Tutorial

Version 7 for Microsoft Windows®

First Edition, Lund, Sweden, March 2005

Authored by QlikTech International AB /KHN/JNN/MSJ

CONTENT

INTRODUCTION

WORKING WITH QLIKVIEW

CREATING A DOCUMENT

ADVANCED FEATURES

INTRODUCTION

- **What is QlikView?**
- **About the Tutorial**
- **Basics**

What is QlikView?

QlikView is a program that makes it possible to retrieve and assimilate data from different sources. Once loaded into the program, the data is presented in a way that is easy to understand and work with.

To make selections in QlikView, you don't need any previous knowledge of databases or search routines: you simply click on the item of which you want to know more. The clicked item turns green, and the program immediately presents all the items associated with the selected one.

Graphics and tables can be created to get an even better overview of data. Any graphic or table can be printed or exported to other programs.

Flavors of QlikView

QlikView comes in three flavours called QlikView Enterprise, QlikView Profesisonal and QlikView Analyzer. If you are running QlikView Enterprise all parts of this tutorial will be relevant for you. If you are running QlikView Professional only the first part "Working with QlikView" is relevant. For those running QlikView Analyzer only the very first lesson may be relevant.

About the Tutorial

The *Tutorial* consists of three parts: *Working with QlikView*, *Creating a QlikView document*, and *Advanced Features*. All the parts contain lessons that take you step by step through various features.

To go through the steps in this *Tutorial*, you need the folder *TutorialFiles*, which has been installed together with the program. If you have not yet installed QlikView, please follow the installation instructions in the *Reference Manual*. If you have installed QlikView without the tutorial files, run the installation program once more, but this time only install the tutorial files.

Before you start working with the lessons, read the two following sections of this introduction, *Conventions* and *Basic*. *Conventions* informs you about the terms used in the *Tutorial*, whereas *Basics* familiarizes you with basic actions such as starting QlikView, opening, saving and closing an application, and using the help program.

The first part, *Working with QlikView*, shows you how to work with an existing application. This part introduces the components of a QlikView application and demonstrates the use and creation of these components. In addition, *Working with QlikView* thoroughly describes how to search in QlikView. If you do not want to load your own data, this part is all you need to review.

The second part, *Creating a QlikView application*, presents the procedure of loading data into QlikView. You will learn how to load data from different sources, how QlikView builds associations between different sets of data and how to link external information to the data. If you are going to build applications, this part is crucial for you.

Finally, *Advanced Features* can be seen as a continuation of both the previous parts. Here you will learn how to build more complicated graphs, as well as how to use more advanced features in the script. Access restriction, semantic links and number format are examples of topics to be discussed.

As mentioned before the last two parts are only relevant to users of QlikView Enterprise.

Conventions

Before you start using QlikView, it is important to understand the terms and notational conventions used in the *Tutorial*. In this section some of the terms will be explained.

General conventions

- The word "choose" is used for carrying out a menu command or a command button in the tool bar or in a dialog.
- The word "select" is used for highlighting an object in a list or on a sheet that you want your next action to affect. It is also used for highlighting field values, thereby making logical selections within the data.
- Numbered lists (e.g. 1, 2, 3, ...) indicate procedures with two or more sequential steps.
- Bulleted lists, such as this one, provide information, and do not indicate procedural steps.

Mouse conventions

- You can either use a single-button or multi-button mouse with QlikView. We recommend the use of a multi-button mouse.
- If you have a multi-button mouse, QlikView assumes that you have configured the left mouse button as the primary mouse button and the right mouse button as the secondary mouse button. (This is default in Windows.)
- "Point at..." means move the mouse and thus the cursor until the tip of the cursor points at the referred object.
- "Click..." means point at the referred object, then press and immediately release the mouse button without moving the mouse.
- "Double-click..." means click the mouse button twice in rapid succession.
- "Right-click" means click with the right mouse button.

Keyboard conventions

- Key names appear in small capital letters, e.g. "Press ENTER".
- The RETURN key and the ENTER key perform the same action in QlikView.
- A plus sign "+" used between two key names indicates that you must press both keys at the same time. E.g., CTRL+S means that you should press the CTRL-key while pressing S.
- A comma sign "," used between two key names indicates that you must press the keys sequentially.

Basics

Starting QlikView

You start QlikView by double-clicking the QlikView icon in the QlikView group (created during the installation procedure). You will also find QlikView on the **Start** menu, under **Programs**.

It is also possible to start QlikView by double-clicking the icon of a QlikView file. After QlikView has started, the file will be opened.

Opening an existing file

Use the **Open** command on the **File** menu or the **Open** button on the toolbar to open an existing file. If the file was one of the latest QlikView documents used, you can also open it by choosing the file name from the **File** menu.

Several files can be open simultaneously. If this is the case, you can activate another file by choosing it from the list on the **Window** menu, or by using the key combination CTRL+TAB.

Saving a document

Use the **Save** command on the **File** menu or the **Save** button on the toolbar to save an open document. When developing applications, you should save periodically so that you do not lose your work in the event of hardware or software problems or a power failure.

There are two save commands on the **File** menu: **Save** and **Save As**. Use the **Save As** command to save your document under a new file name.

Note It is usually a good idea to save the document before making any major changes or a lengthy operation.

Closing a document

Each document appears in its own window. You can close a document at any time by using the **Close** command in the **File** menu. If you have made any changes, QlikView will display a message asking whether you want to save the changes or not. Selections are considered as changes. Choose the **Yes** button to save, the **No** button to close the document without saving, or the **Cancel** button to cancel the closing procedure.

QlikView Help

QlikView Help is a conventional Help program. To find out how to use the Help program, choose **Using Help** from the **Help** menu. For specific help on QlikView, choose **Contents** from the **Help** menu and browse through the topics.

Context sensitive help can be obtained by pressing the F1 key or by pressing the **Context help** button in the toolbar.

Using Documents on a QlikView Server

All variants of QlikView can be used to access documents on a QlikView Server. This is done via the Open in Server command on the File menu. However, since we cannot assume that you have access to any QlikView Server this tutorial deals only with the use of local documents. It could however be pointed out, that when working with documents from QlikView Server no commands for changing the layout or updating the data are available.

WORKING WITH QLIKVIEW

- **Making selections in QlikView**
- **Working with sheets and sheet objects**
- **Creating sheets and sheet objects**
- **Exporting and printing data**

Introduction

This part of the *Tutorial* will show you how to work with an existing QlikView document. Once familiar with the basic terminology, you'll learn how to make selections in QlikView. Subsequently, the components of the QlikView document will be described one by one: you'll learn how to modify and work with the different sheet objects to get the results you are looking for.

To go through the steps in this *Tutorial*, you need the folder *Tutorial* which has been installed together with the program. It has a subfolder named *WorkingWithQV*, which contains two QlikView files: *Tutorial.qvw* and *TutorialFinal.qvw.*

Tutorial.qvw is the one you'll work with. If you follow all the steps correctly, your final document will look like *TutorialFinal.qvw.*

LESSON 1 MAKING QUERIES IN QLIKVIEW

In this lesson you'll get an overview of the basic components of a QlikView document and learn how to make queries in QlikView.

Opening the document

1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Choose **Open** from the **File** menu.

3 Select the file *Tutorial.qvw* under *Tutorial\WorkingWithQV,* then click **Open**.

You have now opened a QlikView document. The opening screen should look similarto Table 1 on page 24.

At the top of the screen you will now have the QlikView *menu bar*; below this, a *toolbar.* One or more *tabs* are shown under the toolbar. Each tab is attached to a *sheet.*

On each sheet there are a number of *sheet objects.* The most basic sheet object is the *list box*. Each list box represents a column (field) of the loaded database table, and contains a number of *(field) values*. *Statistics boxes*, *charts*, *multi boxes* and *table boxes* are sheet objects that can be created to get a better overview of data. *Buttons* are used for performing certain commands.

.

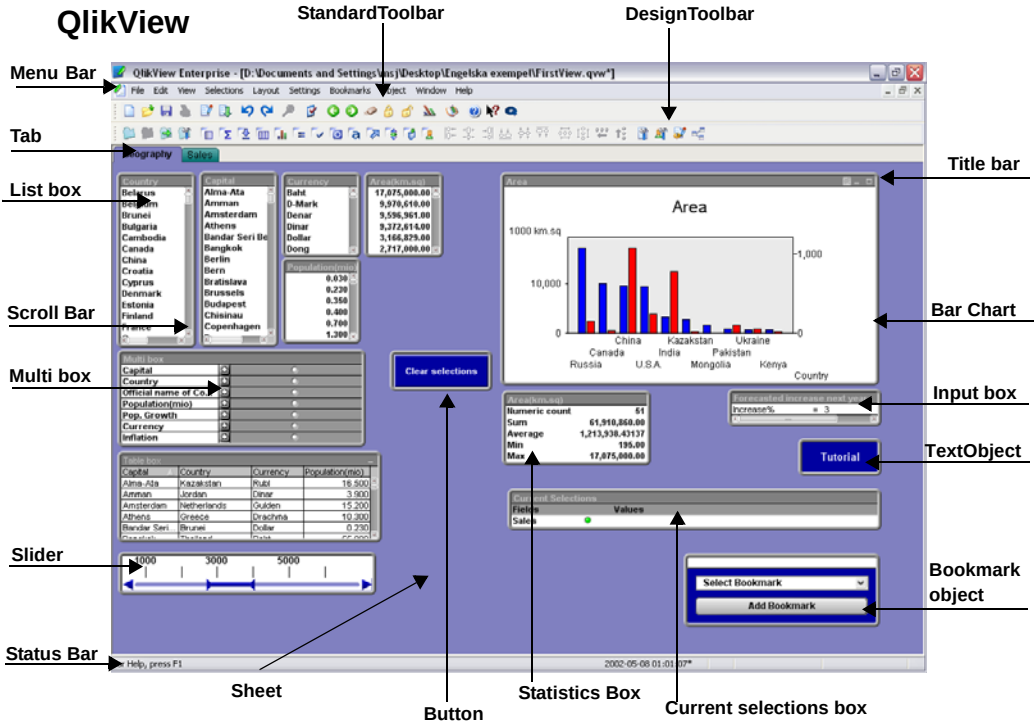


Figure 1. Basic QlikView Terminology

Selections

In QlikView, the main way of making queries is through the selection of field values. When you make a selection, the program instantaneously shows all the field values in the document that are related to the selected field value.

To make a query, or a search, in the database, you just click on something you want to know more about.

1 Click on the tab *Geography.*

2 Place the mouse cursor on the value *Belgium* in the list box *Country* and click.

The color of the cell turns green. In QlikView terms, the value is *selected*. This means that this is the item of which you want to know more. The result of the search is displayed instantaneously in all the other sheet objects. You immediately see which of the values in the other list boxes are compatible with the selection and which are not.

A value that is compatible with the selection is called *optional*. The cells of optional field values are white.

Selected and optional values will in this Manual together be referred to as *possible* values.

A cell whose contents are incompatible (whose value does not occur in combination with that of the selected item) is called *excluded*. The cells of excluded values are gray.

To facilitate the overview of the query result, the contents of the list boxes have been sorted, not only alphabetically, but also by their state: optional values are put at the beginning of the list, excluded values at the end.

3 To undo your selection, simply click on the selected cell again, or click on another cell in the same list box. This selection will replace your previous selection.

4 To select more than one item in the same list box, hold the CTRL key down while selecting additional values. If the items you are selecting are adjacent to your first selection, you can instead hold the left mouse button down while dragging the mouse cursor.

This multiple selection within a field results in QlikView showing the combinations belonging to any of the field values (logical **or**) as optional values.

Combining selections

An optional value in another list box can be selected in combination with a previously selected value. When you select an optional value from a list box and then select another optional value from another list box, QlikView will show the combinations belonging to both selections (logical **and**) as options.

1 Clear your selections by clicking the **Clear Selections** button in the toolbar.

2 Click on the tab *Sales*.

3 Suppose you want to know which salesman has sold products to *Captain Cook's Surfing School* in Monaco. Go to the list box *Customer* and search for the value *Captain Cook's Surfing School*.

4 Select the value by clicking it.

5 Seven values in the list box *Country* are white, i.e. compatible with the selection. Select *Monaco*.

You now see that Joe Cheng is the salesman you are looking for. The value *Joe Cheng* is the only one compatible with both *Captain Cook's Surfing School* and *Monaco*.

By making consecutive selections this way, it is thus possible to step by step get closer to the answer you are looking for.

Keeping track of your selections

When you make many selections at the same time it can sometimes be hard to keep track of them. In order to help you with this QlikView has two good tools, the Current Selections Box and the Current Selections Window.

In the lower right corner of the *Geography* sheet you will find a Current Selections Box. This sheet object lists all fields in which selections have been made and the values selected. If too many values are selected, only the number of selected values is shown.

1 Make some additional selections in the list boxes and watch how they are reflected in the Current Selections Object.

Not all QlikView documents have Current Selections Objects on all sheets. If you want to keep track of your selections anyway, you can use the Current Selections Window.

2 Click the **Current Selections** button in the toolbar. 

A new window will now appear on top of the QlikView window. This window resembles the Current Selections Box quite a bit, but can be moved around as you please and will stay in place even if you change sheet or start working with another document.

3 Make some selections and watch how they are reflected in the Current Selections Window.

4 Close the Current Selections Window by once again clicking the Current Selections button in the toolbar. 

Moving selections

The current selections in an active list box can be moved by means of keyboard keys:

1 Clear your selections by clicking the **Clear Selections** button in the toolbar. 

2 Go to the *Geography* sheet.

3 Click on the header of the list box *Country* to make the list box active.

4 Select the value *Afghanistan*. The values related to this value are now shown in the other list boxes.

5 Use the ↓ key of your keyboard to move the current selection one step downwards in the list box. Note that the other sheet objects are updated to show the result of the new selection.

To move the selection upwards, choose the ↑ key. Pressing an arrow key when no selection is made is equivalent to scrolling the active list box.

Text searches and numeric searches

Text searches

Another way to search in data is to make a text search. This is usually the best way to search in long lists.

1 On the *Geography* sheet, clear your selections by choosing **Clear Selections** from the **Selections** menu.

2 Click on the header of the list box *Country* to make it active (blue).

3 Type the letter "s". Now the list box contains only countries containing the letter "s". The search string appears in a separate window, between two wildcards representing zero or more characters.

Instead of just start typing you may also choose **Search** from the **Edit** menu or click the **Search** icon in the toolbar.

4 Add the letter "w" to the search string. Now the list box contains only countries containing the combination "sw".

Hitting the ENTER key will select all the countries with names containing "sw". It is also possible to click on the country you wish to select.

Numeric searches

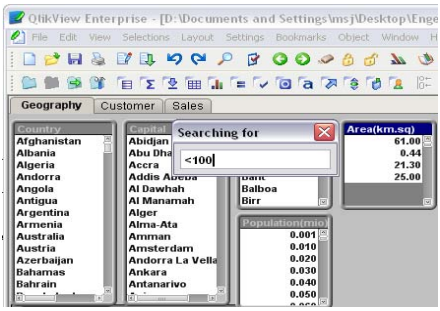
Similarly, if the search is made in a field containing numeric data, you can start your search string with greater than ">" or less than "<" and then enter a number. Suppose you want to select all countries with an area below 100 sq.km.:

1 Clear your selections by clicking the **Clear Selections** button in the toolbar.

2 Click on the header of the list box *Area(km.sq)*.

3 Type <100. The string appears in a separate window.

4 Only numbers below 100 are now optional in the list box. Press ENTER to select them.



The sheet objects are updated to reflect the result of the selection.

Stepping back or forward in the list of selections

QlikView remembers the last 100 selections. By clicking the **Step Back** button in the toolbar, you go back to your previous selection:

1 Click the **Step Back** button in the toolbar. Note that your previous selection is displayed.

2 Click **Step Back** again to go back another step.

To move forward in the list of selections, do the following:

3 Click the **Step Forward** button in the toolbar and study the result.

This way, you can go back and forth in the list of selections as you wish. Note that the **Step Back** and **Step Forward** buttons only apply to selections: other changes, like the removal of an object or the change of a setting, are not affected.

Locking and unlocking selections

The logic of QlikView by default replaces a previous selection with the new selection if the previous selection is in conflict with the new selection.

1 Select an excluded (gray) value. Note that your old selection disappears.

To prevent this, selections may be *locked*. Locked cells are blue. A selection in conflict with a locked selection will not be performed.

2 Choose **Lock Selections** from the **Selections** menu or from the toolbar. This will lock all selections, preventing them from being cleared by mistake.

3 Try to select an excluded value in another list box and note that it is not possible.

4 To unlock all selections, choose **Unlock Selections** from the **Selections** menu or from the toolbar. 

It is also possible to lock fields individually:

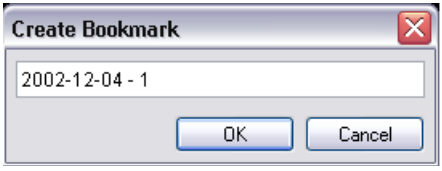
5 Click with the right mouse button on the list box containing the selection, then choose the **Lock** command from the float menu. This will lock the selected field values of this specific field. If there are no selected items in the list, the **Lock** command in the float menu is inactive (dimmed).

6 To unlock the selection in one field, choose **Unlock** from the float menu (or the **Object** menu) of the list box containing it.

Selection bookmarks

It is possible to save a set of selections for later use:

1 Select one or several values, then choose **Add Bookmark** from the **Bookmarks** menu.



The default name for the created bookmark is that of the current date (displayed in the **Create Bookmark** dialog, see the picture). In addition, the first bookmark created on a specific day gets number 1, the second number 2, etc. However, you can change the default name to a more explanatory text:

2 Type an appropriate bookmark name in the dialog, then click **OK**.

3 Go to the **Bookmark** menu again and note that your bookmark has appeared in the list of created bookmarks.

To show the saved set of selections again, simply select the bookmark in the list.

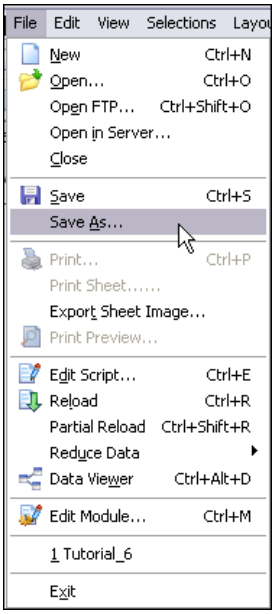
A maximum of ten bookmarks can be displayed in the list. To see futher bookmarks, to get more details on a specific bookmark or to delete a bookmark, choose **More** from the **Bookmarks** menu.

Bookmarks can also be created and selected via a bookmark object in the layout. More about this in Lesson 10 page 111.

Now that you've learned how to make selections in QlikView, it is time to describe the components of the document more thoroughly. The most basic component is the sheet, which will be introduced in the next lesson.

Saving, closing and exiting

If you don't want to turn to the next lesson right away, you can close the document. You should also save the document, since the following lessons are based on the work you've done so far.



1 Choose **Save As** from the **File** menu to save a copy of the document.

2 Type *MyTutorial.qvw* or something similar in the **File name** box, then click **Save**.

QlikView saves the copy. *MyTutorial.qvw* now contains all the changes you've made since you opened the document, whereas the original document (*Tutorial.qvw*) remains unchanged.

You can now close the file:

3 Choose **Close** from the **File** menu.

If you won't be working with QlikView for a while, you can also exit the program:

4 Choose **Exit** from the **File** menu.

LESSON 2 SHEETS

This lesson introduces the sheet, which is the most basic component of the QlikView document. You'll learn how to create a sheet, how to add list boxes to it, and how to move it. The lesson ends with an overview of the available sheet objects.

Opening the document

If you closed the document and exited QlikView after the previous lesson, you need to open it again.

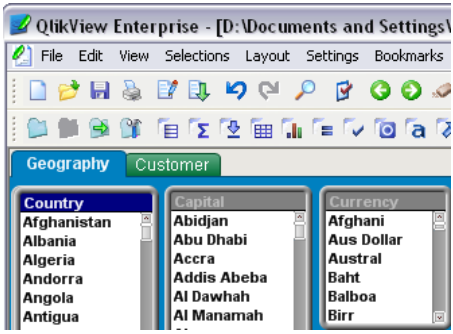
1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Select the file you created in the previous chapter, named *MyTutorial.qvw* or something similar, directly from the **File** menu.

You have now opened the document.

Presentation

Holding all the different objects, the sheet can be considered the most basic component in QlikView. A document usually contains several sheets, which is useful when one wants to achieve a more structured layout. Any sheet object can be put on any sheet. The sheets will, however, still be logically connected, i.e. a selection made on one sheet will affect all sheet objects on all other sheets.



Logical connections between sheets

Each sheet has a tab attached to it. Containing the name of the sheet, the tab helps you find the sheet you are looking for. By clicking on a tab, you activate the sheet attached to it.

There are two sheets in your document: *Geography* and *Sales*. *Geography* is the active sheet.

1 Click on the tab *Sales*.

The tab name changes from normal to bold, and the sheet attached to it is shown.

2 Select the value *Albania* in the list box *Country.*

The cell of the selected value turns green and you immediately see all the values of all other fields that are compatible with the selection (white). You see that the fictive company has one customer in Albania, Moe's Laundromat, and that John Lemon is responsible for the sales.

The sheets are logically connected, i.e. a selection made on one sheet will affect all sheet objects on all other sheets.

3 Go to the sheet *Geography* by clicking on its tab.

The sheet *Geography*, on which you learn more about the geographical data related to the value *Albania*, also contains a *Country* list box. Note that the value *Albania* is selected (green) in this list box too, although you made your selection on the sheet *Sales*.

4 Go back to the sheet *Sales*.

5 Select the item *Cesar Sandu* (currently excluded, i.e. gray) in the list box *Salesman*.

You immediately see that Cesar Sandu has been active in France, Germany, and Mongolia. The item *Albania*, which is not compatible with the selected item *Cesar Sandu*, has been excluded.

6 Go to the sheet *Geography.*

The data displayed in the sheet objects has been updated to show the result of the new selection: *France*, *Germany* and *Mongolia*, as well as the items related to these countries, are shown as optional.

Note the green dot on the tab *Sales*. This is a selection indicator, helping the user to keep track of selections made on other sheets. Especially in large documents containing many selections, this kind of reference to sheets where the selections can be changed is indispensable. If referring to a locked selection, the selection indicator is blue.

Adding a sheet

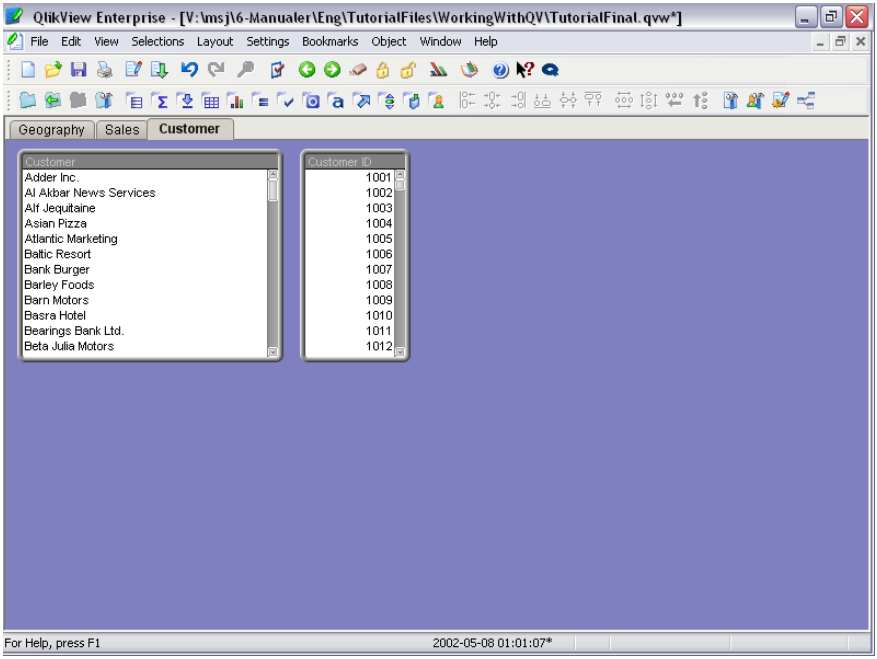


Figure 2. The new sheet.

1 Choose **Add Sheet** from the **Layout** menu. A new sheet appears.

2 Click on the empty sheet with the right mouse button and choose **Properties** from the menu that appears. The **Sheet Properties** dialog will now appear.

3 Change the title from *Sheet 3* to *Customer.*

4 Click on the **Fields** tab.

5 The dialog page now appearing contains a list of the available fields. Select *Customer*, then click the **Add >** button. The field has now been moved to the column of displayed fields, which means that it will appear as a list box on your sheet.

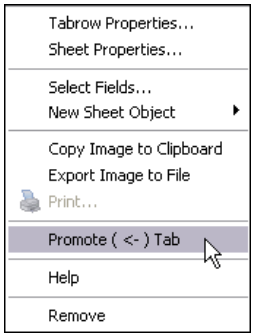
6 You can also add fields to the column of displayed fields by double-clicking them. Double-click the field name *CustomerID.*

7 Click **OK** to close the dialog.

You have now created a new sheet containing two list boxes. Due to the selection made on the sheet *Sales*, only a few values are optional. You learn that *Alf Jequitaine*, *Atlantic Marketing* and *The Mongolian Barbecue House* are customers of the selected salesman *Cesar Sandu*.

Moving a sheet

Your new sheet *Customer*, containing the list boxes *Customer* and *CustomerID*, is placed on the right-hand side of the sheet *Sales*. Suppose you want it in the middle:



1 Click on the tab of your newly created sheet with the right mouse button. From the float menu that opens, choose **Promote Tab**.

The new sheet has now been placed between the sheets *Geography* and *Sales*.

2 Clear all selections by clicking the **Clear Selections** button in the toolbar.

Adding sheet objects

The following sheet objects can be used in QlikView:

- List boxes
- Statistics boxes
- Multi boxes
- Table boxes
- Charts (including pivot tables and straight tables)
- Input boxes
- Slider objects
- Current Selections boxes
- Bookmark objects
- Buttons
- Text objects
- Line/Arrow objects

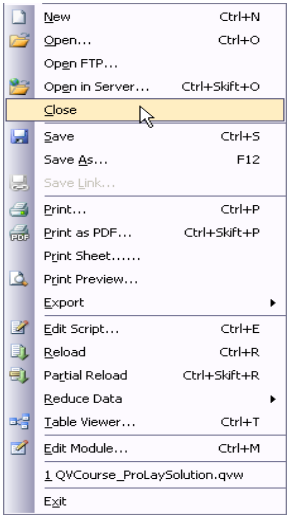
- Custom objects

All the sheet objects except buttons, text objects and line/arrow objects can be used for making selections in the data. All sheet objects may be used for viewing the result of selections.

In the following lessons, the most important sheet objects will be presented one by one. The first sheet objects that you'll get acquainted with are the list boxes and statistics boxes.

Saving, closing and exiting

If you don't want to turn to the next lesson right away, you can close the document. You should also save the document, since the following lessons are based on the work you've done so far.



1 Choose **Save** from the **File** menu.

QlikView saves the changes you've made to your document. You can now close the file:

2 Choose **Close** from the **File** menu.

If you won't be working with QlikView for a while, you can also exit the program:

3 Choose **Exit** from the **File** menu.

LESSON 3 LIST BOXES AND STATISTICS BOXES

This lesson introduces the list box and the statistics box. Once you've learned how to add, copy, move, size and remove a list box, you'll modify its appearance and its way of displaying data. The sort order, the number format and the border are examples of properties that you will change. At the end of the lesson, you will learn how to create and use a statistics box.

Opening the document

If you closed the document and exited QlikView after the previous lesson, you need to open it again.

1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Choose **Open** from the **File** menu.

3 Select the file you worked with in the previous lesson, named *MyTutorial.qvw* or something similar, then click **Open**.

If *MyTutorial.qvw* is among the most recently used files, you can also open it directly from the **File** menu.

You have now opened the document.

The list box

The list box, which is the most basic object on the screen, contains a list of all the values of a specific field.

All the data belonging to the field can be found in the list box. If there is not enough space in the visible list box, a scroll bar is displayed on the right.

If a value occurs several times in one and the same field, it will only be displayed once in the list box.

Adding a list box

The *Customer* sheet created in the previous lesson contains two list boxes, *Customer* and *CustomerID*. Suppose you want to add a list box containing countries. The usual way of doing this is the following:

1 Make sure that the sheet *Customer* is active, then choose **Select Fields** from the **Layout** menu.

2 Double-click the field *Country* to move it to the column of displayed fields.

3 Click **OK**.

The field *Country* now appears as a list box on your sheet *Customer*.

Copying a list box

In case you want to add a list box that is found on another sheet, you can simply copy it. The list box *Country*, e.g., is found on the sheet *Geography*:

1 Click on the tab of the sheet *Geography* to make it active.

2 Press the CTRL key and keep it depressed while placing the cursor on the header of the list box *Country*.

3 Press the mouse button and drag the list box to the tab *Customer*. While dragging, make sure that a small plus sign appears; if it does not, this means that you have released the CTRL key.

4 When the cursor turns into a round arrow on the tab *Customer*, release the mouse button, then the CTRL key.

5 Go to the sheet *Customer* to make sure that the list box *Country* has appeared. Its position on the sheet should be the same as on the sheet from which it was copied.

Naturally, it is also possible make a copy of a list box on the same sheet. In that case, instead of dragging the list box to another tab, simply drag it to the desired position on the active sheet.

If you prefer the standard Windows **Copy** and **Paste** commands, they can be used as well. You find them in the **Edit** menu. The standard Windows shortcuts CTRL+C and CTRL+V also work.

Moving a list box

To move a list box you follow the same steps as above (copying), but without pressing the CTRL button.

1 On the sheet *Customer*, move the new list box *Country* to the right side of the other list boxes.

To move a list box step by step, use CTRL+arrow. For bigger steps, use CTRL+SHIFT+arrow.

Moving several list boxes simultaneously

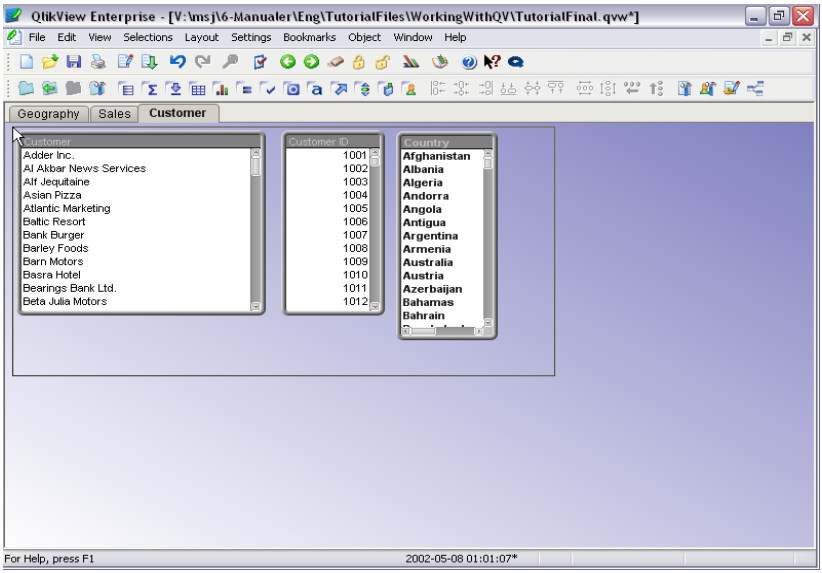


Figure 3. Activating several sheet objects

To move several list boxes at the same time, start by selecting them. This is done in the following way:

1. On the sheet *Customer*, place the mouse cursor in the bottom right corner, then press it and drag a rectangle enclosing all the list boxes on the sheet. Note that the headers of the list boxes turn blue. This means that they are selected, i.e. active.
2. Place the mouse cursor on the header of one of the list boxes, then press the mouse button and drag. All the selected list boxes are moved.

It is also possible to select several list boxes by SHIFT-clicking their headers.

Sizing a list box

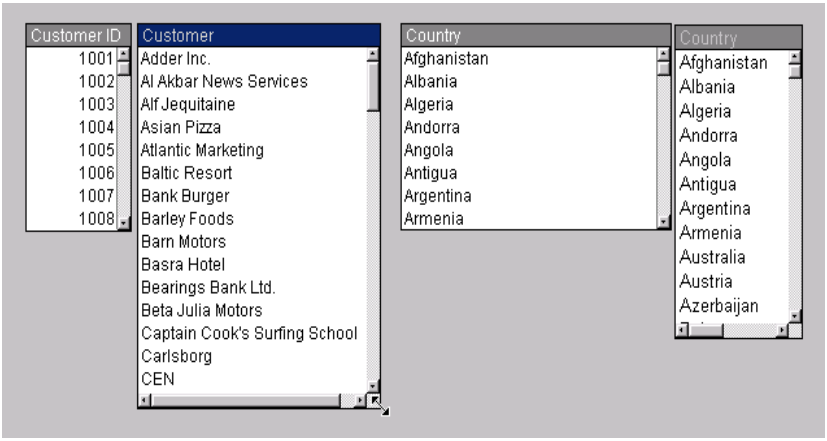


Figure 4. Sizing a list box

You can size list boxes (and other sheet objects) by dragging the window frame of the object.

1 Click on the header of the list box *Customer* (still on the sheet *Customer*) to make it the only active list box. If the other list boxes remain active, they will be sized as well.

2 Move the pointer to one of the corners of the list box until the appearance of the pointer changes (Figure 4).

3 Press the mouse button and drag.

The list box *Customer* now overlaps the first *Country* list box. You'll deal with this in the next section.

Adjusting the layout

The layout of the sheet *Customer* needs to be improved. To make the *Country* list box entirely visible again, you could simply move it, then move the other two list boxes accordingly. There is, however, an easier way of adjusting the layout:

1 Position the mouse cursor in the bottom right corner of the sheet, then press the mouse button and draw a rectangle on the sheet. All the list boxes within the rectangle are now selected.

2 In the **Layout** menu, place the mouse cursor on the **Align/Distribute** command. The cascade menu that opens contains several commands. Choose **Adjust Left**.

The list boxes are now separated by equally sized spaces. If there is not enough space between the list boxes, drag the rightmost listbox further to the right, then choose **Adjust Left** again.

Displaying and using the design toolbar

If you use a QlikView document only for making selections, the main toolbar is sufficient: it contains the most common commands for working with a document. However, as soon as you modify the layout, add objects etc., the design toolbar may be helpful. The design toolbar contains commands for adding sheet objects, moving sheets, and adjusting the layout.

Suppose that you want to top align the list boxes of your sheet:

1 If the list boxes are not already selected, select them by choosing **Activate All** from the **Edit** menu.

2 Click the **Top Align** button from the design toolbar. 

Feel free to further adjust the layout of your document.

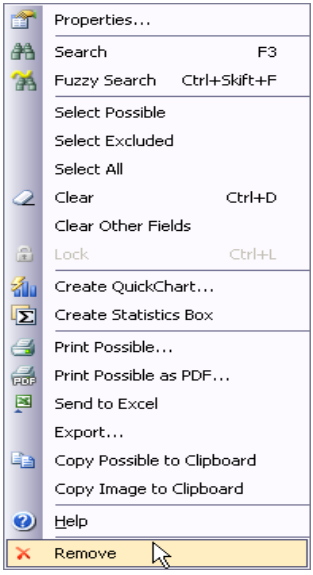
Removing a list box

If you have followed all the steps above, there are two *Country* list boxes on your sheet *Customer*. You only need one:

1 Click on one of the *Country* list boxes of the sheet *Customer* with the right mouse button.

2 From the float menu that appears, choose **Remove**.

3 QlikView issues a message asking you if you are sure about removing the list box. Click **Yes**.



The list box disappears from the screen. Rearrange the remaining list boxes.

Another possibility is to choose the **Remove** command from the **Object** menu. The **Object** menu is equivalent to the float menu of the active sheet object (the one whose header is blue) or, if there is no sheet object, of the active sheet. If several sheet objects are active, the object menu contains the commands that are common to the active objects. A further possibility for removing a sheet object is by pressing the DELETE key.

Minimizing and restoring

List boxes and other sheet objects can be minimized if, for some reason, you don't want them on the screen now but might need them again later.

Note the symbol in the upper right corner of the chart and the table box on your *Geography* sheet. This symbol indicates that the sheet object can be minimized. To make a list box minimizable, do the following:

1 Click on the list box with the right mouse button and choose **Properties...** from the float menu.

2 Go to the **Layout** page and mark the check box **Allow Minimize**, then click **OK**.

The minimize symbol should now have appeared in the top right corner of the list box.

3 Click the symbol or double-click on the header of the list box.

The list box turns into an icon, which is placed in the bottom left corner of the sheet. The icon can be moved freely.

4 Restore the list box by double-clicking the icon.

It is also possible to minimize a list box by choosing **Minimize** from the float menu, and to restore it by choosing **Restore** from the menu.

Changing the properties

Every sheet object has a properties dialog, containing several pages with a number of settings. You will now modify some of the list boxes using the settings in the properties dialog.

Showing frequency

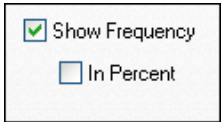
Suppose you are interested in knowing how many sales have been performed during different years.

1 Clear your selections by clicking the **Clear Selections** button in the toolbar.

2 Go to the sheet *Sales*.

3 Click on the list box *Sales* with the right mouse button and choose **Properties...** from the float menu.

4 On the **General** page of the **List Box Properties** dialog, select the **Show Frequency** check box by clicking in it.



5 Choose **OK**.

Each value in the list box is now followed by its number of occurrences. We can e.g. see that 14 sales for $900 have been made.

Changing the number and order of columns

To display the contents of a list box in several columns, do the following:

1 Clear your selections.

2 Click on the list box *Day* with the right mouse button, then choose **Properties...** from the float menu.

3 Go to the **Presentation** page.

4 Deselect **Single Column**, then click **OK**.

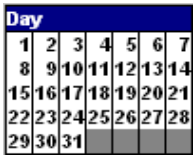
5 Drag the border of the list box *Day* until its contents are displayed in several columns

The values are ordered by column, i.e. vertically. You may prefer to have the values of the *Day* list box ordered by row:

6 Click on the list box *Day* with the right mouse button, then choose **Properties...** from the float menu.

7 Go to the **Presentation** page.

8 Deselect **Order by Column**, then click **OK**. The field values, instead of being ordered by column (vertically), are now ordered by row (horizontally). Your list box should now look like the one to the right.



Changing the sort order

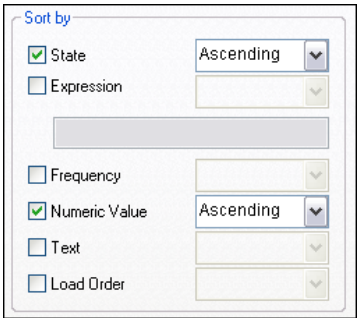
A number of different sort orders are available for each list box.

Numeric fields are usually sorted by numeric value, whereas fields containing text tend to be sorted in alphabetical order (**Text**).

In addition, list boxes whose values are not all visible (list boxes with scroll bars) are set to **Sort by State**, which means that the values are sorted according to their logical state (selected, optional, excluded). This way, selected and optional values are always visible in the document.

1 Click on the list box *Sales* with the right mouse button, and choose **Properties...**.

2 Choose the **Sort** page by clicking on its tab.



The list box *Sales*, as we see, is sorted by **State** and **Numeric value**, **Ascending**. The order of the sort options in the list corresponds to the priority sort order. Thus, as long as no selection is made, the values in the list box *Sales* are sorted by numeric value; as soon as a selection is made, however, the state of the values determines the sort order.

3 Keep the option **Numeric value** selected, but change the order to **Descending** by choosing it from the drop-down box (click the arrow to the right).

4 Click **OK**.

The highest number is now at the top. As soon as a selection is made, however, the selected (green) value(s) or optional (white) values will be placed at the top.

5 Make a selection in the list box and study the result.

6 Clear your selections.

Changing the number format

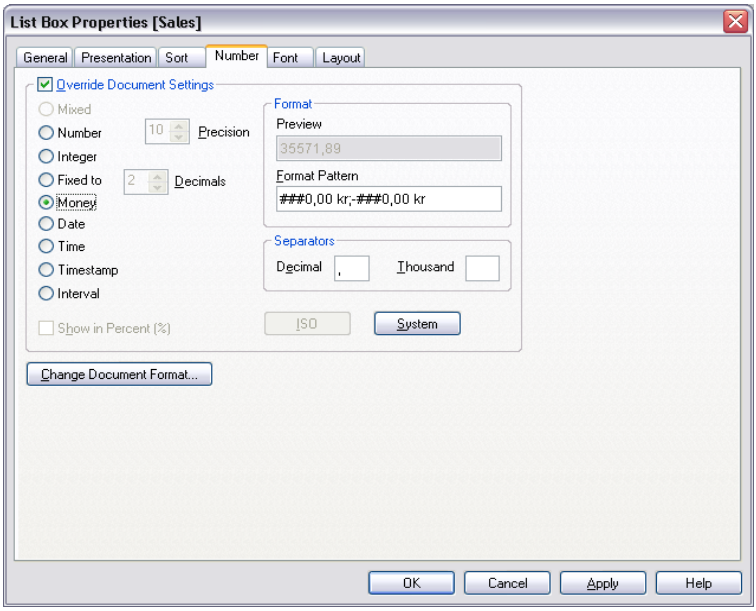


Figure 5. The dialog page on which the number format is set

Numeric data can be of different types and can be formatted in different ways.

1 Click on the *Sales* list box with the right mouse button, and choose **Properties...**, **Number**.

The number format of the field Sales is disabled because all number formats are inherited from the documents by default. To set the number format for the *Sales* list box in US dollars do the following:

2 Click in the **Override Document Settings** check box in order to create a separate number format for this list box.

3 Select the option **Money**, then click **OK**.

Note that the values in the list box *Sales* (see Figure 5) are now differently formatted (you may need to size it first): a comma has appeared as thousands separator and the values are preceded by a $. Two decimals have been added.

4 Open the **Properties** dialog again.

5 Study the **Number** dialog page. The current format is displayed in the **Format** box, and below this a preview is given. The format can be changed manually. Erase the two decimals (the zeros) and view the result of the change in the **Preview** box.

6 Click **OK** to close the dialog.

Aligning the values

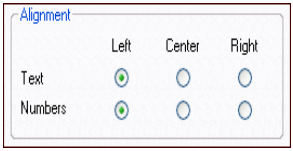
Text is usually left-aligned, numbers right-aligned. This setting can be changed on the **Presentation** page.

1 Click on the list box *Year* with the right mouse button, then choose **Properties...** from the float menu.

2 Go to the **Presentation** page.

3 In the **Alignment** group, click **Left** for numbers.

4 Click **OK**.



Changing the border

Every sheet object has a border that can be given a number of different appearances.

1 Click on a list box with the right mouse button, and choose **Properties...**, **Layout**.

2 Pick a border format of your choice.

3 Click **OK**.

If you want all the sheet objects in the document to have the same border, change the setting in the **Document Properties** dialog (see page 116).

Changing the font

All sheet objects contain text written in a certain font. To change the font of a single object, open the **Font** page in the dialog of the particular object. To change the font of the entire document, open the **Font** page of the **Document Properties** dialog (see page 116).

The statistics box

The statistics box is a compact way of showing a numeric field in which the separate records are not interesting, but e.g. the sum or average is.

A number of different statistical functions can be used in a statistics box. It is also possible to make selections in the statistics box by clicking on some of the functions, e.g. *Min*, *Max*, *Median*, etc.

The sheet *Geography* in your document contains a statistics box based on the field *Area(km.sq)*.

As long as no selections are made in the document, the values shown in the statistics box are calculated using all the possible values of the corresponding list box. As soon as you click a value, however, the statistics box is updated just like the other sheet objects.

1 Select the items *Albania*, *Algeria*, *Andorra* and *Angola* in the list box *Country* and see how the values in the statistics box change.

Statistics boxes can be moved, sized, copied and closed just like ordinary list boxes.

Creating a statistics box

1 Make sure that no selection is made by clicking the **Clear Selections** button in the toolbar.

2 Make the list box *Sales* on the *Sales* sheet active by clicking on its header.

3 Click on the list box with the right mouse button, and choose **Create statistics box** from the float menu.

A statistics box with the same name as the active list box now appears on the screen. You might need to size it to see all the numbers properly.

You immediately see that the company has sold products for a total amount of 2,317,233 USD, that 713 sales have been performed, etc.

Another possibility is to choose **New Sheet Object**, **Statistics Box** from the **Layout** menu or to click the **Create Statistics Box** button in the toolbar. In that case, the **Properties** dialog of the statistics box is opened. This dialog looks similar to that of the list box, but only contains three pages. On the **General** page, you select the statistical functions you wish to use.

Making selections in a statistics box

You can make selections in a statistics box by clicking on the non calculated functions, e.g. *Min*, *Max*, and *Median*.

1 Click the function *Max* to find the customer who made the purchase.

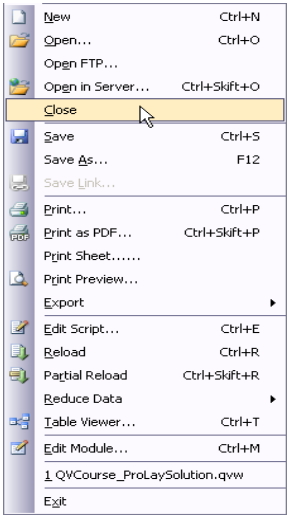
The selection is made in the list box to which the statistical value belongs.

2 Clear all selections by clicking the **Clear Selections** button in the toolbar.

The list box and the statistics box are only two of the sheet objects available. In the next three lessons, different kinds of charts and tables - calculated objects allowing you to get an even better overview of your data - will be introduced.

Saving, closing and exiting

If you don't want to turn to the next lesson right away, you can close the document. You should also save the document, since the following lessons are based on the work you've done so far.



1 Choose **Save** from the **File** menu.

QlikView saves the changes you've made to your document. You can now close the file:

2 Choose **Close** from the **File** menu.

If you won't be working with QlikView for a while, you can also exit the program:

3 Choose **Exit** from the **File** menu.

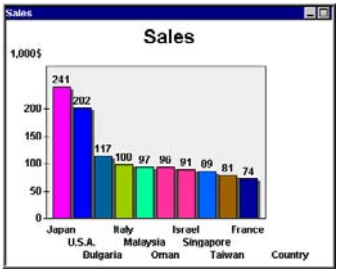
LESSON 4 BAR CHARTS AND PIE CHARTS

Due to the variety of chart subtypes, and considering the great number of available settings, the *Tutorial* provides three lessons on charts. This lesson will start by giving you a general introduction to working with charts; subsequently, you'll create a simple bar chart. Once familiar with the basics, you'll modify the properties of the chart and finally turn it into a pie chart.

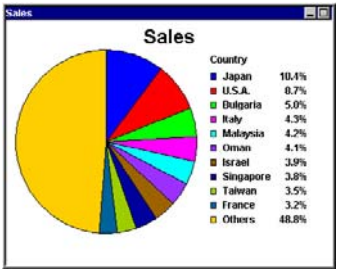
Introduction

Charts and tables are sheet objects that can show numbers very compactly. You can e.g. show sums of money, distributed over different fields such as year, month, account number, etc. Numbers that are calculated using several records in the input tables (sums, averages, min, max) can only be shown in charts or statistics boxes.

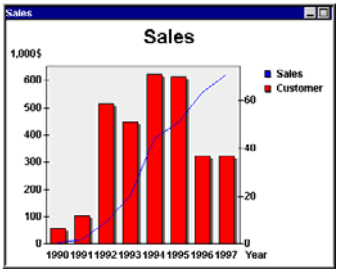
Charts, pivot tables and straight tables are logically the same thing, even though they look different. Hence, we will from here on simply refer to them as charts. Charts can thus be shown as bar charts, pie charts, scatter charts, line charts, combo charts (bar/line), radar charts, grid charts, gauge charts, straight tables or pivot tables. All the chart types are shown below.



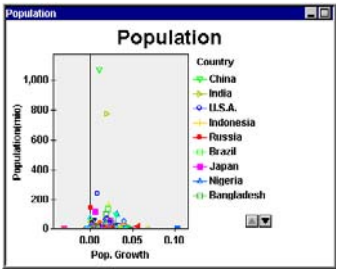
Bar chart



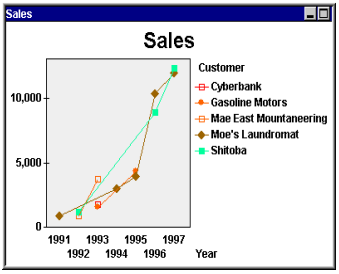
Pie chart



Combo chart



Scatter chart



Line chart

Salesman

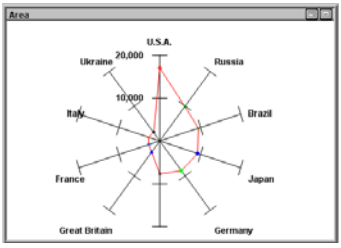
Salesman	Year	Country	Sales
			$78,626
Binh Protzmann	1993	Japan	$1,820
Binh Protzmann	1994	Japan	$9,188
Binh Protzmann	1993	Monaco	$1,760
Ricardo Gucci	1992	Japan	$1,250
Ricardo Gucci	1996	Japan	$8,980
Ricardo Gucci	1997	Japan	$12,350
Ricardo Gucci	1993	Liechtenstein	$1,829
Richard Ranieri	1991	Malta	$990
Richard Ranieri	1994	Malta	$3,110
Richard Ranieri	1995	Malta	$4,040
Richard Ranieri	1996	Malta	$10,400
Richard Ranieri	1997	Malta	$12,040
Richard Ranieri	1992	U.S.A.	$1,010
Richard Ranieri	1993	U.S.A.	$5,459
Richard Ranieri	1995	U.S.A.	$4,400

Straight table

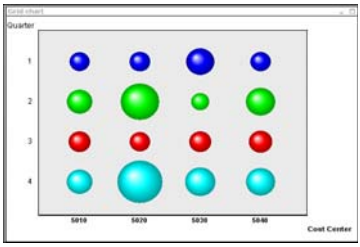
Sales

Company	Product	Year	sum(Sales)	avg(Sales)
ABC	A	1998	3	3.0
		1999	2	2.0
			5	**2.5**
	B	1998	1	1.0
		1999	1	1.0
			2	**1.0**
			7	**1.8**
XYZ	A	1998	5	5.0
		1999	4	4.0
			9	**4.5**
	B	1998	7	7.0
		1999	6	6.0
			13	**6.5**
			22	**5.5**
			29	**3.6**

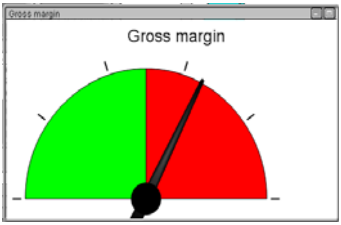
Pivot table



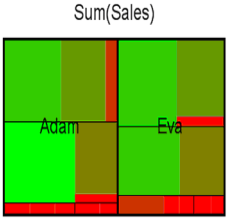
Radar chart



Grid chart



Gauge chart



Block chart

Opening the document

If you closed the document and exited QlikView after the previous lesson, you need to open it again.

1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Choose **Open** from the **File** menu.

3 Select the file *MyTutorial.qvw*, then click **Open**.

If *MyTutorial.qvw* is among the most recently used files, you can also open it directly from the **File** menu.

Making selections in a chart

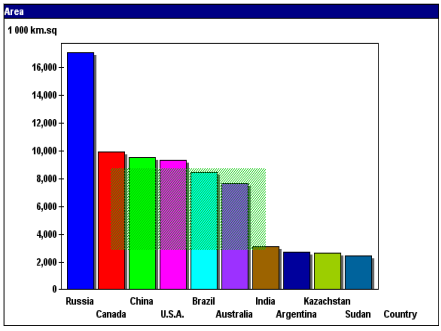
Until now, we have only studied selections in list boxes. It is however also possible to select data in charts.

1 Go to the *Geography* sheet.

The *Geography* sheet contains a bar chart showing the ten largest countries.

2 Place the cursor in the chart, then press the mouse button and select a few bars by "painting" the area (dragging the cursor). When this is done, release the mouse button.

3 The countries represented by the bars you painted have been selected. Check this in the list box *Country*.



It is also possible to make selections by clicking on the labels in the chart:

4 Select one or several countries by clicking on their labels.

To undo the selections made in the chart, simply click in the outer chart area.

Moving and sizing

Charts can be moved, sized and copied in the same way as list boxes.

1 Place the cursor on the header of the chart, then press the mouse button and drag the chart to the desired position.

2 Size the chart by dragging its frame.

Copying, minimizing, maximizing and restoring

You copy the chart in the same way as the list box:

1 Press the CTRL key and keep it depressed while placing the cursor on the header of the chart.

2 Press the mouse button and drag the chart aside. While dragging, make sure that a small plus sign appears; if it does not, this means that you have released the CTRL key.

It is possible to minimize charts to save space. Do the following:

3 Click on the chart with the right mouse button, then choose **Minimize**.

The chart turns into an icon and is placed at the bottom of the screen. The icon can be moved freely.

Another way of minimizing a chart is to double-click its header or to click the symbol. To restore a chart, click on it with the right mouse button and choose **Restore**, or double-click the minimized chart icon.

It is also possible to maximize charts. This is done by clicking the symbol. A maximized chart is restored in the same way as a minimized one, i.e. by choosing **Restore** or double-clicking the header. Another possibility is to click .

Changing chart type with fast type change icon

Some charts in QlikView are prepared for being displayed as more than one type. This is shown as a little icon, either in the chart's header or in the chart itself. The icon is a miniature of the next chart type that will appear if you click on it.

1 Take a look at the bar chart in the *Geography* sheet. In the chart header to the left of the minimize icon you will find a fast type change icon.

2 Click the icon with the left mouse button. The chart will turn into a line chart.

3 This chart has been prepared for changing between three types of charts: bar, line and pie. If you click again the chart will turn into a pie chart.

4 Now click with the right mouse button on the fast type change icon. A drop-down menu will appear with all three possible chart types. Click the bar chart icon and we are back where we started.

All charts can be turned into any of the seven chart types available by going through the chart's Properties dialog. More about this later.

Creating a simple bar chart

The toolbars contain two buttons for creating charts. The one in the main (upper) toolbar allows you to create a chart in two simple steps, whereas the one in the design toolbar makes it possible to set a great number of properties from the very beginning. Regardless of which one you choose, you will get a full-blown chart whose settings can be modified at any time.

Two things are important to think about when making charts:

- What do you want to look at? (What should the sizes of the bars in the bar chart correspond to?) The answer, in this case, is the *Sales*. This is set as **Y-axis Dimension** in the second box.

- What do you want to group it by? (Which field values do you want to use as labels for the bars in the bar chart?) The answer, in this case, is *per Country*. This is set as **X-axis Dimension** in the first box.

You'll start by creating a simple chart showing the sum of sales per country.

1 Go to the sheet *Sales*, and make the list box *Country* active by clicking its header.

2 Click the **Create QuickChart** button in the main toolbar.

3 The first page of the QuickChart wizard appears. It contains three icons representing different charts. Click on the icon representing the bar chart.

4 The second page of the QuickChart wizard opens.

5 Select the field *Country* in the combo box **X-axis Dimension** and the field *Sales* in the box **Y-axis Dimension**.

6 In the **Function** group below the boxes, you can choose between the functions **Sum** and **Frequency**. If you keep the preselected option **Frequency**, this will result in the chart displaying the number (total count) of sales performed in each country. This is not what you want. Select the option **Sum** to get the sum of sales per country.

7 Click **OK**.

The chart should now have appeared on your screen. Its layout is by no means optimal: among other things, the great number of bars in the chart makes it difficult to get an overview. You'll soon be able to change this. However, you can already use the chart to make selections or to view the result of selections:

8 Select *Ann Lindquist* in the list box *Salesmen*.

The chart immediately displays the countries to which Ann Lindquist has sold products, as well as the amounts of money involved.

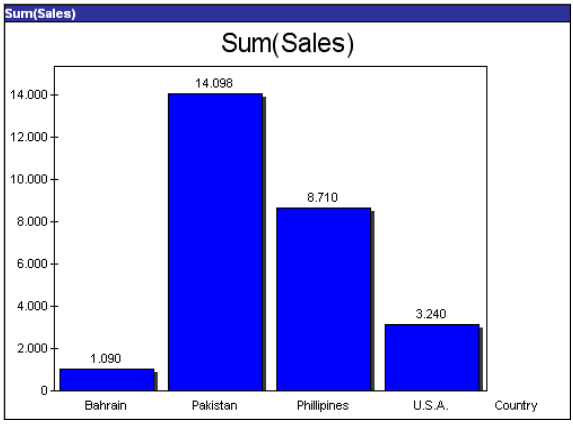


Figure 6. The countries to which Ann Lindquist has sold products.

Creating a bar chart using the full chart wizard

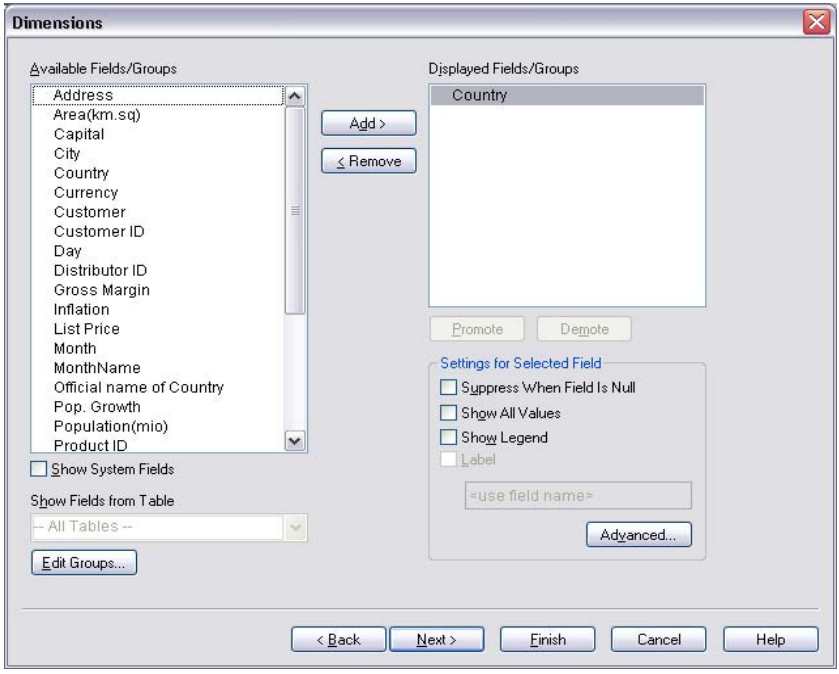


Figure 7. The Dimensions page

1 While on the sheet *Sales*, click the **Create Chart** button in the design toolbar. The first page of the chart wizard appears.

2 On this page you can choose the type of chart you would like to work with. The bar chart option is preselected; leave it that way.

3 Type *Sales* in the box **Window Title**.

4 Choose **Next>**.

The second page of the wizard, **Dimensions**, on which you can set the dimensions to be shown on the x-axis, is now open.

The left list contains all the fields or groups (you'll learn more about groups on page 185) available.

5 Select the field *Country*, then click **Add>** to move it to the list of displayed fields.

6 Click **Next >**.

The **Edit Expression** dialog automatically opens. Here you set one or more expressions to be displayed on the y-axis. You can enter an expression directly into the **Expression** edit box, but it is also possible to use the predefined functions in the **Expression** group.

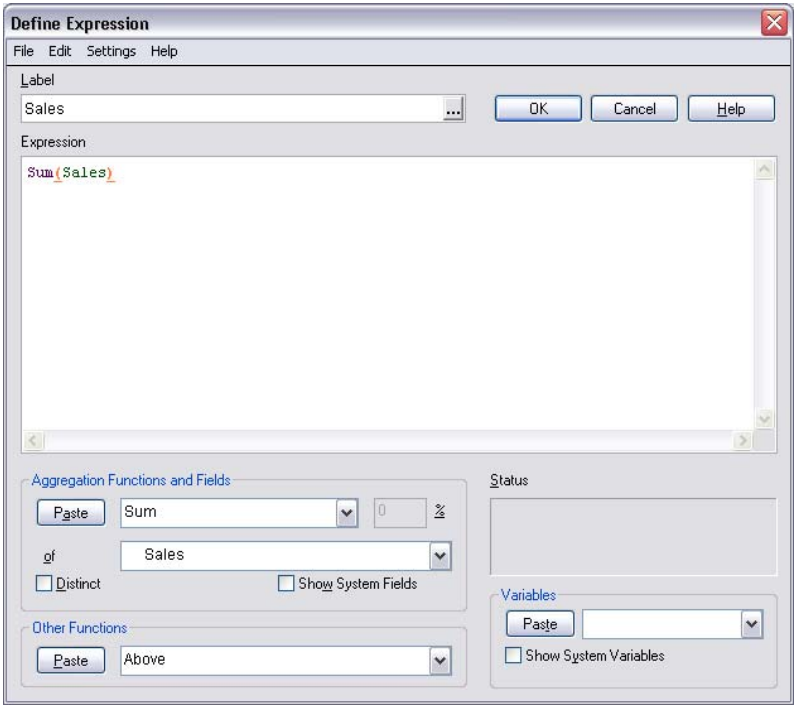


Figure 8. The Edit Expression dialog

7 In the **Aggregation Functions and Fields** group, click the arrow belonging to the first drop-down list and select *Sum.* Then click the arrow belonging to the second drop-down list (containing the field names) and select *Sales*.

8 Click **Paste**.

9 The name of the expression appears in the **Expression** edit box.

10 Type *Sales* into the **Label** box. This is the name that will appear on the y-axis.

11 Click **OK**. The sum of the company's sales is calculated and will be displayed on the y-axis.

By clicking **OK**, you get back to the **Chart Properties** dialog. Note that the expression you just defined has appeared on the **Expressions** page.

You have now selected one variable and one expression, i.e. performed the basic steps of the creation of a chart.

12 Click **Finish**.

The chart has now appeared on your screen. Compare it with the one created in the previous section. You will notice that there are no numbers displayed on top of the the bars. This is due to different property settings. Below you will learn how to modify the properties to change the appearance of your chart.

13 Clear your selections.

Removing a chart

You only need one of the charts you created.

1 Click on the first chart with the right mouse button, then choose **Remove** from the float menu.

2 QlikView issues a message asking you if you really want to remove the chart. Click **Yes**.

The chart disappears from the screen.

Changing a few properties

The chart wizard that helped you create the chart contains eleven pages, of which you only used three. No need to worry: all the pages of the chart wizard are also found in the **Properties** dialog of the chart, which can be opened at any time. You'll now use a few of the settings found on the remaining pages.

Changing the sort order

The chart is currently sorted in alphabetical order. You may prefer to put the main customer country furthest to the left:

1 Click on the chart with the right mouse button, then choose **Properties...** from the float menu.

2 Go to the **Sort** page.

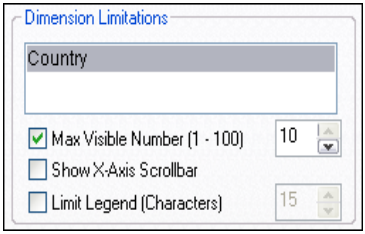
3 Select the option **Y-value** to sort the countries according to their sums of sales.

4 Select **Descending** to put the highest bars to the left.

5 Click **OK**.

Limiting the number of bars

The chart you have created does not display any labels unless only a small range of values is selected. You can limit the maximum number of bars to be displayed:



1 Click in the chart with the right mouse button, then choose **Properties...** from the float menu.

2 Go to the **Presentation** dialog page by clicking its tab.

3 Mark the check box **Max Visible Number**. The number 10 is preselected. Leave it that way.

4 Click **Apply**.

The number of country names having decreased, they are now displayed in the chart.

Displaying numbers on the bars

The next thing we want to do is to display numbers on top of the bars in our chart.

1 Open the **Expressions** page in the properties dialog.

2 Select **Numbers on Data Point**.

3 Click **OK**.

You have now added the y-value numbers on top of the bars.

Changing the number format

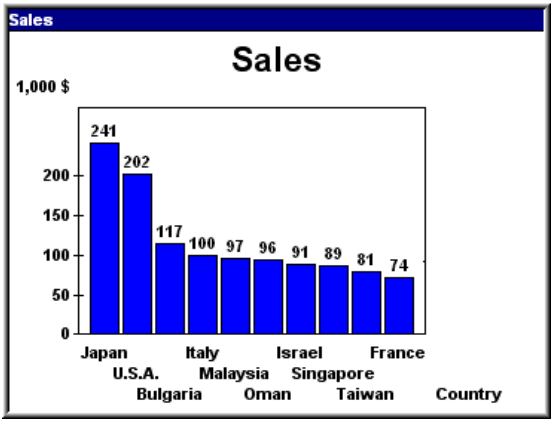


Figure 9. A bar chart showing the sum of sales for different countries sorted by y-value

Displaying the numbers on top of the bars is very useful, but when a large range of values is shown, there is not enough room for all the numbers. You can solve the problem by changing the number format:

1 Open the **Number** page in the **Properties...** dialog.

2 **Expressions default** is preselected here. Change it to **Fixed to**.

3 Change the value in the **Decimals** box to 0 (if it isn't set to 0 already).

4 Enter *1,000 $* in the box **Thousand Symbol**.

5 Click **OK**.

The numbers on top of the bars now have much more space.

Cloning and detaching your chart

You can clone (copy) a chart in the same way as a list box (by CTRL-dragging), but there is also another way of doing it:

1 Click on the chart with the right mouse button to open the float menu.

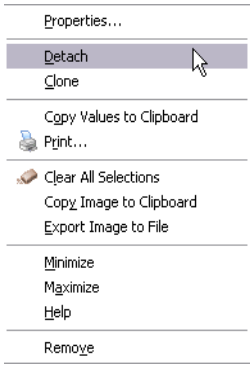
2 Click **Clone**.

A second chart, identical with the first one, appears on the screen.

3 Move the chart in order to see all the sheet objects.

4 Click on the new chart with the right mouse button to open the float menu.

5 Choose **Detach**.



A detached chart is not updated as selections are made. This can be useful when you want to keep the overview while making selections.

6 Make a few selections. See how the original chart is updated, whereas the detached chart stays the same.

7 Attach the chart again by choosing **Attach** from the float menu.

8 Clear your selections by clicking the **Clear Selections** button in the toolbar.

Turning the bar chart into a pie chart

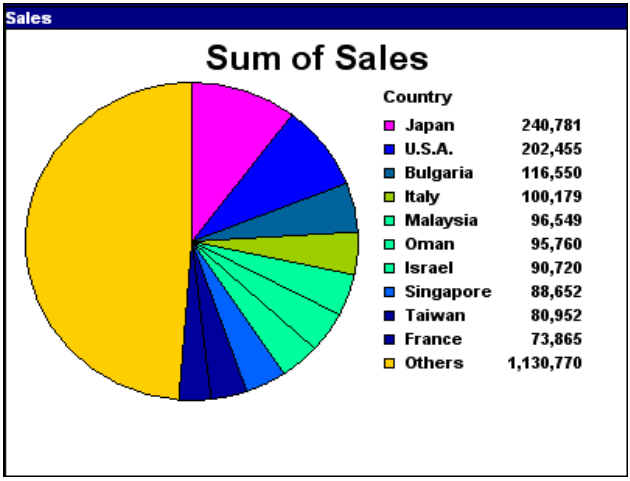


Figure 10. The resulting pie chart

There are several different chart types to choose between, each one with properties that suit certain purposes. You'll now turn the second bar chart into a pie chart.

1 Click on the chart with the right mouse button, then choose **Properties...** from the float menu.

2 On the **General** page, select the option **Pie chart**.

3 On the **General** page it is also possible to change the chart title. Change it to *Sum of Sales*.

4 Go to the **Presentation** page.

5 Mark the check box **Numbers in Legend** (corresponds to **Numbers on Data Points** for bar charts).

6 Click **OK**.

The result is a pie chart where each slice represents the sales in a particular country.

Changing the color settings

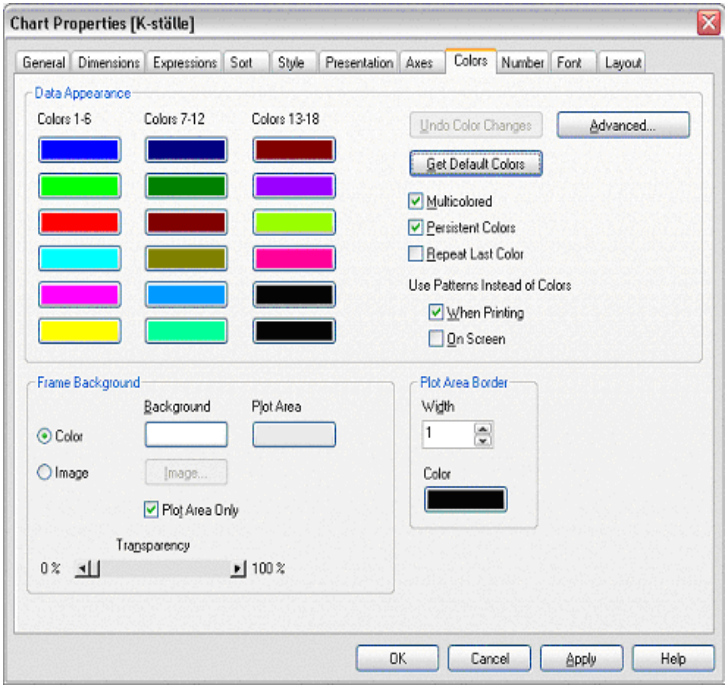


Figure 11. The dialog where the colors used in the bar chart are set.

Go to the previously created bar chart. Note that the bars have the same color (green). This can be changed on the **Colors** page:

1 Click on the bar chart with the right mouse button, then choose **Properties...** from the float menu.

2 Go to the **Colors** page.

3 Select the check box **Multicolored**.

4 Choose **OK**.

Compare the colors used in the bar chart with those of the pie chart. You see that the same colors are used for the same countries. This default setting is very useful in that it enhances the consistency between different charts and sheets.

The 18 colors of the color map can be customized: on the **Color** page, simply click a color that you would like to change and pick the color of your choice from the map that opens.

Showing the percentage

Since the pie chart illustrates proportions, one might be more interested in knowing the percentage than the actual sum of sales.

1 Click on the pie chart with the right mouse button, then choose **Properties...**.

2 Go to the **Expressions** page.

3 Mark the check box **Relative**.

4 Click **OK**.

The percentage numbers now appear in the legend.

You don't need the pie chart on the screen at the moment, but you might need it again later. To save space, minimize the chart:

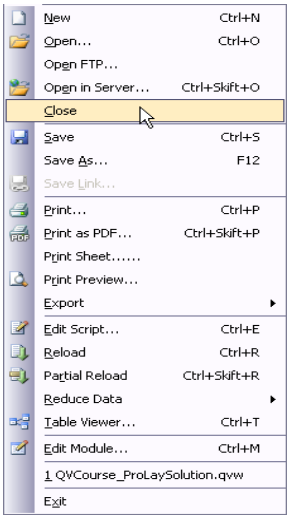
5 Click on the pie chart with the right mouse button, then choose **Minimize**.

The chart turns into an icon and is placed at the bottom of the screen.

In the next lesson, you'll add another dimension to an existing bar chart and create pivot tables and straight tables.

Saving, closing and exiting

If you don’t want to turn to the next lesson right away, you can close the document. You should also save the document, since the following lessons are based on the work you’ve done so far.



1 Choose **Save** from the **File** menu.

QlikView saves the changes you’ve made to your document. You can now close the file:

2 Choose **Close** from the **File** menu.

If you won’t be working with QlikView for a while, you can also exit the program:

3 Choose **Exit** from the **File** menu.

LESSON 5 PIVOT TABLES AND STRAIGHT TABLES

In this lesson, you will continue creating and using charts. After adding a dimension to an existing bar chart, you will turn it into a pivot table. Subsequently, you'll create a straight table containing the same information to compare these two ways of presenting data.

Opening the document

If you closed the document and exited QlikView after the previous lesson, you need to open it again.

1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Choose **Open** from the **File** menu.

3 Select the file *MyTutorial.qvw*, then click **Open**.

If *MyTutorial.qvw* is among the most recently used files, you can also open it directly from the **File** menu.

You have now opened the document.

Adding a dimension to an existing bar chart

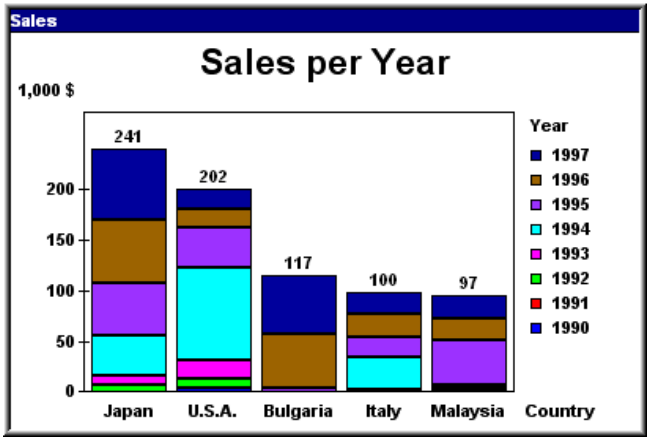


Figure 12. A bar chart with two dimensions

Until now you have worked with only one dimension and one expression. Charts can be very complex, though. They can show several dimensions and/or expressions simultaneously or sequentially, etc.

You'll start by creating a chart with two variables and one expression. It will still show the sum of sales per country, but grouped over different years:

1 Clone the bar chart that you created in the previous lesson (*Sales* sheet).

2 Open its object (float) menu, then choose **Properties...**.

3 On the **General** page, change the chart title to *Sales per Year.*

4 On the **Dimensions** page, move *Year* to the list of displayed fields.

5 On the **Style** page, set **Subtype** to **Stacked**.

6 On the **Presentation** page, set 5 as maximum number.

7 Click **OK** to finish the chart.

A bar still represents the sum of sales of a specific country, but it is now divided into different color sections representing different years.

Turning the chart into a multidimensional pivot table

Displaying data graphically is very illustrative, but you can't show too much information at the same time without losing clarity. To display calculated data for several dimensions, your choice of chart may be a pivot table:

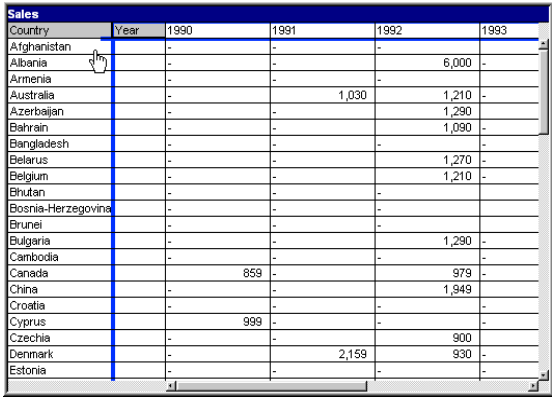
1 Open the **Properties** dialog of the bar chart you just created by choosing the corresponding command from the float menu.

2 On the **General** page, select **Pivot table**.

3 Choose **OK**.

The pivot table shows the data in cross table format: the first field (*Country*) is displayed as a regular column, whereas the values of the second field (*Year*) constitute the headers of the remaining columns. The columns contain the values of the expression (*Sales*).

Dragging dimensions



Sales					
Country	Year	1990	1991	1992	1993
Afghanistan		-	-	-	
Albania		-	-	6,000	-
Armenia		-	-	-	
Australia		-	1,030	1,210	-
Azerbaijan		-	-	1,290	
Bahrain		-	-	1,090	-
Bangladesh		-	-	-	-
Belarus		-	-	1,270	-
Belgium		-	-	1,210	-
Bhutan		-	-	-	
Bosnia-Herzegovina		-	-	-	
Brunei		-	-	-	
Bulgaria		-	-	1,290	-
Cambodia		-	-	-	-
Canada		859	-	979	-
China		-	-	1,949	
Croatia		-	-	-	-
Cyprus		999	-	-	-
Czechia		-	-	900	
Denmark		-	2,159	930	-
Estonia		-	-	-	-

Figure 13. Dragging the Year column to the vertical axis

The pivot table is a very flexible sheet object, allowing you to freely drag the different dimensions and expressions to any position on the vertical or horizontal axis. In this case, e.g., you would probably prefer to present the dimension *Year* on the vertical axis. Do the following:

1 Position the mouse cursor on the field *Year*.

2 Press the mouse button and drag the field to the desired position, e.g. to the right-hand side of the field *Country*. The selected column and its target are highlighted in blue while you are dragging.

3 Release the mouse button.

The dimension *Year*, as well as the expression values, are now displayed on the vertical axis.

Adding a dimension

To add another dimension, do the following:

1 Open the **Properties** dialog and go to the **Dimensions** page.

2 Double-click the dimension *Salesman* to move it to the list of displayed fields, then click **OK**.

The dimension appears on the horizontal axis.

3 Place the dimension *Salesman* next to *Year* by dragging it the way you did above.

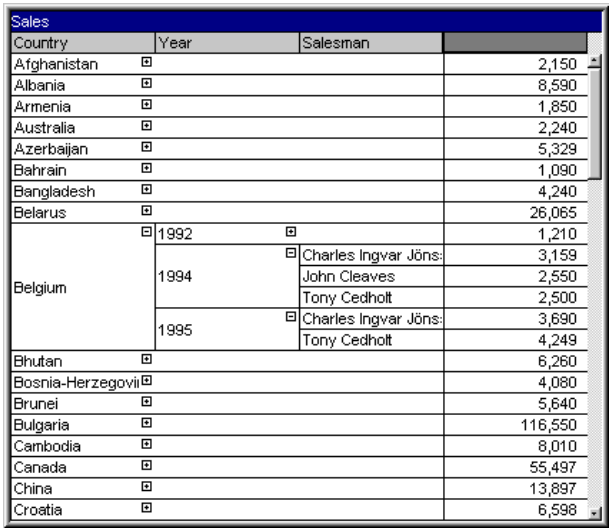
The pivot table should now look like below:

Sales

Country	Year	Salesman	
Afghanistan	1993	Olivier Simenon	2,150
Albania	1992	John Lemon	6,000
	1994	John Lemon	2,590
Armenia	1993	Mario Kaddafi	1,850
Australia	1991	Rolf Wesenlund	1,030
	1992	Rolf Wesenlund	1,210
Azerbaijan	1992	Kaya Alpan	1,290
	1993	Kaya Alpan	4,039
Bahrain	1992	Ann Lindquist	1,090
Bangladesh	1995	Kaya Alpan	4,240
Belarus	1992	John Lemon	1,270
	1994	John Lemon	5,998
	1996	John Lemon	8,698
	1997	John Lemon	10,099
Belgium	1992	Charles Ingvar Jöns:	1,210
	1994	Charles Ingvar Jöns:	3,159
		John Cleaves	2,550
		Tony Cedholt	2,500
	1995	Charles Ingvar Jöns:	3,690
		Tony Cedholt	4,249
Bhutan	1993	Rolf Wesenlund	2,060
	1995	Rolf Wesenlund	4,200

Figure 14. The resulting pivot table

Expanding and collapsing



Sales			
Country	Year	Salesman	
Afghanistan ⊡			2,150
Albania ⊡			8,590
Armenia ⊡			1,850
Australia ⊡			2,240
Azerbaijan ⊡			5,329
Bahrain ⊡			1,090
Bangladesh ⊡			4,240
Belarus ⊡			26,065
Belgium ⊟	1992 ⊡		1,210
	1994 ⊟	Charles Ingvar Jöns:	3,159
		John Cleaves	2,550
		Tony Cedholt	2,500
	1995 ⊟	Charles Ingvar Jöns:	3,690
		Tony Cedholt	4,249
Bhutan ⊡			6,260
Bosnia-Herzegovi ⊡			4,080
Brunei ⊡			5,640
Bulgaria ⊡			116,550
Cambodia ⊡			8,010
Canada ⊡			55,497
China ⊡			13,897
Croatia ⊡			6,598

Figure 15. The pivot table showing details for Belgium

The pivot table provides yet another useful feature: the possibility of expanding and collapsing dimensions on value level. By collapsing the values you're currently not interested in, you considerably enhance the overview of your data.

You have probably noted the small signs ⊞ and ⊟ displayed in the top right-hand corners of the values in the columns. A minus sign indicates that the dimension is expanded, whereas a plus sign indicates that it is collapsed. At the moment, all the columns are fully expanded, i.e. all the values of the following column are shown.

1 Click in the *Year* column with the right mouse button, then choose **Collapse all**.

All the values of the dimension *Salesman*, previously shown, are now hidden. Suppose that you are only interested in the sales performed in Belgium:

2 Right-click in the *Country* column, then choose **Collapse all** to show only this column.

3 Click the plus sign of the value *Belgium*.

4 Click the plus sign of the values *1994* and *1995*.

You have now expanded only those values of the following columns that are related to the value *Belgium*. Details on salesmen are only visible for *1994* and *1995*.

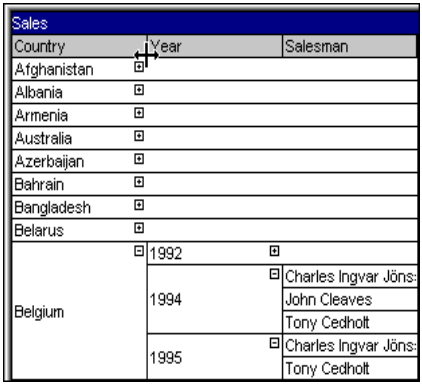
Adjusting the columns

The country column of the pivot table is not wide enough for certain values.

1 Place the cursor on the line separating the country column from the year column.

2 When the cursor looks like the one shown in the figure below, press the mouse button and drag.

3 All the columns can be sized this way. To adjust the rightmost column, place the cursor within the border (to the left of the scroll bar) and drag.



You can also adjust the columns using the command **Equal Columnwidth** in the float menu.

Showing partial sums

At the moment, the table shows the sales for Belgium during different years. Suppose you wish to know the sum of sales during all the years together. Do the following:

1 Choose **Properties...** from the float menu.

2 Go to the **Presentation** page.

3 In the **Dimensions and Expressions** list, select the variable *Year*.

4 Mark the check box **Show Partial Sums**.

5 Click **OK**.

The pivot table now shows partial sums on year level.

Creating a straight table

Salesman

Year	Country	Salesman	Sales
			2317233
1990	U.S.A.	Ann Lindquist	3240
1990	Saudi Arabia	Bill Yang	690
1990	Germany	Cezar Sandu	759
1990	Serbia and Monte	Jacques Clouseau	700
1990	Cyprus	Jacques Clouseau	999
1990	U.S.A.	Kenneth Finley	1518
1990	Canada	Sunil Gupta	859
1991	Slovenia	Bill Yang	859
1991	Greece	Bill Yang	4720
1991	Spain	James Bond	1159
1991	Denmark	John Doe	1159
1991	North Korea	Kaya Alpan	3270
1991	Germany	Kaya Alpan	810
1991	Netherlands	Keith Helmkey	2700
1991	Malta	Richard Ranieri	990
1991	Sweden	Rolf Wesenlund	910

Figure 16. The resulting straight table

In opposition to the pivot table, the straight table cannot display sub-totals or serve as a cross table. On the other hand, any of the columns of the straight table can be sorted and each of its rows contains one combination of dimension(s)+expression(s).

1 Minimize the pivot chart on the *Sales* sheet to increase the free space.

2 In the **Layout** menu, point to **New Sheet Object**, then choose **Chart**.

3 In the wizard that opens, select **Straight table**.

4 Type *Salesman* in the box **Window title**.

5 Click **Next>**.

6 On the **Dimensions** page, move *Year*, *Country* and *Salesman* to the column of displayed fields.

7 Click **Next>**.

8 The **Edit Expression** dialog opens.

9 Compose the expression *Sum of Sales* by selecting the corresponding items from the lists in the combo boxes (**Aggregation Functions and Fields** group).

10 Click **Paste**.

11 Type *Sales* in the **Label** box.

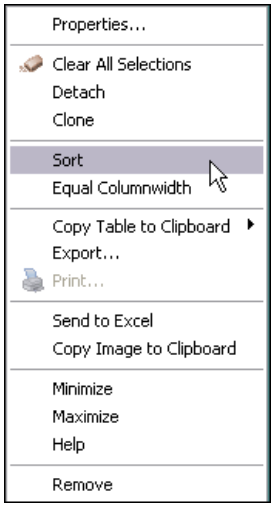
12 Click **OK**.

13 Click **Finish**.

You now have a straight table containing the same information as the pivot table. Compare the two tables. Notice that in the straight table, the total sum of sales is shown at the top, that each row represents a possible combination of data (in the pivot table, data is grouped by field values), and that no partial sums are given.

Sorting the table

The straight table provides excellent possibilities for sorting columns.



Currently, the column *Year* is placed furthest to the left, and the table is sorted according to the sort order specified for this field (**Sort** page). You can see this from the little arrow sort indicator in the column header. You can change the sort order of the table with two simple clicks of the mouse:

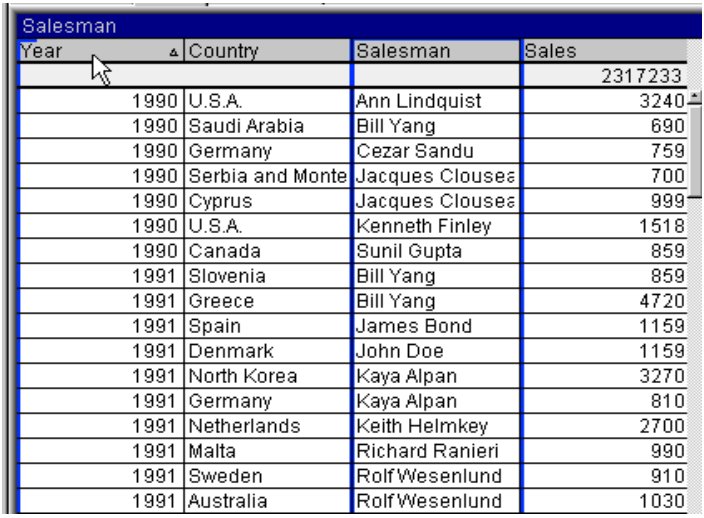
1 Click on the column *Salesman* with the right mouse button to open the float menu.

2 Choose **Sort**.

The order of the columns remains the same, but it is now the sort order defined for the field *Salesman* that determines the order of the values in the table. Note how the sort indicator has moved to the *Salesman* column.

The sort priority can also be set on the **Sort** page of the **Properties** dialog.

Moving a column



Salesman

Year	Country	Salesman	Sales
			2317233
1990	U.S.A.	Ann Lindquist	3240
1990	Saudi Arabia	Bill Yang	690
1990	Germany	Cezar Sandu	759
1990	Serbia and Monte	Jacques Clousea	700
1990	Cyprus	Jacques Clousea	999
1990	U.S.A.	Kenneth Finley	1518
1990	Canada	Sunil Gupta	859
1991	Slovenia	Bill Yang	859
1991	Greece	Bill Yang	4720
1991	Spain	James Bond	1159
1991	Denmark	John Doe	1159
1991	North Korea	Kaya Alpan	3270
1991	Germany	Kaya Alpan	810
1991	Netherlands	Keith Helmkey	2700
1991	Malta	Richard Ranieri	990
1991	Sweden	Rolf Wesenlund	910
1991	Australia	Rolf Wesenlund	1030

Figure 17. Dragging the Salesman column

Suppose you want the field *Salesman* furthest to the left. Do the following:

1 Press the mouse button while on the column header *Salesman*.

2 Drag the column to the desired position. Both the selected column and its target are highlighted in blue while you are dragging.

3 Release the mouse button.

The field *Salesman* is now placed furthest to the left.

Visual cues

You can use visual cues to highlight expression values in the table. Values belonging to different value categories can be given separate colors and/or font styles.

1 Click on the straight table with the right mouse button, then choose **Properties...** from the float menu.

2 Go to the **Visual Cues** page.

3 *Sales* is the expression available. Select it in the text box.

There are four value categories to choose between: upper, normal, lower and text. Suppose you want to highlight all the expression values above 10,000:

4 Type 10000 in the **Upper >** edit box.

Next to the edit box, you find two color buttons and three check boxes. This is where you set the appearance of the text and/or the background of the values you wish to highlight.

5 Suppose you want to apply a green color to the values belonging to the upper value category. Click the **Text** button, then choose a green color from the color map.

6 Choose **OK**.

7 In addition, check the **Bold** check box.

8 Click **OK**.

All the expression values above 10,000 are now highlighted.

Selections in table charts

It is of course possible to make selections in pivot tables and straight tables as well. Clicking those columns (or rows in a pivot table) which contain chart dimensions imply direct selection of the values clicked on.

1 Click the value *1992* in the *Year* column. The effect is the same as selecting *1992* in the list box *Year.*

2 Clear your selections.

Clicking a column containing a chart expression implies an indirect selection of those values in the dimension columns (rows) that are used to calculate that expression value.

3 Click the value *$11,379* in the column *Sales*. You have now selected the value *1995* in *Year*, the value *Pakistan* in *Country* and *Ann Lindquist* in *Salesman*.

4 Clear you selections.

If you need to make more complex or multiple selections in a table chart there is yet another option, called drop-down select. This feature makes it possible to turn a dimension column into a list box with full selection and search possibilities.

1 Click the *Salesman* straight table to activate it. Then select **Properties...** from the float menu.

2 Go to the **Presentation** page.

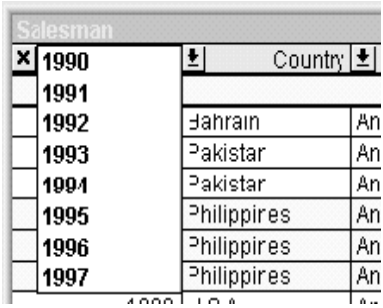
3 Mark *Year* in the list of **Columns** and check the check box **Drop-down Select**.

4 Repeat for the *Country* and *Salesman* columns.

5 Click **OK**.

You will now find that all three dimension columns have a drop-down icon to the left in the column header.

6 Click the leftmost icon and a temporary list box with all the years will appear. Hold down the CTRL key and click the years 1992,1995 and 1997. Then release the CTRL key. The three years will be selected and the drop-down list is closed.



7 Click the drop-down icon in the *Country* column. When the drop-down list appears, type "sw". This text search will result in *Botwana*, *Swaziland*, *Sweden* and *Switzerland*. Press ENTER and the two countries are selected while the drop-down list appears.

8 Clear your selections.

Moving the pivot table and the straight table to a new sheet

1 The *Sales* sheet is getting too crowded. To improve the overview, you'll create a new sheet for the tables:

2 Choose **Add Sheet** from the **Layout** menu.

3 On the **General** page, enter *Tables* in the **Title** box, then click **Next>**.

4 Click **Finish**.

5 Go back to the *Sales* sheet.

6 Move the pivot table to the new sheet (if you have forgotten how to move sheet objects, see page 41).

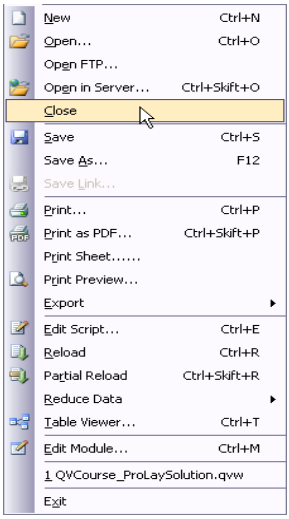
7 Move the straight table to the new sheet.

8 Go to the *Tables* sheet to adjust the layout.

There is now room for further charts on the *Sales* sheet. In the next lesson, you'll work with line charts, combo charts, scatter charts and drill-down charts. The next lesson also contains information on printing and exporting charts.

Saving, closing and exiting

If you don’t want to turn to the next lesson right away, you can close the document. You should also save the document, since the following lessons are based on the work you’ve done so far.



1 Choose **Save** from the **File** menu.

QlikView saves the changes you’ve made to your document. You can now close the file:

2 Choose **Close** from the **File** menu.

If you won’t be working with QlikView for a while, you can also exit the program:

3 Choose **Exit** from the **File** menu.

LESSON 6 MORE CHART TYPES

This lesson introduces further chart types. The line chart is useful for showing trends or changes. Working with a combo chart, you can combine the features of the bar chart with those of the line chart. As for scatter charts, they show pairs of values from two expressions. Gauge charts are used for displaying one specific value. The last chart type to be introduced is the drill-down chart, a hierarchic bar chart created out of a field group. At the end of the lesson, you'll print and export a chart.

Opening the document

If you closed the document and exited QlikView after the previous lesson, you need to open it again.

1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Choose **Open** from the **File** menu.

3 Select the file *MyTutorial.qvw*, then click **Open**.

If *MyTutorial.qvw* is among the most recently used files, you can also open it directly from the **File** menu.

Creating a line chart

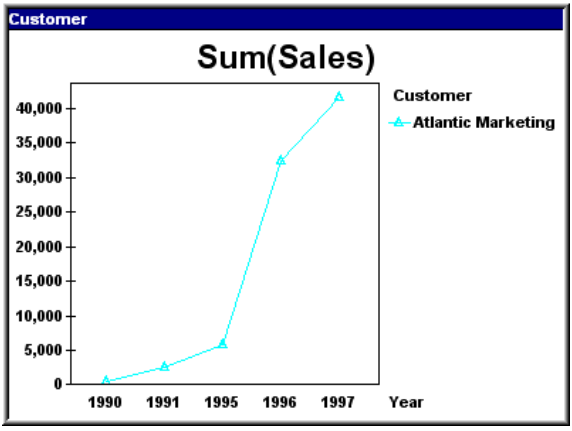


Figure 18. A line chart showing the sales fluctuation for the customer Atlantic Marketing

Instead of being displayed as bars, data can be presented as lines between value points, as value points only or as both lines and value points. Line charts are useful for showing changes or trends.

You'll create a line chart illustrating how the sales per customer have changed over the years.

1 Go to the *Sales* sheet.

2 Click the **Create Chart** button in the toolbar.

3 Select **Line Chart**, and choose *Customer* as **Window Title**.

4 Click **Next>**.

5 On the **Dimensions** page, move the fields *Year* and *Customer* to the column of displayed fields.

6 Click **Next>** to create an expression in the **Edit Expression** dialog.

7 In the **Aggregation Functions and Fields** group, create the expression *Sum(Sales)*, then click **Paste**.

8 Click **OK**.

9 Click **Finish**.

When no values are selected, the chart looks a bit overcrowded; as soon as you make a selection, though, the trends will appear very clearly.

10 Clear previous selections by clicking the **Clear Selections** button in the toolbar.

11 Select *Atlantic Marketing* in the list box *Customer* and study the result (see the figure above).

12 Undo your selection by clicking on the list box *Customer* with the right mouse button and choosing **Clear** from the float menu.

13 Select *John Doe* in the list box *Salesman*.

One now gets a clear picture of Mr. Doe's doings. We see that he has had business contacts with Carlsborg since 1991, and that Mary Kay has meant a lot to his career so far. We also see that he wasn't very successful with Captain Cook's Surfing School.

Suppose you want to know if Captain Cook's Surfing School is still our customer after all.

14 Deselect *John Doe* by clicking the value again.

15 Select *Captain Cook's Surfing School* in the list box *Customer.*

No need to worry: the surfing school is still our customer, even though it purchased less during 1996 and 1997. In the pivot table that we moved to the *Tables* sheet you can study the exact data.

16 Clear your selections.

Adding an expression to a bar chart

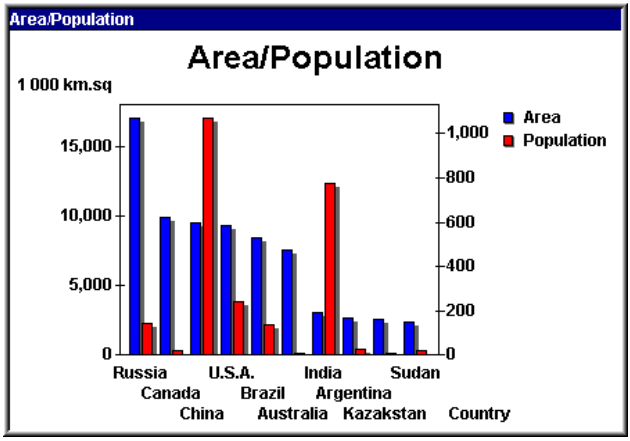


Figure 19. A bar chart showing the ten largest countries and their population

The *Geography* sheet contains a bar chart showing area per country. Suppose you would like to see how area and population are related to each other.

Start by adding an expression to the existing bar chart.

1 Click on the chart with the right mouse button, then choose **Properties...** from the float menu.

2 On the **General** page, change the window title to *Area/Population*.

3 Select the check box **Chart title**, and type *Area/Population* in this box too.

4 On the **Expressions** page, click **Add** to get to the **Edit Expression** dialog.

5 Compose *Sum of Population (mio)* in the **Aggregation Functions and Fields** group, then click **Paste**.

6 Type *Population* into the **Label** box.

7 Click **OK**.

8 Click **Apply**.

Drag the dialog box aside and study the chart. You have set both population and area as expressions, but only the area is shown. The reason for this is that both expressions are shown on a single axis, and that the magnitude of the numbers of the two expressions differs so much that the population is not visible.

9 Go to the **Axes** page.

10 Select *Population* in the **Expressions** box, then click **Right** under **Position**.

11 Click **OK**.

The chart shows the ten largest countries and their population (if no selections are made).

Turning the bar chart into a combo chart

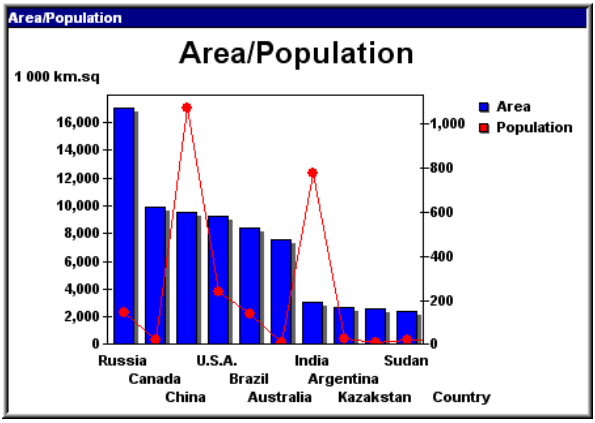


Figure 20. A combo chart showing how the population and the area of different countries are related to each other.

You will now turn the bar chart into a combo chart. In a combo chart, you can combine the features of the bar chart with those of the line chart, e.g. by showing one expression as bars and the second as lines and/or symbols.

1 Open the **Properties** dialog.

2 On the **General** page, select **Combo Chart**.

3 Go to the **Expressions** page.

The expressions *Area* and *Population* are listed in the **Expressions** box.

4 Select *Area*, then mark the **Bar** check box under **Plot Options**. The boxes named **Line** and **Symbol** must not be marked.

5 Now select *Population* in the **Expressions** box, then mark the check boxes **Symbol** and **Line**, leaving the check box **Bar** deselected.

6 Click **OK**.

Instead of displaying both expressions as bars, the chart now shows the population as symbols and lines.

Turning the combo chart into a scatter chart

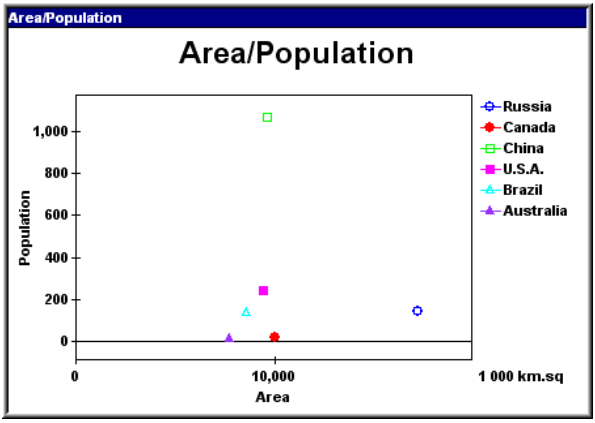


Figure 21. A scatter chart showing how population and area are related to each other.

When showing data where each instance has two numbers, like in this case (each country has an area and a population), you might find the scatter chart a useful representation form:

1 Click on the combo chart with the right mouse button, then open the **Properties** dialog.

2 On the **General** page, select **Scatter Chart**.

3 Click **OK**.

The dimension (*Country*) is represented by the symbols, and the expressions (*Population* and *Area*) are displayed on the axes. You immediately see that six of the countries are placed far out to the right on the x-axis, which means that their areas are far above the average. One of the countries also has a huge population.

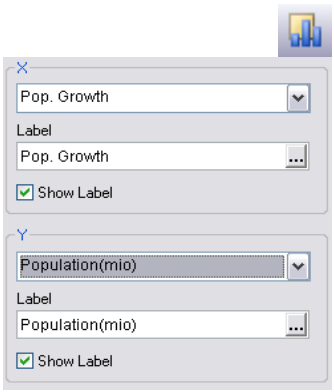
4 Select those countries by "painting" the area in the chart using the mouse button.

You see that the countries are Russia, Canada, China, USA, Brazil, and Australia.

Creating a scatter chart from scratch

You will now create a similar scatter chart, showing population and population growth:

1 Click the **Create Chart** button in the toolbar.



2 Choose *Population* as both **Window Title** and **Chart Title**, and select the option **Scatter Chart**.

3 Choose **Next>**.

4 On the **Dimensions** page, move *Country* to the column of displayed fields.

5 Choose **Next>**.

6 The **Expressions** page of the scatter chart differs somewhat from that of the other charts. Choose *Pop. Growth* in the **X** combo box, and *Population (mio)* in the **Y** combo box.

7 Click **Finish**.

Your new scatter chart is finished. Move it, size it, and try it by making selections.

8 Minimize the chart.

9 Clear your selections.

Creating a gauge chart

Quite often you want to view the changing value of a single measurement as you change your selections. For this purpose the gauge chart is ideal. QlikView offers a wide range of gauge charts for graphic visualization of values. In this section we will create a simple circular gauge chart indicating average gross margin for whatever set of customers and/or periods etc. that we have selected.

1 Go to the *Sales* sheet.

2 Click the **Create Chart** button in the toolbar.

3 Select **Gauge Chart**, and type in *Gross margin* as **Chart Title** and **Window Title**.

4 Click **Next>**.

5 On the **Dimensions** page, we do nothing at all, as most gauge charts are best calculated without any dimension resulting in one single value over the entire data set.

6 Click **Next>** to create an expression in the **Edit Expression** dialog.

7 In the **Aggregated Functions** group, create the expression *Avg([Gross Margin])*, then click **Paste**.

8 Click **Next>** twice.

9 On the **Style** page, make sure that the first icon under **Look** (circular gauge) is selected.

10 Click **Next>**.

11 On the **Presentation** page, enter the value 3000 under **Max** in the **Gauge settings** group.

12 Click **Finish**. A semi-circular gauge with two segments, one green and one red will appear.

Let's do a bit of analysis!

13 Click the **Clear** button in the toolbar. The gauge now shows average gross margin for all customers.

14 Select *Atlantic Marketing* in the *Customer* list box. This is a good customer!

15 Select the *Asian Trade House* instead. Room for improvement!

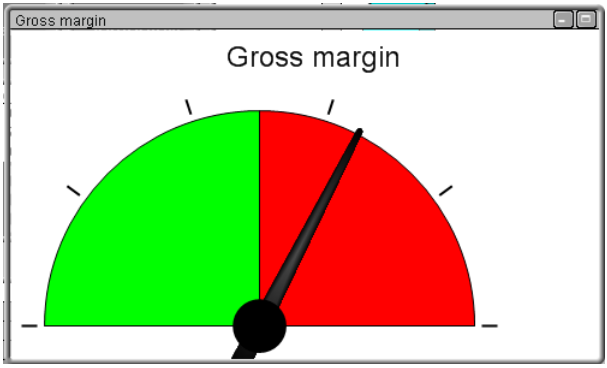


Figure 22. The gauge chart created above when Atlantic Marketing is selected in the Customer list box.

Working with a drill-down chart

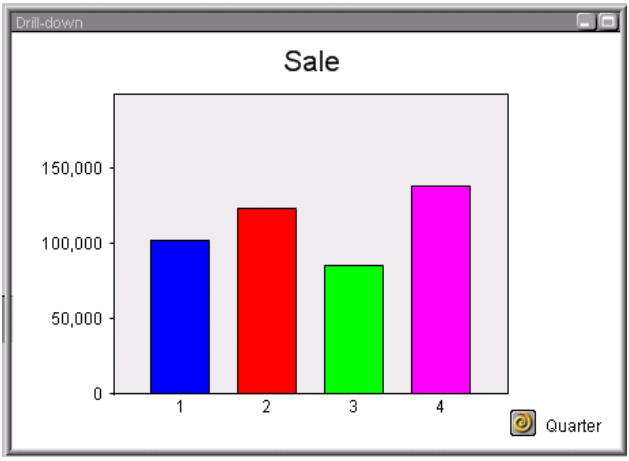


Figure 23. A drill-down chart

A dimension used in a chart is usually equivalent to a single field, e.g. *Year*. However, you will sometimes encounter charts created out of field groups. These charts can be of two types, drill-down or cyclic. In a drill-down chart, the field group defined usually consists of fields forming a natural hierarchy, e.g. *Year*, *Quarter*, *Month*.

The *Sales* sheet in your document contains a minimized drill-down chart.

1 Go to the *Sales* sheet.

2 Restore the minimized *Drill-Down* chart - found in the left-hand corner of the screen - by double-clicking it.

The chart, showing the sum of sales per year, looks like any other bar chart. However, as soon as you make a selection causing the field *Year* to have only one possible value, you discover its drill-down character:

3 Select the bar *1995* in the chart.

An ordinary chart would now display one bar, representing the sum of sales for 1995. This chart, however, shows the sum of sales for each *quarter* of the year 1995 (the second field in the field list defined being *Quarter*).

4 Select the bar representing the fourth quarter.

The chart turns to showing the sales for each month of the selected quarter. *Month* is the third, and last, field in the field group.

Note the selections in the Current Selection box in the lower right corner of the sheet. Keeping track of selections is very important when working with drill-down charts.

5 To go back in the hierarchy, click in the outer chart area, or on the drill-down button next to the field name. 

As soon as more than one value becomes possible in the fields further up in the hierarchy, the chart is automatically drilled back up.

The creation of field groups will be discussed in *Advanced Features* (page 185).

You should now be familiar with all the different chart types: bar chart, line chart, combo chart, scatter chart, pie chart, pivot table, straight table and gauge chart as well as drill-down chart. The last section of this lesson will show you how to copy charts to Clipboard and how to print them.

Copying to Clipboard and printing

All sheet objects can be copied as images to the clipboard. Charts and tables can be printed. It is also possible to export the data contents of charts and tables to the clipboard.

Copying a sheet object to Clipboard

1 Click with the right mouse button on a chart to open the float menu.

2 Choose **Copy Image to Clipboard**.

3 To view the result, open a blank document in e.g. Word, and click **Paste**.

4 Close Word.

Printing

1 Go back to QlikView.

2 Click on a chart with the right mouse button, then click **Print...**.

The **Print...** dialog opens. The **General** page of this dialog contains the basic print options. The **Layout** page is used for setting margins and for deciding whether a selection stamp should be printed or not. On the **Header/Footer** page you may specify header and footer for the printed pages. For detailed information, see the *Reference Manual, Book II*.

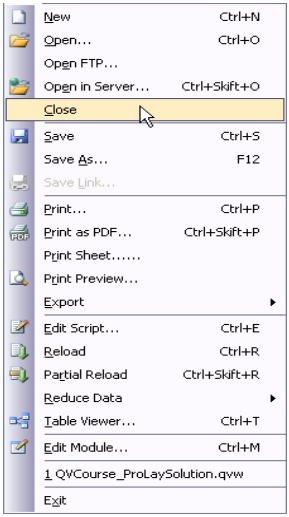
3 Click **Print...**.

It is also possible to choose the **Print...** command from the **File** menu or from the toolbar.

In the next lesson, the presentation tour goes on with the multi box and the table box.

Saving, closing and exiting

If you don't want to turn to the next lesson right away, you can close the document. You should also save the document, since the following lessons are based on the work you've done so far.



1 Choose **Save** from the **File** menu.

QlikView saves the changes you've made to your document. You can now close the file:

2 Choose **Close** from the **File** menu.

If you won't be working with QlikView for a while, you can also exit the program:

3 Choose **Exit** from the **File** menu.

LESSON 7 MULTI BOXES, TABLE BOXES AND INPUT BOXES

This lesson features the multi box, which allows you to show data in a very compact way; the input box, which can be used for interactive input of data; and the table box which presents data in table format.

Opening the document

If you closed the document and exited QlikView after the previous lesson, you need to open it again.

1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Choose **Open** from the **File** menu.

3 Select the file *MyTutorial.qvw*, then click **Open**.

If *MyTutorial.qvw* is among the most recently used files, you can also open it directly from the **File** menu.

You have now opened the document.

The multi box

The multi box, or multiple drop-down list box, is a sheet object that shows several fields simultaneously in a very compact way.

The multi box makes it possible to show a great number of fields on a single sheet without losing the overview.

How results of selections are shown in multi boxes

The *Geography* sheet contains a multi box showing country information.

For each field in the multi box, there is a selection indicator telling you if the values of the field are selected, optional or excluded.

A value will be shown in the multi box only if it is the single possible (optional or selected) one.

1 Clear all your selections by clicking the **Clear Selections** button in the toolbar.

The selection indicators of the multi box are now all white, which means that all the fields contain optional values.

2 Select *Dollar* in the *Currency* list box.

Most of the fields still have white selection indicators, which means that they contain several optional values. *Dollar* and *Not known* being the only possible values in their respective fields, they are shown in the multi box.

3 Select *Australia* in the *Country* list box.

Multi box	
Capital	Canberra
Country	Australia
Offical name of Country	the Commonwealth of Australia
Population(mio)	16.000
Pop. Growth	1.30%
Currency	Dollar
Inflation	Not known

Values appear in all the fields. The multi box allows you to display a great amount of information in a limited space.

Creating a multi box

1 Go to the *Customer* sheet.

2 Clear your selections.

3 Click the **Create Multi box** button in the toolbar or choose **New Sheet Object**, **Multi box** from the **Layout** menu.

The **General** page of the **Multi Box Properties** dialog box now appears. Here you can choose the fields to display in the multi box.

4 Type *Customer info* in the **Title** box.

5 Select *Customer* in the column listing available fields, then click **Add>**.

The field *Customer* is moved to the column of displayed fields, which means that it will appear in the multi box. Select a few more fields:

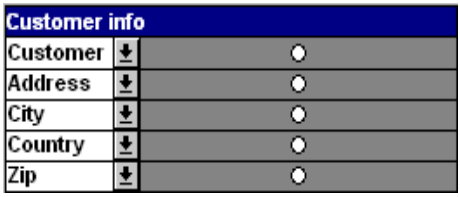
6 Select *Address* by clicking the field in the list.

7 Press CTRL while clicking the fields *City*, *Country*, and *Zip*.

8 Click **Add>**.

9 Click **OK**.

The multi box appears on your sheet.



Making selections in the multi box

You make selections in a multi box in the following way:

1 Clear your selections.

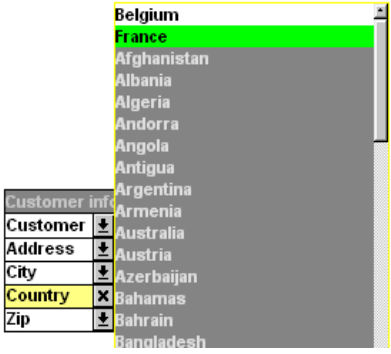
2 Open the field *Customer* by clicking the arrow.

3 Select *Gaston HiTech*.

There are optional values in all the boxes.

4 Open the field *Country* by clicking the arrow.

5 *Belgium* and *France* are optional. The French address is the one you need: click *France*.



The requested information appears in the remaining fields of the multi box.

The properties of the multi box can be changed just like those of other sheet objects.

6 Click on the multi box with the right mouse button to open the float menu.

The float menu appearing contains the same commands as that of the list box. The commands in the second group (**Select Possible** etc.) apply to the field you have clicked on, while the next three operate on all the fields of the multi box. If you click on the title bar of the multi box, the field-specific commands are not shown.

7 Choose **Properties...**.

The properties dialog of the multi box contains six pages, which look similar to those of the list box.

Promoting a field

Maybe you would prefer to let the field *Zip* precede *Country.*

1 Select *Zip* in the column of displayed fields.

2 Below the list, there are two buttons: **Promote** and **Demote**. Click **Promote**.

3 Click **OK**.

The field *Zip* has been moved one step up in the multi box.

4 Clear your selections.

The table box

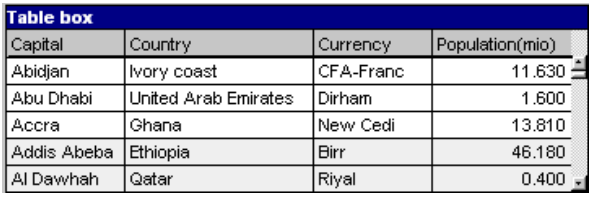


Table box

Capital	Country	Currency	Population(mio)
Abidjan	Ivory coast	CFA-Franc	11.630
Abu Dhabi	United Arab Emirates	Dirham	1.600
Accra	Ghana	New Cedi	13.810
Addis Abeba	Ethiopia	Birr	46.180
Al Dawhah	Qatar	Riyal	0.400

The table box is a sheet object that shows several fields simultaneously. The contents are record-oriented in the same way as a normal table, i.e. the contents of one row are logically connected. The columns of the table box can be fetched from different input tables, which allows the user to create a new table from the logically possible combinations of the input tables.

At the first glance, the table box may look similar to the straight table: both are record-oriented, i.e. each row contains a possible combination of data. However, there are fundamental differences between the two sheet objects, the most important one being that table boxes cannot show calculated values.

Making selections in a table box

The sheet *Geography* contains a table box, found below the multi box you worked with in the previous section.

Just like the other sheet objects, the table box immediately reflects selections made in other sheet objects.

1 Select a few countries in the list box *Country* and study the result.

You can make selections in a table box by clicking any of the available field values or by "painting" an area:

2 Select a range of values in the table box. See how the contents change.

3 Clear your selections.

Creating a table box

1 Go to the sheet *Customer*.

The sheet contains a multi box with the fields *Customer*, *Address*, *City*, *Zip*, and *Country*. You will now create a table box with the same fields:

2 Click the **Create Table Box** button in the toolbar.

3 The **General** page of the **Table Box Properties** dialog is now open. Enter the text *Customer info* in the **Title** box.

4 Double-click the fields mentioned above to move them to the column of displayed fields, then click **OK**.

A table box containing the selected fields now appears on your screen. Size it until you see all the columns, and move it to an appropriate position.

As you see, the field values found in one and the same row are logically connected just like in a straight table.

Customer info

Customer	Address	City	Zip	Country
Adder Inc.	9, rue de la Poste	Montreal	-	Canada
Adder Inc.	14 George Washington	San Francisco	-	U.S.A.
Al Akbar News Services	-	Kabul	-	Afghanistan
Alf Jequitaine	Rue de Gaulle 13	Paris	75664	France
Asian Pizza	55, Han Kow St.	Taipei	-	Taiwan
Asian Pizza	-	Chittagong	-	Bangladesh
Asian Pizza	-	Rangoon	-	Burma
Asian Pizza	-	San'a	-	Yemen
Asian Pizza	-	Thimpu	-	Bhutan
Atlantic Marketing	174, rue Duchamp	Liège	-	Belgium
Atlantic Marketing	Bahnhof Strasse 3	Berlin	749 33	Germany
Atlantic Marketing	Westkapelseweg 5	Arnhem	-	Netherlands

Figure 24. A table box containing the same information as the multi box created in the previous lesson.

Changing properties

Adjusting columns

The columns of the table box can be adjusted just like those of the other tables:

1 Place the cursor on one of the vertical lines, then drag.

To adjust the rightmost column, place the cursor as far to the right as you can, but within the border and the scroll bar.

To assign the same size to all the columns, do the following:

2 Click on one of the columns with the right mouse button.

3 Choose **Equal Columnwidth** from the float menu.

Note The float menu (and the **Object** menu, which is equivalent to the float menu of the currently active object) of the table box has different appearances depending on whether you click on the header or on a field. Field-specific commands such as **Select Possible**, **Sort** etc. are either non-existent or dimmed when you click on the header of the table box.

Sorting the table box

Just like the straight table, the table box provides excellent possibilities for sorting.

1 Right-click on the column header of the column *Country*, then choose **Sort** from the float menu.

Customer is still the first column of the table box, but the values are now sorted according to the sort order of the field *Country*. Note how the sort indicator in the table header changed position. Since this sheet mainly contains customer information, it makes more sense to have the table sorted by customer, though.

2 Double-click the header of the column *Customer*.

The table is now again sorted according to the sort order of the field *Customer*.

The sort orders of the different fields can be set on the **Sort** page of the **Table Box Properties** dialog. Here you can also change the sort priority of the columns by means of the **Promote** and **Demote** buttons.

Printing or exporting a table box

Printing

Suppose you want to print a list of all the French customers.

1 Clear all previous selections by clicking **Clear Selections** in the toolbar.

2 In the *Country* list box of the *Customer* sheet, select *France*. The table box now shows all the customers that have offices in France.

3 Click on the table box with the right mouse button, then choose **Print...**.

The **Print** dialog opens.

4 Click **Print...**.

It is also possible to choose the **Print...** command from the **Object** menu, from the **File** menu or from the toolbar.

Exporting

Instead of printing the table box, you can export its contents to a file:

1 Click on the table box with the right mouse button, then choose **Export...** from the float menu.

In the dialog that opens, .qvo is preselected as type of file. This is a QlikView-specific type, which can be freely associated with any program.

2 Type *Customers in France.qvo* or something similar in the **File name** box.

3 Click **Save**.

To view the result of your export, do the following:

4 Open the Explorer from your **Start** menu.

5 Find the file, then double-click it.

6 In the dialog that opens, you can specify the program you want to use to open the file. Select e.g. Excel in the list, then click **OK**.

Microsoft Excel now opens your file *Customers in France.qvo*.

7 Close Excel and go back to QlikView.

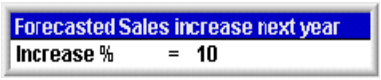
Using an input box

Sometimes there is a need to enter data interactively into the QlikView document. The data in the fields (list boxes etc.) cannot be changed interactively. However QlikView has something called variables, which can be changed at any time. The typical way of entering data in a variable is through the **Input Box**.

Entering data in an input box

In this chapter we will use an input box to enter a forecasted sales increase and see the result in a chart.

1 Clear all selections.



2 Go to the *Geography* sheet. There you will find an input box.

3 Move the input box to the *Sales* sheet by dragging it to the *Sales* sheet tab.

4 Go to the *Sales* sheet. The input box should now be found on that sheet.

5 Restore the chart *Forecasted sales next year*, which can be found as an icon in the bottom of the sheet. Double-click the icon to restore it.

This chart shows sales for all years but also has an extra bar to the right showing a forecast for the next year. The expression in the chart calculates this as sales in the last year increased with a percent factor in a variable called *Increase*. This is the variable which is shown in the input box. It is currently set to 10 percent. Since we are optimistic about sales, we will now raise the forecast to 20 percent sales increase.

6 Click with the mouse in the area to the right of the "=" in the input box. The figure "10" will be marked. You are now in edit mode for the input box.

7 Type "20" and press ENTER.

The value of the variable has changed and the chart will be recalculated. You can see how the *Forecast* bar grew higher compared to the bars to the left.

Input box constraints

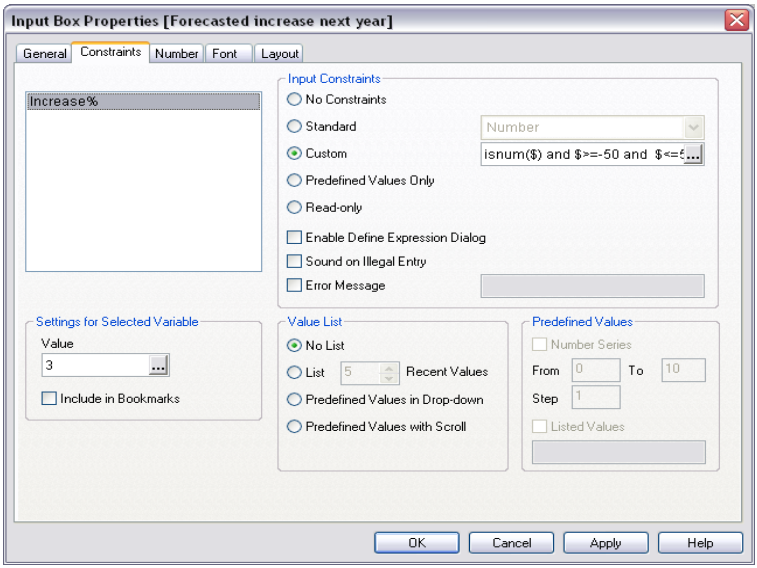


Figure 25. The Constraints page of the Input box dialog

In principle variables in input boxes can hold any data. The document designer often sets limits to what is allowed to enter. In the example in front of you e.g. a non-numeric value would not make sense. This input box therefor has a constraint only allowing input of numbers between -50 and 50.

1 Click in the input box and enter the value 99.

The input box will not accept this value as it falls outside the set constraints. An error message will be shown.

2 Click **OK**.

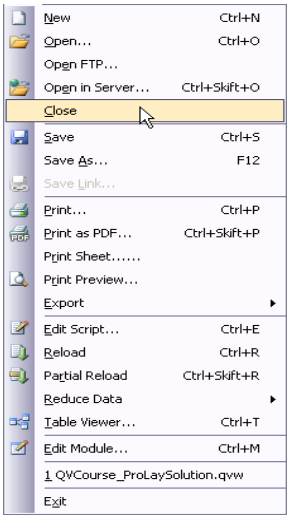
You will remain in edit mode in the input box with the old value marked.

3 Type "3" and press ENTER and we are back where we started.

In the next lesson, you'll get acquainted with the button, the text object and line/arrow object.

Saving, closing and exiting

If you don’t want to turn to the next lesson right away, you can close the document. You should also save the document, since the following lessons are based on the work you’ve done so far.



1 Choose **Save** from the **File** menu.

QlikView saves the changes you’ve made to your document. You can now close the file:

2 Choose **Close** from the **File** menu.

If you won’t be working with QlikView for a while, you can also exit the program:

3 Choose **Exit** from the **File** menu.

LESSON 8 BUTTONS, TEXT OBJECTS AND LINE/ARROW OBJECTS

In this lesson, you will learn how to create buttons and text objects. Buttons are used for carrying out commands in an easy way, or for exporting data. Text objects also have several areas of document; among other things, you can improve the appearance of your document by combining text objects of different colors to form sheet backgrounds. Line/arrow objects are used to draw lines and arrows to enhance the clarity of the document.

Opening the document

If you closed the document and exited QlikView after the previous lesson, you need to open it again.

1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Choose **Open** from the **File** menu.

3 Select the file *MyTutorial.qvw*, then click **Open**.

If *MyTutorial.qvw* is among the most recently used files, you can also open it directly from the **File** menu.

You have now opened the document.

The button

Buttons can be used in QlikView to perform commands or actions, e.g. exporting data to files or launching other documents. There are three types of buttons: the shortcut button, the launch/export button and the macro button. Macro buttons are not described in the *Tutorial*.

Using a shortcut button

All the commands available for a shortcut button can also be performed in other ways in QlikView, but it is often very convenient to use a shortcut button. The *Geography* sheet contains a shortcut button with the text *Clear selections*.

1 Go to the *Geography* sheet.

2 Select one or several countries.

3 Find the shortcut button *Clear selections* in the center of the screen and click it.

Your selections have disappeared.

Creating a shortcut button

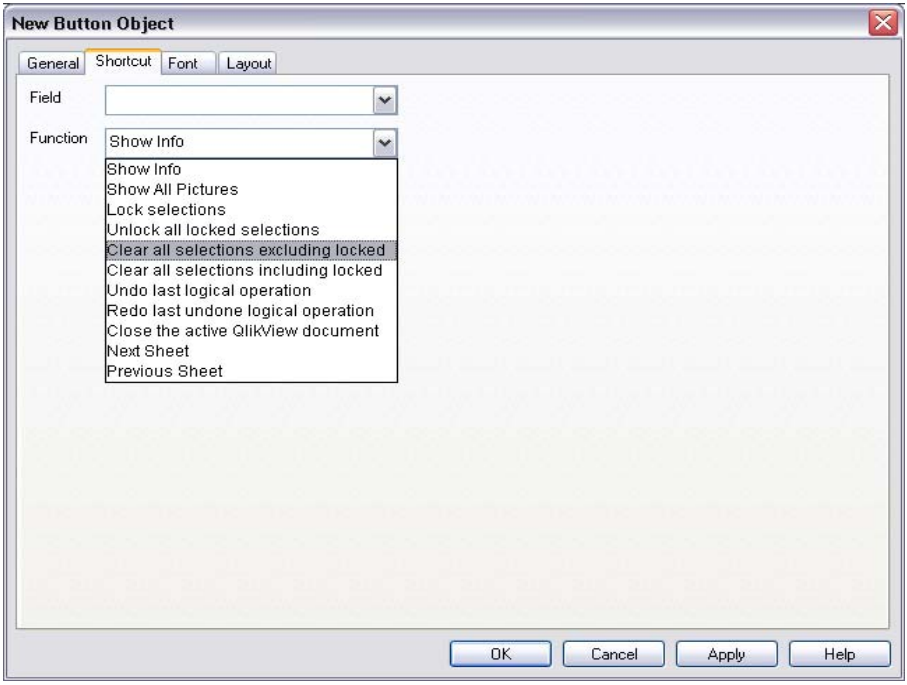


Figure 26. The Shortcut page of the Button Properties dialog

You will now create a similar shortcut button on the *Customer* sheet.

1 Click the **Create Button** icon in the toolbar.

2 On the **General** page of the **Button Properties** dialog that appears, type the text *Clear all selections* in the **Text** box.

3 Click **Shortcut** under **Function**.

The tabs **Launch** and **Export**, which were originally present, have been replaced by the **Shortcut** tab.

4 Click the **Shortcut** tab.

On the **Shortcut** page, you can choose the command to be performed, as well as the field on which it should operate. Since the

command that you wish to perform operates on all fields, the contents of the **Field** box will be disregarded.

5 In the **Function** box, choose the function **Clear all selections including locked**.

6 Click **OK**.

7 Try your new button.

You can move the button by placing the cursor on it and dragging while holding the mouse button down.

Creating an Export button

You have already learned how to export data from a table box. It is also possible to use a button to export data from specific fields.

1 Go to the *Sales* sheet.

2 Click the **Create Button** icon in the toolbar.

3 Type the text *Export* in the **Text** box.

4 **Launch/Export** is preselected under **Function**. Go to the **Export** page.

The **Fields** column contains a list of all the fields in the document. By double-clicking fields in this column, you add them to the column **Export Lines**.

5 Add the fields *Country*, *Customer*, *Salesman*, *Sales*, and *Year* to the column **Export Lines**.

6 Click **OK**.

7 Select a few values, then click the **Export** button.

The possible values in the specified fields have been copied to the clipboard. To see the result, open e.g. Excel, and click **Paste**.

Exporting to a file

You can also export the data to a file, like you did with in the table box example:

1 Open the **Properties** dialog again, and go to the **Export** page.

2 In the group named **Export to**, select **File** instead of **Clipboard**.

3 The **Export File** dialog automatically opens. Find an appropriate location, then type a file name with the extension .csv (Comma Separated Value) in the **File name** box, e.g. *Export.csv.*

4 Select *Comma Delimited* in the text box **Save as type**.

5 Click **Save**.

The path to the file appears in the **File** box on the **Export** page. Every time you click the export button, all combinations of the possible values of the specified fields will be copied to this file.

Launching the application

If you want the application to be launched as soon as you click the export button, you can specify this on the **Launch** page.

1 Go to the **Launch** page.

2 Mark the **Application** check box, and find the program with which you want to open the export file. Choose Excel, which should be found under Program Files.

3 Click **Open**.

4 Click **OK**.

Select a few values again, then click the *Export* button. If everything works as it should, Excel will now open the file *Export.csv*, containing your exported data.

5 Close Excel.

6 Clear your selections.

The text object

Text objects can be used in several different ways, e.g. for displaying explanatory text for the different parts of your document, or for creating multi-colored sheet backgrounds. In this section, you will do the latter.

Setting a background color using the sheet properties dialog

Your document consists of four sheets: *Geography*, *Customer*, *Sales*, and *Tables*. The sheets all have gray backgrounds. The easiest way of applying a different background color to a sheet is the following:

1 Click on the sheet *Geography* with the right mouse button and choose **Sheet Properties...**.

2 On the **General** page select **Sheet Settings** in the **Background** group, mark the **Color** check box and press the color button.

3 Pick a navy blue color from the color map, then click **OK** and close the properties dialog.

The *Geography* sheet now has a navy blue background. Instead of a simple color, you can also show a picture. However, the color you set this way will always cover the entire sheet.

Setting a background using text objects

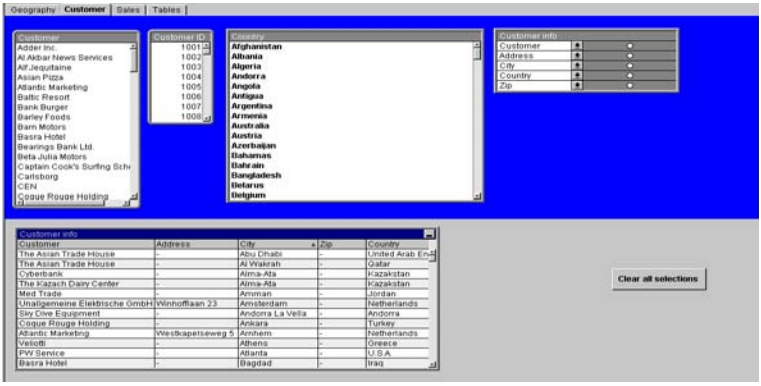


Figure 27. The new background of the sheet Customer

Suppose you would like the background of the sheet *Customer* to have two colors, navy blue and gray.

1 Click the **Create Text Object** button in the design toolbar. 

The **Text Object Properties** dialog opens. The upper part of it contains an area in which you can type text. In this case the box should remain empty, since we only want color, not text.

2 Make sure that the **Opaque Fixed** option is marked in the **Background** group, then click the **Color** button.

3 Pick a navy blue color from the map, then click **OK** and close the properties dialog.

There should now be a small navy blue square somewhere on your sheet. This is your text object. You can move and size it freely.

4 Move and size the text object until it covers the upper part of the sheet, including the list boxes *Customer ID*, *Country* and *Customer*, as well as the multi box *Customer info*.

If you would like the lower half of the sheet to have a different color as well, repeat the procedure described above to create another text object with the color of your choice.

Feel free to add colored text objects to the remaining sheets. Make sure that the text objects are positioned in the bottom layer (**Layout** page), so that they don't accidentally obscure other sheet objects.

The line/arrow object

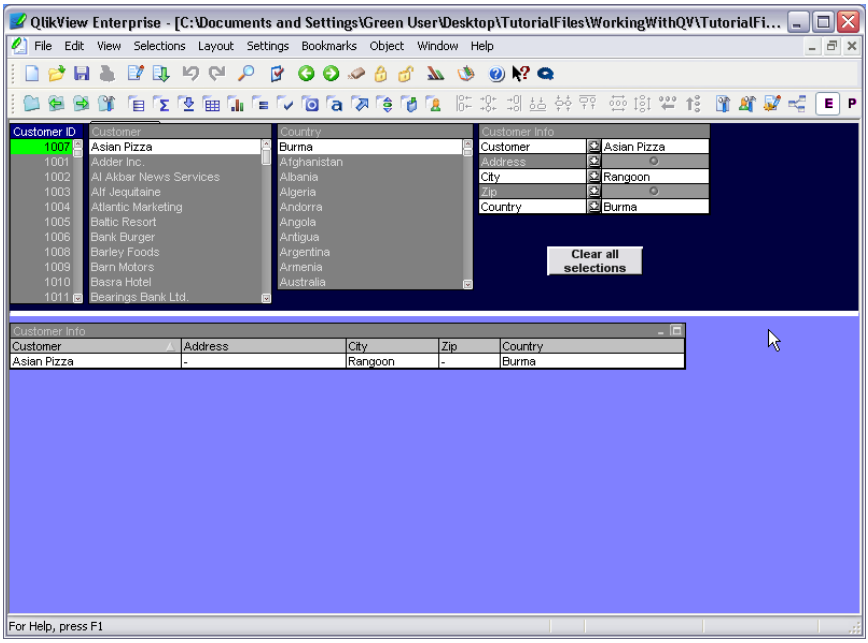


Figure 28. The line further enhances the division of the sheet.

Line/arrow objects can be used e.g. for dividing the sheet layout or for pointing out a certain sheet object etc. We will use a horizontal line to emphasize the sectioning of the sheet established by the text object background we just created.

1 Select the sheet *Customer*.

2 Click the **Create Line/Arrow** button in the design toolbar.

The **General** page of the **Line/Arrow Properties** dialog appears.

3 Choose **Horizontal** orientation.

4 Choose a fixed white color.

5 Choose a **Line Weight** of 5 and a continuous line as **Line Style**.

6 Choose line without arrow as **Arrow Style**.

7 Click **OK**.

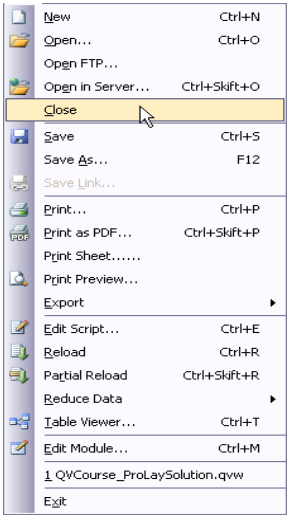
A white horizontal line will now appear on the sheet.

8 Move the line with the mouse so that it lies over the border between the two background colors.

9 Size the line to the left and to the right so that it covers the entire width of the sheet.

Saving, closing and exiting

If you don't want to turn to the next lesson right away, you can close the document. You should also save the document, since the following lessons are based on the work you've done so far.



1 Choose **Save** from the **File** menu.

QlikView saves the changes you've made to your document. You can now close the file:

2 Choose **Close** from the **File** menu.

If you won't be working with QlikView for a while, you can also exit the program:

3 Choose **Exit** from the **File** menu.

LESSON 9 SLIDER OBJECTS, CURRENT SELECTION OBJECTS AND BOOKMARK OBJECTS

This lesson features three additional types of sheet objects which can be used to make QlikView applications more user friendly. The slider objects offers a graphical way of manipulating selections in a field or data in a variable. The current selections box and bookmark objects makes it possible to move menu functionality to a more visible position in the QlikView layout.

Opening the document

If you closed the document and exited QlikView after the previous lesson, you need to open it again.

1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Choose **Open** from the **File** menu.

3 Select the file you worked with in the previous lesson, named *MyTutorial.qvw* or something similar, then click **Open**.

If *MyTutorial.qvw* is among the most recently used files, you can also open it directly from the **File** menu.

You have now opened the document.

Creating a slider object

The slider objects offer a graphical way of manipulating selections in a field or data in a variable. It is a very versatile object but in this lesson we will only demonstrate one of its uses by connecting a slider to a field.

1 Go to the *Sales* sheet.

2 Clear your selections.

3 Click the **Create Slider** button in the toolbar or choose **New Sheet Object**, **Slider...** from the **Layout** menu.

4 The **General** page of the **Slider Properties** dialog box now appears. Slider objects can be used to control a field or one or two variables. In this example we will use it for controlling selections in the field *Month*.

5 Choose *Month* in the **Field** drop-down box.

6 Choose **Multi Value** in the **Mode** group.

7 Click **OK**.

The slider object appears on your sheet.

8 Select months 7, 8 and 9 in the *Months* list box. A thumb will appear in the slider object.

9 Point at the thumb and drag it. Notice the pop-up showing the months corresponding to the current position of the thumb.

10 Release the mouse button. The selections in the list box will shift in line with the slider position.

11 Position the cursor on one of the slider thumb's short ends. Click and drag. The range of selections will narrow or widen accordingly.

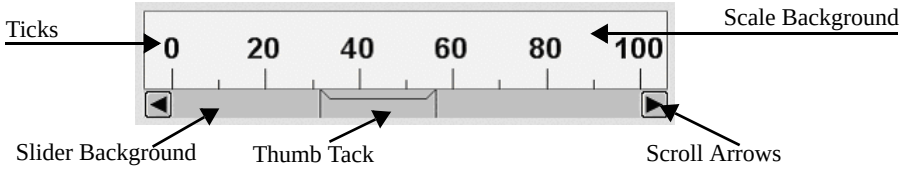
12 Release the mouse button and the new selection takes effect.

13 Clear selections. The thumb disappears from the slider object.

14 Click inside the slider area (between the arrows) and paint a selection with the mouse. The thumb will reappear.

Using a slider object

The slider objects offer a graphical way of manipulation selections in a field or data in a variable. A slider object has the following components:



The exact looks, colors etc of a slider object may vary with object settings.

The slider object may of course, just like any other sheet object, have border and caption. With the appropriate settings in the **Layout** page of **Slider Object Properties** it may also be minimized, maximized etc.

The thumb tack shows the value or values currently selected by the slider object. The thumb tack can be moved by pointing at it with the mouse and keeping the left mouse button depressed while dragging the mouse in either direction. By moving the thumb tack you will also move the selection value(s). By pointing the mouse and dragging at one of the edges of the thumb tack in a multi-value slider you may expand or limit the selection.

When moving or changing the selection with the thumb tack a pop-up window will show the current value(s). The new selection will not apply until the slider is released.

The selection can be moved one unit up or down by clicking on the scroll arrows or by using the arrow keys. The selection can also be moved one width of the thumbtack up or down by clicking in the slider background or by using the PAGEDN/PAGEUP keys.

If a slider is linked to a field where there is not exactly one selected value (for single value mode slider) or exactly one continuous range of selected values (for multi value mode slider), no thumb tack will be shown. It is then possible to click a value (single value mode) or paint a range (multi value mode) in the slider background. The same applies when a slider is linked to a variable without numeric value.

Note Slider objects linked to a field are typically best used without having list boxes displaying the same field. As described above the slider thumb tack may disappear due to non slider-compatible selections. The best way to avoid this problem is to lock the field while keeping the **Override Locked Field** settings for the slider object. This setting will allow the slider object to change selections in the field while prohibiting other types of objects to do the same. This works also when the user uses the **Clear** command.

Creating a bookmark object

It is sometimes convenient and user friendly to move the handling of bookmarks from menus and toolbar and down to the QlikView layout. This is why we have the bookmark object.

In a bookmark object you can select between existing bookmarks in a dropdown list and, depending on configuration, add new and delete old bookmarks.

Let’s create a bookmark object:

1 Go to the *Sales* sheet.

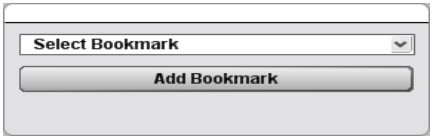
2 Clear your selections.

3 Click the **Create Bookmark** object button in the toolbar or choose **New Sheet Object**, **Bookmark object...** from the **Layout** menu.

4 The **General** page of the **Bookmark objects Properties** dialog box now appears. In this case we do not need to change any of the default settings.

5 Click **OK**.

The bookmark now appears on your sheet.



6 Make a few selections in some list boxes and then click the **Add Bookmark** button.

7 Type a name for the new bookmark in the dialog that appears. Then click **OK**.

8 Clear your selections.

9 Select your bookmark in the dropdown list in the bookmark object.

In the last lesson of this part, you will learn how to change settings on document level, how to set user preferences and how to reload data.

Saving, closing and exiting

If you don't want to return to the next lesson right away, you can close the document. You should also save the document, since the following lessons are based on the work you have done so far.

1 Choose **Save** from the **File** menu.

QlikView saves the changes you've made to your document. You can now close the file:

2 Choose **Close** from the **File** menu.

If you won't be working with QlikView for a while, you can also exit the program:

3 Choose **Exit** from the **File** menu.

LESSON 10 DOCUMENT PROPERTIES, USER PREFERENCES AND RELOAD

In the previous lessons, you have been working with the different sheet objects; among other things, you have been changing the appearance and behavior of the objects using their respective properties dialogs. In this lesson, which is the final lesson of the part *Working with QlikView*, you'll learn how to change the properties of all the objects of the document at the same time.

Furthermore, a dialog containing settings that affect not only the current document, but all the work performed in QlikView, will be introduced.

At the end of the lesson, you'll learn how to update your document, i.e. how to reload data from the data sources.

Opening the document

If you closed the document and exited QlikView after the previous lesson, you need to open it again.

1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Choose **Open** from the **File** menu.

3 Select the file *MyTutorial.qvw*, then click **Open**.

If *MyTutorial.qvw* is among the most recently used files, you can also open it directly from the **File** menu.

You have now opened the document.

Setting Document Properties

Until now, you have been changing the properties of individual sheet objects. However, you will often find yourself in a situation where you would like to give the same appearance to all the sheet objects of the document or format several fields at the same time. This is when the **Document Properties** dialog is useful. You can also use this dialog to attribute an opening sound or an opening picture to your document.

Setting an opening picture and an opening sound

On the **Opening** page, you can further improve your document by choosing a picture and/or a sound to be shown or played, respectively, when the document is opened:

1 Go to the **Opening** page that you find in the **Document Properties** in the **Settings** menu.

2 Select the check box **Image**.

3 Select the file *Opening.bmp* in the dialog that opens, then click **Open**.

4 By check-marking one of the three following options, you decide how the picture will be closed. Select **Close After 10 Seconds**, but change the number to 5.

5 Check-mark the option **Sound**.

6 Select the file *tada.wav* in the dialog that opens, then click **Open**.

7 Click **OK**.

If you have done everything correctly, you will now get a demonstration of the opening sound and the opening picture.

8 Save the document.

Setting properties

Several of the pages in the **Document Properties** dialog contain settings identical with those of the **List Box Properties** dialog. The difference is that when you change the settings in the **Document Properties** dialog, all the sheet objects containing the selected field are affected. The settings are either applied immediately (settings on **Number**, **Font**, and **Layout** pages), or when new sheet objects are created (settings on **Sort** and **Presentation** pages).

Sorting all future list boxes containing the field Area

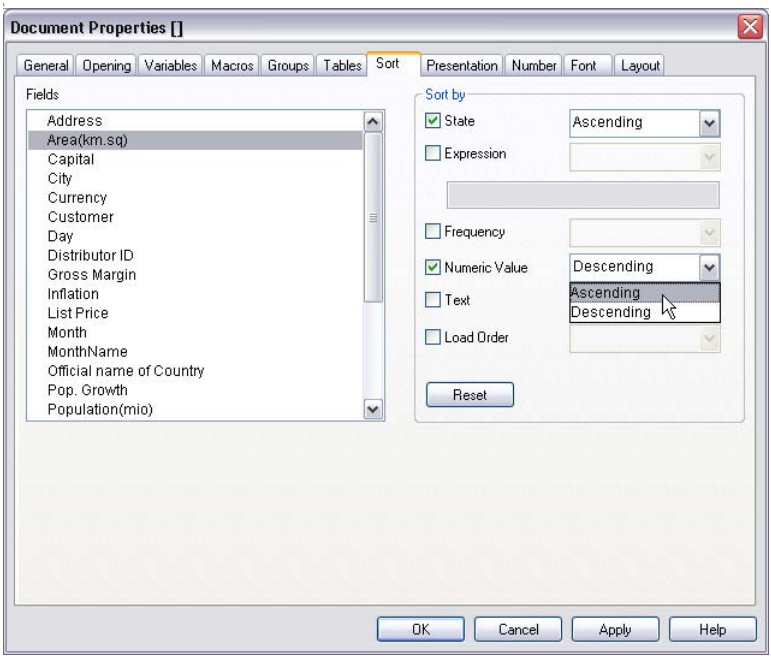


Figure 29. The Sort page of the Document properties dialog.

1 Choose **Document Properties** from the **Settings** menu.

2 Go to the **Sort** page.

You recognize the sort options from the **List Box Properties** dialog. The **Fields** box on the left contains a list of all the fields in the document. Here you can select one or several fields to set their sort order:

3 Select *Area(km.sq)*.

You see that the field is sorted by numeric value, descending. Suppose you want the field sorted by numeric value, ascending instead:

4 Select **Ascending**.

5 Click **OK**.

6 Create a new list box containing the field *Area* and note its sort order.

Applying the same border to all the sheet objects

The **Layout** page of the **Document Properties** dialog is identical with the corresponding page in the **List Box Properties** dialog. However, a setting changed here will affect the entire document. Let us give objects (except buttons, text objects and line/arrow objects) a walled border with slightly rounded corners.

1 Choose **Document Properties** from the **Settings** menu.

2 Go to the **Layout** page.

3 Check **Use Borders**.

4 Choose the style **Walled**.

5 Check **Rounded Shapes**.

6 Make sure that **Corner Radius** is set to 7 pixels, **Squareness** to 2 and that all four corners are marked.

7 In the **Apply to** list, select all objects except buttons, text objects and line/arrow.

8 Click **OK**.

The change is implemented throughout the entire document.

9 Save the document.

User Preferences

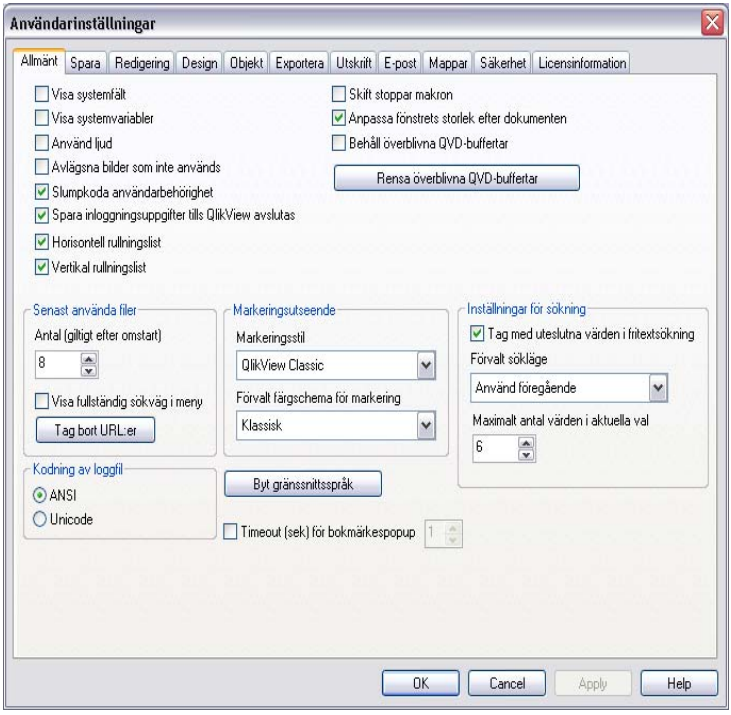


Figure 30. The User Preferences dialog

The **User Preferences** dialog, found in the **Settings** menu, contains a number of settings concerning your way of working with QlikView. Settings changed here remain the same regardless of the application you work with.

Take a few minutes to browse through the settings in the **User Preferences** dialog.

For information on the available commands, see the *Reference Manual*.

Reloading data

The procedure of loading data into QlikView is beyond the scope of this first part of the *Tutorial*. However, even if you will not build your own documents, knowing how to reload, i.e. update, the data contained in the document is of great importance. This is done in a very easy way:

1 Click the **Reload** button in the toolbar (or choose **Reload** from the **File** menu).

If the source data has changed, all your sheet objects are instantly updated to reflect the changes (in this case, no new data has been added). QlikView thus offers an extremely easy way of keeping your document up to date.

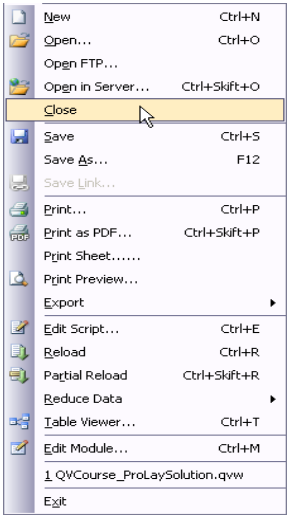
You have now come to the end of the part *Working with QlikView*. If you are going to build your own documents, or if you are just curious to find out where the data you worked with came from and how the values in the boxes were originally associated, you should continue with the following part.

Saving, closing and exiting

1 Choose **Save** from the **File** menu.

QlikView saves the changes you've made to your document. You can now close the file:

2 Choose **Close** from the **File** menu.



The folder *WorkingWithQV* contained not only the file *Tutorial.qvw* that you've been working with, but also a file called *TutorialFinal*. If you want to, you can open this file to compare it with the one you just saved.

If you won't be working with QlikView for a while, you can exit the program:

3 Choose **Exit** from the **File** menu.

CREATING A DOCUMENT

- **Loading data**
- **Associating tables**
- **Concatenating tables**
- **Linking information**
- **Loading data via ODBC**

Introduction

In the previous part of the *Tutorial*, you learned how to work with an existing application. The document already contained data in the form of fields, which you displayed in list boxes and other sheet objects. In this part, you will learn how to create a QlikView document from scratch. Loading data and associating data tables are two of the main topics to be treated. Like in the previous part, there will be a step-by-step presentation of the procedures.

The files used in this part are found in the *..Tutorial\Application\Examples* directory. The sample represents a customer database of a fictive company.

Note that new documents can only be created if you are using QlikView Enterprise.

LESSON 11 LOADING DATA INTO QLIKVIEW

A QlikView document is created by retrieving data from a source, e.g. from a relational database or from text files containing data tables. This retrieval is done by writing and executing a script, in which the database, the tables and the fields to be retrieved are specified. The script can be generated automatically with the tools included in QlikView. Note that QlikView in itself is not a database; it is thus not possible to add new data to a database or alter data in a database with QlikView.

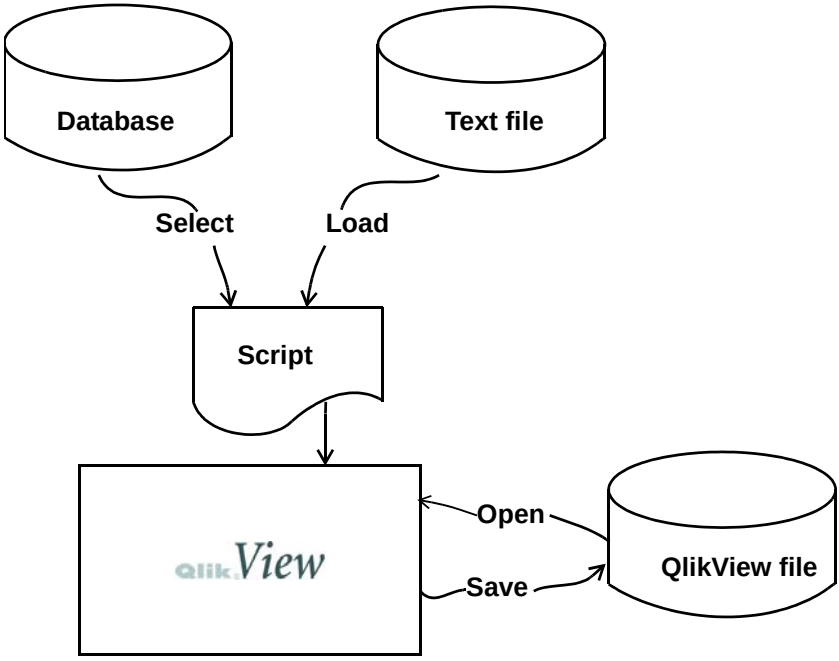


Figure 31. Data can be imported from typed files, or from databases via the ODBC or OLEDB interface. The imported data, together with the made layout, can be saved as a QlikView document.

In this lesson, you'll create a simple document consisting of one data table.

Looking at a delimited text file

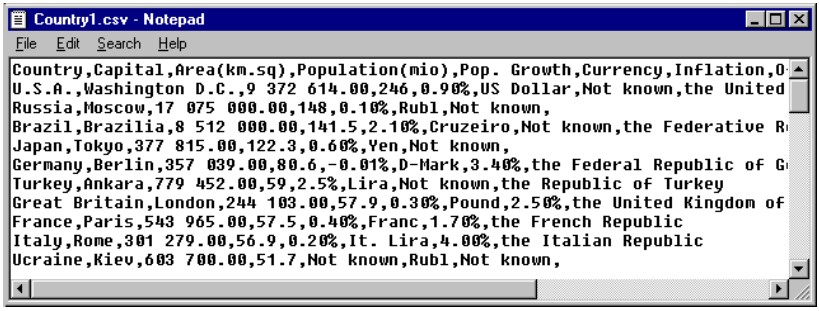


Figure 32. One representation of a table - a comma separated file viewed in a simple text editor.

The simplest way to store a data table is in a text file. In this type of file, each record is represented by a row, and the fields (columns) are separated by characters, e.g. commas (or semicolons, tabs, etc.). Field names are preferably stored in the first row. The type of file that will be used in the examples is the csv (comma separated value) file, which uses comma as delimiter. You'll start by looking at a csv file in a text editor:

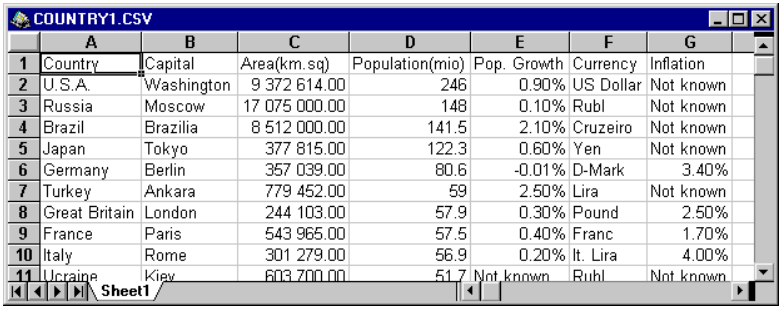
1 Start a text editor, e.g. **Notepad** (found in the Windows **Accessories** group).

2 Open the file *Country1.csv* from the *..\TutorialFiles\Application\Examples* directory (choose **All Files** in the **Files of Type** box).

It should look similar to the file in Figure 32. The contents of the file are logically a table, where each row, or record, describes a country and its properties. The columns are separated by commas, and the first line contains the column (field) names.

3 Close the text editor.

Comma separated value files and text files with other delimiters, such as tab or semicolon, can often be imported to, and exported from, spreadsheet programs. In such a program (e.g. Excel) the same file looks like the one in Figure 33. If you have a spreadsheet program, it might be easier to work in this than in a text editor when creating the tables.



COUNTRY1.CSV

	A	B	C	D	E	F	G
1	Country	Capital	Area(km.sq)	Population(mio)	Pop. Growth	Currency	Inflation
2	U.S.A.	Washington	9 372 614.00	246	0.90%	US Dollar	Not known
3	Russia	Moscow	17 075 000.00	148	0.10%	Rubl	Not known
4	Brazil	Brazilia	8 512 000.00	141.5	2.10%	Cruzeiro	Not known
5	Japan	Tokyo	377 815.00	122.3	0.60%	Yen	Not known
6	Germany	Berlin	357 039.00	80.6	-0.01%	D-Mark	3.40%
7	Turkey	Ankara	779 452.00	59	2.50%	Lira	Not known
8	Great Britain	London	244 103.00	57.9	0.30%	Pound	2.50%
9	France	Paris	543 965.00	57.5	0.40%	Franc	1.70%
10	Italy	Rome	301 279.00	56.9	0.20%	It. Lira	4.00%
11	Ukraine	Kiev	603 700.00	51.7	Not known	Rubl	Not known

Sheet1

Figure 33. The comma separated file viewed in a spreadsheet program.

Note QlikView treats Excel files (.xls) in the same way as text files, which means that you can load them directly into the script without saving them in another format.

Loading the text file

The first thing to do when loading the file into QlikView is to create an empty document.

1 Start QlikView (see the *Basics* chapter if you have forgotten).

2 Choose **New** from the **File** menu or from the toolbar.

The next thing to do is to create a script that specifies the files to load:

3 Choose **Edit Script** from the **File** menu or from the toolbar.

The **Edit Script** dialog now opens. It is in this dialog that the script will be created. A number of rows starting with **SET** have already been generated in the script pane to the upper right. You will learn about their meaning later (*Advanced Features* page 209). Each statement is represented by a box in the statement graph pane to the left.

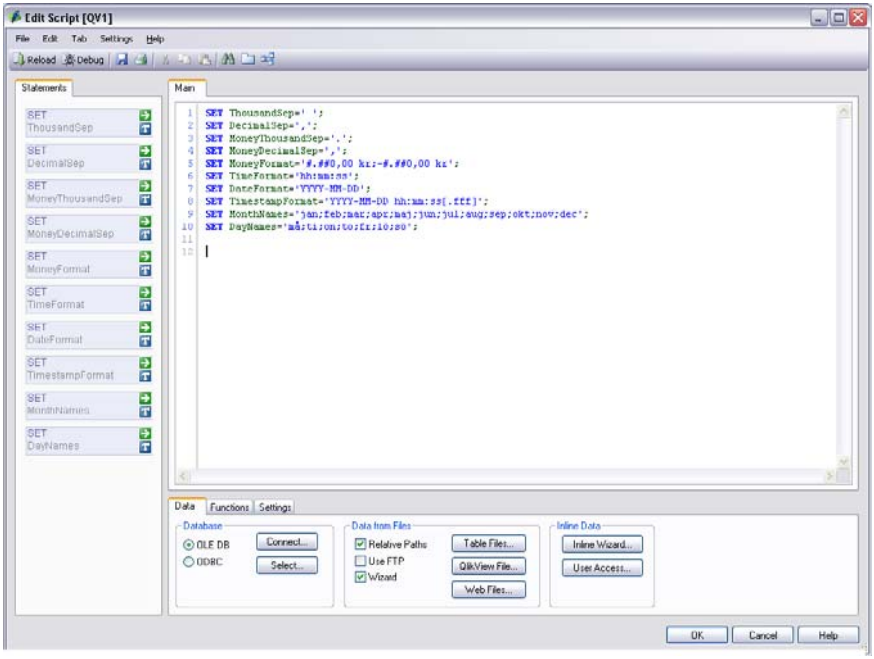


Figure 34. The Edit Script dialog

At the bottom of the dialog you will find a row of tabs containing functions for script generation.

4 Choose **Table Files** on the **Data tab**. This opens the **Open Local Files** dialog box, in which you can browse for the file you wish to load. Make sure that the control **Files of Type** is set to **Table Files**.

5 Find the file *Country1.csv* (the one you opened in the text editor before), select it and choose **Open**. The file is now opened in the file wizard, which interprets the contents of the file and helps you to load the data into the script in a correct way. In the file wizard, your file looks like in Figure 35 below.

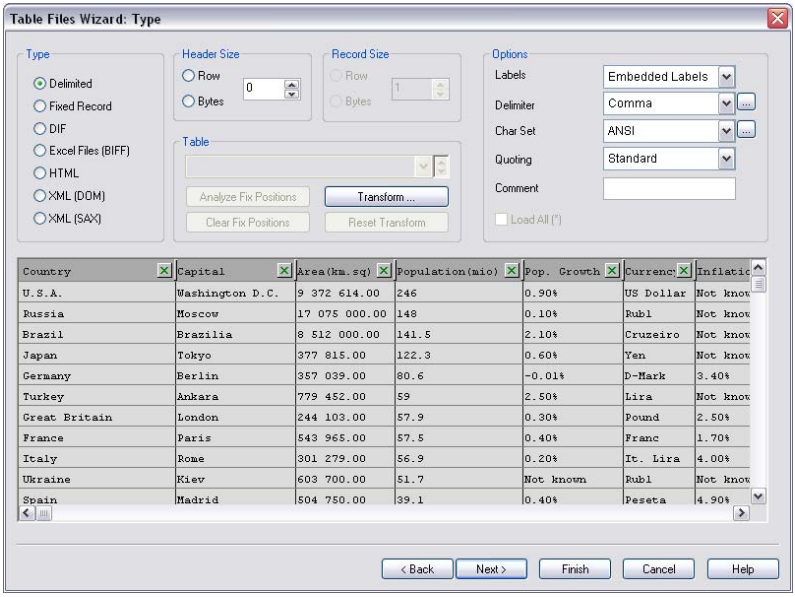


Figure 35. Interpretation of the file Country1.csv in the file wizard

The file wizard interprets the file to be a comma separated (delimited) file using the ANSI character set. This is a correct interpretation. Furthermore, the file is said to have embedded labels, which means that the first row contains field names. When studying the text box at the bottom of the wizard, you see that this is also correct: *Country*, *Capital* etc., marked gray, are indeed field names. Finally, the wizard states that the header size is 0 characters, which means that the file contains no initial information to be omitted.

6 Since the program has made a correct interpretation of the file, you can click **Finish**.

7 A script similar to the one below has been generated in the **Edit Script** dialog:

```
Load  Country,
      Capital,
      [Area(km.sq)],
      [Population(mio)],
      [Pop. Growth],
      Currency,
      Inflation,
      [Official name of Country]
from c:\qlikview\tutorialfiles\
application\examples\country1.csv
(ansi, txt, delimiter is ',', embedded labels);
```

Study the script. Note that the words **set**, **load** and **from** are highlighted. This means that they are keywords, i.e. have a special meaning in the QlikView script. You can change the colors by choosing **Configure** from the **Settings** menu (of the **Edit Script** dialog). For further details, see the *Reference Manual*.

After **load**, the fields of the selected file are listed. Some of the field names are enclosed by square brackets; this is necessary when a field name contains spaces. The word **from** is followed by the path to the file (*C:\program files\QlikView\...*) and the file name, *Country1.csv*. The path may be different from the one shown here if you installed QlikView and the tutorial files in another directory. The final parenthesis contains additional information about the file, specifying that ANSI is the character set used (standard for Windows files), that the file is a text file, that the character separating the field values is a comma, that the first row of the file contains field names. You recognize the terms from the file wizard.

Note The type of path used here, beginning with *c:* or some other character specifying a hard disk, is called *absolute*. An absolute path gives an exact specification of the location of the file. However, in case you move the file to another location (e.g. to a user directory or to another hard disk), the program will no longer be able to find the file and run the script. To prevent this, you can mark the check box **Relative Paths** in the **Edit Script** dialog. This should be done before loading the file, but it is also possible to delete the path directly in the script. When using relative paths, QlikView will look for files relative to the directory where the current QlikView document is stored. A statement using a relative path is preceded by a **directory** statement in the QlikView script. Learn more about the **directory** statement in the *Reference Manual*.

8 Choose **Run**. The data is now loaded into QlikView, and a dialog box in which it is possible to select the fields to be displayed (Figure 36) is opened.

9 Select the fields *Area (km.sq.)*, *Capital*, *Currency* and *Population(mio)* by CTRL-clicking their names, then choose **Add>** to include them in the list of displayed fields. Another possibility is to double-click the field names. This will immediately put them in the list of displayed fields. The field names starting by "$" are system fields (they are only shown if the check box **Show System Fields** is selected). You'll learn about them later (page 171).

10 Choose **OK** to close the dialog. All the fields in the column **Displayed Fields** will be displayed as list boxes on the active QlikView sheet.

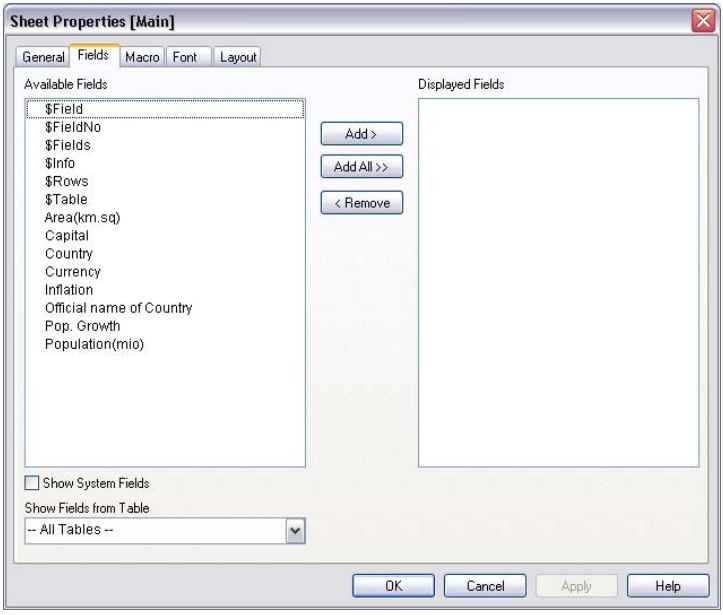


Figure 36. The Fields page in the Sheet Properties dialog. Here you select the fields to display on the current sheet.

If you want to add or remove fields, you can open the **Sheet Properties** dialog again at any time. This is done by clicking on the sheet with the right mouse button and choosing **Properties** from the float menu.

If you have followed all the steps correctly, you should now have a display similar to that in Figure 37. This document is ready to be used, although the layout can be improved.

11 Click on a capital, and you will find e.g. the currency used in that city.

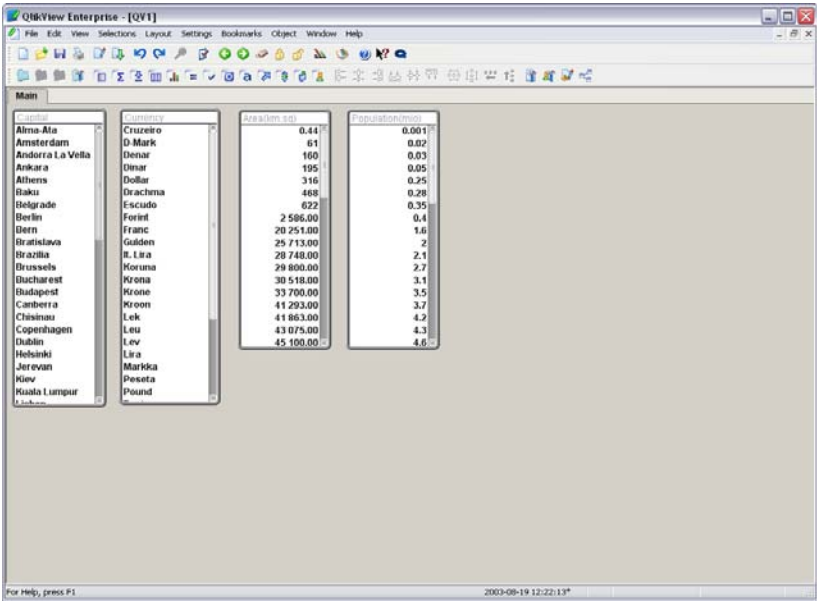


Figure 37. A simple QlikView document

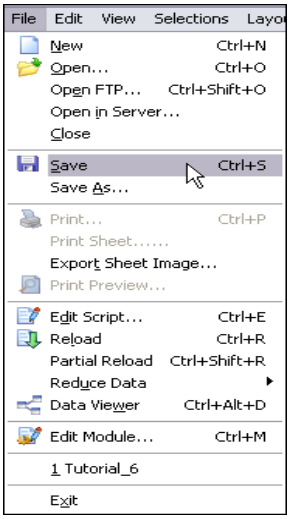
Note Note that all the information refers to the countries, since every record in the table that was loaded represents a country. Thus, clicking on Paris does not mean that you get the population of Paris. It is still the population of France that is shown.

12 Clear your selections.

You have created a simple QlikView document, consisting of a single table. In the next lesson, you'll add two more tables and learn about QlikView's powerful capability of associating tables.

Saving, closing and exiting

If you don't want to turn to the next lesson right away, you can close the document. You should also save the document, since the following lessons are based on the work you've done so far.



1 Choose **Save As** from the **File** menu to save the document.

2 Find an appropriate location for the file: we suggest *...Tutorial\Application*.

3 Type *Application.qvw* or something similar in the **File name** box, then click **Save**.

QlikView saves the file using the new name. You can now close the file:

4 Choose **Close** from the **File** menu.

If you won't be working with QlikView for a while, you can also exit the program:

5 Choose **Exit** from the **File** menu.

LESSON 12 ASSOCIATING DATA FROM MANY TABLES

In the previous lesson, you created a basic document by loading one table into QlikView. However, what you usually want to do is to load and associate data from a great number of tables. In this lesson you'll be familiarized with QlikView's way of automatically associating related tables. You'll also learn how to rename fields in order to assure or prevent associations.

Associations

If you have two tables listing different things, e.g. if you have one list of customers and one list of invoices, and the two tables have a field (column) in common, e.g. the customer number, this usually means that there is a relationship between the two tables.

If such a relationship exists, associations are made between the fields that are common to the tables: QlikView assumes that the two fields are one and the same thing, and the two fields are treated as one. Such a field connecting two or more tables is called a *key.*

There are two basic rules for associations:

- For two fields to be associated, they need to have the exact same name (case sensitive). Thus, e.g., *Name* and *name* are not the same and are not associated.
- If a certain field has the exact same value in several different input tables, QlikView will treat it as one value and also assume that the records (rows) containing the value should be associated. For two field values to be associated, they either need to

  – have exactly the same spelling (case sensitive), or

  – have exactly the same numeric value

Thus: *Name* and *name* are not the same and are not associated. The numbers *123* and *00123* are the same and are associated.

For a further illustration of the basic rules, study the following example:

Table 1:

Name	Number
John	1
Phil	2
Betty	5

Table 2:

Number	Age
3	28
4	35
2	42

Table 3:

Name	ID
Phil	ab
John	xy

Figure 38.

The fields named *Number* are assumed to be one and the same according to the first rule. Table 1 and Table 2 are associated via this field. Table 1 and Table 3 are associated in the same way via the field *Name*.

The field *Number* has the value *2* in both Table 1 and Table 2, which means that *Phil* is assumed to be associated with the age *42*.

The value *2* in Table 1 is associated with the value *ab* in the field *ID* in Table 3 via the value *Phil* of the field *Name*. *John* in Table 1, however, is not the same as *john* in Table 3, so there will be no association.

Table 1:

Name	Number
John	1
Phil	2
Betty	5

Table 2:

Number	Age
3	28
4	35
2	42

Table 3:

Name	ID
Phil	ab
john	xy

Figure 39.

An association thus means that links are built between the fields in the tables, so that logical connections can be studied. This way several tables from one or several databases can be included in the QlikView logic simultaneously.

Opening the document

If you closed the document and exited QlikView after the previous lesson, you need to open it again.

1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Choose **Open** from the **File** menu.

3 Select the file created in the previous lesson (*Application.qvw* or something similar), then click **Open**.

Loading and associating a second table

Your document contains a table with country-specific information. In this lesson, you'll load an additional table representing a list of customers. The country table and the customer table will be associated through the common field *Country*. The customers being registered in different countries, the relation between country properties and customer can be studied as a result of the association.

The new table is found in an Excel file, but you can load it in the same easy way as a text file.

1 Choose **Edit Script** from the **File** menu or from the toolbar.

2 Place the cursor at the end of the script.

3 Choose **Table files**.

4 Select *Customer.xls* from the *...Tutorial\Application\Examples* directory and choose **Open**. This opens the file wizard (Figure 35 on page 129).

5 Note that **Excel** is set as type this time, and that the **Table** box contains the name of the worksheet. This Excel document contains only one worksheet; if there had been several sheets or named tables, the **Table** box would have given you the possibility of choosing from which one of them data should be retrieved. Click **Finish**. Your script will now look similar to the one below (to improve clarity, we will from now on show relative paths, since the directory will stay the same):

```
Load      Country,
          Capital,
          [Area(km.sq)],
          [Population(mio)],
          [Pop. Growth],
          Currency,
          Inflation,
          [Official name of Country]
from country1.csv (ansi, txt, delimiter is
',',embedded labels);
Load      [Customer ID],
          Customer,
          Address,
          City,
          Zip,
          Country
from customer.xls (ansi, biff, embedded labels, table
is [Customer$]);
```

Study the script. You see that both *Country1.csv* and *Customer.xls* contain a field named *Country*. According to the association rules described above, QlikView will associate the two tables via this field.

6 Choose **Run**.

7 The dialog in which you choose the fields to display now appears. All fields, except the field *Country* from the file *Customer.xls* have been added to the column of available fields. The field *Country* is shown in the list of displayed fields. The field *Country* has been associated with the previously loaded fields with the same fieldname.

8 Add the field *Customer* to the column of displayed fields.

9 Choose **OK**.

10 Save your document.

It is now possible to click on a capital and find the customers that reside in the country of this capital; at the same time, they are found in the customer register. This is possible although the fields *Customer* and *Capital* are found in different tables. The only prerequisite is that there is a field, *Country*, common to both tables.

11 Click *Alma-Ata*, the capital of Kazakstan, and note that the fictive company has two customers in Kazakstan.

12 Clear your selections.

You have now built a simple QlikView document containing data from two tables. Several tables can be linked (associated) this way, which makes it possible to study complex relationships in data from many tables.

Renaming fields

In the previous section, you learned that associations between tables are made via fields that are common to the tables, so called *keys*. As we have seen, the criterion for two fields to be associated (to be treated as one and the same field) is that they have the same name. It thus becomes clear that field names are of great importance, and that the renaming of fields is a common procedure when building the QlikView data structure: in real life, fields that should be associated do not always have exactly the same name in different tables.

The directory contains additional files (tables) that are relevant to your document. Suppose you want to associate the file *Transact.csv*, a file containing information about transactions, sales, etc. concerning the customers in the document:

1 Choose **Edit Script** from the **File** menu or from the toolbar.

2 Place the cursor at the end of the script.

3 Choose **Table Files**.

4 Select *Transact.csv* and choose **Open**. This opens the file wizard (Figure 35 on page 129).

5 Make sure that **Delimited** is set as type, **Comma** as delimiter and that the check box **Embedded Labels** is selected.

Until now, you have only accepted the settings proposed to you by the file wizard. Now we will make use of some of the possibilities to change the way QlikView reads the data files.

In the file *Customer.xls* that we loaded before, there was a field named *Customer ID*. Note that the new file contains a field named *ID Customer*. These two fields should be associated, i.e. treated as one. To make this happen, however, you need to rename one of the fields.

6 The file wizard provides excellent possibilities for renaming fields. Simply click in the table header of *ID Customer*, then type the new name, *Customer ID*. Make sure not to forget the space between the words: any misspelling prevents QlikView from interpreting the fields as being one and the same.

7 Press ENTER. The name of the field has been changed.

8 Click **Finish**.

The automatically generated script looks similar to the one below:

```
Load      Country,
          Capital,
          [Area(km.sq)],
          [Population(mio)],
          [Pop. Growth],
          Currency,
          Inflation,
          [Official name of Country]
from country1.csv (ansi, txt, delimiter is ',',
embedded labels);

Load      [Customer ID],
          Customer,
          Address,
          City,
          Zip,
          Country,
from customer.xls (ansi, biff, embedded labels, table
is [Customer$]);

Load      [Transaction ID],
          Year,
          Month,
          Day,
          [Salesman ID],
          [Product ID],
          [SerialNo],
          [ID Customer] as [Customer ID],
          [List Price],
          Sales,
          [Gross Margin]
from transact.csv (ansi, txt, delimiter is ',',
embedded labels);
```

Note the line *[ID Customer] as [Customer ID]*: it has appeared as a result of the change you made in the file wizard, and means that the field *ID Customer* will be loaded into QlikView with the name *Customer ID* (thus assuring the necessary association).

9 Choose **Run**.

10 The **Fields** page of the **Sheet Properties** dialog appears. Add a field from the file *Transact.csv* to the column of displayed fields, e.g. *Sales*.

11 Click **OK**.

12 Save your document.

Three different tables have been loaded, containing information about countries, customers and transactions, respectively. By associating the tables in the way described, QlikView allows you to find all the relevant information from all the tables at the same time - by means of a single click.

13 Select *Finland* in the list box *Country*. The program immediately provides the geographical data stored in the country tables - but also displays the names of the customers residing in Finland, as well as the sales values related to them.

14 Clear your selections.

Note It is easy to associate tables in QlikView, and it is possible to link fields and tables that should not be linked. If this is done, QlikView will not give you relevant answers. Think carefully before assigning field names to fields of different tables, thereby defining the associations.

You should now have acquired some basic knowledge about loading and associating tables. In the following lesson, you'll learn how to merge tables containing the same type of information.

Saving, closing and exiting

If you don't want to turn to the next lesson right away, you can close the document. You should also save the document, since the following lessons are based on the work you've done so far.

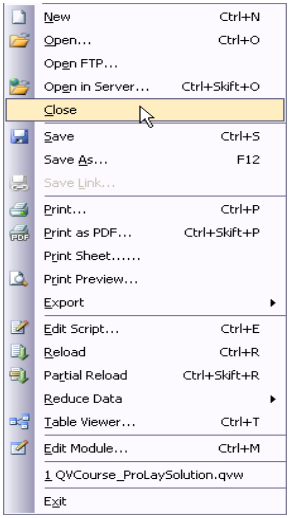
1 Choose **Save** from the **File** menu.

QlikView saves the changes you've made to your document. You can now close the file:

2 Choose **Close** from the **File** menu.

If you won't be working with QlikView for a while, you can also exit the program:

3 Choose **Exit** from the **File** menu.



LESSON 13 CONCATENATING TABLES

In the previous lessons, you learned to load data into QlikView and to associate different tables having fields in common. However, instead of being associated, tables can also be merged. If two input tables are lists of the same thing, but contain different values, e.g. if one is a list of countries in Europe and the other one a list of countries in North and South America, the second table can be seen as a continuation of the first. The tables should then be *concatenated*.

Opening the document

If you closed the document and exited QlikView after the previous lesson, you need to open it again.

1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Choose **Open** from the **File** menu.

3 Select the file *Application.qvw*, then click **Open**.

Automatic concatenation

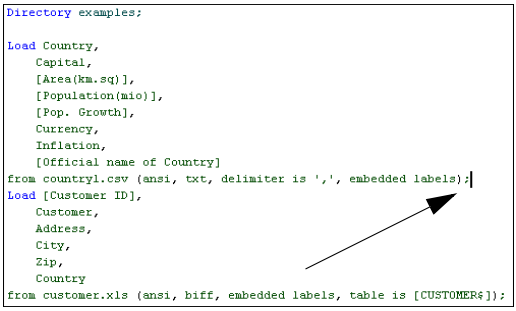
If two tables that have exactly the same set of fields are entered, QlikView automatically treats the second table as a continuation of the first. This is called *concatenation* of tables.

Any number of tables can be concatenated into one table.

Your QlikView document retrieved data from a file with a limited number of countries. The *...Tutorial\Application\Examples* directory contains a second file listing countries, whose field names correspond exactly to those of the already loaded *Country1.csv*. When you load the second file, the two tables will be automatically concatenated.

1 Choose **Edit Script** from the **File** menu or from the toolbar.

2 Position the cursor after the **load** statement loading the file *Country1.csv* (all statements end with a semicolon) and press ENTER to get an empty row. The order of the **load** statements is arbitrary, but you get a better overview of your script by keeping the country files together.



3 Click **Table Files**.

4 Select *Country2.csv*, then choose **Open**. This opens the file wizard (Figure 35 on page 129).

5 Make sure that **Delimited** is set as type, **Comma** as delimiter and that the check box **Embedded Labels** is selected.

6 You don’t need to rename any fields this time, so click **Finish**. You should now have a script similar to the following:

```
Load      Country,
          Capital,
          [Area(km.sq)],
          [Population(mio)],
          [Pop. Growth],
          Currency,
          Inflation,
          [Official name of Country]
from country1.csv (ansi, txt, delimiter is ',',
embedded labels);
Load      Country,
          Capital,
          [Area(km.sq)],
          [Population(mio)],
          [Pop. Growth],
          Currency,
          Inflation,
          [Official name of Country]
from country2.csv (ansi, txt, delimiter is ',',
embedded labels);
Load      [Customer ID],
          Customer,
          Address,
          City,
          Zip,
          Country,
from customer.xls (ansi, biff, embedded labels,
table is [Customer$]);
Load      [Transaction ID],
          Year,
          Month,
          Day,
          [Salesman ID],
          [Product ID],
          [Serial No],
          [ID Customer] as [Customer ID],
          [List Price],
          Sales,
          Gross Margin
from transact.csv (ansi, txt, delimiter is ',',
embedded labels);
```

Note that the sets of fields in *Country1.csv* and *Country2.csv* are exactly the same.

7 Choose **Run**. The **Fields** page in the **Sheet Properties** dialog box (Figure 36 on page 131) is opened. The fields you selected last time are already in the column of displayed fields. No new fields have appeared in the list of available fields, since the field values of *Country2.csv* have been added to the corresponding fields of *Country1.csv.*

8 Choose **OK** to close the dialog.

At a first glance, your document will look very much like it did before; however, there are more entries in most list boxes. Some list boxes may have become wider or obtained scroll bars due to longer field contents.

9 Save your document.

Forced concatenation

Sometimes you want to concatenate tables also when they have different sets of fields. QlikView will then not automatically concatenate the two tables: you need to use the **concatenate** statement, which concatenates a table with the last created logical table.

In the previous section two tables with identical sets of fields, *Country1.csv* and *Country2.csv*, were concatenated. There is also a third file, *Country3.csv*, that contains only a subset of the fields. All three files are lists of countries. Furthermore, they contain different countries, so it is certainly relevant to concatenate the three files into one logical table.

The values of the missing fields in the concatenated table will be NULL, i.e. QlikView will treat these fields as having no value.

Do the following:

1 Choose **Edit Script** from the **File** menu or from the toolbar.

2 Position the cursor after the statement loading *Country2.csv.* This time the order of the statements is not arbitrary, since the **concatenate** statement forces concatenation with the last created logical table in the script.

3 Choose **Table Files**.

4 Select *country3.csv* and choose **Open**. This opens the file wizard (Figure 35 on page 129).

5 Make sure that the wizard has made a correct interpretation, then click **Finish**. This generates a script similar to the one below:

```
Load      Country,
          Capital,
          [Area(km.sq)],
          [Population(mio)],
          [Pop. Growth],
          Currency,
          Inflation,
          [Official name of Country]
from country1.csv (ansi, txt, delimiter is ',',
embedded labels);
Load      Country,
          Capital,
          [Area(km.sq)],
          [Population(mio)],
          [Pop. Growth],
          Currency,
          Inflation,
          [Official name of Country]
from country2.csv (ansi, txt, delimiter is ',',
embedded labels);
Load      Country,
          [Official name of Country],
          [Area(km.sq)]
from country3.csv (ansi, txt, delimiter is ',',
embedded labels);
Load      [Customer ID],
          Customer,
          Address,
          City,
          Zip,
          Country,
from customer.xls (ansi, biff, embedded labels, table
is [Customer$]);
Load      [Transaction ID],
          Year,
          Month,
          Day,
          [Salesman ID],
          [Product ID],
          [Serial No],
          [ID Customer] as [Customer ID],
          [List Price],
          Sales,
          Gross Margin
from transact.csv (ansi, txt, delimiter is ',',
embedded labels);
```

Study the script. The three fields in the file *Country3.csv* are all found in *Country1.csv*, which constitutes the last created logical table. However, since the set of fields is not exactly the same, you need to add the word **concatenate** for the tables to be merged:

6 Position the cursor in front of the **load** statement that loads *Country3.csv* and type **Concatenate**. If the spelling is correct, the word **concatenate** will turn blue just like **load** and **from** etc., since it is also a keyword. Make sure there is a space between the two words:

```
...
Concatenate Load Country,
          Official name of Country],
          [Area(km.sq)],
from country3.csv (ansi, txt, delimiter is ',',
embedded labels);
...
```

7 Choose **Run**.

Your application should not have changed very much. There are, however, a few more countries.

8 Click the **OK** button.

9 Select the country *Seychelles*.

Seychelles is a country that is listed in the third file, and you can now see that only the list box *Area* contains optional data.

10 Clear your selections.

11 To get a clear picture of the contents of the concatenated table, create a table box containing the fields of the country files, i.e. *Country, Capital, Area (km.sq), Population(mio), Pop.Growth, Currency, Inflation, Official name of Country.*

12 Use the scroll bar to browse through the data of your table box. You'll note that some of the rows are not complete, but contain a '-' instead of a value. This is the case for all the countries from the third country file, containing only a subset of the fields: the values of the missing fields are treated as NULL.

Three logical tables have been loaded so far:

Country1 (concatenation of Country1, Country2 and Country3) is a table listing countries. Each row contains information concerning a specific country.

Customer is a table listing customers. Each row contains information concerning a specific customer. This table is associated to the table above through the field Country, which is found in both tables.

Transact is a table listing transactions. Each row contains information concerning one sold unit. This table is associated to the table above through the field CustomerID, which is found in both tables.

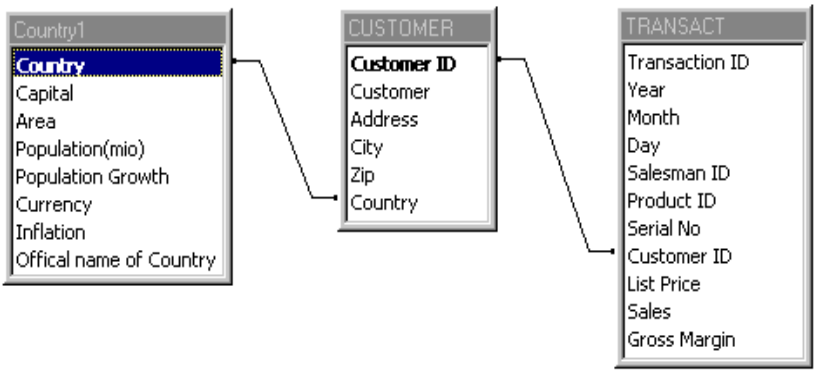


Figure 40. The associations made in the example that loads the tables Country1, Customer and Transact

When a selection is made in one of the tables, QlikView analyzes how the result of the selection affects the next logical table. When this table is analyzed, QlikView continues with the next logical table, etc.: the result of the selection propagates through the chain of tables involved.

Note Structures with circular references, i.e. when the chain becomes a ring, should usually be avoided. These are sometimes a sign of an incorrect data model, in which two similar fields that have slightly different interpretations are treated as one and the same field. If QlikView discovers the circular reference during the execution of the script, the tables will be set to loosely coupled. For further information, see the *Reference Manual*.

Using the Table Viewer

The tables and their associations can be shown graphically in the built-in **Table Viewer**.

1 Choose **Table Viewer** from the **File** menu.

The three tables loaded so far will appear. Each association is shown with a line connecting the associated fields in the respective tables.

2 Click on the header of the table *Country1*. All tables directly associated with this table (only one actually) will be highlighted.

3 Click on the field *Customer ID* in one of the tables where it appears. Notice that the field name will be highlighted in all tables where it appears.

As you get more complex table structures it may be useful to know that the tables can be moved over the background using the mouse. The same goes for the connector points on the lines connecting the tables.

The table view can be copied to the clipboard for inclusion in documentation or printed with the help of toolbar buttons available.

4 Close the **Table Viewer** by clicking **OK**.

The logical structure can also be studied by looking at the system fields. The part *Advanced Features* provides a lesson in which you can further analyze the structure of your application. See page 172.

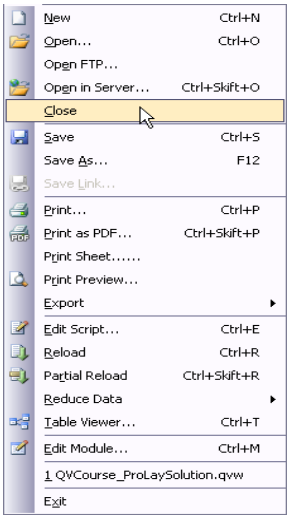
Improving the layout

This part of the *Tutorial* being devoted to the creation of scripts, we have neglected the layout so far. However, creating a layout that is easy to work with and that provides a good overview of the information is extremely important in order to fully utilize the possibilities of QlikView.

Having data from three different domains at your disposal, you could create a layout with three different sheets, named *Geography*, *Customer* and *Sales* or something similar. Add list boxes and other sheet objects, move them and size them until you have an application that is easy to work with. If there are steps you don't remember, go back to the first part of the *Tutorial*, *Working with QlikView*, to get help.

Saving, closing and exiting

If you don't want to turn to the next lesson right away, you can close the application. You should also save the application, since the following lessons are based on the work you've done so far.



1 Choose **Save** from the **File** menu.

QlikView saves the changes you've made to your application. You can now close the file:

2 Choose **Close** from the **File** menu.

If you won't be working with QlikView for a while, you can also exit the program:

3 Choose **Exit** from the **File** menu.

LESSON 14 LINKING EXTERNAL INFORMATION TO A DOCUMENT

Besides associating and concatenating tables that contain data, it is also possible to link information to field values in the data. The links are defined in information tables which must be loaded in a special way. In this lesson you'll link flags to specific values in the *Country* list box.

Opening the document

If you closed the document and exited QlikView after the previous lesson, you need to open it again.

1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Choose **Open** from the **File** menu.

3 Select the file *Application.qvw*, then click **Open**.

Looking at an info file

Let's start by looking at the file containing the information to link.

1 Open a text editor, e.g. **Notepad**, and choose **Open** from the **File** menu.

2 In the box **Files of type**, select **All files**.

3 Open the file *Flagsoecd.csv* in the ...*Tutorial\Application\Examples* directory. It should look like Figure 41.

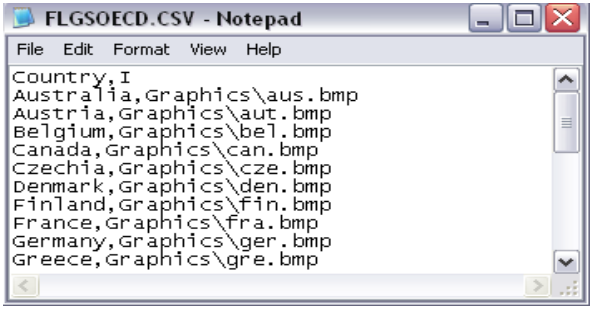


Figure 41. An information table defining that the specified bmp files should be linked to the listed country values.

It is a two-column table, in which different values of the field *Country* are associated with different files. Each value must be put on a separate row. The file associated with a field value will be shown, played, executed, etc. depending on the file type. Some file types, e.g. files of the bmp (images) or wav (sounds) type are handled internally in QlikView. For other file types, the associated program is used to open the document.

Note To associate a file type (with no association) with a program, open the Explorer (for Windows 98, Windows NT, Windows 2000 and Windows XP). Select a file of the concerned type in the structure and double-click it. This opens a list of available programs. Pick an appropriate program, preferably Notepad or Excel, then click **OK**. All files with this extension will from now on be opened with the program you selected. (Another possibility is to choose **View**, **Folder Options** from the Explorer menu and go to the **File Types** page.)

4 Close the editor.

Loading the info file

The next step is to load the info file into QlikView.

1 Choose **Edit Script**, and click **Table Files**.

2 Select the file *Flagsoecd.csv* and click **Open**. This opens the file wizard.

3 Like for the files already loaded, **Delimited** is set as type, **Comma** as delimiter. **Embedded Labels** is selected as label.

4 Click **Finish**.

The statement generated will load the file *Flagsoecd.csv* as a regular data file. However, this is not what you want to do: you would like QlikView to use *Flagsoecd.csv* to link information to specific field values. This is done in the following way:

5 Change the script by manually adding the word **info** before the **load** statement. The word **info** being a keyword in the script, it will turn blue. The script should look similar to the following:

```
...
Load      [Transaction ID],
          Year,
          Month,
          Day,
          [Salesman ID],
          [Product ID],
          [Serial No],
          [ID Customer] as [Customer ID],
          [List Price],
          Sales,
          Gross Margin
from transact.csv (ansi, txt, delimiter is ',',
embedded labels);
   Info Load Country,
          I
from flagsoecd.csv (ansi, txt, delimiter is ',',
embedded labels);
```

6 Choose **Run**.

7 The **Fields** page is opened. No new fields have been added. Click **OK**.

8 Save your application.

Viewing the linked information

To view the information you've linked, do the following:

1 Select *Germany* from the list of countries.

2 A small info symbol appears in the upper right-hand corner of the list box. Click it.

An independent window containing Germany's flag now appears in the application.

3 Close the window..

4 Select *France* from the list of countries.

5 Click the info symbol to make the specified picture appear (Figure 42).

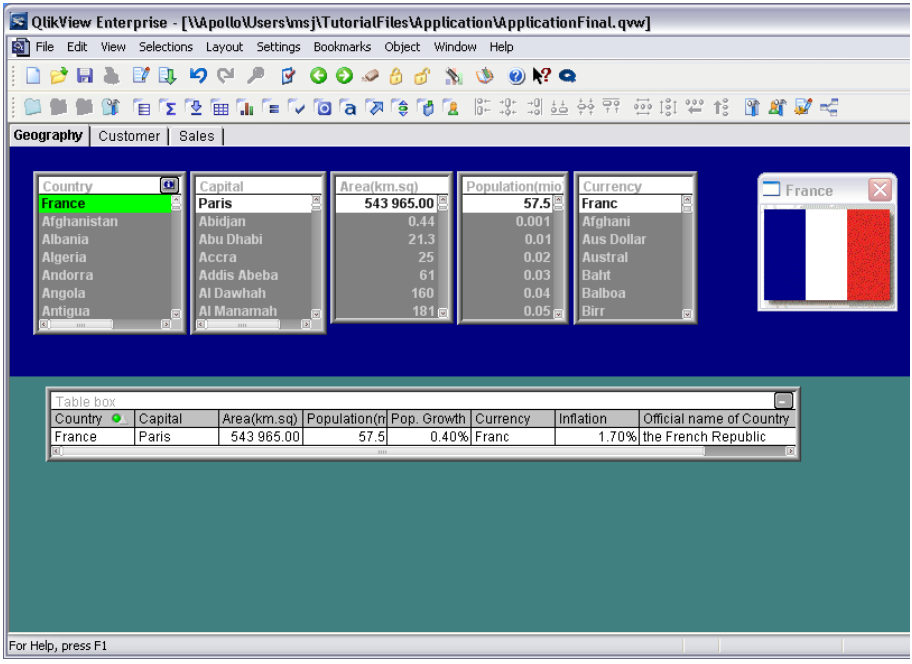


Figure 42. The French flag associated with the field value France

6 Close the flag and clear all selections.

This way, pictures and multimedia presentations can be shown in the right contexts, other applications can be started, and specific documents opened. You can link almost any type of file to field values. It is also possible to simply type words in the second field of the info table instead of specifying a path to a file. In that case, QlikView will show the text in an internal text viewer.

To learn more about creating and viewing info files, see the *Reference Manual*.

Embedding external info

In many cases it is good that pictures etc. do not have to be stored inside a QlikView document and take up space in memory and on disk. However, if you want to be able

to send a QlikView document to other people without worrying about sending the picture files as well, there is an option to embed the info in the QlikView file.

1 Choose **Edit Script** again.

2 Find the statement which starts by `info load`.

3 Precede that statement with the word `bundle`, so that it now starts `bundle info load`.

4 Run the script.

The flag pictures are now stored inside the QlikView document itself and do not need to be moved with the QlikView document.

Until now, you have only worked with comma separated text files and an Excel file, which you've been able to load directly into QlikView. In the next lesson, you'll get to know other types of files, and you'll also learn how to load files via ODBC.

Saving, closing and exiting

If you don't want to turn to the next lesson right away, you can close the application. You should also save the application, since the following lessons are based on the work you've done so far.

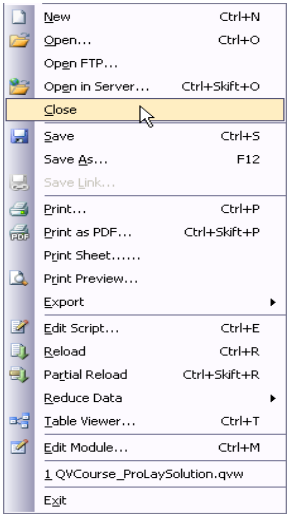
1 Choose **Save** from the **File** menu.

QlikView saves the changes you've made to your application. You can now close the file:

2 Choose **Close** from the **File** menu.

If you won't be working with QlikView for a while, you can also exit the program:

3 Choose **Exit** from the **File** menu.



LESSON 15 LOADING ADDITIONAL FILES

All the files you've loaded so far have been text files or Excel files containing field names in the first row. In this lesson, you'll learn how to load a tab separated text file without field names. Moreover, you'll get an introduction to loading files via the ODBC interface.

Opening the document

If you closed the document and exited QlikView after the previous lesson, you need to open it again.

1 Start QlikView by double-clicking the QlikView icon (for other ways of starting the program see page 17).

2 Choose **Open** from the **File** menu.

3 Select the file *Application.qvw*, then click **Open**.

Loading a tab separated file without labels

Figure 43. The interpretation of the file markets.tab in the file wizard.

The ...*TutorialFiles\Application\Examples* directory contains a file with information on the markets to which the different countries belong. Just like the files you've loaded so far, *Markets.tab* is a text file; however, instead of being separated by commas, its field values are tab delimited. Furthermore, the file does not contain any labels (field names). The loading procedure is similar to the one you've encountered in the previous lessons:

1 Go to the *Sales* sheet.

2 Choose **Edit Script** from the **File** menu or from the toolbar.

3 Position the cursor at the end of the script.

4 Click **Table Files**.

5 Select *Markets.tab*, then choose **Open**. This opens the Table wizard (see above).

6 **Delimited** is still set as type, but this time **Tab** is selected as delimiter. Furthermore, **Labels** should be set to None because the first row contains ordinary field values, not field names. Change **Labels** to None in the drop-down list if does not already have this setting.

For QlikView to find relations between the new file and those that have already been loaded, you need to give the fields appropriate names. Naming the first field *Market* seems like a good choice; the second one should be named *Country* to be associated with the *Country* fields of the files *Country1.csv* and *Customer.xls*. This is done in the following way:

7 Click in the header of the first column where it says @1. Type Market and press ENTER. Click in the header of the second column where it says @2. Type Country and press ENTER

8 Click **Finish**. Your script now looks similar to the one below:

```
...
   Info Load Country,
          I
from infofile.csv (ansi, txt, delimiter is ',',
embedded labels);
Load      @1 as Market,
          @2 as Country
from markets.tab (ansi, txt, delimiter is '\t', no
labels);
```

Study the script. Note the contents of the final parenthesis: the delimiter is not comma (**','**), but tab (**'\t'**), and the text **no labels** appears instead of the usual **embedded labels**.

9 Click **Run** to execute the script.

10 Move the new field *Market* to the column of displayed fields, then click **OK**.

If you have followed all the steps correctly, you can now study the sales development for different markets during different years.

Loading a file via ODBC

Until now you have always loaded files directly into QlikView. However, if you want to access general databases or files that are not stored in a format that QlikView can read, you need to use the ODBC (Open DataBase Connectivity) interface.

To follow this example, you need to have ODBC installed. If you do not, read the information on installing ODBC in the *Reference Manual*.

In the *...Tutorial\Application\Examples* directory you'll find an Access file named *Salesman.mdb*, which contains the names of the salesmen who performed the sales described in the file *Transact.csv*. The names of the salesmen are of great importance to you, so you would like to associate *Salesman.mdb* to the existing data of your application.

One possible way of doing this is to simply save the file as a character separated text file, i.e. a file that QlikView can read.

However, it is also possible to load the file via ODBC, which is what you'll do in this example.

1 Open the **Edit Script** dialog.

2 Instead of clicking **Table Files**, you must now click the **Connect** button to establish a connection with the data source.

3 The **Data Link Properties** dialog opens. Make sure that the *OLE DB Provider for ODBC Drivers* is selected, then click **Next** to get to the **Connection** page.

4 Since you are working with a generic data source not yet defined, select the option **Use connection string**, then click the **Build** button.

5 Go to the tab **Machine Data Source**.

6 Select *MS Access Database*, then click **OK**.

7 From the **Login** dialog that opens, click the **Database...** button.

8 Browse for the file. Once you find the correct location, the salesman file should be the only one available in the left list. Select it, then click **OK** to close the dialog.

9 Click **OK** to close the remaining dialogs.

Your script now contains a **connect** statement, connecting you to the selected data source. The next step is to select the tables (in this case there is only one, but if you access a database you usually have a great number of tables to choose from) and fields to load:

10 Click the **Select** button.

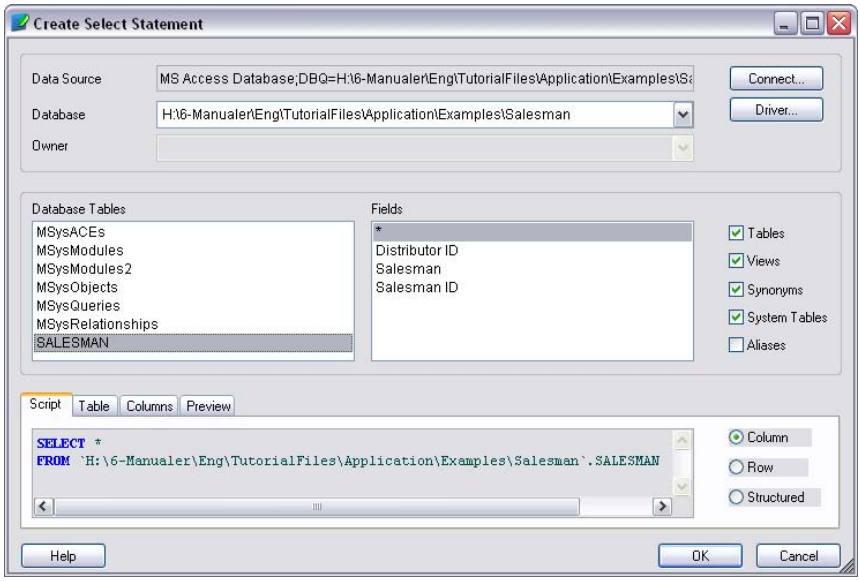


Figure 44. The Create Select Statement dialog.

The **Create Select Statement** dialog is now opened. The **Fields** box lists the available fields, whereas the **Database Tables** box contains the available tables. At the bottom of the dialog, you get a preview of the statement (a standard SQL **select** statement, which will appear in your script as soon as you click **OK**).

By default, a star is selected in the **SELECT** group. The star is equivalent to all fields. You want to load all fields, but for consistency reasons you'll select them to make their names appear in the script:

11 Click on the field *Salesman ID*, then press the SHIFT key and hold it down while clicking the last field name. Verify that all the fields are selected by studying the preview.

12 Click **OK**. Your script should now look similar to the following:

```
...
Load      @1 as Market,
          @2 as Country
from markets.tab (ansi, txt, delimiter is '\t', no
labels);
CONNECT TO 'MS Access Database;
DBQ=c:\QlikView\TutorialFiles\Application\
Examples\SALESMAN.mdb;';
SQL SELECT `Salesman ID`, Salesman, `Distributor ID`
FROM SALESMAN;
```

The salesman table is associated with the existing data via the field *Salesman ID*, which it has in common with *Transact.csv.*

13 Click **Run**.

14 Add the new field *Salesman* to the *Sales* sheet and study the relations by making a few selections.

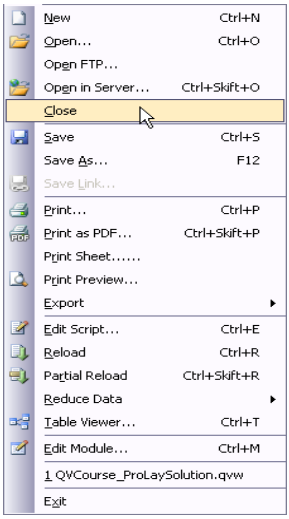
15 Clear your selections.

You have now finished the second part of the *Tutorial*. In addition to the basic knowledge about selections, sheets and sheet objects acquired in the first part (*Working with QlikView*), you have learned how different kinds of files are loaded into the associative QlikView database and how the logical structure is created.

The final part of the *Tutorial*, *Advanced Features*, lets you further explore the possibilities of QlikView. It differs from the first two parts in that it contains independent lessons (i.e. the procedures performed are not based on the work done in previous lessons), thereby allowing you to immediately go to the lesson that interests you the most.

Saving, closing and exiting

Unless you wish to go on with the next part right away, you can now close the application.



1 Choose **Close** from the **File** menu.

QlikView issues a message asking you if you want to save the changes. Click **Yes**.

2 If you wish, you can open the file Application-Final found in the Application folder to compare this file withw the one you've created.

If you won't be working with QlikView for a while, you can exit the program:

3 Choose **Exit** from the **File** menu.

ADVANCED FEATURES

- **More about associations**
- **Field groups and cyclic display in charts**
- **Cross tables**
- **And-mode**
- **Semantic links**
- **Number format**
- **Access restriction**

Introduction

This final part of the *Tutorial* deepens the knowledge you've already acquired and lets you further explore the possibilities of QlikView. Among other things, you'll learn how to modify the script to load different types of table formats in an optimal way, how to create semantic links and how to use access restriction. Moreover, *Advanced Features* provides a chapter on the interpretation and formatting of numbers. Although most of the functions presented are related to the script, we have also devoted a chapter to advanced layout features: you'll learn to create hierarchic and cyclic field groups and to use cyclic expressions in charts.

Advanced Features differs from the first two parts in that its lessons are independent (i.e. the procedures performed are not based on the work done in previous lessons), which allows you to immediately go to the lesson that interests you the most.

The files used in this part are found in the *...Tutoria\Advanced* directory.

LESSON 16 MORE ABOUT ASSOCIATIONS

The **Fields** page appearing after every script execution contains a check box named **Show System Fields**. If this check box is selected, the column listing available fields includes six fields preceded by a dollar sign ($). These fields, called *system fields*, are very useful for obtaining an overview of the logical structure of a QlikView document.

The first section of this lesson describes the system fields and shows how they can be displayed on a system sheet. The second part shows an example of how you can solve a common problem using the system fields: display of frequency information in associating fields.

Creating a system sheet

1 Start QlikView.

2 Choose **Open** from the **File** menu.

3 Select the file *Advanced.qvw* found in the *Advanced* folder, then click **Open**.

4 Choose **Add Sheet...** from the **Layout** menu.

5 Name the sheet *System*, then click **Next>**.

6 Move the system fields (the ones preceded by a dollar sign, $) to the column of displayed fields. If the system fields are not visible, mark the check box **Show System Fields**.

The system fields show

- the names of the fields retrieved (*$Field*),
- the names of the tables loaded (*$Table*),
- the number of rows and columns in a table (*$Rows* and *$Fields*),
- the column number for a specific field (*$FieldNo*), and
- the names of the info tables loaded (*$Info*).

7 Click **Finish**.

8 Size the list boxes until you see all the field names and all the field values, then rearrange the boxes.

Using the system sheet

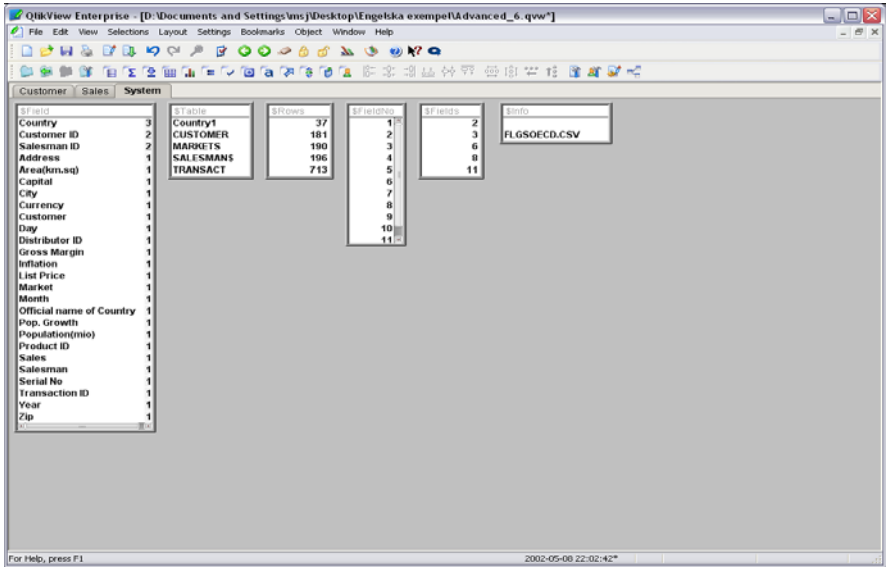


Figure 45. The System sheet

Your system sheet is now ready, but to further improve it, choose frequency display for the list box *$Field*:

1 Open the **Properties** dialog and go to the **General** page.

2 Select the check box **Show** in the **Frequency** group, then go to the **Sort** page.

3 Select **Frequency, Descending**, then click **OK**.

The values in the field *$Field* are now followed by numbers indicating their number of occurrences in the tables. The list box being sorted by frequency, the field with the greatest number of occurrences is placed at the top. The result is as follows:

You see that the field *Country* occurs in three tables, *Customer ID* and *Salesman ID* in two tables, and all the other fields in only one table. The three fields appearing more than once are the fields used to associate the tables of the document. The relations are illustrated in the figure below:

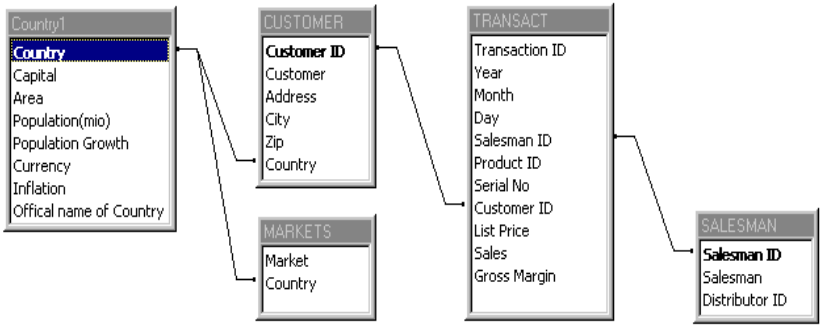


Figure 46. The logical structure

4 Click *Country* in the *$Field* box.

The program now shows that the field *Country* occurs in the tables *Country1* (a logical table consisting of three concatenated country tables), *Customer* and *Markets*. The other list boxes provide additional information on the number of rows and fields of the concerned tables, and of the column numbers of the field in the respective tables.

Moreover, the list box *$Info* on the system sheet shows the info table associated with the field *Country.*

As soon as only one table or info table is possible (selected or optional) in a list box, a small info symbol  is displayed in the top right-hand corner of the list box. Clicking this will allow you to edit the table directly:

5 Click one of the optional tables in the list box *$Table*.

6 The info symbol appears in the top right-hand corner. Click it.

7 The original table is now opened by the associated program. Study it, then close the program to get back to QlikView.

8 Clear your selections.

Note If the file type of the table (usually the extension csv) is not associated with an appropriate text editor, the table will not be opened. To associate a file type with a program, open the Windows Explorer. Select a file of the concerned type in the structure and double-click it. This opens a list of

available programs. Pick an appropriate program, preferably Notepad or Excel, then click **OK**. (Another possibility is to choose **View**, **Folder Options** from the Explorer menu and go to the **File Types** page.)

When working with large sets of data with complicated structures, it is impossible to keep the entire data structure in mind. The system sheet is then of crucial importance.

Creating a system table

Besides displaying the system fields in list boxes, you can also illustrate the relations by creating a system table:

1 Right-click on the sheet and open the cascade menu **New Sheet Object** where you select **System Table**.

The system table now appears on your system sheet. Size it. Study it. You'll find that the first column, listing all the fields found in the document, is followed by one column for each loaded table. If a table contains the field listed in the leftmost column, the field also occurs in the table column; if not, a '-' (indicating a NULL value) is displayed. You easily see which of the fields are keys, i.e. common to more than one table. The system table thus clearly shows how the tables of the document are associated. It can be a useful complement to the **Table Viewer** described in Lesson 13 on page 149.

System table

$Field	$Table	Country1	CUSTOMER	TRANSACT	MARKETS	SALESMAN$
Country		Country	Country	-	Country	-
Capital		Capital	-	-	-	-
Area(km.sq)		Area(km.sq)	-	-	-	-
Population(mio)		Population(mio)	-	-	-	-
Pop. Growth		Pop. Growth	-	-	-	-
Currency		Currency	-	-	-	-
Inflation		Inflation	-	-	-	-
Official name of C		Official name of C	-	-	-	-
Customer ID		-	Customer ID	Customer ID	-	-
Customer		-	Customer	-	-	-
Address		-	Address	-	-	-
City		-	City	-	-	-
Zip		-	Zip	-	-	-
Transaction ID		-	-	Transaction ID	-	-
Year		-	-	Year	-	-
Month		-	-	Month	-	-
Day		-	-	Day	-	-
Salesman ID		-	-	Salesman ID	-	Salesman ID
Product ID		-	-	Product ID	-	-
Serial No		-	-	Serial No	-	-
List Price		-	-	List Price	-	-
Sales		-	-	Sales	-	-
Gross Margin		-	-	Gross Margin	-	-
Market		-	-	-	Market	-
Salesman		-	-	-	-	Salesman
Distributor ID		-	-	-	-	Distributor ID

Figure 47. The system table

One of many examples of situations where the use of system variables is indispensable is the one below.

Showing frequency in associating fields

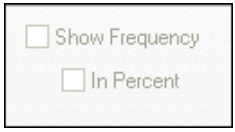
Suppose you work with the customer sheet and want to see how many customers you have in different countries, i.e. how many times the countries occur in the data.

1 Go to the *Customer* sheet of your document.

2 Click on the list box *Country* with the right mouse button, then click **Properties**.

3 Go to the **General** page.

The check box **Show Frequency** is disabled, i.e. it is not possible to show frequency for this field. Why?



By studying the *System* sheet, you clearly see that the field *Country* occurs in more than one table. As a matter of fact, three of the loaded tables contain a field named *Country. Country1* and *Market*, containing geographical information and a list of the markets to which different countries belong, respectively, list each country only once. The *Customer* table, however, contains more than one occurrence of countries in which several customers reside. The three *Country* fields being treated as one due to the associations, it is impossible for the program to know which of the tables it should use for calculating data frequencies.

Since making guesses could lead to erroneous results, QlikView has been designed not to allow certain operations when the data interpretation is ambiguous for associating fields.

What you are actually interested in is the frequency of the countries in the customer table. To obtain the information you need, load the field *Country* a second time under a new name from the table *Customer.csv*:

4 Close the **List Box Properties** dialog.

5 Open the **Edit Script** dialog.

6 Find the statement loading *Customer.csv* and position the cursor after the last field (*Country*), then type ", **Country as CustomerCountry**". The **load** statement now looks similar to the following:

```
Load      [Customer ID],
          Customer,
          Address,
          City,
          Zip,
          Country, Country as CustomerCountry
from c:\qlikview\tutorialfiles\application\
examples\customer.csv
(ansi, txt, delimiter is ',', embedded labels, header
is 0);
```

You need to keep the field *Country*, otherwise there will be no key field and thus no association with previously loaded tables.

7 Click **Run**.

8 Move the new field *CustomerCountry* to the list of displayed fields, then click **OK**.

Your *Customer* sheet now contains a second country list box, listing only the countries in which there are customers. Having a name that is not common to any other field name in the document, this second field is not an associating field. It is thus possible to show frequency information.

9 Click on the *CustomerCountry* list box with the right mouse button, then choose **Properties**.

10 On the **General** page, select the check box **Show** in the **Frequency** group, then go to the **Sort** page.

11 Select **Frequency**, then click **OK**.

The countries are now displayed in frequency order. You may have to size the list box to see the numbers.

Since it actually makes more sense to have the field *CustomerCountry* on this sheet than the *Country* field (you aren't interested in the countries in which you have no customers), do the following:

12 Remove the list box *Country.*

When selecting countries on the *Customer* sheet, there will now always be at least one customer optional.

13 Adjust the layout.

14 Save the file as *System.qvw.*

Associating fields have yet two limitations besides the inability to show frequency:

- Statistics boxes based on an associating field shows n/a for most statistical entities.
- In charts using an associating field, it is not possible to create expressions containing functions that depend on frequency information (e.g. sum, count functions, average) unless the distinct modifier is turned on.

15 Close the file. If you wish, compare it with the file *SystemFinal.qvw* found in the *Advanced* folder.

16 If you won't be working with QlikView for a while, you can now exit the program.

For more information, see the *Reference Manual*.

LESSON 17 LOAD INLINE

In some cases, you may want to add data by typing it directly in the script rather than loading it from a file or a database. In this lesson you'll learn how to do this with **load inline**.

Load inline can also be used for mapping (associating new information with already existing information via a field name), which constitutes the second section of this lesson.

Adding a record with load inline

1 Start QlikView and open the file *Inline.qvw* found in the *...Tutorial\Advanced* directory.

The document has been created from two tables, *Customer.csv* and *Transact.csv.* Suppose you want to add a customer to the document, but without changing the original files. Do the following:

2 Open the **Edit Script** dialog.

3 Position the cursor at the end of the script, then type the following lines:

```
Load * Inline [
Customer ID,Customer, Address, City, Zip, Country
1181, Alexander's Catering Service, Fisherman's Drive
4, Portsmouth, BH 354 RW, Great Britain];
```

The first line lists the field names of *Customer.csv* (the table to which you want to add the record), whereas the second line contains the record that is to be added. The star symbol is equivalent to "all fields".

Note Due to limited space, the record in the above example does not fit in one line. When reproducing this **inline** clause in the script, however, it is important that you put the entire record in one single line: *Portsmouth* etc. should thus follow directly after *Fisherman's Drive 4.* See the file *InlineFinal.qvw* in the *Advanced* folder.

---

4 Choose **Run**.

5 Choose **OK** to close the dialog.

6 No new field has been added, but there are new field values in some of the list boxes. Click *Alexander's Catering Service* in the customer list and study the result.

The data enclosed by the parenthesis after **inline** is treated like an ordinary table. Having the same set of fields as the customer table, the inline table has been concatenated with the customer table. You can easily check this by studying the *System* sheet: only two tables are displayed in the *$Table* list box (the concatenated table is always given the name of the first input table, which, in this case, is *Customer*).

Save the document as *MyInline.qvw* or something similar.

Naturally, inline tables can be used for other purposes than for adding records to existing tables. If, for instance, you wish to load very small tables, it may be easier to create these directly in the script than to create and load an external file.

Mapping data with load inline

The document *Inline.qvw* contains a field with the months of the year written as numbers. Suppose you want to create a chart with the names of the months spelled out, and another chart showing sales per quarter. This is easily solved with data mapping.

Data mapping means associating new information to already existing information via a field name. Typical examples of data mapping could be connecting an account number to an account name or splitting a date into three fields for year, month and day, respectively. The data mapping can be done using an external file or straight in the script using **load inline**.

In this example, you'll use **load inline** to map month numbers against month names and quarters.

This time we will use the built-in inline wizard to create the load inline statement, usually a much more convenient method than typing directly in the script.

1 Open the **Edit Script** dialog.

2 Position the cursor at the end of the script.

3 Click on **Inline Wizard...** under **Data in Script** on the **Data** tab.

4 The dialog that opens looks like a small spreadsheet and in fact works much like one. However there is no support for formulas in the data cells.

5 The cursor will be positioned in the top left data cell. Enter the *1* as shown in the picture below. Use ENTER or the arrow keys to move between cells and fill in the table as shown below.

6 Finally double-click in the header row over *1* and enter the field name *Month*. Repeat for the remaining columns as shown below.

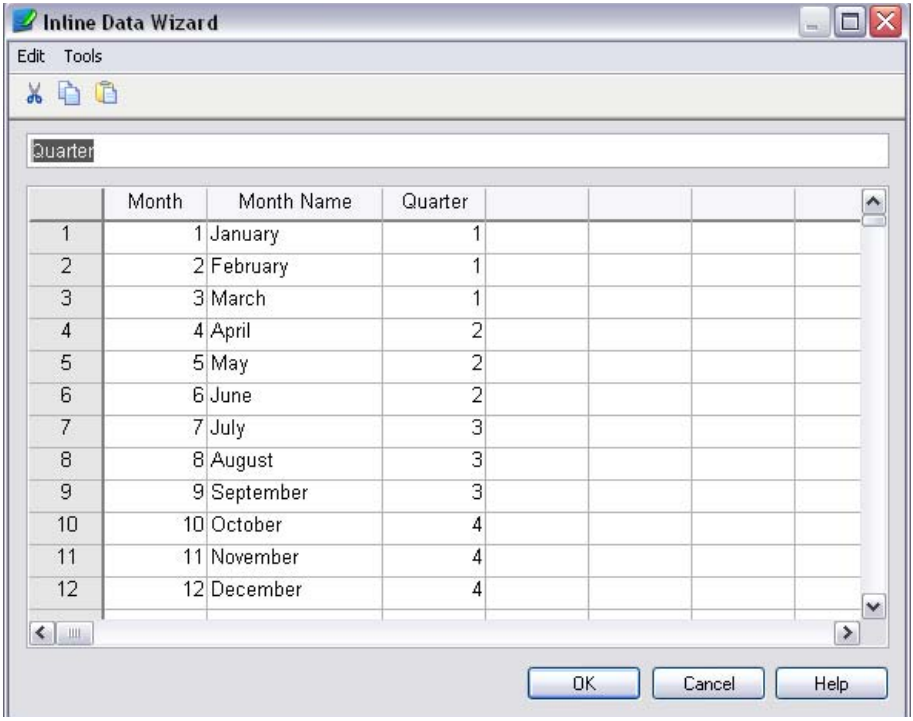


Figure 48. The Inline Data Wizard

Tip! If you need a table in e.g. Excel it can of course be pasted into the QlikView inline wizard.

7 Click **OK** and you should have a piece of script looking like this:

```
Load * Inline [
Month, MonthName, Quarter
1, January, 1
2, February, 1
3, March, 1
4, April, 2
5, May, 2
6, June, 2
7, July, 3
8, August, 3
9, September, 3
10, October, 4
11, November, 4
12, December, 4];
```

8 Choose **Run**.

Two new fields have been added to the list of available fields, *MonthName* and *Quarter*. The inline table has been associated with the transact table via the field *Month*.

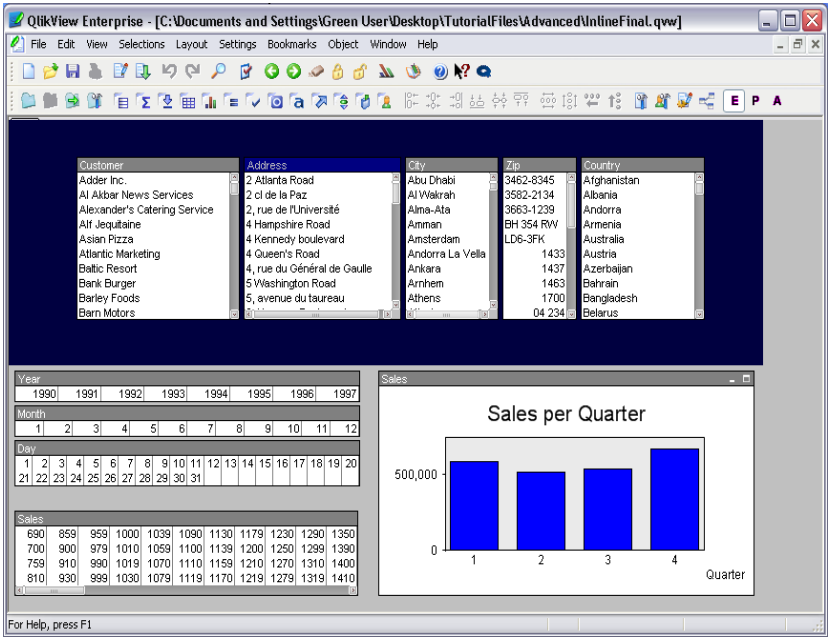


Figure 49. The potential appearance of your inline document.

9 Click **OK**.

10 Create a bar chart showing sales per quarter (choose *Quarter* as variable and add the expression *Sum of Sales*). In case you need help, see *Working with QlikView* on page 57.

11 Save the document under a name of your choice and close the file. If you wish, compare your file with the file *InlineFinal.qvw.*

12 If you won't be working with QlikView for a while, you can also exit the program.

LESSON 18 FIELD GROUPS AND CYCLIC DISPLAY

Instead of displaying single fields as dimensions in charts, it is possible to define groups of fields to be used for this purpose. Working with field groups allows you to display data in a very efficient way, since the resulting charts will show the selected fields in a hierarchical (drill-down) or cyclic sequence. In this lesson, these important features will be explained: you'll define both hierarchic and cyclic field groups and create corresponding charts.

The use of field groups should not be confused with cyclic display in charts. Cyclic display, constituting the last part of this lesson, can be applied to any chart having more than one expression, and results in the *expressions* being displayed sequentially. Just like the use of field groups, however, it saves space and allows you to make quick changes in the data displayed in the chart.

Field groups

One main difference between QlikView and many other database viewers, OLAP tools etc. is that in QlikView there is no need to predefine any hierarchies in the input data. The unique associative logic of QlikView gives you the complete freedom to access any field as a full dimension in any order you like. For most purposes this freedom is extremely powerful.

However, there are occasions when a predefined hierarchy could actually help you to display data more efficiently. QlikView therefore offers the possibility to define groups of fields. The groups can be hierarchic (drill-down) or non hierarchic (cyclic).

Creating a drill-down group

When several fields form a natural hierarchy, it makes sense to create a drill-down group.

1. Start QlikView, then open the file *Groups.qvw* found in the *...Tutorial\Advanced* directory.
2. Choose **Document Properties** from the **Settings** menu and go to the **Groups** page.
3. Click the **New** button. The **Group Settings** dialog opens. Change the default name to *Time* in the **Group Name** box.
4. Select *Year*, *Quarter* and *Month* in the list of available fields by CTRL-clicking them, then click **Add** to move them to the column of used fields.

5 Use the **Promote** and **Demote** buttons to get the correct hierarchy: *Year*, *Quarter*, *Month*. This is of great importance, since the order of the fields in the group corresponds to the display order in charts.

6 Click **OK** twice.

You have now created a drill-down group, which you can use as a dimension variable in a chart.

Creating and using a drill-down chart

To create a drill-down chart, do the following:

1 Go to the *Sales* sheet, then click the **Create chart** button in the toolbar (if the design toolbar is not displayed, choose **Design Toolbar** from the **View** menu).

2 Choose *Drill-down* as window title, then click **Next>** to go to the **Dimensions** page.

The *Time* group created above is listed among the ordinary field names. However, it can easily be distinguished from them: field groups are always preceded by specific symbols. For drill-down groups, this symbol is a straight arrow.

3 Choose *Time* as variable by moving it to the column of displayed fields.

4 Click **Next**.

5 The **Edit Expression** dialog automatically opens. Compose the expression *Sum of Sales*, then click **Paste**. Type *Sales* in the **Label** box.

6 Click **OK**.

7 Click **Next>** until you get to the **Colors** page. Select the check box **Multicolored**.

8 On the **Number** page, select **Integer** and set *1000$* as **Thousand Symbol**, then click **Finish**.

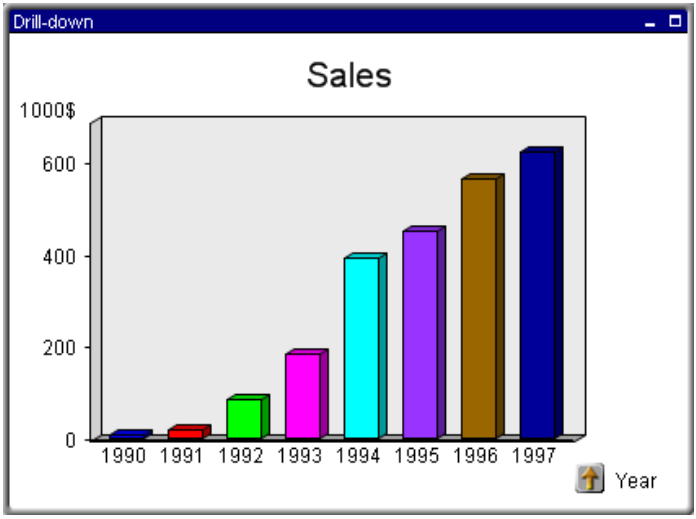


Figure 50. The drill-down chart

The chart, showing the sum of sales per year, looks like any other bar chart. However, as soon as you make a selection causing the field *Year* to have only one possible value, you discover its drill-down character:

9 Select the bar *1996* in the chart.

An ordinary chart would now display one bar, representing the sum of sales for 1996. This chart, however, shows the sum of sales for each *quarter* of the year 1996 (the second field in the field list defined being *Quarter*).

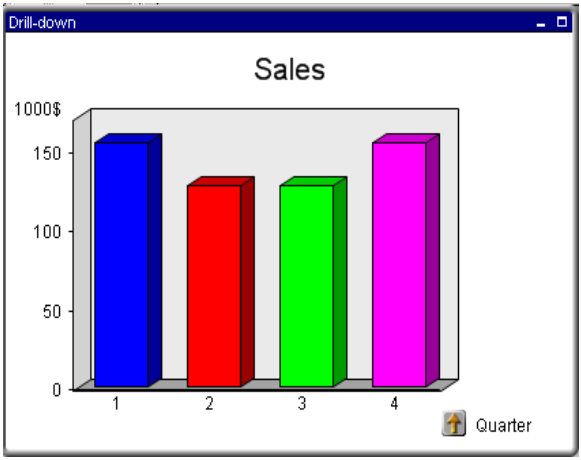


Figure 51. The drill-down chart showing the second field in the hierachy.

10 Select the bar representing the fourth quarter.

The chart turns to showing the sales for each month of the selected quarter. *Month* is the third, and last, field in the field group.

As soon as more than one value becomes possible in the fields further up in the hierarchy, the chart is automatically drilled back up.

To go back in the hierarchy, click in the outer chart area or on the drill-up icon next to the field name. 

Creating a cyclic group

Sometimes it may be useful to group fields which do not form a natural hierarchy or even have nothing in common at all. The reason would be to make quick changes of the data displayed in a chart and to save space.

Any fields can be grouped together in a cyclic group.

1 Choose **Document Properties** from the **Settings** menu and go to the **Groups** page.

2 Click the **New** button. The **Group Settings** dialog opens. Change the default name to *Cyclic* in the name box.

3 Select *Country*, *Salesman* and *Year* in the list of available fields, then click **Add** to move them to the column of used fields. The order of the fields in the list is of no importance when defining cyclic groups.

4 Select the **Cyclic** option.

5 Click **OK** twice.

You have now created a cyclic group. When used as a dimension in a chart, it will allow you to switch between the fields of the group (x-axis) while keeping the same expression (y-axis).

Creating and using a cyclic chart

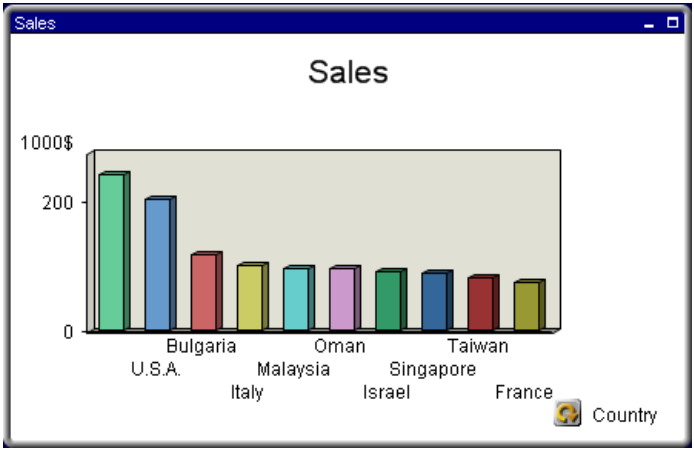


Figure 52. The cyclic chart

To create a cyclic chart, do the following:

1 Click the **Create chart** button in the toolbar (if the design toolbar is not displayed, choose **Design Toolbar** from the **View** menu).

2 Choose *Cyclic* as window title, then click **Next>** to go to the **Dimensions** page.

The *Cyclic* group is listed among the ordinary field names. Just like the drill-down group, it is preceded by a symbol. For cyclic groups, this symbol is a circular arrow.

3 Double-click the *Cyclic* group to move it to the column of displayed fields/groups.

4 Click **Next>**.

5 The **Edit Expression** dialog automatically opens. Compose the expression *Sum of Sales*, then click **Paste**. Type *Sales* in the **Label** box.

6 Click **OK**.

7 Click **Next>**. On the **Sort** page, sort the values by y-value.

8 On the **Presentation** page, set **Max Number** to 10.

9 Click **Next>** until you get to the **Colors** page. Select the check box **Multicolored**.

10 On the **Number** page, select **Integer** and set *1000$* as **1 000 Symbol**, then click **Finish**.

Initially, your chart shows the sum of sales per *CustomerCountry*, which is the first field in the field list.

11 Switch to the next field by clicking the cycle icon in the bottom right-hand corner of the chart. Now *Salesman*, the second field, is displayed.

12 If you click the cycle icon a second time, the sum of sales per year will be shown. *Year* is the third and last field of the field group.

When the last field in the list has been used, the turn goes back to the first field. The chart can be cycled indefinitely.

It is also possible to right-click on the cycle icon, in which case a list of the fields in the cyclic group is displayed for direct selection (see the picture below).

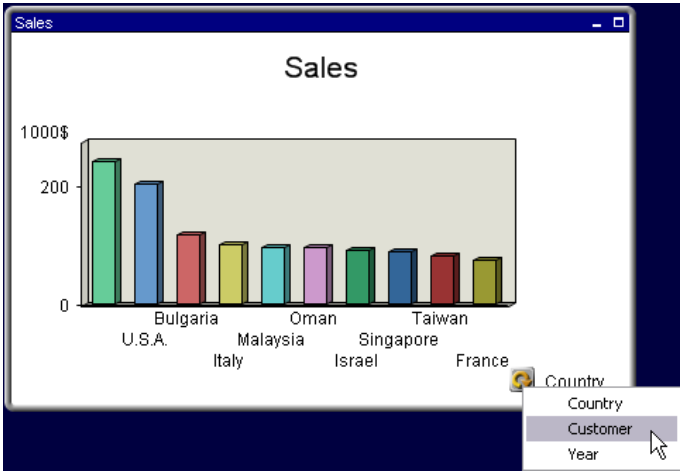


Figure 53. Direct selection in the cyclic icon when right-clicking it

13 Minimize the chart.

Showing three charts in one frame this way is a very efficient way of displaying data. It also allows you to make quick changes of graphically displayed data.

Cyclic display of Expressions

The **Expressions** page in the **Chart Properties** dialog provides a check box named **Cyclic Display**. If you have a chart with two expressions, you can choose to display them sequentially instead of simultaneously. The switching between expressions is done via a button similar to the one used in cyclic charts.

To create a chart with cyclic display of expressions, do the following:

1 Click the **Create chart** button in the toolbar (if the design toolbar is not displayed, choose **Design Toolbar** from the **View** menu).

2 Choose *Cyclic Display* as window title, then click **Next>** to go to the **Dimensions** page.

3 Move the field *Year* to the column of displayed fields, then click **Next>**.

4 The **Edit Expression** dialog automatically opens. Compose the expression *Sum of Sales*, then click **Paste**.

5 Click **OK**. Note that the **Cyclic Display** check box is disabled: you need two expressions to be able to use it.

6 Click **Add** again to add a second expression.

7 This time, create the expression *Total count of Sales*.

8 Click **Paste**, then **OK**. The **Cyclic Display** check box is now enabled: select it.

9 Click **Next>**. On the **Sort** page, sort the values by y-value, ascending.

10 On the **Presentation** page, set **Max Number** to 10.

11 Click **Next>** until you get to the **Color** page. Select the check box **Multicolored bars**.

12 On the **Number** page, select **Integer** and set *1000$* as **1 000 Symbol** (for the first expression), then click **Finish**.

The chart looks like an ordinary bar chart showing the sum of sales per year:

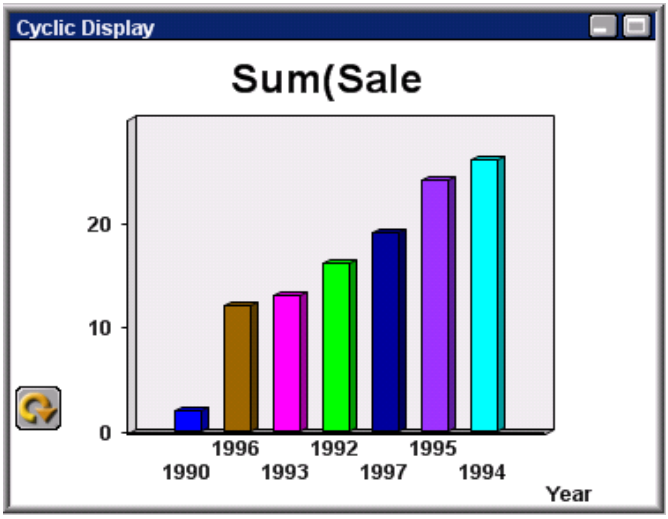


Figure 54. The chart using the first expression

However, the cycle icon in the bottom left-hand corner indicates that the chart has further potential.

13 Click the cycle icon.

The chart now turns to showing the number (total count) of sales performed during different years.

Naturally, you can choose to display more than two expressions this way. It is also possible to combine groups and cyclic display into powerful multi-dimensional charts. Only your imagination will set the limits.

14 Save the document using a name of your choice. If you wish, compare it with the file *GroupsFinal.qvw.*

15 Close the file. If you won't be working with QlikView for a while, you can also exit the program.

LESSON 19 HANDLING CROSS TABLES

A cross table is a common type of table featuring a matrix of values between two orthogonal lists of header data. By using the QlikView **crosstable** statement, you can load this type of table in a very elegant way. The procedure is described in this chapter.

Loading a cross table

You'll start by looking at a crosstable in Excel (or a similar program):

Open the Explorer, then find the file *Crosstable1.csv* in the *...Tutorial\Advanced\Examples* directory and double-click it.

Microsoft Excel opens the file. It looks like below:

Year	Jan	Feb	Mar	Apr	May	Jun
1991	45	65	78	12	78	22
1992	11	23	22	22	45	85
1993	65	56	22	79	12	56
1994	45	24	32	78	55	15
1995	45	56	35	78	68	82

Figure 55. The Crosstable1.csv file

If this table is loaded into QlikView the usual way, the result will be one field for *Year* and one field for each of the months. This is generally not what you want: you would probably prefer to have three fields generated, one for each header category (*Year* and *Month*) and one for the data values inside the matrix.

You'll start by loading the table into QlikView the usual way:

1 Close the file.

2 Start QlikView and choose **New** from the **File** menu.

3 Open the **Edit Script** dialog.

4 Click **Table Files**, then find the file *Crosstable1.csv* and click **Open**.

5 If the file wizard has made a correct interpretation, click **Finish**.

The following statement has been generated in your script:

```
Load      Year,
          Jan,
          Feb,
          Mar,
          Apr,
          May,
          Jun
from c:\qlikview\tutorialfiles\advanced\
examples\crosstable1.csv
(ansi, txt, delimiter is ',', embedded labels);
```

6 Load the file by clicking **Run**.

7 Add all the fields except the system fields to the column of displayed fields.

8 Click **OK**. The following list boxes appear on your screen:

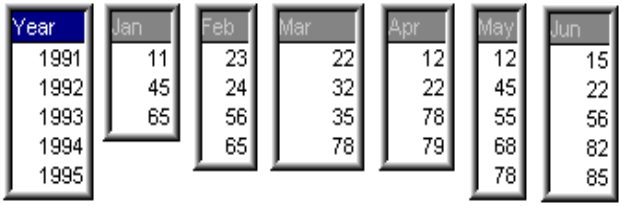


Figure 56. The resulting list boxes

9 This is not what you want. Open the **Edit Script** dialog box again.

10 Now add the **crosstable** prefix, indicating that the table is to be loaded as a cross table, to your **load** statement. The **crosstable** prefix should be followed by a parenthesis containing the names you wish to apply to the new fields:

```
Crosstable (Month, Sales) Load
          Year,
          Jan,
          Feb,
          Mar,
          Apr,
          May,
          Jun
from c:\qlikview\tutorialfiles\advanced\
examples\crosstable1.csv
(ansi, txt, delimiter is ',', embedded labels);
```

11 Click **Run**.

12 The **Fields** dialog page opens. Move the fields *Month* and *Sales* to the column of displayed fields (the field *Year* is already there), then click **OK**.

The following list boxes appear on your screen:

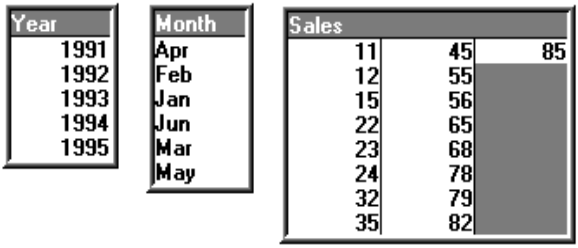


Figure 57. The list boxes when the script has been run with the crosstable prefix.

This distribution of values makes a lot more sense.

13 Save the document using an appropriate name, then close it.

Loading a cross table with more than one regular column

The cross table is often preceded by a number of regular columns, which should be loaded in a straightforward way. This is the case in the following table (*Crosstable2.csv*):

Salesman	Year	Jan	Feb	Mar	Apr	May	Jun
A	1991	45	65	78	12	78	22
A	1992	11	23	22	22	45	85
A	1993	65	56	22	79	12	56
A	1994	45	24	32	78	55	15
A	1995	45	56	35	78	68	82
B	1991	57	77	90	24	90	34
B	1992	23	35	34	34	57	97
B	1993	77	68	34	91	24	68
B	1994	57	36	44	90	67	27
B	1995	57	68	47	90	80	94

Figure 58. Crosstable2.csv

In this table the matrix columns are preceded by two regular columns. You would probably like QlikView to show the contents of the table in four fields:

- *Salesman*, containing the values of the first (regular) column

- *Year*, containing the values of the second (regular) column
- *Month*, containing the headers of the remaining columns
- *Sales*, containing the values of the remaining columns

To obtain this result, do the following:

1 Choose **New** from the **File** menu.

2 Open the **Edit Script** dialog.

3 Click **Table Files**, then find the file *Crosstable2.csv* and click **Open**.

We will now use a special wizard for creating the crosstable statement.

4 Click **Next**. This will take you to the last page of the file wizard, which we have not used up to this point.

5 Click the **Crosstable** button.

6 QlikView asks if *Salesman* is a qualifying field (regular column). Click **Yes**.

7 QlikView asks if *Year* is a qualifying field. Click **Yes**.

8 QlikView asks if *Jan* is a qualifying field. Click **No**.

9 QlikView now asks for the name of the new field that will contain the month names. Type *Month* and click **OK**.

10 QlikView will then finally ask for the name of the field to combine the sales figures. Type *Sales* and click **OK**.

11 In the preview pane you can now see the transfromed table. Click **Finish**. The script generated will look as follows:

```
CROSSTABLE(Month, Sales, 2)
Load Salesman,
Year,
Jan,
Feb,
Mar,
Apr,
May,
Jun
FROM
g:\documentation\qv\5.0\manual\eng\tutorialfiles\adva
nced\examples\crosstable2.csv (ansi, txt, delimiter is
',', embedded labels);
```

Note that the crosstable prefix has the number *2* as a third parameter. This indicates the number of regular column in the original table. If no parameter is stated, 1 is assumed.

12 Click **Run**.

13 The **Fields** dialog page opens. Move the fields *Salesman, Year, Month* and *Sales* to the column of displayed fields, then click **OK**.

The following list boxes appear on your screen:

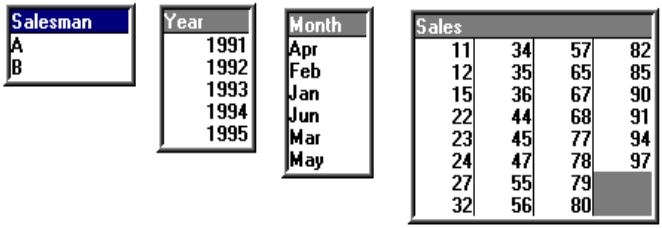


Figure 59. The resulting list boxes

14 Save the document using an appropriate name, then close it. If you won't be working with QlikView for a while, you can also exit the program.

For a description of the syntax, see the *Reference Manual*.

LESSON 20 AND-MODE IN A LIST BOX

Two selections in different list boxes are always interpreted as logical **and**, i.e. QlikView will show all the field values associated with both the selections. A multiple selection within a list box is however usually interpreted as logical **or**, i.e. QlikView will show data entries associated with *any* of the selected values.

Under some circumstances, a multiple selection within a list box can be set to logical **and**, which means that QlikView will show only data entries associated with *all* of the selected values.

This lesson features a list box set to **and**-mode, which you will use for usual selections as well as for **not**-selections. You'll also learn under which circumstances a list box can be set to **and**-mode.

Making an and-selection

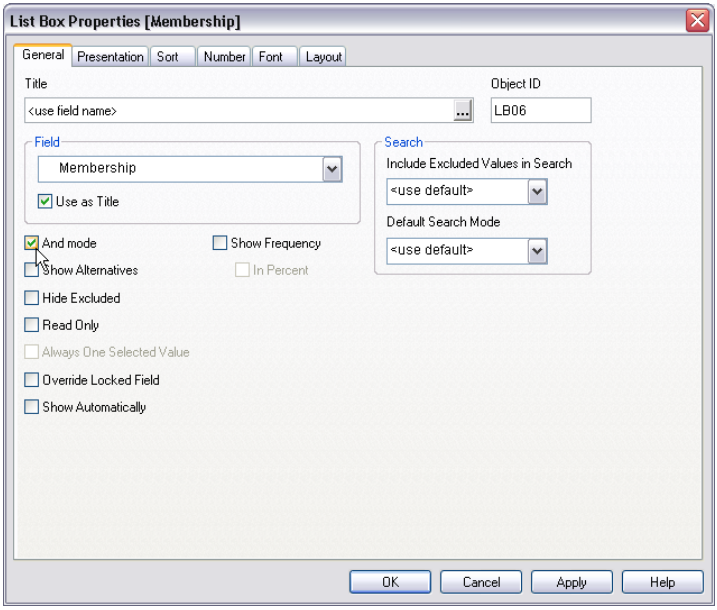


Figure 60. The List Box Properties sheet in which the **and** *mode can be set*

In the file *And.qvw* in the *...Tutorial\Advanced* directory, there is such a list box:

1 Start QlikView.

2 Open the file *And.qvw* by pressing the **Open** button in the toolbar, browsing for the file and clicking **Open**.

3 Choose the tab *Geography*, and find the list box *Membership*.

This is a list of organizations and geographical areas that the different countries belong to. A country can be a member of several organizations, and an organization can have many members. There is thus a many-to-many relationship between the field *Country* and the field *Membership*. Moreover, the field *Membership* does not link directly to any other field but *Country*. Under such circumstances, the field *Membership* can be set to **and** mode. A multiple selection in the *Membership* field should then be interpreted as "show only countries that are members of all the selected organizations".

4 Click on the list box with the right mouse button, then choose **Properties**, **General**.

5 Mark the check box **And mode**, then choose the **OK** button.

6 Select *Europe* by clicking it.

The *Europe* cell should now be green, and have an ampersand "&" to the left. The organizations shown as alternatives (white) are the ones that have one or several members of Europe. The organizations that are excluded are the ones with no members on the European continent.

7 Select *G-7* by CTRL-clicking.

You have now selected Europe *and* G-7, i.e. countries that are members of both. Only four countries remain optional, and these are all European countries in the G-7 group.

Making a not-selection

It is also possible to exclude countries in a similar way:

1 Deselect *G-7* by CTRL-clicking it.

2 Select *G-7* by CTRL-clicking it, keeping the mouse button down. Release the button when the cell has turned red.

You have now selected Europe and *not* G-7. Only European countries not in the G-7 group are now optional. This type of selection is called forced exclusion, and is very useful in many-to-many relationships.

3 Close the file. If you won't be working with QlikView for a while, you can also exit the program.

Characteristics of the and-table

	A	B	C	D
1	Country	Membership		
2	Russia	Europe		
3	Russia	Prev. Soviet Rep.		
4	Russia	Asia		
5	Liechtenstein	Europe		
6	Canada	OECD		
7	Canada	North America		
8	Canada	G-7		
9	Canada	NATO		
10	Canada	NAFTA		
11	Argentina	South America		
12	China	Asia		
13	Chile	South America		
14	U.S.A.	ANZUS		
15	U.S.A.	OECD		
16	U.S.A.	North America		
17	U.S.A.	G-7		
18	U.S.A.	NATO		
19	U.S.A.	NAFTA		
20	Malaysia	Asia		
21	Malaysia	ASEAN		
22	Brazil	South America		
23	Lebanon	Asia		
24	Lebanon	Middle east		
25	Australia	ANZUS		
26	Australia	OECD		
27	Australia	Australia & Pacific		

Figure 61. An and-table

Not every field can be set to logical **and** mode. The **and** mode is only possible if the field corresponds to the second column of a two-column table.

Also, the field must not be fetched from more than one table. The reason for this is that the **and**-alternative is logically meaningful only if the concerned field is associated to only one other field.

Finally, there must be no duplicate records in the table. It is thus advisable to load this kind of table using the **distinct** predicate (see the *Reference Manual*).

If the field is loaded this way, the **And mode** control in the **List Box Properties** dialog will no longer be dimmed and the logical mode of the list box can be changed.

LESSON 21 SEMANTIC LINKS

Normally, selections are made explicitly by clicking on the field values that are interesting. There is, however, also a way to make selections indirectly through *semantic links*. These are similar to field values, but with the difference that they describe the relations between the objects rather than the objects themselves.

This lesson shows you how to work with semantic links as well as how to create and load a semantic table. Furthermore, the script function **load...resident** will be introduced.

Working with semantic links

1 Start QlikView.

2 Open the file *Presidents.qvw* in the *...Tutorial\Advanced* directory.

This document is a list of U.S. presidents. By selecting a president, you can find out when he was born, etc.

3 Select *Eisenhower.*

You see that he was the 34th president. But who was his predecessor?

4 Click on *Predecessor* in the *Relation* list box.

You immediately find that it was Harry S Truman. Note that *Predecessor* does not turn green. Instead, *33* in the *No* list box turns green. By clicking on *Predecessor* you make an indirect selection of an object, other than the one that is currently selected.

Predecessor and *Successor* are typical semantic links.

5 Close the file.

Creating a document with semantic links

To create the above document, you need to load two tables: one logical table containing information about the presidents, and one semantic table.

Loading the logical table

Presidents

No	FirstName	LastName	Born	Decea	From	To	Origin	Party
1	George	Washington	1732	1799	1789	1797	Virginia	Federalist
2	John	Adams	1735	1826	1797	1801	Massachusetts	Federalist
3	Thomas	Jefferson	1743	1826	1801	1809	Virginia	Dem.-Rep
4	James	Madison	1751	1836	1809	1817	Virginia	Dem.-Rep
5	James	Monroe	1758	1831	1817	1825	Virginia	Dem.-Rep
6	John Quinc	Adams	1767	1848	1825	1829	Massachusetts	Dem.-Rep
7	Andrew	Jackson	1767	1845	1829	1837	SouthCarolina	Democrat
8	Martin	Van Buren	1782	1876	1837	1841	NewYork	Democrat
9	William Hei	Harrison	1773	1841	1841	1841	Virginia	Whig
10	John	Tyler	1789	1862	1841	1845	Virginia	Democrat

Figure 62. The logical table listing the U.S. presidents

The logical table (the one above) is loaded into QlikView the usual way:

1 Click the **New** button to create an empty document.

2 Choose **Edit Script** from the **File** menu.

3 Click **Table Files**.

4 Find the file *presdnts.csv* in the *...\TutorialFiles\Advanced\Examples* directory, then click **Open**.

5 The file wizard opens. Make sure that the program has made a correct interpretation, then click **Finish**.

An ordinary **load** statement has been generated in your script:

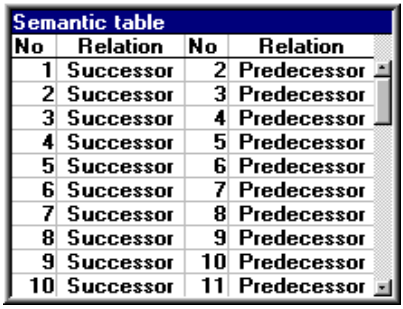
```
Load  No,
          FirstName,
          LastName,
          Born,
          Deceased,
          Party,
          Origin,
          From,
          To
from c:\qlikview\tutorialfiles\advanced\
examples\presdnts.csv
(ansi, txt, delimiter is ',', embedded labels);
```

6 Click **Run** to execute the script.

7 Add all the fields except the system fields to your document, then click **OK**.

Your document now looks almost like *Presidents.qvw*; only the *Relation* list box containing the semantic links is missing. For this to appear, you must load a semantic table.

The semantic table



Semantic table

No	Relation	No	Relation
1	Successor	2	Predecessor
2	Successor	3	Predecessor
3	Successor	4	Predecessor
4	Successor	5	Predecessor
5	Successor	6	Predecessor
6	Successor	7	Predecessor
7	Successor	8	Predecessor
8	Successor	9	Predecessor
9	Successor	10	Predecessor
10	Successor	11	Predecessor

Figure 63. The semantic table defining the relations between the presidents

The semantic table must contain exactly three or four columns. Normally four columns are used, the first one containing the field values that have a relation to some other field value and the third one containing the related field value. The second column must contain the names of the relations, and finally, the fourth one must contain the names of the inverse relations.

In this case, we only have to define the order of the presidents, and what the words predecessor and successor mean. This can be done by loading a table like the one in Figure 63. The first and third columns list the numbers of the presidents, and the second and fourth columns list the names of the relations. In this example all the relations in the second column are named *Successor* and all the relations in the fourth are named *Predecessor*, but the relations do not necessarily have to be the same within a column.

Extracting the semantic table from existing data

The semantic table does not have to exist as a table outside QlikView. It is more flexible to extract this table from the existing table of presidents through a separate **load** statement.

1 Open the **Edit Script** dialog again.

2 Position the cursor at the end of the script.

3 Type the following rows:

```
Load[No] -1 as No,
         'Successor' as Relation,
         [No],
         'Predecessor' as Relation
from c:\qlikview\tutorialfiles\advanced\
examples\presdnts.csv
(ansi, txt, delimiter is ',', embedded labels) where
[No] > 1;
```

This **load** statement results in the table in Table 63 on page 205.

The first script line, **No -1 as No**, results in the first column of the semantic table (Figure 63), containing all the numeric values of the original field *No* subtracted by 1. The **where** clause after the parenthesis has been added to omit the first record, since this would link the first president to the nonexistent 0:th president.

The second and fourth script lines will load the text strings *Successor* and *Predecessor* (enclosed by single quotation marks) as field values into the respective fields (both named *Relation*). This procedure should not be confused with the renaming of fields, where the fields to be renamed lack quotation marks or are enclosed by double quotation marks (or by square brackets).

It is important to use single straight quotation marks, otherwise the program will not make a correct interpretation. For more information on quotation marks, see the *Reference Manual*.

Note also that the **load** statement contains two fields labeled *No* and two fields labeled *Relation*. Such a **load** statement would cause a script execution error if used to load a *logical* table, since the loading procedure for one single logical table demands that none of the fields have the same name.

Loading the semantic table

For the above table to be loaded as a semantic table, the **load** statement must be preceded by the **semantic** qualifier:

4 Type **semantic** before **load**. The script now has the following appearance:

```
Load [No],
          FirstName,
          LastName,
          Born,
          Deceased,
          Party,
          Origin,
          [From],
          [To]
from c:\qlikview\tutorialfiles\advanced\
examples\presdnts.csv
(ansi, txt, delimiter is ',', embedded labels);
Semantic Load [No] -1 as [No],
          'Successor' as Relation,
          [No],
          'Predecessor' as Relation
from c:\qlikview\tutorialfiles\advanced\
examples\presdnts.csv
(ansi, txt, delimiter is ',', embedded labels) where
No > 1;
```

5 Click **Run**.

6 Add the new field *Relation* to your document by moving it to the column of displayed fields, then click **OK**.

Study your document: it is now identical with *Presidents.qvw*. The new field *Relation* has two field values, *Successor* and *Predecessor*, which are semantic links.

7 Select a president, e.g. Clinton.

8 Click the semantic link *Predecessor*.

9 The value *George Bush* is displayed. Click *Predecessor* again.

George Bush's predecessor, Ronald Reagan, is now displayed. This way you can click yourself through the entire line of presidents.

Loading the semantic table using load...resident

The most convenient way of extracting data from a previously loaded table, like you did above, is to use the **resident** clause.

The procedure is simple: all you need to do is add a label to the input table containing the data you wish to extract, and to refer to this label in a succeed-

ing statement. To extract the above table using a **resident** clause, the script would look like the one below:

```
Presidents:
Load      No,
          FirstName,
          LastName,
          Born,
          Deceased,
          Party,
          Origin,
          From,
          To
from c:\qlikview\tutorialfiles\advanced\
examples\presdnts.csv
(ansi, txt, delimiter is ',', embedded labels);
Semantic Load No -1 as No,
          'Successor' as Relation,
          No,
          'Predecessor' as Relation
resident Presidents where No > 1;
```

Note that the first **load** statement is preceded by "*Presidents*:": this is the label specified for the first table. The second statement, instead of loading the file *presdnts.csv* a second time, simply refers to it via "**resident Presidents**". Note that the label, when specified, ends with a colon, whereas there is no colon in the reference. Don't forget the semicolon, which is used to indicate the end of a statement.

1 Open the **Edit Script** dialog.

2 Modify the script to make it look like the one above.

3 Click **Run**. If you have done everything correctly, the script is executed and no changes occur in the document.

4 Save your document as *Semantic.qvw.*

5 Close the file. If you won't be working with QlikView for a while, you can also exit the program.

The presidents example is just one simple example of how to use semantic links. Semantic links are very useful when working with hierarchies, e.g. in genealogy, where the links could be e.g. *cousin*, *sibling*, *grandmother*, etc. They can also be used for people in companies where the semantic links can be e.g. *boss*, *reports to*, *secretary*, etc.

See the *Reference Manual* for more information on semantic links.

LESSON 22 NUMBER FORMATS

QlikView can handle text strings, numbers, dates, times, time stamps and currencies correctly. They can be sorted, displayed in a number of different formats and they can be used in calculations. This means e.g. that dates, times and time stamps can be added to or subtracted from each other.

This lesson deals with the basics of number interpretation and number formatting. For more detailed information, see the *Reference Manual*.

Interpretation and formatting

The issue of obtaining correct number formats is really a question of two different things:

- Interpretation of data when it is loaded
- Display of different number-based data types

Data representation inside QlikView

In order to understand data interpretation and number formatting in QlikView, it is necessary to know how data is stored internally by the program. All of the data loaded into QlikView is stored in two representations, as a string and as a number.

1 The string representation is always available and is what is shown in the list boxes and the other sheet objects. Formatting of data in list boxes (number format) only affects the string representation.

2 The number representation is only available when the data can be interpreted as a valid number. The number representation is used for all numeric calculations and for numeric sorting.

If several data items read into one field have the same number representation, they will all be treated as the same value and will all share the first string representation encountered. Example: The numbers 1.0, 1 and 1.000 read in that order will all have the number representation 1 and the initial string representation 1.0. Na

Interpretation of data

QlikView tries to interpret input data as a number, date, time etc. As long as the system default settings (found under **Regional Settings** in Windows 98, **Regional Options** in Windows 2000 or **Regional and Language Options** in Windows XP in

the Control Panel) are used in the data and the number interpretation variables in the script are correctly defined, the interpretation and the display formatting are handled automatically by QlikView, and the user does not need to alter the script or any setting in QlikView.

1 Open the Explorer and find the file *Date1.csv* in the *...\Tutorial-Files\Advanced\Examples* directory. Double-click the file.

2 Excel opens the file. It consists of three fields, *Date*, *Customer* and *Sales*. Note that the dates in the *Date* field are formatted according to the American standard format M/D/YY (M=month, D=day,YY=the two final numbers of the year), and that the numbers in the sales field have comma as thousands separator.

3 Close the file.

4 Start QlikView, then choose **New** from the **File** menu.

5 Open the **Edit Script** dialog. A certain number of **set** statements, defining separators and number formats via the number interpretation variables, have been generated automatically:

```
SET ThousandSep=',';
SET DecimalSep='.';
SET MoneyThousandSep=',';
SET MoneyDecimalSep='.';
SET MoneyFormat='$#,##0.00;($#,##0.00)';
SET TimeFormat='th:mm:ss';
SET DateFormat='M/D/YY';
SET TimestampFormat='M/D/YY th:mm:ss[.fff]';
SET MonthNames=Jan;Feb;Mar;Apr;May;Jun;...';
SET DayNames='Mon;Tue;Wed;Thu;Fri;Sat;Sun';
```

These settings are taken from the regional settings in the computer on which the script is generated and could therefor look somewhat different on your computer. This ensures a correct reexecution of the QlikView script also on computers with other regional settings, provided that the data files remain the same.

6 Open the Control Panel (**Start** menu, **Settings**) and go to **Regional Settings**.

7 Look through the pages of the **Regional Settings** dialog, especially **Number** and **Date**, and note that the settings correspond to those defined by the variables above. To get the same results as this example, English (United States) must be chosen on the first page.

8 Close the Control Panel.

The number interpretation variables may be deleted, edited or duplicated freely. If changed, they substitute the operating system defaults.

Note that the thousands separator and the date format defined by the number interpretation variables also correspond to the formats used in your file. QlikView will thus interpret everything correctly:

9 Go back to QlikView and click **Table Files** in the **Edit Script** dialog.

10 Find the file *Date1.csv*, then click **Open**.

11 If the file wizard has made a correct interpretation of the contents, click **Finish**.

12 Click **Run** to execute the script.

13 Move the fields *Customer*, *Date* and *Sales* to the column of displayed fields, then click **OK**.

14 The three list boxes appear on your sheet. Move and size them.

There is an easy way to find out if QlikView has interpreted the contents as valid numbers: valid numbers are always right-aligned in the list box, whereas values interpreted merely as text strings are left-aligned.

The contents of both *Sales* and *Date* being right-aligned, you can conclude that they have been correctly interpreted.

15 Save the document as *Number.qvw* and close it.

Once QlikView has interpreted the data as valid numbers, you can apply other formats using the **Number** page in the **List Box Properties** dialog. Formatting will be treated in the section “Formatting of data” on page 214.

Changing the number interpretation format

Suppose that the values of the field *Date* have the British date format (DD/MM/YY) instead of the American, i.e. a format that differs from the system settings and the formats set at the beginning of the script:

1 Click the **New** button to create a blank document.

2 Open the **Edit Script** dialog, then click **Table Files**.

3 Find the file *Date2.csv*, then click **Open**.

4 If the file wizard has made a correct interpretation of the contents, click **Finish**.

5 Click **Run** to execute the script.

6 Move the fields *Customer*, *Date* and *Sales* to the column of displayed fields, then click **OK**.

7 The three list boxes appear on your sheet. Move and size them.

This time, the values of the *Date* list box are left-aligned, which means that they have been interpreted as text strings, not as valid dates. As long as this situation remains, you won't be able to change the number format of the field, nor make calculations based on the field.

The problem can be solved in one of the following ways:

- By changing the system settings in the Control Panel
- By changing the date format setting in the script
- By using an interpretation function in the script

Changing the date format in the script

Changing the system settings is usually not a good idea, unless most of the files you load have a type of regional settings that is different from yours. Changing the date format setting in the script is a better solution (moreover, it is very useful if you want a person with different system settings to use the document):

1 Open the **Edit Script** dialog and change the date format setting to DD/MM/YY. The **set** statements should now be the following:

```
SET ThousandSep=',';
SET DecimalSep='.';
SET MoneyThousandSep=' ';
SET MoneyDecimalSep='.';
SET MoneyFormat='$# ##0.00;($# ##0.00)';
SET TimeFormat='th:mm:ss';
SET DateFormat='DD/MM/YY';
SET TimestampFormat='M/D/YY th:mm:ss[.fff]
SET MonthNames='Jan;Feb;Mar;Apr;May;Jun;...';
SET DayNames='Mon;Tue;Wed;Thu;Fri;Sat;Sun';
```

2 Reexecute the script by clicking **Run**.

3 Click **OK** to close the dialog, then study your document and note that the values in the list box *Date* are now right-aligned. They have thus been interpreted as valid dates.

4 Save the document as *Number2.qvw* and close it.

Using interpretation functions

If you load several files which all have different number formats, you may want to use an interpretation function instead. Interpretation functions are used to interpret field contents or expressions. Do the following:

1 Create a blank document by clicking **New**.

2 Open the **Edit Script** dialog. Note that the date format is M/D/YY again, since you haven't changed the system settings.

3 Click **Table Files** and open the file *Date2.csv.*

4 If the file wizard has made a correct interpretation of the contents, click **Finish**.

5 Modify the script to make it look like below:

```
Load  date#(Date, 'DD/MM/YY') as Date,
          Customer,
          Sales
from c:\qlikview\tutorialfiles\advanced\
examples\Date2.csv
(ansi, txt, delimiter is ',', embedded labels);
```

Date# is the interpretation function, *Date* is the field to be interpreted, and DD/MM/YY is the date format according to which you want the field contents to be interpreted. The syntax, as well as further examples, are found in the *Reference Manual*.

6 Choose **Run** to execute the script.

7 Move the fields *Customer*, *Date* and *Sales* to the column of displayed fields, then click **OK**.

Study the document and note that the values of the field *Date* have once again been interpreted as valid dates. The result is identical with the one of *Number2.qvw.*

8 Save the document as *Number3.qvw.*

Interpretation problems due to different separators are solved in the same way.

Note When interpreting dates with only two positions for year, e.g. YY-MM-DD, QlikView will assume that the date falls within a moving window of -50 to +49 years counted from the current year according to the system clock. Thus, 88-08-08 will be interpreted as 1988-08-08, whereas 44-08-08 will be interpreted as 2044-08-08.

Files are not always homogeneous. If you have a file containing differently formatted data in one and the same field, you can use the **alt** function, which tests if the field contains data formatted according to the specified number representations. See the *Reference Manual*.

Formatting of data

Once QlikView has interpreted data as valid numbers, it is possible to choose another number format in the properties dialog for the sheet object.

1 Click on the list box *Date* with the right mouse button, then choose **Properties...** from the float menu.

2 Go to the **Number** page.

3 Choose **Override Document Settings** in order to set a separate number format for the list box.

4 The format is set to **Mixed**. Change it to **Date** by selecting the option.

5 In the **Format** box, the default date format of the operating system appears. It can be changed to any other format of your choice. For instance, you may prefer the standard ISO format YYYY-MM-DD. Erase the contents of the **Format** box and enter the new format, or click the **ISO** button.

6 Click **OK**.

The specified format has been applied to the values of the list box *Date*. To choose another date format, simply open the **Number** page of the properties dialog again and change the contents of the **Format** box.

The easiest way to change the number format for several fields is to use the **Document Properties** dialog.

If the field originally contained differently formatted values, e.g. certain dates with the format M/D/YY and others with the format DD/MM/YY, you may want to return to the original formatting. For ordinary text files, however, this is only possible if the script is re-executed with the **Survive Reload** check box (**Number** page) deselected.

The **Default from input** button on the **Number** page is only available for fields with a defined data type read from a database via ODBC.

7 Save and close the document. If you won't be working with QlikView for a while, you can also exit the program.

It is also possible to set the formatting by using formatting functions in the script. See the *Reference Manual, Book I*.

For more detailed information about number formats, see the *Reference Manual, Book I*. Year 2000 compliance is treated in the *Introduction* part of the *Reference Manual*.

LESSON 23 ACCESS RESTRICTION

It is important that information is distributed only to those with access rights to it. Since QlikView makes the previously cumbersome process of retrieving information a very simple task, it is obvious that an access restriction mechanism is necessary. This kind of mechanism can be added when creating the document. In this lesson, which is the last lesson of the *Tutorial*, you'll add an access restriction mechanism to a previously created file.

Access levels

Access to QlikView documents can be restricted to specified users or groups of users. When creating the document, these are assigned the access levels ADMIN or USER. If no access level is assigned, the user cannot open the QlikView document. For clarity, it is often useful to use other access levels, e.g. NONE, but these will always be treated as "no access".

A person with ADMIN access can change everything in the document. Using the **Security** page in the **Document Properties** and **Sheet Properties** dialogs, a person with ADMIN access can limit the users' possibilities of modifying the document. Read more about this in the Reference Manual. A person with USER privileges cannot access the **Security** pages. A NONE access does not give any access at all to the QlikView document.

Sections in the Script

All access control is managed via files, SQL databases or inline clauses in the same way as QlikView normally handles data. It is thus possible to store the access data in a normal database. The script statements managing the security tables are given within the access section, which in the script is initiated by the statement **section access**.

If an access section is defined in the script, the part of the script loading the "normal" data must be put in a different section, initiated by the statement **section application**.

Example:

```
Section Access;
Load * inline
    [ACCESS,USERID,PASSWORD
    ADMIN, A,X
    USER,U,Y  ];
Section Application;
Load … from …
```

Section Access system fields

The access levels are assigned to users in one or several tables loaded within the section access. These tables can contain several different user-specific system fields, typically USERID and PASSWORD, and the field defining the access level, ACCESS. The full set of section access system fields are described in the reference manual. Other fields like e.g. GROUP or ORGANISATION may be added to facilitate the administration, but QlikView does not treat these fields in any special way.

None, all, or any combination of the security fields may be loaded in the access section. However, if the ACCESS field is not loaded, all the users will have ADMIN access to the document and the section access will not be meaningful.

ACCESS
: A field that defines what access the user should have.

USERID
: A field that should contain a user ID that has the privilege specified in the field ACCESS.

PASSWORD
: A field that should contain an accepted password.

SERIAL
: A field that should contain a number corresponding to the QlikView serial number. Example: 4900 2394 7113 7304

QlikView will first compare the QlikView serial number with the field SERIAL. It will then, if necessary, prompt for User ID and password and compare these with the fields USERID and PASSWORD.

If the combination of User ID, password and serial number is found in the Section Access table, the document is opened with the corresponding access level. If not, QlikView will deny the user access to the document. If the User ID and/or the password are not entered correctly within three attempts the entire log-on procedure must be repeated.

Example 1:

Only serial number is checked. One specific computer gets ADMIN access. Everyone else gets USER access. Note that a star can be used to mark “any serial number”.

ACCESS	SERIAL
ADMIN	4900 2394 7113 7304
USER	*

Example 2:

The administrator and the computer with serial number 4900 2394 7113 7304 (the server on which QlikView runs as a batch job) gets ADMIN access. Everyone else gets USER access when entering “USER” as user ID and password.

ACCESS	SERIAL	USERID	PASSWORD
ADMIN	*	ADMIN	ADMIN
ADMIN	4900 2394 7113 7304	*	*
USER	*	USER	USER

Loading security tables

Suppose you have two tables containing security information, the first one named *acclist.csv*, the second *accserid.csv*. The first table contains the security fields *USERID*, *PASSWORD* and *ACCESS*, the second the security field *SERIAL*. Since the same associative logic that is the hallmark of QlikView is used also in the access section, the tables will be associated via the optional field *COMPUTER NAME*.

Note All fields listed in **Load** or **Select** statements in the section access must be written in UPPER CASE. Any field name containing lower case letters in the database will be converted to upper case before being read by the **Load** or **Select** statement. However, the user ID and the password entered by the end-user opening the QlikView document are case insensitive..

USERID	PASSWORD	ACCESS	GROUP	COMPUTER NAME
Sharon	7VFI1R	ADMIN	IT	All
Sharon	FROMME2U	USER	IT	All
Bob	LOVE15	ADMIN	Marketing	Bob
Bob	15ALL	USER	Marketing	All
Pete	NUMBER1	USER	Personnel	All
Sarah	ABSOLUT	USER	Personnel	Sarah

COMPUTER NAME	SERIAL
Sharon	1234 5678 9012 3456
Bob	1234 5678 9012 3457

COMPUTER NAME	SERIAL
Pete	1234 5678 9012 3458
Sarah	1234 5678 9012 3459
All	*

Note The serial number must be given in 4x4 number groups separated by a blank.

You'll now load the above tables into QlikView:

1 Open the document for which you want access control, e.g. *Advanced.qvw.*

2 Open the **Edit Script** dialog and position the cursor at the beginning of the script, but after the **set** statements.

3 Click **Table Files**.

4 Select *the* files *acclist.csv* and *accserid.csv* (in the *...Tutorial\Advanced\Examples* directory) and click **Open**.

5 The files are opened in the file wizard. Click **Finish** for both files.

6 For the tables to be used for access control, the statements loading them need to be placed in a separate section. Type **section access;** at the top of the script (after the **set** statements). Don't forget the semicolon.

7 To distinguish the access section from the application section, position the cursor after the statements loading the security tables, then type **section application;**. Don't forget the semicolons: they indicate the end of a statement.

The first part of your script should now have the following appearance:

```
Section access;
Directory c:\qlikview\tutorialfiles\
advanced\examples;
Load      USERID,
          PASSWORD,
          ACCESS,
          GROUP,
          [COMPUTER NAME]
from acclist.csv
(ansi, txt, delimiter is ',', embedded labels);
Load      [COMPUTER NAME],
          SERIAL
from accserid.csv
(ansi, txt, delimiter is ',', embedded labels);

Section application;
Load Country,
    Capital,...
```

The **directory** statement specifies the path to the files.

8 Choose **Run** to execute the script.

9 Click **OK** to close the dialog.

The following access rights will be granted:

Sharon will have access rights from all the computers (since all the serial numbers are allowed). Depending on which password she uses she will be granted either ADMIN or USER access rights.

Bob will have ADMIN rights when he sits at his own computer (Serial number 1234 5678 9012 3457) and enters his UserID (Bob) and Password (LOVE15). He will have USER rights on all the computers (all serial numbers allowed) when he gives his UserID (Bob) and Password (15ALL).

Pete will have USER access from all the computers provided he gives his UserID and correct password, and

Sarah will have to use her own computer (Serial number 1234 5678 9012 3459) and give a correct UserID and Password to be able to open the QlikView document with USER access rights.

Using the Security pages

People with ADMIN privileges can prevent the execution of certain commands:

1 Choose **Document Properties** from the **Settings** menu.

2 Go to the **Security** page.

The **Security** page contains a list of QlikView commands. By deselecting a check box, you prevent the document users from executing that command.

3 Deselect **Add Sheets** and **Edit Script**, then click **OK**.

Note that the commands you deselected are now dimmed, i.e. inactive.

4 Save the file as *Access.qvw*, then close it and exit QlikView.

There is also a **Security** page on the **Sheet Properties** page, containing further commands

Working with access restriction

Suppose you are Pete and wish to work with the document.

1 Open QlikView, then choose **Open** from the **File** menu.

2 Find the file *Access.qvw* and click **Open**.

3 QlikView prompts for the correct User ID. Enter *Pete*, then click **OK**.

4 QlikView now prompts for the correct password. As Pete, you have USER rights from all the computers. Enter your password, i.e. *NUMBER1* (case insensitive). Click **OK**.

If you have done everything correctly, the document now opens and you can work with it. Note, however, that you cannot add sheets or view the script, since these commands have been inactivated. Note also that you cannot access the **Security** pages: these pages are only available for ADMIN users.

If you wish to be granted access to all the parts of the document, you need to enter Sharon's UserID and Password (make sure to pick the password granting her ADMIN access rights.

5 Close the file. If you won't be working with QlikView for a while, you can also exit the program.

The syntax of the **section** statement is given in the *Reference Manual*. For further information on access restriction, see the *Appendix* of that manual.

You have now finished the entire *Tutorial*. As you create your own documents, be sure to take advantage of all the resources available to you. For further information, see the *Reference Manual*.

INDEX

Symbols

A

B

C

D