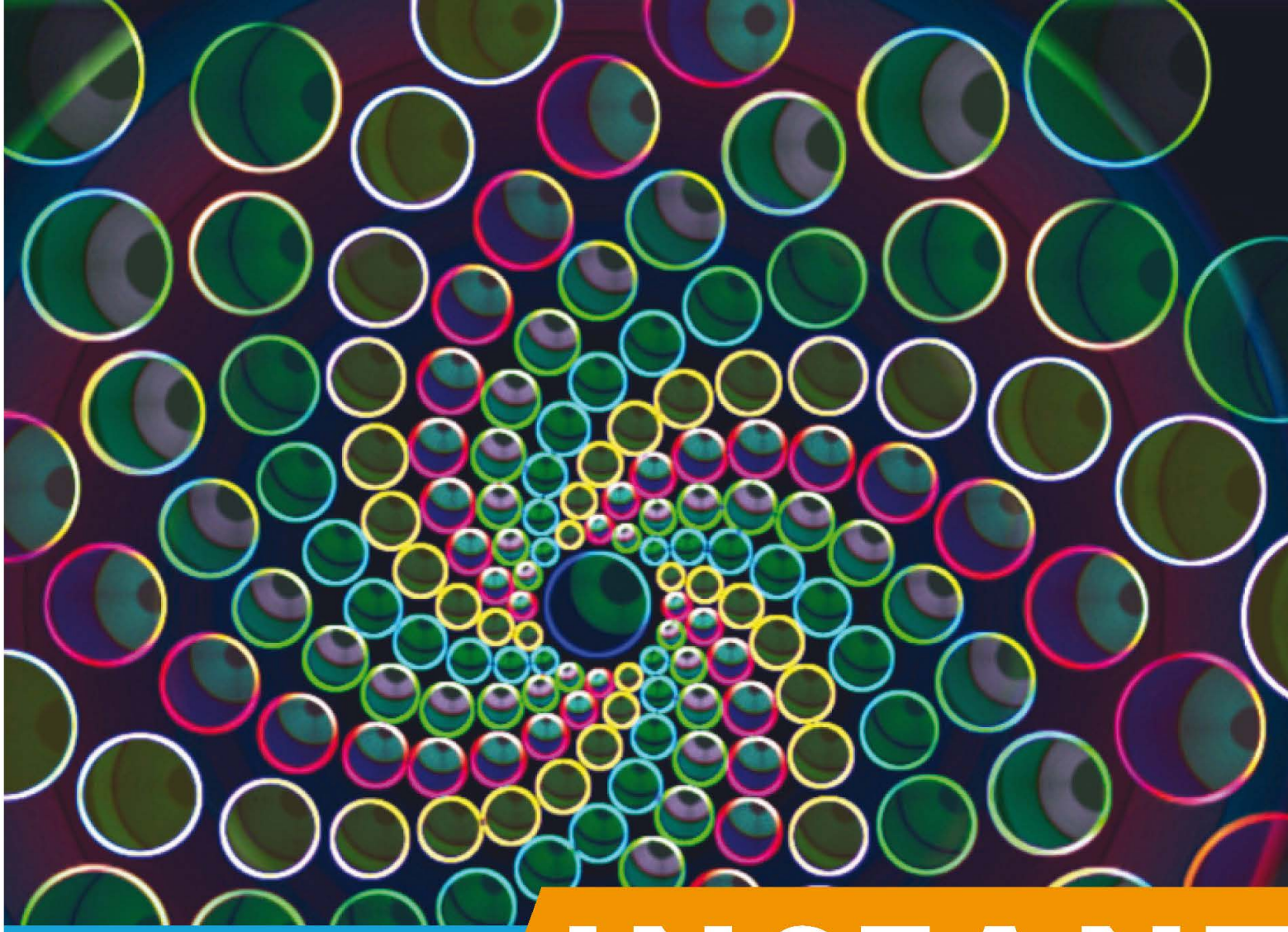

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QlikView 11 Application Development

An intuitive guide to building and customizing a business intelligence application for your data

B. Diane Blackwood

[PACKT] PUBLISHING

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About the Author

B. Diane Blackwood has worked as a consultant implementing business intelligence and corporate performance management solutions since 2005. She has extensive experience in multiple industries (micro electronics to heavy equipment manufacturing, medical, legal, and various retail industries) implementing BI and CPM solutions. In 2010, she worked with El Camino Hospital creating data warehouse/data marts to feed QlikView, a "social business discovery" software. Working closely with Dr. Michael Gallagher, formerly Director of Informatics at El Camino Hospital, his enthusiasm for the uses of QlikView in analyzing hospital and medical data "infected" her.

Diane and her husband, Bob, moved from Chicago to Albuquerque in June of 2012. He took early retirement from the City Colleges of Chicago, and they have had Albuquerque on their short list of retirement locations since 1997.

In the past, Diane has written several biographic encyclopedia articles including articles on Charles Babbage, Erving Goffman and Isaac Asimov.

Thank you to Dr. Bob Blackwood for proofreading the sentence structures and punctuation.

Thank you to Dr. Michael Gallagher for first showing me prescribing pattern analysis with QlikView.

About the Reviewer

Theofilopoulos (LefTy) Eleftherios has an extensive background in business intelligence accumulating over a decade of working solely in this field with another decade in general programming and hardware dismantling as a hobby. Starting from a data center in Europe and organizing reporting for a huge multinational company, to numerous banks and financial institutions his interest and expertise grew over the years. He likes to work on an end-to-end basis as he says, from designing the infrastructure, database schemas, cubes, and whatever else is necessary to provide the end result; precise and timely reporting or end user applications in a variety of languages and frameworks. He is not focused on a certain brand of database or tools, and has experience with Microsoft, Oracle, Teradata, MySQL, MariaDB, and Mongo as backends and Cognos, Microsoft, Tableau, Tibco, and QlikView as frontends and almost everything in between. He is an avid open source advocate, strongly believing in and supporting community efforts such as the Python and R languages.

He started working in DHL Prague, at the moment of the transition of numerous individual service centers to a centralized data center in the heart of Europe. From there he moved on to Accenture and Komercni Banka before moving back to his birthplace, Greece, and continuing his career with Piraeus Bank for many years. Then he moved on to his beloved consulting and thus gained access to all of Greece's major Banks and Financial institutions. Nowadays he is employed by one of the biggest online travel agencies in Europe, Tripsta/Travelplanet24 and his focus remains unchanged; always enriching his expertise in the field of Data Science with the added variable of big data volumes the travel industry so aptly provides.

I would like to thank all of the wonderful people I have had the pleasure of working with, and of course my parents for always being there for me.

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Preface

This book will teach the reader how to develop business intelligence applications with QlikView 11. QlikView 11 delivers enterprise-class analytics and search with the ease of use of office productivity software. The book is aimed at anyone who is interested in learning QlikView development and analysis.

> *QlikTech's belief is that all BI users can benefit from a fully-functional and interactive QlikView app experience.*
>
> *– www.QlikView.com*

Because QlikView 11 is available in a free personal edition and is so easy to use and set up, this book will focus on ideas about how to use QlikView while demonstrating the process of loading data and setting up dashboards; then using the dashboards to analyze data. Practical applications of QlikView 11 can be developed quickly with assistance from tutorials and help rather than waiting weeks for a Business Intelligence application to be delivered and still more weeks for dashboards and analytical applications as with the majority of the products on the market. This time saving experience makes QlikView an obvious addition to business (and personal) analysis tools.

What this book covers

Downloading, installing, and analyzing with QlikView (Simple) introduces you to the QlikView 11 interface while working with sample financial data available for download. The topics covered in this recipe include: when to use QlikView, navigating the interface, and creating your first QlikView sheet, sheet objects, and chart. Additional practice includes editing the script to load more than one sample file and automatically linking data.

Analyzing retirement locations (Intermediate) will explain how to create our own analysis from scratch in order to learn more about combining data from multiple sources and creating our own input to assist analysis. More sheet objects are introduced and more of the QlikView interface is explored. Sample data is available for download. More scripting examples for joining data are covered.

Using QlikView practically (Intermediate) explores where else QlikView has been used and how. It explores ideas of how else QlikView might be used and looks at other demonstration databases from QlikView to stimulate the thought processes of how you might want to use it. References are provided to additional website training and the QlikView Community to help you build your knowledge.

Sharing the wealth (of information) – scaling up (Intermediate) discusses various steps and options to scale up to an Enterprise application. This chapter also tells us where to find information about licensing, pricing, enterprise server requirements, data sources, and big data, and how to implement mobile applications.

Analyzing movies example (bonus recipe) is an analysis example that uses the QlikView Movie Database to demonstrate how analysis can be performed with an existing demonstration database from QlikView. This analysis also helps familiarize us with using the interface and provides examples of interface sheet creation for analysis along with more of the tools available. There are additional practice ideas included at the end of this chapter. This simple analysis covers terminology, analysis techniques, and tools intermediate to the *Downloading, installing, and analyzing with QlikView* and *Analyzing retirement locations* recipes.

You can download this bonus recipe from: `http://www.packtpub.com/sites/default/files/downloads/9649ENInstant_Bonusrecipe.pdf`

What you need for this book

QlikView 11 is available in a free personal edition from the QlikTech company website: `http://www.QlikView.com`.

To download the QlikView 11, follow these steps:

1. Navigate to the website and click the **Free Download** button.
2. Scroll down to where you will be asked to register and choose a username.
3. Click on **Download Now** and select your preferred language and the version of the product that you need for your environment. You have the choice of 32-bit Windows or 64-bit Windows.
4. Click on the **Download QlikView Now** button and when your system asks you what you want to do, click on the **Run** button.

5. Follow the instructions on the install screens, give your system the permission to install the software if necessary and accept the license agreement. QlikView is now available to use.

There are three sample data Excel spreadsheets available for download as well as a bonus recipe, from your account at `http://www.PacktPub.com`. LNData.xlsx and LNData-Nov.xlsx are used with the *Downloading, installing, and analyzing with QlikView* recipe, the `Where to Retire.xls` file is used with the *Analyzing retirement locations* recipe.

Who this book is for

The book is aimed at anyone who is interested in learning QlikView development and analysis. Anyone who is interested in Business Intelligence or analyzing data for themselves in a visual format will benefit from learning how to use QlikView.

Conventions

In this book, you will find a number of styles of text that distinguish between different kinds of information. Here are some examples of these styles, and an explanation of their meaning.

Code words in text are shown as follows: "First, we will load the file named `LNData.xlsx`."

A block of code is set as follows:

```
LOAD Company,
   [Acct-Group],
   [Account-Name],
   Count,
    Acct5,
   Acct6,
```

When we wish to draw your attention to a particular part of a code block, the relevant lines or items are set in bold:

```
LOAD Company,
   [Acct-Group],
   [Account-Name],
   Count,
    Acct5,
   Acct6,
```

New terms and **important words** are shown in bold. Words that you see on the screen, in menus or dialog boxes for example, appear in the text like this: "Navigate to the website and click on the **Free Download** button."

Warnings or important notes appear in a box like this.

Tips and tricks appear like this.

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Questions

You can contact us at `questions@packtpub.com` if you are having a problem with any aspect of the book, and we will do our best to address it.

Instant QlikView 11 Application Development

QlikView 11 is a very easy-to-use business intelligence product. It is designed to facilitate relationship analysis rather than the more formal corporate performance and financial applications. It is designed to use a methodology of *Direct Discovery*, which is used to analyze data from multiple sources. QlikView 11 allows you to do your own business discovery, and take you quickly out of the data management stage and into the data relationship investigation stage.

With that in mind, when would you want to use QlikView 11? You would use it to analyze and quickly see trends and exceptions that—with normal financial application-oriented BI products—would not be readily apparent without days of consultant and technology department setup. With QlikView, you can analyze data relationships that are not measured in monetary units. Certainly, QlikView 11 can be used to analyze sales trends and stock performance, but other relationships soon become apparent when using QlikView. Human resource trends become apparent. Fantasy football factors can assist you with team choices along with tracking team performance. Textual analysis can indicate public opinion for political surveys, or sales and marketing.

Downloading, installing, and analyzing with QlikView (Simple)

This recipe will take you step-by-step on how to get started with QlikView. After downloading and installing QlikView 11 from the company website, we will load our first sets of data and begin our exploration of the QlikView interface for analysis.

Getting ready

QlikView 11 Personal Edition is freely available from the QlikTech company website at `http://www.QlikView.com`. The following steps explain how to install the software:

1. Navigate to the website and click on the **Free Download** button. Scroll down to the section where you will be asked to register and choose a username.
2. Click on **Download Now**. Select your preferred language and the versions of the product you need for your environment. You have the choice of 32-bit Windows or 64-bit Windows.
3. Click on the **Download QlikView Now** button. Your system will now ask what you want to do; click on the **Run** button. You may want to come back and download the tutorial also.
4. Follow the instructions on the installation screen. Give your system permission to install the software if necessary, and accept the license agreement. It can take around 10 to 20 minutes for downloading and installation depending on your Internet speed. Once done, QlikView 11 is now available to use.
5. There are two sample data Excel spreadsheets available for download from your account at `http://www.PacktPub.com` that are used in this recipe. Their names are `LNData.xlsx` and `LNData-Nov.xlsx`.

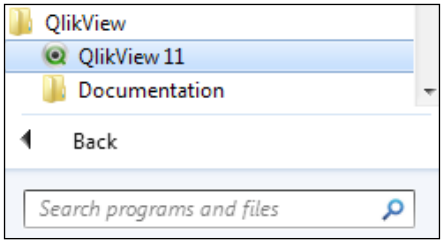
Downloading the support files

You can download the example code/support files for all Packt books you have purchased from your account at `http://www.PacktPub.com`. If you purchased this book elsewhere, you can visit `http://www.PacktPub.com/support` and register to have the files e-mailed directly to you.

How to do it...

Let us begin to examine the QlikView 11 application by opening the program:

1. Start **QlikView** by going to **Start** | **All Program** in Windows. After QlikView starts, you can begin to navigate around the program to familiarize yourself with the environment.

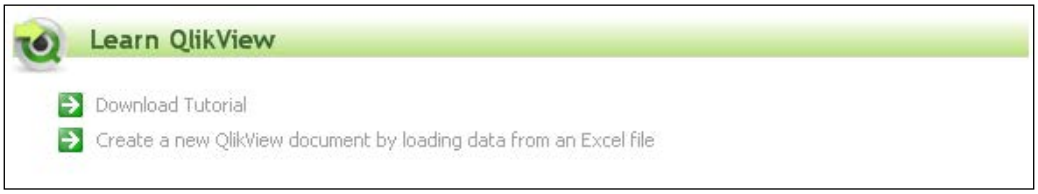


2. QlikView consists of two parts:
    - The `sheet` that can contain sheet objects such as charts or list boxes that show clickable information
    - The `load script` that stores information about the data and the data sources
3. To load data from an Excel sheet, use the options available on the **Getting Started** screen. This wizard can also help you create a basic document `sheet` that contains a chart.
4. To use data from other file types, click on the **File Wizard: Type** option present in **Table Files** | **Edit Script**.
5. Using the **Edit Script** dialog, we can view our data script, edit it in the script interface, and add other data sources. Reload the data by clicking on the **Reload** button. If we just want data from an existing QlikView file and to analyze the information in it, we do not need to work with the script at all.
6. After QlikView opens, we will see the default start screen. Here you will see a side menu with the following options:
    - The **Getting Started** option, which will be highlighted.
    - The **Recently Opened Documents** option shows the documents that were recently opened. This will be blank the first time QlikView is opened.
    - The **Favorites** option will also be empty at this point.
    - The **Open in Server** option allows you to register the QlikView Server if your company has an Enterprise QlikView license and is running QlikView from a server.
    - The **Resources** option from which you can follow links back to the QlikView website and see more examples.
7. In the lower-left corner, we have the option to uncheck the box to show the default screen when starting QlikView. Leave that option checked to make it easy to navigate to examples and training.
8. Currently, the **Getting Started** screen shows that you are running QlikView Personal Edition, with the **Learning Center** and **Examples** options.

The very first entry under **Examples** is **Data Visualization**. This is a very good tutorial on what types of charts to use to aid in visual discovery and understanding of your data relationships. You may want to take a few minutes to investigate this before continuing with the current recipe.

Now, let's create our first QlikView document by loading data from Excel:

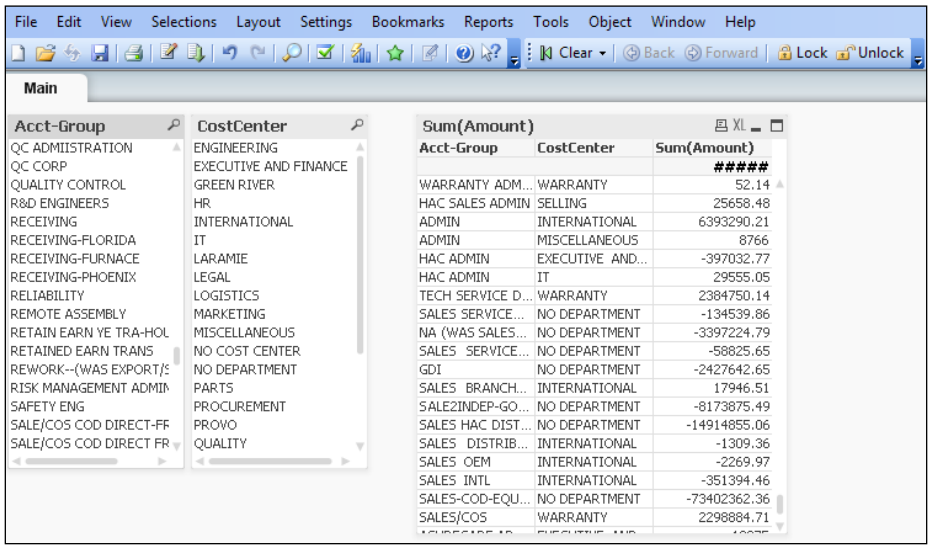
1. Under **Learn QlikView** in the **Getting Started** screen, click on **Create a new QlikView document by loading data from an Excel file** , as shown in the following screenshot:



2. For this example, we will use some sample financial data downloaded from an accounting system into Excel. These files are available for download at the Packt Publishing website.
3. Review the data in Excel before you load it. There are six steps to the creation:
    1. Select the data source. You can do this by clicking on **Browse** and navigating to the Excel file that you are going to analyze. First, we will load the `LNData.xlsx` file.
    2. Verify the data and choose to use column headers from this datafile (or to create your own for each column in the data). With the sample data, we will use the existing column headers.
    3. Save your new QlikView QVW file and give it a name of your choice. (For example, `Sample.qvw`)
    4. Choose the chart type to create for our first sheet object. Here, because it is financial type data we are choosing a straight table type chart to start examining our sample data.
    5. Select the dimension(s) to use in our first chart. Here we have selected **Acct-Group** and **CostCenter**. Dimensions represent the columns of data from which we load the Excel file.
    6. We add a mathematical expression such as a sum or an average. Just add the sum expression of the **amount** column we loaded.

Note that at step 6, we can check the box to launch **Help**.

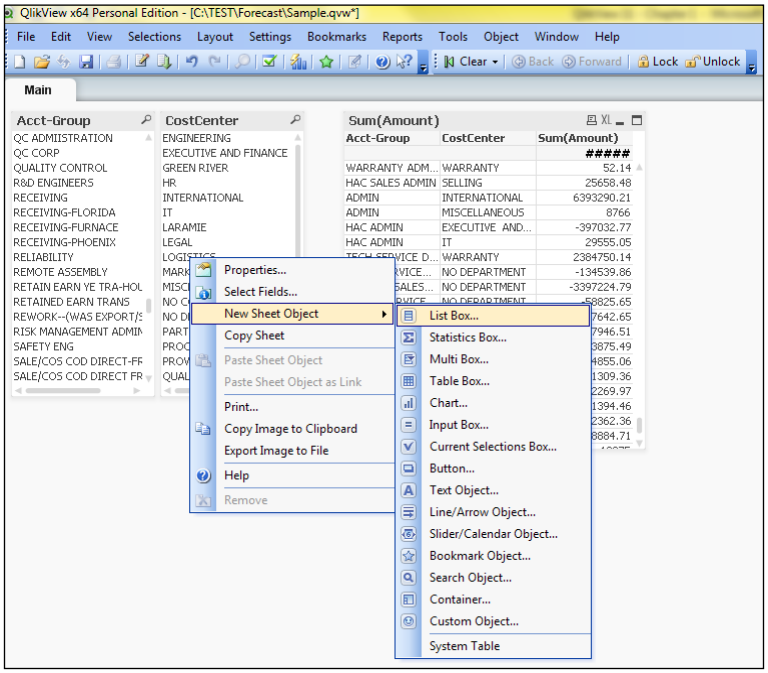
We have now created our first QlikView application. The following screenshot shows its look:



How it works...

Next, we will create more sheet objects, starting with a new list box to begin analyzing our loaded data. We can add dimensions for analysis. We can format our data and other enhancements by right-clicking on our sheet or our sheet objects that were created by the wizard. For example, with this data, we can add a box for the **Company** dimension data and format the data to have dollar signs and commas.

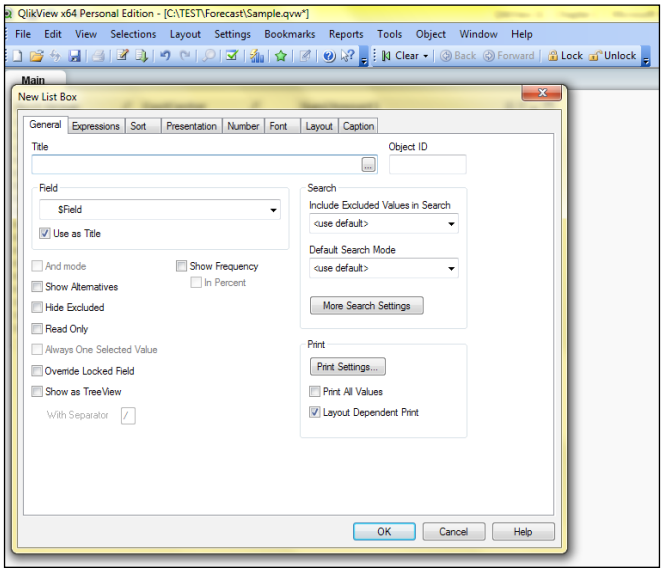
To add the list box for a company, right-click in the blank area of the sheet, and choose **New Sheet Object** | **List Box** as shown in the following screenshot:



As you can see in the drop-down menu, there are multiple types of sheet objects to choose from such as **List Box**, **Statistics Box**, **Chart**, **Input Box**, **Current Selections Box**, **Multi Box**, **Table Box**, **Button**, **Text Object**, **Line/Arrow Object**, **Slider/Calendar Object**, and **Bookmark Object**. We will only cover a few of them in the course of this book.

The **Help** menu and extended examples that are available on the QlikView website will allow you to explore ideas beyond the scope of this book. The **Help** documentation for any item can be obtained by using the **Help** menu present on the top menu bar.

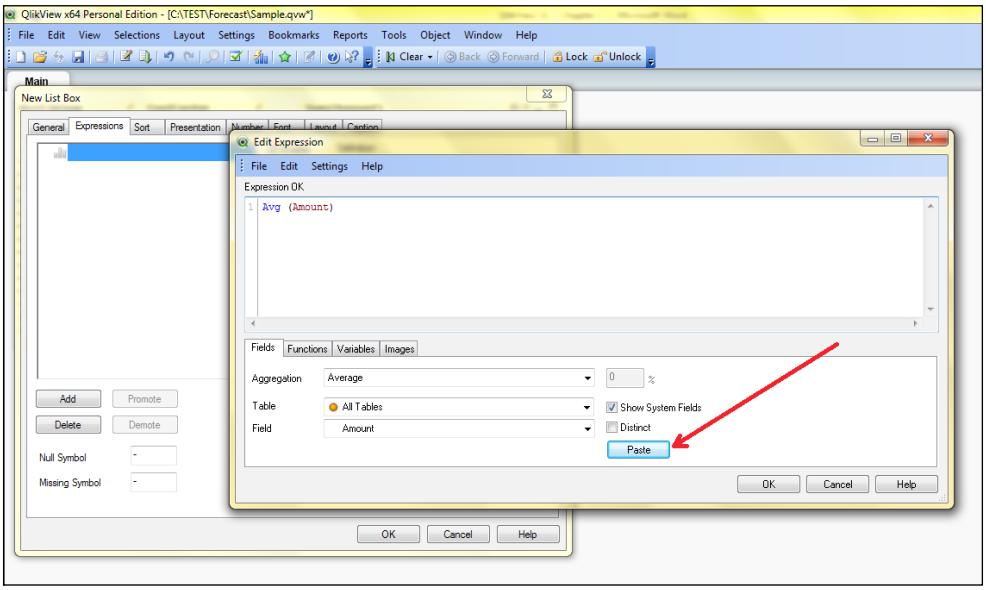
Choose the **List Box** sheet object to add the company dimension to our analysis. The **New List Box** wizard has eight tabs: **General**, **Expressions**, **Sort**, **Presentation**, **Number**, **Font**, **Layout**, and **Caption**, as shown in the following screenshot:



Give the new **List Box** the title `Company`. The **Object ID** will be system generated. We choose the `Company` field from the fields available in the datafile that we loaded. We can check the **Show Frequency** box to show frequency in percent, which will only tell us how many account lines in October were loaded for each company.

In the **Expressions** tab, we can add formulas for analyzing the data. Here, click on **Add** and choose **Average**. Since, we only have numerical data in the **Amount** field, we will use the **Average** aggregation for the **Amount** field. Don't forget to click on the **Paste** button to move your expression into the expression checker. The expression checker will tell you if the expression format is valid or if there is a syntax problem.

If you forget to move your expression into the expression checker with the **Paste** button, the expression will not be saved and will not appear in your application.



The **Sort** tab allows you to change the **Sort** criteria from text to numeric or dates. We will not change the **Sort** criteria here.

The **Presentation** tab allows you to adjust things such as column or row header wrap, cell borders, and background pictures.

The **Number** tab allows us to override the default format to tell the sheet to format the data as money, percentage, or date for example. We will use this tab on our table box currently labeled `Sum(Amount)` to format the amount as money after we have finished creating our new company list box.

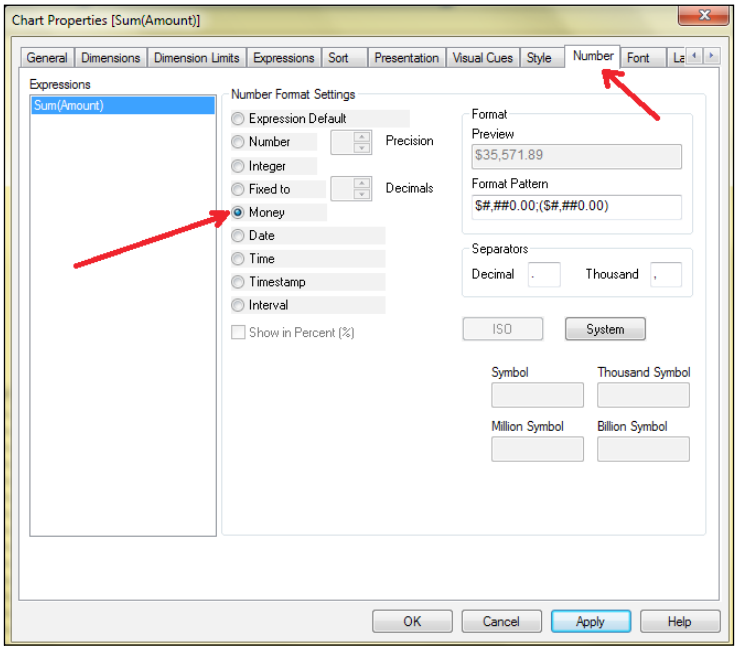
The **Font** tab lets us choose the font that we want to use, its display size, and whether to make our font bold.

The **Layout** tab allows us to establish and apply themes, and format the appearance of the sheet object, in this case, the list box.

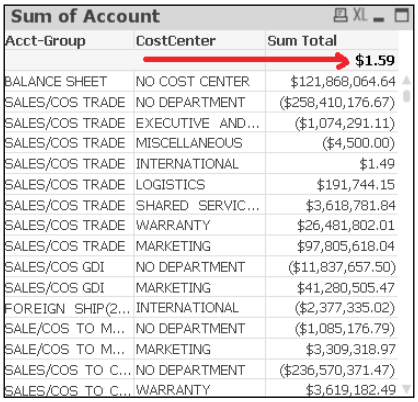
The **Caption** tab further formats the sheet object and, in the case of the list box, allows you to choose the icons that will appear in the top menu of the list box so that we can use those icons to select and clear selections in our list box. In this example, we have selected search, select all, and clear.

Company		
American Distribution	0.00040485875	5.1%
Cheyenne Co L.P.	0.00031534718	29.5%
Cheyenne Distributing	0	0.1%
Cheyenne Holding	0	0.1%
Cheyenne Manufacturing	0.00011891876	38.2%
Cheyenne National Gro...	0.0010000004	0.2%
Cheyenne National Hol...	0.0091666489	0.7%
Cheyenne National Inc	-0.0070588212	0.7%
Eliminations	0.040999997	0.2%
Pioneer Payroll	0	0.6%
Provo	0.00020477817	18.1%
Sales Corp	0	0.3%
Warranty Care Corporat...	0	0.3%
Wheatland	0.00045936391	5.8%

We can see that the percentage contribution to the amount and the average amount is displayed in our list box. Now, we need to edit our straight table sheet object along with the amount. Right-click on the straight table sheet object and choose **Properties** from the pop-up menu. In the **General** tab, give the table a suitable name. In this case, use `Sum of Accounts`. Then move over to the **Number** tab and choose **Money** for the number format. Click on **Apply** to immediately apply the number format, and click on **OK** to close the wizard.



Now our straight table sheet object has easier to read dollar amounts. One of the things we notice immediately in our analysis is that we are out of balance by one dollar and fifty-nine cents, as shown in the following screenshot:



Sum of Account

Acct-Group	CostCenter	Sum Total
		$1.59
BALANCE SHEET	NO COST CENTER	$121,868,064.64
SALES/COS TRADE	NO DEPARTMENT	($258,410,176.67)
SALES/COS TRADE	EXECUTIVE AND...	($1,074,291.11)
SALES/COS TRADE	MISCELLANEOUS	($4,500.00)
SALES/COS TRADE	INTERNATIONAL	$1.49
SALES/COS TRADE	LOGISTICS	$191,744.15
SALES/COS TRADE	SHARED SERVIC...	$3,618,781.84
SALES/COS TRADE	WARRANTY	$26,481,802.01
SALES/COS TRADE	MARKETING	$97,805,618.04
SALES/COS GDI	NO DEPARTMENT	($11,837,657.50)
SALES/COS GDI	MARKETING	$41,280,505.47
FOREIGN SHIP(2...	INTERNATIONAL	($2,377,335.02)
SALE/COS TO M...	NO DEPARTMENT	($1,085,176.79)
SALE/COS TO M...	MARKETING	$3,309,318.97
SALES/COS TO C...	NO DEPARTMENT	($236,570,371.47)
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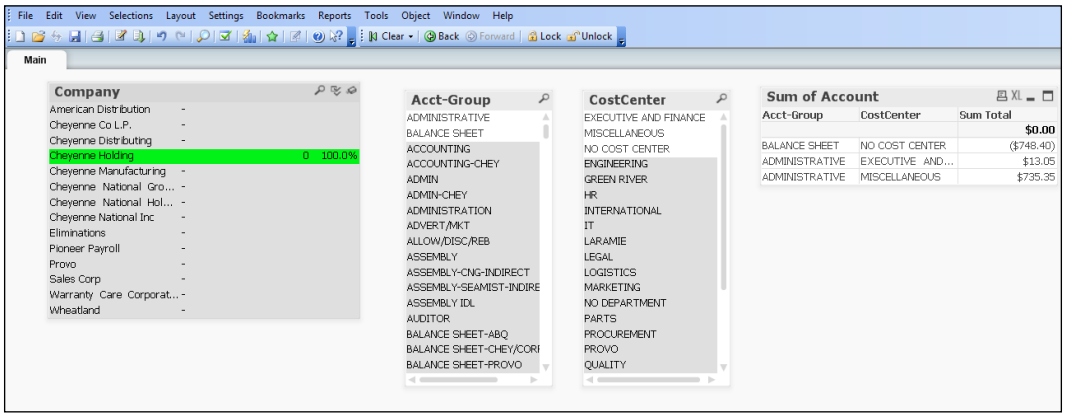
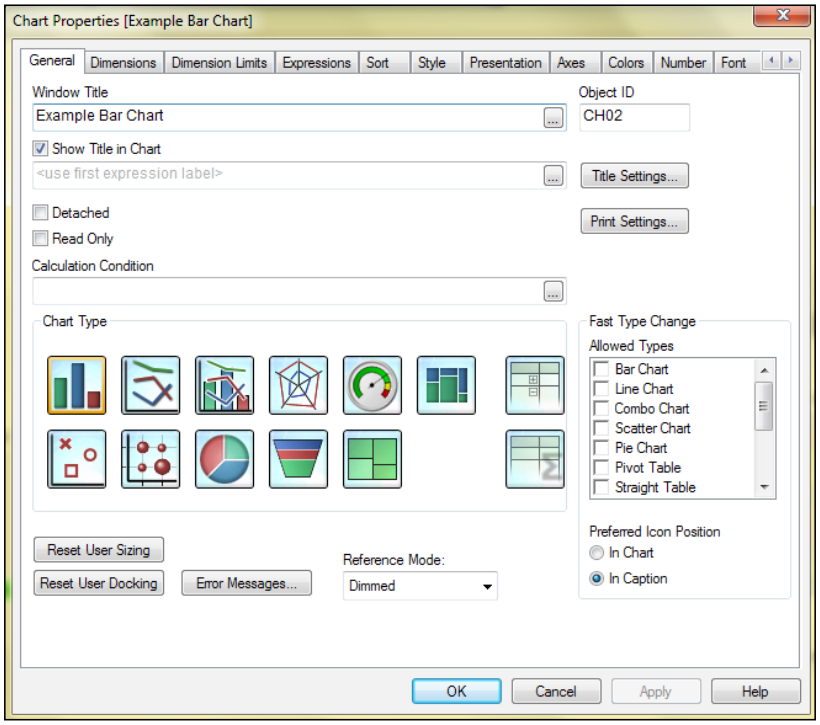
We can analyze our data just using the list boxes, by selecting a company from the **Company** list and seeing which account groups and which cost centers are included (white) and which are excluded (gray). Our selected **Company** shows highlighted in green:



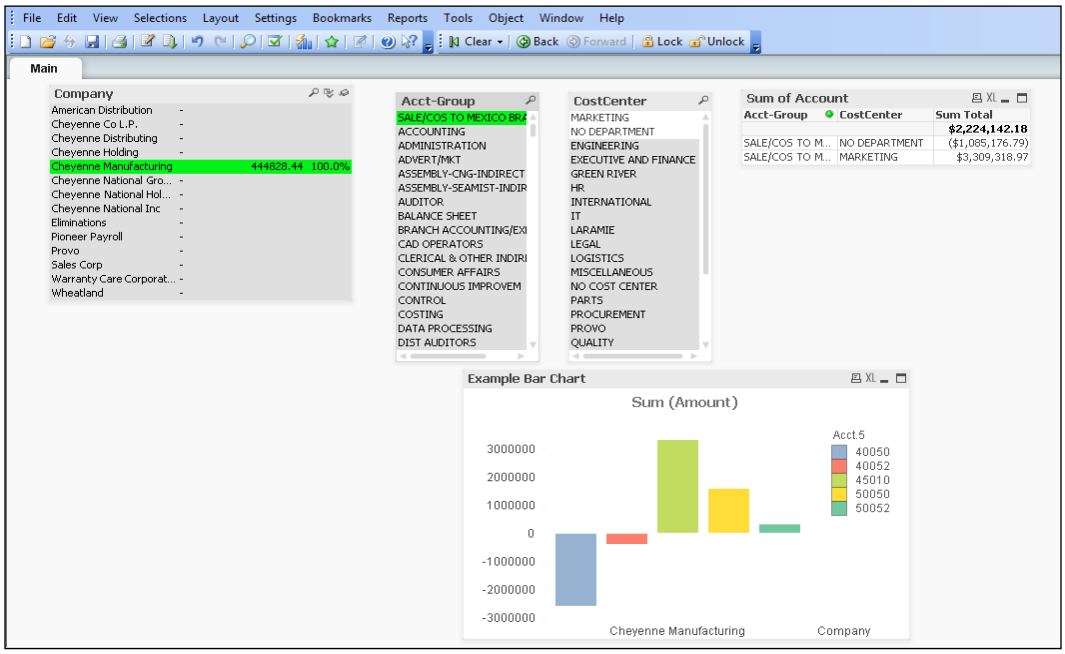
By selecting **Cheyenne Holding**, we can see that it is indeed a holding company and has no manufacturing groups, sales accounting groups, or cost centers. Also the company is in balance. But what about a more graphic visual analysis?

To create a chart to further visualize and analyze our data, we are going to create a new sheet object. This time we are going to create a bar chart so that we can see various company contributions to administrative costs or sales by the `Acct.5` field, and the account number. Just as when we created the company list box, we right-click on the sheet and choose **New Sheet Object** | **Chart**. This opens the following **Chart Properties** wizard for us:



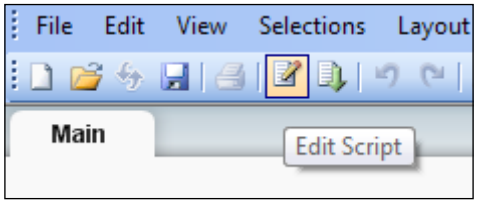
We follow the steps through the chart wizard by giving the chart a name, selecting the chart type, and the dimensions we want to use. Again our expression is going to be `SUM(Amount)`, but we will use the **Label** option and name it `Total Amount` in the **Expression** tab. We have selected the `Company` and `Acct.5` dimensions in the **Dimension** tab, and we take the defaults for the rest of the wizard tabs.

When we close the wizard, the new bar chart appears on our sheet, and we can continue our analysis. In the following screenshot, we have chosen **Cheyenne Manufacturing** for our **Company** and all **Sales/COS Trade to Mexico Branch** as **Account Groups**. These two selections then show us in our straight table the cost centers that are associated with sales/COS trade to Mexico branch. In our bar chart, we see the individual accounts associated with sales/COS trade to Mexico branch and Cheyenne Manufacturing along with the related amounts posted for these accounts.



There's more...

We can modify the load script to load more than one spreadsheet, or to load from a different data source so that we have more data to use in our analyses. The **Edit Script** dialog is opened from the **File** menu or by clicking on the **Edit Script** symbol in the toolbar as shown in the following screenshot:

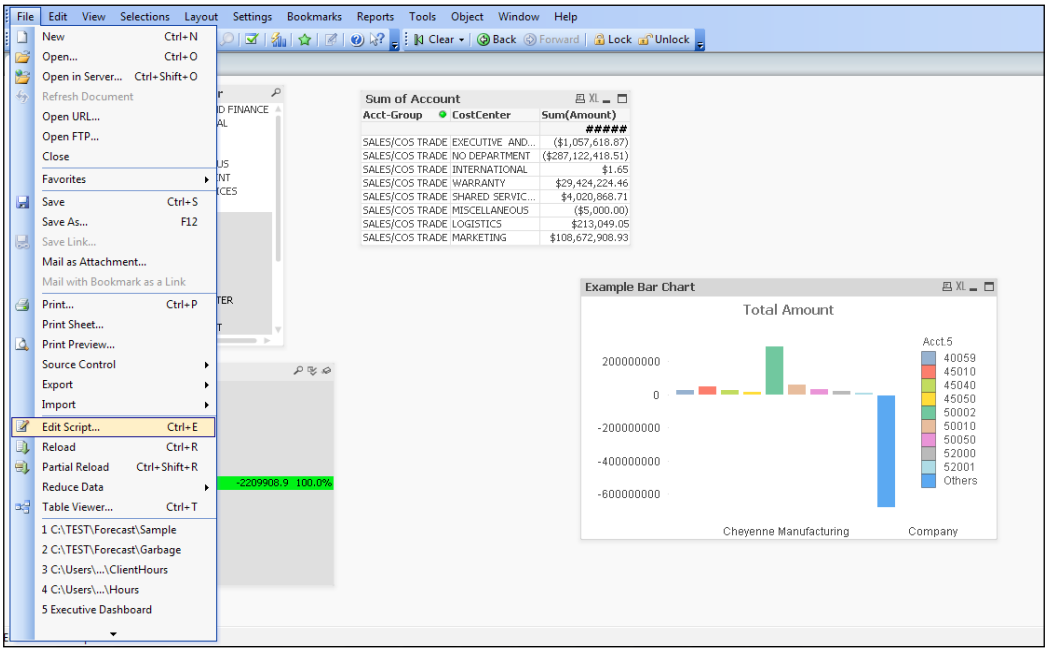


From the **Edit Script** interface, we can modify and execute a script that connects the QlikView document to an ODBC data source, or to datafiles of different types, thus pulling in the data source information.

Our first script was generated automatically; but scripts can be entered manually, and automatically generated scripts can be modified. Complex script statements must, at least partially, be entered manually. The statements, expressions, functions, and so on available for the creation of scripts are described in the QlikView Help: **Script Syntax** and **Script Expressions**.

The **Edit Script** dialog uses autocomplete, so when typing, the program tries to predict what is wanted in the script without your having to type it completely. The predictions include words that are part of the script syntax. The script is also color coded by syntax components. The **Edit Script** interface and behavior may be customized by choosing **Tools** and **Editor Preferences**.

At the top of the dialog, a menu bar with various script related commands is found. The most frequently used commands also appear in the toolbar. In the toolbar, there is also a drop-down list for the tabs of the **Edit script** wizard as shown in the following screenshot:

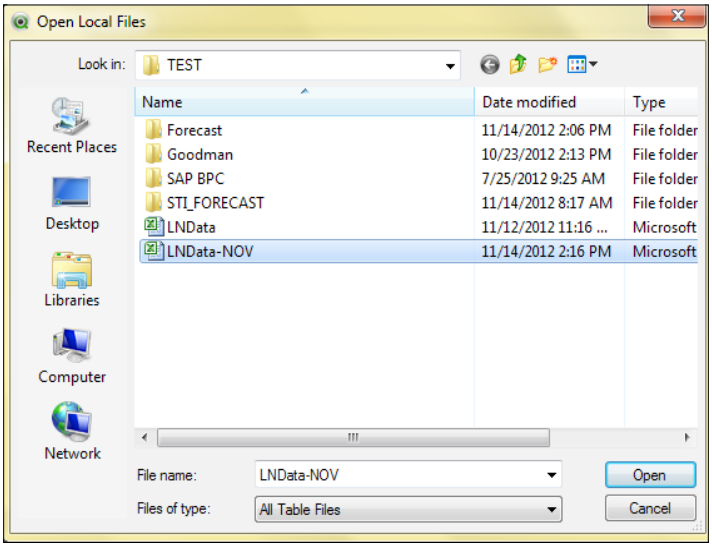


Once we have clicked on the **Edit script** menu item, we will see the script associated with our data load in the interface. The script in the **Edit script** interface is the automatically generated script that was created by the wizard when we started this QlikView file. The automatically generated script picked up the column names from the Excel file and put in some default formatting scripting. The actual text of the script is as follows:

```
SET ThousandSep=',';
SET DecimalSep='.';
SET MoneyThousandSep=',';
SET MoneyDecimalSep='.';
SET MoneyFormat='$#,##0.00;($#,##0.00)';
SET TimeFormat='h:mm:ss TT';
SET DateFormat='M/D/YYYY';
SET TimestampFormat='M/D/YYYY h:mm:ss[.fff] TT';
SET MonthNames='Jan;Feb;Mar;Apr;May;Jun;Jul;Aug;Sep;Oct;Nov;Dec';
SET DayNames='Mon;Tue;Wed;Thu;Fri;Sat;Sun';

LOAD Company,
     [Acct-Group],
     [Account-Name],
     Count,
     Unit,
     Acct.5,
     Acct.6,
     Nature,
     CostCenter,
     Month,
     Year,
     Amount
FROM
C:\TEST\LNData.xlsx
(ooxml, embedded labels, table is LNData);
```

We can change our date formats, month names, day names, our thousands, and our decimal separators by changing the automatically generated formats. We can copy this part of the script into new blank scripts to get started. The language selection that we made during the initial installation of QlikView 11 determines the defaults assigned to this portion of the script.

We can add data from multiple sources such as ODBC links, additional Excel "tables," the web, FTP, and even other QlikView files. The following screenshot shows the **Open Local Files** dialog:



The Excel file that we used to create our initial QlikView document is already in our script. It happened to be October 2013 data, but suppose we wanted to add November data to our analysis? We would just go into the **Edit script** interface from the **File** menu and then click on the script itself.

Make sure your cursor is at the bottom of the script after the first Excel file path and description. If you do not position your cursor where you want your additional script information, you may generate your new script code in the middle of your existing script code. If you make a mistake, click on **Cancel** and start over.

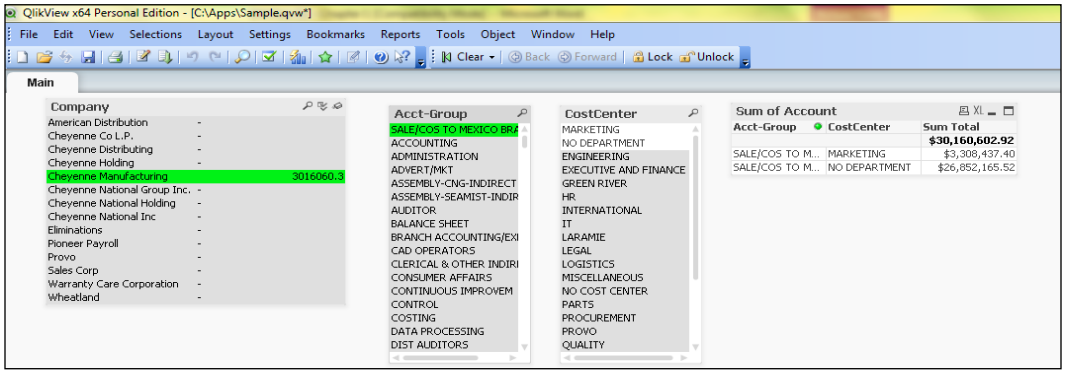
After navigating to the location where we want to add our new code, click on the **Table Files** button. Click on **Next** through the next four screens unless we need to add column labels or transform our data for analysis in some way. The following section is to be added to our script:

```
LOAD Company,
     [Acct-Group],
     [Account-Name],
     Count,
      Acct5,
     Acct6,
     Nature,
     CostCenter,
```

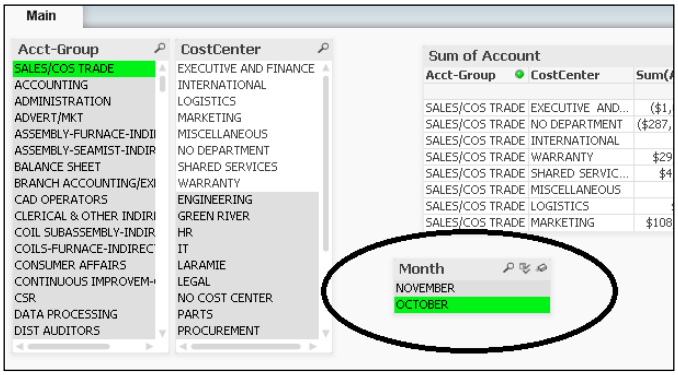
```
        Month,
        Year,
        Amount
    FROM
    [C:\TEST\LNData-NOV.xlsx]
    (ooxml, embedded labels, table is LNData);
```

Once you are done editing the script, click on the **OK** button. This will save the changes to the script. Now, to reload your data, navigate to **File** | **Edit script** | **Reload**. If you receive any error messages, the solutions can be researched in the QlikView Help. In this case, QlikView knew we were adding data to the same table, hence the layout was the same, and most of the column names were the same.

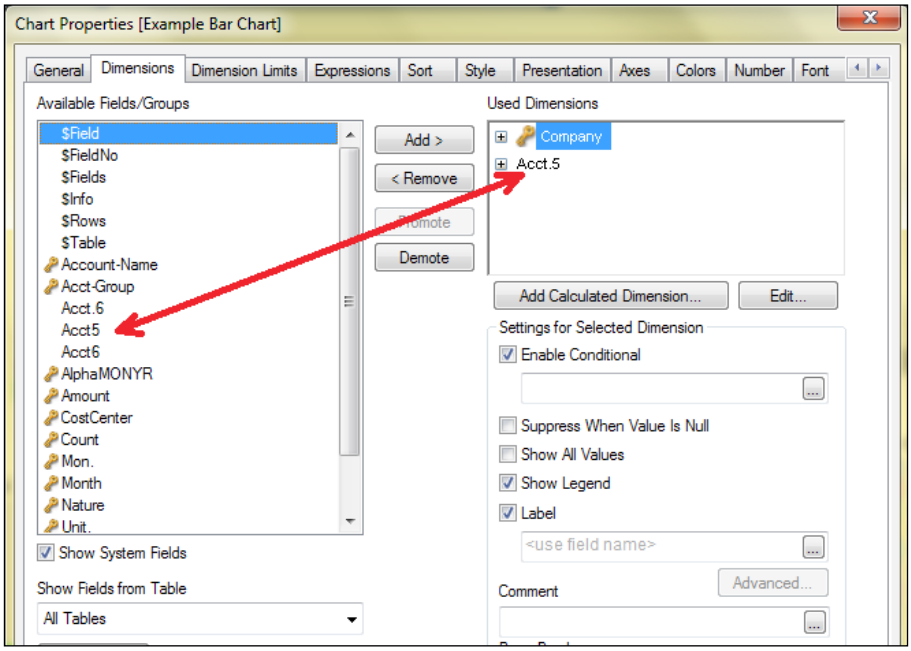
If we look at the straight table and bar chart now, we see that our data has about doubled after the reload from two Excel files. But why is that? We thought we were loading the October and November data. What is happening here is that we do not have a selection to split the months and only select the data for October or November. So, what do we do? Now that we have more than one month of data, we can add another list box with the months. Then we can modify our chart and straight table sheet objects to separate our monthly data. The following screenshot shows how the data doubled after reloading the additional file:



First we will add a new list box for the months. Right-click on the sheet and select **New Sheet Object** | **List Box**. In the **General** tab, we choose the field that was labeled `Month` in the Excel files. Then, we go to the **Sort** tab and check **Sort by Text**. Finally, we choose the icons we want to appear on the top bar of the list box in the **Captions** tab.



When we choose **OCTOBER** or **NOVEMBER** our straight table sheet object automatically shows the correct sum of the accounts. But we notice something else. When we choose November our bar chart data disappears. We notice when we go to edit **Chart Properties** of the bar chart sheet object that we have two fields for the five digit account number. The one from the October datafile is named `Acct.5`, and the one for November is named `Acct5`. The following screenshot shows that there are two separate columns from the data loads:



How do we get QlikView to recognize that both fields are the same? We are going to edit the script to automatically link the data.

To automatically link data, navigate to **File** | **Edit Script**. We decide that we want the five digit account number field to be labeled `Acct5` in both cases. While we are at it, we want `Acct.6` and `Acct6` to match up and be labeled `SubAccount`. We do this by manually editing the script using standard SQL formats to rename the fields. Our script will now look like this:

```
LOAD Company,
     [Acct-Group],
     [Account-Name],
     Count,
     Acct.5 as Acct5,
     Acct.6 as SubAccount,
     Nature,
     CostCenter,
     Month,
     Year,
     Amount
FROM
C:\TEST\LNData.xlsx
(ooxml, embedded labels, table is LNData);

LOAD Company,
     [Acct-Group],
     [Account-Name],
     Count,
     Acct5,
     Acct6 as SubAccount,
     Nature,
     CostCenter,
     Month,
     Year,
     Amount
FROM
[C:\TEST\LNData-NOV.xlsx]
(ooxml, embedded labels, table is LNData);
```

To save the script, click on **OK**. We make sure the bar chart sheet object is using the `Acct5` field instead of the now missing `Acct.5` field. This can be done by going to **Dimensions** by editing the properties in the **Properties** tab. Then, using **File** | **Reload**, reload to combine the data into the newly renamed columns. If the columns are named the same, QlikView automatically tries to combine them!

Comments can be added to scripts by using `//` for a single line or by surrounding the comment by a beginning `/*` and an ending `*/`. The comments show up in green color. Once you click on the **OK** button you will exit the script editor. There is another **File** menu item that can be used to see if QlikView has correctly interpreted the joins. This is the table viewer menu item. You cannot edit in the table view, but it is convenient to visualize how the table fields are interacting.

In this recipe we have learned the following:

- How to download and install QlikView 11
- We created our first QlikView analysis
- We learned how to add data to that analysis
- We learned a few things that can be done with QlikView 11

The next recipe is more difficult and designed to stimulate more creative analytical ideas. The next recipe is of intermediate difficulty so if you would prefer to work through another simple recipe before tackling this one, a bonus recipe named *Analyzing Movies Example* is available for download. Check the *Preface* for the download link.

Analyzing retirement locations (Intermediate)

In this recipe, we will go through the process of creating our own analysis from scratch in order to learn more about combining data from multiple sources. We will discuss how to stimulate thought processes in order to select criteria for a creative and meaningful analysis. In later sections, we will introduce more sheet objects and more of the QlikView interface will be explored. More scripting examples for joining data are covered.

There is an Excel spreadsheet named `Where to Retire.xls`, which has multiple tabs that contain the example data. This sheet is a part of the downloadable support files.

Getting ready

For this analysis, I began by gathering data to load. When my spouse and I first began discussing retirement there were many possibilities. What will our needs be in the future? My crystal ball is always cloudy, so we just had to make our best guesses about the future.

We are United States citizens and have paid into Medicare. Therefore we would probably want to live in the U.S. for medical care. So, we have now narrowed the search to the United States without even gathering any data. But, we have to avoid filtering out data before we get to analyzing it, or we run the risk of missing important information in our decision-making process.

Now, I started compiling data from different sources. On the Internet, I found that U.S. News, AARP, and Money magazines annually publish top ten lists of best places to retire. Some of the lists use specific criteria. The places are often not ranked, but are listed in the alphabetical order. Those lists are great if my only criteria matches one of the lists. Defining my own criteria and ranking cities accordingly sounds more like the route to take. The Internet lists will help contribute cities to investigate. Here are my criteria and how I rank them:

1. Family and/or friends who stay close by—use to help select cities to investigate
2. Warmer, dryer climate—my husband has asthma
3. Low average pollen count/good air quality—we both have allergies
4. Lower cost of living than Chicago, where we currently live
5. Rich availability of entertainment—especially movies and museums
6. Close to hospitals and other well rated health care facilities
7. Good water quality and water supply
8. Low natural hazard risk—hurricane, tornado, earthquake

This gives me eight criteria to use in evaluating my cities lists.

How to do it...

Grabbing the addresses from my greeting card list, I get 65 unique cities in the US where we have been keeping in touch with friends or family. That list gets a `1` in my created column "know someone" and goes into an Excel spreadsheet. You may have other criteria and your list would differ from mine.

Then I grab a few lists from the Internet and, for demonstration purposes, we will use different methods of loading them to QlikView throughout the recipe. If you choose to follow along and use the downloaded Excel file, `Where to Retire.xls`, then all of the datasources in your QVW different sheet tabs of the Excel file.

Some examples of the lists I collected are as follows:

- Top cities by lowest average pollen counts
- Top cities by least sunshine variance
- Top cities by air quality
- Top cities by number of movie theaters
- Top cities for low natural hazard
- Average cost of living by city

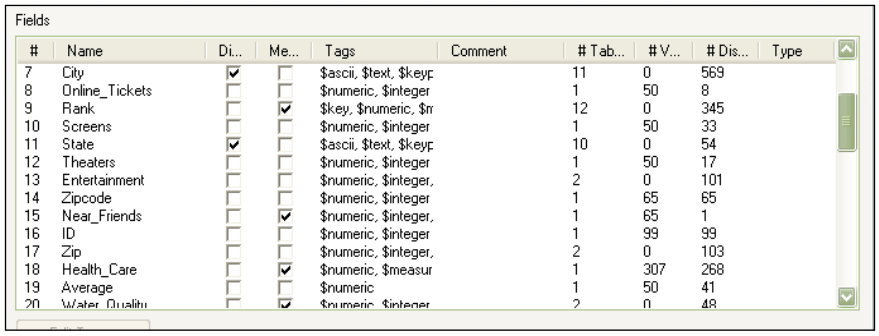
Here is the load script I started with:

```
//MainScript:

// Loading from an Excel 2003 file
LOAD City,
     State,
     Zipcode,
     KnowSomeone as Near_Friends,
     1 as Rank
FROM
[C:\TEST\Cities Personal List1.xls]
(biff, embedded labels, table is Personal$);

/* Loading from an Excel 2010 files - different rankings
    Rank is set as a measure
    City is a dimension, State is a dimension.
       Because City and State are always named the same,
       They should automatically join */
LOAD Rank,
     City,
     Average,
     Water_supply_sustainability as Water_Quality,
     [Heat stress],
     [Natural disaster risk] as Low_Natural_Hazard,
     State
FROM
C:\TEST\NaturalDisasterRank.xlsx
(ooxml, embedded labels, table is NAT_DIS);

// Examples of loading data from comma separated value text files
LOAD Rank,
     City,
     State,
     QualityofLife,
     Rank as Cost_of_Living
FROM
C:\TEST\50bestcities.csv
(txt, codepage is 1252, embedded labels, delimiter is ',', msq);
```

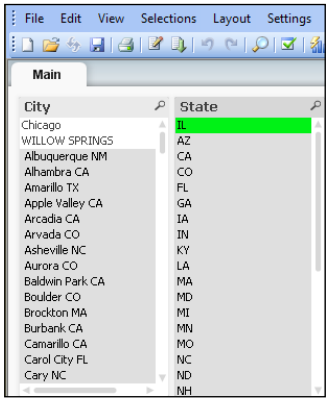
The preceding script shows us examples of loading from Excel 2003, 2010 and from comma separated value files. Using the **Settings** menu for the document's settings, we make sure that city and state are checked as dimensions. We check the following as measures:

- **Rank**
- **Quality_of_Life**
- **Climate**
- **Air_Quality**
- **Water_Quality**
- **Entertainment**
- **Friends_and_Family**
- **Low_Natural_Hazard**

This helps QlikView know how to treat the data being loaded. The following screenshot shows the **Document Settings Table** tab for **Dimension** and **Measures** in the **Fields** section:



Now we can begin the setup of our list box sheet objects to review our data. Create list boxes on the **Main** tab and use it to review and clean up the data and make sure it is joining correctly.



In my initial review, I can see that the states are included with the names in some of the data and not in others. I need to edit my data to remove the state abbreviation in the city column. We also notice that cities are both uppercase and lowercase; therefore they do not necessarily match up. We need to convert the `City` dimension to uppercase. We are doing this in the following code when we add a data source:

```
/* We are loading from Excel 2007. We convert City to upper case
for the joins. We are assigning the incoming column CleanAir to the
criteria name Air_Quality */
LOAD Rank,
     UPPER(City) as City,
     State,
     CleanAir as Air_Quality
FROM
C:\TEST\CleanAir.xlsx
(ooxml, embedded labels, table is GoodAir);
```

We have converted the dimension `City` to uppercase so that it will match from the various load files since we do not have an underlying numeric ID code. Ideally, if the data had been available from the multiple sources that way, we could have used zip codes. We have made sure that `State` is the two letter abbreviation. When we want it joined, the `Dimension` is always named `State`.

Now, we are ready to create some additional sheet objects and sheet tabs to start analyzing our data.

To create an analysis interface follow these steps:

1. Start by creating additional sheets by going to the **Layout** menu and choosing **Add Sheet**. Add one sheet and name it `Charts` in the **Sheet Properties** title. Then right-click on the main sheet and chose **Copy Sheet** and name this new sheet: `Lists`. Finally, right-click on each object in the main sheet and chose **Remove**. We could also have moved the list box objects to the `Lists` sheet by copying, then pasting the copied object on to the new Sheet.

2. The entry page of the **Where to Retire QlikView** application is now populated with text objects (see the following image). The map from the U.S. Geological Survey website is an image inserted into a text object as background. The light blue box is a text object with a hyperlink inserted into the formula interface that links to the U.S. Geologic Survey website. `https://geohazards.usgs.gov/hazards/apps/cmaps`. The house and hands picture behind the title is clip art from Microsoft, which is also inserted as a background image. The entry page of the Where to Retire QlikView application looks as follows:

3. The loaded data is current and does not have a calendar or time designation. We want a different method of analyzing this data than one would use to analyze financial data. Since it is geographic, it would be nice to analyze the data in a map format similar to the U.S. Geologic Survey's **Custom Hazard Map** in the **Main** tab. QlikView comes to our rescue with QlikView extensions.
4. When you installed QlikView, you downloaded several extensions, but to use them, they must be unpacked.

Extension objects are located in the `C:\Program Files\QlikView\Examples\Extensions` folder for desktop users.

5. Navigate to the `C:\Program Files\QlikView\Examples\Extensions` folder and find the `Examples.qar` extension file (QlikView archive). Double-click to unpack it. Once unpacked, you can review the extensions by starting QlikView and navigating to the **Extension Examples** under the QlikView **Getting Started** examples.

6. To actually see the extensions displayed and to work with them, go to the **View** menu in QlikView and switch to the **Webview**. Here, in the **Extension Example** application, we can see the extension demo examples already created for our use:
   - Organization chart
   - Geographic heat map
   - Bullet chart
   - Calendar view

7. Inspired by the map pictures from the entry page, the `Geographic Heat Map` Extension is useful to visualize the data. Using the extension examples, right-click on **Geographic Heat Map** and see how the properties are handled. For example, we can see that the shading of the states is handled by four properties:
   - A dimension called State
   - A measure in percent created by the following formula:

     ```
     Count (DISTINCT [Employee No])/Count (total DISTINCT
     [Employee No])*100
     ```

   - A color property
   - The `Text1` property: `RGB (177, 230, 147)`

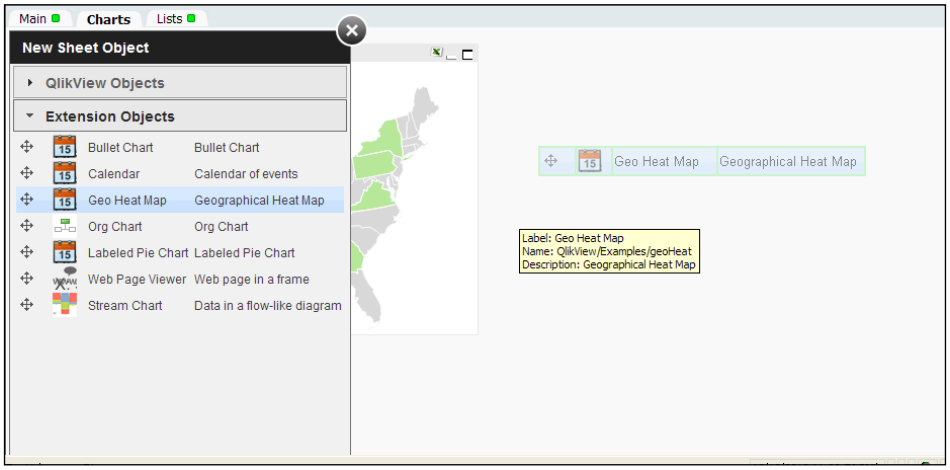
   Please examine the other extensions and their properties as they may be useful to you now that you are aware of them.

8. The data that we want to compare in a Geographic Heat Map is not yet loaded, except for my personal list of family and friends. We need to include some additional information for the map presentations by adding inline loads to the script. In the next example of an inline load used to drive extension objects, `State` is renamed to `State2`. This keeps extension objects independent otherwise the first object `State` selections will exclude the other object selections.

   ```
   Load * Inline [
   Rank, City, State2, High_Pollen, Bad_Air_Quality
   100,LEXINGTON, KY, 1,100
   99,LITTLE ROCK, AR, 1,99
   98,GREENSBORO, NC, 1,98
   97,GREENVILLE, SC, 1,97
   96,MCALLEN, TX, 1,96
   95,JACKSON, MS, 1,95
   ];

   // This inline script load is used to rank order my personal
   criteria
   ```

```
LOAD * Inline [
Ranking_Importance, Rank_Type
1, Near_Friends
2, Climate
3, Air_Quality
4, Cost_of_Living
5, Entertainment
6, Health_Care
7, Water_Quality
8, Low_Natural_Hazard
];
```

9. Now we can create our Geographic Heat Maps for analysis. We need to be in the **Webview** mode to insert an extension sheet object. From the following screenshot, we can see that **Extension Objects** as a menu item now shows at the bottom of the **New Sheet Object** menu when we are in **Webview** mode.



10. To insert the extension sheet object, left-click on the crossed arrows icon next to the description and drag and drop on to the sheet. After the Geographical Heat Map (or extension sheet object of your choice) appears on the sheet, we can begin to edit the **Properties** menu.

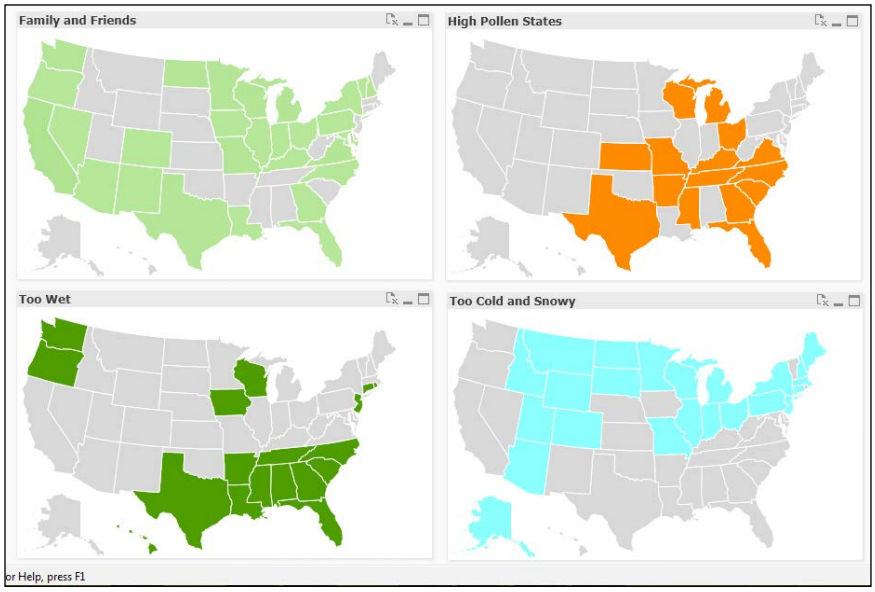
11. Right-click on the **Name/Menu** bar of the extension object to bring up the menu and choose **Properties**. In the **Geo Heat Map** section of the **Properties**, we set the colors for display. Make sure that `Dimension1` is pointing at the correct dimension. Recall that to use more than one Geo Heat Map we need different state dimensions. Set `Measurement1` to a formula for the appropriate measure for the map—in this case we are highlighting states that tend to have a high average pollen count so we use `State2`. Choose the highlight color. `Text1` controls the shading and needs either a RGB web-color coding, a hex code color, or HTML color; words such as "blue" or "red" will not work.

12. Further down in the **Properties** interface are other web-based properties that can be set, including the caption for the extension sheet object.

    If you want to know more about the extension sheet objects and even how to create your own, there is additional information in the **Help** menu.

If you have an older 32-bit computer without the ability to use more than 2 GB of RAM, the rendering of the Geographic Heat Maps will take a long time so you may want to stick to only creating one map for your personal version of this recipe.

13. After inserting and setting up the Geographic Heat Maps into our sheet, the final display looks similar to the following screenshot:



How it works...

Now that we have our initial sheet objects created, we can begin to use them for analysis.

The preceding screenshot displays four Geographic Heat Maps. The top-right corner map represents states where the **Family and Friends** list live. Because the data is not easily joinable and not based on percentage values, this is the readily available image display that makes sense to use for analysis with this data.

From the display, we can see that the overlap of the right, lower-right, and lower-left map negative qualities only leaves a few states where there are family and friends. Some of the states, such as Vermont, Rhode Island, and Delaware, did not get into the **Too Cold and Snowy** lists because of the numerical ranking cutoff. I was surprised that Arizona made the list because of the amount of snow that falls in the mountain communities. If it had not, I would have had to add another list for the extremely hot areas which would have knocked out Arizona, Nevada, and Texas. Texas is already out because of the average pollen count, so, for purposes of this analysis, Nevada stays on the list.

Choosing states still on the list that have family and friends, we get California, New Mexico, Nevada, and Vermont. Logic says that Vermont is too cold and snowy but Vermont did not make the **Too Cold and Snowy** list cutoff, so we will include it to see if it meets other less critical criteria. If I include the states where we don't have family and friends, we can add Connecticut, Nebraska, Kansas, Oklahoma, West Virginia, Rhode Island, and Delaware.

There's more...

Now we can add additional data to analyze. With lists from other websites, government studies and magazines, we end up with the following script additions that loads data for all my criteria:

When we load from another QlikView file the first line in the script should always be:

```
//MainScript:
Binary c:\test\cities101.qvw;
```

Load the example from a SQL Server database table via ODBC. Notice how the names of the cities represented by **City** are converted to uppercase using the keyword `UPPER`.

```
ODBC CONNECT TO SQL_Server;
LOAD "Avg_Ticket_Price",
    UPPER (City) as City,
    "Online_Tickets",
    Rank,
    Screens,
    State,
    Theaters,
    Rank as Entertainment;
SQL SELECT "Avg_Ticket_Price",
    City,
    "Online_Tickets",
    Rank,
    Screens,
    State,
    Theaters,
    Rank as Entertainment
```

```
FROM AdventureWorks.dbo."US_Theaters";
Loading from an Access database via ODBC
ODBC CONNECT TO [MS Access Database;DBQ=C:\TEST\greatplaces.mdb];
LOAD DISTINCT UPPER (City) as City,
    ID,
    State,
    Rank,
    Zip;
SQL SELECT City,
    ID,
    State,
    Rank,
    Zip,
    1 as Cost_of_Living
FROM `MLS_List`;
```

When loading from an Excel 2010 file, set a different `Rank` for a measure. City dimension members are converted to uppercase and `City` is a dimension. `State` is a dimension. `City` and `State` are always named the same, they automatically join.

```
LOAD Rank,
     UPPER(City) as City,
     State,
     Hospital_Quality as Health_Care
FROM
C:\TEST\NaturalDisasterRank.xlsx
(ooxml, embedded labels, table is HealthCare);
```

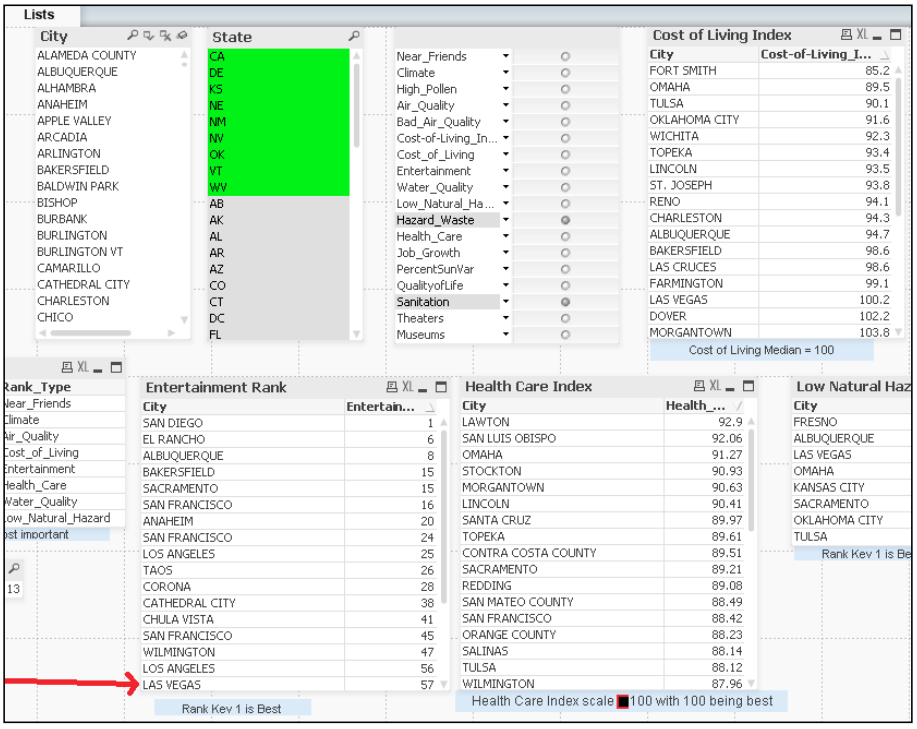
Example of loading from an HTML type file. The ranks in this file need to be reversed via formula as they are an average of the other fields.

```
LOAD upper(F1) as City,
     F2 as Air,
     F3 as Water,
     F4 as Toxics,
     F5 as Hazard_Waste,
     F6 as Sanitation,
     F7*(-1)+51 as Rank,
     F2*(-1)+51 as Air_Quality,
     F3*(-1)+51 as Water_Quality
     FROM
[C:\TEST\50 Cleanest Cities in America.mht]
(html, codepage is 1252, embedded labels, table is @1);
```

In the *How it Works...* section, we have refined our state list to 11 states. We will use list boxes and multiboxes to further investigate our data.

We can search in our list boxes by using the `*` wild card symbol so that we get Nebraska, Nevada, and New Mexico by right-clicking in the **State** list box, then, we choose **Search**. When the **Search** textbox pops up, enter `NE*`.

We add several table boxes and textboxes to analyze our data. The table boxes have the **Sort** option set in the **Sort** tab, and the **Omit Rows Where Field is Null** checkbox is checked on the **Presentation** tab.

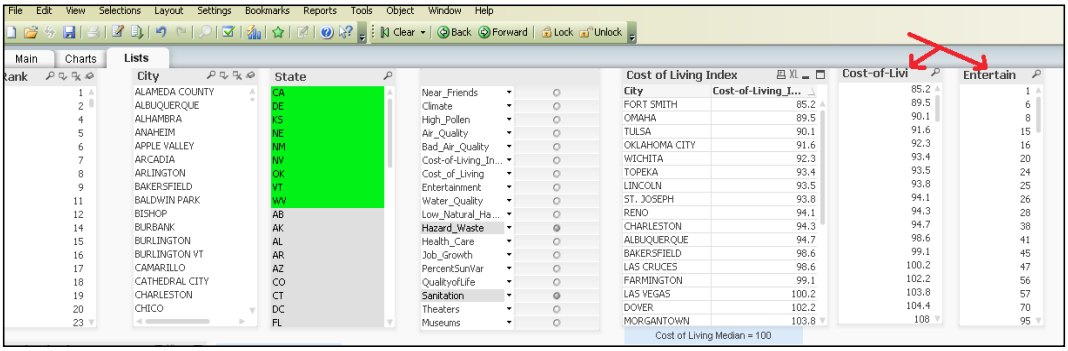


In order to analyze what we see in the image for adding table boxes and text boxes, we need to discuss what we are seeing when we select the states that made our cutoff. Here we see a set of table boxes that display the cities and numeric information. Preferably, we want an area with a lower cost of living because our income will go down when we retire. The number **100** is the median for the **Cost of Living** index. On the other hand, we want a high score for our **Health Care** index. Also, we need to remember that we have not loaded any scores lower than 80, and many of our cities may not have made the 100 index limit.

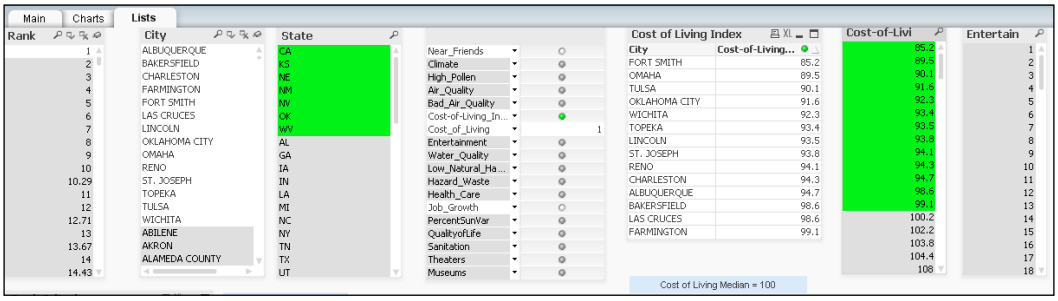
The **Entertainment Rank** looks very strange as **Las Vegas** has a **57** out of **100**, and our textbox tells us that a rank of 1 is best. Las Vegas may have a lot of entertainment, but the ranking we have loaded is based on total number of movie theaters, which was my entertainment criteria. Notice also, that San Francisco appears three times on the **Entertainment** list because the original list came by zip code and not by individual city.

We would like to be able to use more list boxes for selection so now we add two more list boxes to our sheet, one for **Cost of Living** index and one for **Entertainment**. For choosing states to examine, we could select the states we want by holding down *Ctrl* and clicking on the states in the upper-left Geographic Heat Map. Because this extension uses state as its driving dimension, the selection will carry through to the **Lists** tab and select the states chosen in the **State** list box.

All QlikView objects are interconnected so that a selection in one object will highlight in white the related information in the other objects.

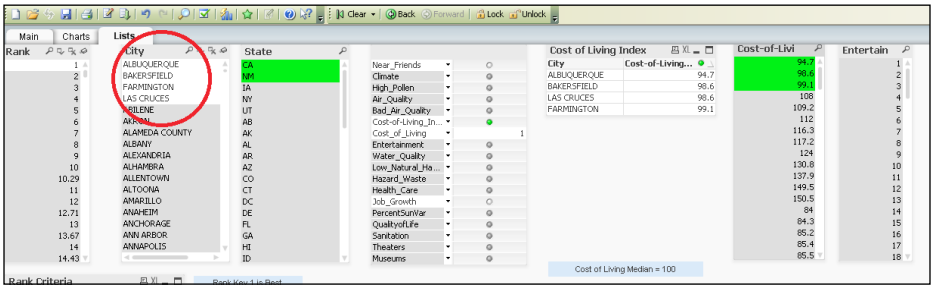


If we choose cost of living to be below `100`—the fourth criteria on my list—in the **Cost of Living** list box by choosing **Search** and entering `<100`, we have California, Kansas, Nebraska, New Mexico, Nevada, Oklahoma, and West Virginia.



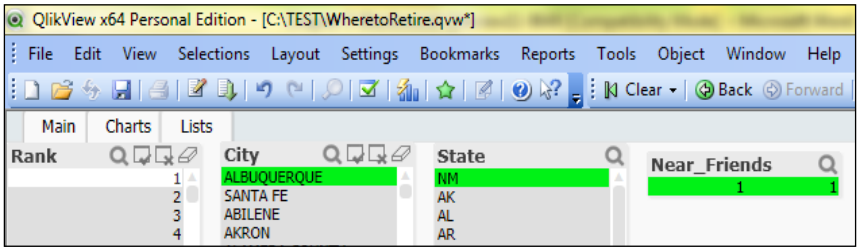
Now switching back to the possible states and looking at their **Entertainment Ranking**, we have to go to number **57** (which we noticed earlier is **Las Vegas**) to find an entertainment ranking in a state other than California or New Mexico.

To return to a prior selection use the **Back** button in the toolbar. Once you use the **Back** button, the **Forward** button will become available to use. QlikView remembers the last **100** selections.



Next, we select just California and New Mexico and clear all of the other selections by clicking on the **Entertainment** list box, right-clicking and choosing **Clear**. Then we select the **Cost of Living** index to be below `100`. We select these by holding down the *Ctrl* key and clicking on the three values. That leaves us with two cities in California, namely, Bakersfield and Farmington, and two cities in New Mexico, namely, Albuquerque and Las Cruces.

Finally, we chose the **Near_Friends** list box. That narrows the four cities down to one: **Albuquerque NM**. Recall that near friends and family was my most important criteria.



At this point, I would actually continue to investigate all four of the final cities. I might send for newspapers and check out other statistics on these four cities on the Internet before arranging to visit them and making a final decision. You may want to add and investigate the effects of other criteria on the analysis, perhaps your own list of locations of family and friends, a different kind of entertainment, or other weather preferences.

In this recipe, we have learned about extensions, toolbar buttons, table boxes, textboxes, multiboxes, inserting images, using additional, different data loading sources, how to tell QlikView about dimensions and measures, and how one might go about analyzing non-financial data.

Using QlikView practically (Intermediate)

In this recipe, we will cover some more of the possibilities for using QlikView 11.

Getting ready

One interesting and practical way in which QlikView has been used is by analyzing the hospital prescribing patterns of physicians, hospitals. It has been discovered that they can find patterns that might assist them in providing better patient care and to become more profitable. The QlikView website offers further information on these areas.

A knowledgeable physician can spot interesting prescribing patterns in hospital data using QlikView. Those prescribing patterns might show that a particular physician is prescribing an unusual medication for their area of practice. This unusual prescribing pattern needs to be investigated. Among the possibilities that this prescribing pattern might indicate are:

- The physician is confused about the usage of this medication and may be putting the hospital at risk.
- The physician is treating a condition outside of his/her specialization area such as when a patient, that is seeing the physician for a complaint in the physician's specialization area, also presents with bronchitis or flu symptoms.
- The physician has noticed that a medication indicated for one condition such as an anti-inflammatory for arthritis seems to also reduce inflammation related to certain types of skin rash, the physician's specialty. In which case, we need to work with the physician to get this observation back to the pharmaceutical company so that the drug can be put into drug trials for this usage.

It is important with this type of information that knowledgeable people have the opportunity to review the potential patterns and discuss the possible implications of those patterns.

Cancer Treatment Centers of America, a Schaumburg, Illinois, based healthcare provider reports using QlikView for analyzing both prescribing patterns and managing profitability. QlikView can make it easier to see those patterns that help manage health care areas such as patient outcomes and operational efficiency.

Another area where QlikView has been used is crime solving in Sweden.

On the QlikView website is the *Amazing Tales of Business Discovery: The Tale of the Killer Clues* video (`http://www.qlikview.com/us/videos/how-to/tales-of-business-discovery/bd-killers-clues`). In this video, QlikView's head of products, *Donald Farmer*, relates how the police in southern Sweden used QlikView to analyze their criminal archive. Through this analysis they were able to discover patterns and connections in criminal activities that helped them to track down a serial killer before he could strike again. *Simonsson*, a police analyst from Malmö, Sweden, estimated that, without QlikView, analyzing the entire set of data could have taken 43 years for one detective.

How to do it...

Looking for more ideas on how to use QlikView? Explore the QlikView website and search for specific areas of interest to you such as:

- **Automotive**
- **Banking**
- **Chemicals**
- **Consumer Products**
- **Education**
- **Government**
- **Healthcare**
- **High Tech**
- **Industrial Machinery**
- **Insurance**
- **Media**
- **Medical Devices**
- **Mill Products**
- **Pharmaceuticals**
- **Retail & Wholesale Distribution**
- **Securities & Investments**

- **Services**
- **Telecommunications**
- **Transportation & Logistics**
- **Utilities**

Don't forget that there are many more QlikView demo examples to explore, both from the website and from links under the **Examples** section in your own personal QlikView application.

Demos that we have not explored, available under the **Examples** section in your own personal QlikView application will include:

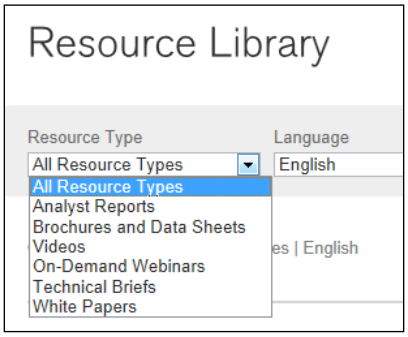
- **Data Visualization**: Here you can see the various kinds of charts available, along with advice on when to use them. You can copy and paste the sheet objects from this application into your own QlikView and then modify the settings to fit your own application needs.
- **Executive Dashboard**: This is an example of an application that supports key performance indicators with the ability to investigate the underlying details. This example can be used as a personal sales tool to excite your employer about the possibilities with QlikView.
- **Golf Quest**: If you enjoy playing golf, this application can help you pick your next vacation location.
- **Sales Compass**: Another traditional business type application of QlikView for use by a company's sales force.
- **QlikView Developer Toolkit**: Examples of all the non-web sheet objects that can be copied and used in new applications. Additional tabs contain **Theme examples** and **Design Elements** such as column overlays, that will help create professional visual interfaces for your sheets.
- **What's New in QlikView**: This final QlikView example is linked directly in your personal application. The various tabs demonstrate objects and properties such as the **Pick** lists, the **Container** object, mouse over pop-up information, the **Global Search** tool, comparative analysis, conditional enabling of dimensions and expressions, and more granular chart control using *Global Grouping*.

How it works...

This last new feature, *Global Grouping*, could have been used in the *Analyzing retirement locations* recipe's example QlikView application. In the example on the **Sales Reps** tab, a variable called `vTopN` is used in a text-input box to collect the limit, then, the grouping control of the chart object properties uses the following formula to pass the variable input and sort the chart accordingly:

```
rank(sum(aggr(sum(Sales), GetCurrentField([@TopX]), [Sales Rep
Name])))
```

In addition to the functioning demos that you can investigate, there are numerous *white papers* that you can download, *webinars* that you can attend or play on-demand, and videos that you can view. The login ID that you created when you downloaded your personal QlikView application also gives you access to these.

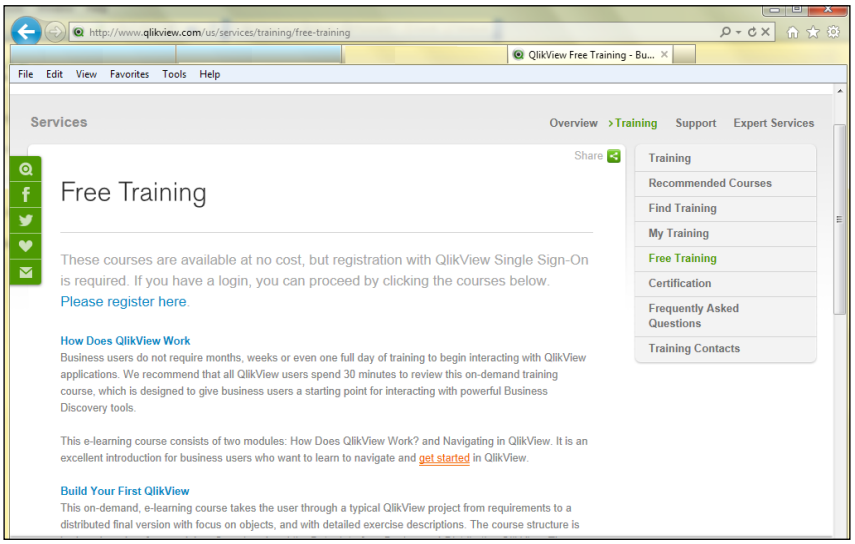


When you are getting started, it is well worth the time it takes to play the *QlikView Product Tour* video.

The **Resource Library** is where you will find the many white papers available for downloading and online-reading (`http://www.qlikview.com/us/explore/resources`).

There's more...

Don't forget to check out the training available online. You will find this information under the **Services** section of the QlikView website at `http://www.qlikview.com/us/services/training`:



In the **Training** section, you will find **Free Training**, **Recommended Courses**, and information about QlikView **Certification** when you are ready. There are QlikView 11 certification exams available for designer, developer, and system administrator. With all of these resources at your fingertips, you can quickly become an expert in QlikView development, or become instrumental in helping your company quickly realize the benefits of QlikView applications.

The free-to-download QlikView tutorial (scroll to the bottom of the **Training** page) available in this area will walk you through using the application, adding design elements, and loading data to an existing application. The tutorial is a self-contained zipped file. It is divided into three sections after the introduction: *Working with QlikView*, *Creating a document*, and *Advanced features*. The tutorial is designed to allow you to stop at the point you have gathered enough information to meet your QlikView needs.

Here are five points of interest that are covered in the tutorial:

- How to change the display order from columns to rows: Deselect **Single Column** in the **Presentation** tab in the list box's **Properties**.
- Each sheet object can have its size changed by dragging with the mouse pointer. There are options on the **Layout** tab of the **Properties** section that control or lock down the sheet object.
- "Painting" the area of a chart to select the values associated with that area: Click in the chart and drag the cursor.
- Create a **Detached** chart that will not be updated when selections are made by right-clicking in an existing chart and choosing clone, then right-click in the **Cloned** chart and choose **Detach**.
- To display calculated data for several dimensions at once, create a **Pivot Table** object by right-clicking in the sheet, selecting chart from the menu, then checking the box for **Chart Type** as **Pivot Table**.

One final thing to remember when creating and using your QlikView applications is the very old (1963) mantra of computer science, garbage in – garbage out. Computers and QlikView applications will unquestioningly process the most nonsensical data.

The intelligence in business intelligence has to come from you — the application user!

Nothing can replace your own expertise and common sense applied to the data. QlikView can make it easier for you to analyze data and share discoveries, and to quickly see outliers, but the final arbitrator of action based on the analysis has to have the human beings involved.

Sharing the wealth (of information) – scaling up (Intermediate)

This final recipe discusses scaling up to an Enterprise application with information on Licensing, Enterprise Servers, Data Sources, Mobile Applications and QlikCommunity.

Perhaps you are the CFO of a company and, after downloading and investigating QlikView 11; you have decided this is a tool that can really benefit your company. Or maybe you are the warehouse manager, an accounting analyst, or a sales manager and you heard about QlikView from a friend. Now that you know what QlikView can do, you have recommended it to upper management. They have asked you, "What will it take? How do we make QlikView available for collaborative analysis in our company?" Scale up to an Enterprise application.

Getting ready

Recall that the very first page when you open QlikView contains the license information about the personal edition of QlikView. For you to open QlikView documents created by someone else, such as the *Analyzing retirement locations* recipe, we would both need licenses. I would need a license so that the document could be saved for more than personal use, and you would need one to open a QlikView document (`.qvw`) created by someone else.

Licenses are available for *named users* or as *concurrent user* licenses. Each QlikView licensed user has a fully functioning version of QlikView. When evaluating the cost of business intelligence software, the actual licensing costs are usually a small piece of the return on investment calculation. QlikView is designed to help eliminate some of those extra costs of services often necessary with other business intelligence software by helping you become your own developer.

Current pricing is available from the QlikView website. This is a good place to start when thinking about implementing an enterprise version of the software. This pricing information also includes information on:

- Extra net solutions and services to make QlikView available outside your company's intranet firewall
- QlikView Expressor – the IT management tool used for auditing usage, user security, and managing metadata such as dimension and formula consistency
- Maintenance and support
- Training and services

How to do it...

The first step to scaling up is obtaining the Enterprise licensing. Contact the QlikView Sales Department when you are ready for more information (`http://www.qlikview.com/us/explore/pricing`).

The next step to scaling up and sharing your information is setting up Enterprise Servers. QlikView is not a *non-profit foundation*, but a business, and it needs to make its profits from somewhere. QlikView is expecting that you will love the product and will recommend it to your company. The pricing model for Enterprise licensing is comparatively reasonable, but you must remember to factor in the initial install and set up services that come with any new enterprise level application. For this, QlikView offers their QlikView expert services with the Foundation services offering (`http://www.qlikview.com/us/services/expert-services/foundation-services`).

Foundation services engagement will cover:

- System Architecture Foundation
- Data Architecture Foundation
- Application Architecture Foundation
- Solution Validation

Connecting to an Enterprise Server is done via the `Open in Server` command on the **File** menu, or from the **Open in Server** tab on the **Start** page.

How it works...

Additional considerations when scaling up to an Enterprise Server, include security, deployment, and understanding of the technology.

This is not necessarily something that you need to understand in depth unless you are a technology person actually setting up the enterprise application, but knowing a little bit about these aspects of the application can help you guide your managers and associates in making the decision to scale up to an enterprise application.

When more than one person is using the application and has access to data, security of data becomes an issue. QlikView security can be integrated with **Microsoft Active Directory**, with **Windows NT LAN Manager** (**NTLM**) and with third-party security (which requires QlikView Server Enterprise Edition).

To manage large deployments of QlikView, use the QlikView Publisher component which is an administrative interface for maintaining QlikView analyses. QlikView Publisher enables reload of data to a QlikView analysis on a periodic basis to ensure that the most current data is available. QlikView Publisher connects to the security directory servers within your organization and applies the user security rules to the QlikView analysis to ensure appropriate secure user access. QlikView Publisher is licensed on a per server basis and includes a separately licensable option for PDF report distribution capabilities.

QlikView is an *in-memory BI pioneer* using an inference engine that maintains associations in the data (which we have seen in previous recipes where, when giving data from different sources the same name, QlikView knows that we intend the data to be joined as one dimension). Aggregations are calculated as needed for use by multiple people. QlikView caches data in memory and uses proprietary technology to compress the data down to as much as 10 percent of its original size. This helps to optimize the power of the computer processor(s) for the fastest user experience possible.

Additionally, the QlikView Server component supports concurrent access to analyses by large user groups. QlikView Server is designed to maximize the use of the processing power of standard multicore servers by spreading calculations over all of the available CPU cores. The QlikView Server can be deployed across more than one physical server into clusters to provide fault tolerance and additional scale.

For large enterprise deployments, multiple QlikView Servers and QlikView Publishers can be clustered to provide load balancing and fail-over capabilities.

QlikView Publisher, QlikView web parts for Microsoft SharePoint®, and QlikView Workbench are additional licensed modules of QlikView Server. QlikView web parts for Microsoft SharePoint® and QlikView Workbench require QlikView Server Enterprise Edition. Install them by purchasing and applying a license to a QlikView Server. QlikView recommends that QlikView Server and Publisher reside on separate, dedicated server machines with no other applications running, for optimal performance of a QlikView deployment.

There's more...

With QlikView 11, Source Control Integration was introduced. This is the capability for developers of QlikView documents to manage their work with source control tools. With these tools, developers can control and share their development efforts in a single QlikView QVW file.

This feature is available when using QlikView desktop. A **Menu** option in the **File** menu allows QlikView developers to connect a QlikView document to a source-control system. More information on source control is available in a white paper at `http://community.qlikview.com`.

For more details on server requirements, check out the PDF document: *DS-QlikView-11-System-Requirements-EN.pdf* available from the QlikView website.

QlikView can connect to **Open Database Connectivity** (**ODBC**) and **eXtensible Markup Language** (**XML**) data sources, as well as to Microsoft Excel. Developers can use the open QVX (QlikView data exchange) format for importing non-standard data sources into QlikView.

When you purchase an Enterprise Server license, in addition to the sources you could already connect to, you will receive connectors for non-ODBC data sources **SalesForce.com** and **Informatica**. There is an additional charge for the SAP NetWeaver® connector.

Documents published on a QlikView Server can be accessed by different clients including the Internet Explorer plugin, AJAX Zero Footprint, and several mobile clients such as iPhone, iPad, Android, and Blackberry.

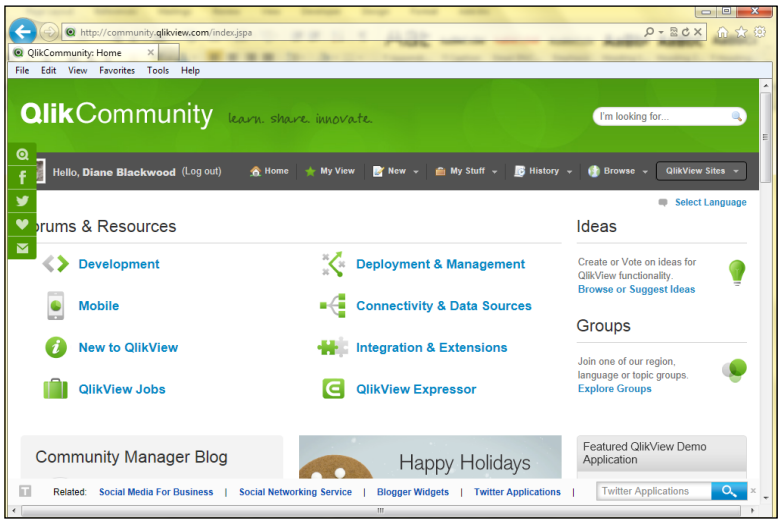
It is now possible to distribute a QVW file to the e-mail recipients defined in a field in the document. See **QlikCommunity** for tested devices and version details.

On mobile devices, Users get a complete QlikView experience with interactive analysis and rich visualization. The mobile application is free to download and works with any QlikView 11 Server license. Important features are:

- Delivery of the full QlikView Business Discovery experience across desktop, laptop, and mobile platforms
- Recognizing mobile devices and touch-enabling apps as needed
- Offering a single-object display mode on handheld devices for a more intuitive user experience

For more information about mobile device security for QlikView, download the *DS-Technical-Brief-QlikView-on-Mobile-Security-EN.pdf* document.

Perhaps one of the most important (and free) QlikView website features is the QlikCommunity.



QlikCommunity is a discussion forum for QlikView users: `http://community.qlikview.com`. Log in with your QlikView ID, the same one you used to download QlikView Personal Edition. Here you will be able to set up your personal profile, join groups, ask questions, read blogs, and make suggestions for improvements to QlikView functionality. The search function in the QlikCommunity website works well. Chances are, if you are just starting out, you are not the only one to have ever run into the issue that you are facing.

Enjoy your journey with QlikView!

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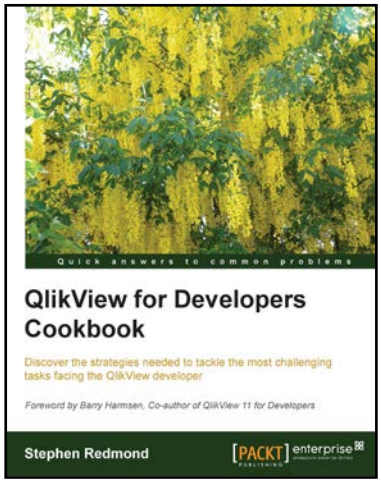

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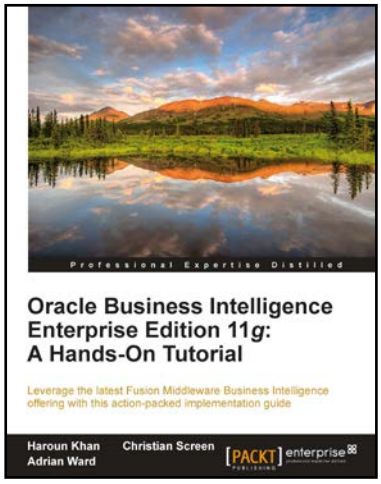

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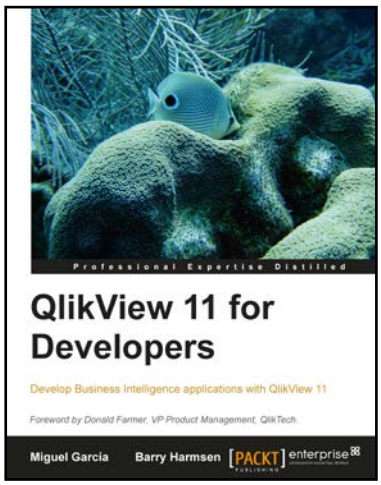

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