LARGE WORKSHEETS, MULTIPLE WORKSHEETS AND WORKBOOKS

Chapter Objectives

By the time you finish this chapter, you should be able to identify the following terms:

- ❑ Range names
- ❑ Sort ascending
- ❑ Sort descending
- ❑ Freeze/unfreeze panes
- ❑ Subtotals
- ❑ Active sheet

- ❑ Sheet tabs
- ❑ Linking formula
- ❑ Internal reference formula
- ❑ External reference formula
- ❑ 3-D reference

By the time you finish this chapter, you should be able to perform the following tasks:

- ❑ Sort data by one field and by multiple fields
- ❑ Freeze columns and rows
- ❑ Name worksheets
- ❑ Group worksheets
- ❑ Copy, insert, and delete worksheets
- ❑ Rearrange worksheets

- ❑ Filter data using AutoFilter and Advanced Filter
- ❑ Link formulas on different worksheets using 3-D cell references
- ❑ Create and modify subtotals

INTRODUCTION

So far, most of the worksheets you have been using fit on one screen. This is not always true, however, in the real world. In the real world, it is not uncommon to work with worksheets that are hundreds, or even thousands, of rows deep. In this chapter, you will work with several large worksheets. You will also learn how to assign names to ranges. Naming ranges is a very helpful tool when working with numerous ranges and/or large worksheets. Range names can be used in formulas and functions to help you make your worksheet more user-friendly. You will also learn to sort and arrange our data to make it easier to read.

In addition to naming ranges and working with large worksheets, you will learn how to filter data and create subtotals. Filtering data means to extract records from a table that meet specified criteria such as all Boston employees or all action movies. Creating subtotals allows you to group large amounts of records together and calculate group totals, averages, etc.

Finally, you will learn how to work with multiple worksheets and workbooks. You will name, insert, move, and delete worksheets, link worksheets and workbooks together with formulas, and analyze and update links.

RANGE NAMES

When using Excel, you have probably already noticed that you frequently work with many ranges. Working with many ranges, especially in formulas, can be cumbersome considering you have to use and memorize the many range addresses. To help work with ranges, you can actually assign a meaningful name to a range. This is called a **range name.** Assigning a name to a range enables you to refer to that range by a name rather than its range address. For example, **Range B5:B10** contains expen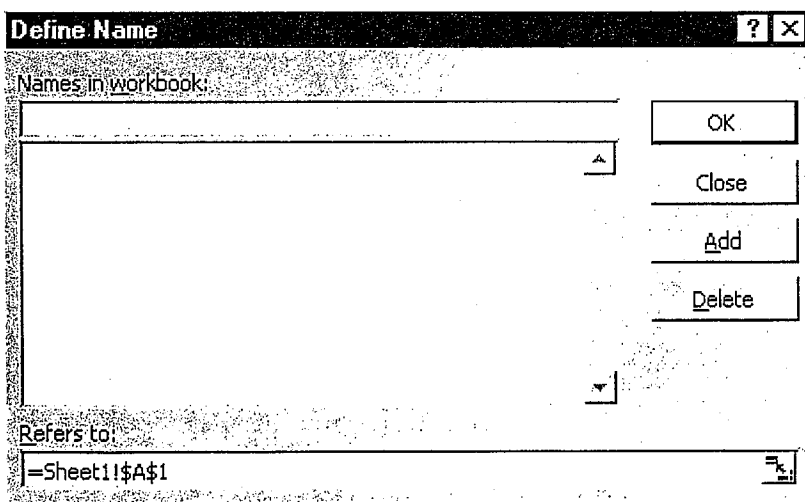ses for the month of January. Instead of referring to the range as **B5:B10**, you could just name the range **JANUARY.** Using range names makes it much easier to work with worksheet formulas and functions. There are two ways you can assign a name to a range. Select the range you wish to name, and then either type the range name into the **Name box** on the **Formula bar** and press the **Enter** key, or click **Insert, Name, Define** on the **Menu bar**, enter a name in the **Names in workbook** field, and click **OK.**

Figure 4.1: Define Name Dialog Box

Exercise 4-1	Use Range Names

I. Open the **Ex 2-13 Movie Inventory** workbook from your work disk, and save it as **Ex 4-1 Movie Inventory** to your work disk.

II. Delete the functions in **cells B20, B23,** and **B25.**
    a. The statistical data is deleted from the **Summary Information** area.

III. Assign range names.
    a. Select **Range A7:A16.** Click **Insert, Name, Define** on the **Menu bar** to open the **Define Name** dialog box. Enter **TITLE** in the **Names in workbook** field, and click **OK.**
        i. **Range A7:A16** is named **TITLE,** and its name appears in the **Name box** on the **Formula bar.**
    b. Select **Range F7:F16.** Click **Insert, Name, Define** on the **Menu bar** to open the **Define Name** dialog box. Enter **DATERELEASED** in the **Names in workbook** field, and click **OK.**
        i. **Range F7:F16** is named **DATERELEASED,** and its name appears in the **Name box** on the **Formula bar.**
    c. Select **Range D7:D16.** Enter **PRICE** in the **Name box** on the **Formula bar,** and press the **Enter** key.
        i. **Range D7:D16** is named **PRICE,** and its name appears in the **Name box** on the **Formula bar.**

IV. Use range names in functions.
    a. In **cell B20,** enter the function **=COUNTA(TITLE).**
        i. The number of movies displays.
    b. In **cell B23,** enter the function **=COUNT(DATERELEASED).**
        i. The number of movies with known release dates displays.
    c. In **cell B25,** enter the function **=AVERAGE(PRICE).**
        i. The average price of a movie displays.

V. Use range names in the **Go To** dialog box.
    a. Activate the **Go To** dialog box.
    b. Select the **PRICE** range name, and click **OK.**
        i. The prices are highlighted.

VI. Use the **Go To** dialog box to locate the **DATERELEASED** range.

VII. Use range names in the **Name box.**
    a. Click the arrow on the **Name box** on the **Formula bar** to access the drop-down list, and select **TITLE.**
        i. The title range is selected.

VIII. Deselect any ranges.

IX. Save, and close the workbook.

LARGE WORKSHEETS

When viewing a worksheet for the first time, you should do several things. First, you should attempt to fully understand the purpose of the worksheet and why it is being used. Second, you should familiarize yourself with the worksheet's formulas and functions. Familiarity with the

formulas and functions helps you understand how the worksheet performs. Lastly, you should familiarize yourself with the size of the worksheet and how it is to be printed. Working with large worksheets can be somewhat awkward because you have to think "beyond" what's on the screen. In this section, we will explore the inner mechanisms of some large worksheets and learn how to work with them.

Figure 4.2: Sort Dialog Box

Sorting

When working with large worksheets, it may be necessary to arrange your data in a more meaningful way. Excel's sorting features help you arrange the data in your worksheet so it is easy to work with.

You can sort your data in **ascending** (A, B, C) or **descending** (C, B, A) order. These are known as sort orders. In an **ascending sort,** Excel sorts numbers from the smallest to the largest; text is sorted alphabetically from left to right, character by character; and blanks are placed first. In a **descending sort,** the orders are reversed. When sorting data, you can use the **Sort Ascending** and **Sort Descending** buttons on the **Standard toolbar,** or click **Data, Sort** on the **Menu bar** to utilize the **Sort** dialog box.
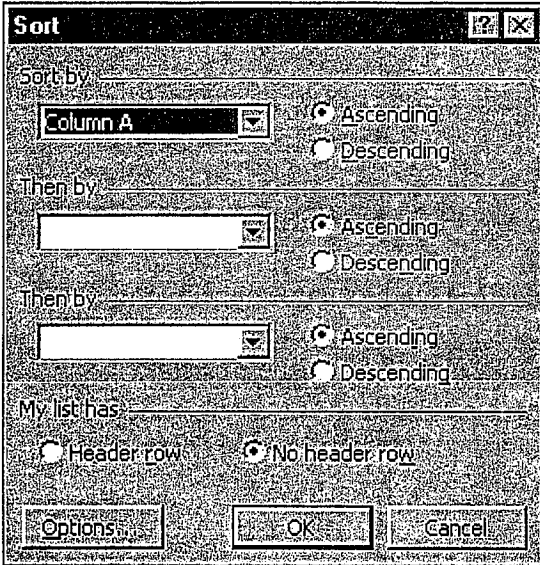
Freeze Panes

When scrolling through a large worksheet, you will notice that your worksheet column and/or row headings disappear. For example: If your column headings are in **row 5** and you scroll down past or across the visible window, the column/row headings scroll off the screen. This can make reading your worksheet difficult. The **Freeze Panes** feature keeps column and/or row headings visible on the screen as you scroll through a large worksheet. To freeze the worksheet panes, place the cell cursor below the row or to the right of the column you want to be frozen, and click **Window, Freeze Panes** on the **Menu bar.** With the column/row headings frozen, you can then scroll through a large worksheet, and your column/row headings remain on the screen.

Exercise 4-2	Work with a Large Worksheet, Sorting, and Freeze Panes

I. Open the **Golden Key Auto Sales** workbook from your data disk, and save it as **Ex 4-2 Golden Key Auto Sales** on your computer's work disk.

II. Use the **TODAY** function in **cell A3** to display the current date.

III. Explore the worksheet to get acquainted with its size and purpose.

Sort Ascending button

IV. Sort records in ascending order.
   a. Select **cell A6,** and click the **Sort Ascending** button on the **Standard toolbar.**
      i. The cars are sorted by **Vehicle ID** in ascending order.
   b. Select **cell B6,** and click the **Sort Ascending** button.
      i. The cars are sorted by **Year** in ascending order.

V. Practice sorting the records in ascending order using different columns.

VI. Sort records in descending order.
   a. Select **cell L6,** and click the **Sort Descending** button.
      i. The cars are sorted by **Price** in descending order.
VII. Practice sorting the records in descending order using different columns.
VIII. Sort the records by more than one column.
   a. With the cell cursor anywhere in the table, click **Data, Sort** on the **Menu bar.**
      i. This activates the **Sort** dialog box.
   b. Select **Make** from the **Sort by** drop-down list, and make sure it reads **Ascending.**
   c. Select **Price** from the first **Then by** drop-down list, and make sure it reads **Descending.** Click **OK.**
      i. The cars are sorted first by **Make** in ascending order, and then by **Price** in descending order.
IX. Analyze the worksheet and verify the sort.
X. Use the **Sort** dialog box again to sort the cars by **Year,** then by **Make,** then by **Price.**
   a. The records are sorted by year, make, and price.
XI. Use the **Sort Ascending** button to sort the cars by **Make.**
XII. Scroll up and down the worksheet, and watch the column headings scroll off the screen.
XIII. Freeze/unfreeze panes on a worksheet.
   a. With the cell cursor in **cell A6,** click **Window, Freeze Panes** on the **Menu bar.**
      i. The top five rows of the worksheet are frozen.
   b. Scroll down to see the last vehicle in the list.
      i. The column headings stay on screen when you scroll.
   c. Click **Window, Unfreeze Panes** on the **Menu bar,** and return to **cell A1.**
      i. The top five rows are unlocked.
   d. With the cell cursor in **cell B6,** click **Window, Freeze Panes** on the **Menu bar.**
      i. The top five rows are frozen.
   e. Scroll down and to the right so **row 40** and **column K** are visible.
      i. The first five rows and **column A** remain visible on the screen.
   f. Click **Window, Unfreeze Panes** on the **Menu bar,** and return to **cell A1.**
      i. The frozen rows and column are unlocked.
XIV. Save the workbook, and leave it open.

Sort Descending button

Filtering

When you work with large tables of data such as an employee list or inventory list, it will be necessary to extract specific information from the table. For example, let's say that in a large movie inventory worksheet, you wish to extract all movies that are rated **G.** This can be done utilizing Excel's filtering features. The AutoFilter and Advanced Filter features both extract records from a table according to set criteria. The **AutoFilter** extracts records from a table and displays them in the same data range. The **Advanced Filter** extracts records to a different

worksheet. You can then analyze, or print the filtered data. To access filtering options, click **Data, Filter** or **Advanced Filter** on the **Menu bar.**

Exercise 4-3	Use AutoFilter

I. Open the **Ex 4-2 Golden Key Auto Sales** workbook from your work disk if it's not already open.

II. Apply AutoFilter.
   a. With the cell cursor anywhere in the table, click **Data, Filter, AutoFilter** on the **Menu bar.**
      i. Small drop-down arrows appear on every column heading.
   b. Click the drop-down arrows for the **Year** column, and select **2000** from the drop-down list.
      i. Cars that are from the year 2000 are displayed, and the drop-down arrow for the **Year** column turns blue.
   c. Click the **Year** column drop-down arrow again, and select **(All).**
      i. All the cars are restored.
   d. Click the **Airbag** drop-down arrow, and select **Yes.**
      i. Only cars with airbags are visible, and the drop-down arrow turns blue.
   e. Click the **Airbag** drop-down arrow again, and select **(All).**
      i. All cars are restored.
   f. Click the **Cassette** drop-down arrow, and select **Yes.** Click the **Sunroof** drop-down arrow, and select **Yes.**
      i. Cars with cassette decks and sunroofs are displayed, and the drop-down arrows turn blue for cassette and sunroof.
   g. Click the **Cassette** drop-down arrow, and select **(All).** Do the same for **Sunroof.**
      i. All cars are displayed.

III. Apply Custom AutoFilter.
   a. Click the **Price** drop-down arrow, and select **(Custom).**
      i. This activates the **Custom Filter** dialog box.
   b. Select **is less than** from the **Price** drop-down list.
   c. Enter **10000** in the text box to the right, and click **OK.**
      i. Cars priced less than **$10,000** are displayed.

IV. Display all of the records.

V. Apply Custom AutoFilter.
   a. Click the **Price** drop-down arrow, and select **(Custom).**
   b. Select **is greater than** from the **Price** drop-down list, and enter **10000** in the box to the right.
   c. Select the **And** option if necessary.
   d. Select **is less than** in the bottom drop-down list, and enter **15000** in the box to the right. Click **OK.**
      i. Cars that cost between **$10,000** and **$15,000** are displayed.

VI. Display all of the records.

VII. Practice filtering other information in the table.

VIII. Close the workbook without saving.

Exercise 4-4	Use Advanced Filter

I. Open the **National Insurance Agency** workbook from the data disk.
II. Click the drop-down arrow on the **Name box**, and go to each range (**Criteria** and **MAINTABLE**), and then return to **cell A1.**
III. Apply Advanced Filter.
    a. In **cell F7**, enter **Lakeland.**
    b. Click **Data, Filter, Advanced Filter** on the **Menu bar.**
        i. This activates the **Advanced Filter** dialog box.
    c. Enter **MAINTABLE** in the **List range** field and **Criteria** in the **Criteria range** field.
        i. Doing so identifies the main table of employees as the list range and identifies the criteria section as the criteria range.
    d. Click **OK.**
        i. Lakeland employees are filtered.
IV. Delete **Lakeland** from the criteria section.
V. Show all of the records.
    a. Click **Data, Filter, Show All** on the **Menu bar.**
        i. All records display.
VI. Apply Advanced Filter.
    a. Enter **72,300** in **cell L7.**
    b. Click **Data, Filter, Advanced Filter** on the **Menu bar.**
    c. Enter **MAINTABLE** in the **List range** field and **Criteria** in the **Criteria range** field, and click **OK.**
        i. Two employees should be extracted.
VII. Show all of the records.
    a. Click **Data, Filter, Show All** on the **Menu bar.**
        i. All records display.
VIII. Practice using the advanced filter with multiple criteria.
IX. Close the workbook without saving.

Subtotals

To further summarize your information, use Excel's Subtotal feature. Excel's **Subtotal** feature allows you many options for grouping related records, and then calculating subtotals based on the grouped information. For example, in a large movie inventory worksheet, you can arrange the movies by category and then calculate subtotals, averages, and counts of the entire inventory.

Exercise 4-5	Use Subtotals

I. Open the **Super Duper Realty Company** workbook from the data disk, and save it as **Ex 4-5 Super Duper Realty Company** on your work disk.
II. Name **Range A7:A146 AGENT** and **Range K7:K146 PRICE.**
III. In **cells E1 and E2**, respectively, enter the functions =COUNTA(AGENT) and =AVERAGE(PRICE).
IV. Format the results in **cell E1** to **Comma Style with no decimal places.** Format the results in **cell E2** to **Currency Style with 2 decimal places.**
V. Sort the main table in ascending order by **Agent.**

VI. Apply Subtotals.
   a. With the cell cursor anywhere in the table, click **Data, Subtotals** on the **Menu bar.**
      i. This activates the **Subtotals** dialog box.
   b. Select **House Type** from the **At each change in** drop-down list, **Count** from the **Function** drop-down list, and place a check in the check box for the **House Type** choice in the **Add subtotal to** list. Click **OK.**
      i. The houses are grouped and counted by house type.
VII. Scroll down the worksheet and note the subtotals at each **House Type** change.
VIII. Scroll down so the last record is visible in the middle of the screen.
IX. To the left of the row headings, there are three columns of vertical subtotal indicator lines. The numbers **1, 2,** and **3** are at the top of the subtotal column. These indicate which subtotal level you are looking at. At the end of each line is a button with a minus sign. These are subtotal level markers at each change in house type.
X. Click the minus sign in the **Level 2** column to collapse the portion of the subtotal area.
   a. The minus sign turns into a plus sign.
XI. Scroll up the worksheet clicking each minus sign button, but do not click the minus sign button in the **Level 1** column.
   a. Each subtotal level collapses, hiding more and more records.
XII. You should now see a small summary table with a count of houses of different types with a series of expand buttons to the left of the row heading numbers.
XIII. Click the top expand button (the plus sign button) to the left of the row heading numbers, and then scroll down the worksheet clicking each plus sign button until the table is completely expanded.
XIV. Go to **cell A1.**
XV. Save, and close the workbook.

MULTIPLE WORKSHEETS

Until now, you have been working with only one worksheet at a time. As you already know, every workbook has three worksheets by default. In this section, you will learn how to create additional worksheets and add, delete, and copy sheets. You will also learn how to name the worksheets using the worksheet tabs, and create formulas that link the sheets together.

Navigate Worksheets

In a multi-worksheet environment, you have to change between active worksheets. The **active worksheet** is the sheet that you are currently working on. When a sheet is active, the sheet tab is white. Inactive worksheets have gray sheet tabs. To make a sheet active, simply click the corresponding sheet tab.

If there are numerous worksheets, you may have to use the worksheet navigation buttons to find the appropriate worksheet. The worksheet navigation buttons are the small triangles to the left of the sheet tabs. With them, you can scroll forward and backward through all of your sheet tabs.

Rename Worksheets

Renaming the worksheets makes working among worksheets easier. To change the name of a worksheet, double-click the sheet tab, type in the new name, and hit the **Enter** key. You can also right-click the sheet tab, and select **Rename** from the **Shortcut menu.** The worksheet name should be only one or two words that describe what kind of data is in the worksheet. Sheet names can consist of up to **31 characters** including spaces. It is usually wise to keep sheet names somewhat short. Slashes, question marks, and asterisks cannot be used in a sheet name.

Insert Worksheets

The amount of worksheets one workbook can have is limited only by the amount of RAM (random access memory) your computer has available. In other words, with as much RAM as computers have these days, the amount of worksheets you can have in one workbook is virtually unlimited. To insert a worksheet into your workbook, click **Insert, Worksheet** on the **Menu bar.** You can also right-click a sheet tab, and select **Insert** from the **Shortcut menu.**

Rearrange Worksheets

When you are working with many worksheets, you may want to rearrange their order. Rearranging worksheets is a simple process. Simply click and drag the worksheet tab to the new location, and release the mouse button. A small triangle follows the mouse pointer while you are dragging the sheet tab. The triangle specifies where the sheet will be dropped if you release the mouse button. You can also move a worksheet by right-clicking the sheet tab you wish to move and selecting **Move** from the **Shortcut menu.**

Copy Worksheets

In addition to inserting and rearranging, you can also copy worksheets. By copying a worksheet with the same basic information as the one you need, you'll drastically reduce data entry time. To copy a worksheet, right-click the sheet tab, and select **Move or Copy.** In the **Move or Copy** dialog box, click to insert a checkmark in the **Create a copy** check box. Indicate where the new sheet will be place in the **Before sheet** list box, and click the **OK** button. You can also access the **Move or Copy** dialog box by selecting **Edit, Move or Copy Sheet** on the **Menu bar.**

Delete Worksheets

Just as you can insert worksheets into a workbook, you may also delete worksheets. Deleting worksheets is somewhat dangerous because you may delete a sheet that supplies data to another sheet, causing error messages in the dependent worksheet. Another reason deleting sheets is dangerous is that you cannot undo a deleting sheets action. Once the sheet is deleted, you cannot bring it back. You would have to close the file without saving it, and then reopen it to bring back the sheet. Data loss may be possible if this method is used to recover a deleted sheet. The easiest way to delete a worksheet is to right-click the sheet tab you wish to delete, and then click **Delete** from the **Shortcut menu.** You are asked for confirmation in a dialog box before the sheet is deleted. You can delete multiple sheets by dragging to select the multiple sheet tabs and then clicking **Delete** on the **Shortcut menu.** To select multiple sheets that are contiguous such

as **Sheet1, Sheet2,** and **Sheet3,** click the first sheet and then hold the **Shift** key while you click the last sheet tab. All the sheet tabs in between are selected. To select noncontiguous sheets such as **Sheet1, Sheet4,** and **Sheet7,** click the first sheet and then hold the **Ctrl** key while you click the remaining sheet tabs.

Exercise 4-6	**Use Multiple Worksheets**

   I. Open a new workbook.
  II. Name a worksheet.
     a. Double-click the **Sheet1** tab at the bottom of the screen.
       i. The sheet tab name goes into **Edit** mode.
     b. Enter **Investments,** and press the **Enter** key.
       i. The sheet is named **Investments.**
     c. Right-click the **Sheet2** tab, and select **Rename** from the **Shortcut menu.**
       i. The sheet tab name goes into **Edit** mode.
     d. Enter **Amortization,** and click **OK.**
       i. **Sheet2** is named **Amortization.**
  III. Name **Sheet3 Pay Schedule.**
  IV. Create a new worksheet.
     a. Click **Insert, Worksheet** from the **Menu bar.**
       i. This inserts one worksheet.
   V. Name the new worksheet **Employees.**
  VI. Practice making each worksheet active by clicking its tab.
 VII. Move a worksheet.
     a. Click and drag the **Amortization** sheet tab until the small black triangle is to the left of the **Investment** sheet tab, and release the mouse button.
       i. **Amoritization** is now the first sheet tab.
VIII. Click and drag the other sheet tabs so they are in alphabetical order.
  IX. Delete a worksheet.
     a. Right-click the **Amortization** sheet tab, and select **Delete** from the **Shortcut menu.** Click **OK** to confirm the deletion.
   X. Copy a worksheet.
     a. Right-click the **Dallas Employees** worksheet, and select **Move or Copy** from the **Shortcut** menu.
     b. Click to place a checkmark in the **Make a copy** check box.
     c. Select **(move to end)** in the **Before sheet** list box, and click **OK.**
  XI. Name the newly inserted worksheet **Austin Employees.**
 XII. Delete the **Investment** worksheet.
XIII. Close the workbook without saving.

Group Worksheets

When creating multiple worksheets with the same general information, you have the option to group the worksheets. When you group worksheets, everything you type in the active sheet is also entered into the selected sheets. To group the worksheets, click the first sheet tab, and then hold the **Shift** key and click the other sheet tabs. All sheet tabs turn white and the word **Group** appears in brackets in the **Title bar.** Grouping worksheets is very handy when it comes to entering common data into multiple worksheets, but it is somewhat dangerous if you forget to