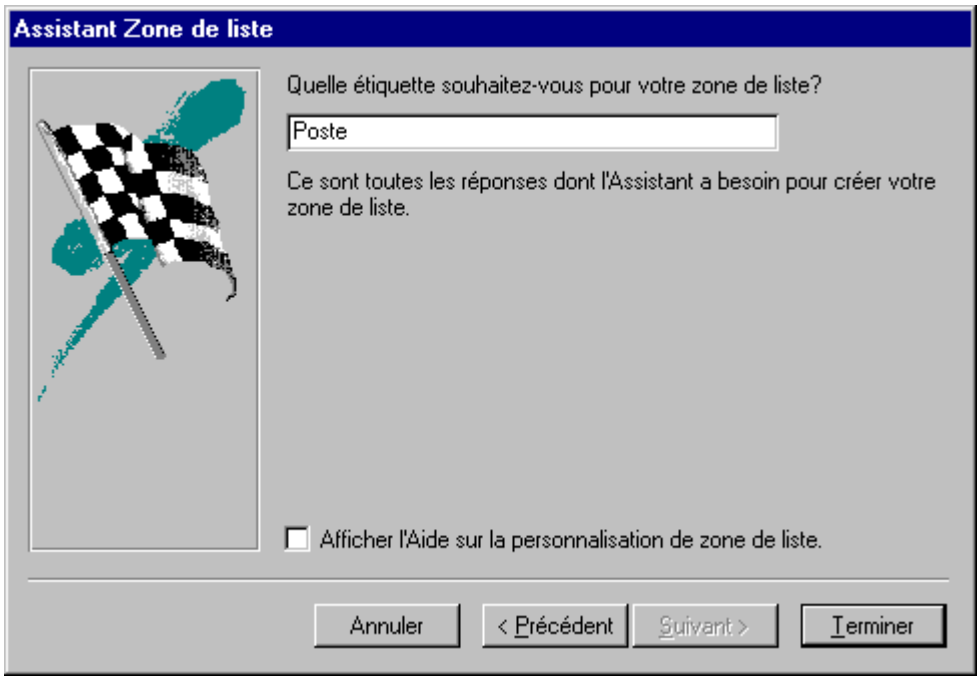
The assistant of the zone of list asks you then to determine the length the field that will be shown in the screen.

- Place the cursor on the right border of the box.
- Press and hold the **left** mouse button and move the mouse towards the left or the right-hand side as you want to reduce or to enlarge the width the length the window.
- Once you determined the wanted width, release the mouse button.
- Press the **Next** button.



The front last stage consists in indicating to the assistant of the zone of list if you want to save choices in a value for later custom(usage) or among one of the fields that meets itself in the form. For the exercise, the value chosen by the zone of list will go to the field Poste.

- Select the second option: **Store the value in this field**.
- From the list of the available fields, select the field **Poste**.
- Press the **Next** button.



The last stage consists in writing the text that will go with the zone of list.

- Write in the box of the label: **"Post("post office")**.
- Press the **Finish** button.

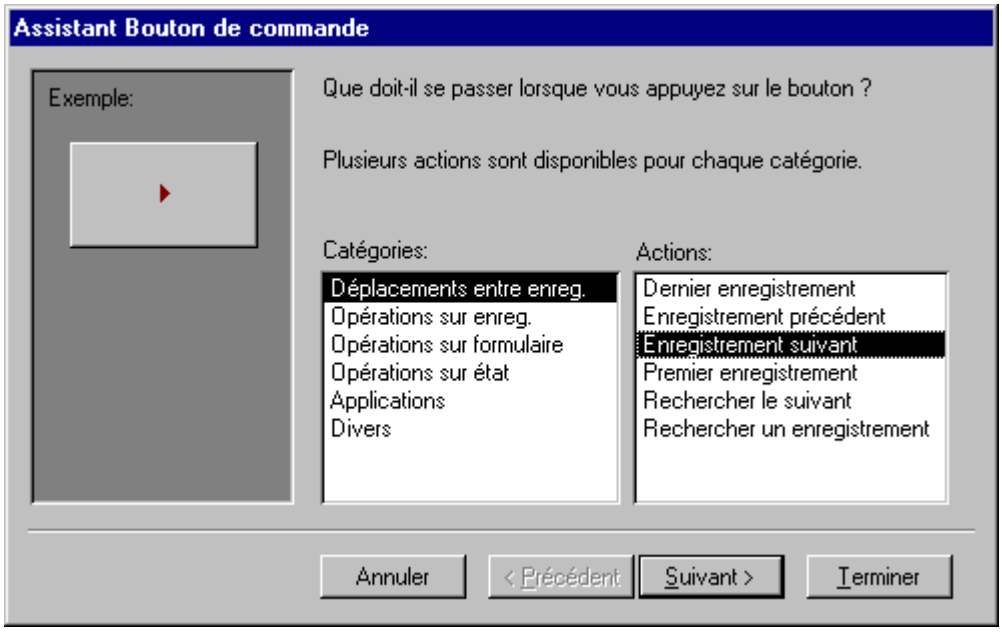
Command button 

Command buttons are very practical for the users of forms. They allow easily to reach options that affect the form or the database. For example, graces(favours) in the buttons of command, it's possible to cross(spend) from a record to another, to open or to print a form or a report as well as several other possibilities. Access offers a series of options predetermined to facilitate the creation of buttons of command. If, these don't answer your needs, you can always create a macro or a module and " to attach it " to a button.

The next exercise consists in the creation of a button instructions to pass in the following record.

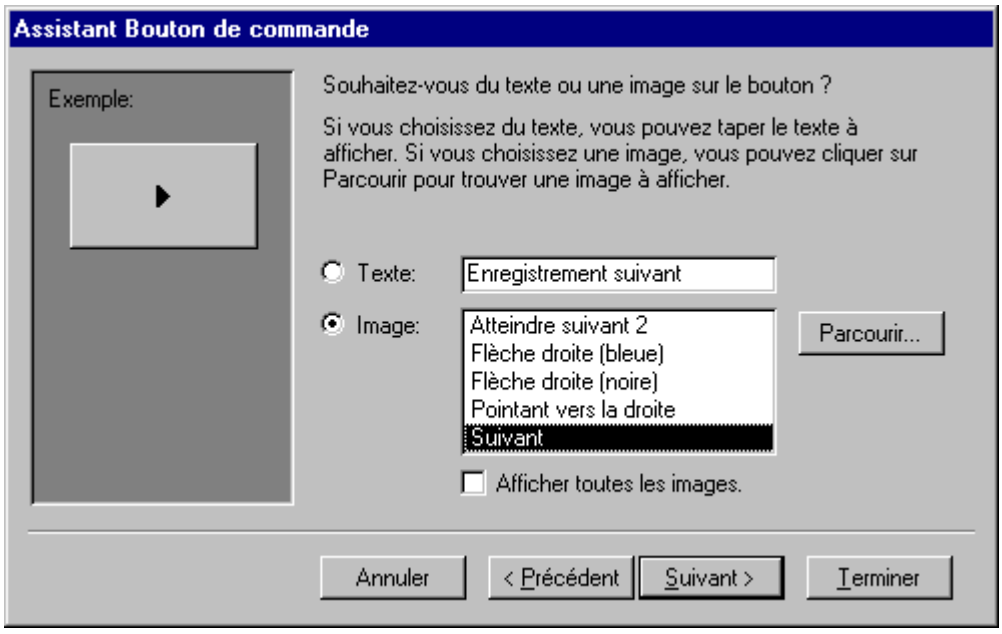
- From the toolbar, click the command button  .

The assistant for the command button will show the following window.



This first window asks for action button you wish for. The first column is the categories of possible actions. The second column shows the possible actions. For the exercise, the button should show the following record:

- From the column **Categories**, select the option **Movements among enreg**.
- From the column **Actions**, select the option **following Record**.
- Press the **Next button**.

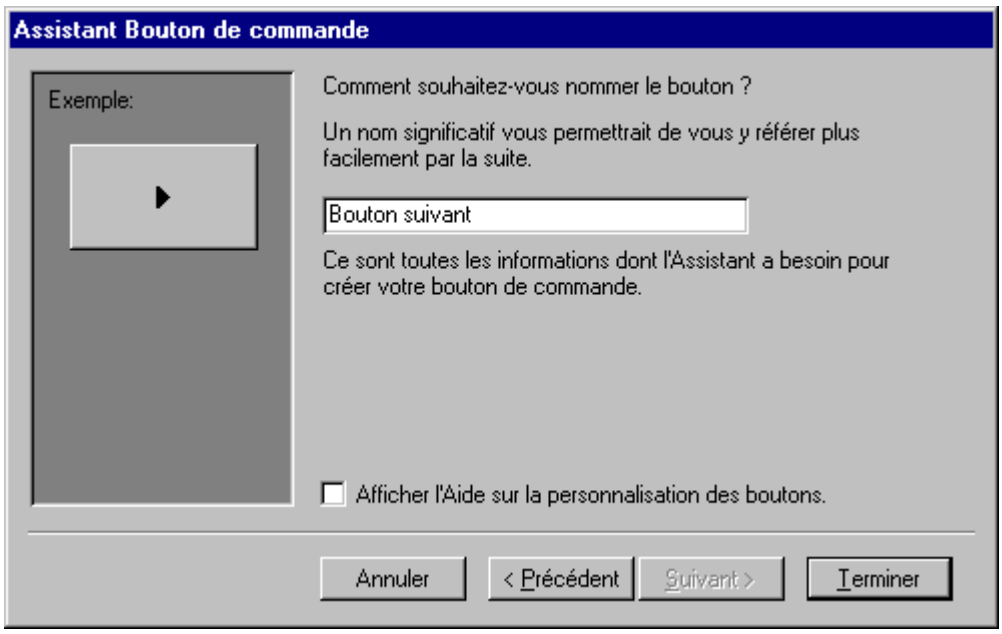


The next window asks you for that kind of presentation, want on the button. Is it of the text of your choice or a representative image? If you want of the text, it's enough to write the text in the first box and to choose the option Text. For the exercise, an image will be used.

- Click on the option **Embellishes with images**.
- From the list of the possible images, select the **Next** image.

There are also two other interesting options on this window. By clicking the option " **Show all the images** ", you'll have more possibilities to choose an image. Even with this list, it's still possible that there is no image that answers your needs. It's so possible, with the **button To cross(go through)** to fetch an image that you found moreover and to paste it on the button.

- Press the **Next button**.



The last window asks you for that name, want to give to the control command button.

- In the box, write the text **" following Button "**.
- Press the **Finish** button.

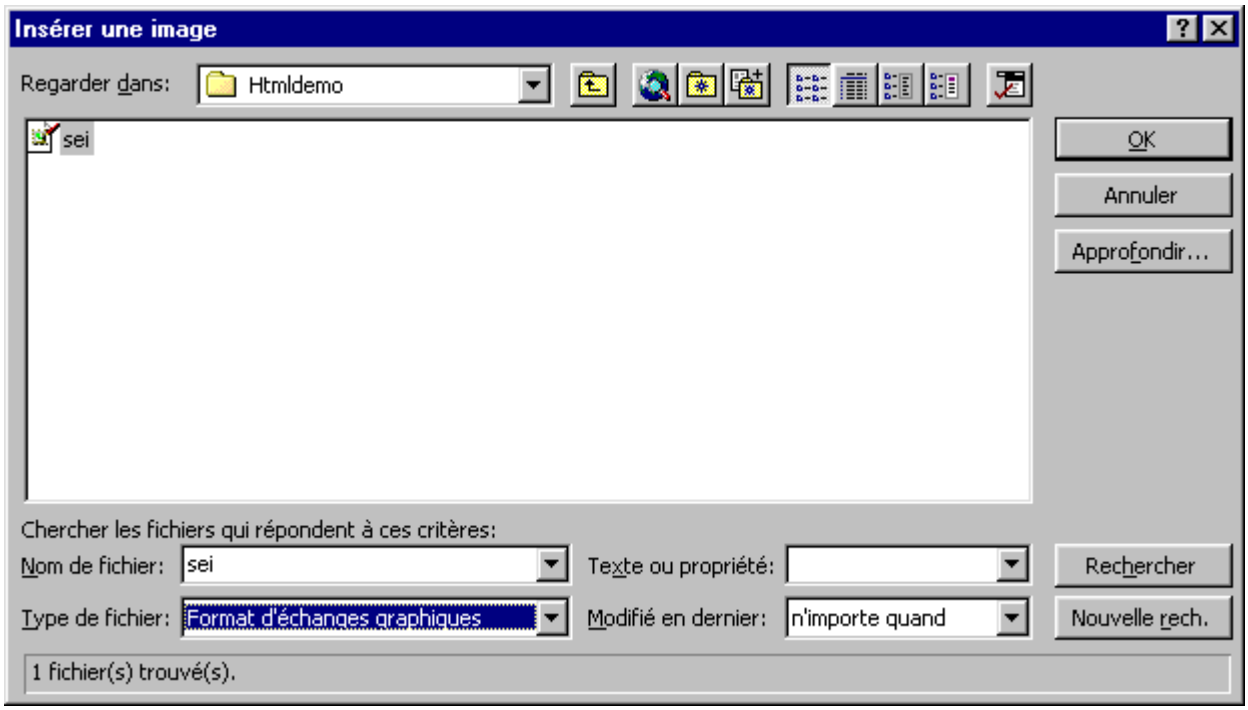
Image

It's also possible to insert images into a form. That it's the logo of the company or a representative image.

- From the toolbar, click the button of image .

A cursor with the following format will appear. It's enough to place it on the form in the place where you want to insert the image.

- Place the cursor on the form and click the mouse button.



Access will ask you for the endoit and for the name of the image that you want to insert.

- Select the place and the image of your choice.
- Press the **OK** button.

The image will fit on the form. You can always move it on the form. According to the size(format) of the image, it's possible that you can not change the size. It's a thing to consider when you create the images for your forms or your reports.

Frame of independent object 

Allows to insert objects resulting from the other Windows applications such as a chart of Excel or an organization chart of Visio or the other applications. The object is indépendnant of the contents of Access's tables.

Frame of dependent object 

The inserted object is dependent on the contents of tales or Acceess's queries. A modification of these could affect the dependent object.

Page break 

Even in a form, it's possible to put page breaks. It has no effect in the view in the screen. But, this option is very practical at the time of the printing of the form. It allows to print a form on several pages.

- From the toolbar, press page break button  .
- Move the cursor at the footer of the Details zone.
- Press the **left** mouse button.

A small control ..... will seem stuck on the left border of the window. This is the separator of page. All that is above this control will be on a page. The rest will be printed on another page.

To see the effect of this control, it's first necessary to move it in the middle of the form.

- Click on the control of the separator of page.
- Press and hold the **left** mouse button and move the control in the middle of the form.

The separator is automatically going to paste to the left border of the form.

- Press the  button .

You will see a preview of your form if it was printed on paper. You see only also a part of your form. The rest is on the following page.

- Press the  button located in the left lower corner of the screen.

The following page will appear to the screen. You go to notice that the rest of the form will appear on the paper. But, also, you go to see the beginning of a form for the following record. It's for that reason, for be

Care of printing that page breaks are put in it any end of the zone Detail of the form; to have two forms on the same paper.

Control Tab 

The control Tab offers two advantages. It groups together(includes) the data in the same place and sets less(fewer) of space in the screen. It's enough to click the tab to see the data of the chosen category.

Sub form / Sub Report 

Very practical to make complex forms the data of that result from several connected tables. It's however necessary to pay attention that there are "formal" relations between tables.

Line 

Serves for separating the various sections of a form. Helps at a better reading and understanding of the form.

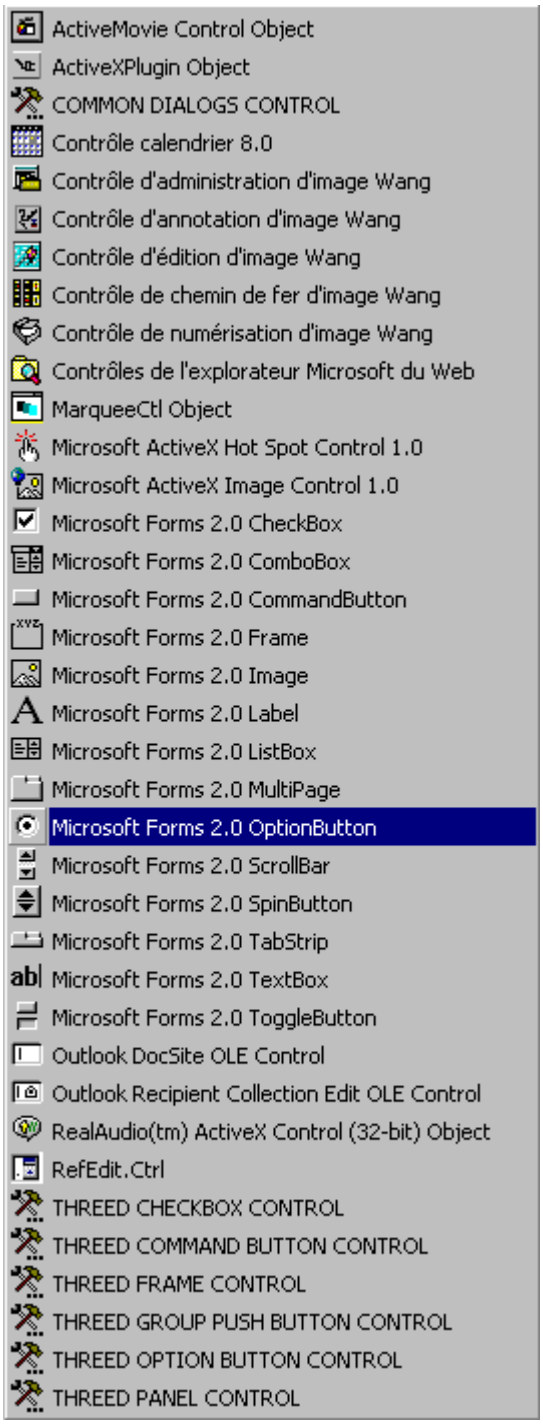
Box 

Allows to frame of the text or one or several fields. Only for needs of presentation.

The other controls 

There are several other controls that are available.

- Press the  button.



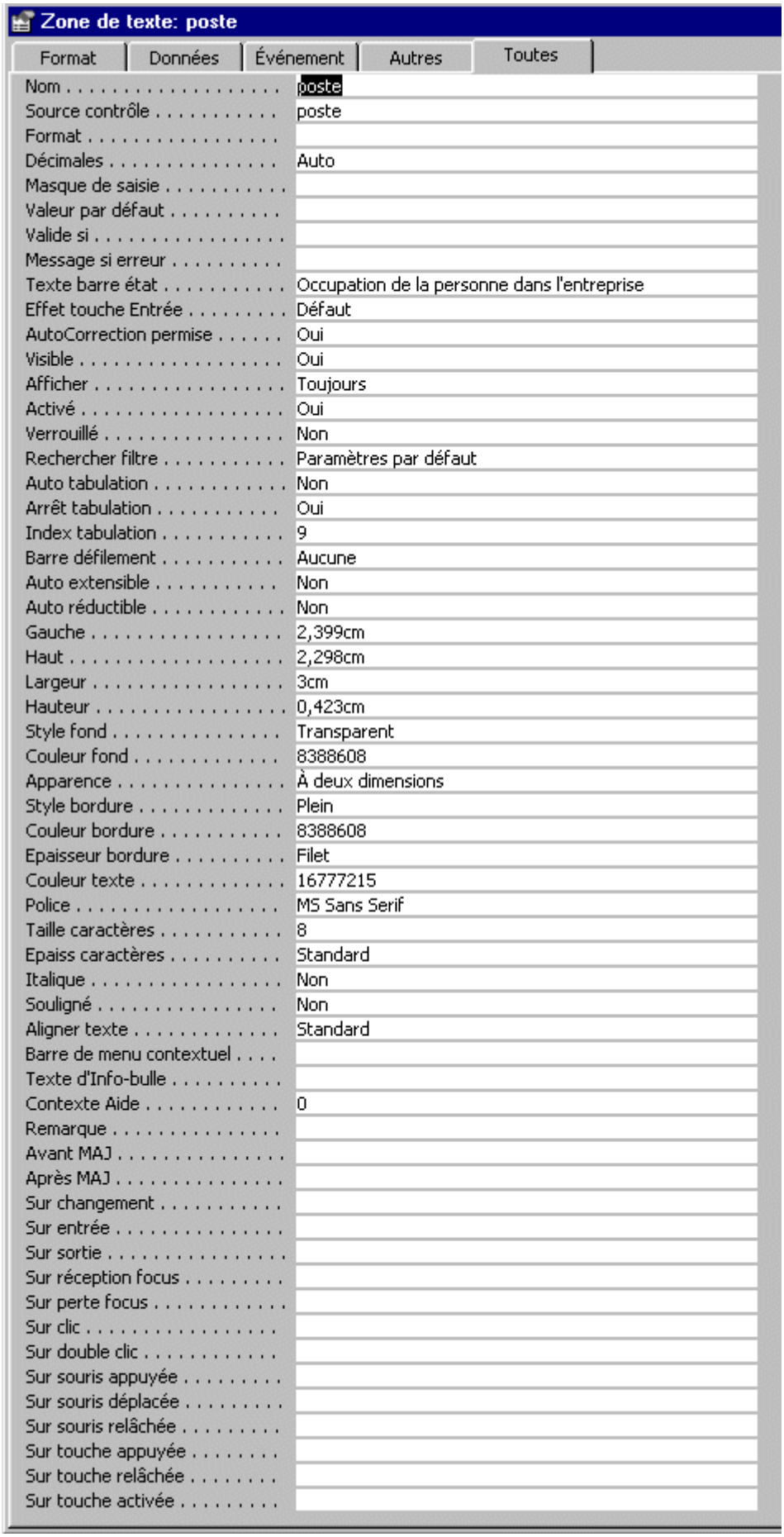
You will find a list of all the other objects that you can add. Some you already know, other that you never imagined existed or accesible.

Change the properties of a field or of an object.

- Select the object, or the control, that you want to change an attribute.
- Press the button on the toolbar.

OR

- Press the **right** mouse button.
- From the context menu, select the **Properties** option.



Here is the list of all the properties or options that you can modify for each of the "controls" of the form.

The properties can be grouped together in 4 categories: Format, Data, Évennement and the Others.

The most important option is the second of the list: Source controls. Access can know if the contents are a field of a query or a table. It's also possible to enter it a formula.

Lock a field

Mask a field

Put a page break

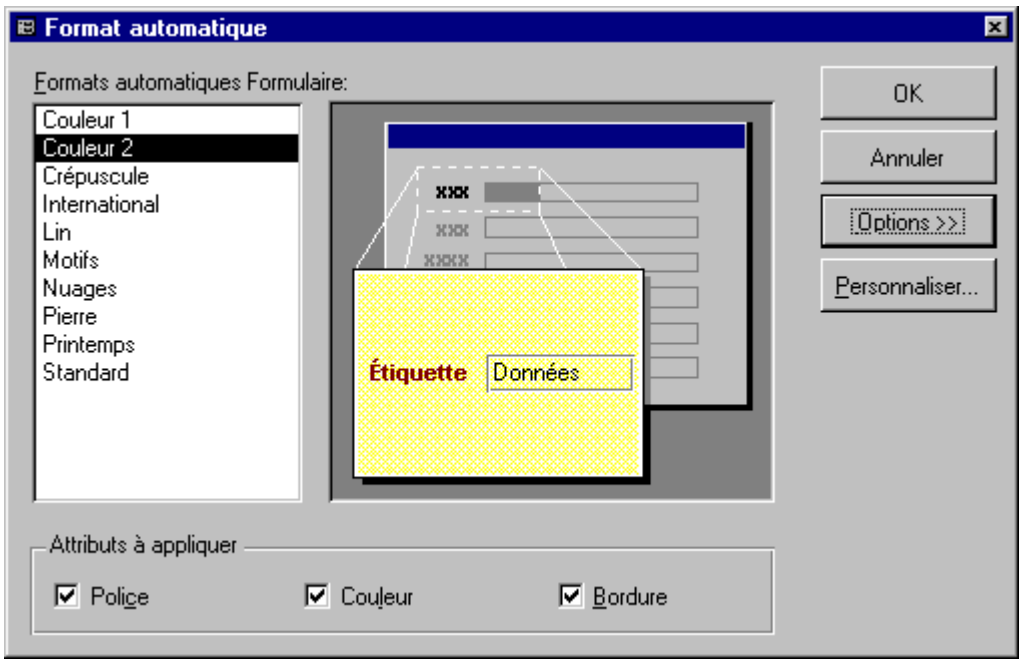
Only practical for the printing of the form.

The automatic format

Access allows you to change the presentation of your form by using a preestablished model.

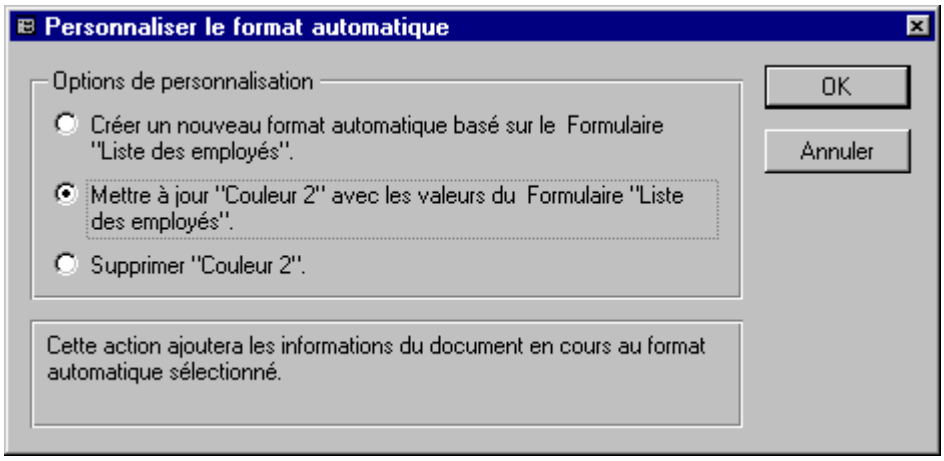
- Press the button.

The following window will appear.



This window allows you to use one of the existing models as well as to decide to affect these changes to fonts, to colors of the text and the borders.

- For this exercise, select the **Colour** option 2 from all the attributes.



The assistant of automatic size(format) offers you three options: to create a new size(format) based on the current values of the Form option of Colour 2 **Lists employees**, to update the form with or to delete the Colour model 2.

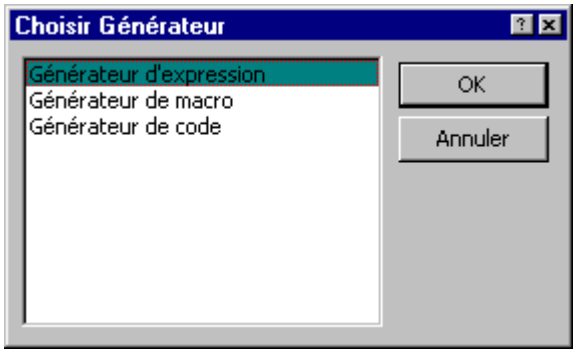
- For this exercise, select the second option **(Update Colour 2)**.
- Press the **OK** button.

Access will take a moment to update the presentation of the form.

The button to generate

Update a Formulas, add functions, a macro or a programming module.

- Press the button .



Access the choice offers you to reach the expression generator, the macro generator or the code generator.

Preview a form

- From the creation mode, press the button.

OR

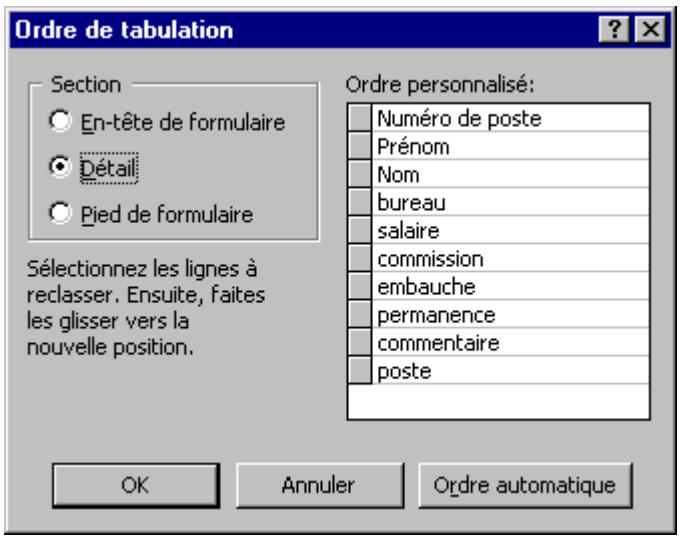
- From the **Edit** menu, select the option **Previw a form**.

Tab order

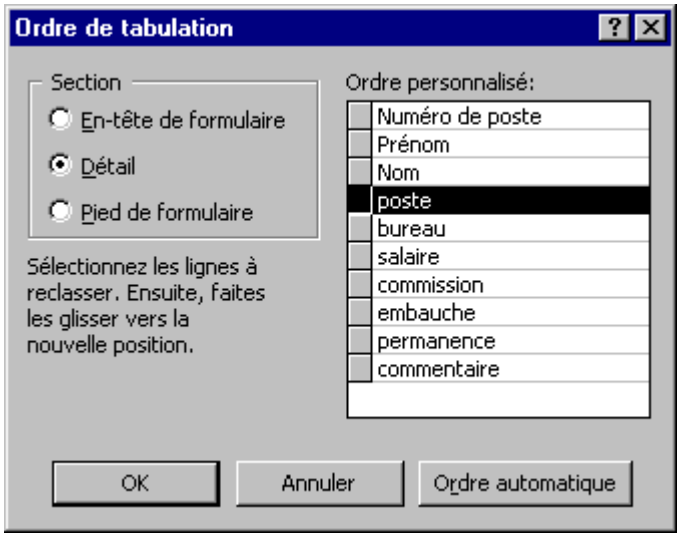
The order of tabulation allows you to determine the order in that the cursor will pass from a field to another on the form. It's possible to you to change it to allow you better to meet the needs of the form. For this example, the field **Poste** should be below the field **Name**. Here is how to move it.

- From the **Edit** menu, select the**Tab Order** option.

The screen that is shown gives you the list of the fields that meets itself on the form in the order that the cursor passes from a field to another.



- Click on the small grey box at the left of the field **Poste**.
- Press and hold the **left** mouse button and move the field below the field **Name**.



- When the field is at the right place, you can release the mouse button.

The **Automatic Order** button can automatically order the fields. Access orders fields according to their place on the form: from left to right and top to bottom. So, the field the closest to the upper left corner of the form will be the first field where the cursor will stop, that in its right-hand side the second etc.

But it's can be not what you with need. imagine that you have on your form three "zones", personal data, salary and social advantages for example. It's very possible to have these zones the one in quoted(esteemed) by the other one. So, the automatic order would not be for your advantage. It's for that reason that it's always possible to change the order of tabulation.

Print a form 

Be careful!

Because this is an example, don't print all the records. Print only the first page of the form. Otherwise, all the records are going to be printed in the form of a form. You can also change the pagination of the document by using the **File** menu and **Page setup**.

- From the **File** menu, select the **Print** option.

OR

- Press the  button.

Access - Chart forms

Before we begin

Access offers you several types of forms. This Web page demonstrates how to create you and to use a chart form. For more data about forms generally, watch to go to the page on forms.

To realize this Web page, it's better use the data of the database demoacc2.mdb or demoa2k2.mdb (for Access97 or Access 2000 respectively). You can take these databases from the page of the demonstration files of this site.

Introduction

Access allows you to generate charts from the mass of data that is accumulated. This page demonstrates how to generate you a chart form and to modify it. The exercise of this page will demonstrate the sum the commissions of the company by office location. These data you will find **Commission** and **office** of the **Employees** table.

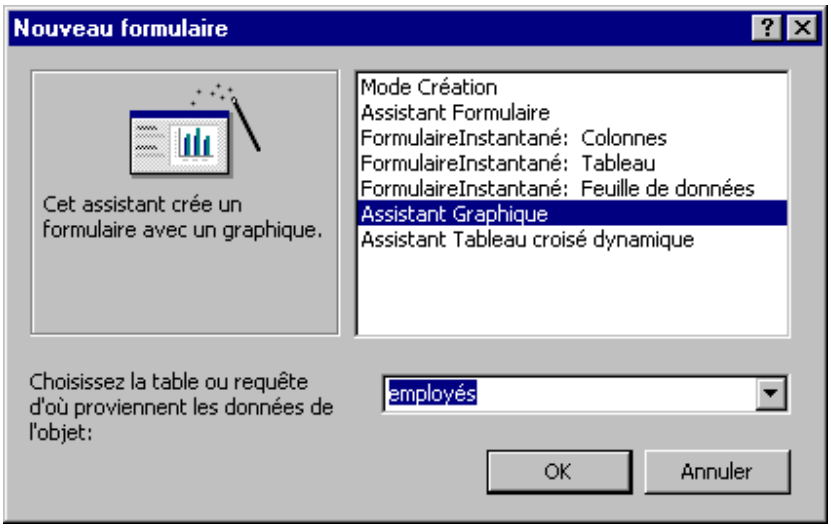
Why a chart?

- To simplify the analysis of a mass of data.
- To analyse quickly the trends of the series of data.
- To be able to compare the data.
- To analyse proportions.

Creating a chart form with the assistant

- From the main menu, select the tab **Forms** 

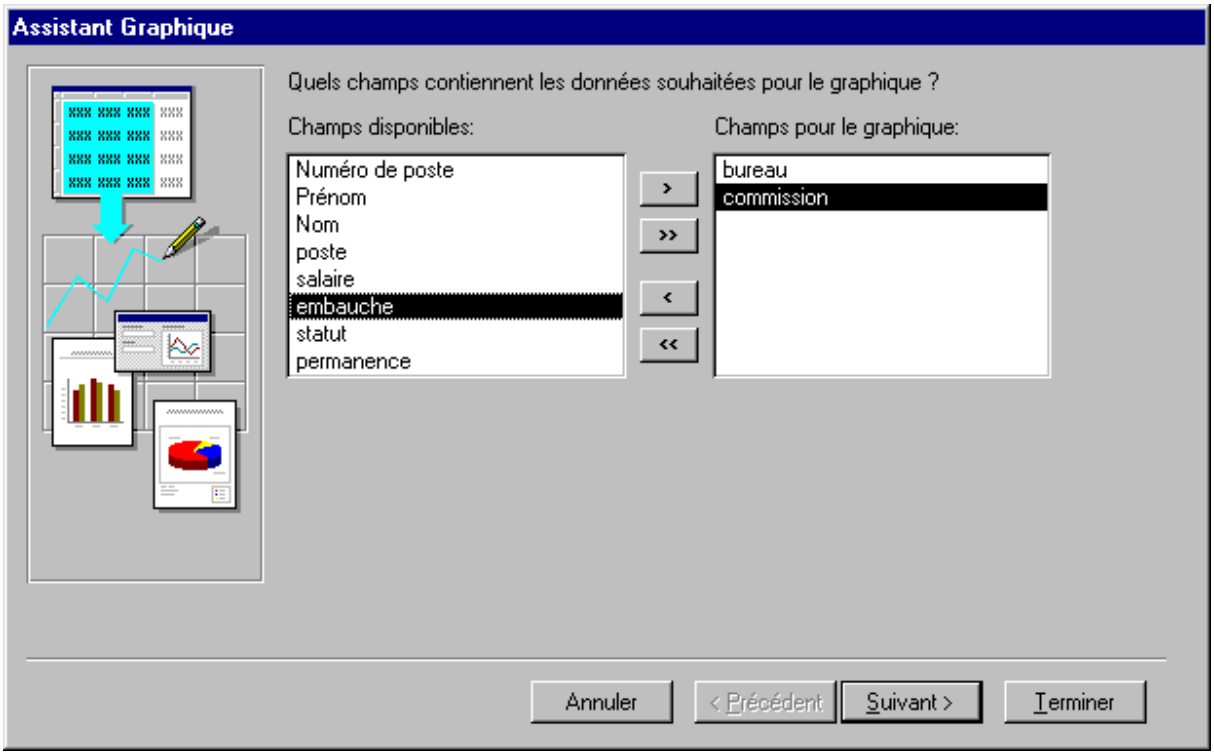
.
- Press the **New** button.



- From the list of the available options, select the option **Attending chart**.

The "source" of a form or a report can be a table or a query. The query to use records that answer the wanted criteria or resulting from several connected tables. It's a point to consider during the creation of a chart.

- For this exercise, select the **Employees** table.
- Press the **OK** button.



- From the list of the available fields, select fields **office** and **Commission**.

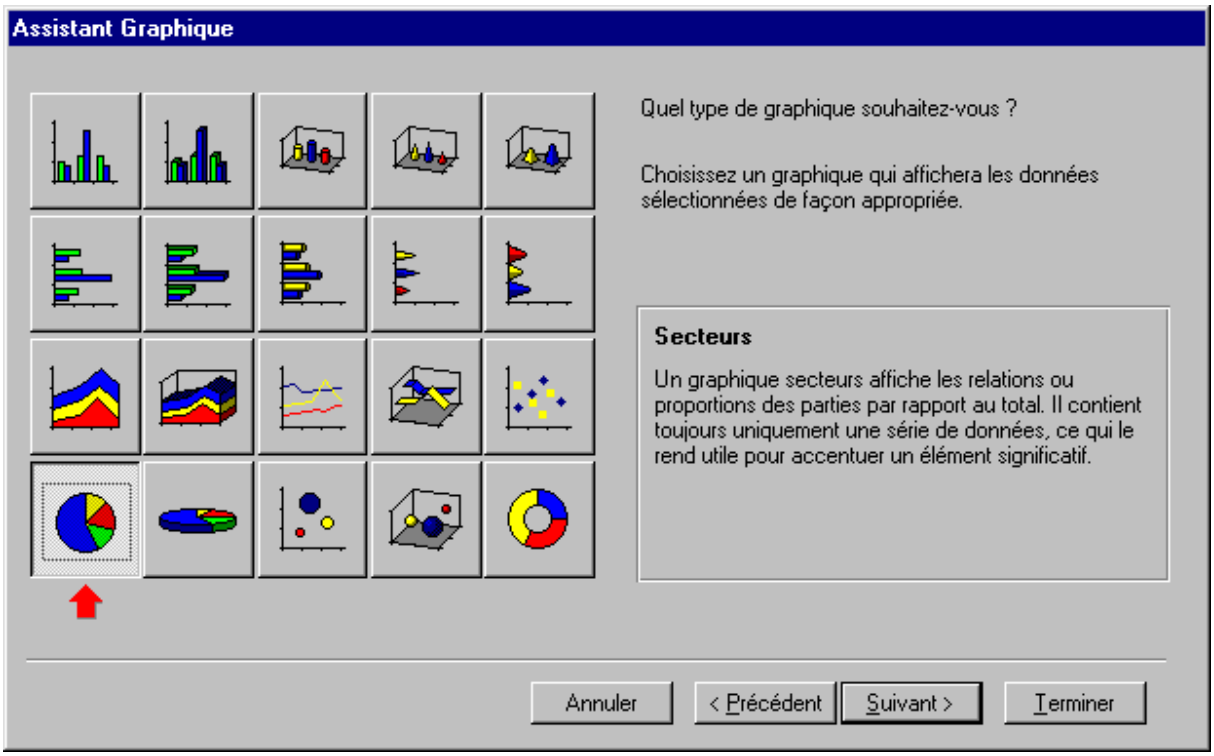
It's enough of:

- Choose the field of the left column and to press the button [>].

OR

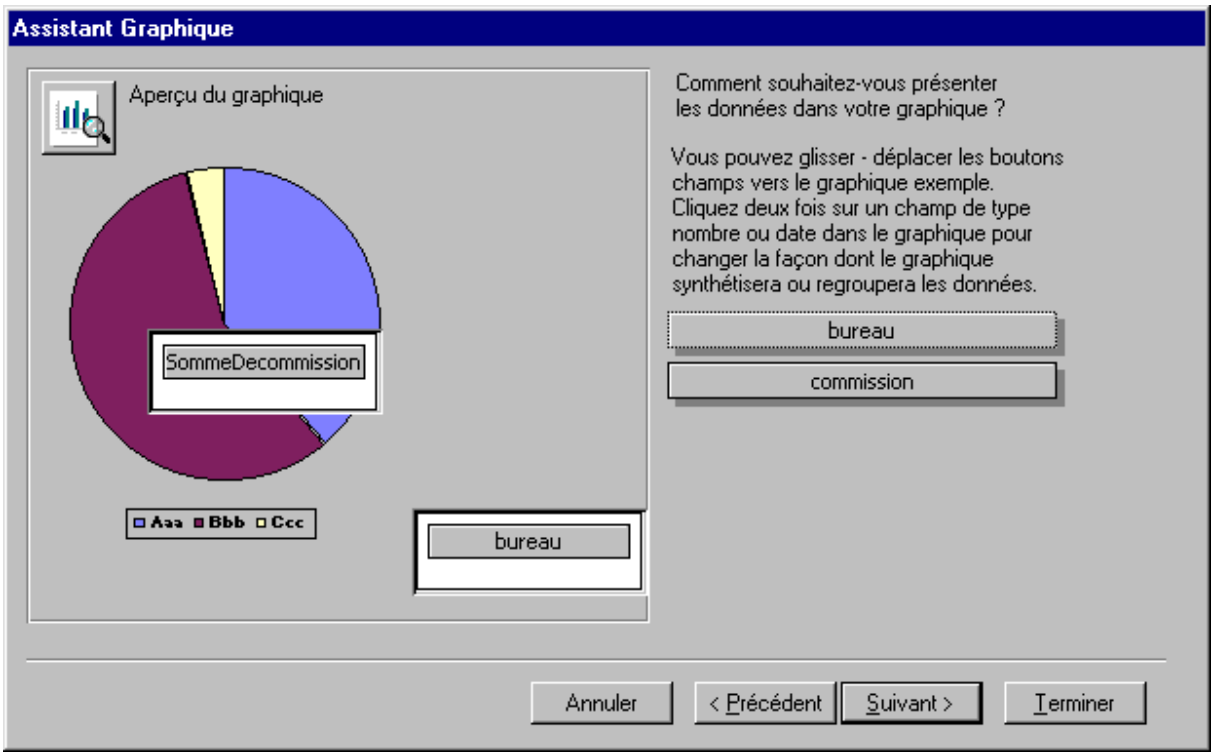
- Make(do) a double-click on the wished field.

- When the wanted fields were selected, press the **Next button**.

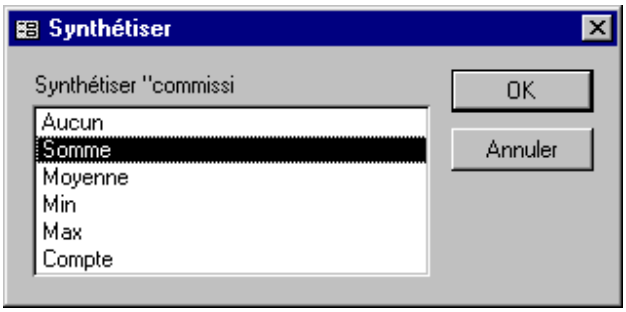


Access a list of types of chart offers you to represent your data.

- For this exercise, select the type of chart sector.
- Press the **Next button**.



- Double-click on the button SommeDecommission.



The chart form allows you to generate a synthesis on several elements of the data. Here is a short description of each of the possible options.

Nobody	Show the values of the selected field.
Sum	Show the sum a selected field.
Average	Show the average of a selected field.
Min	Show the smallest value of a selected field.

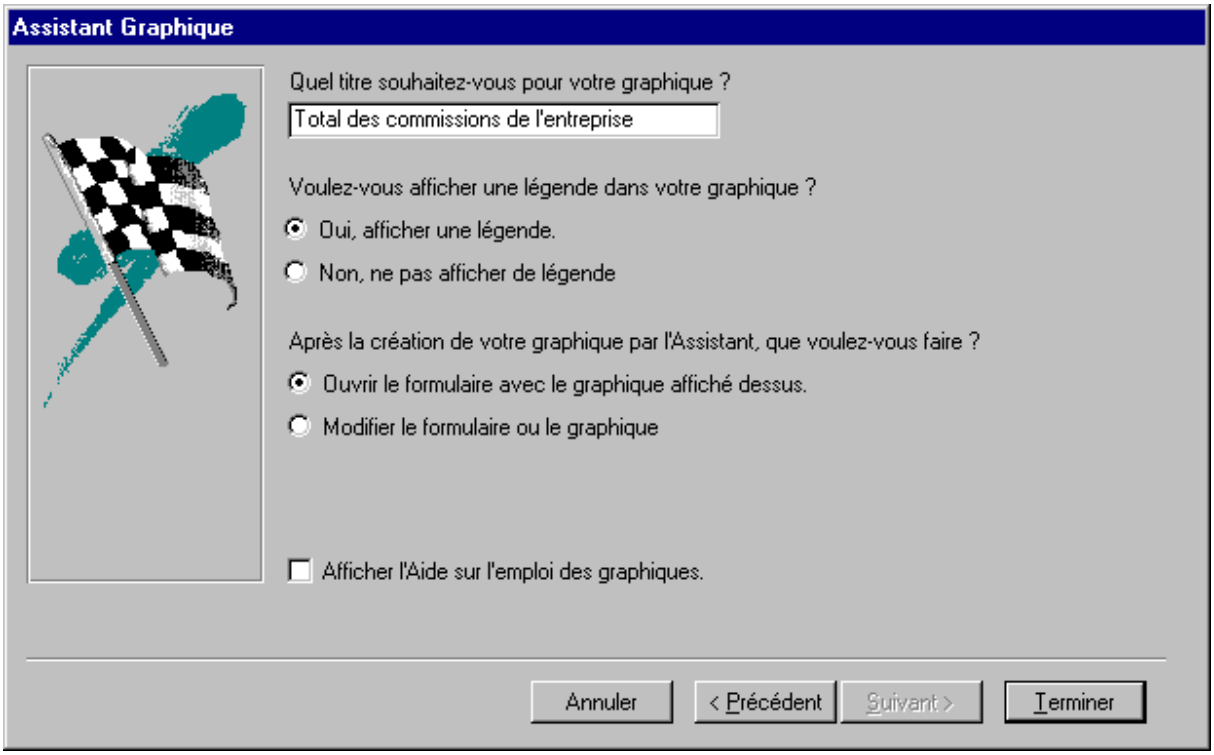
Max Show the biggest value of a selected field.

Count Show the number of records of a selected field.

- Assure that the synthesis is on the option **the Somme**.
- Press the **OK** button.

It's always possible to you to change fields or synthesis by returning to the creation mode.

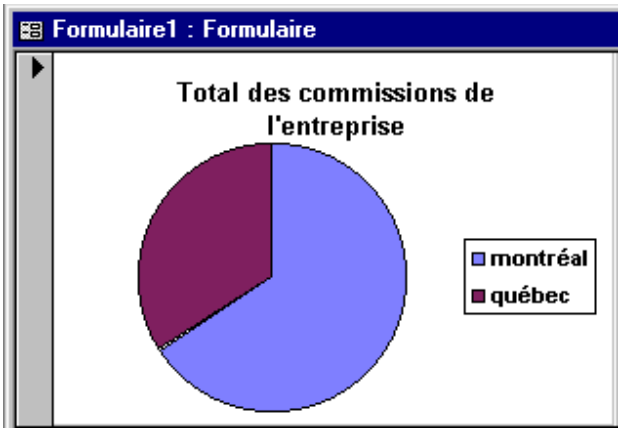
- For this exercise, press the **Next button**.



It remains still to give a name to the chart as well as to see some other possibilities.

- For the name of the chart, enter the name: **Total of the commissions of the company**.
- Press the **Finish** button.

Access will take a moment to generate the chart according to the options that you chose.



Here is the chart generated from the data of the **Employees** table.

Modification of the form

To be able to modify the chart form, it's necessary to enter creation mode.

- Press the  button.

OR

- From the **Edit** menu, select the **Creation mode** option.

You can change the dimension of the form to answer your needs.

To modify the presentation.

- Place the cursor over the chart.
- Double-click on the chart.

Access uses the generator of chart of Windows to represent the data. watch to read the page on the insertion of a chart to learn how to modify it.

Note:
You can not modify the data from the table of data of the chart module.

Access - Reports

Before we begin

To realize the exercises of this Web page, you need the **Employees** table. You will find it in the database **demoacc1.mdb or demoacc2.mdb** on the demonstration files Web page. For those that use Access on 2000, you'll find on this same page, files **demoa2k1.mdb or demoa2k2.mdb**.

Introduction

A report is a representation of the records of the database that is make paper. It's possible to analyse a synthesis from these data that would be more difficult to have otherwise. Besides, it's easier to sort out and to group together the data about relevant fields.

Types of reports

Access can help you during the creation of reports.

Standard: View the records of the database in the form of report.

Graph: To represent diagrammatically the records of the database. An example of a chart form is demonstrated on this site.

Labels: To prepare labels for the mailing or conference. An example of a report labels is demonstrated on this site. It's moreover the following page of this section of the site.

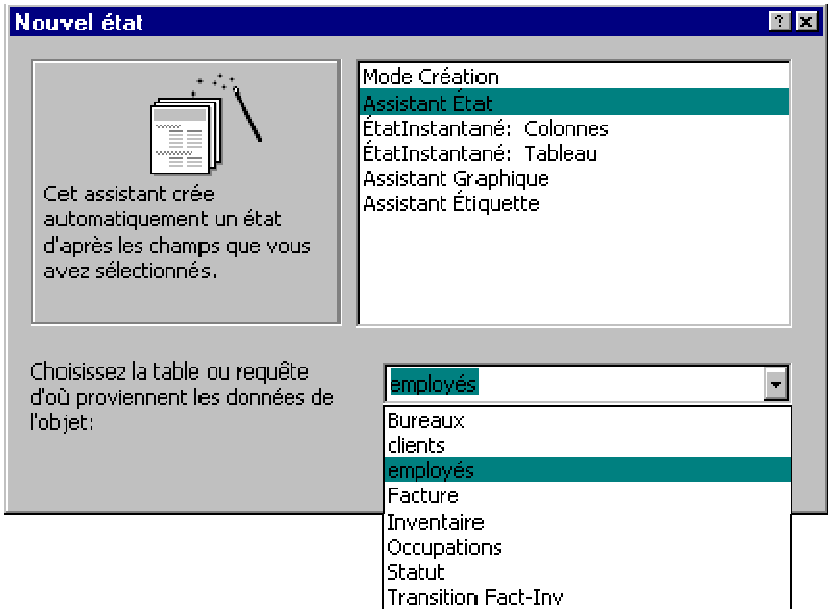
Creating a simple report with the assistant

The example that follows is to demonstrate how to create you a report by using an assistant by looking at each of the stages of the creation of the report. One looks also at the possibilities, in each of these stages.

- Click on the reports tab 

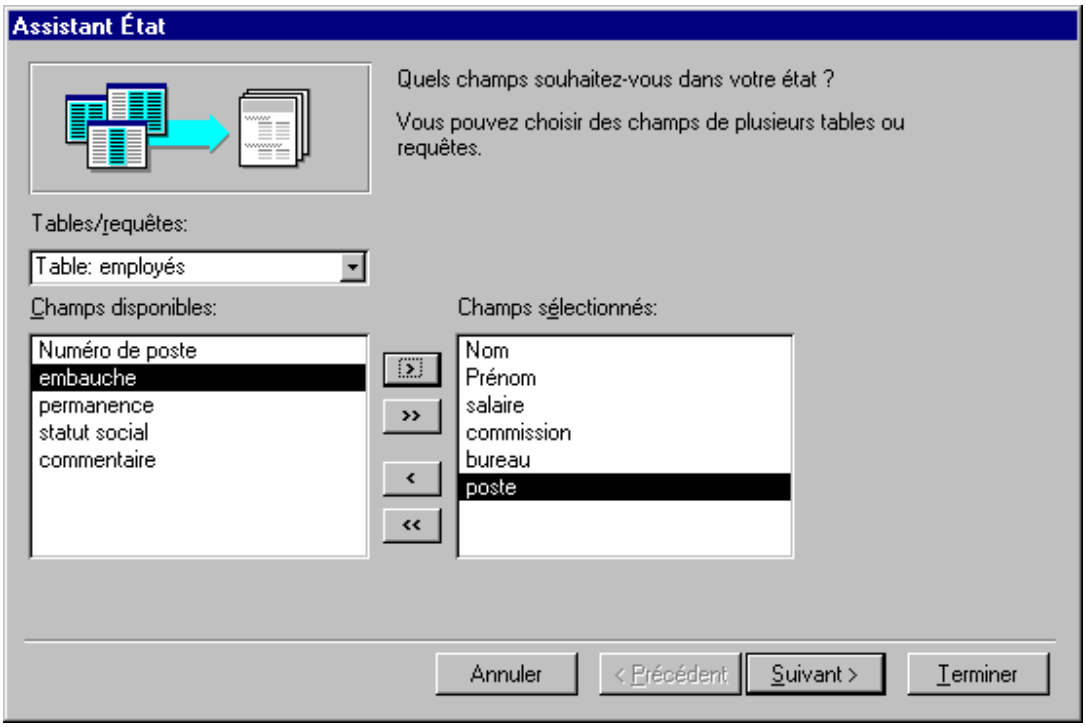
.
- Press the **New** button.

Access offers you several ways to create a new report. You can use the Mode creation to begin from zero a report. You can also use the assistants to create reports by answering some appropriate questions. The immediate reports, that show all the fields of a table or a query under the format of columns (a field below the other one) or of table (a field next to another), don't ask questions. They generate a report that shows all the fields of the table in the order that appears in the structure of the table or the query. The chart assistant allows to generate a chart from the fields of numeric or monetary type. And to end, the assistant labels you help to generate a report consisted of label for various situations: of labels of letters in labels for presentations.

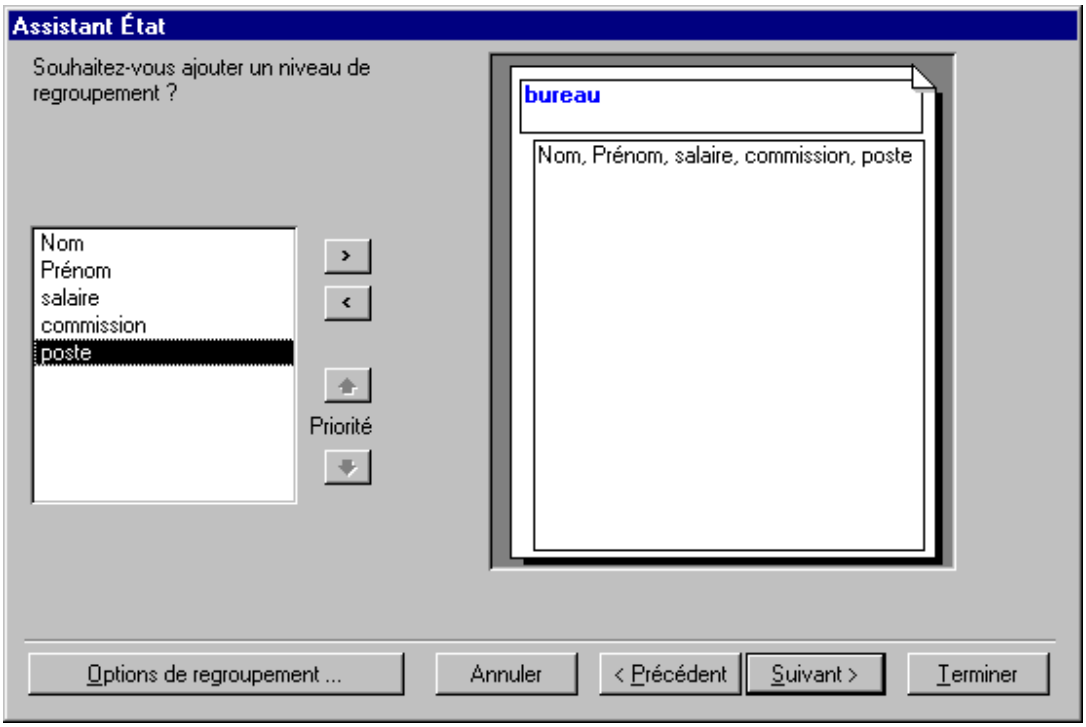


- Of the list, select the **Report Assistant** option.
- Among the list of available tables and queries, select the table **"Employés"** (employees).
- Press the **Next** button.

The assistant asks you then that are the fields that you need in your report. pay attention to the order of the fields that you select. It's in this order that they are going to appear in your new report. It's also possible to select fields of several tables or queries. It's enough to choose the table or the query from the list. add then one or several fields of your choice to the list of the selected fields.



- Of the list of the available fields, select, in order, the fields **Name, Prénom (first name), Salaraire** (salary)**, commission, office** (office)**, Poste** (occupation) by clicking the field and by pressing on the > button .
- Press the **Next** button.



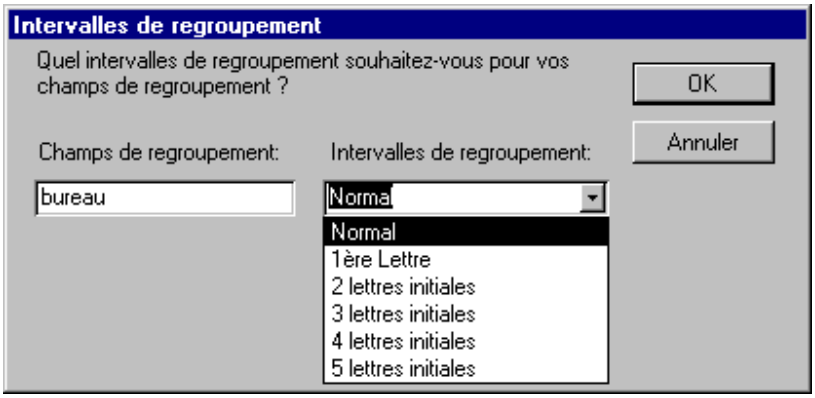
The assistant asks you if you want to group together the records on a field in particular. You can also make " under groups ", or rather groups inside groups.

- Of the list of the fields of the report, select the field **office**.
- Press the > button .

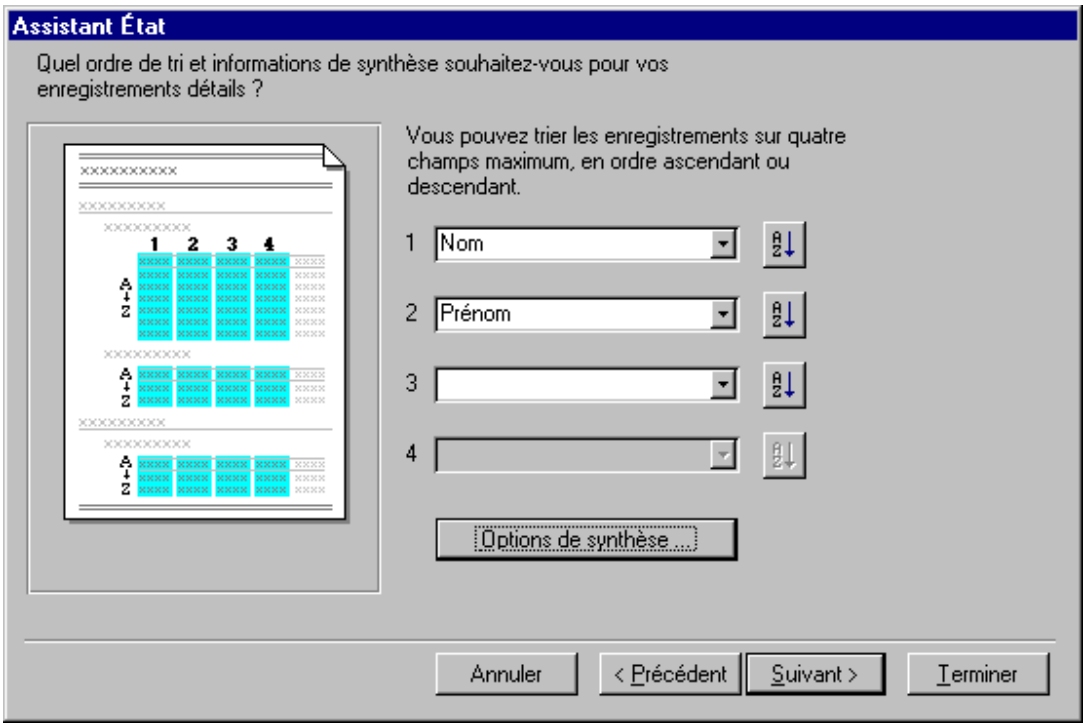
The outline of the presentation in the right-hand side of the window will change. It's now going to show fields grouped together with regard to the field **office**. So, every time the value of the field **office** will change, a new group will be generated.

- Press the **Next** button.

The assistant asks you how you want to group together the records. want to group together in a normal way or only on the first letters contained in the field.



- Leave the option to **"Normal"**
- Press the **OK** button.



The assistant asks you if you want to sort out the records according to one or several fields. You can sort out the records until on four fields. The field in the first box has priority over the second and so on. So, you can choose if you want to show the records in increasing or lessening order by pressing on the button of highly-rated right of the name of the field.

- Select of the list the field **"name"** for the first sorting.

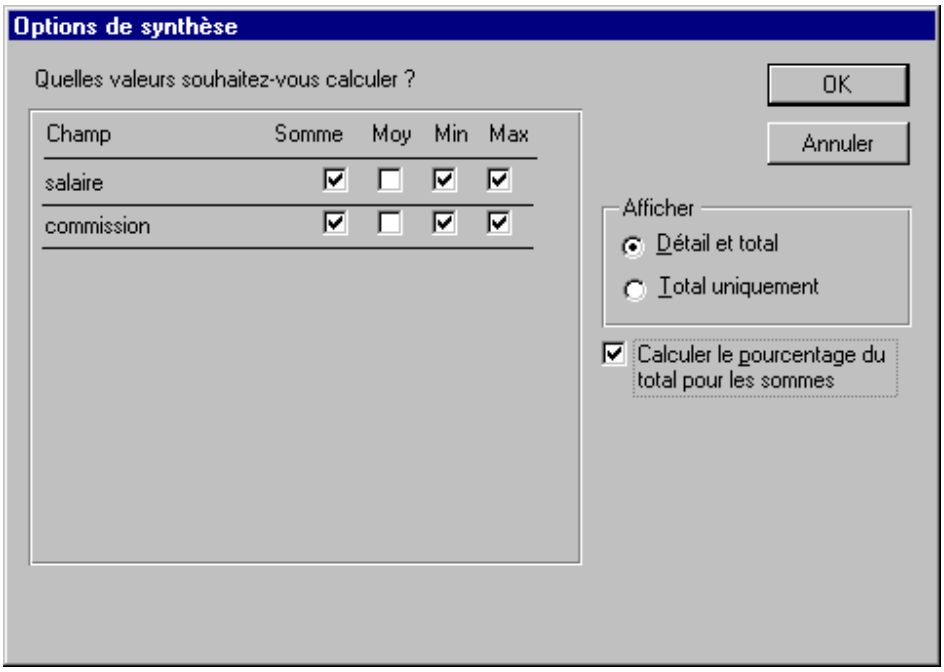
The employees will be sorted out according to the name.

- Select of the list the field **"Prénom (first name)"** for the second sorting.

Besides being sorted out on the name, the records will be also sorted out on the Prénom (first name). So, for the same name, the records will be also sorted out on the Prénom (first name) of these persons. One of the most advantageous options of reports is the possibility to generate automatically a synthesis of the results.

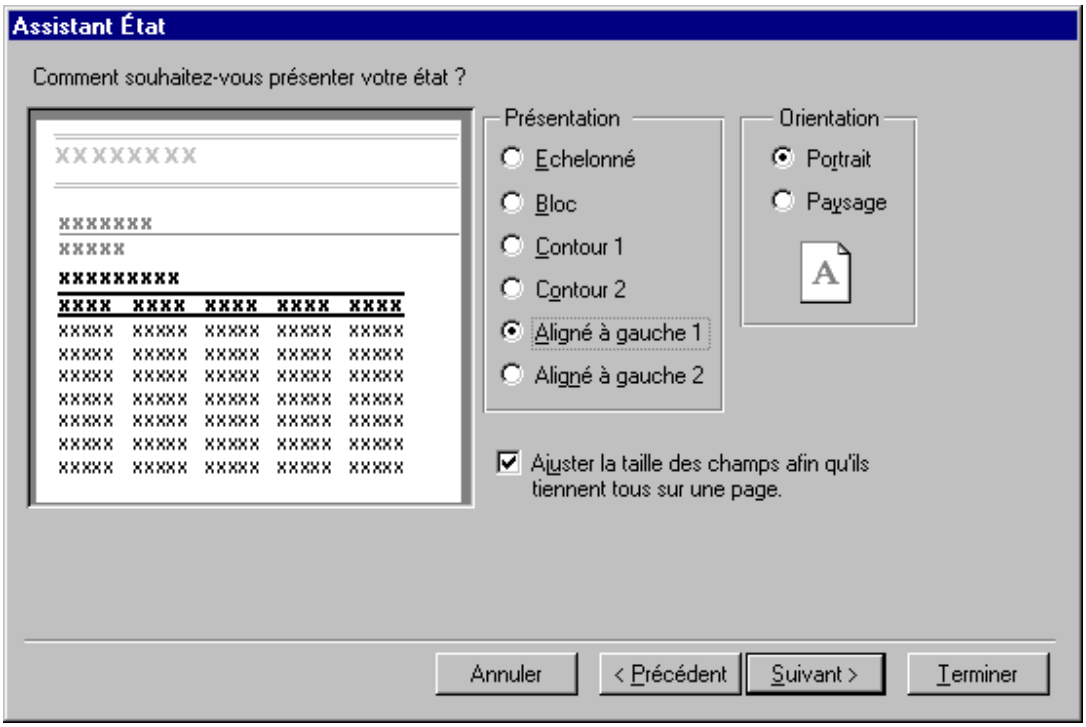
- Press the button **Options of synthesis**.

Among the options of synthesis, you can choose from the most frequent mathematical operations. If need be, you can modify the report to add the other operations such as the number of records, the standard deviation and so on. This operation will be demonstrated farther on this page.



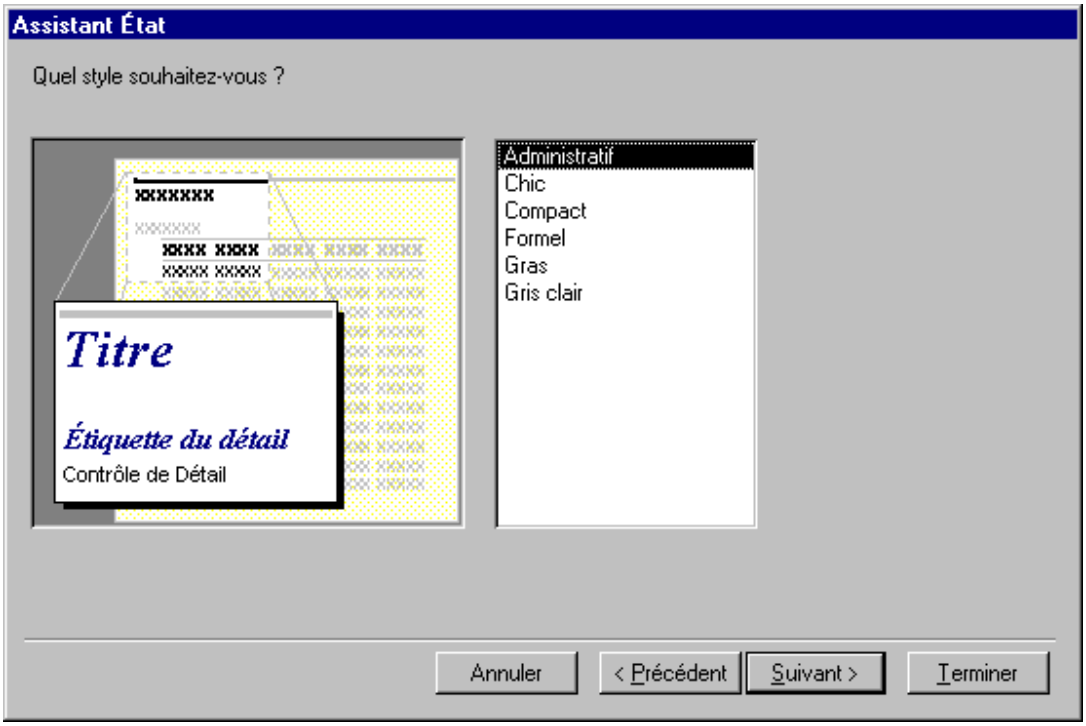
- Select the same options as those marked in the previous image.
- Press the **OK** button.
- Press the **Next** button.

The assistant asks you then for that type of presentation what you want for your report ? You can also decide on the orientation of the paper as well as to force all the fields on the same sheet.



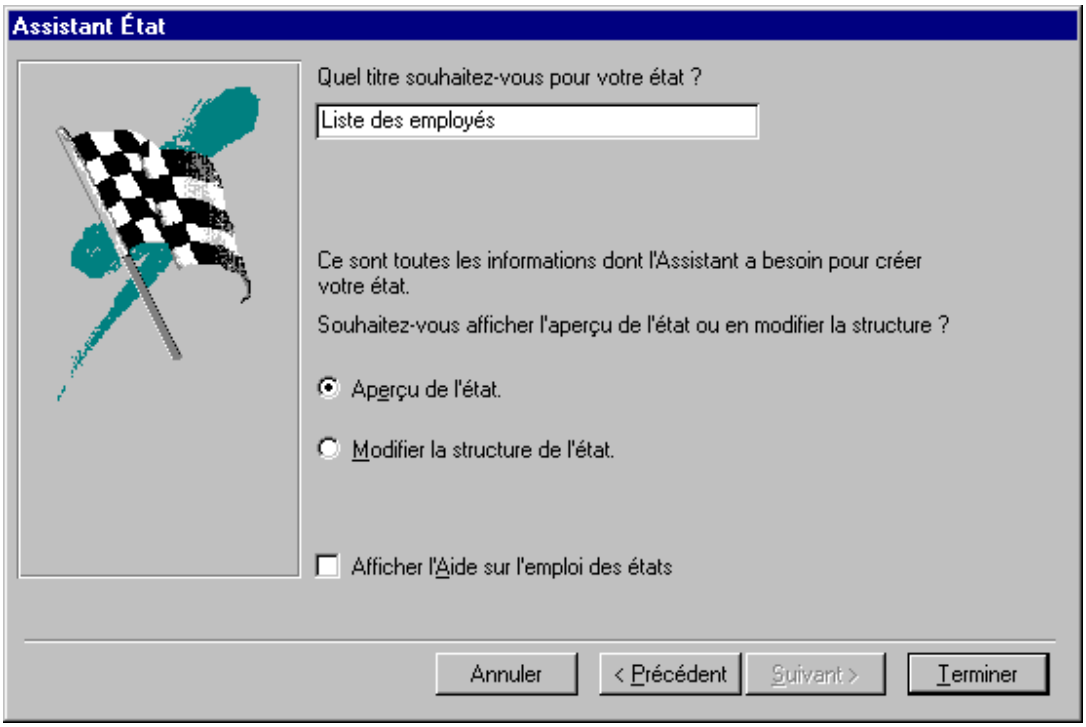
- Select the same options as on the image above.
- Press the **Next** button.

The assistant asks you a last question on the presentation of the report. This time, it's about the presentation of the fonts of the report. The assistant offers you several ways to present the records in the form of text. click the name of each of the styles to have a preview of the final result.



- For the purpose of this exercise, select the **"Administrative"** type.
- Press the **Next** button.

It remains only to add the main title of the report and to decide if you later want to have a preview of this one or to modify it at once.



- Write in the box of the title of the report " Liste des employés ".
- Press the **Finish** button.

Here is the first part of the final result.

Liste des employés

bureau *montréal*

Nom	*Prénom*	*salaire*	*commission*	*poste*
Gendron	Éric	0 $	23 000 $	vendeur
Lambert	Denis	0 $	45 000 $	vendeur
Lepage	Roger	50 000 $	0 $	gérant
Rémi	Suzanne	0 $	65 000 $	vendeur

Synthèse pour 'bureau' = montréal (4 enregistrements détail)

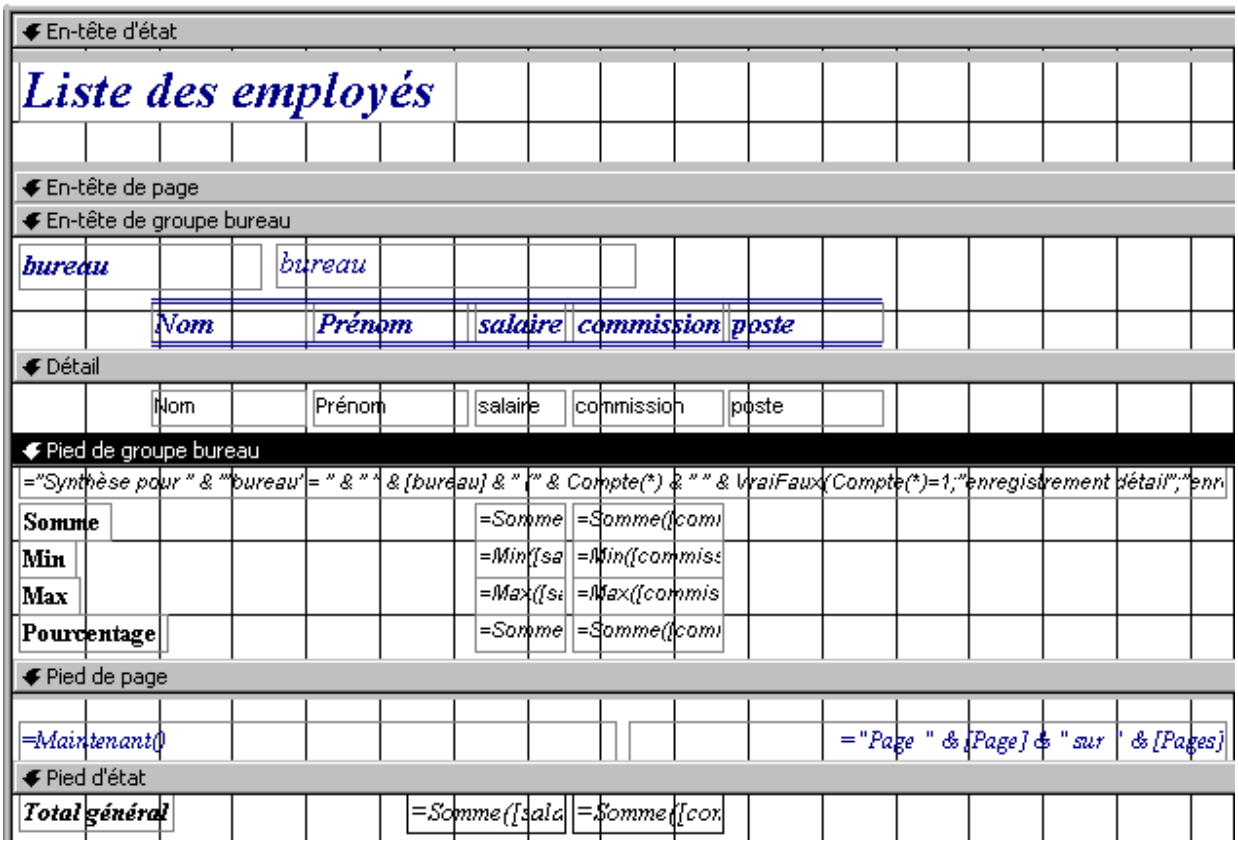
Somme	*50 000 $*	*133 000 $*
Min	*0 $*	*0 $*
Max	*50 000 $*	*65 000 $*
Pourcentage	*53,76%*	*65,84%*

It's now time to look in detail at the composition of the report.

Change a report

It's also possible to modify a report better to answer your needs. In time, the report can need to change better to answer your expectations.

- From the outline of the report, press the button creation mode ( ).
- From the window Data base, select the report to be modified and press the **Modify** button.



The objects of a report

There are several objects, or controls in Access's jargon, that compose a report. Among some of these, there are "titles", that are of the free text, " zones of text, that are really fields resulting from tables or from queries, from lines, from boxes, from calculated fields and several others.

Sections

Besides, these "controls" you will find in various zones.

Headers

Header of This part meets itself at the very beginning of the report. One finds

the report: there generally the title of the report.

Header of the page: This part meets itself at the beginning of each of the pages of the report. One finds there generally the name of each of the fields that meets itself in the report.

Header of the group: This part meets itself at the beginning of each of the groups of the report. One finds there generally the description of the group.

Feet

Every heading in its equivalent in the end of the report.

Foot of the report: This part contains generally the cumulative or the synthesis of the report.

Foot of page: This part contains the cumulative of the page as well as the number of page.

Foot of group: This part contains generally the cumulative or the synthesis of a group.

Section details

Between the various headings and the feet of zones, there is a section detail. It's in this zone that will be shown the data of each of the records.

Add a calculated field

As for the queries and the forms, it's possible to add calculated fields that answer better your needs. For example, there is no standard deviation or the other Formulas or functions to analyse certain ratios among your data.

The next part consists in adding a calculated field that calculates the total of the incomes of a group. By income, one implies here the total of salaries and commissions of the employees.

- If you are already not it, put yourselves in creation mode by pressing on the  button.
- If the toolbar is not shown, press the  button.
- Enlarge the footer zone of group **office**.
- From the toolbar, press the  button bums around of text .
- Click towards your choice in the zone foot of group " office ".

An independent field and a title are going to appear.

- Click in the box of the title and change the text **"Incomes"**.
- Click in the zone of text (independent field).
- Write the following formula: **=sum(salaire+commission)**.

Because there is already a total of salaries and a total of commissions in this zone, you would have been able to write in the place of the formula **= SommeDeSalaire + SommeDeCommission**.

It's necessary to pay attention not to make errors during the writing of the formula. Otherwise, at the time of showing the report, Access will ask you of the data about a field that does not exist. For example, I changed one of the Formulas so that it calculates the income by using the field commisssion with three " s ". This field does not exist. But Access will ask you for the value of this field before showing the report.

An outline of the report ( ) will show you the result. At the end of every group, there is now a total of incomes.

You can create more elaborated calculated fields by using functions of Access. If you know the functioning of the function, you can directly write it. Otherwise, you can use the expression generator to fetch the list of the functions.

- Return to creation mode by pressing on the  button.
- Place the cursor on the calculated field that you have just created.
- Press the **right** mouse button.
- Select the **Properties** option.

OR

- Of the standard toolbar, press the  button.

- Click in the box next to the option **Source of control**.
- Click on the button that has just appeared to the end of the box.

You are now in the expression generators.

- Of the first column, double-click on the shirt having one more when it's written **Functions**.

The second column included lists it categories of the functions. The third column included lists it of all the available functions for Access. You can then choose from the list the function, or the combination of functions, that answers your needs. have

by fear to experiment. In the worst, the calculation will not work. It will be enough to re-try until it fonctionne!

The next exercise consists in copying the formula preassignor, **=sum(salaire+commission)**, in the footer of the report.

- Click on the new formula in the footer of the **office** group zone.
- From the **Edit** menu, select the **Copy** option.
- Click in the footer zone of the report.
- From the **Edit** menu, select the **Paste** option.
- Move the field next to the existing fields.
- Make a preview of the report by pressing on the button  .

At the end of the report, there is a new field that shows the cumulative of the incomes of the employees. Although it's about the same formula, it has no same area as **office** formulates it in the zone of group. The first show the result of all the records whereas the second fact only the cumulative a group at the same moment.

Add a calculated field

It's always possible to add a field that is contained in the table or the query that created the report. But it's also possible to add calculated fields such as demonstrated during the creation of a query or a form. As for the form, it's necessary to put the sign "=" in front of the formula. So, to make the sum incomes, it's necessary to use the formula =sum([salaire] + [commission]).

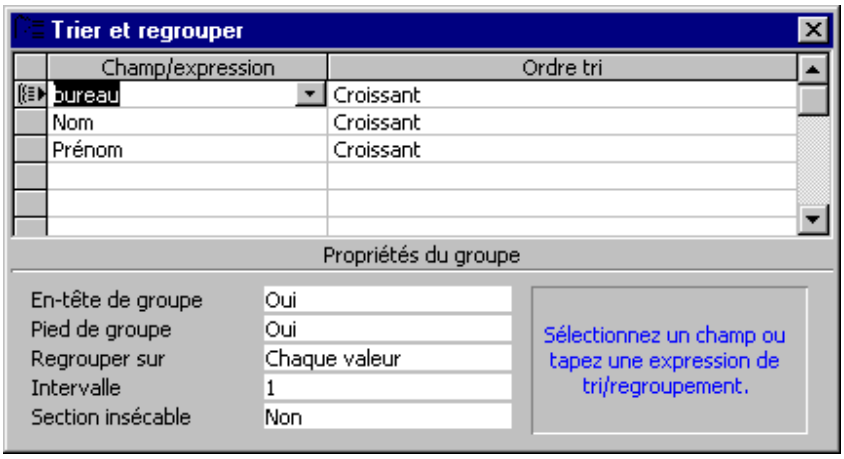
It's always possible to improve the presentation of the report but this gives you an idea in the way that the records will be shown in the report.

It's also possible to copy the formula of incomes and to put it in the other zones. If you copy the formula and put it in the section Details, the formula will show the income of each of the records. If you copy the same formula to put it in the foot of the group office, the result would be the sum incomes by office. The formula of incomes in the foot of report would show the total sum of the incomes of the company. The place where is located the formula determines the vast of this one, that are for a recording, a group or a report.

Creating a group

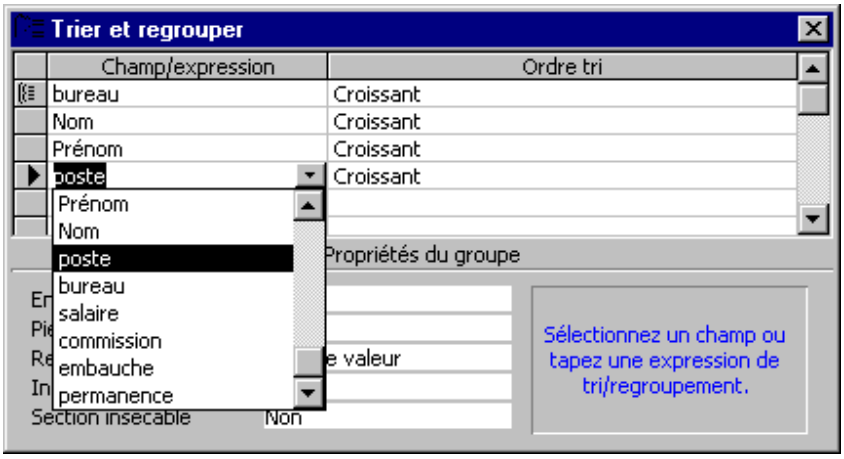
It's possible any time to modify the order of the sortings of fields as well as the groups of the report. The next part consists in adding a group to the report as well as to explain at the same time the difference between a sorting and a group in the report.

- From the **Edit** menu, select the option **sort out and group**.

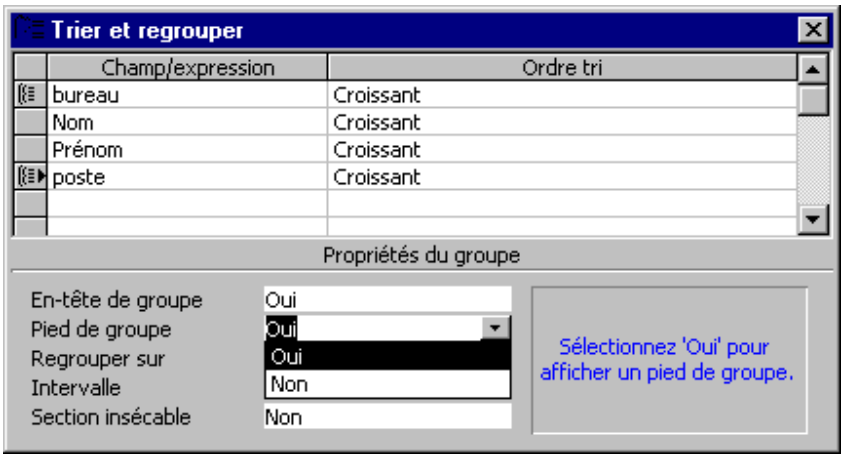


From this screen, you can determine on that field you want to sort out and to group together the records of the report. The window shows that the report is at present grouped together on the field **office**. So, the records are sorted out on fields **Name** and **Prénom (first name)**. The exercise consists in adding a group on the field **Poste**. So, besides being grouped together by office location, the records will be divided by the occupation of the employee. Here are the necessary stages to add the group Poste.

- Place the cursor on the fourth list of fields, just man below the line of the **Prénom (first name)** field.
- Press the button with the triangle pointing down at the end of the first box of the line.



- Of the list of fields, select the field **Poste**.

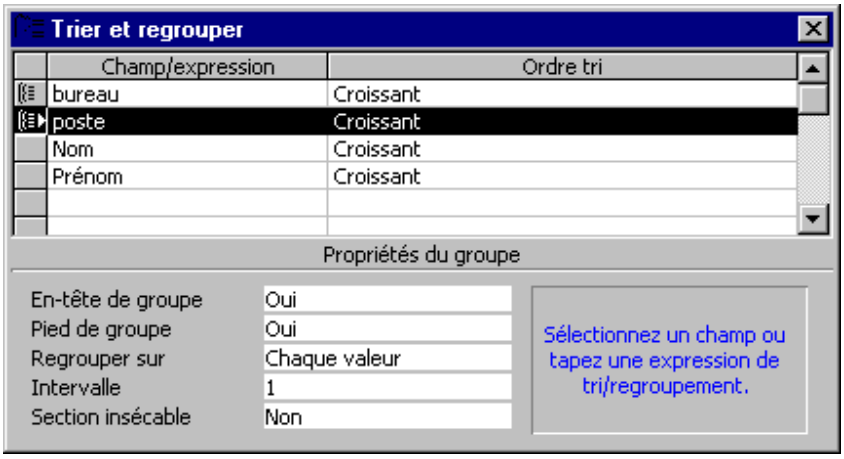


- Among the list of the properties of the field, select the **Yes** option to show the header of the group footer.

As soon as you select the one or other one of these two options, the field is used to group together the records instead of sorting out them only. The symbol appears in front of the name of the field to indicate that it's about a group on this field. So two new sections are going to appear in the report, that is the heading of the new group Poste as well as its foot of page.

If you make a preview of the report, you'll see that the result is not really interesting. The field **Poste** fact a group on each of the records instead of group together them. The reason is that the field posts are in fourth position from the sortings and the groups. The next stage consists in changing the order of the sortings and the groups by placing the field **Poste** in second position.

- Click on the grey box to the left of the field **Poste**.
- Press and hold the **left** mouse button and move the field in second position in the list of fields.



The outline of the report shows now the data by office location and by occupation of the employees.

Remove a group

You saw how adding a regroupement and changing the order of the sortings. The next exercise consists of removing a group.

- Click on the grey box to the left of the field **Poste**.
- Press the **Delete** key.

Access - Label Report

Before we begin

Access offers you several types of reports. This Web page how demonstrates to create a report labels and to modify it. For more data about reports, watch to go to the Web page on reports.

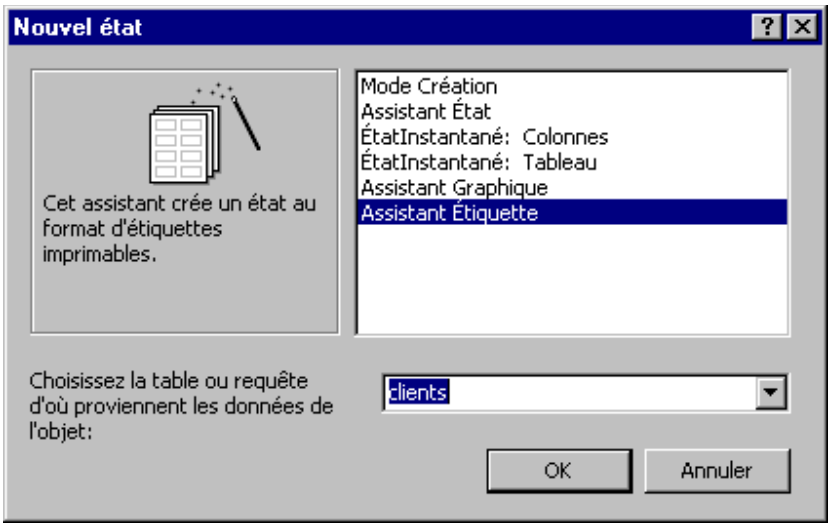
The exercise of this page consists in creating a report labels that contains the list of the mail labels of the list of the customers of the company. This is to demonstrate that it's possible to have on a label of the text and the fields at the same time. To realize the exercise of this page, you need the database **demoacc2.mdb** or **demoa2k2.mbd** for Access on 2000. You will find this document on the demonstration files Web page.

Introduction

Access allows you to create quickly and easily labels from the data of your tables and your queries. The next part consists in creating a new report from the data of the **Customers** table.

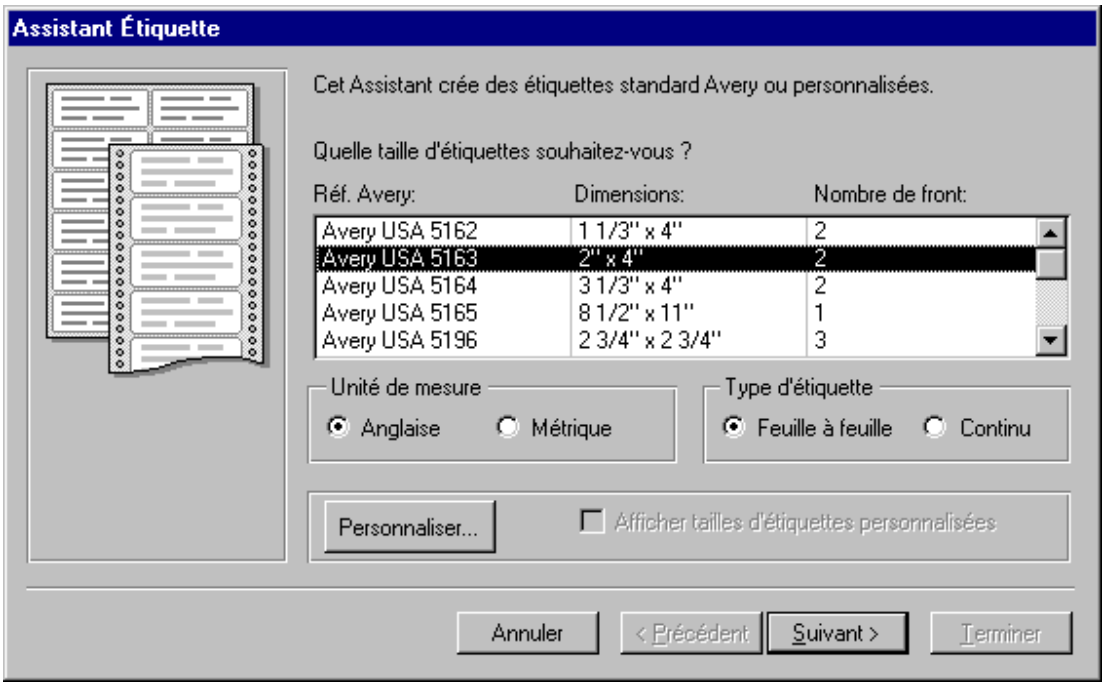
- From the main menu, click on the reports tab 

.
- Press the **New** button.



- From the list of reports that you can create, select the **Label Assistant**.
- From the list des tables and queries disponibles, select the **Clients** (customer) table.
- Press the **OK** button.

Note:
If you have data that result from several tables, create a query consisted of several tables. For more data, read Web pages on the queries and the exercises of the queries.

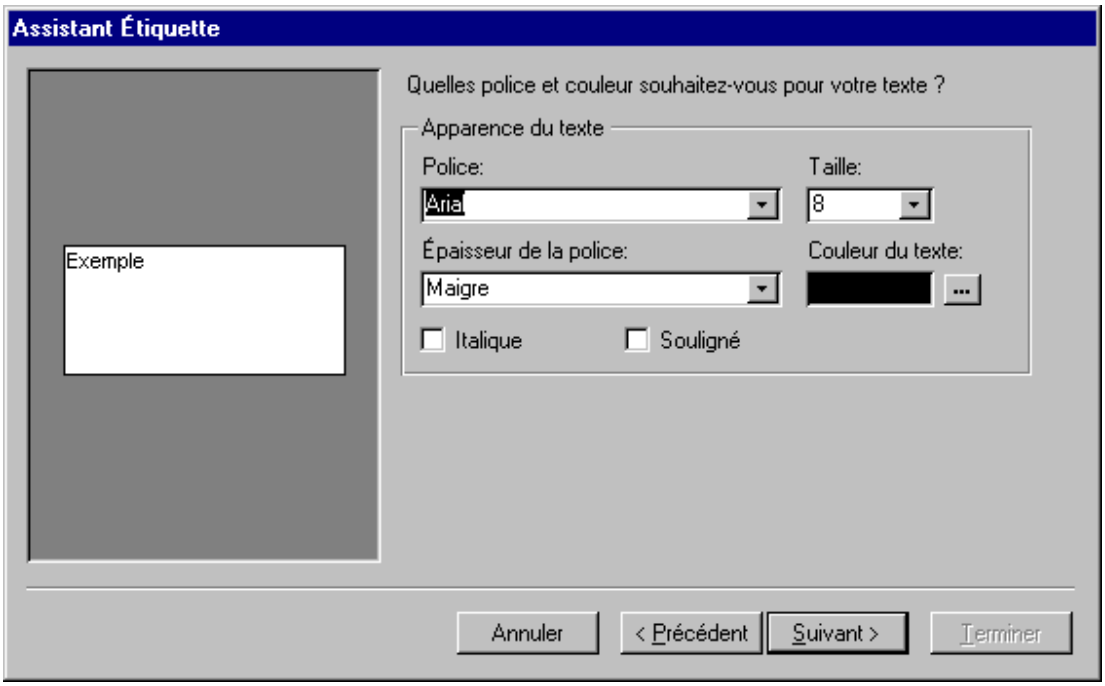


The assistant labels will ask you some questions on the type of labels on that the report will print the chosen data. For the exercise, the chosen labels will be that of 2 " (inches) by 4 " (inches) from the Avery company.

- For the mesuring unit option, select the **English** option.
- For the type of label, select the **Sheet by sheet** option.
- For the list on possible label at the top of the window, select **Avery USA 5163**.
- Press the **Next** button.

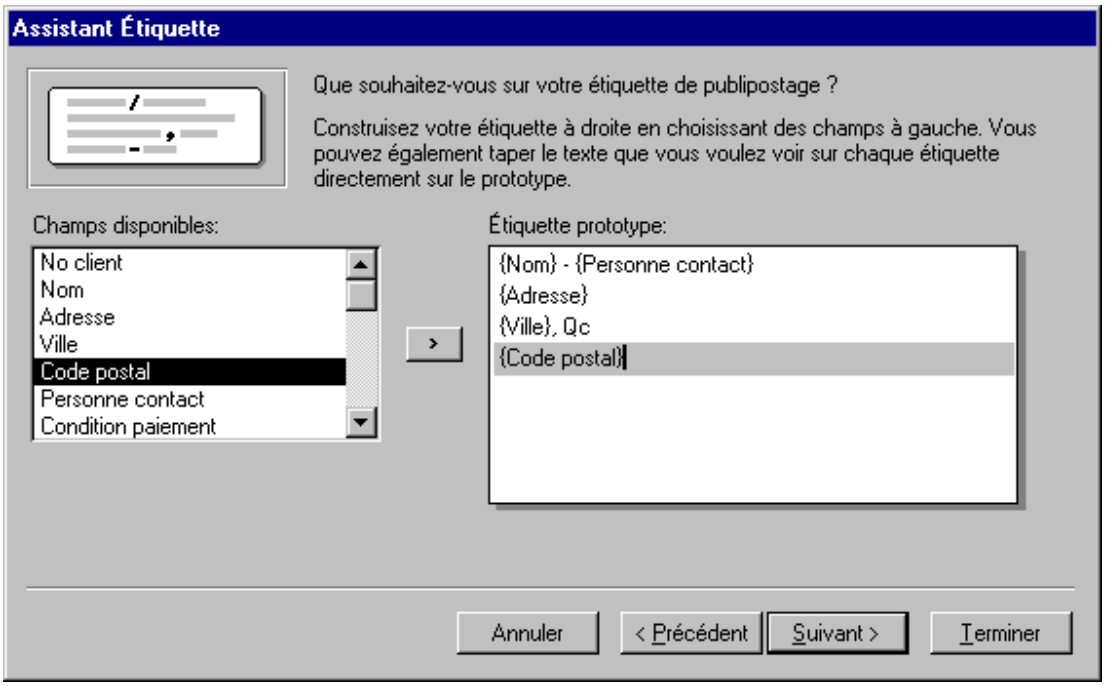
The option Counts frontally indicates the number of labels that are the one next to another. It's always possible that you don't find the size(format) that you wish from the units of measure, the companies and the types of labels. You can so press the button **To personalize** to generate your own sizes(formats) of labels with the data that you possess.

Note:
On Access 2000 offers to choose you among several companies as the choice of labels. select the company of that you bought labels and model.



The assistant labels you demand then the kind of presentation of text that you want. pay attention not to choose a size of too big font. Otherwise, the text will not enter on the label.

- Select the font type, size, style and the color of your choice.
- Press the **Next** button.



The label assistant asks for the kind of presentation of text that you want. Pay attention not to choose a font size that's too big. Otherwise, the text will not enter on the label.

There are two ways to select a field.You can:

- Select a field from the left column and press the  button .

OR

- Double-clic on the disired field from the left column.

For this exercise, place the fields in the same order as described below:

- Select the **Nom** (name) field.
- Press the **spacebar**, the " **-** " key and the **spacebar** once again.
- select the the field **Personne contact** (person in charge).
- Press the **Enter** key.

The label will pass to the next line every time you press the **Enter** key. As you have just carried out, it's possible to have several fields on the same line. Furthermore, it's possible to have also of the text and the fields on the same line.

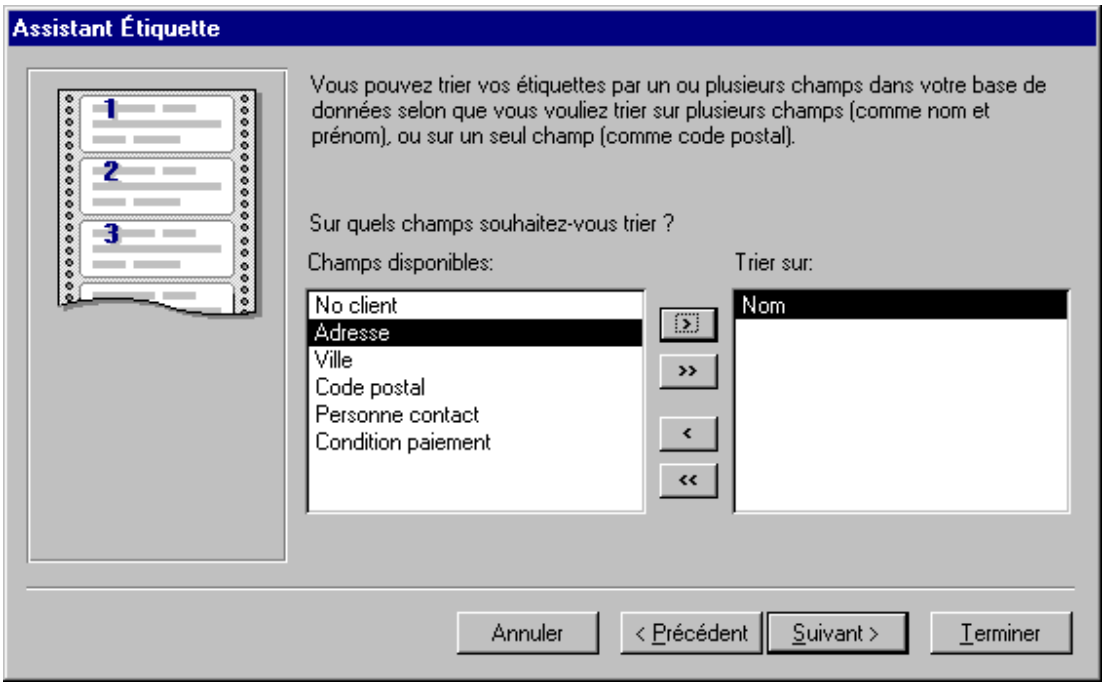
- Select the field **Adresse** (Address).
- Press the **Enter** key.
- Select the field **Ville** (city).
- Write the following text "**, Qc**" (Québec).
- Press the **Enter** key.

We presume in this case that all the clients are in the province of Québec. Another field (province) will be required if they are spread outside the province. Another field (country) will be required for international business.

- Select the the field **Code postal**.
- Press the **Enter** key.

The required fields and the presentation are all placed correctly on the label. verify with the image for this part of the exercise above.

- Press the **Next** button.



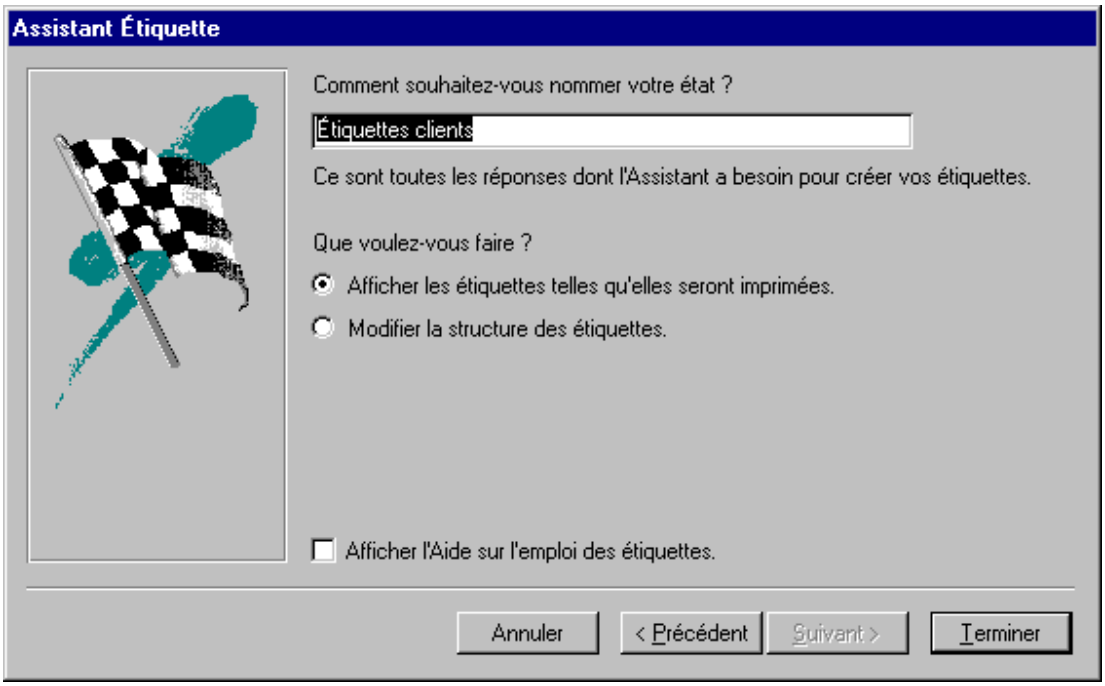
The assistant asks you then if you want to sort out the records on one or several fields. For the purpose of the exercise, the records will be sorted out in order crossing according to the name of the company.

- From the list fields available form the left column, select the **Nom** field.
- Press the > button .

OR

- Double-clic on the field **Nom**.

- Press the **Next** button.



The assistant will ask you that name it's necessary to give to the report. It suggests you the title Labels customers. It's a rather good description of the report. So, we are going to save the label report.

- For this exercise, leave the options "as is".
- Press the **Finish** button.

Access will take a moment to generate the report according to the options that you chose and to save it in your database. Here is what should look like the first label of the report.

Alpha ltée - Albert Archambeault
1000 Lavigne
Montréal, Qc
H1H1H1

Modify report

- From the **View** menu, select the **Creation Mode** option.

OR

- Press the  button.

=SupprEspace(Etat![Nom] & " - " & [Personne contact])
=SupprEspace([Adresse])
=SupprEspace([Ville] & ", Qc")
=SupprEspace([Code postal])

Access uses the function **SupprEspace()** to remove spaces useless to the end of a field. The software uses also the command **&** to glue together parts of text, placed

between quotation marks, or the other fields. look at the first line of the label. The function pastes together the field **Nom**, the text that was the field **Personne contact** put between quotation marks, "-".

Access - Macro commands

Introduction

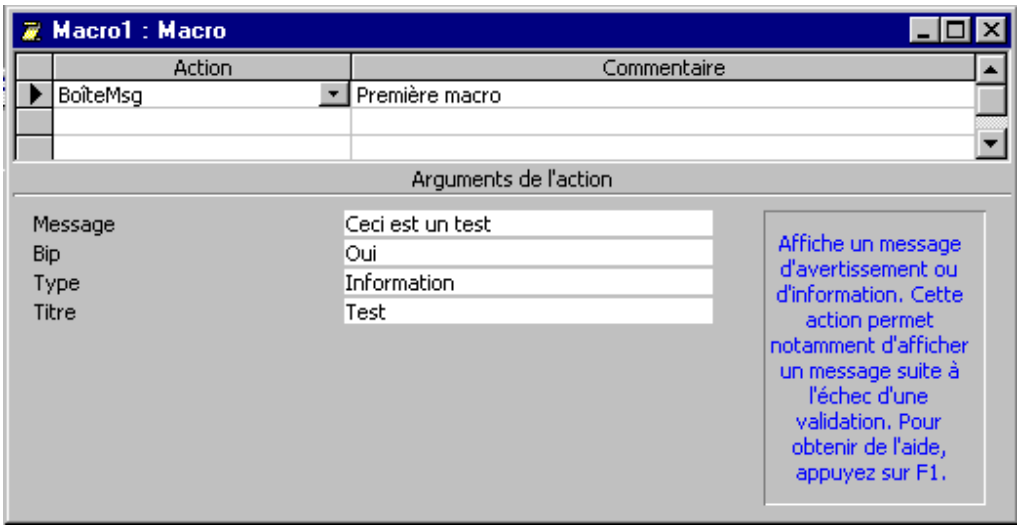
A macro allows to execute a series of instructions one after the other. Besides, you can "attach" a macro to a button on a form. The exercise that follows consists in creating a macro girl who contains a single instruction. Later, this macro short story(piece of news) will be attached to a button of a form.

Create a macro

- From the main menu, select the macro tab 

.
- Press the **New** button.

The window of creation of macro will appear.



Under the column Action is the list of the instructions that you can execute.

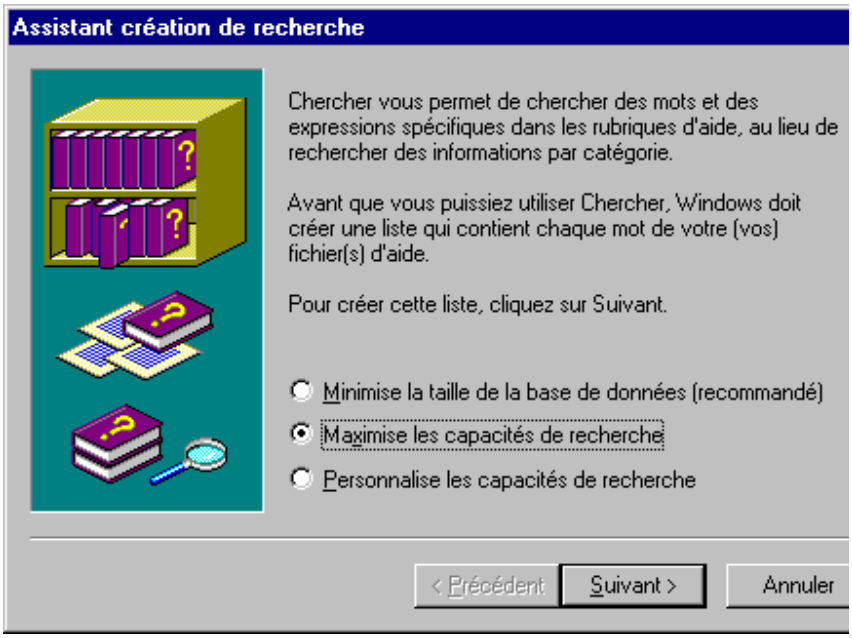
As you see it, Access offers you several instructions.

To have more data about these

- From the main menu, select the menu of help by selecting**?**.
- From the menu, select the Summary option and index.
- Click on the tab Look for.

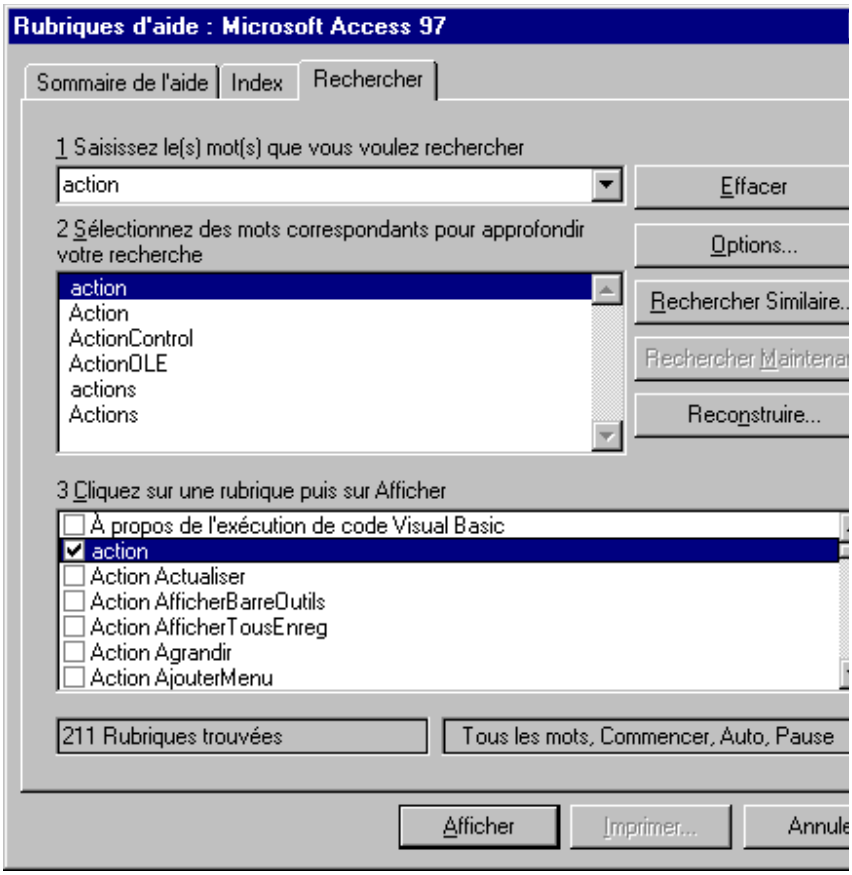
It's possible that it's a question the first time that the help is used inside Access.

- If it's not already made, to prepare the file of help by using the option **Maximize research capacities**.



- Press the Next button.
- Press the button Finish.

Access will take a moment to generate the file of help.



- Enter the word "Action" the first box.
- Click on the first word action of the list of the second box.

The contents of the third box are going to change to show the columns in the word "action" contents in the file of help. This list includes also the actions of the macro.

- In the third box, select the action of your choice and press the button Show at the foot of the window.

To continue the creation of the macro, it's necessary to enter the " arguments of the action " or the characteristics of this one. These arguments change according to the type of action. For the action BoîteMsg (message box):

- Enter the text following in the box message: " **This is a test** ".
- Select the **Yes** for the Bip option.
- For the type of window, select the **Information** type.
- For the title of the window, write the text **"Test"**.

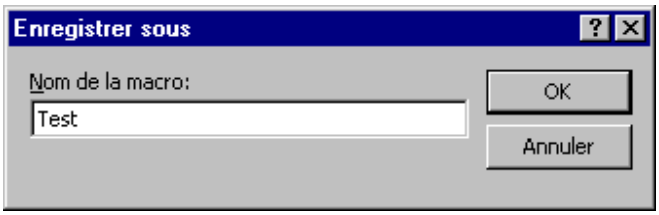
If you want to add another action, place the cursor below the last action and select it from the list of the actions.

To protect the macro:

- From the **File** menu, select the option, **Save as / export**.

Or

- Press the button.



- For this exercise, enter the name "Test"
- Press the **OK** button.

Attach a macro to a button of form

The next part consists in attaching(fastening) the short story(piece of news) macro Test that has just been created in the previous part in a button of form. There are two ways to paste: paste to a new button or to an already existing button. This part will cover these two ways.

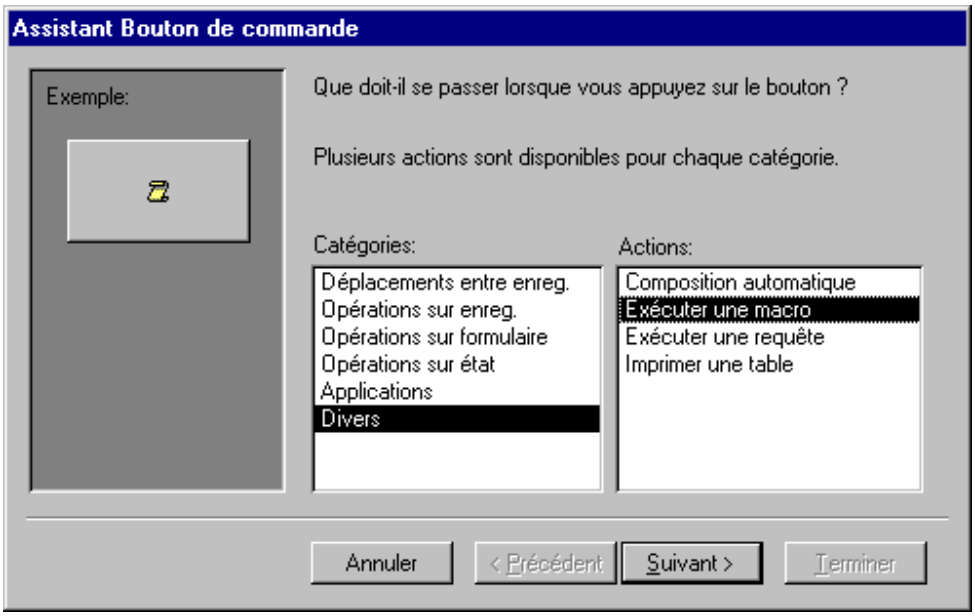
Paste to a new button.

- Return to the main menu and click the **Forms** tab 

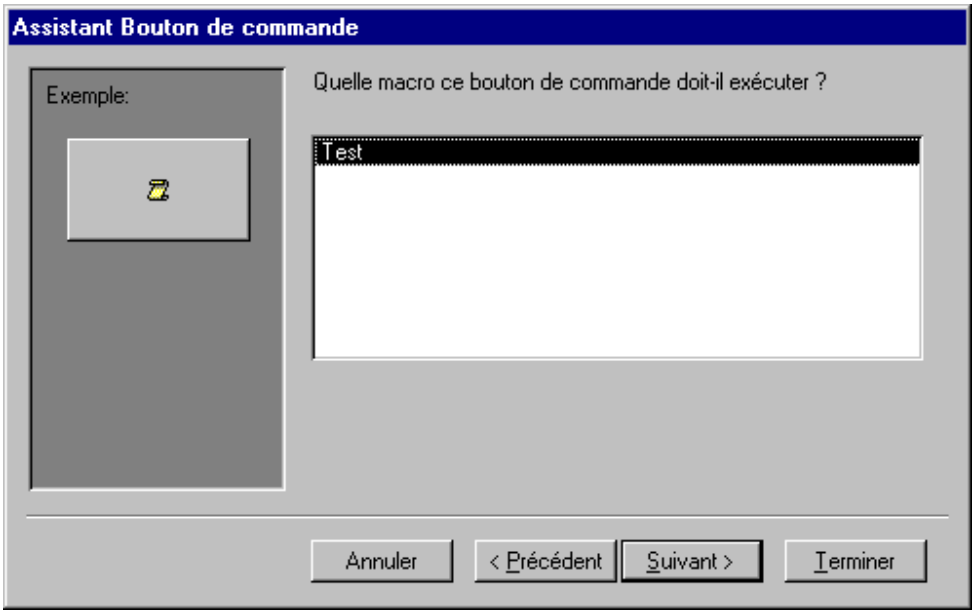
.
- If you already have a form, select it and press the **Modify** button.
- Otherwise, Press the **New** button. To accelerate the creation of a form, select one InstantForm:Columns and the table of the employees.
- When the form is generated, enter the creation mode by pressing on the button.
- From the toolbar, select the command button .

Click on the form on the place where you want the command button to appear.

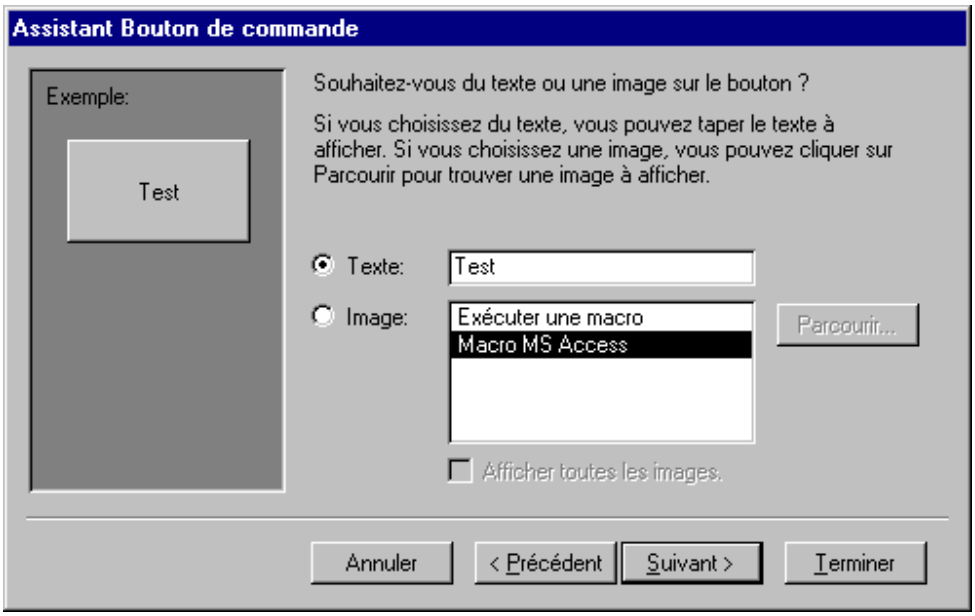
The assistant of command button offers several options. It contains several models of buttons to create quickly buttons the most used in various categories.



- Among the list of the categories, select the category "Miscellaneous".
- Select the option " Execute a macro " from the list of the actions.
- Press the **Next** button.

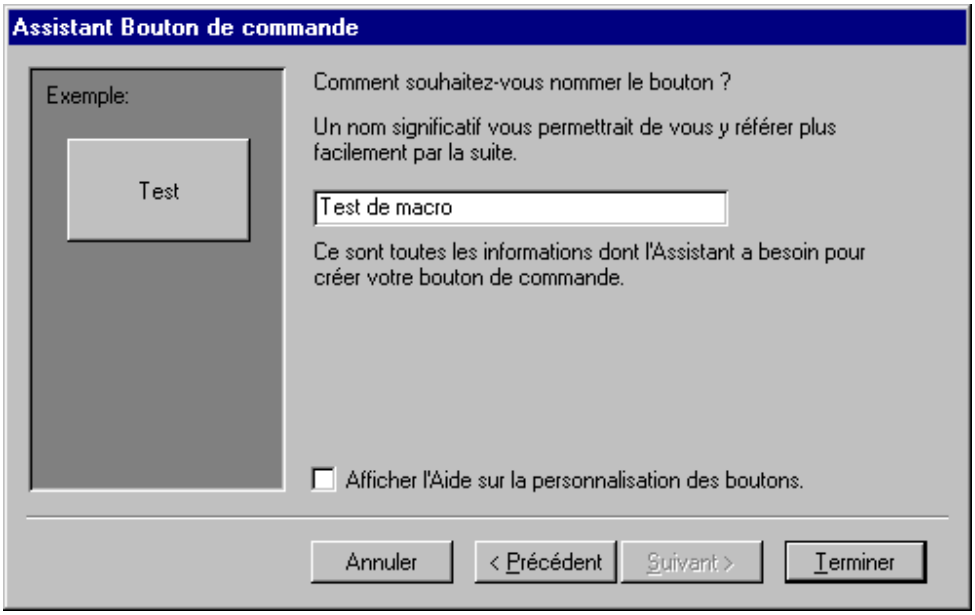


- Among the list of the macro available, select macro "Test".
- Press the **Next** button.



Access the choice offers you to show of the text or an image on the top of the button. For this exercise, the text "Test" will be written on the button.

- Click on the option Text:.
- Write the text "Test" in the box in the right-hand side of the option Text:.
- Press the **Next** button.



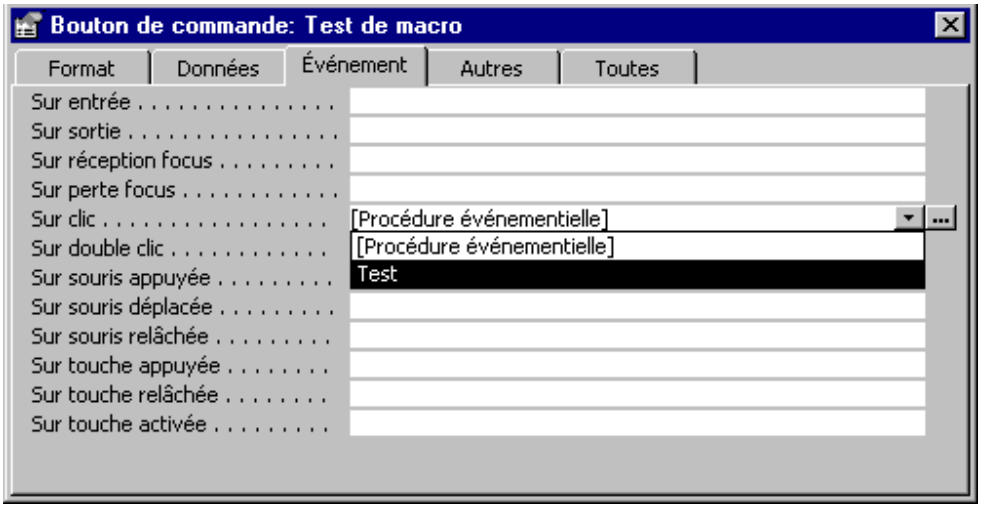
It remains only to give a name to the button.

- For the exercise, write " Test of macro " in the first box of the window.
- Press the **Finish** button.

Attach an existing button

He can arrive that you change opinion and want to change macro or of option for an event or a button. This part of the page shows how to change you macro and the list of the possible events with Access.

- Select the creation mode for the form.
- Place the cursor over the button to be modified.
- Press the **right** mouse button.
- From the list of the possible options, select the **Properties** option.



- Click on the Event tab.

Access a possible list of the events shows you. You can attach a macro or a module to each of these events. It's so possible that Access executes a macro when you click a button or a field and a different event if you make a double-click on the same control.

- Click in the box in the right-hand side of the event " On click ".
- Press the button with a triangle pointing down at the end of the box.
- From the list of the macro and the modules, select macro Test.
- Close the window of the properties by pressing on the  button.

When you go to press the button Test, one of both following windows will appear as the assistant of Access is shown in the screen or not.

The autoexec macro

Access offers you the opportunity to execute a macro-command at the opening of a database. This gives you the advantage to open with a macro to execute instructions. For example, you can open the database with a main menu form. You simply have to create a macro and giving it the Autoexec name. If you want to open a database without executing the autoexec macro at the opening, keep a finger on the Shift key at the time of opening the database.

Access - Relations

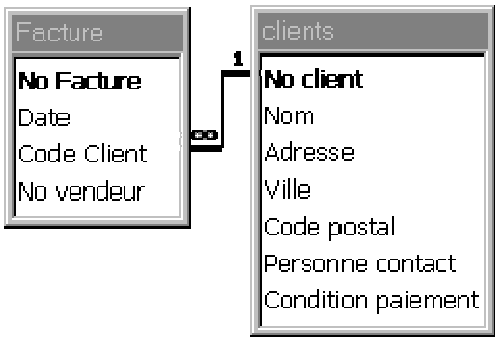
Before starting

This page includes exercises to experiment with the relations between tables. To help you in the understanding, you can copy the file ***demoacc2.mdb*** for those that have **Access 97 or demoa2k2.mdb** for those that have **Access on 2000** of the page of the demonstration files. Click here to return you to this page. Copy the data base suited on a floppy disk or on your hard drive and return then to this page.

Introduction

The practical aspect to connect tables on fields in common is to avoid the redundancy. It is useless to rewrite several times the same information. For example, with a relational data base such as Access, it is useless to write several times the same information about a customer to every invoice. The force of the connected tables is to give you access to the information of another table than you would have no access without a relation between tables.

Let's take the example of tables **Charges** and **Customers**. The table **Charges customer's number** and no other information about the customer contains the field. But this field is the key to connect both tables. It is possible to connect it with the field **customer's number** of the table **Customers**. Once connected, it is then possible to have the other information about the customer such as the name of the company, its address, it's persons contacts, its margin of credit etc.



The types of relations or the cardinalité

There are three types of relations: one to one, one to many and many to many.

It is not always easy to determine that kind of relation, so called cardinalité, that there is between two tables. It is necessary of the practice. I found a small trick to determine that kind of relation that there is between two tables. I found it accidentally by giving my demonstrations. I don't know how effective it is. But, it works very well during the demonstrations. It is a question of putting two questions.

1-For 1 (record of the first table), how many are there in the second table?
2-For 1 (record of the second table), how many are there in the first table?

Both questions always begin by: " For 1 of this, how much it? " The only acceptable answers are **one** or **many**. When you have the answers, place them in the small image that follows. It is necessary to invert the second question to enter it the image. Replace the "?" with the results (one or many).

Determine the type of relation

	Table 1		Table 2
Q1:	1	- >	?
Q2:	?	<-	1
Max:			

Then, you write on the last line the biggest, among one and many, of the second and the last column. You can then know about that kind of relation that it is a question.

The next exercise consists in experimenting with this small trick. It is necessary to determine that kind of relation that he can there have between tables **Invoice** and **Customers**. It is necessary to ask the questions.

Q1: For 1 invoice, how much have I of customers? The answer is one. An invoice, a customer.
Q2: For 1 customer, how much may I have of invoice? The answer is many. At least, you hope for it. It's not practical to have a customer who only comes once! Enter the information as the image below.

Determine the type of relation

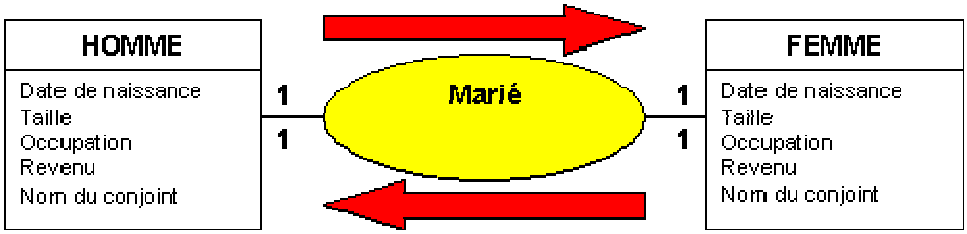
	Invoice		Customers
Q1:	1	- >	1
Q2:	Some	<-	1
Max:	Some		1

Effectively, it is indeed a relation of one to many of the Customers towards Invoice. You can now try with the other tables or the other situations.

This means as well as you can find only once the information in common in one of the tables and several times in the other one. For this example, every customer's number in the Customers's table is unique. There are two records (or customers) with the customer's same number. However, in the table Invoices, you can find the same number of invoice for several different records. It is for that reason that the relation is called 1 to many. The information in common meets itself only once in the first table (Customers) and potentially several times in the second (Invoices).

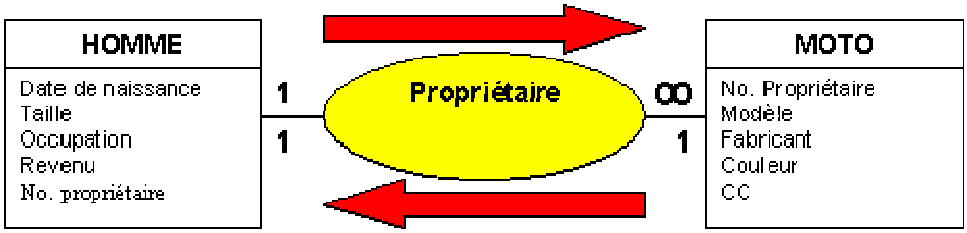
ONE TO ONE RELATION

Ex: A man is married to a single woman. A woman is married to a single man.
I should remind you that the bigamy is illegal!



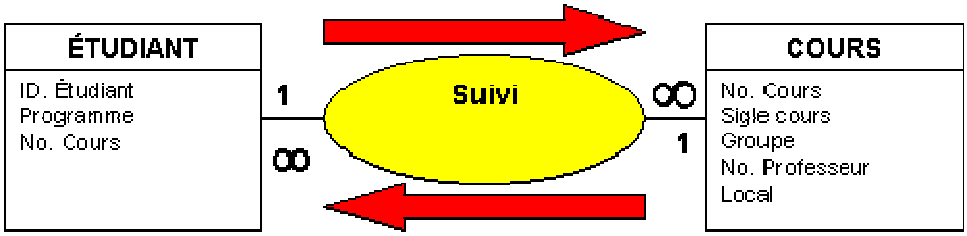
ONE TO MANY RELATION

Ex: A person can possess several motorcycles. A motorcycle can be possessed only by a single person. (Let's forget about co-ownership casses for now).



MANY TO MANY RELATION

Ex:. A student follows several classes. A class is followed by several students



It is necessary to pay attention during the conception of a database with relations of type " many to many ". There are more details farther of this Web page on this special case.

What is required to make a relation

- 2 tables (or queries or a combination of both)
- 1 field in common in each of the tables.
- The same type of field (Text with text, numeric with numeric...)
- The same length (no field long 15 characters with one the other long 50 characters!)
- The same kind of information (Ex: Code of inventory with codes of inventories, NAS with NAS...)

Do not try to create a relation between the fields **Date** and **Phone number**. Both fields are not the same types (Text, Numeric, Date/Time, Yes/No, NuméroAuto...) Also, don't try between fields **name** and **Prénom (first name)**. Although both fields are the type "text", they have no same kind of information.

There is however ***an exception*** that confirms the ruler. It is possible to make(do) a relation between a field of type NuméroAuto and a field of *numeric* type the size of the field of that is " Whole length ". It would be impossible to create a relation of type " one to many " if fields in common are of type NuméroAuto. By definition, this type of field can not have twice the same information!

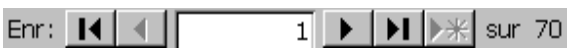
This exception is of size and very advantageous. For example, the user does not need to worry to give numbers of identifications to a new customer. Access take care of it automatically.

Create a relation on a query

It is very advantageous by moments to be capable of showing the information contained by several tables at the same time. It is however necessary to have a relation between tables to have an interesting result. The next exercise consists in creating a relation between two tables in a query.

- From the main menu, press the the queries 

tab.
- Press the **New** button.
- Of the list of the available tables, add tables **Invoice** and **Customers**.
- Select the following fields of the table **Charges**: **Number of invoice** and **Codes customer**.
- Select the following fields of the table **Customers**: **Name** and **Address**.
- Execute the query.



What you see is the result of all the possible combinations between both tables. notice that for every number of invoice there are 5 customers! In fact, there are 14 records in the table **Charges** and 5 records in the table **Customers**. So, there is 14 * 5 (70) records of activated. This is really impossible. The reason is that there is no relation between these two tables at the moment. If you don't make relations

between the tables of a query, Access will show all the combinations of possible records between both tables. It is necessary to create a relation between two tables to avoid this kind of situation.

To turn(return) to the mode creation:

- Press the  button.

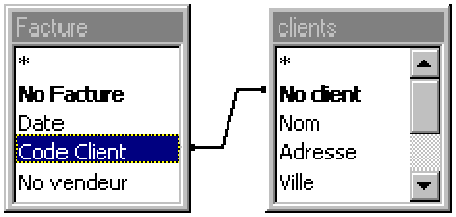
OR

- Of the **View** menu, select the option **Creation**.

- determine fields in common between both tables.

In that case, it is about fields Customer's number Codes customer and. Although they have no same name, they are the same types of fields. They have also the same size(format) or of length and contain the same kind of information.

- Place the pointer over one of the fields in common.
- By keeping your finger on the **left** mouse button, move the pointer over the other field in common.
- Release the mouse button..



A thin line should appear between both fields. Both tables are now connected. Otherwise, re-try.

It is also possible, accidentally , to have connected the fields that have no same kind of information. It is necessary to remove the bad relation before being able to retry.

- Click the line that connects both tables.
- Of the **Edit** menu, select the **Delete** option.

OR

- Press the **Delete** key of the keyboard.

When tables are correctly connected, it's time to show the result.

- Execute once again the query by pressing on the button  .

The number of records should have reduced to 14 invoices. It is necessary to notice that you see the information of two tables at the same time! It is there one of the big advantages of the relational data bases; be capable of reaching the information that no table, taken only, is capable of supplying. It is only once that these tables are connected that they are really effective.

The mechanism of a relation

From a query, it is possible to modify or to add records. As you write a value in one of the fields in common. Access will try to find if this value exists in one of the records of the other connected table. If it finds, you will have access to the contents of all the fields of the recording. Let's take the example of tables **Charges** and **Customers** that are connected on fields in common customer in a query Codes customer and No.. If you write a number between 1 and 5, Access can find a recording in the table **Customers** and show you all the information of the recording if you want it.

It is possible to enter or to modify of the information from a query that contains several tables. It is necessary to make sure that one of the fields in common of all the connected tables is used in the query. Otherwise, Access will warn you that he can not realize the query.

Be careful!
Furthermore, this field in common should be the one that you can enter several times the same information. For example, if you make a relation between tables **Invoice** and **Customers** on the field in common **customer's number**, use the field **Codes customer** of the table **Charges** because you can enter several times customer's same number invoices. When you entered the information the table **Customers**, you can not bring in it second time!

Creating a permanent relations between tables

It is advantageous to connect tables in the query to reach the information that none of the only taken tables possesses. The problem with this technique is that it is necessary to redo the relations every time you make(do) a new query. Access offers you a way of creating "more permanent" relations between the tables of your data base. It has also the advantage to verify " the integrity " of the relations between tables.

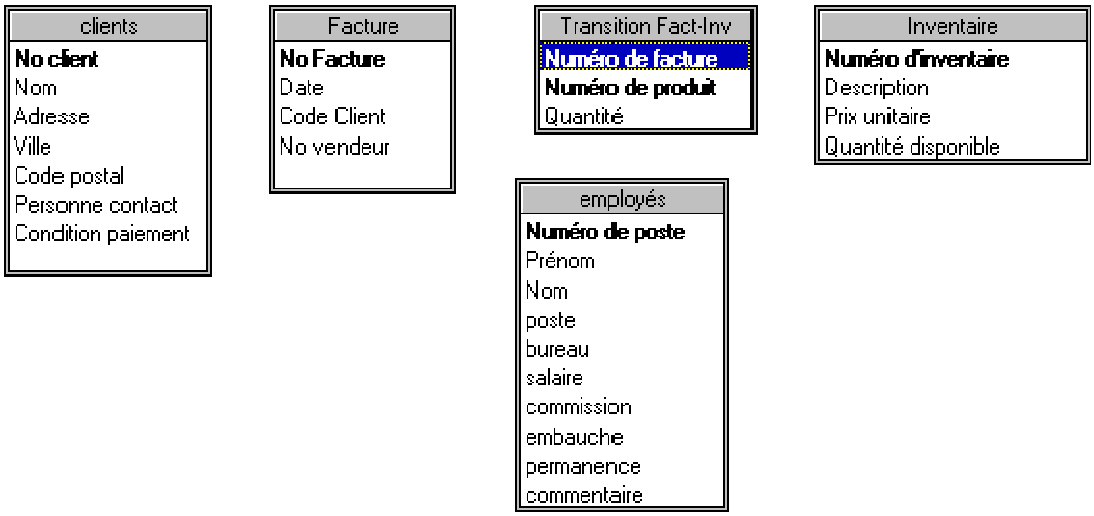
From the main menu, it is possible to reach the relations section.

- Press the  button.

OR

- Of the **Tools** menu, select the option **Relation**.

It is in this window that you go to create the relations between tables. When you open this section for the first time, there are no tables; only a big vacuum. It is first necessary to add tables or queries on that you want to connect. To accelerate the demonstration, I have already put for you all the tables that will be necessary for the relations except the table **Customers**.



Add a table

When to go to open to you the zone of the relations for the first time, it should be empty. It is necessary that to add you tables or queries that you want to connect before establishing the relations.

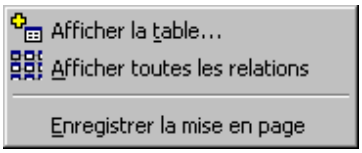
- Of the Relations menu, select the option **View the table**.

OR

- Press the  button .

OR

- Place the pointer of the mouse in the zone of the relations.
- Press the **right** mouse button.



- Of the context menu, select the option **View the table**.

The following window will appear.

With Access, it is possible to connect tables or queries if they have a field in common.

- Select the **Tables** tab.

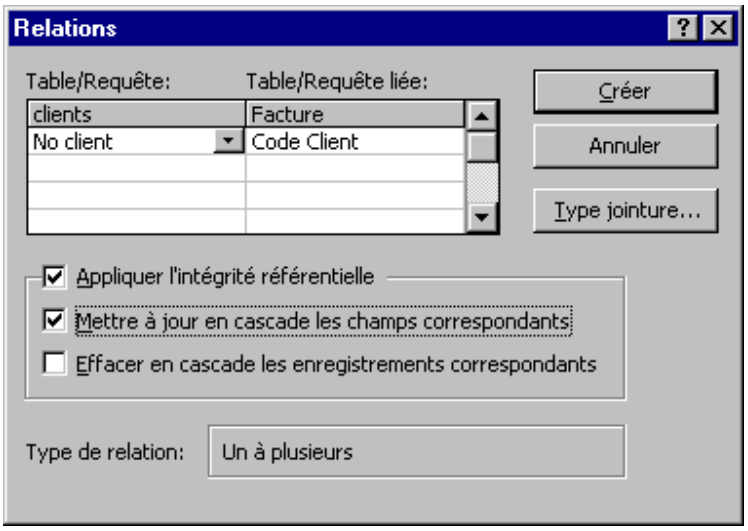
Then, select the tables of that you want to connect. For the demonstration,

- select the table **Customers** and press the button **Add**.
- Because there are no more other tables to be added, press the button **Close**.

Establish the relations between tables.

- Place the pointer over the field **Customer's number** of the table **Customers**.
- Click on the **left** mouse button to select the field.
- While pressing the **left** mouse button, move the pointer over the field **Codes customer**.
- Release the mouse button.

When you will have made the relation, the following screen will appear.



Apply the repository integrity

This option is necessary to establish a relation that I call "strong". It is the relation that makes sure that there is a value in the other connected table. By activating the option " to apply the repository integrity ", Access makes sure that certain integrity rules of a relation are respected. It is so that the relations between the connected tables are always good. No information can be "lost" by letting Access the right validate these rules.

Access can refuse to create a relation with integrity repository for these reasons:

- The table that contains the unique recording has no option of index without doubloons or primary key.
- The table that contains the unique recording has a double. Ex: several products have the same product number.
- The one of records of one of tables connected with one of the common fields empties. It is always necessary that fields in common both tables have of the information in the other table.
- The value written in the table that can contain several times the same value in the field in common has no equivalent in the other table. Ex: one of the records contains the number of product number 5 although there are only four products, from 1 to 4 , of available.
- Another reason is that one of the tables is " opened " or shown. It is necessary to close any tables, queries, states and forms before creating the relations between tables. Here is the procedure to be followed to close objects that would have remained opened.

- Close the window of the relations.
- From the Window menu, select the object (table, query...) that remained opened.

The option of the opened menu allows you to pass easily from an object to another. In that case, it is to close all the objects opened except the data base and the screen of the relations.

- Close the object.
- If the other objects are opened, except for the data base and the screen of the relations, repeat the previous operations to close these objects.

You can then re-try to create relations between tables.

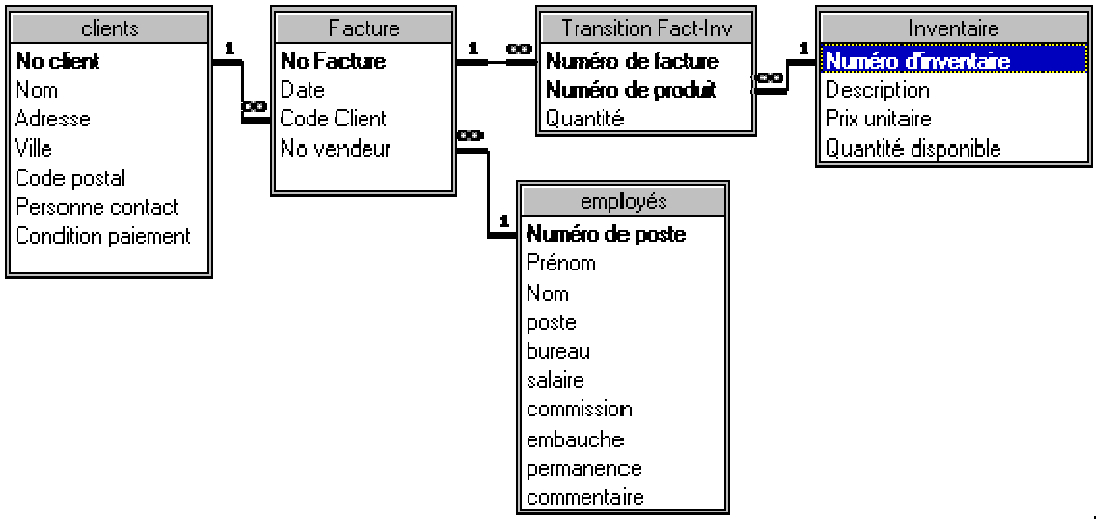
The Updated option cascades to it.

Updates in one or several other tables that are connected. If you change customer's number, all the records of the other connected tables customer of that the code is identical are also to be modified. Ex: If you change the value of the field **No. Customer** of tables **Customers**, Access goes changed for all the fields in common connected tables. In that case, would only be the field **Codes Customer** of the table **Charges**.

The Delete in cascade option.

This option erases the records of the other table that have the same field in common as the killed(abolished) recording. When should one activate this option? It depends on the contents of tables. In that case, for fiscal reasons, it would be preferable to keep the data even if the customer leaves. But for another data base, for bookings for example, it would be preferable to remove the options at the same time as a booking.

Here is a chart with a representation of tables and relations from them. A little later, one will ask you to create all the relations between these tables. For the moment, read the other possible options on the relations.



Delete a relation.

It is possible to remove one relations on tables. There are many reasons to remove a relation between tables or queries. The first is that you made an error at the time of the creation of the relation. You chose accidentally the bad field at the time of the creation of the relation. Or, after a more detailed analysis, you change the relations

between tables. So, to allow you to modify the structure of a connected table, he can be necessary previously to remove a relation. Access goes will say it to you if it is the case.

- Click on the line that connects both tables.
- From the **Edit** menu, select the **Delete** option.

OR

- Press the **Delete** key.

Modify the options of a relation.

- Click on the line that connects both tables.
- Double-click on this line.

OR

- Of the **Relations** menu, select the option **Modify a relation**.

The options of the relation are going then to appear. You can modify them and then press the button to create to keep these modifications.

It's now time to create the relations between tables. Here is the particular case who could indeed arrive at you at the time of the creation of relations between the tables of your data base.

Creating a relation between tables Charges and Employees.

It is first necessary to determine that type of relation that it is a question or its cardinalité.

1 invoice is generated by a single salesman.
1 salesman can generate several invoices.

It is about a relation of type 1 to many.

It is now necessary to create the relation between tables **Employee** and **Invoice** on their field in common.

- Place the pointer over the field **Numéro of poste (Employee's ID number)** of the table **Employees**.
- Click on the **left** mouse button to select the field.
- While pressing the **left** mouse button, move the pointer over the field **No. salesman**.
- Release the mouse button.

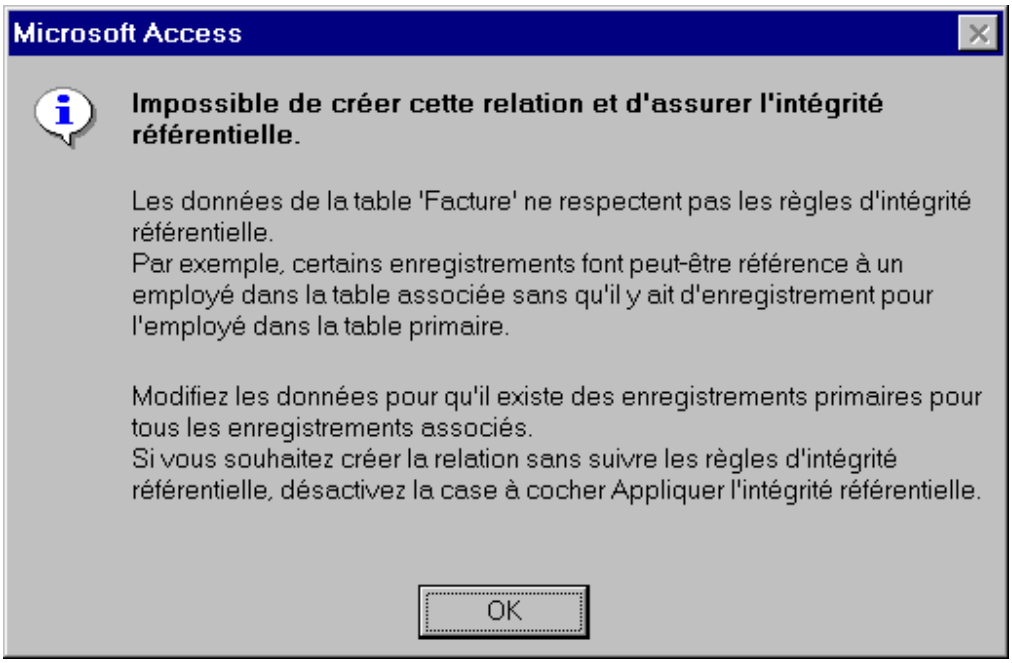
It is now necessary to choose the options.

- Activate the option **Apply the integrity repository**.
- Make sure that the relation is 1 to many.
- Press the button **Create**.

The relation will not work!

What to check when Access refuses to create a relation.

As being mentioned above, the relation between tables Charges and Employees will not work. The contents of certain recording on the field in common (No. salesman and number of occupation) don't respect the integrity rules. To warn to you of it, Access will show you the following message.

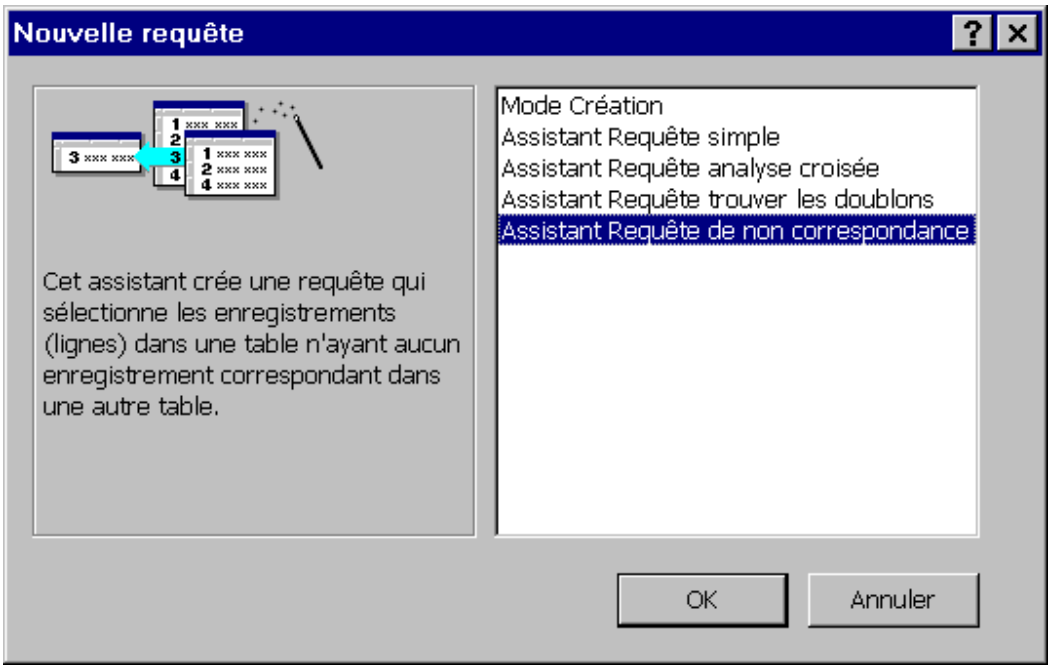


Read attentively the message to understand what happens. In that case, it is the second sentence that explains the situation: " The data of the table " Facture " don't respect the rules of repository integrity ". And it's true. Both last records of the table have no valid contents in the field **No. Salesman**. It is for that reason that Access refuses to create a permanent relation between these two tables.

For this example, you know the cause of the problem. It is enough to put values suited for these two records to solve the problem. But what to do when you don't know the cause of the problem? Access has an indispensable tool to offers to make sure that you have good relations between your tables and/or queries. It is about the query of not correspondence. The next part consists in creating a query of not correspondence that determines the cause of the problem between tables **Charges** and **Employees**.

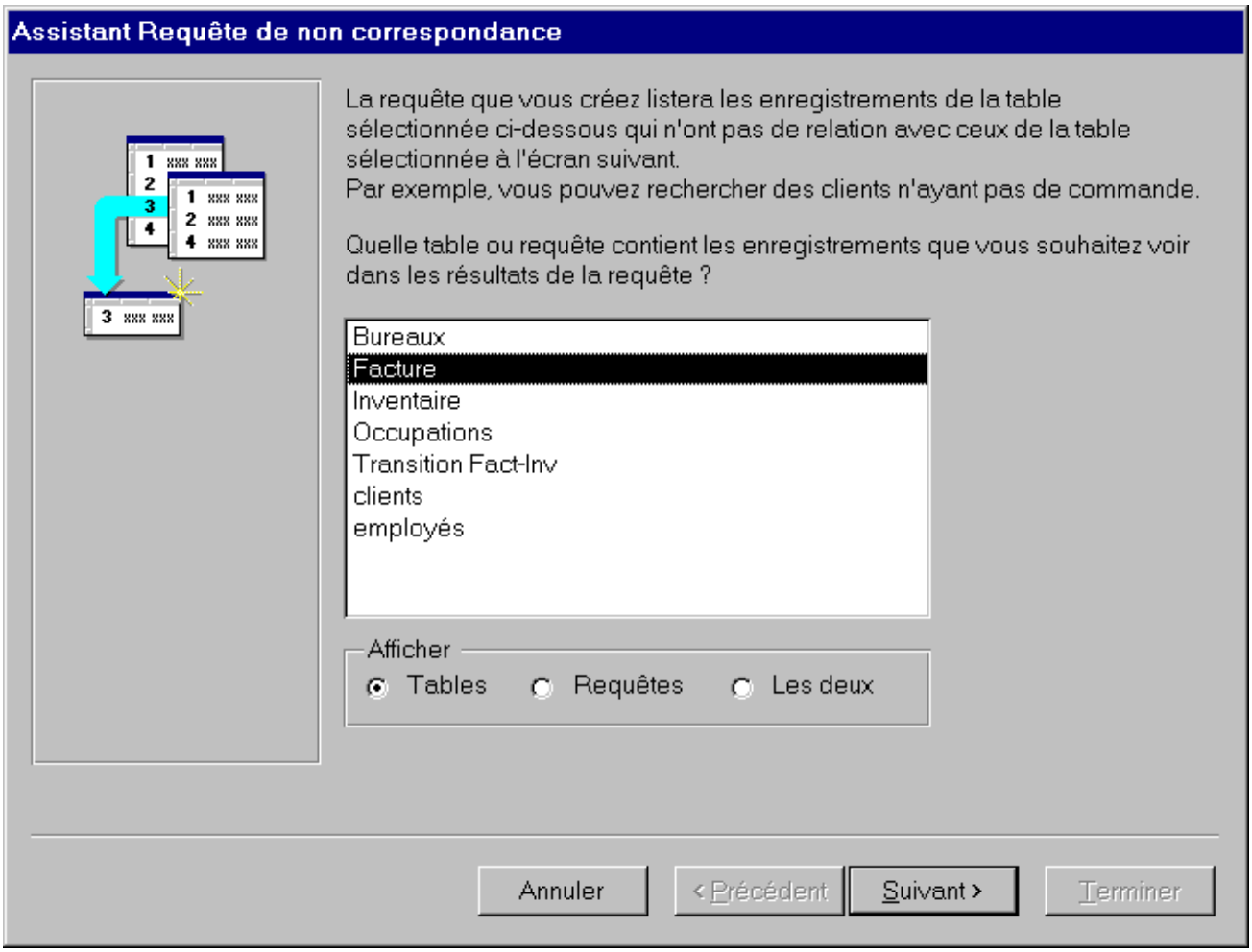
- Close the zone of the relations by selecting of the menu **File** the option **Close**.
- Click on the the queries 

tab.
- Press the **New** button.



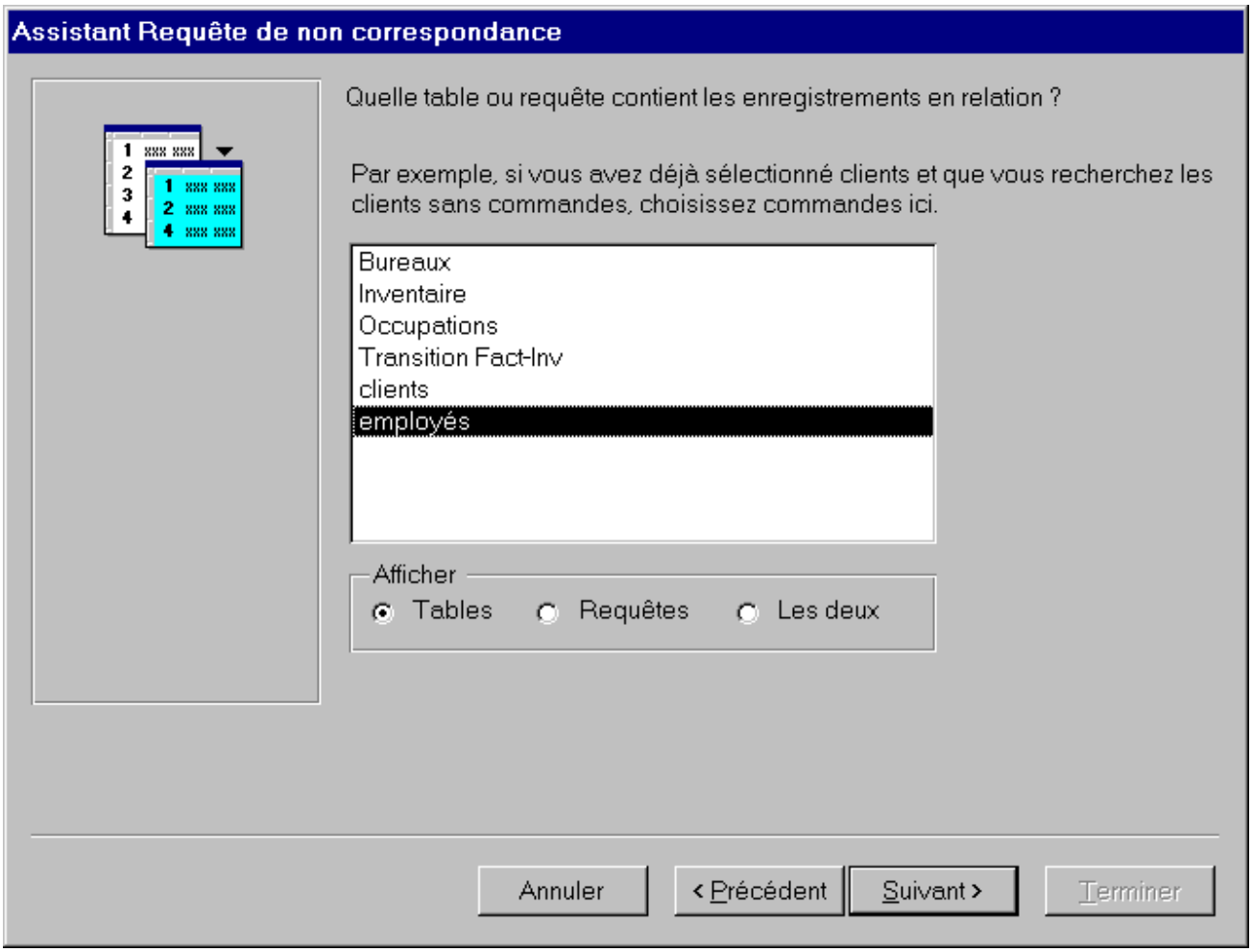
- From the list of the possible queries, choose **Assisting Request of not correspondence**.
- Press the **OK** button.

To determine the records that don't correspond between both tables, it is necessary first to indicate to Access the name of both tables to connect follow-up of the name of fields in common of both tables.



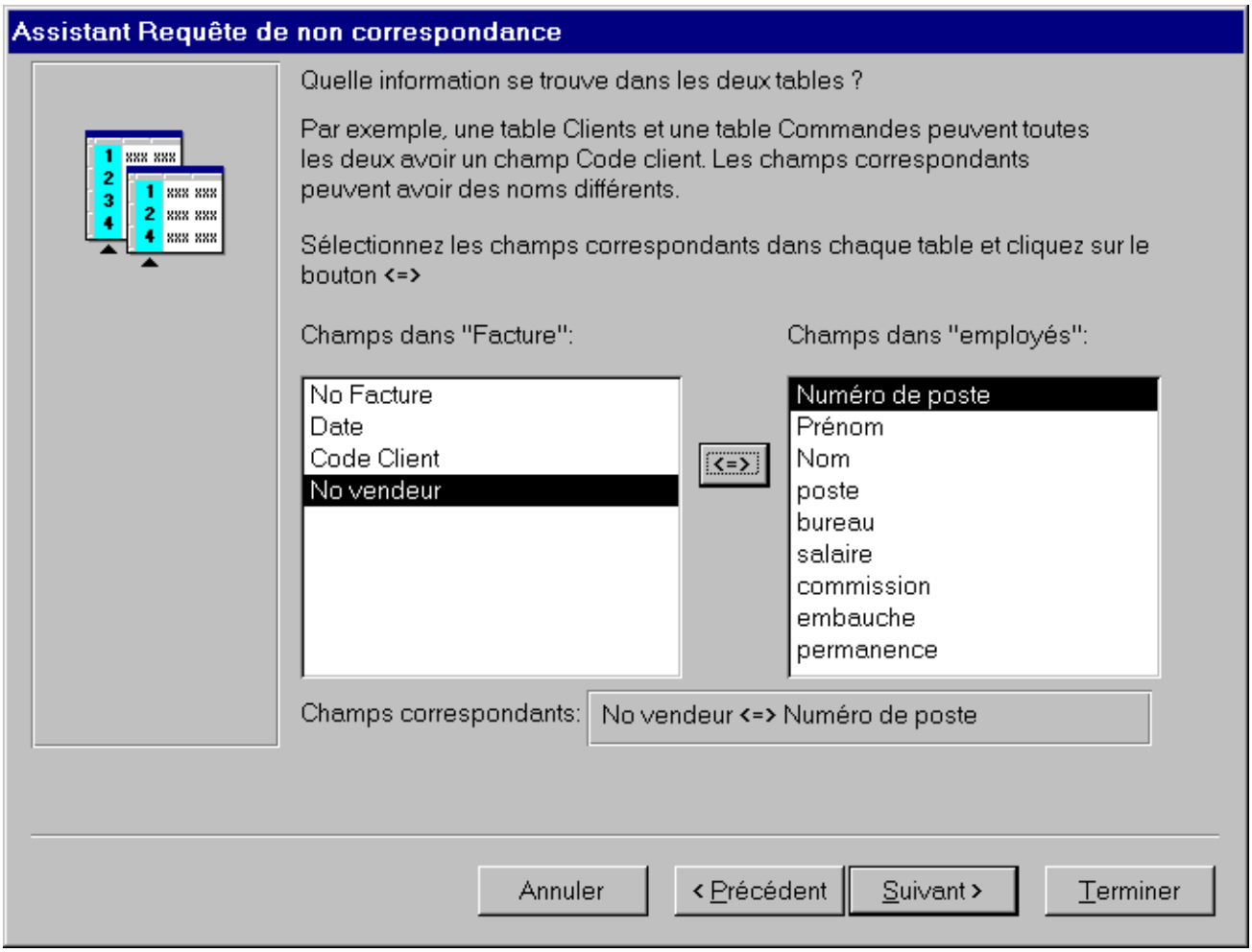
It is necessary to indicate to Access the name of the first banks to connect that causes a problem of relation.

- From the list of tables, select the table **Charges**.
- Press the **Next** button **>**.



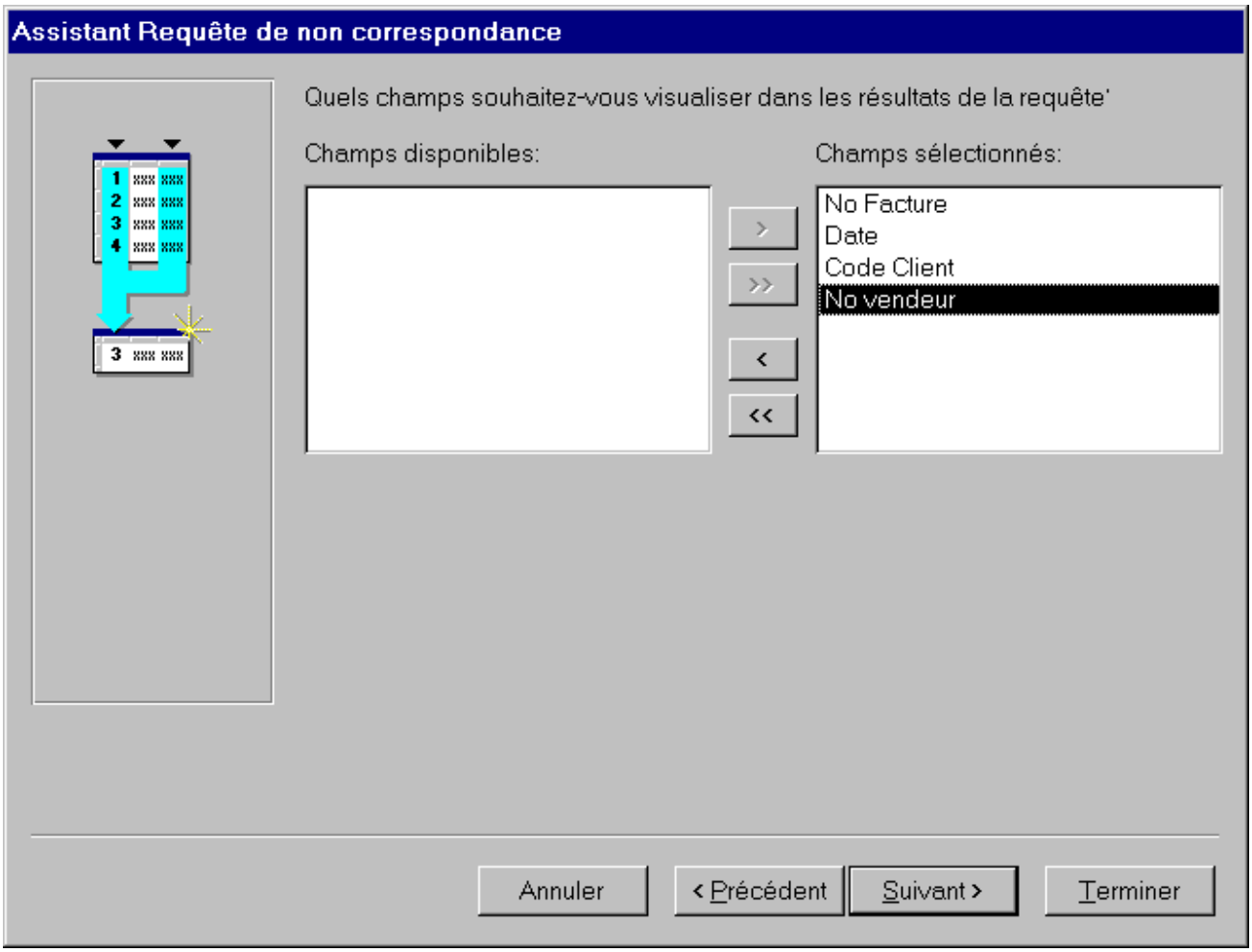
It is now necessary to indicate the name of the second table that causes a problem of relation.

- From the list of tables, select the **Employees** table.
- Press the **Next** button **>**.



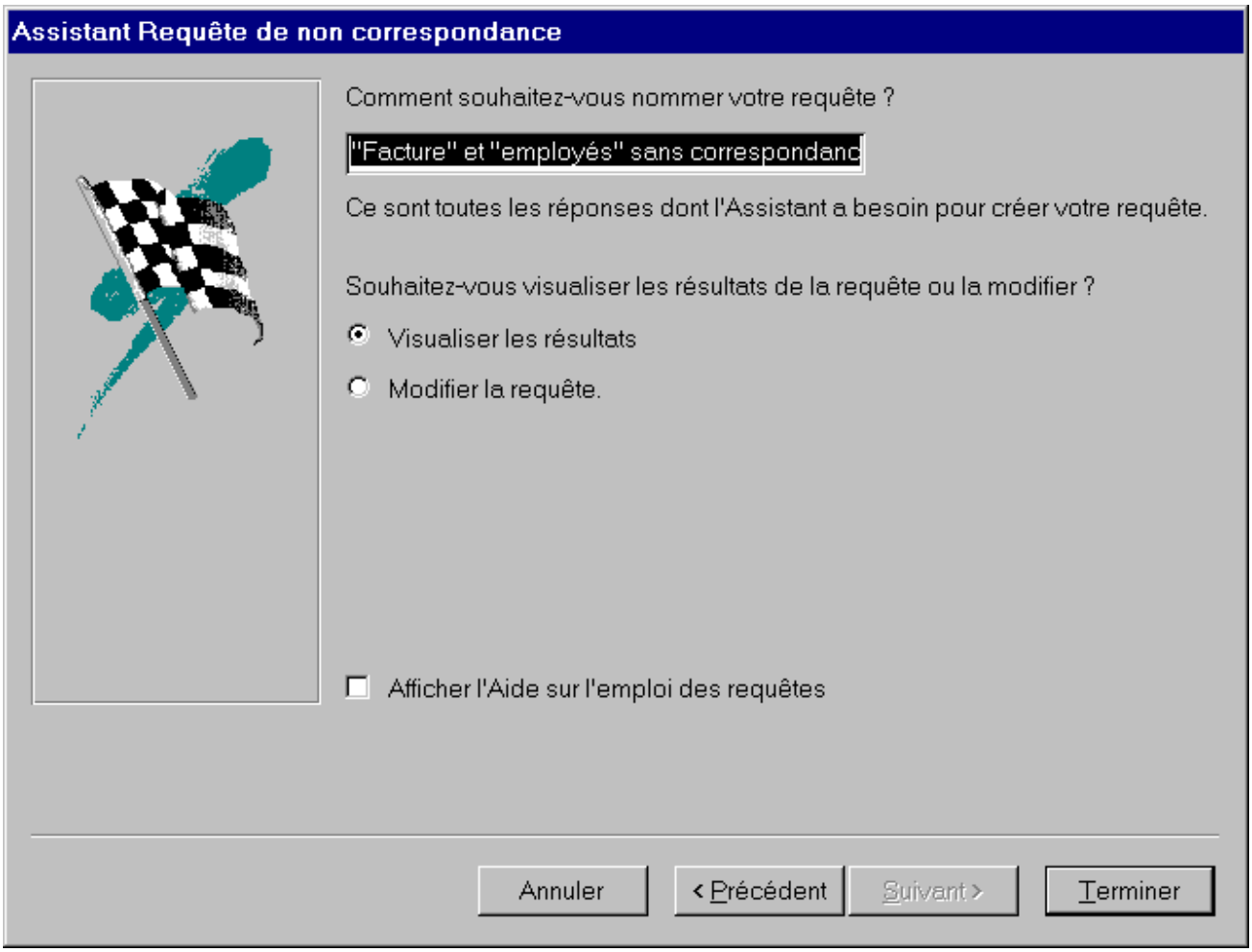
It is then necessary to show to Access that are fields in common of both tables.

- From the table **Charges**, click the field **No. salesman**.
- From the **Employees** table, click the field **Numéro of poste (Employee's ID number)**.
- Press the <=> button.
- Press the **Next** button **>**.



Access asks you then that are the fields that you want to see in the query. For the purpose of the example, select all the fields.

- Press the button >>.
- Press the **Next** button **>**.



To end, Access asks you for the name to look to the query. For the moment, don't change the name of the query.

Press the button **End**.

Access shows the result of the query.

"Facture" et "employés" sans correspondance : Requête Sélection

	No Facture	Date	Code Client	No vendeur
▶	21		3	8
	22		2	
*	(NuméroAuto)		0	0

Invoices 21 and 22 have no valid values in the No vendeur (salesman's ID number) field. The invoice number 21 has an employee number (No vendeur) that's impossible because there are only 7 employees at present in the company. For invoice number 22, there is no salesman's number. A relation is impossible if the contents of a field in common is empty.

- For both invoices, enter salesman's number 7 the field **No. salesman**.

After this correction, it is now possible to you to create a "permanent" relation between these two tables.

- Close the query.
- Return to the section of the relations.
- Redo the relation between tables **Employees** and **Invoice** on their field in common (**Numéro of poste (Employee's ID number)** and **No. salesman**).

Both tables are now connected on a field in common. You can now create the relations between the tables of this data base such as in the previous chart.

The relations of many to many

Access offers you a way easy to create relations of type 1 to 1 and 1 to many with the option rules of integrity. However, the creation of relations of type many to many require more work. Let's take the example of the creation of a relation between tables **Charges** and **Produced**. Above all, it is necessary to determine of that kind of relation that it is a question.

1 invoice can contain several products.
1 product can be contained in several invoices.

It is indeed a relation of many to many.

It is impossible to directly make a many to many relation. It is necessary to create an *intermediate table* that contains the primary key of both tables. It is then necessary to create two relations of type 1 to many between tables **Charges**, **Product** and the intermediate table by using the field of the primary key of both tables.

Ex:

Invoice	Relation	Transition Fact-Inv	Relation	Inventory
No. Charge	1 - > many	Number of invoice		
		Number of product	Many< - 1	Number of inventory
		Bought quantity		

don't forget to activate the option rules of integrity and also the option of update in cascade. Otherwise, the relation of many to many is more difficult. So that a relation works, it is necessary that there is the same kind of information in both connected tables. The option " To update **in cascade** " makes sure that the information meets itself also in the other table. It is so useless to you to worry to have you the information in both tables. Access take charge of it for you.

Go to of the screen of the relations

If you want to keep the relations between tables, you should first protect them before leaving the mode of relations.

- Click on the button with the yellow floppy disk  .
- From the **File** menu, select the option **Close**.

Creating an invoice

It is here that all the relations between tables will be put in advantage.

Creating a query that contains all the connected tables.

- Click on the the queries 

tab.
- Press the **New** button.
- Select of the list of tables: **Invoice**, **Transition Fact-Inv**, **Inventory**, **Customers** and **Employees**.
- Press the button **Close**.

Every time to add to you a table in the query, the table adds as well as its relations with the other tables. Furthermore, it is about relations with the options of repository integrity. The first relation was a "simple" relation; without the possibility of a relation with repository integrity.

- From the list of the possible fields, select in order the following fields:

Number of invoice (Transition Fact-Inv), Codes customer Facture (Invoice), No. salesman Facture (Invoice), Number of product (Transition Fact-Inv), Quantity (Transition Fact-Inv), Unit price (Inventory).

It is the necessary minimum of fields to have a query with relations that work. It is necessary that one of the fields in a relation is shown. Furthermore, this field should be the one where you can enter the same information several times. You can add the other fields to your choice. Because they are connected, all the information is going automatically to display without having to add anything of the information.

To demonstrate you the advantage to connect tables, the last field to be added is a calculated field. It's going to take the information of two various tables (Quantity and Unit price) to find the total of the deal. Because it is possible to find the total from the information of tables, it is useless to have a **"Total"** field in one of the tables.

- Place the cursor in the box empties in the right-hand side of the field **Unit price**.
- Write the following text: **Total: [Quantity] * [Unit price]**

As for all the calculated fields, it is necessary to give it a name **(Total)**. It is then necessary to separate the name of the formula by writing one **":"**. It remains that to write the formula. This field will give the total of each of the items of the invoice.

Data entry for an invoices

Having to complete the previous operations for the creation of relations between the various tables of the data base, it remains to seen how to enter many invoices and to explain the working of the chosen options. To enter the data,

- Press the  button.

OR

- From the **View** menu, select the option **Banks of data**.
- Enter no information the field Number of invoice and press the **Enter** key.

As soon as the cursor is moved to the following field, a number appeared in the first field. Why?

It is because of the relation between this field and that of **No. Invoice** of the table **Charges**. Not only is the relation of a " **1 to many** " type, but there is also an option " To update **in cascade** ". It is this option that forces Access to see the contents of the field No. Number of invoice charges and to copy it in the field. No need to enter the information every time to begin you a new invoice.

- Enter the information for the other fields your choice.

You see that it is possible to enter of the information several tables at the same time. So, the advantage of the relations because there are redundancy of information only for fields in common various tables. It is useless to rewrite the information about the customer or about the product because Access has access to this information thanks to the relations between tables.

The next exercise consists in adding a second item to the same invoice.

- In the field **Number of invoice**, enter the same number of invoice of the previous recording.
- Enter the information for the other fields your choice.

And so it is possible to add several items to the same invoice. You can use this technique for the other tables that have a relation of " 1 to many " type.