Table of contents

The use of range names

In this chapter, you will learn how to:

- Give the cell ranges a name
- Modify the contents of the cell ranges
- Delete a range name
- Use the cell ranges for your calculations

DESCRIPTION

We use cell addresses when we want to define a range of cells.

To use a range of cells, we define the first cell address (upper left corner) and the last cell address (right corner).

These two addresses are separated by the :

Example :

	A	B	C
1		TVA	
2		3%	
3		6%	
4		9%	
5		15%	
6		19%	
7		25%	
8		33%	
9			
10			

This range of cells will be defined as follows B2:B8.

For the person who created this range, it is very simple but for somebody else it is not clear at all. What does it mean? And what happens if I move this range, if I add lines or columns. Of course, you guessed it these references will change.

A name for this range of cells is an easy-to-remember identifier to refer to a cell, a group of cells, a value. In the example here above, it would be easier to name the cells B2:B8 “VAT”.

You will use this name as a reference in formulas instead of the cell addresses.

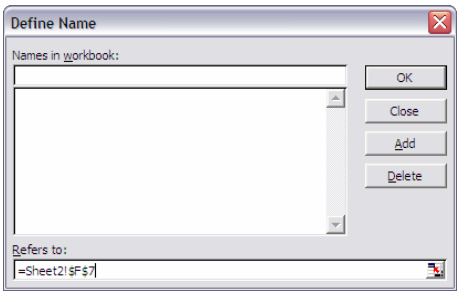
Using names has the following advantages :

- formulas are easier to read and remember than formulas using cell addresses ;
- you can easily move around in the document, by using the GO TO function and clicking on one of the range names. Excel will select this range automatically.

TO DEFINE A NAME

There are two ways to create names :

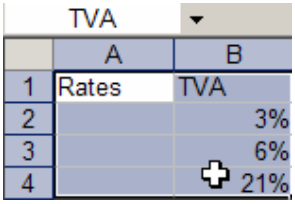
- Either select the range of cells you want to name.
- Go to the menu ***INSERT*** ➔ ***NAME*** ➔ ***DEFINE***.
- You can type a name after checking the cell reference§.
- Click on ***ADD*** or OK.



OR

- Select the range of cells you want to name.
- Go to the formula bar, the cell address appears on the left side.
- Click on the name of cell that appears.
- Type the name and press the ***ENTER*** key.

Example :



USING RANGE NAMES

Formulas

These names will be frequently used in formulas as parameters. Your formulas will be easier to read and understand.

Example :

= AVERAGE(VAT)

- In case you forgot the name of the range, you can look for it by using the box next to the formula bar.

Click the arrow and click the range name

Remark :

- Or press the **F5** key.
- Or use the menu **INSERT → NAME → PASTE**.
- Or press the shortcut key **F3**.

The chosen name appears in the formula bar, you can complete the formula now.

Functions

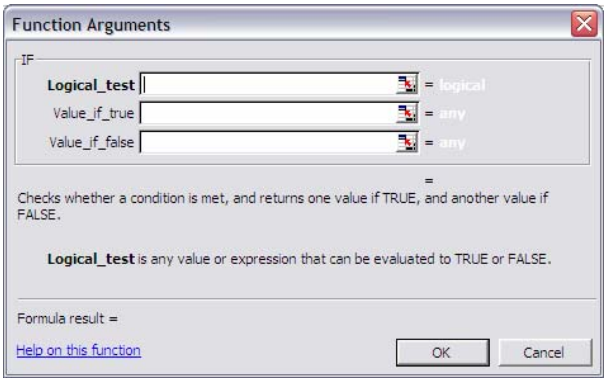
In this chapter, you will learn how to:

- Get familiar with the functions
- Use a few functions

THE IF FUNCTION

Use ***IF*** to conduct conditional tests on values and formulas. This function returns one value if a condition you specify is ***TRUE*** and another value if it is ***FALSE***.

=IF



The function's arguments

This function has 3 arguments

=IF(logical_test ; value if true ; value if false)

- ***LOGICAL TEST*** : any value or expression that can be TRUE or FALSE. This argument can use any comparison calculation operator.
- ***VALUE IF TRUE*** : the value that is returned if the logical_test is TRUE.
- ***VALUE IF FALSE*** : the value that is returned if the logical_test is FALSE.

Example :

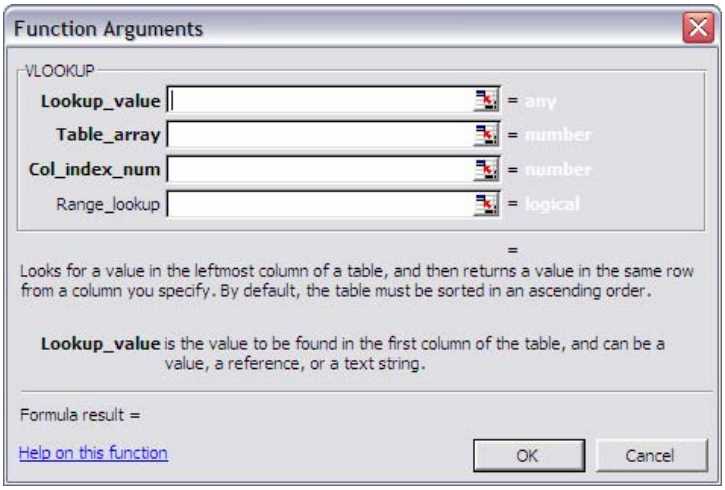
> =IF(A2<=100,"Within budget","Over budget").You have to compare the content of the cell A2. If the number is less than or equal to 100, then the formula displays "Within budget". Otherwise, the function displays "Over budget".
>
> =IF(A2=100,SUM(B5:B15),""). You have to compare the content of the cell A2. If the number is 100, then the range B5:B15 is calculated. Otherwise, empty text ("") is returned.

THE VLOOKUP FUNCTION

The function ***VLOOKUP*** enables you to look for a reference in a vertical column. This research will be executed exactly the same way, as you would do it manually.

Excel and the ***VLOOKUP*** function will do this research automatically for you.

=VLOOKUP



The function's arguments

The function has 4 arguments:

LOOKUP_VALUE : cell reference where the search value is located which is the value that you want to compare.

TABLE_ARRAY : the range containing the entire list.

COL_INDEX_NUM : the column containing the value you want to return. Excel will look for the answer in this column.

RANGE_LOOKUP : is a logical value that specifies whether you want VLOOKUP to find an exact match or an approximate match. If TRUE or omitted, an approximate match is returned. In other words, if an exact match is not found, the next largest value that is less than lookup_value is returned. If FALSE, VLOOKUP will find an exact match. If one is not found, the error value #N/A is returned.

Remark :

To make this formula more readable, you can name the table area, and use this name in the formula.

Example

Table

Qty	Reduction	
1	0%	No reduction for quantities between 1 and 49
50	3%	A reduction of 3% for quantities between 50 and 99
100	11%	A reduction of 11% for quantities between 100 and more

Result

Qty	Price	Reduction
5	200	=VLOOKUP(cell containing the quantity; Range of the reference table; column where Excel has to look for information) =VLOOKUP(A9;table;2) 0%

THE HLOOKUP FUNCTION

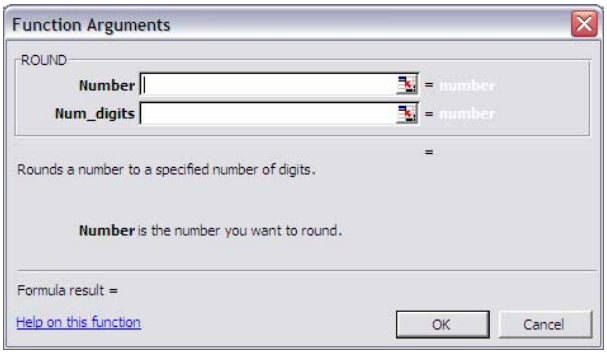
Horizontal table but identical as the VLookup.

Qty	1	50	100
% PRICE<500	0	3	11
% PRICE>500	5	12	18

THE ROUND FUNCTION

Rounds a number to a specified number of digits.

=ROUND

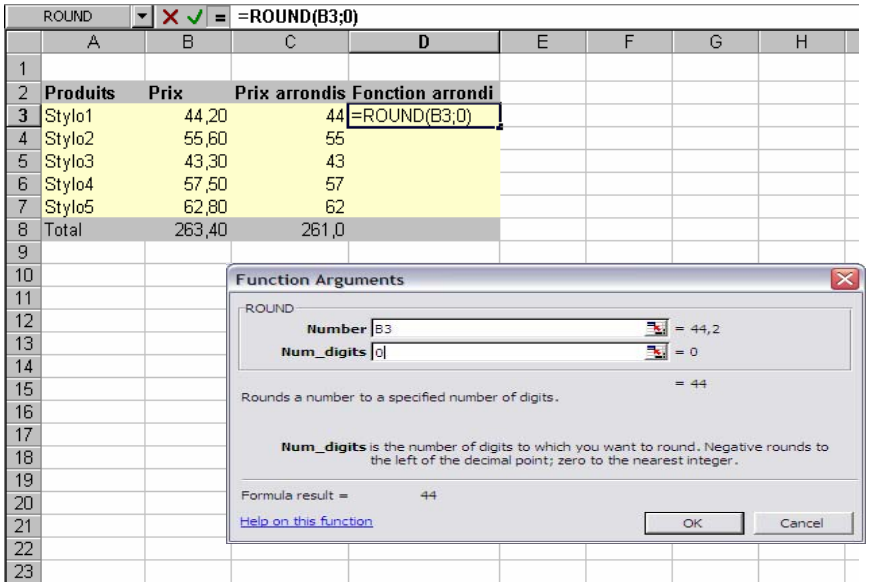


The function's arguments

ROUND (number ; num digits)

- **Number** : the address of the cell you want to round.
- **Num_digits** : specifies the number of digits to which you want to round the number.

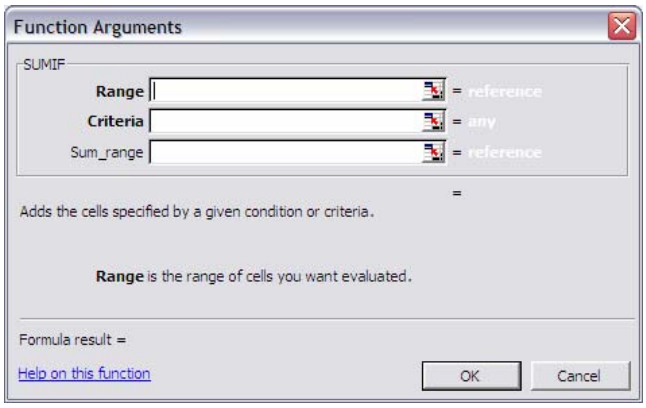
Example :



THE SUMIF FUNCTION

Adds the cells specified by a given criteria.

=SUMIF



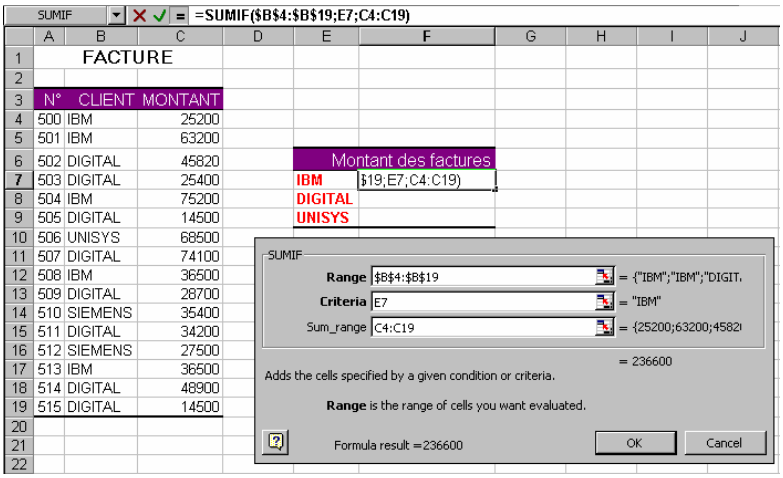
The function's arguments

SUMIF (range ; criteria ; sum range)

The function has 3 arguments.

- ***RANGE*** : the range of cells you want evaluated.
- ***CRITERIA*** : the criteria in the form of a number, expression, or text that defines which cells will be added.
- ***SUM RANGE*** : the actual cells to sum.

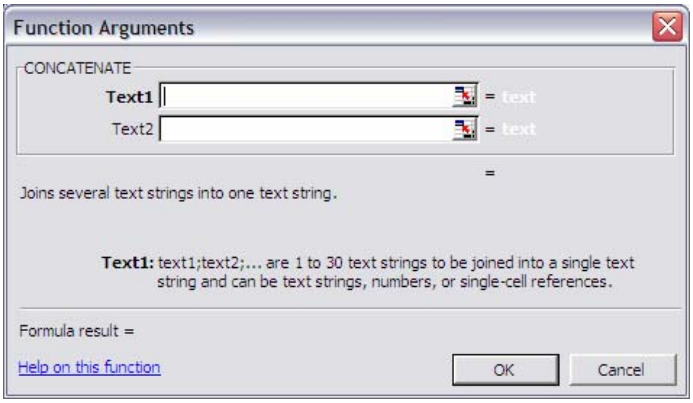
Example :



THE CONCATENATE FUNCTION

Joins several text strings into one text string.

=CONCATENATE

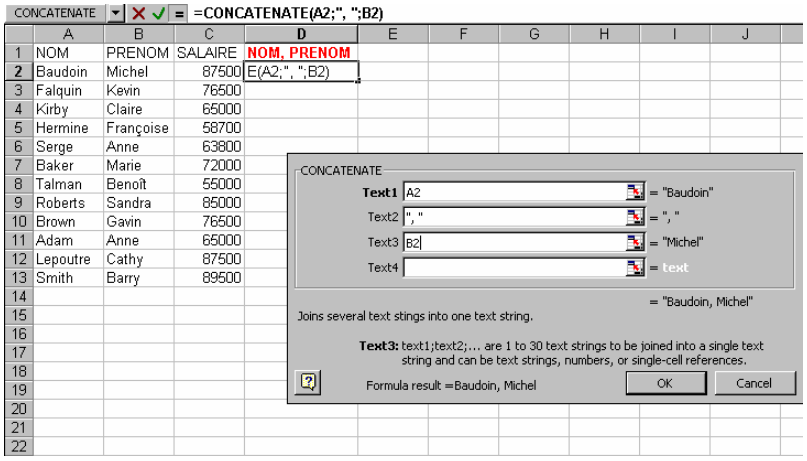


The function's arguments

CONCATENATE (text1 ; text2 ;...)

- **Text1, Text2** :, ... are 1 to 30 text items to be joined into a single text item. The text items can be text strings, numbers, or single-cell references.

Example :

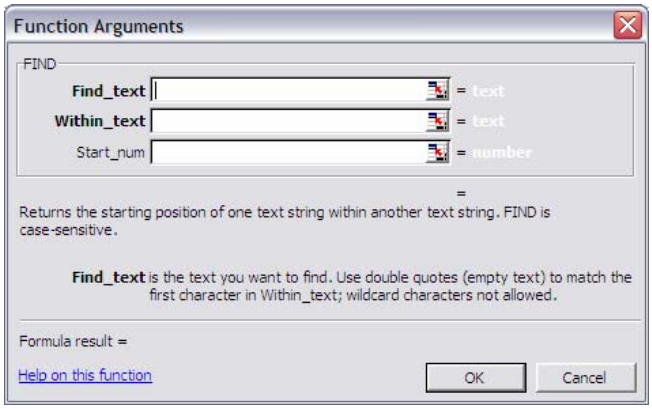


	A	B	C	D
1	NOM	PRENOM	SALAIRE	NOM, PRENOM
2	Baudoin	Michel	87500	E(A2;", ";B2)
3	Falquin	Kevin	76500	
4	Kirby	Claire	65000	
5	Hermine	Françoise	58700	
6	Serge	Anne	63800	
7	Baker	Marie	72000	
8	Talman	Benoît	55000	
9	Roberts	Sandra	85000	
10	Brown	Gavin	76500	
11	Adam	Anne	65000	
12	Lepoutre	Cathy	87500	
13	Smith	Barry	89500	

THE FIND FUNCTION

FIND finds one text string (find_text) within another text string (within_text), and returns the number of the starting position of find_text, from the first character of within_text. You can also use SEARCH to find one text string within another, but unlike SEARCH, FIND is case sensitive and doesn't allow wildcard characters.

=FIND



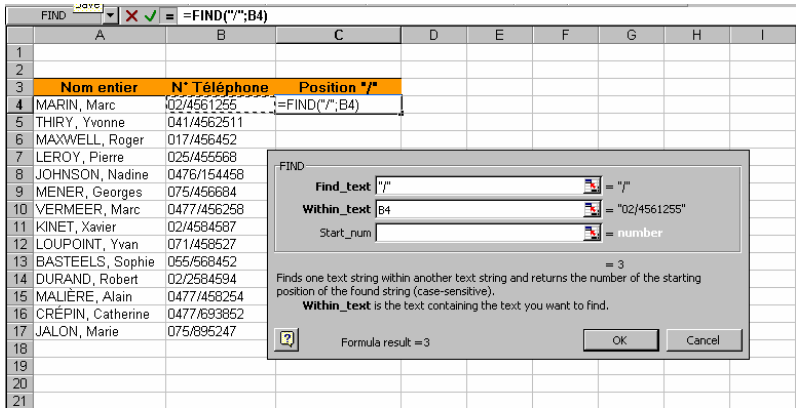
The function's arguments

FIND (find text ; within text ; start num)

The function has 3 arguments.

- ***FIND TEXT*** : the text you want to find.
- ***WITHIN TEXT*** : the text containing the text you want to find.
- ***START NUMBER*** : specifies the character at which to start the search. The first character in within text is character number 1. If you omit ***START NUM***, it is assumed to be 1.

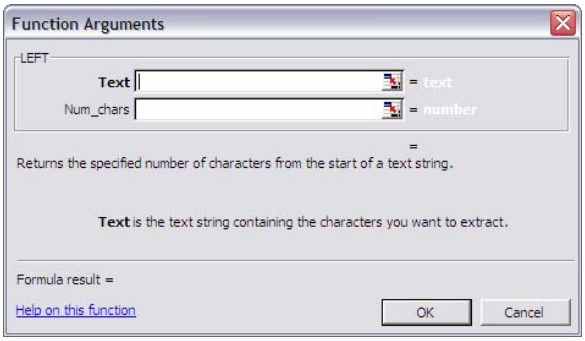
Example :



THE LEFT FUNCTION

LEFT returns the first character or characters in a text string, based on the number of characters you specify.

=LEFT



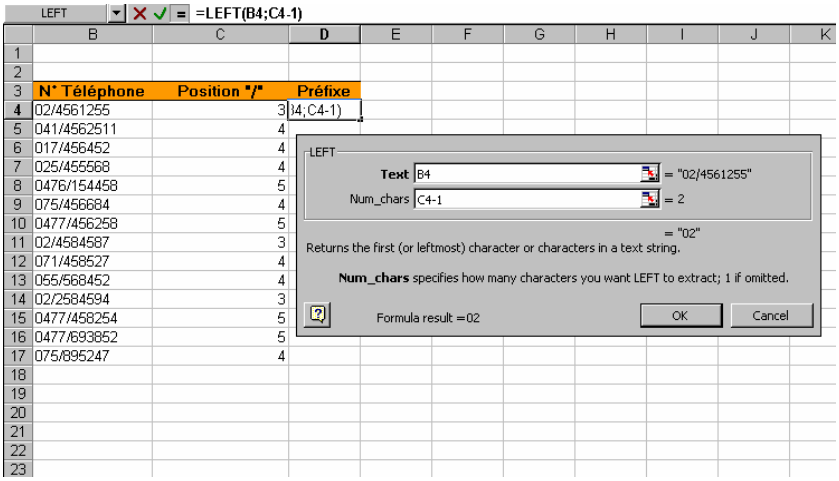
The function's arguments

LEFT (text ; num chars)

The function has 2 arguments.

- **Text** : the text string that contains the characters you want to extract.
- **Num_chars** : specifies the number of characters you want ***LEFT*** to extract.

Example :



Database

In this chapter, you will learn how to:

- Sort the data
- Filter the data
- Add subtotals to a subgroup
- Cross the data contained in the table
- Consolidate the data by using the PivotTables

INTRODUCTION

You can make a database with Excel to select, sort some data...

The possibilities and tools are of course less powerful than those in special database programs like Access...

A database in Excel is a list. A list is the equivalent of a table in a database such as Access.

A list is a tool for organizing, managing and retrieving information. You can create a database on a worksheet.

You can easily store and manipulate complex data or large amounts of data.

A file or a table includes ***RECORDS*** (lines) and ***FIELDS*** (columns).

A record (line) includes all the data for a specified element (client, article,...).

A field (column) shows the components of a data (name, address,...).

CREATE

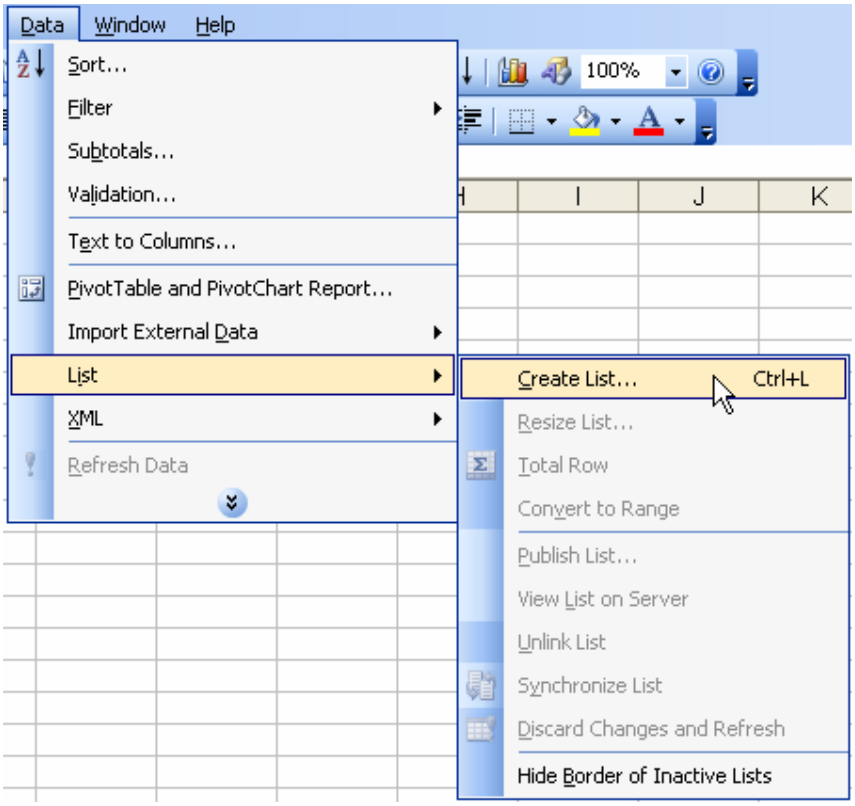
To create a database, you create a common table but you have to enter the various names (columns) of the fields in the first row.

Example :

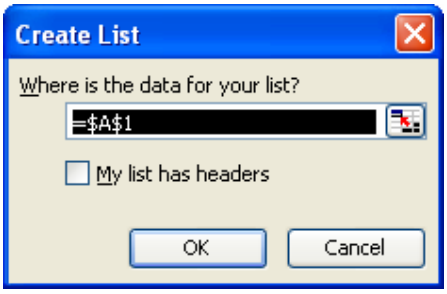
	A	B	C	D	E	F
1	**Product**	**Year**	**Month**	**Sales**	**Salesman**	**City**
2	Razors	1992	Dec	76860	Deltour	Antwerpen
3	Lighters	1993	Sep	29560	Lamotte	Liège
4	Lighters	1992	Oct	81650	Lamotte	Liège
5	Razors	1993	Jan	44480	Lamotte	Antwerpen
6	Razors	1993	Sep	750	Lamotte	Brussels

There is a brand new wizard in Excel 2003 that allows you to create data tables that will have the correct structure, with several integrated tools such as an encoding wizard, a sorting tool, a filtering tool…

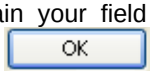
Go to ***DATA → LIST → CREATE LIST***



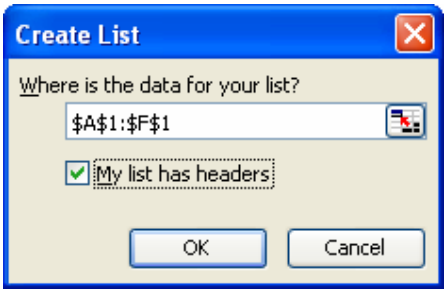
1. The following dialogue box is displayed :



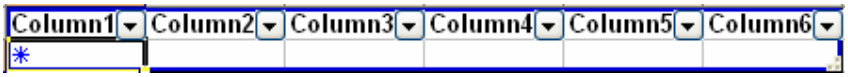
2. Select the cells that should contain your field names and tick the option 

. Then click on 

.



3. This is how your data table will be presented :



4. Type the field names, and begin typing the data :

N°	Nom	Prénom	Date naissance	Etat civil	Voiture
1	Leclercq	Laurent	27/12/1973	C	Subaru

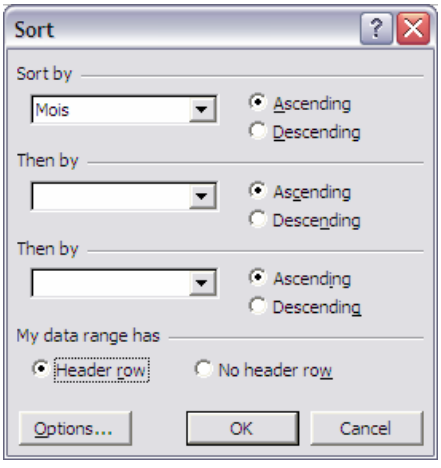
SORT

Once you have entered data in a list you can organize them by columns alphabetically, numerically, or by date, by performing a sort.

The rows of data in the list are rearranged according to the data in the column you choose to sort.

To sort data

- Select the cells you want to sort but do not select the row containing the fields names (columns).
- Choose ***SORT*** in the ***DATA MENU***.
- Create one or more key(s) (select the field in the dropdown list).
- Choose ***ASCENDING*** or ***DESCENDING*** according to the order in which the list will be sorted.



Remark :

If you do not select a cell, Excel will, by default, select all the rows except the first one because it is considered as a header.

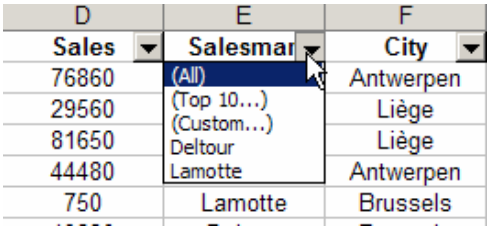
AUTOFILTER

In order to help you to build the database, Excel can select the basic criteria to track the needed records.

You can also define customized criteria.

- Activate one cell of the database.
- Choose the ***FILTER*** option in the ***DATA*** menu.
- Select ***AUTOFILTER***.
- Excel will define basic criteria to select information. Dropdown lists are automatically inserted in the table on each field name (column).

Example :



- Click on the arrow on the right of the field name (column) to scroll the list and select the criteria.
- The result automatically appears.
- To retrieve all the data, you have to select the ***ALL*** criteria in the list.

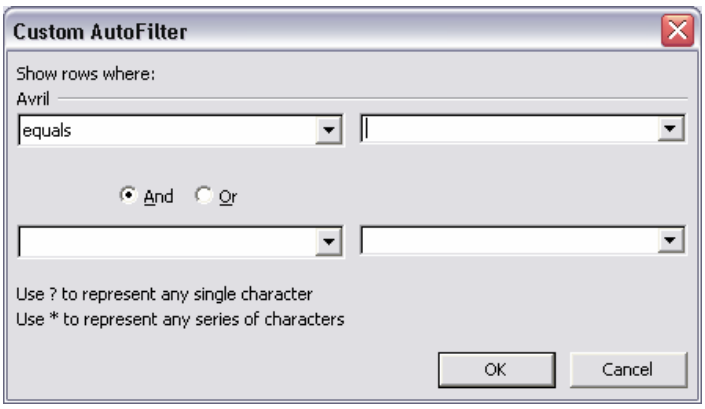
Remark :

Blanks and Nonblanks are displayed in the dropdown list only if at least one cell of the field is blank.

CUSTOM FILTER

With the Autofilter option, Excel creates criteria for you but you can also create your own criteria.

- Activate the Autofilter function and select ***CUSTOM*** in the dropdown list.
- Try to create one or two criteria using the drop-down lists in the box.



Remark :

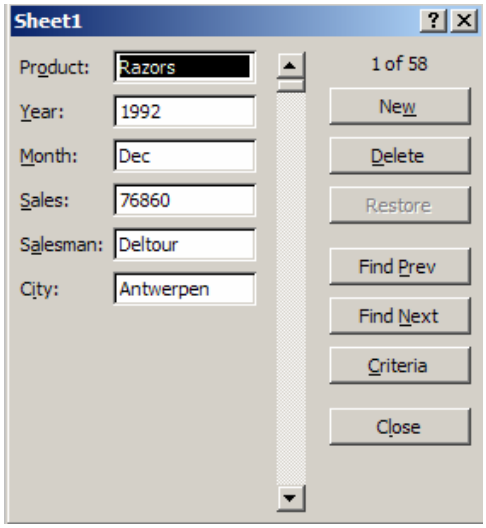
You can use the ? or the * signs in criteria in order to replace one or several characters.

THE FORM

It is possible to view data in a form.

Position the pointer in the database.

Select the ***FORM*** option in the ***DATA MENU***.



In this form it is possible to add a new record, to delete one or to do a search on simple criteria.

Outlining a worksheet

In this chapter, you will learn how to:

- Outline a worksheet
- Clear the outline from the worksheet

You can give your worksheets an outline structure that can include several levels of information.

Outlining makes it easy to create charts, to move through large amounts of data quickly.

Example:

	A	B	C	D	E
1		*Jan*	*Feb*	*Mar*	**Trimestre 1**
2	Ventes				
3	*Voitures*				
4	Compacte	393.333 BEF	368.641 BEF	419.772 BEF	1.181.746 BEF
5	Moyennes	392.954 BEF	395.175 BEF	373.221 BEF	1.161.350 BEF
6	Luxes	106.185 BEF	186.898 BEF	128.092 BEF	421.175 BEF
7	**Total (Voitures)**	892.472 BEF	950.714 BEF	921.085 BEF	2.764.271 BEF

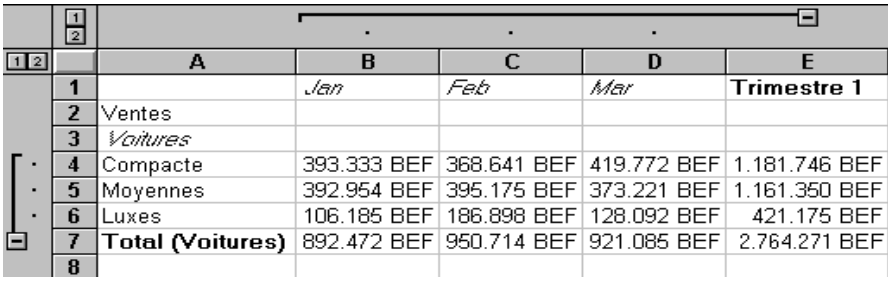
In the table shown above, the columns B, C and D are details as well as the lines 4,5 and 6.

The E column as well as the row 7 contains totals.

CREATING AN OUTLINE

Outlining a worksheet can be done automatically by using the menu.

- If the outline should concern only a part of the sheet, select the group of cells to be organized as an outline.
- Select ***GROUP AND OUTLINE*** in the ***DATA*** menu. A submenu appears.
- Select ***AUTO OUTLINE***.
- Outline symbols are automatically displayed when your worksheet contains two or more levels of outlined data. They are called row level symbols and column level symbols.



	A	B	C	D	E
1		*Jan*	*Feb*	*Mar*	**Trimestre 1**
2	Ventes				
3	*Voitures*				
4	Compacte	393.333 BEF	368.641 BEF	419.772 BEF	1.181.746 BEF
5	Moyennes	392.954 BEF	395.175 BEF	373.221 BEF	1.161.350 BEF
6	Luxes	106.185 BEF	186.898 BEF	128.092 BEF	421.175 BEF
7	**Total (Voitures)**	892.472 BEF	950.714 BEF	921.085 BEF	2.764.271 BEF
8					

Excel looks up the formulas, in this case the autosums that are in the document and creates a level for the details of this sum.

Example:

The cell E4 contains a formula ***=SUM(B4:D4)***.

Excel looked up the details of this formula, which are usually situated above or on the left side of the formula.

The symbols ***MINUS*** make it possible to collapse; hide rows.

The ***PLUS*** symbol allows you to unhide the details of the formula.

	A	E
1		**Trimestre 1**
2	Ventes	
3	*Voitures*	
4	Compacte	1.181.746 BEF
5	Moyennes	1.161.350 BEF
6	Luxes	421.175 BEF
7	**Total (Voitures)**	2.764.271 BEF
8		

By using the numbers ***1, 2..*** you can hide or show some levels.

CLEARING AN OUTLINE FROM A WORKSHEET

You may decide to clear an outline or part of an outline.

When you want to clear only a part of the outline, select the part of the outline.

If you want to clear the whole outline structure from your table :

- Select the ***GROUP AND OUTLINE*** in the ***DATA*** menu.
- Select ***CLEAR OUTLINE***.
- The different outline levels are deleted.

The automatic subtotals

In this chapter, you will learn how to:

- Use the subtotal function
- Remove subtotals

GENERAL

By using the automatic subtotal function, Excel will calculate the values in a list. Excel will automatically calculate subtotals, totals, insert lines and structure your list in the outline view.

You can hide details of this list.

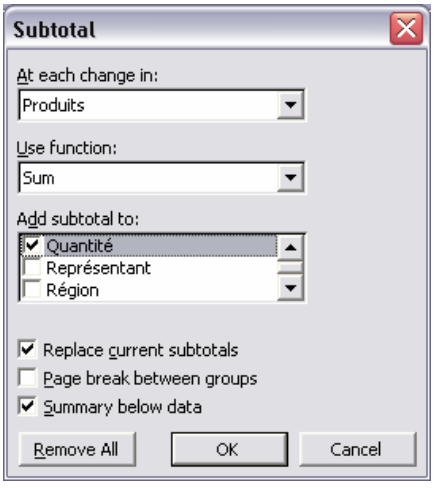
CREATE

When you want to use this function you should be sure that the columns you use have names.

Before inserting subtotals, you have to sort the list by using the field to be subtotaled.

For example we can ask for a sum of sold items for each salesman.

- The active cell should be one of the cells in your list, so Excel knows where he should work on.
- Afterwards select ***SUBTOTALS...*** in the ***DATA*** menu.
- The following box appears on the screen :



At each change in the drop-down list, select the field to be subtotaled.

This means that whenever a change in the list occurs, salesman for instance, you can ask to use a function on these details.

DETAILS

There are different functions available by using the drop-down list ***USE FUNCTION***.

For example, you can use the sum function, the average, the minimum, the maximum. Select one of the 11 functions.

↳ Use the ***USE FUNCTION*** box and this function should be applied on the selected columns in ***ADD SUBTOTAL TO***.

Remark :

If there are already subtotals, mark the box ***REPLACE CURRENT SUBTOTALS*** to delete the previous functions and replace them by the new ones, or unmark the box to add the new functions to the existing one.

At this moment a table will appear in outline view:

	A	B	C	D	E
1	**Représentant**	**Produits**	**Unités**	**Ventes**	**Mois**
2	Davolio	Laitages	1695	20.340 BEF	Octobre
3	Davolio	Laitages	2790	33.480 BEF	Décembre
4	Davolio	Légumes	39	585 BEF	Octobre
5	Davolio	Légumes	1824	27.360 BEF	Juin
6	Davolio	Légumes	3448	51.720 BEF	Septembre
7	**Davolio Total**		9796		
8	Doury	Laitages	1773	21.276 BEF	Mars
9	Doury	Laitages	2730	32.760 BEF	Août
10	Doury	Laitages	3216	38.592 BEF	Septembre
11	Doury	Légumes	744	11.160 BEF	Février
12	Doury	Légumes	1242	18.630 BEF	Septembre
13	Doury	Légumes	2891	43.365 BEF	Novembre
14	Doury	Légumes	3219	48.285 BEF	Février
15	**Doury Total**		15815		
16	**Grand Total**		25611		
17					

It is possible to ask for several subtotals and this with different functions. To carry out this operation you should unlock the option ***REPLACE CURRENT SUBTOTALS***. We can also ask not to see the subtotals under each column but on top of the list by unlocking the option ***SUMMARY BELOW DATA***.

The button ***REMOVE ALL*** will display the table with its original presentation, without any subtotals.

Remark :

For alphanumerical data, the function ***COUNT*** is displayed, when it concerns numerical data the function ***SUM*** appears.

REMOVE

To remove subtotals:

↳ Activate a cell of the list.

- Select ***SUBTOTALS***… in the ***DATA*** menu.
- A dialog box appears.
- Select ***REMOVE ALL***.

PivotTables

In this chapter, you will learn how to:

- Summarize data by using PivotTables
- Add data to a PivotTable or remove data from it
- Show or remove details in a PivotTable
- Update a PivotTable
- Group or ungroup items in a PivotTable
- Create a PivotChart
- Consolidate tables by using PivotTables

DESCRIPTION

The dynamic PivotTables are interactive worksheet tables. They will enable you to summarize large amounts of data. It is up to you to define the layout of the table. You can rotate the rows and columns to give you different views of the source data.

- You can quickly analyze existing data. You can specify the method of calculation you want to perform. By default, Excel will propose the ***SUM*** function and the ***COUNT*** function for alphanumerical data.
- You have the possibility to pivot the table, lines and columns and that way you can create another structure for the table. You can show only the details you want to display.
- You can ask to update your PivotTable.

CREATING A PIVOTTABLE

The table can be based on an existing table. You then need to specify what data you want to include and how you want to organize it.

If you want to transform all the data into a PivotTable:

↳ Activate one cell inside the table.

↳ Excel has a Wizard at your disposal, a tool that will assist you by creating this new table. To call this wizard, select ***PIVOTTABLE AND PIVOTCHART WIZARD*** in the ***DATA*** menu.

↳ The Wizard will display a dialog box for each step of the way.

Step 1: tell Excel what type of source data you want to use.

- An Excel list or database.
- External data source as Access, Fox Pro, Dbase.
- Multiple ranges from different worksheets.
- Another pivottable.

Select ***MICROSOFT EXCEL LIST OR DATABASE***.

Click the Next > button.

Step 2: specify the worksheet range you want to use. Excel automatically detects the list and displays the references of the cell range.

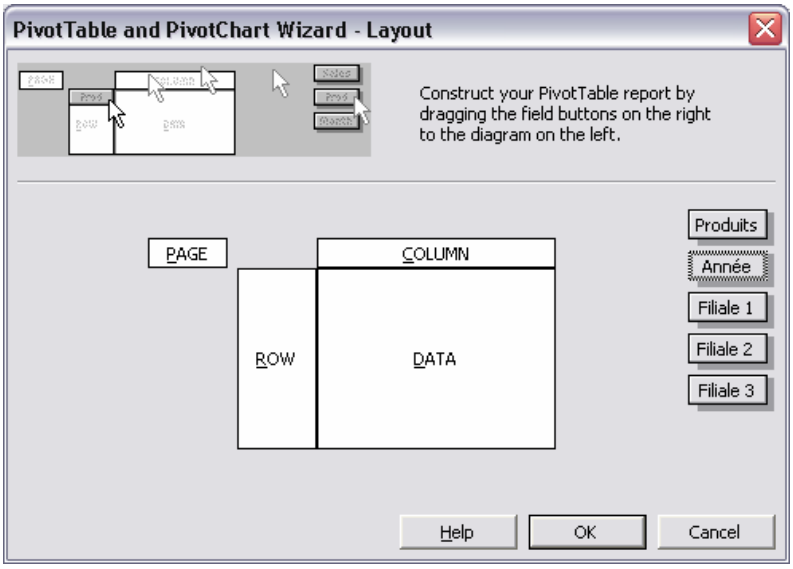
If necessary, modify them by clicking directly in the calculation sheet to select the concerned cells.

Click the Next > button.

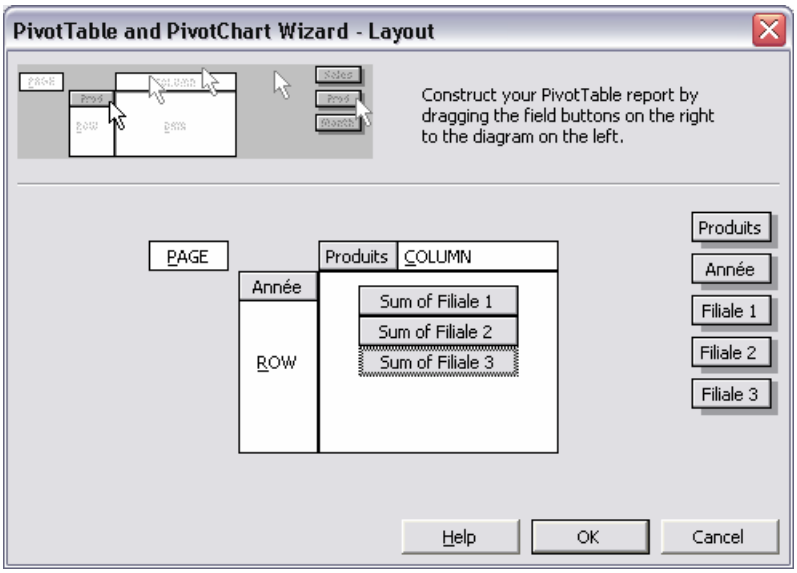
- Step 3: specify where you want the pivottable to appear and create a layout for your pivottable.
- You can place the table on any worksheet or any workbook. You need to type or select the cell reference only of the first cell, the upper-left corner of the range in PivotTable Starting Cell. If you do not specify an area, Excel will automatically insert a sheet to the left of the source sheet.

Defining the parameters of the PivotTable

- Click the Layout... button.
- A dialog box appears.



- On the right side, you will find the field or column labels from the source table, the titles also column names. You will click and drag the field name to the place you want to place them.
- The ***PAGE*** box allows you to filter data from the table.



Click the OK button and then the Finish button.

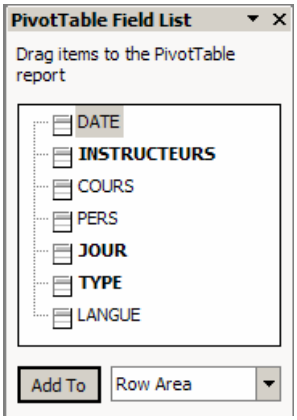
Excel creates and displays the PivotTable.

	A	B	C	D	E
1	Sum of Unités	Produits			
2	Représentant	Laitages	Légumes	Grand Total	
3	Davolio	4485	5311	9796	
4	Doury	7719	8096	15815	
5	Grand Total	12204	13407	25611	
6					
7					

Remark :

When you create a PivotTable, a new toolbar appears.

Button	Effect
PivotTable	PivotTable menu
	Displays a dialog box containing automatic formats for the PivotTable
	Creates a PivotChart
	Hides the detail rows or columns

Button	Effect
	Displays the details rows or columns
	Executes the updating of the PivotTable
	Includes the hidden elements in the subtotals
	Activates/deactivates the original display of data
	Displays the PivotTable Field dialog box. Its contents depend on the active cell.
	Displays/hides the fields list. 

ADDING DATA TO YOU PIVOTTABLE

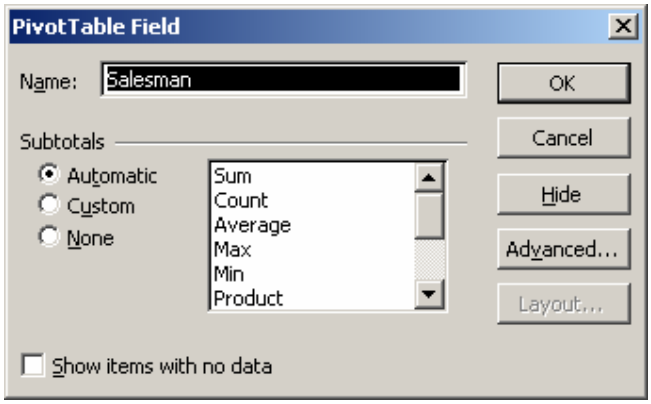
- Click the  icon to display the ***PIVOTTABLE FIELD LIST*** if it is not already displayed.
- Drag the button corresponding to the field toward the PivotTable in the chosen area (column, row, data, page).

DELETING DATA FROM YOUR PIVOTTABLE

- Select one of the fields, click and drag it out of the table with the .
- Once you released the mouse button , the data will have disappeared from your table.

HIDING ELEMENTS ON YOUR PIVOTTABLE

- Double-click the button corresponding to the field to be hidden.
- A dialog box appears on the screen:



Click the Hide button.

SHOWING DETAILS IN A PIVOTTABLE

You can decide to show some detailed items, row cells or column cells.

Select a range of items.

	A	B	C	D	E
1	Sum of Unités	Représentant			
2	Produits	Davolio	Doury	Grand Total	
3	Laitages	2	6524	6526	
4	Légumes	1863	2969	4832	
5	Grand Total	1865	9493	11358	
6					

Then click the tool .

Simply click the item you want to see the details of.

	A	B	C	D	E
1	Sum of Unités		Représentant		
2	Produits	Mois	Davolio	Doury	Grand Total
3	Laitages	Août	0	2730	2730
4		Avril	0	2021	2021
5		Mars	0	1773	1773
6		Octobre	2	0	2
7	Laitages Total		2	6524	6526
8	Légumes		1863	2969	4832
9	Grand Total		1865	9493	11358

A new field appears showing you the requested details.

HIDING DETAILS IN A PIVOTTABLE

To hide detailed rows and columns.

Select the right cell.

Click the Hide Detail button .

The name of the field remains but not the details.

	A	B	C	D	E
1	Sum of Unités		Représentant		
2	Produits	Mois	Davolio	Doury	Grand Total
3	Laitages		2	6524	6526
4	Légumes		1863	2969	4832
5	Grand Total		1865	9493	11358

DISPLAYING THE SOURCE DATA FOR A CELL IN THE PIVOTTABLE

The PivotTable summarizes data.

Sometimes it might be helpful to display where this result is coming from. In this case, we will ask Excel to display these details.

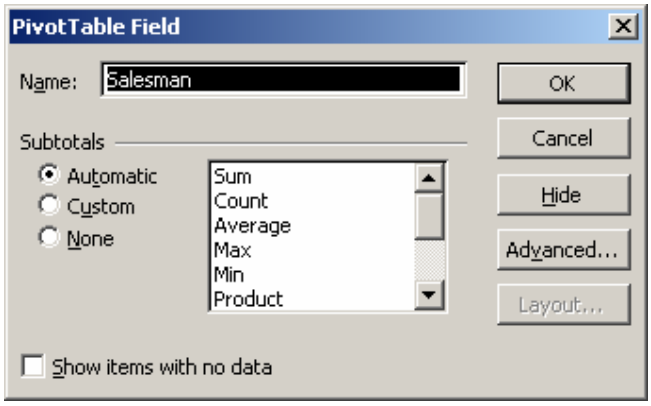
- Select one of these data items and double-click it.
- Automatically a new sheet will be opened, telling you where it comes from and showing you all the details.

	A	B	C	D	E
1	Sum of Unités	Produits			
2	Représentant	Laitages	Légumes	Grand Total	
3	Davolio	4485	5311	9796	
4	Doury	7719	8096	15815	
5	Grand Total	12204	13407	25611	
6					

CHANGING THE SUMMARY FUNCTION FOR A SUBTOTAL

Unless you specify otherwise, Excel automatically adds subtotals and grand total lines to your PivotTable.

- If you do not want Excel to use this function but perhaps another function you can specify it (for example Average).
- To subtotal data another way, double-click the field to display the PivotTable Field dialog box or click the  button.
- The dialog box ***PIVOTTABLE FIELD*** is displayed.



- In the zone ***SUBTOTALS***, select ***CUSTOM*** and select the function you want to use.

REMOVING SUBTOTALS

- To remove subtotals, double-click the field that contains the subtotaled item.
- The dialog box ***PIVOTTABLE FIELD*** appears again on your screen.
- Select the ***NONE*** option under the Category ***SUBTOTALS***.

UPDATING A PIVOTTABLE

If you change data in the source list or table, you can update, or ***REFRESH***, the table without recreating another one.

The update will not be carried out automatically.

To refresh your data:

- Place the cursor in a cell in your table and click the button  on the ***PIVOTTABLE*** toolbar.

GROUPING ITEMS IN A PIVOTTABLE

Excel offers the possibility to group items within PivotTable fields. For example, if you analyze sales data for 15 salespersons from four regional offices, and the regional office information is not provided in your source records, you can group salespersons by regional offices so that the data is summarized.

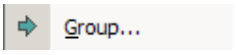
There are three ways to group these items depending on the types of items in your table. In these three cases you have to start from your PivotTable.

Grouping selected items (text) into the category

To do so:

- Select the items you want to group.

	A	B	C	D	E
1	Sum of Unités	Produits			
2	Pays	Laitages	Légumes	Grand Total	
3	Colombie	3468	0	3468	
4	Etats-Unis	2730	2225	4955	
5	France	0	783	783	
6	Italie	2021	1824	3845	
7	Grand Total	8219	4832	13051	
8					

- Then select the ***PIVOTTABLE*** menu.
- Choose ***GROUP AND SHOW DETAIL***.
- Click the 

button.
- Excel adds a group item named Group 1. The text appears at the left side of the group together with the new field name. It is the same field name plus a number added to it, to differenciate them.

	A	B	C	D	E	F
1	Sum of Unités		Produits			
2	Pays2	Pays	Laitages	Légumes	Grand Total	
3	Group1	Colombie	3468	0	3468	
4		Etats-Unis	2730	2225	4955	
5	France	France	0	783	783	
6	Italie	Italie	2021	1824	3845	
7	Grand Total		8219	4832	13051	
8						

You can rename these Group 1 and Pays 2 groups to have an adequate presentation.

	A	B	C	D	E	F
1	Sum of Unités		Produits			
2	Continent	Pays	Laitages	Légumes	Grand Total	
3	Amérique	Colombie	3468	0	3468	
4		Etats-Unis	2730	2225	4955	
5	France	France	0	783	783	
6	Italie	Italie	2021	1824	3845	
7	Grand Total		8219	4832	13051	
8						

Automatically grouping numeric items into ranges

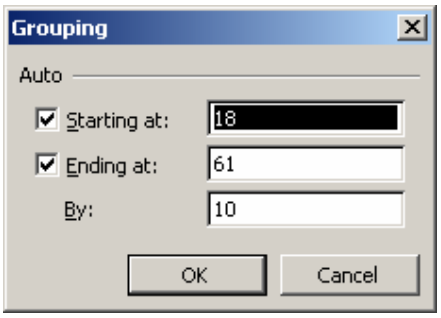
When you want to group numerical data into ranges Excel offers you the possibility to do this automatically.

To do so:

You have to start from your PivotTable and select one cell from a range that contains numeric data.

	A	B	C	D	E
1	Sum of Ventes	Produits			
2	Référence	Laitages	Légumes	Grand Total	
3	100	0	585	585	
4	101	0	11160	11160	
5	105	0	14745	14745	
6	122	24252	0	24252	
7	128	21276	0	21276	
8	200	0	18630	18630	
9	206	32760	0	32760	
10	244	0	27360	27360	
11	259	20340	0	20340	
12	Grand Total	98628	72480	171108	
13					

The menus and buttons you can use are the same as for the first group, only this time the dialog box **Grouping** appears on your screen.



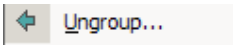
Excel asks to specify the starting value and the ending value, already shows you the smallest and greatest number in the list, and also the **by** for the numbers you want to group:

	A	B	C	D	E
1	Sum of Ventes	Produits			
2	Référence	Laitages	Légumes	Grand Total	
3	100-150	45528	26490	72018	
4	200-250	32760	45990	78750	
5	250-300	20340	0	20340	
6	Grand Total	98628	72480	171108	
7					

UNGROUPING ITEMS IN A PIVOTTABLE.

- Select the items you want to ungroup.

	A	B	C	D	E
1	Sum of Ventes	Produits			
2	Référence	Laitages	Légumes	Grand Total	
3	100-150	45528	26490	72018	
4	200-250	32760	45990	78750	
5	250-300	20340	0	20340	
6	Grand Total	98628	72480	171108	
7					

- Then click on the ***PIVOTTABLE*** menu.
- Choose ***GROUP AND SHOW DETAIL***.
- Click the 

button.

CREATING A PIVOTCHART BASED ON A PIVOTTABLE

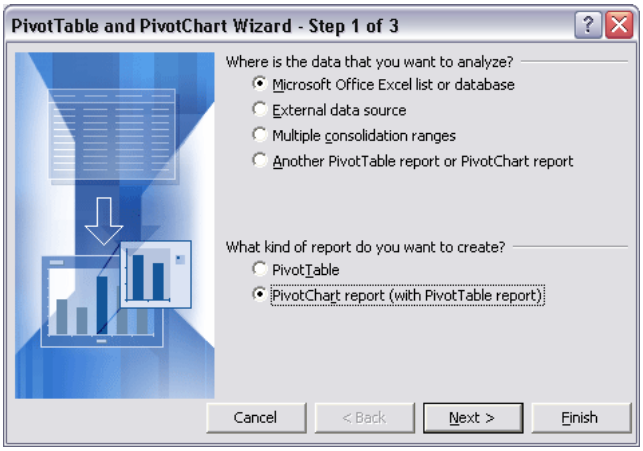
A PivotChart

- Enables you to benefit from the increased flexibility of the PivotTables;
- Provides an excellent visual representation of your data. This will make them easy to manipulate when making a more advanced analysis.

To create a PivotChart, Excel proposes the same assistant as the one mentioned before when creating the PivotTable.

The difference between the two of them can be made in the first step.

These are your choices:



The next steps are identical.

Remark :

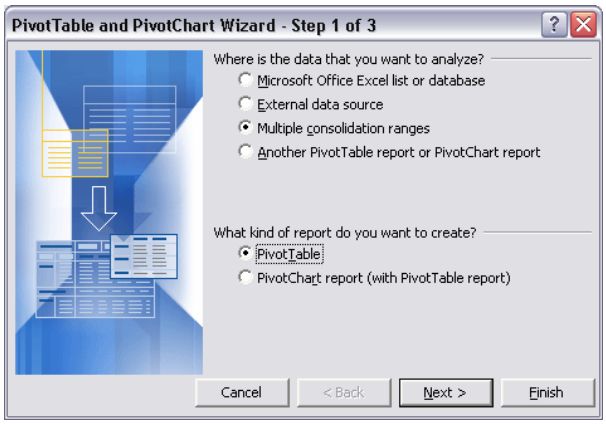
As the PivotTables and the PivotCharts are linked, both are updated when you modify or move some fields.

CONSOLIDATING TABLES BY USING PIVOTTABLES

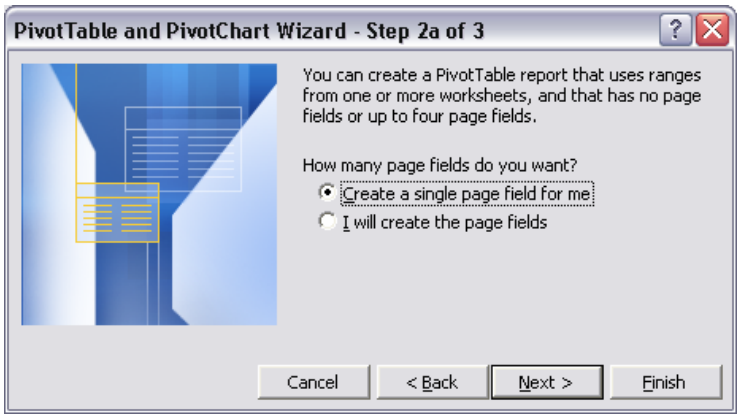
Microsoft Excel tables that use similar categories can easily be analyzed or consolidated by using PivotTables.

When you consolidate data coming from various sources, the tables have to be organized in a similar way in rows and columns. Don't include the totals of the rows and columns when you define the data that will be consolidated.

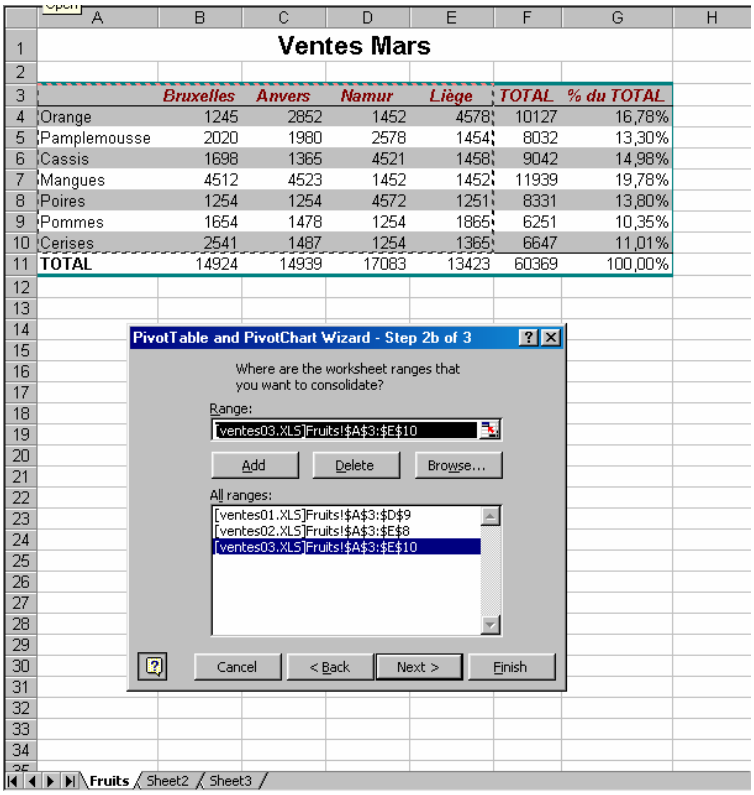
- First open all the files you want to consolidate.
- Then choose the command ***DATA*** ➔ ***PIVOTTABLE REPORT***.



- Select the option ***MULTIPLE CONSOLIDATION RANGES***.
- Then choose ***CREATE A SINGLE PAGE FIELD FOR ME*** for the program to define a ***PAGE*** field for each table used in the consolidation.



- Then define the various ranges to consolidate and click the Add button to add the ranges of the other worksheets.



- Indicate where you want to insert the consolidated table.

Modify the table as any other PivotTable.

Page1	(All)				
Sum of Value	Column				
Row	Anvers	Bruxelles	Liège	Namur	Grand Total
Cassis	4095	5094	4374	9042	22605
Cerises	4219	6340	4095	2508	17162
Citron	1985	1785	1852		5622
Mangues	4523	4512	1452	1452	11939
Orange	8556	5016	11277	2904	27753
Pamplemousse	5940	6060	4688	5156	21844
Poires	1254	1254	1251	4572	8331
Pommes	4434	4962	5595	2508	17499
Grand Total	35006	35023	34584	28142	132755

Goal Seeking

In this chapter, you will learn how to:

- The Goal Seek command

GENERAL

You often know the result you want to reach, but you don't know the values you need to reach that result. In order to do so, you can use the goal seeking.

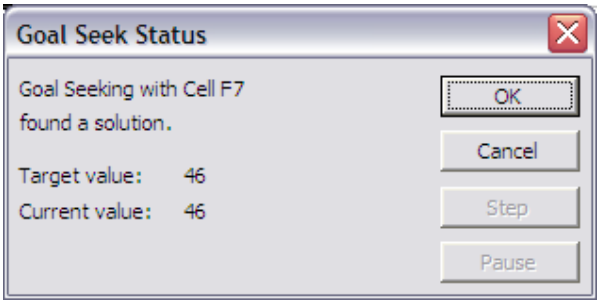
FINDING A VALUE

To obtain the values,

- Choose the menu ***TOOLS.***
- Select ***GOAL SEEK.***

- Next to ***SET CELL*** : specify the reference or name of the cell containing the formula.
- Next to ***TO VALUE*** **:** specify the value you want to obtain, the value which should result from the formula.
- Next to ***BY CHANGING CELL*** : specify the reference of the cell containing the variable that you want to modify in order to reach the goal. A changing cell can not contain any formula.

- Once you clicked the OK button, Excel will show you the ***GOAL SEEK STATUS*** dialog box.



- To stop the operation, click the ***PAUSE*** button.
- To continue step by step, use the ***STEP*** button.
- Click the OK button to accept the result.
- Select ***CANCEL*** to restore the original values.

Solver

In this chapter, you will learn how to:

- Use the Solver to answer some specific questions

GENERAL

The solver is a powerful optimization and resource allocation tool.

By using the solver you can answer questions like: "How can I live within the budget?, What promotion will maximise profit?,...

Excel will try to find the best answers.

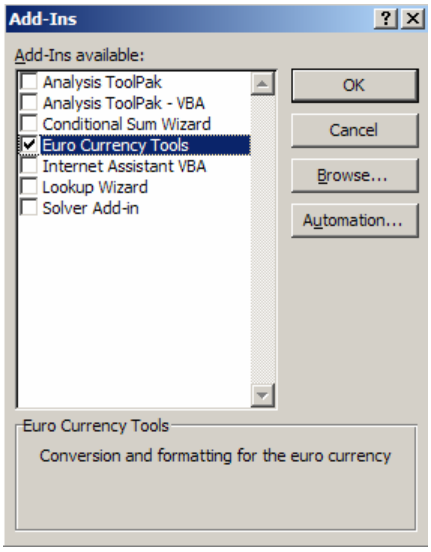
Use the Solver when you need to find the optimum value for a particular cell by adjusting the values of several cells, even with some limitations.

INSTALLING THE SOLVER

If the ***SOLVER*** is not in the ***TOOLS*** menu.

↳ Select ***ADD-INS***...in the ***TOOLS*** menu.

↳ A dialog box appears.



↳ Mark ***SOLVER ADD-IN***.

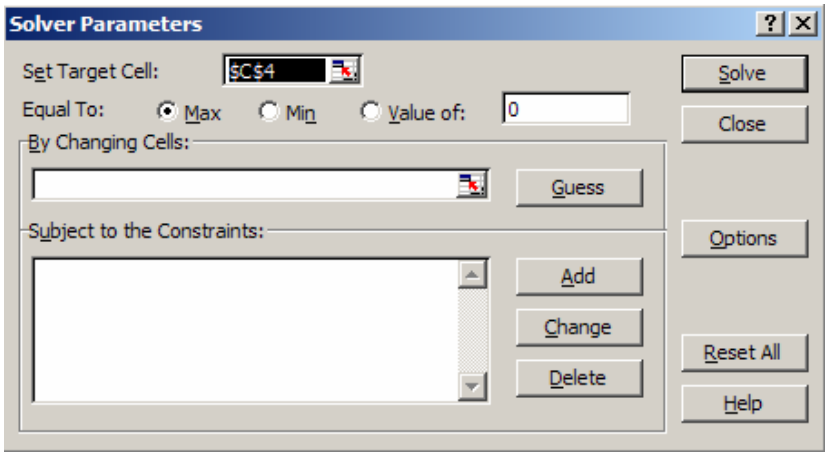
↳ Confirm with OK.

The option ***SOLVER*** is now accessible with the ***TOOLS*** menu.

FINDING A VALUE

To use the ***SOLVER*** :

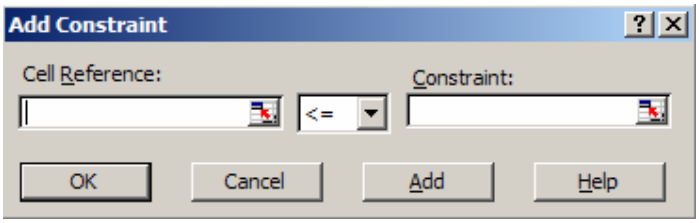
- Choose the menu ***TOOLS***.
- Select ***SOLVER***.
- A dialog box appears.



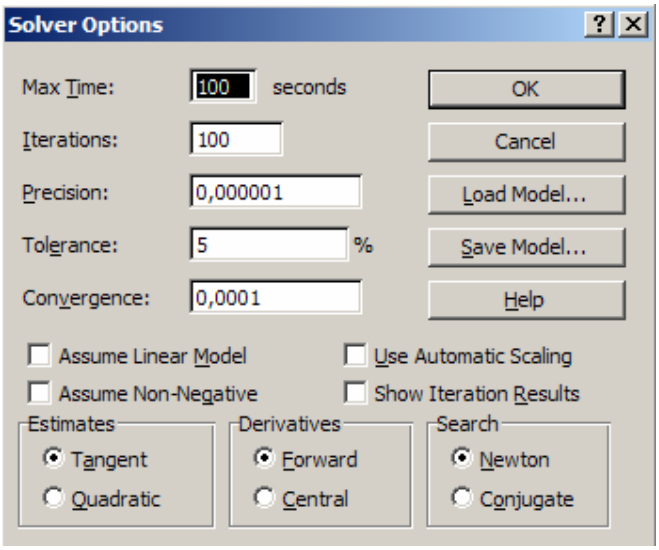
- ***SET TARGET CELL*** (also called objective), is the cell that you want to minimise, maximise, or set to a certain value.
- In the ***BY CHANGING CELLS*** (also called decision variables) box, you can specify these cells which will affect the value of the target cells. Excel accepts up to 200 variables.
- ***SUBJECT TO THE CONSTRAINTS*** is a cell value that must fall within certain limits or target values. Constraints may be applied to the target cell and the changing cells. Excel accepts a maximum of 100 constraints.

Using the different buttons :

- When you click the ***GUESS*** button, Excel will give you a proposition of which cells to modify.
- The ***ADD*** button allows you to add a list of constraints by using this dialog box:



- The ***CHANGE*** button gives you this dialog box ***CHANGE CONSTRAINT*** and allows you to modify some constraints.
- The ***OPTIONS*** button will display the ***SOLVER OPTIONS*** dialog box.

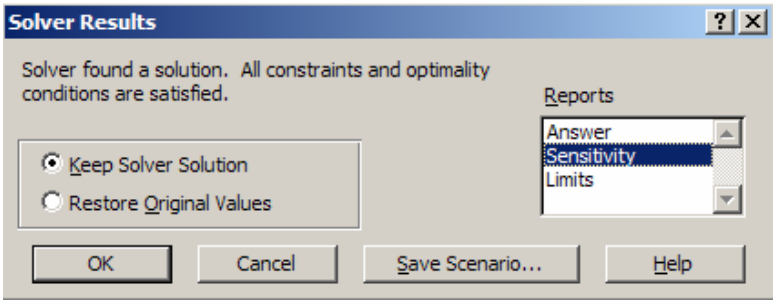


- In this box you can modify the number of ***ITERATIONS*** and the ***MAX TIME*** used by Solver.
- The ***PRECISION*** field controls the answers. The smaller the number is (between 0 and 1) the more precise the result will be. Of course it will take more time for Excel to find a solution.
- The ***TOLERANCE*** **field** also allows to control the time, but the smaller this number is, the more time it will take to calculate.
- By selecting the ***ASSUME LINEAR MODEL*** possibility: it will speed up the procedure. The solver will not recalculate each time, i twill use another calculating method called Simplex.
- ***SHOW ITERATION RESULTS*** : shows you the result of the calculation after each iteration.
- ***USE AUTOMATIC SCALING*** : you should select this option when there is a large difference between the values (for example hundreds and percentages).
- The other Solver option helps you modify the calculation methods in Excel.
- The buttons ***SAVE MODEL*** and ***LOAD MODEL*** give you the possibility to keep the result Excel found, or to save the solution as a named scenario, so you can perform several simulations without re-entering the parameters.

To start the solver:

Click the ***SOLVE*** button.

The ***SOLVER RESULTS*** dialog box will appear on the screen.



You can choose among three types of reports, each of them being displayed on a separate sheet :

This report gives you the following information :

- The ***TARGET CELL*** with its original and final value.
- The ***ORIGINAL AND FINAL VALUE*** of the changing cells.
- Information about ***CONSTRAINTS*** appear in the Status and slack columns. These columns tell you how well each constraint was met.

In the Status column, one of the following values is displayed:

- ***§ BINDING*** means that the final value of the cell is equal to the value of the constraint. Both values are the same.
- ***§ NOT BINDING*** means the constraint is met but does not equal the constraint value.

The sensitivity report

This report contains information about how sensitive a solution is to changes in the formulas used in this problem.

- ***REDUCED GRADIENT*** : measures the increase in the target cell per unit increase in the changing cells.
- ***LAGRANGE MULTIPLIER*** : measures the increase in the target cell per unit increase of the corresponding constraint.

The limits report

- ***LOWER LIMIT*** : the smallest value that a changing cell can take while all the other changing cells are fixed and still satisfying the constraints.
- ***UPPER LIMIT*** : the greatest value that a changing cell can take while all the other changing cells are fixed and still satisfying the constraints.

Being more productive by using templates

In this chapter, you will learn how to:

- Create and use a template

A template is a file containing some defined characteristics that will be shared with other files created from that template.

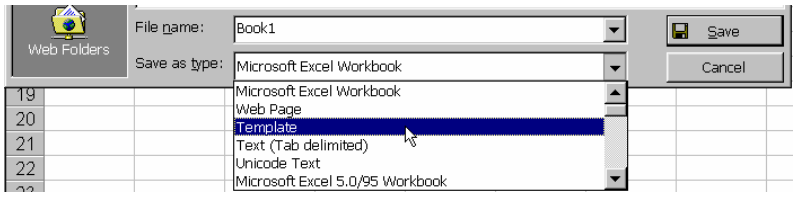
The defined settings in the templates are :

- cell contents
- cell formatting
- amount of sheets per workbook
- styles (available formatting)
- macros

SAVING A TEMPLATE

At first a template is a file like any other. Upon saving the file you will need to specify that it should be saved as a template.

5. Open the file you wish to save as a template or create your future template from a blank new file.
6. Go in the menu ***FILE*** ➔ ***SAVE AS.***
7. In this ***SAVE AS*** dialogue box, save your file as a template.



8. Excel chooses where to save your template.
9. Click on ***SAVE***.

SHARING SOME DEFINED CHARACTERISTICS IN THE DEFAULT FILE

Excel does not contain something similar to "normal.dot" from Word.

You actually need to create this default file yourself.

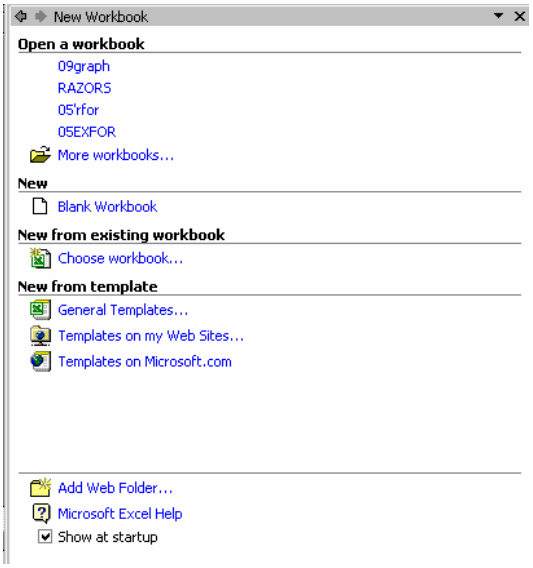
This file has to be :

- named "book.xlt" (class.xlt in FR, map.xlt in NL) ;
- saved in the following folder c:\program files\msoffice\excel\xlstart.

USING A TEMPLATE TO CREATE A NEW FILE

Templates are used to create new documents. Instead of creating a new document generated from the default file proposed upon opening Excel, you may choose a different template to work with.

1. Click on ***FILE*** ➔ ***NEW***. This dialogue box is displayed :



2. Choose a template and click on OK.
3. Excel creates a new document based on the template you chose.

Automating the formatting of cells

In this chapter, you will learn how to :

- Automate formatting rules by using styles
- Save formatting and apply it to other cells in other files
- Modify an existing style

Example :

In a workbook, you have defined three different formatting. Some cells need to be expressed in euros, some others need to be protected and must have a gray shading and others need to have a blue and bold font. Make it simpler by creating three styles that will be easily applied to cells.

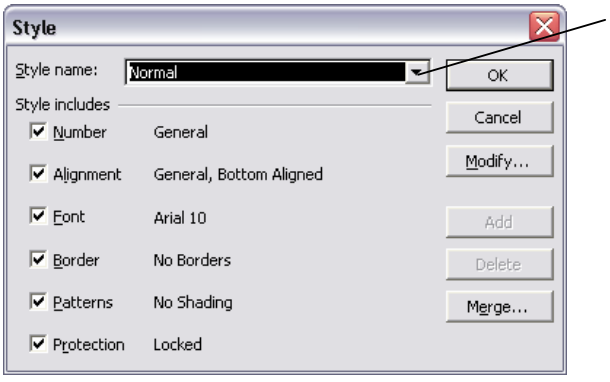
APPLYING AN EXISTING STYLE

1. Select the cells you want to format.
2. First select the command ***FORMAT ➔ STYLES.***
3. The following dialog box is displayed:

4. Choose the style that needs to be applied and click on OK.

Remark:

A style is only defined for one file. If you wish to make it available in several workbooks, you have to create it in a template



Click on the drop-down list to view the styles list. For each style, a description appears in the bottom of the dialogue box.

CREATING A NEW STYLE

Creating a new style is easy from a worksheet.

1. Select the cells that need to be formatted. Apply all desired formatting characteristics using ***FORMAT CELLS*** menu or toolbar.
2. Click on ***FORMAT ➔ STYLES.***
3. In ***STYLE NAME***, type the name of the new style you are creating.

   Example :

   Create a style called 

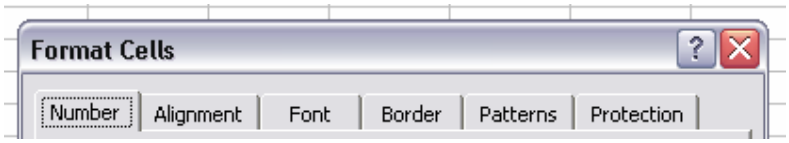
   with blue font.
4. Click on 

. The new style has just been created.

MODIFYING THE FORMATTING CHARACTERISTICS OF A STYLE

1. Select the cells that need to be formatted.
2. Click on ***FORMAT ➔ STYLES.***
3. Click on 

. The following dialogue box opens : ***FORMAT CELLS.***



4. Define your formatting characteristics.
5. Click on 

to apply.

Automating operations by recording macros

In this chapter, you will learn how to:

- Automate repetitive tasks
- Record a macro

Long and routine tasks can be recorded with a macro.

A macro is a recorded procedure that will enable you to repeat the whole procedure later on simply by activating one single command.

To record a macro, you have to follow two steps :

- record the procedure which will be repeated later on
- assign a key combination, a button or an option in a menu to refer to the macro you created

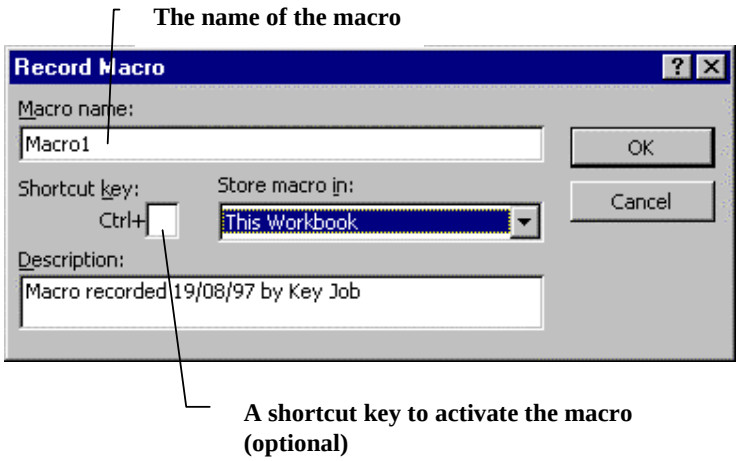
Example

To illustrate the recording procedure of a macro, lets take the following example …

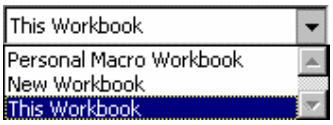
RECORDING A MACRO

- Start the macro recorder
- Carry out the different operations you want to record in the macro
- Stop the macro recorder

↳ Click the Tools-Macro-Record New Macro command, which leads you to the following dialog box, where you have to specify:



↳ In ***STORE MACRO IN***, specify the files where the macros will be available.



- Confirm your intention to record a macro by clicking the OK button.
- Excel will take you to the worksheet and display the following toolbar.

- Determine if you want to use relative references by clicking the button on the above toolbar.
- Carry out all the operations you want to record in the macro.
- Once you are finished, click the button.
- Your macro has been recorded.

ASSIGNING A COMMAND TO THE MACRO

Once you have recorded your macro, you still have to assign a command to your macro (except if you already have assigned a shortcut key to your macro).

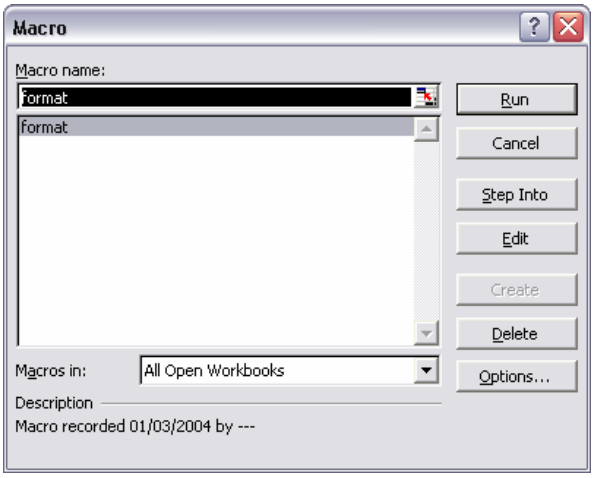
You can activate your macro by using

- shortcut keys
- buttons (on the worksheet or on a toolbar)
- menus

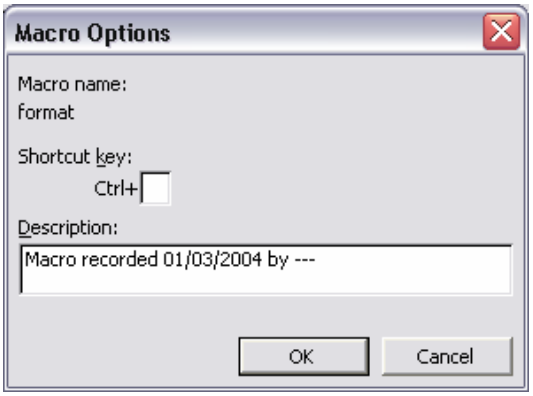
Assigning a shortcut key to the macro

It is possible to assign a shortcut to the macro just before recording it. Once the macro has been recorded :

- Click the command Tools-Macros-Macros which will take you to the Macro dialog box.



Click the Options... button which will lead you to the following dialog box:



Mention the letter or the combination of keys you want to use to refer to your macro and confirm by clicking the OK button.

From now on, you will be able to activate the macro by pressing the keys you specified.

Assigning a toolbar button to the macro

There are two steps to follow if you want to assign a button to your macro :

- Creating a new toolbar
- Assigning an existing button (perhaps modified) or creating a new button

Creating a new toolbar

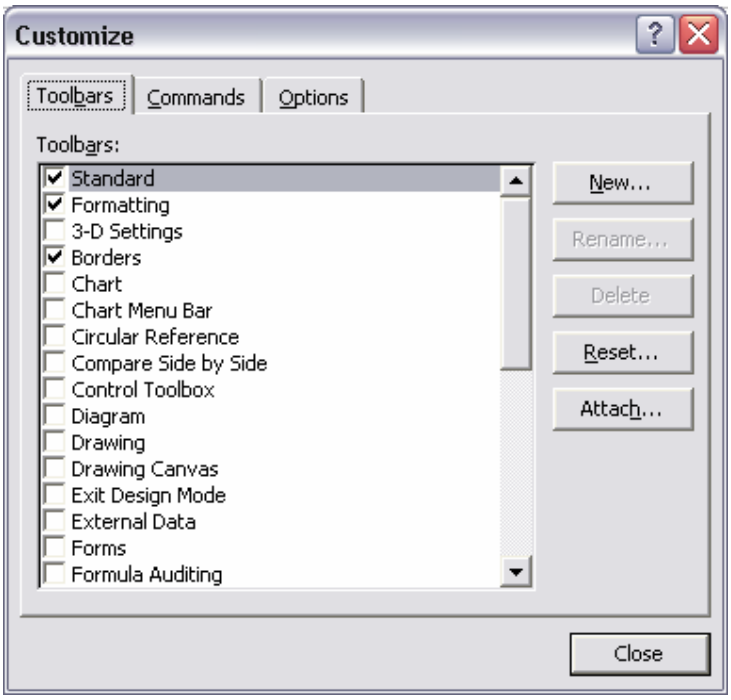
Unlike Word, Excel doesn't record the toolbar in the template but in another file named c:\win(nt4)\[username]8.xlb.

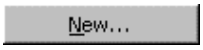
Position your mouse on the toolbar and click with the right mouse button.

The « toolbar » menu is displayed. Click the Customize command.

The customize dialog box is displayed.

Select the Toolbar tab.



Click the  button.

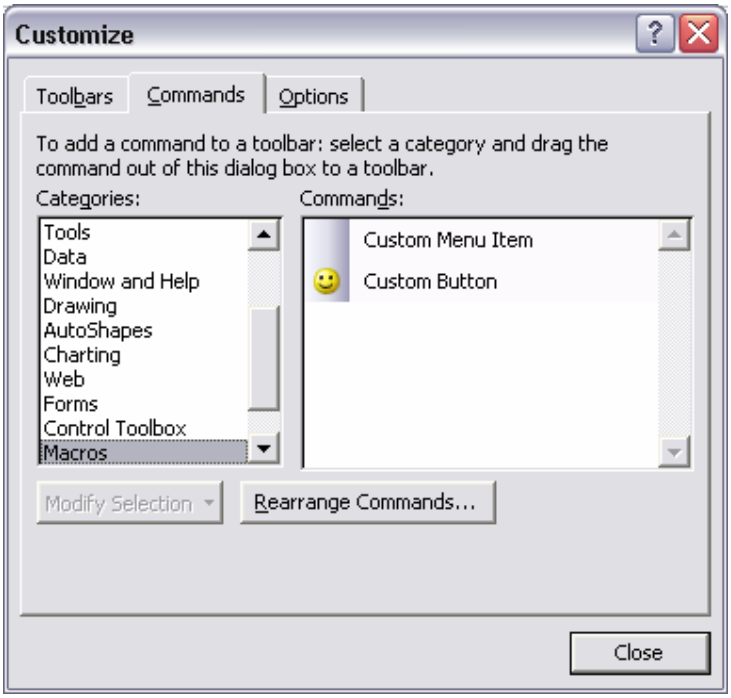
It will display the New Toolbar dialog box.

Click the  button to confirm.

The new toolbar you just made will be displayed.

Assigning a button to your macro on this new toolbar

- Right-click the toolbars.
- The Toolbars menu is displayed. Click the ***CUSTOMIZE COMMAND.***
- The Customize dialog box appears on screen.
- Select the Command tab.



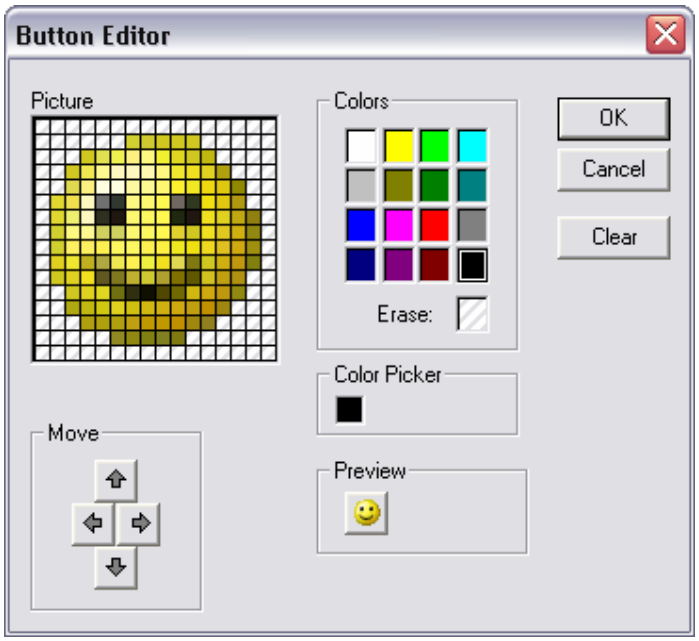
- Click the Macros category. It will display the following choices: Custom Menu Item or Custom Button.
- Click the Custom Button and hold down the mouse button while dragging the button to the toolbar.

Modifying the button

- Position your mouse on the button and click with the right mouse button.
- Choose the Change Button and select another button in the list of choices.

or

- Click the Edit Button which will display a small program for editing the buttons.



- Modify the colors and/or the shape of the drawing and click the OK button to confirm.

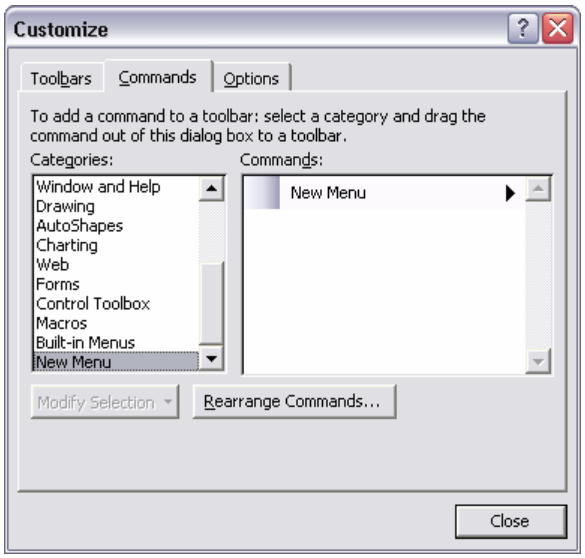
Assigning the button to the macro

Stay in the **Customize-dialog box.**

- Position your mouse pointer on the button and click with the right mouse button.
- Choose the command Assign Macro and Excel will display the dialog box containing the lists with the macros to assign.

Creating a menu and "menu commands" for the macros

- Right-click the toolbars.
- This will display the « toolbars » menu. Click the ***CUSTOMIZE COMMAND.***
- The Customize dialog box will appear on screen.
- Choose the Command tab.
- Choose the ***NEW MENU*** category which will display the following window :



↳ Select the 

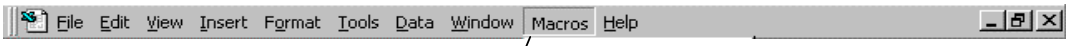
button and drag it in the menu bar.

↳ Clicking with the right mouse button will display a contextual menu, enabling you to modify the name of the menu.

RUNNING THE MACRO

According to the means you chose to activate the macro with, you will either run it with:

- The new menu you made



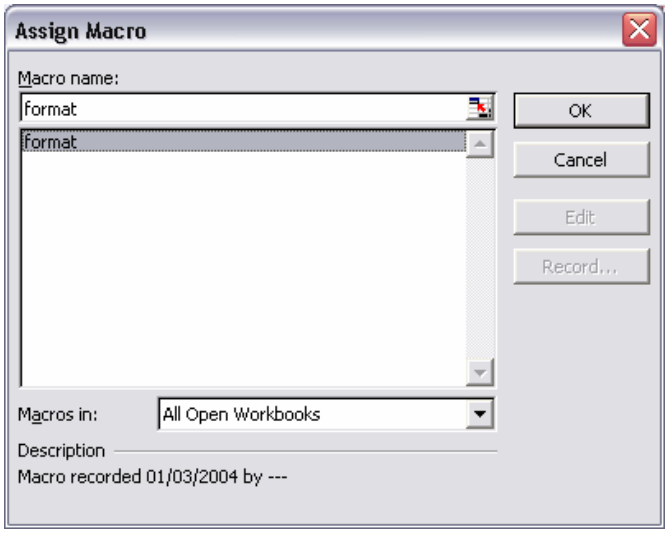
The new « Macro » menu you created

- A new button in the toolbar

- A shortcut key

If you haven't assigned a means to activate your macro yet:

↳ Click the ***TOOLS-OUTILS*** ➔ ***MACRO- MACROS*** command which displays the following dialog box:



Click the Run button to run the macro.