



LibreOffice
The Document Foundation

Calc Guide

Chapter 10

Linking Calc Data

Sharing data in and out of Calc

Copyright

This document is Copyright © 2006–2013 by its contributors as listed below. You may distribute it and/or modify it under the terms of either the GNU General Public License (<http://www.gnu.org/licenses/gpl.html>), version 3 or later, or the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0/>), version 3.0 or later.

All trademarks within this guide belong to their legitimate owners.

Contributors

Barbara Duprey
Jean Hollis Weber
John A Smith

Feedback

Please direct any comments or suggestions about this document to:
documentation@global.libreoffice.org

Acknowledgments

This chapter is based on Chapter 10 of the *OpenOffice.org 3.3 Calc Guide*. The contributors to that chapter are:

John Kane
Rob Scott
James Andrew

Peter Kupfer
Nikita Telang
Claire Wood

Iain Roberts
Jean Hollis Weber

Publication date and software version

Published 23 September 2013. Based on LibreOffice 4.1.

Note for Mac users

Some keystrokes and menu items are different on a Mac from those used in Windows and Linux. The table below gives some common substitutions for the instructions in this chapter. For a more detailed list, see the application Help.

<i>Windows or Linux</i>	<i>Mac equivalent</i>	<i>Effect</i>
Tools > Options menu selection	LibreOffice > Preferences	Access setup options
<i>Right-click</i>	<i>Control+click</i>	Opens a context menu
<i>Ctrl (Control)</i>	⌘ (<i>Command</i>)	Used with other keys
<i>F5</i>	<i>Shift+⌘+F5</i>	Opens the Navigator
<i>F11</i>	⌘+T	Opens the Styles and Formatting window

Contents

Copyright	2
Contributors.....	2
Feedback.....	2
Acknowledgments.....	2
Publication date and software version.....	2
Note for Mac users	2
Why use multiple sheets?	4
Setting up multiple sheets	4
Identifying sheets.....	4
Inserting new sheets.....	4
Inserting sheets from a different spreadsheet.....	6
Renaming sheets.....	6
Referencing other sheets	7
Creating the reference with the mouse.....	7
Creating the reference with the keyboard.....	9
Referencing other documents	9
Creating the reference with the mouse.....	9
Creating the reference with the keyboard.....	10
Hyperlinks and URLs	10
Relative and absolute hyperlinks.....	10
Creating hyperlinks.....	11
Editing hyperlinks.....	13
Removing hyperlinks.....	13
Linking to external data	13
Using the External Data dialog.....	13
Using the Navigator.....	15
How to find the required data range or table.....	16
Linking to registered data sources	18
Viewing data sources.....	19
Editing data sources.....	20
Launching Base to work on data sources.....	20
Using data sources in Calc spreadsheets.....	20
Embedding spreadsheets	21
Object Linking and Embedding (OLE).....	21
Other OLE objects.....	23
Non-linked OLE object.....	23
Linked OLE object.....	24
Dynamic Data Exchange (DDE).....	24
DDE link in Calc.....	24
DDE link in Writer.....	24

Why use multiple sheets?

Chapter 1 introduced the concept of multiple sheets (also called worksheets) in a spreadsheet. Multiple sheets help keep information organized; once you link those sheets together, you unleash the full power of Calc. Consider this case.

John is having trouble keeping track of his personal finances. He has several bank accounts and the information is scattered and disorganized. He can't get a good grasp on his finances until he can see everything at once.

To resolve this, John decided to track his finances in LibreOffice Calc. John knows Calc can do simple mathematical computations to help him keep a running tab of his accounts, and he wants to set up a summary sheet so that he can see all of his account balances at once.

This can be accomplished easily.

Note

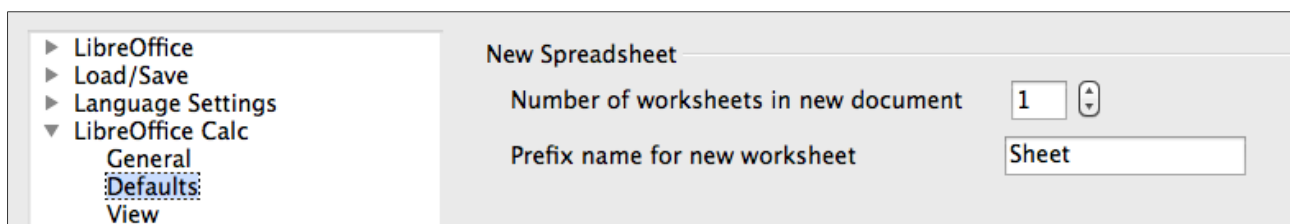
For users with experience using Microsoft Excel: what Excel calls a *workbook*, Calc calls a *spreadsheet* (the whole document). Both Excel and Calc use the terms *sheet* and *worksheet*.

Setting up multiple sheets

Chapter 1 gives a detailed explanation of how to set up multiple sheets in a spreadsheet. Here is a quick review.


Identifying sheets

When you open a new spreadsheet it has, by default, one sheet named *Sheet1*, unless you have specified a different number of sheets or a different Prefix name for worksheets in **Tools > Options > LibreOffice Calc > Defaults**.



Worksheets in Calc are managed using tabs at the bottom of the spreadsheet.

Inserting new sheets

There are several ways to insert a new sheet. The fastest method is to click on the Add Sheet button . This inserts one new sheet at that point, without opening the Insert Sheet dialog.

Use one of these other methods to insert more than one sheet, to rename the sheet at the same time, or to insert the sheet somewhere else in the sequence. The first step for these methods is to select the sheet that the new sheet will be inserted next to. Then do any one of the following:

- Select **Insert > Sheet** from the menu bar.

- Right-click on the tab and select **Insert Sheet**.
- Click in an empty space at the end of the line of sheet tabs.

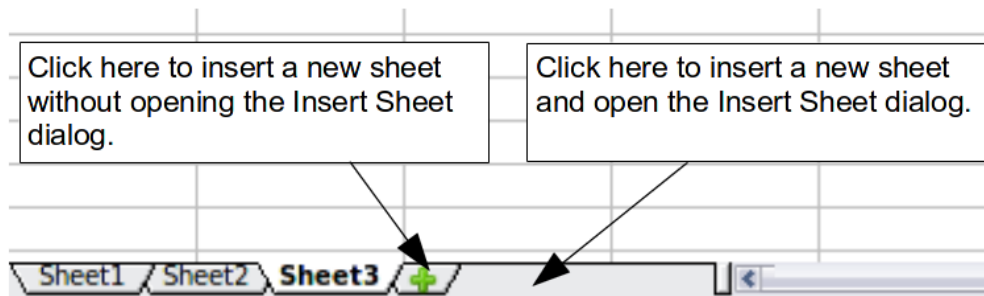


Figure 1: Creating a new sheet

Each method opens the Insert Sheet dialog. Here you can choose to put the new sheet before or after the selected sheet, how many sheets to insert, and what to name a single sheet. (For the *From file* option, see the next section.)

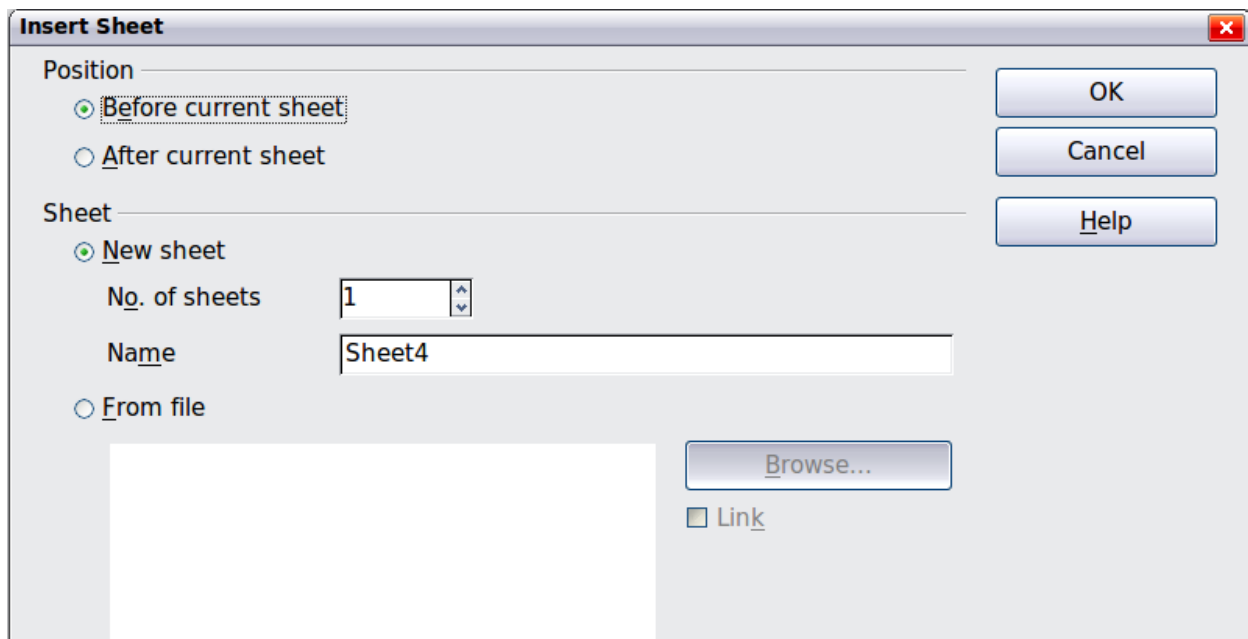


Figure 2. Insert Sheet dialog

We need six sheets, one for each of the five accounts and one as a summary sheet, so we will add three more. We also want to name each of these sheets for the account they represent: Summary, Checking Account, Savings Account, Credit Card 1, Credit Card 2, and Car Loan.

We have two choices: insert three new sheets and rename all six sheets afterwards; or rename the existing sheets, then insert the three new sheets one at a time, renaming each new sheet during the insert step.

To insert sheets and rename afterwards:

- 1) In the Insert Sheet dialog, choose the position for the new sheets (in this example, we use **After current sheet**).
- 2) Choose **New sheet** and **3** as the *No. of sheets*. (Three sheets are already provided by default.) Because you are inserting more than one sheet, the *Name* box is not available.
- 3) Click **OK** to insert the sheets.
- 4) For the next steps, go to “Renaming sheets” below.

To insert sheets and name them at the same time:

- 1) Rename the existing sheets Summary, Checking Account, and Savings Account, as described in “Renaming sheets” below.
- 2) In the Insert Sheet dialog, choose the position for the first new sheet.
- 3) Choose **New sheet** and 1 as the *No. of sheets*. The *Name* box is now available.
- 4) In the **Name** box, type a name for this new sheet, for example **Credit Card 1**.
- 5) Click **OK** to insert the sheet.
- 6) Repeat steps 1–4 for each new sheet, giving them the names Credit Card 2 and Car Loan.

Inserting sheets from a different spreadsheet

On the Insert Sheet dialog, you can also add a sheet from a different spreadsheet file (for example, another Calc or Excel spreadsheet), by choosing the **From file** option. Click **Browse** and select the file; a list of the available sheets appears in the box. Select the sheet to import. If, after you select the file, no sheets appear, you probably selected an invalid file type (not a spreadsheet, for example).

Tip

For a shortcut to inserting a sheet from another file, choose **Insert > Sheet from file** from the menu bar. The Insert Sheet dialog opens with the **From file** option preselected, and then the Insert dialog opens on top of it.

If you prefer, select the **Link** option to insert the external sheet as a link instead as a copy. This is one of several ways to include “live” data from another spreadsheet. (See also “Linking to external data” on page 13.) The links can be updated manually to show the current contents of the external file; or, depending on the options you have selected in **Tools > Options > LibreOffice Calc > General > Updating**, whenever the file is opened.

Renaming sheets

Sheets can be renamed at any time. To give a sheet a more meaningful name:

- Enter the name in the name box when you create the sheet, or
- Double click on the sheet tab, or
- Right-click on a sheet tab, select **Rename Sheet** from the context menu and replace the existing name.

Note

If you want to save the spreadsheet to Microsoft Excel format, the following characters are not allowed in sheet names: \ / ? * [] : and ' as the first or last character of the name.

Your sheet tab area should now look like this.

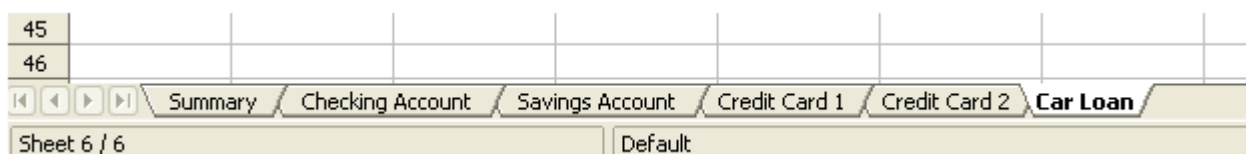


Figure 3: Six renamed sheets

Now we will set up the account ledgers. This is just a simple summary that includes the previous balance plus the amount of the current transaction. For withdrawals, we enter the current transaction as a negative number so the balance gets smaller. A basic ledger is shown in Figure 4.

This ledger is set up in the sheet named *Checking Account*. The total balance is added up in cell F3. You can see the equation for it in the formula bar. It is the summary of the opening balance, cell C3, and all of the subsequent transactions.

	A	B	C	D	E	F	G
1	Checking Account						
2	Description	Amount	Balance				
3	Opening Balance	\$75.00	\$75.00		Total Balance	\$380.05	
4	Pay	\$425.00	\$500.00				
5	Groceries	-\$75.00	\$425.00				
6	Cable Bill	-\$44.95	\$380.05				
7							
8							
9							

Figure 4: Checking ledger

Referencing other sheets

On the *Summary* sheet we display the balance from each of the other sheets. If you copy the example in Figure 4 onto each account, the current balances will be in cell F3 of each sheet.

There are two ways to reference cells in other sheets: by entering the formula directly using the keyboard or by using the mouse. We will look at the mouse method first.

Creating the reference with the mouse

On the *Summary* sheet, set up a place for all five account balances, so we know where to put the cell reference. Figure 5 shows a summary sheet with a blank Balance column. We want to place the reference for the checking account balance in cell B3.

	A	B	C	D	E
1	My Account Summary				
2	Account	Balance			
3	Checking Account				
4	Savings Account				
5	Credit Card 1				
6	Credit Card 2				
7	Car Loan				
8					

Figure 5: Blank summary

To make the cell reference in cell B3, select the cell and follow these steps:

- 1) Click on the = icon next to the input line. The icons change and an equals sign appears in the input line as in Figure 6.

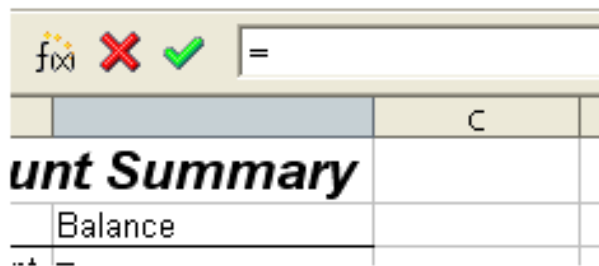


Figure 6: Equal sign in input line

- 2) Now, click on the sheet tab for the sheet containing the cell to be referenced. In this case, that is the *Checking Account* sheet as shown in Figure 7.



Figure 7: Click on the checking account tab

- 3) Click on cell F3 (where the balance is) in the *Checking Account* sheet. The phrase 'Checking Account' . F3 should appear in the input line as in Figure 8 and the selected cell is bordered in red.

	A	B	C	D	E	F
1	Checking Account					
2	Description	Amount	Balance			
3	Opening Balance	\$75.00	\$75.00		Total Balance	\$380.05
4	Pay	\$425.00	\$500.00			
5	Groceries	-\$75.00	\$425.00			
6	Cable Bill	-\$44.95	\$380.05			
7						
8						

Figure 8: Cell reference selected

- 4) Click the green checkmark in the input line, or press the keyboard *Enter* key to finish.
- 5) The *Summary* sheet should now look like Figure 9.

	A	B	C	D	E
1	My Account Summary				
2	Account	Balance			
3	Checking Account	\$380.05			
4	Savings Account				
5	Credit Card 1				
6	Credit Card 2				
7	Car Loan				
8					

Figure 9: Finished checking account reference

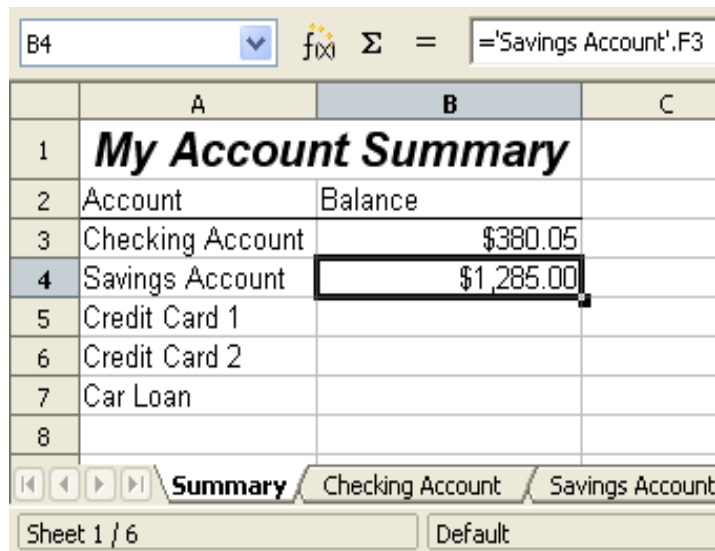
Creating the reference with the keyboard

From Figure 9, you can deduce how the cell reference is constructed. The reference has two parts: the sheet name ('*Checking Account*') and the cell reference (F3). Notice that they are separated by a period.

Note

The sheet name is in single quotes because it contains a space, and the mandatory period (.) always falls outside any quotes.

So, you can fill in the Savings Account cell reference by just typing it in. Assuming that the balance is in the same cell (F3) in the *Savings Account* sheet, the cell reference should be ='Savings Account'.F3 (see Figure 10).



	A	B	C
1	My Account Summary		
2	Account	Balance	
3	Checking Account	\$380.05	
4	Savings Account	\$1,285.00	
5	Credit Card 1		
6	Credit Card 2		
7	Car Loan		
8			

Figure 10: Savings account reference

Referencing other documents

John decides to keep his family account information in a different spreadsheet file from his own summary. Fortunately Calc can link different files together. The process is the same as described for different sheets in a single spreadsheet, but we add one more step to indicate which file the sheet is in.

Creating the reference with the mouse

To create the reference with the mouse, both spreadsheets need to be open. Select the cell in which the formula is going to be entered.

- 1) Click the = icon next to the input line.
- 2) Switch to the other spreadsheet (the process to do this will vary depending on which operating system you are using).
- 3) Select the sheet (*Savings Account*) and then the reference cell (F3). See Figure 11. The keyboard *Enter* key can be pressed at this point, or continue with steps 4 and 5.
- 4) Switch back to the original spreadsheet.
- 5) Click on the green check mark on the input line.

Your spreadsheet should now resemble Figure 12.

	A	B	C	D	E	F
1	Savings Account					
2	Description	Amount	Balance			
3	Opening Balance	\$2,500.00	\$2,500.00		Total Balance	\$1,285.00
4	Savings Account	\$35.00	\$2,535.00			
5	Car Down Payment	-\$1,250.00	\$1,285.00			
6						
7						
8						

Figure 11: Selecting the savings account reference cell

	A	B	C	D	E	F	G	H
1	Family Account Balances							
2	John	-\$20,053.51						
3	Melissa	-\$30,025.36						

Figure 12: Linked files

You will get a good feel for the format of the reference if you look closely at the input line. Based on this line you can create the reference using the keyboard.

Creating the reference with the keyboard

Typing the reference is simple once you know the format the reference takes. The reference has three parts to it:

- Path and file name
- Sheet name
- Cell

From Figure 12, you can see the the general format for the reference is

`= 'file:///Path & File Name'#$SheetName.CellName`

Note

The reference for a file has three forward slashes `///` and the reference for a hyperlink has two forward slashes `//`.

Hyperlinks and URLs

Hyperlinks can be used in Calc to jump to a different location from within a spreadsheet and can lead to other parts of the current file, to different files or even to web sites.

Relative and absolute hyperlinks

Hyperlinks can be stored within your file as either relative or absolute.

A relative hyperlink says, *Here is how to get there starting from where you are now* (meaning from the folder in which your current document is saved) while an absolute hyperlink says, *Here is how to get there no matter where you start from*.

An absolute link will stop working only if the target is moved. A relative link will stop working only if the start and target locations change relative to each other. For instance, if you have two spreadsheets in the same folder linked to each other and you move the entire folder to a new location, a relative hyperlink will not break.

To change the way that LibreOffice stores the hyperlinks in your file, select **Tools > Options > Load/Save > General** and choose if you want URLs saved relatively when referencing the *File System*, or the *Internet*, or both.

Calc will always display an absolute hyperlink. Don't be alarmed when it does this even when you have saved a relative hyperlink—this 'absolute' target address will be updated if you move the file.

Note

Make sure that the folder structure on your computer is the same as the file structure on your web server if you save your links as relative to the file system and you are going to upload pages to the Internet.

Tip

When you rest the mouse pointer on a hyperlink, a help tip displays the absolute reference, since LibreOffice uses absolute path names internally. The complete path and address can only be seen when you view the result of the HTML export (saving the spreadsheet as an HTML file), by loading the HTML file as Text, or by opening it with a text editor.


Creating hyperlinks

When you type text that can be used as a hyperlink (such as a website address or URL), Calc formats it automatically, creating the hyperlink and applying to the text a color and background shading. If this does not happen, you can enable this feature using **Tools > AutoCorrect Options > Options** and selecting **URL Recognition**.

Tips

To change the color of hyperlinks, go to **Tools > Options > LibreOffice > Appearance**, scroll to *Unvisited links* and/or *Visited links*, pick the new colors and click **OK**. Caution: this will change the color for all hyperlinks in all components of LibreOffice—this may not be what you want.

You can also insert and modify links using the Hyperlink dialog. To display the dialog, click the

Hyperlink icon  on the Standard toolbar or choose **Insert > Hyperlink** from the menu bar. To turn existing text into a link, highlight it before opening the dialog.

On the left side, select one of the four categories of hyperlinks:

- **Internet:** the hyperlink points to a web address, normally starting with `http://`
- **Mail & News:** the hyperlink opens an email message that is pre-addressed to a particular recipient.
- **Document:** the hyperlink points to a place in either the current document or another existing document.
- **New document:** the hyperlink creates a new document.

The top section of the dialog changes according to the choice made for the hyperlink category from the left panel. A full description of all the choices, and their interactions, is beyond the scope of this chapter. Here is a summary of the most common choices used in spreadsheets.

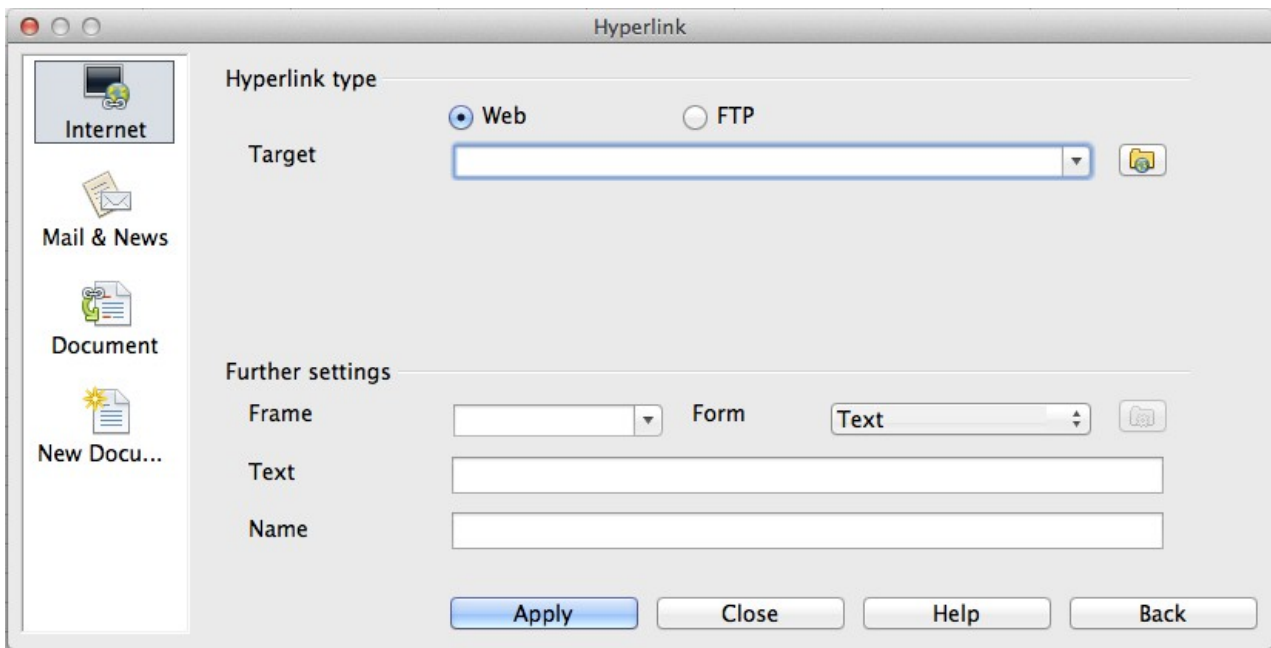


Figure 13. Hyperlink dialog showing details for Internet links

For an **Internet** hyperlink, choose the type of hyperlink (Web or FTP), and enter the required web address (URL).

For a **Mail and News** hyperlink, specify whether it is a mail or news link, the receiver address and for email, also the subject.

For a **Document** hyperlink, specify the document path (the **Open File** button opens a file browser); leave this blank if you want to link to a target in the same spreadsheet. Optionally specify the target in the document (for example a specific sheet). Click on the **Target in document** icon to open the Navigator where you can select the target, or if you know the name of the target, you can type it into the box.

For a **New Document** hyperlink, specify whether to edit the newly created document immediately (**Edit now**) or just create it (**Edit later**), and enter the file name and the type of document to create (text, spreadsheet, etc.). The **Select path** button opens a directory picker dialog.

The *Further settings* section at the bottom of the dialog is common to all the hyperlink categories, although some choices are more relevant to some types of links.

- Set the value of **Frame** to determine how the hyperlink will open. This applies to documents that open in a Web browser.
- **Form** specifies if the link is to be presented as text or as a button. Figure 14 shows a link formatted as a button.

	A	B	C	D
1				
2				
3		Calc Guide		
4				
5				
6				
7				


Figure 14: Hyperlink as button

- **Text** specifies the text that will be visible to the user. If you do not enter anything here, Calc will use the full URL or path as the link text. Note that if the link is relative and you move the file, this text will not change, though the target will.


- **Name** is applicable to HTML documents. It specifies text that will be added as a NAME attribute in the HTML code behind the hyperlink.
- **Events** button: this button will be activated to allow Calc to react to events for which the user has written some code (macro). This function is not covered in this chapter.

Note

A hyperlink button is a type of form control. As with all form controls, it can be anchored or positioned by right-clicking on the button in design mode. More information about forms can be found in Chapter 15 of the *Writer Guide*.

For the button to work, the spreadsheet must *not* be in design mode. To toggle design mode on and off, view the Form Controls toolbar (**View > Toolbars > Form Controls**) and click the **Design Mode On/Off** button .

Editing hyperlinks

To edit an existing link, place the cursor anywhere in the link and click the **Hyperlink** icon  on the Standard toolbar or select **Edit > Hyperlink** from the menu bar. The Hyperlink dialog (Figure 13) opens. If the Hyperlink is in button form, the spreadsheet must have Design Mode on in order to edit the Hyperlink. Make your changes and click **Apply**. If you need to edit several hyperlinks, you can leave the Hyperlink dialog open until you have edited all of them. Be sure to click **Apply** after each one. When you are finished, click **Close**.

Removing hyperlinks

You can remove the clickable link from hyperlink text—leaving just the text—by right-clicking on the link and selecting **Default Formatting**. This option is also available from the **Format** menu. You may then need to re-apply some formatting in order for it to match the rest of your document.

To erase the link text or button from the document completely, select it and press the *Backspace* or *Delete* key.

Linking to external data

With the help of the Web Page Query import filter, you can insert tables from HTML documents into Calc.

You can use the same method to insert data located within named ranges from a LibreOffice Calc or Microsoft Excel spreadsheet, into a Calc spreadsheet. (To use other data sources, including database files in LibreOffice Base, see “Linking to registered data sources” on page 18.)

You can do this in two ways: using the External Data dialog or using the Navigator. If your file has named ranges or named tables, and you know the name of the range or table you want to link to, using the External Data dialog method is quick and easy. However, if the file has several tables, and you want to pick only one of them, you may not be able to easily determine which is which; in that case, the Navigator method may be easier.

Using the External Data dialog

- 1) Open the Calc document where the external data is to be inserted. This is the target document.
- 2) Select the cell where the upper left-hand cell of the external data is to be inserted.
- 3) Choose **Insert > Link to External Data**.

- 4) On the External Data dialog, type the URL of the source document or select it from the drop-down list if it is listed.
 - For entries typed in, press *Enter* on completion.
 - File selections from the drop-down list will load automatically.
- 5) You can also click the [...] button to open the Insert (file selection) dialog. Selecting a file and then clicking **Insert** loads the list of available tables. If the source document is a Web page, choose **Web Page Query (Calc)** as the file type (see Figure 15). Enter the URL as the file name. Click **Insert**.

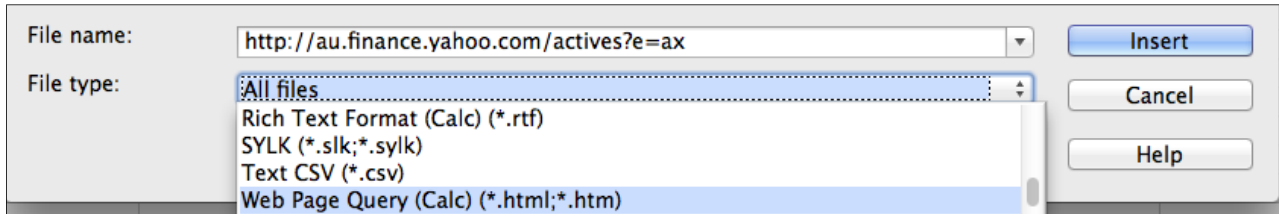


Figure 15: Using a Web Query to link data directly to a web page

- 6) For URLs to HTML (web) documents, pressing *Enter* at step 4, or **Insert** at step 5, opens the Import Options dialog where you can choose the import language of the site. Select **Automatic** to let Calc import the data directly, or select **Custom** and choose from the drop-down list of languages available. You can also select the option to have Calc recognise special numbers such as dates on import.

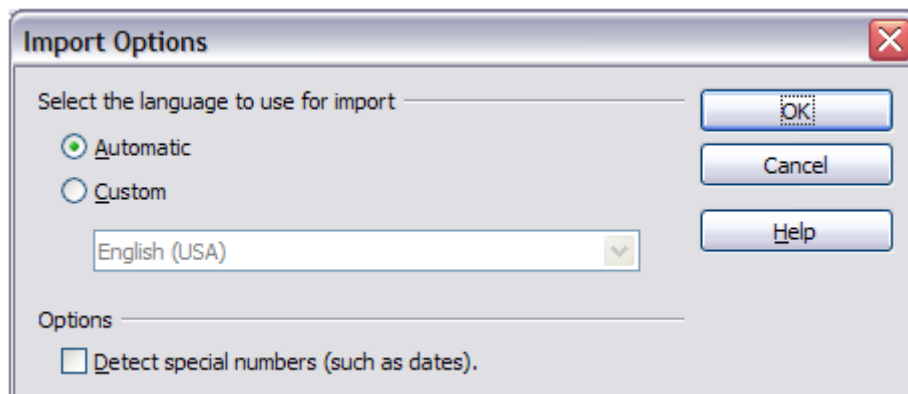


Figure 16: Import Options dialog

- 7) Click **OK** and Calc loads the list of available tables/ranges (Figure 17). The filter can create names for cell ranges as they are imported. As much formatting as possible is retained while the filter intentionally does not import any images. The filter additionally creates two entries to the list: HTML_all to permit selection of the entire document, and HTML_tables to permit selection of all the tables.
- 8) In the *Available tables/range* list, select the named ranges or tables you want to insert (hold *Ctrl* to select multiple entries). The **OK** button then becomes available. You can also specify that the ranges or tables are updated every (number of) seconds.
- 9) Click **OK** to close the dialog and insert the linked data.

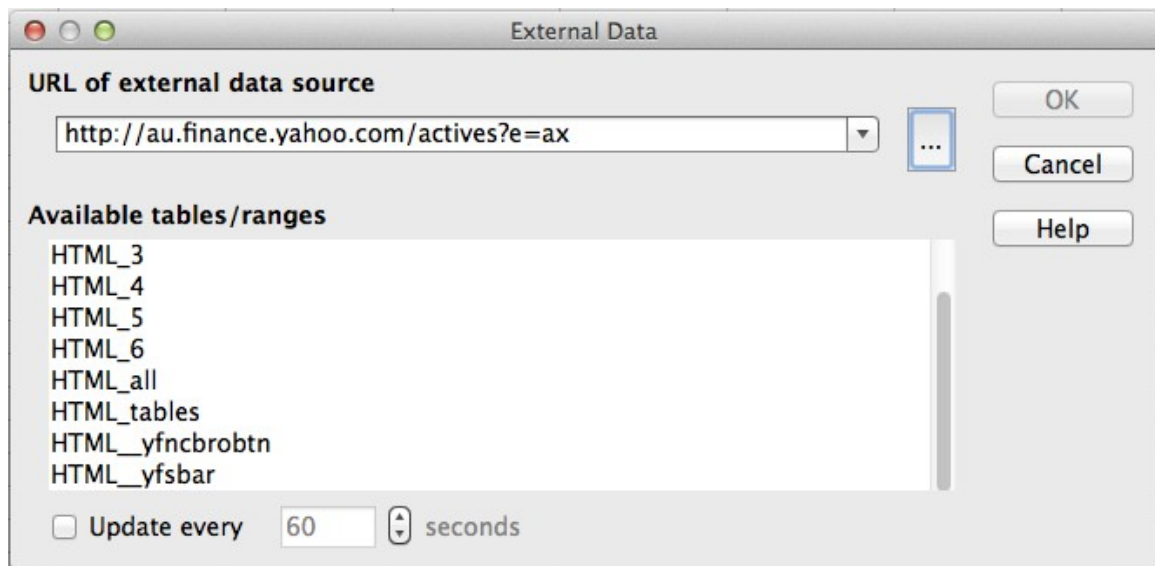


Figure 17: Selecting a table or range in a source document from the Web

Using the Navigator

- 1) Open the Calc spreadsheet in which the external data is to be inserted (target document).
- 2) Open the document from which the external data is to be taken (source document). The source document can be a Web page, created by choosing **Web Page Query (Calc)** as the file type, and entering the URL into the File name box, before clicking **OK** (see Figure 15).
- 3) In the target document, press *F5* to open the Navigator.

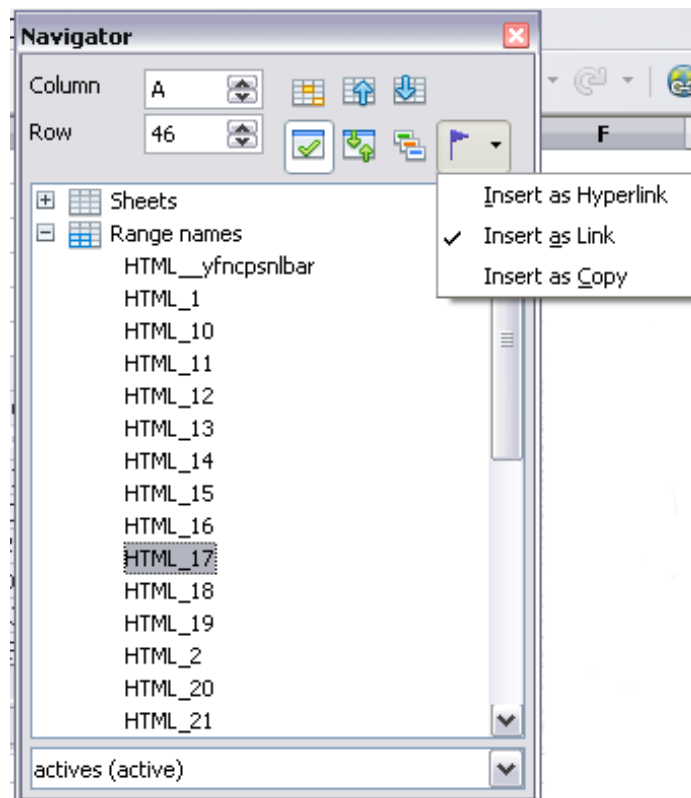


Figure 18: Selecting a data range in a source document, to be inserted as a link

- 4) At the bottom of the Navigator, select the source document. (In Figure 18, the source is named *actives*.)
The Navigator now shows the range names or the tables contained in the source document (the example contains range names; other documents have a list of tables). Click on the + next to *Range names* to display the list.
- 5) In the Navigator, select the **Insert as Link** drag mode, as shown in Figure 18.
- 6) Select the required range or table and drag it from the Navigator into the target document, to the cell where you want the upper left-hand cell of the data range to be.
- 7) Reselect the target document in the box at the bottom of the Navigator. Instead of a + symbol next to *Range names*, it shows a + symbol next to *Linked areas*. Click the + symbol to see the range name (see Figure 19) dragged across from the source document.

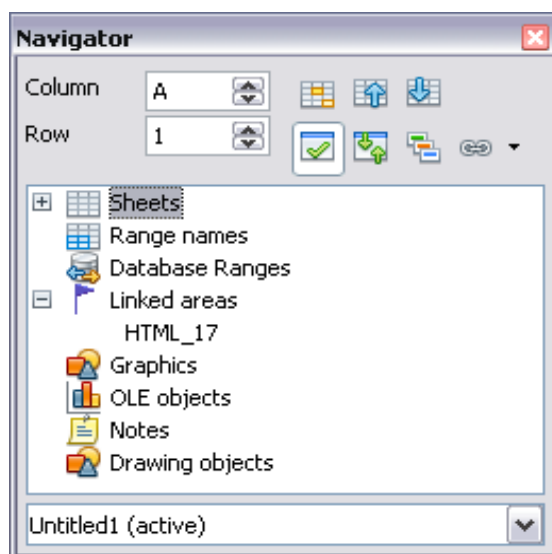


Figure 19: Linked areas in target spreadsheet

How to find the required data range or table

The examples above show that the import filter gave names to the data ranges (tables) in the sample web page starting from **HTML_1**. It also created two additional range names (not visible in the illustration):

- **HTML_all** – designates the entire document
- **HTML_tables** – designates all HTML tables in the document

If the data tables in the source HTML document have been given names (using the ID attribute on the TABLE tag), or the external spreadsheet includes named ranges, those names appear in the list along with the ranges Calc has sequentially numbered.

If the data range or table you want is not named, how can you tell which one to select?

Go to the source document, which you opened in Calc. In the Navigator, double-click on a range name: that range is highlighted on the sheet (see Figure 20).

If the Formula Bar is visible, the range name is also displayed in the *Name* box at the left-hand end (see Figure 21). The range name can also be selected from this drop-down list to highlight it on the page.

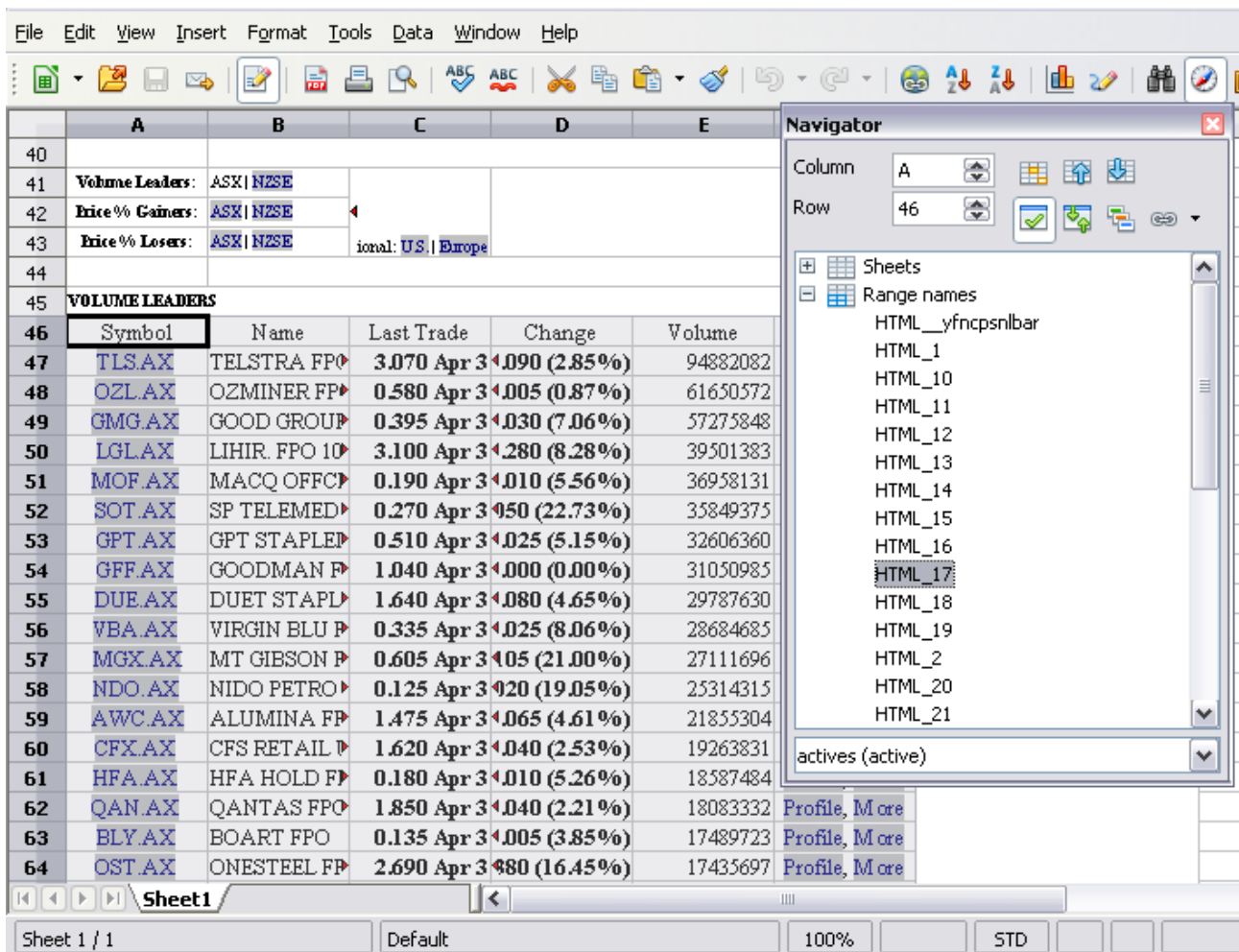


Figure 20: Using the Navigator to find a data range name

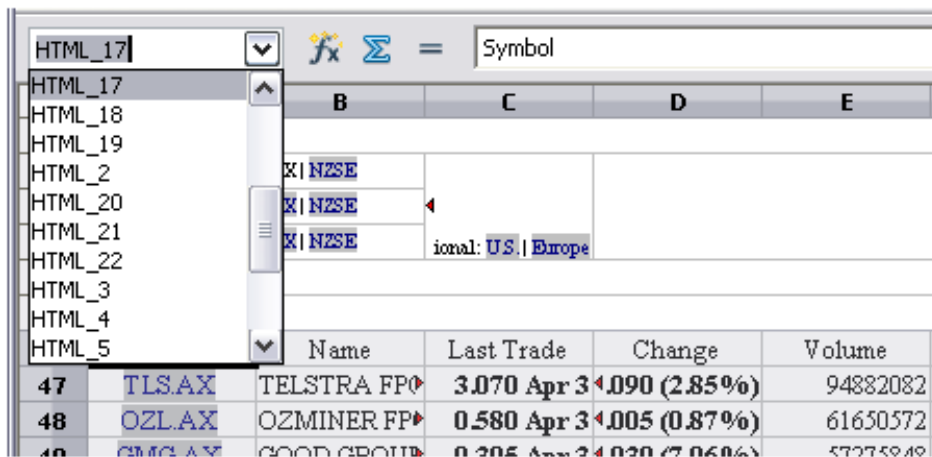


Figure 21: Using the Name box to find a data range name

Linking to registered data sources

You can access a variety of databases and other data sources and link them into Calc documents.

First you need to register the data source with LibreOffice. (To register means to tell LibreOffice what type of data source it is and where the file is located.) The way to do this depends on whether or not the data source is a database in *.odb format.

To register a data source that is in *.odb format:

- 1) Choose **Tools > Options > LibreOffice Base > Databases**.
- 2) Click the **New** button (below the list of registered databases) to open the Create Database Link dialog (Figure 22).

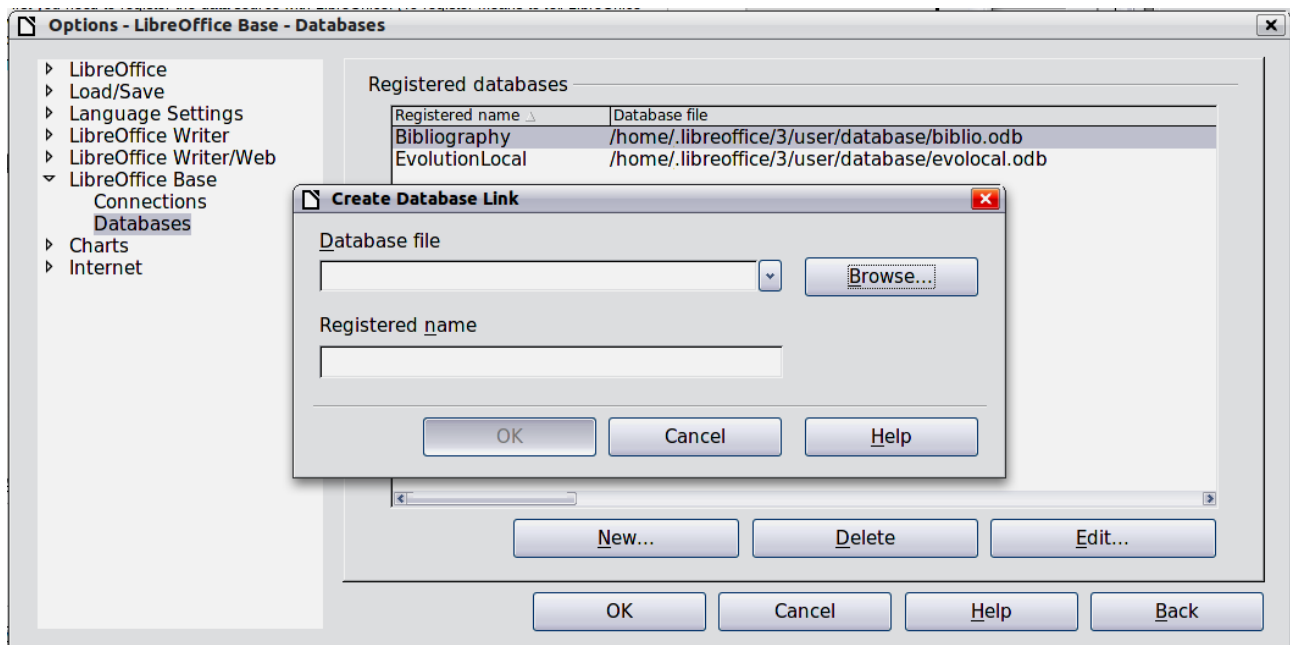


Figure 22: Registering databases

- 3) Enter the location of the database file, or click **Browse** to open a file browser and select the database file.
- 4) Type a name to use as the registered name for the database and click **OK**. The database is added to the list of registered databases. The **OK** button is enabled only when both fields are filled in.

To register a data source that is *not* in *.odb format:

- 1) Choose **File > New > Database** to open the Database Wizard.
- 2) Select **Connect to an existing database**. The choices for database type depend on your operating system. For example, Microsoft Access and other Microsoft products are not among the choices if you are using Linux. In our example, we chose dBASE.
- 3) Click **Next**. Type the path to the database file or click **Browse** and use the Open dialog to navigate to and select the database file before clicking **Open**.
- 4) Click **Next**. Select *Yes, register the database for me*, but clear the checkbox marked *Open the database for editing*.
- 5) Click **Finish**. Name and save the database in the location of your choice. Note: changes made to the *.odb do not affect the original dBASE file.

Once a data source has been registered, it can be used by any LibreOffice component (for example Calc).

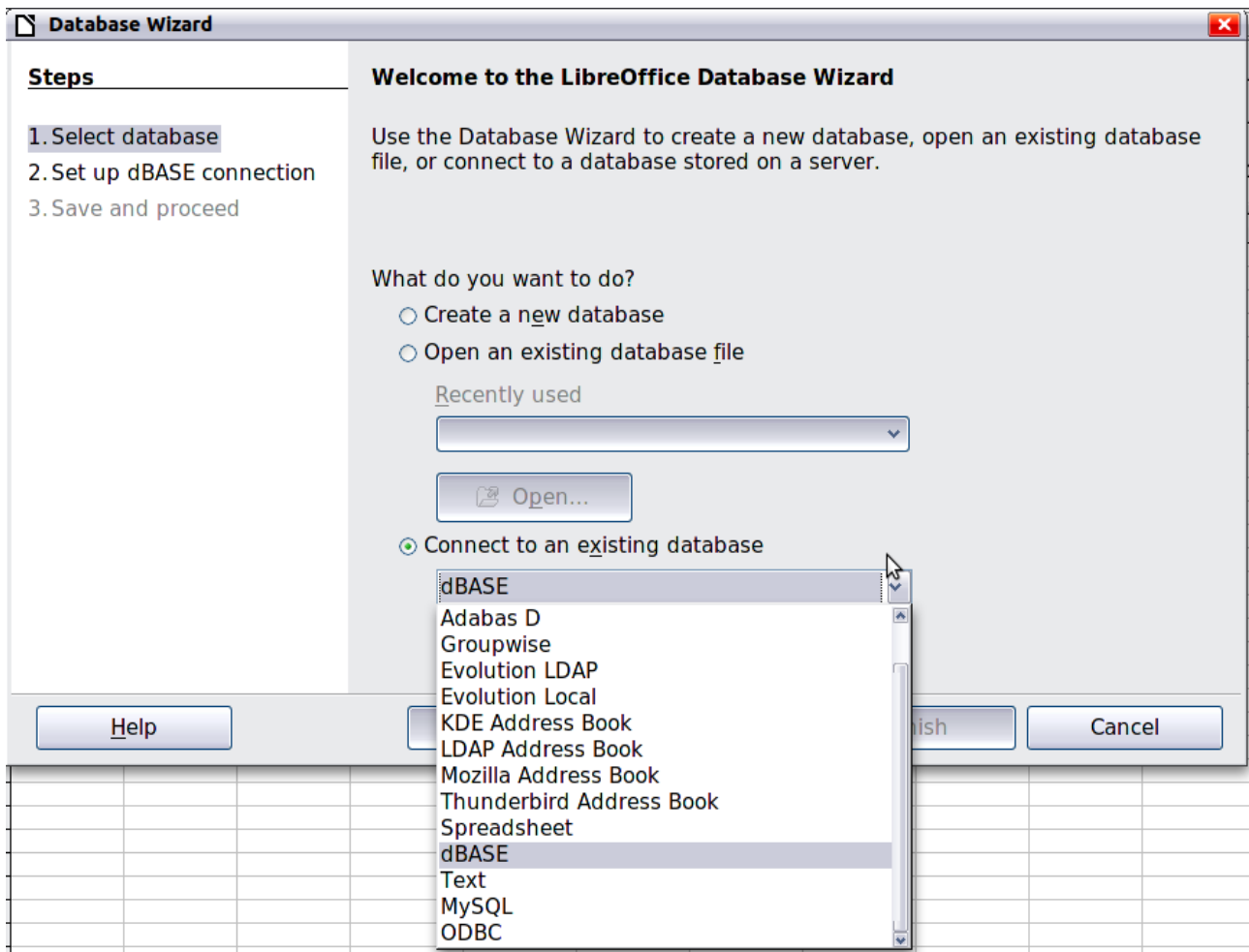


Figure 23: Registering a database using the Database Wizard

Viewing data sources

Open a document in Calc. To view the data sources available, press *F4* or select **View > Data Sources** from the menu bar. The Data Source View pane opens above the spreadsheet. A list of registered databases is in the Data Explorer area on the left. (The built-in Bibliography database is included in the list.)

To view each database, click on the **+** symbol to the left of the name of the database. (This has been done for the Automobile database in Figure 24.) Click on the **+** symbol next to Tables to view the individual tables.

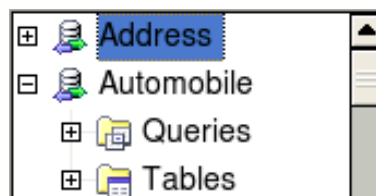


Figure 24: Databases

Now click on a table to see all the records held in it. The data records are displayed on the right side of the Data Source View pane. To see more columns, you can click the **Explorer On/Off** button to hide the Data Explorer area.

At the top of the Data Source View pane, below the Calc toolbars, is the Table Data bar. This toolbar includes buttons for saving records, editing data, finding records, sorting, filtering, and other functions. For more details about this toolbar, see the Help for *data source browser*.

Below the records is the Form Navigation bar, which shows which record is selected and the total number of records. To the right are five small buttons; the first four move backwards or forwards through the records, or to the beginning or end. The last is for adding new records.



Figure 25: Data Source View navigation buttons

Editing data sources

Some data sources (such as spreadsheets) cannot be edited in the data source view.

In editable data sources, records can be edited, added, or deleted. If you cannot save your edits, you need to open the database in Base and edit it there; see “Launching Base to work on data sources”. You can also hide columns and make other changes to the display.

Launching Base to work on data sources

You can launch LibreOffice Base at any time from the Data Source View pane. Right-click on a database or the **Tables** or **Queries** icons and select **Edit Database File**. Once in Base, you can edit, add, and delete tables, queries, forms, and reports.


For more about using Base, see Chapter 8, Getting Started with Base, in the *Getting Started* guide.

Using data sources in Calc spreadsheets


Data from the tables in the data source pane can be placed into Calc documents in a variety of ways.

You can select a cell or an entire row in the data source pane and drag and drop the data into the spreadsheet. The data is inserted at the place where you release the mouse button.

An alternative method uses the **Data to Text** icon and will include the column headings above the data you insert:

- 1) Click the cell of the spreadsheet which you want to be the top left of your data including the column names.
- 2) Press *F4* to open the database source window and select the table containing the data you want to use.
- 3) Select the rows of data you want to add to the spreadsheet:
 - Click the gray box to the left of the row you want to select if only selecting one row. That row is highlighted.
 - To select multiple adjacent rows, hold down the *Shift* key while clicking the gray box of the rows you need.
 - To select multiple separate rows, hold down the *Control* key while selecting the rows. The selected rows are highlighted.
 - To select all the rows, click the gray box in the upper left corner. All rows are highlighted.
- 4) Click the **Data to text** icon  to insert the data into the spreadsheet cells.

You can also drag the data source column headings (field names) onto your spreadsheet to create a form for viewing and editing individual records one at a time. Follow these steps:

- 1) Click the gray box at the top of the column (containing the field name you wish to use) to highlight it.
- 2) Drag and drop the gray box to where you want the record to appear in the spreadsheet.
- 3) Repeat until you have moved all of the fields you need to where you want them.
- 4) Close the Data Source window by pressing *F4*.
- 5) Save the spreadsheet and click the **Edit File** button  on the Standard toolbar, to make the spreadsheet read-only. All of the fields will show the value for the data of the first record you selected.
- 6) Add the *Form Navigation* toolbar: **View > Toolbars > Form Navigation**. By default, this toolbar opens at the bottom of the Calc window, just above the status bar.
- 7) Click the arrows on the Form Navigation toolbar to view the different records of the table. The number in the Record box changes as you move through the records. The data in the fields changes to correspond to the data for that particular record number. You can also search for a specific record, sort and filter records, and do other tasks using this toolbar.

Embedding spreadsheets

Spreadsheets can be embedded in other LibreOffice files. This is often used in Writer or Impress documents so that Calc data can be used in a text document. You can embed the spreadsheet as either an *OLE* or *DDE* object. The difference between a DDE object and a Linked OLE object is that a Linked OLE object can be edited from the document in which it is added as a link, but a DDE object cannot.

For example, if a Calc spreadsheet is pasted into a Writer document as a DDE object, then the spreadsheet cannot be edited in the Writer document. But if the original Calc spreadsheet is updated, the changes are automatically made in the Writer document. If the spreadsheet is inserted as a Linked OLE object into the Writer document, then the spreadsheet can be edited in the Writer as well as in the Calc document and both documents are in sync with each other.

Object Linking and Embedding (OLE)

The major benefit of an OLE (Object Linking and Embedding) object is that it is quick and easy to edit its contents just by double-clicking on it. You can also insert a link to the object that will appear as an icon rather than an area showing the contents itself.

OLE objects can be linked to a target document or be embedded in the target document. Linking inserts information which will be updated with any subsequent changes to the original file, while embedding inserts a static copy of the data. If you want to edit the embedded spreadsheet, double-click on the object.

To embed a spreadsheet as an OLE object in a presentation:

- 1) Place the cursor in the document and location you want the OLE object to be.
- 2) Select **Insert > Object > OLE Object**. The dialog in Figure 26 opens.

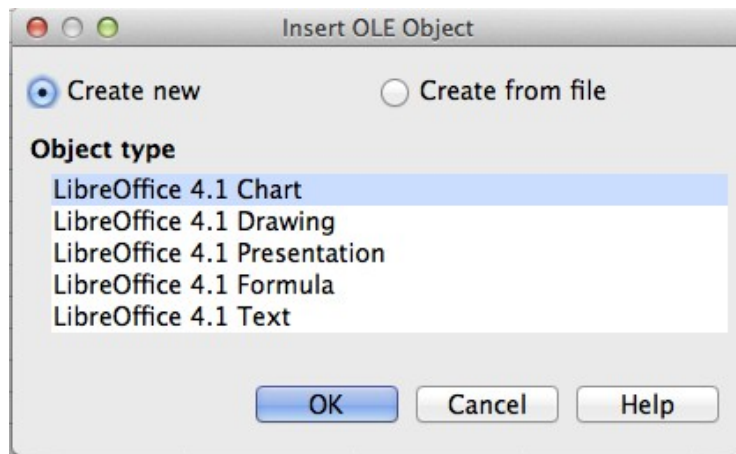


Figure 26: Insert OLE object dialog

You can either create a new OLE object or create from a file.

To create a new object:

- 1) Select **Create new** and select the object type among the available options.
- 2) Click **OK**. An empty container is placed in the slide.
- 3) Double-click on the OLE object to enter the edit mode of the object. The application devoted to handling that type of file will open the object.

Note

If the object inserted is handled by LibreOffice, then the transition to the program to manipulate the object will be seamless; in other cases the object opens in a new window and an option in the File menu becomes available to update the object you inserted.

To insert an existing object:

- 1) To create from a file, select **Create from file**. The dialog changes to look like Figure 27.
- 2) To insert the object as a link, select the **Link to file** option. Otherwise, the object will be embedded.
- 3) Click **Search**, select the required file in the Open dialog, then click **Open**. A section of the inserted file is shown in the document.

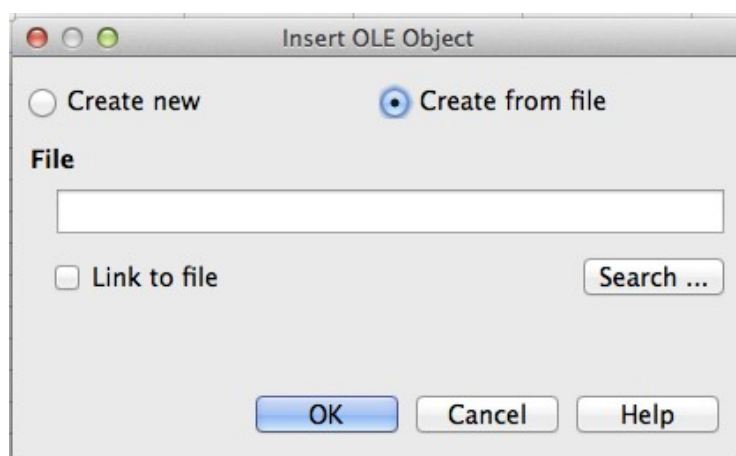


Figure 27: Inserting an object as a link

Other OLE objects

Under Windows, the Insert OLE Object dialog has an extra entry, *Further objects*.

- 1) Double-click on the entry **Further objects** to open the dialog shown below.

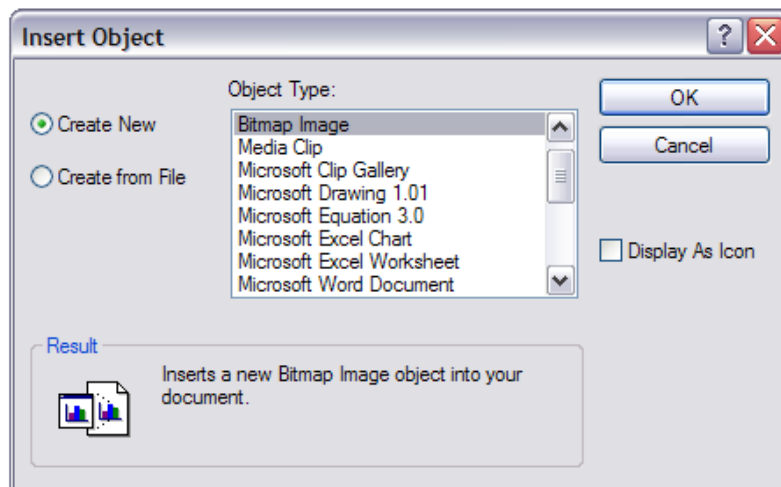


Figure 28: Inserting an OLE object under Windows

- 2) Select **Create New** to insert a new object of the type selected in the Object Type list, or select **Create from File** to create a new object from a file.
- 3) If you choose **Create from File**, the dialog shown in Figure 25 opens. Click **Browse** and choose the file to insert. The inserted file object is editable by the Windows program that created it.

If instead of inserting an object, you want to insert a *link* to an object, select the **Display As Icon** option.

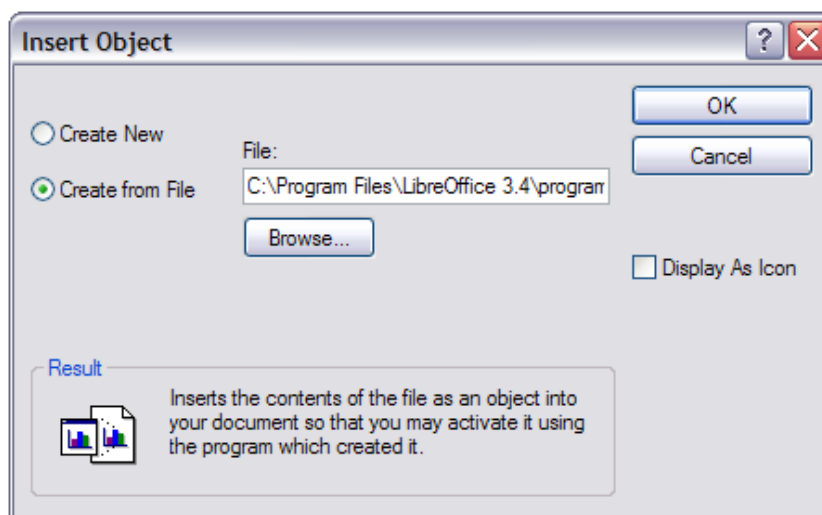


Figure 29: Insert object from a file

Non-linked OLE object

If the OLE object is not linked, it can be edited in the new document. For instance, if you insert a spreadsheet into a Writer document, you can essentially treat it as a Writer table (with a little more power). To edit it, double-click on it.

Linked OLE object

When the spreadsheet OLE object is linked, if you change it in Writer it will change in Calc; if you change it in Calc, it will change in Writer. This can be a very powerful tool if you create reports in Writer using Calc data, and want to make a quick change without opening Calc.

Note

You can only edit one copy of a spreadsheet at a time. If you have a linked OLE spreadsheet object in an open Writer document and then open the same spreadsheet in Calc, the Calc spreadsheet will be a read-only copy.

Dynamic Data Exchange (DDE)

DDE is an acronym for Dynamic Data Exchange, a mechanism whereby selected data in document *A* can be pasted into document *B* as a linked, 'live' copy of the original. It would be used, for example, in a report written in Writer containing time-varying data, such as sales results sourced from a Calc spreadsheet. The DDE link ensures that, as the source spreadsheet is updated so is the report, thus reducing the scope for error and reducing the work involved in keeping the Writer document up to date.

DDE is a predecessor of OLE. With DDE, objects are linked through file reference, but not embedded. You can create DDE links either within Calc cells in a Calc sheet, or in Calc cells in another LibreOffice doc such as in Writer.

DDE link in Calc

Creating a DDE link in Calc is similar to creating a cell reference. The process is a little different, but the result is the same.

- 1) In Calc, select the cells that you want to make the DDE link to.
- 2) Copy them: **Edit > Copy** or *Ctrl+C*.
- 3) Go to the place in the spreadsheet where you want the link to be.
- 4) Select **Edit > Paste Special**.
- 5) When the Paste Special dialog opens, select the **Link** option on the bottom left of the dialog (Figure 30). Click **OK**.

The cells now reference the copied data, and the formula bar shows a reference beginning with {=DDE.

If you now edit the original cells, the linked cells will update.

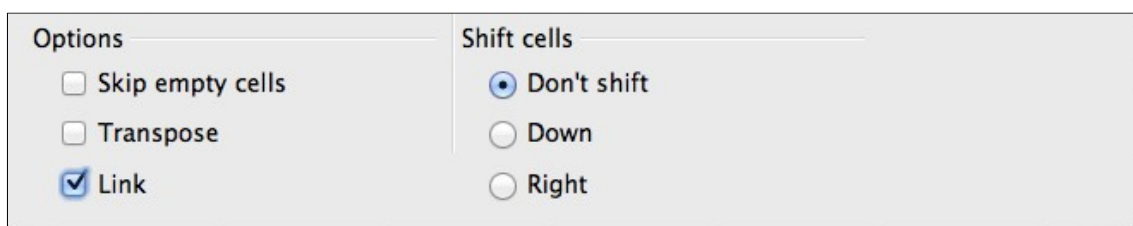


Figure 30: Location of Link option on Paste Special dialog in Calc

DDE link in Writer

The process for creating a DDE link from Calc to Writer is similar to creating a link within Calc.

- 1) In Calc, select the cells to make the DDE link to. Copy them.
- 2) Go to the place in your Writer document where you want the DDE link. Select **Edit > Paste Special**.
- 3) Select **DDE Link** (Figure 31). Click **OK**.

Now the link has been created in Writer. When the Calc spreadsheet is updated, the table in Writer is automatically updated.

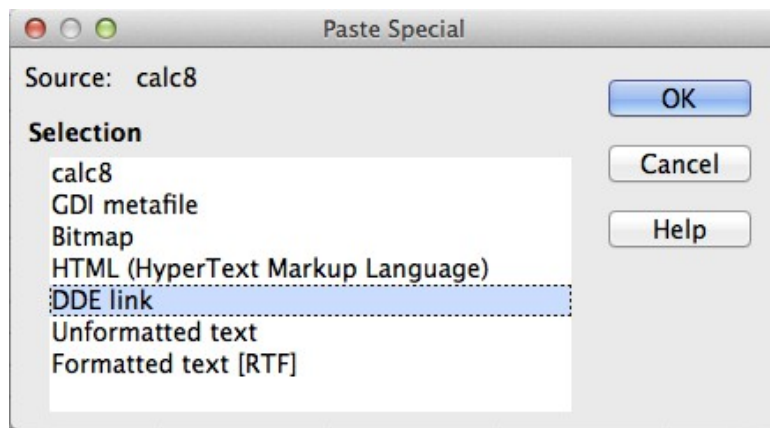


Figure 31: Paste Special dialog in Writer, with DDE link selected