

Exercise 7.5 teaches you a couple of things. First, it is possible to create *3D references* that will link the data in one workbook to another; and second, the Top Row and Left Column checkboxes in the Consolidate dialog box are useful only when you are creating consolidation reports that point to multiple workbooks. Whenever you use formulas to access data in other workbooks, you are creating external links to that data, and that's what you will learn about in this next section.

Linking Data

Many times, when you use specific Excel features, data in one place is automatically linked to data in another. Examples of this include dynamic data consolidation (described previously in this chapter), charts that are placed on a sheet other than the sheet where the data lives (explained in Chapter 2, "Formats, Graphics, and Excel's Templates"), VLOOKUP formulas that refer to a table array on a different sheet (covered in Chapter 6, "Advanced Functions, Table Arrays, and Database Features"), and pivot tables, discussed later in this chapter. However, you can also manually create links to data in other locations simply by referencing the external cell or range within a formula.

Linking data assures you that data is updated in the linked location whenever the source data in the original location changes. In a work situation, think of that global workbook that lives on a network drive and includes product prices that you refer to in your local inventory workbook. Or, in a home situation, think of addresses that reside in your Contacts workbook and are referred to in your Birthday Cards Reminder workbook.

Formulas that include 3D references to cells or ranges in locations outside of the sheet are formatted in this way:

- Cell reference to another sheet within the workbook:
SheetName!CellOrRangeReference
- Cell reference to another workbook:
'[WorkbookName]SheetName'!CellOrRangeReference

Creating Simple Links to External Data

Before we get into including 3D references as part of an argument within a function, let's look at simple linking to external cells. If you only want to display a value from a different workbook or worksheet but don't need that value calculated in a formula, all you have to do is type an equal sign, followed by the workbook/worksheet/cell reference.

As long as you know the full name of the workbook and sheet, you can type the 3D reference directly after an equal sign. However, the easiest and most accurate way to do it (to avoid misspellings that will result in errors) is to enter your formula and, when you get to the part of the formula that references another sheet or workbook, simply move to that location, select the cell or range, and press Enter. But it is important to know that the default cell reference type for 3D references entered by selecting the cells is relative when referencing a sheet within

the same workbook and absolute when referencing a sheet in a different workbook. This is based on the behavior Microsoft assumes is the “norm,” and this may be true in your case; however, the important thing is that you know this and remember to change the cell reference type when the behavior does not suit your purpose.

Use Exercise 7.6 to learn how to manually type in simple 3D references or create them by selecting cells.

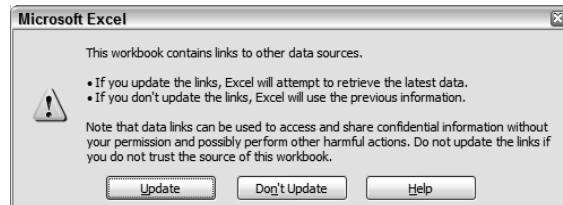
EXERCISE 7.6

Creating Simple 3D References

1. Open a new blank workbook and save it in your Chapter Seven folder and name it **Exercise 7-6A.xls**.
2. In cell A1 type **5**, then in cell A2 type **10**. Select both cells and drag the series down to cell A10, using the fill handle (so the series continues from 15 to 50).
3. Rename Sheet1 to **Original**, name Sheet 2 **LinkedCopy**, and name Sheet3 **Totals**.
4. Move to the LinkedCopy sheet. In cell A1 type **Manual** and in cell A2 type **Selection**.
5. On the LinkedCopy sheet, in cell B1 type **=original!a1** and press Enter. Excel returns 5, which is what is in cell A1 on the Original sheet.
6. In cell B2 on the LinkedCopy sheet, type **=** and then click the Original sheet tab, select cell A2, and press Enter. When you press Enter, you are returned to the LinkedCopy sheet and 10 appears in cell B2, because that is what is in cell A2 on the Original sheet.
7. View the formulas in cells B1 and B2 and note that they are basically the same, except they obviously refer to different cells on the Original sheet.
8. Save the workbook to update it and leave it open.
9. Create another new workbook and save it and name it **Exercise 7-6B.xls**.
10. In the new B workbook, in cell F5, type **=['exercise 7-6a.xls]original!a1** (don't miss the single quote before the left bracket and before the exclamation point). Press Enter and Excel returns 5.
11. In cell F6, type **=** and then from the Window menu select the Exercise 7-6A workbook. Inside the A workbook, click the Original tab, then click cell A1. Press Enter and you are returned to the B workbook. As you can see, cell F6 shows 5.
12. Examine the formulas in F5 and F6 and note that they are similar, but the A1 cell reference in F5 is relative and in F6 it is absolute.
13. Go back to the A workbook and change the value on the Original sheet, in A1, to **100** and press Enter.

EXERCISE 7.6 (continued)

14. Move to the LinkedCopy sheet and note that Excel has updated the value in B1 to 100 also.
15. Move to the B workbook and note that both F5 and F6 now show 100 too.
16. Save both workbooks to update them and then close them both.
17. Reopen the B workbook and you should see this warning box:



If you don't see the prompt shown in the graphic above, it means you have the prompt to update links turned off. You can turn it on by selecting **Tools > Options**. In the Options dialog box, select the **Edit** tab and select the option **Ask To Update Automatic Links**. You'll learn about all of the settings in the Options dialog box in Chapter 12, "Customizing Excel and Setting Defaults." For now, just be sure this option is checked. If it was not selected, select it now; then save and close the workbook and reopen it.

18. You can choose whether or not you want the B workbook updated with any changes made to the A workbook. Click the **Update** button.
19. Select cell F5 and view the formula in the Formula bar. Once the workbooks are saved, the full path to the linked workbook shows within the formula. Leave the B workbook open for the next exercise.

I guess it's pretty obvious what the advantages to linking are. Data in one place can be kept up to date in many places this way. And, this becomes even more valuable when you include these links in formulas, so let's learn about that next.

Using Linked Data in Formulas

When including linked data in formulas, the process is the same as described in Exercise 7.6. And, again, you can type the references directly into the formula, or simply click on them to select them. I find the easiest way to link data from one workbook to another is to arrange the workbooks side by side and use the click-to-select method. Exercise 7.7 shows how to use this technique when adding links within formulas.