

Fast Start to Excel[®]

Volume 2



Up-skill yourself in
the **job Market**
by
Quickly Adding
Proficiency in Excel to
your resume

Easily learn how to perform sophisticated **calculations** and create **formulas** that **automatically calculate** answers .

Excel's data management capability allows you to manipulate lists of information such as names, addresses, inventory items, prices, etc.

Quickly create **charts**. Chart types include column, bar, line, pie, area, doughnut, radar, surface, and bubble.

Put yourself on the cutting edge by becoming **proficient** in the most widely used **spreadsheet** program in the world.

Frank Vickers

Fast Start to Excel

Volume 2

Discussion

Microsoft Excel is a software application that can be used as a spreadsheet, database, or graphing program.

The electronic spreadsheet portion of Excel allows you to perform sophisticated calculations and create formulas that automatically calculate answers. The advantage of using formulas is that, when data in the worksheet changes, all the formulas recalculate automatically. This feature assists you in developing budgets, forecasting models, creating sales plans, making financial projections, calculating inventories, generating banking statements, and basically working with any format involving numbers. In addition, the **AutoCalculate** feature provides you with instant answers, using functions such as **Sum**, **Count**, and **Average**.

Excel's data management capability allows you to manipulate lists of information such as names, addresses, inventory items, prices, etc. Excel can sort lists and select specific pieces of information based on specified conditions.

You can use information created in an Excel spreadsheet or database to create an Excel chart. Chart types include column, bar, line, pie, area, doughnut, radar, surface, and bubble. All charts can be formatted using styles provided by Excel.

You can get help on an Excel task or feature in many ways. You can type a question into the **Ask a Question** box on the menu bar to get help with a specific feature. Another method of obtaining help is to use the Office Assistant Help facility. The Office Assistant is context-sensitive, which means that help for the current task is only a mouse click away. The Office Assistant may also appear automatically on your screen if Excel detects that you need help completing the current task. In addition, you can search detailed Help indexes by category or keyword. Other help features include smart tags. Smart tags appear when you perform certain actions and provide a menu of choices for dealing with those tasks.

You can use the **Start** menu to start Excel. Once the program starts, a brief copyright screen appears, and then the application window opens.



The first time you open Excel after installation, the User Name dialog box may appear. You can enter your name and initials as necessary, and then select **OK**.

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CHAPTER 1 - WORKING WITH DATABASES

In this chapter, you will learn how to:

- Use a database
- Create a database
- Modify a database
- Sort records by multiple fields
- Use data validation
- Validate data using a list
- Create a custom error message
- Remove data validation
- Create subtotals in a list
- Remove subtotals from a list

USING A DATABASE


Discussion

A database is a collection of information arranged in such a way as to make it easy to access. For example, a telephone book is a static database arranged in alphabetical order; however, because it is static, you cannot rearrange the information. In the business world, you need the capability to manipulate a database. This capability is known as database management. The computer makes the concept of database management possible by enabling you to create, store, and manipulate a database.

Excel has built-in database management capabilities. You can treat a worksheet or portions of a worksheet as a database. Using an Excel database, you can enter, edit, locate, sort, and analyze information.

In Excel, you can define any list as a database, since a list is simply a range of cells made up of columns and rows. The columns contain the field data and the rows contain the record data. Additional rows can be inserted as records are added to the database. In Excel, any list can be used as a database. A valid list does not contain any blank columns or rows.

In addition to creating your own database, Excel can retrieve information from an external database. You can import information from database programs such as Microsoft Access, dBase, FoxPro, Paradox, and SQL Server. The **Microsoft Query** feature (which includes the Query Wizard) must be installed in order to perform this operation.

 You can also work with lists created in other Office 2002 programs by copying and pasting the lists into Excel.

CREATING A DATABASE

Discussion

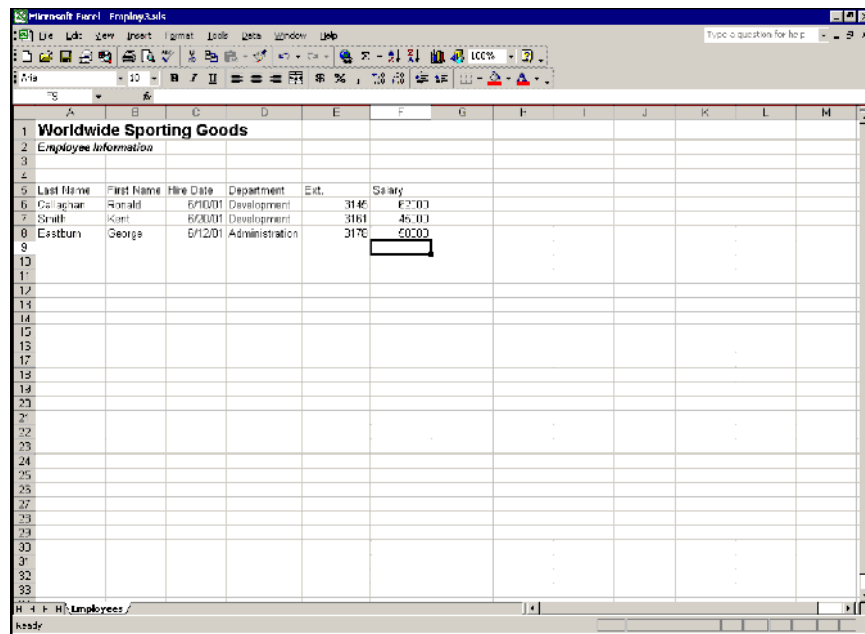
You can create an Excel database. Before creating a database, however, you must consider the specific information you want to collect (that is, the fields or types of information you want to track). You might, for example, need to track a client name, address, city, state, zip code, telephone number, invoice number, date of invoice, amount of invoice, and the sales representative's commission. You can create one field for each type of information.

A field occupies a single column of a database and contains a single piece of information in each record. For example, a **Salary** field might contain salary information for each employee record. You can enter text, numbers, formulas, dates, or functions into a field. A computed field contains formulas or functions. Excel uses the top row of the list (the column labels) as the field names.

A little planning can save hours of additional work at a later date. For example, to sort a database by last name, you must create two fields (one for the first name and one for the last name). You cannot enter the first and last names in a single field if you want to sort by last name.

Once you have entered the field names for a database, you can enter the records. Each row of a database contains one record. A record contains all the information related to one entry. For example, an employee record could contain the name, address, telephone number, and salary information of a single employee. Although each record contains all the fields in the database, you do not have to enter data into every field.

You may want to start with a small model of your database to test its design and usability. You can enter a few records and verify that you can store and retrieve the data as needed.



Creating a database

Step-by-Step

From the Student Data directory, open **EMPLOY3.XLS**.
Create a database.

<i>Steps</i>	<i>Practice Data</i>
1. Select the cell where you want to enter the first column label. <i>The cell is selected.</i>	Click cell A5
2. Type the desired column label. <i>The text appears in the cell and on the formula bar.</i>	Type <i>Last Name</i>

<i>Steps</i>	<i>Practice Data</i>
3. Press [Right] to move to the next cell in the row. <i>The cell pointer moves to the next cell in the row.</i>	Press [Right]
4. Enter additional database field labels as needed. <i>The field labels appear in the worksheet.</i>	Follow the instructions shown below the table to complete this step

Enter the following field labels:

Last Name	First Name	Hire Date	Department	Ext.	Salary
-----------	------------	-----------	------------	------	--------

After entering the field labels, enter the following data:

Last Name	First Name	Hire Date	Department	Ext.	Salary
Callaghan	Ronald	6/10/01	Development	3145	62000
Smith	Kent	6/20/01	Development	3161	45000
Eastburn	George	6/12/01	Administration	3178	50000

MODIFYING A DATABASE

Discussion

Maintaining a database involves modifying database objects. You can modify a database by adding and deleting records and fields.

New records can be added at the end of your database, or you can insert a new row in the database in order to add a record in a particular area. You can also delete records by deleting the row that contains the record. When you delete a row, Excel adjusts any database ranges as needed. If you simply clear the contents of the record, the blank row can cause problems with sorting and locating records.

After you have created a database, you may discover that you need to track additional information. You can insert columns into the database to create additional fields as needed. Conversely, you can delete fields you no longer need to track. Deleting unnecessary fields produces a more efficient database and faster sorts and queries.

A valid database list does not contain any blank columns or rows.

You can also modify a database by editing the information in the same way as you would edit any worksheet. You can change the information in any field by editing it on the formula bar or by typing over the old information in the cell. You can also copy information from one cell to another.



You can format a database using any of the Excel formatting features.



When you delete a row, all the information in that row is deleted across the entire worksheet. Before you delete a row, you should make sure that there is no information in the row you want to retain.

Step-by-Step

Modify a database.

<i>Steps</i>	<i>Practice Data</i>
1. Right-click the column or row you want to modify. <i>A shortcut menu appears.</i>	Right-click the column letter F
2. Select the Insert or Delete command to modify the column or row as desired. <i>The database is modified accordingly.</i>	Click I nsert

Type the field label **Status** in cell F5. Type a **2** in cell F6, a **4** in cell F7, and a **3** in cell F8.

Practice the Concept: Delete the **Ext.** field column from the database. Delete the **Smith** record by deleting row 7. Add a new record above the **Callaghan** record by inserting a new row 6. Close **EMPLOY3.XLS**.

SORTING RECORDS BY MULTIPLE FIELDS

Discussion

In Excel, you can arrange a list of records alphabetically or numerically (according to the contents of the column or row). Unless otherwise specified, Excel automatically sorts from top to bottom.

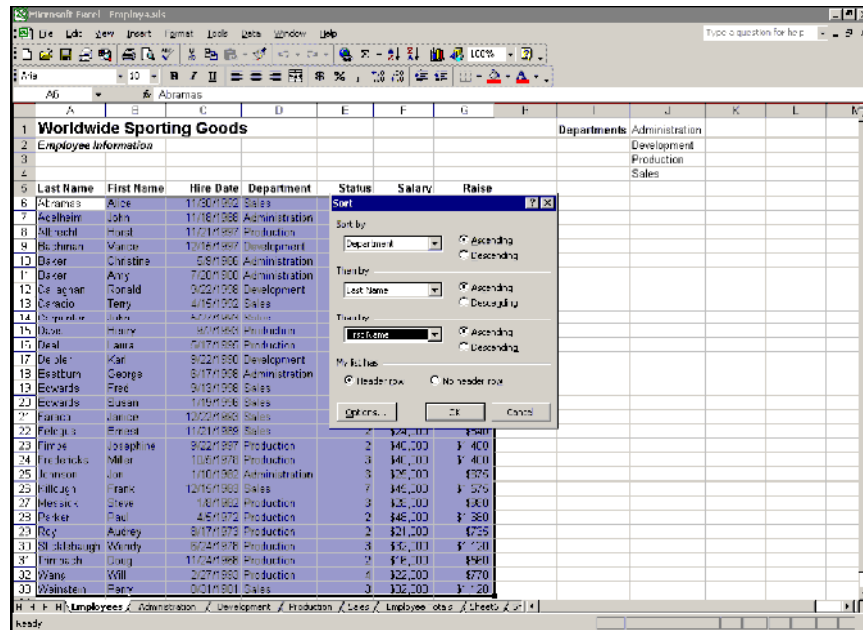
In order to sort records, you must select the sort keys. Sort keys define the column(s) by which you want to sort to place the records in a specific order. For example, if you want to arrange the database according to the information in the **Last Name** field, then the **Last Name** field is the primary sort key.

Frequently, many records contain the same information in the primary sort key field. For example, if you sort by the **Department** field, several employees may be in the same department. You can refine a search using a secondary sort key. To sort records by last name within a department, you can use

the **Department** field as the primary sort key and the **Last Name** field as a secondary sort key. In addition, you can add a third sort key (such as the **First Name** field).

You can sort in either ascending or descending order. By default, Excel performs an ascending sort in the following order: numbers, text, logical values, error values, and blanks.

If the top row of the list does not contain field labels, you should select the **No Header Row** option in the Sort dialog box. Excel then considers the top row in the range as data to be sorted, not as field labels.



Sorting records by multiple fields

▶ To reverse a sort, you can use the **Undo** feature immediately following the sort operation.

▶ You can sort on a single field by selecting a cell in the field and clicking the **Sort Ascending** or **Sort Descending** button on the **Standard** toolbar.

Step-by-Step

From the Student Data directory, open **EMPLOY4.XLS**.
Sort records by multiple fields.

<i>Steps</i>	<i>Practice Data</i>
1. Select any cell in the database. <i>The cell is selected.</i>	Click cell A6
2. Select the Data menu. <i>The Data menu appears.</i>	Click D ata
3. Select the Sort command. <i>The Sort dialog box opens.</i>	Click S ort...
4. Select the Sort by list. <i>The Sort by list appears.</i>	Click Sort by ▼
5. Select the field for the primary sort key. <i>The field name appears in the Sort by box.</i>	Click Department
6. Select the Ascending or Descending option as desired. <i>The desired option is selected.</i>	Click <input type="radio"/> A scending, if necessary
7. Select the upper Then by list. <i>The upper Then by list appears.</i>	Click upper Then by ▼
8. Select the field for the secondary sort key. <i>The field name appears in the upper Then by box.</i>	Click Last Name
9. Select the Ascending or Descending option as desired. <i>The desired option is selected.</i>	Click <input type="radio"/> A scending, if necessary
10. Select the lower Then by list. <i>The lower Then by list appears.</i>	Click lower Then by ▼
11. Select the field for the tertiary sort key. <i>The field name appears in the lower Then by box.</i>	Click First Name
12. Select the Ascending or Descending option as desired. <i>The desired option is selected.</i>	Click <input type="radio"/> A scending, if necessary
13. Select OK . <i>The Sort dialog box closes and the records are sorted according to the fields and orders selected.</i>	Click OK

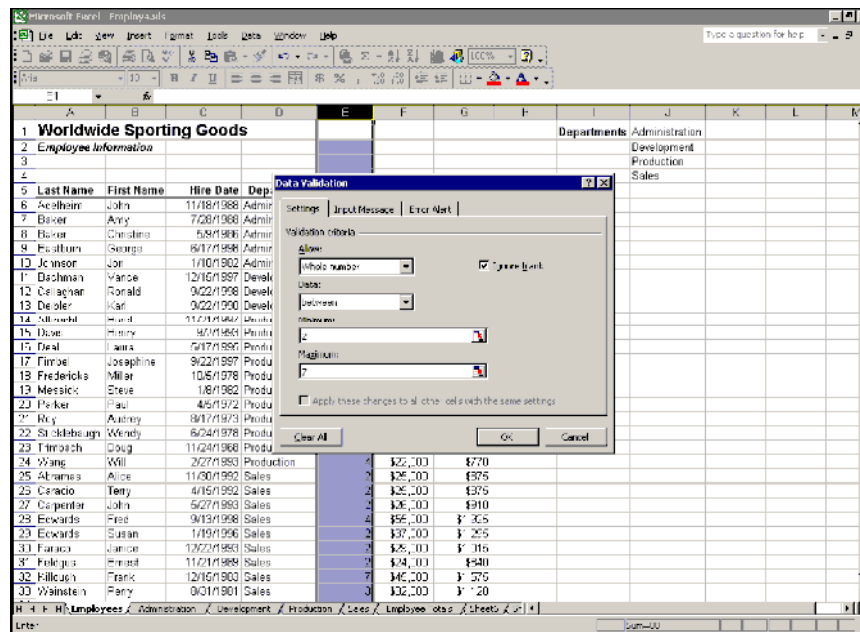
USING DATA VALIDATION

Discussion



Databases can contain incorrect information due to data entry errors. One method of controlling the accuracy of data entered is to place validation limits on the type of data to be entered and to decide whether or not blank entries are allowed.

Using data validation, you can restrict the type of data allowed in a cell and the minimum, maximum, or upper and lower limits for whole numbers, decimals, dates, or times. If the cell will contain text, you can set an upper and lower limit for the number of characters permitted.

When a user enters an invalid entry into a cell that contains data restrictions, Excel opens a message box, called an alert, which explains that the entry is not valid and only restricted values can be entered into this cell.



Using data validation

-  You can copy the data validation from one cell to another using the **Validation** option in the Paste Special dialog box.
-  Selecting **Custom** from the **Allow** list on the **Settings** page in the Data Validation dialog box allows you to enter or refer to a formula. The formula calculates to a true or false result, with true results being valid entries and false results being invalid entries.

Step-by-Step

Use data validation to restrict data entry.

<i>Steps</i>	<i>Practice Data</i>
1. Select the cells with the data entry you want to restrict. <i>The cells are selected.</i>	Click column letter E
2. Select the Data menu. <i>The Data menu appears.</i>	Click D ata
3. Select the Validation command. <i>The Data Validation dialog box opens.</i>	Click V alidation...
4. Select the Settings tab. <i>The Settings page appears.</i>	Click the Settings tab, if necessary
5. Select the Allow list. <i>A list of options appears.</i>	Click A llow <input type="button" value="v"/>
6. Select the desired option. <i>The desired option appears in the Allow box.</i>	Click Whole number
7. Select the Data list. <i>A list of options appears.</i>	Click D ata <input type="button" value="v"/>
8. Select the desired option. <i>The desired option appears in the Data box.</i>	Click between
9. Select the box for the restriction you want to set. <i>The insertion point appears in the appropriate box.</i>	Click in the M inimum box
10. Type the restriction. <i>The text appears in the appropriate box.</i>	Type 2
11. Select additional boxes as necessary. <i>The insertion point appears in the boxes.</i>	Click in the M aximum box
12. Type additional restrictions. <i>The restrictions appear in the boxes.</i>	Type 7
13. Select OK . <i>The Data Validation dialog box closes and the data validation is applied to the selected cells.</i>	Click OK

Type **8** in cell E6 and press [**Enter**]. A Microsoft Excel message box opens, informing you that your entry is not valid. Select **Cancel** to close the message box. Type **3** and press [**Enter**].

VALIDATING DATA USING A LIST



Discussion


You can restrict cell entry to specific values in a list. The list value can be text or numbers. For example, you can specify the four departments that can be entered into a **Department** field.

When you restrict data entry in a cell to a specified list, a drop-down arrow appears when the user selects the cell. The user can either select a valid entry from the list or type a valid entry. Entries that do not appear on the list are considered invalid.

Step-by-Step

Validate data using a list.

<i>Steps</i>	<i>Practice Data</i>
1. Select the cells with the data entry you want to restrict to a list. <i>The cells are selected.</i>	Click column letter D
2. Select the Data menu. <i>The Data menu appears.</i>	Click D ata
3. Select the Validation command. <i>The Data Validation dialog box opens.</i>	Click V alidation...
4. Select the Settings tab. <i>The Settings page appears.</i>	Click the S ettings tab, if necessary
5. Select the Allow list. <i>A list of options appears.</i>	Click A llow 
6. Select List . <i>List appears in the Allow box.</i>	Click L ist
7. Click the Collapse Dialog button in the Source box. <i>The Data Validation dialog box collapses.</i>	Click  in the S ource box
8. Drag to select the list range. <i>A blinking marquee appears around the selected range and the address appears in the Data Validation dialog box.</i>	Scroll right to column J, if necessary, and drag J1:J4

<i>Steps</i>	<i>Practice Data</i>
9. Click the Expand Dialog button in the Source box. <i>The Data Validation dialog box expands.</i>	Click  in the Data Validation dialog
10. Select OK . <i>The Data Validation dialog box closes and the data validation is applied to the selected cells.</i>	Click OK

Scroll, if necessary, and select cell D6. Click the drop-down arrow and select **Production** from the list. Type **Marketing** into cell D6 and press **[Enter]**. A Microsoft Excel message box opens, informing you that your entry is not valid. Select **Cancel** to close the message box.

CREATING A CUSTOM ERROR MESSAGE

Discussion

When a user enters an invalid entry into a cell with restricted data entry, Excel opens a message box, informing the user that the entry is invalid. You can create a custom message that appears in the message box instead of the default message.

Excel includes three styles of alert message boxes: **Stop**, **Warning**, and **Information**. Each style provides different buttons in the message box and, more importantly, different restrictions. The default error alert style is **Stop**, which does not allow invalid data to be entered into cells. Both the **Warning** and **Information** styles allow invalid data to be entered.




You can enable the **Apply these changes to all other cells with the same settings** option on the **Settings** page in the Data Validation dialog box. This option applies any changes you have made to all cells that contain the same data validation as the changed cells.



You can use the **Input Message** page in the Data Validation dialog box to create a message that appears in a ScreenTip when the user selects a cell. This message can provide information for the user about the type of data to be entered.

Step-by-Step

Create a custom error message.

<i>Steps</i>	<i>Practice Data</i>
1. Select the cells with the error message you want to customize. <i>The cells are selected.</i>	Click column letter E
2. Select the Data menu. <i>The Data menu appears.</i>	Click <u>D</u>ata
3. Select the Validation command. <i>The Data Validation dialog box opens.</i>	Click <u>V</u>alidation...
4. Select the Error Alert tab. <i>The Error Alert page appears.</i>	Click the Error Alert tab
5. Select the Style list. <i>A list of styles appears.</i>	Click <u>S</u>tyl 
6. Select the desired style. <i>The desired style appears in the Style box.</i>	Click Warning
7. Select the Title box. <i>The insertion point appears in the Title box.</i>	Click in the <u>T</u>itle box
8. Type the desired title. <i>The text appears in the Title box.</i>	Type <i>Status Error</i>
9. Select the Error message box. <i>The insertion point appears in the Error message box.</i>	Click in the <u>E</u>rror message box
10. Type the desired error message. <i>The text appears in the Error message box.</i>	Type <i>Only entries between 2 and 7 accepted!</i>
11. Select OK . <i>The Data Validation dialog box closes and the error message is saved.</i>	Click OK

Type **8** in cell E6 and press [**Enter**]. A Microsoft Excel warning box opens with your custom message. Select **Yes** to enter your text and close the warning box.

REMOVING DATA VALIDATION

Discussion

You can remove all the restrictions on data entry in a cell by clearing the data validation from the cell. Removing data validation allows any entry to be entered in a cell.



Selecting the **Clear All** button on any page in the Data Validation dialog box clears the restrictions on all the pages for the selected range.

Step-by-Step

Remove data validation.

<i>Steps</i>	<i>Practice Data</i>
1. Select the cells with the data validation you want to remove. <i>The cells are selected.</i>	Click column letter D
2. Select the Data menu. <i>The Data menu appears.</i>	Click D ata
3. Select the Validation command. <i>The Data Validation dialog box opens.</i>	Click V alidation...
4. Select Clear All . <i>The restrictions are cleared on all pages in the Data Validation dialog box.</i>	Click C lear All
5. Select OK . <i>The Data Validation dialog box closes and the data validation is removed from the selected cells.</i>	Click O K

Click in any cell to deselect the range.

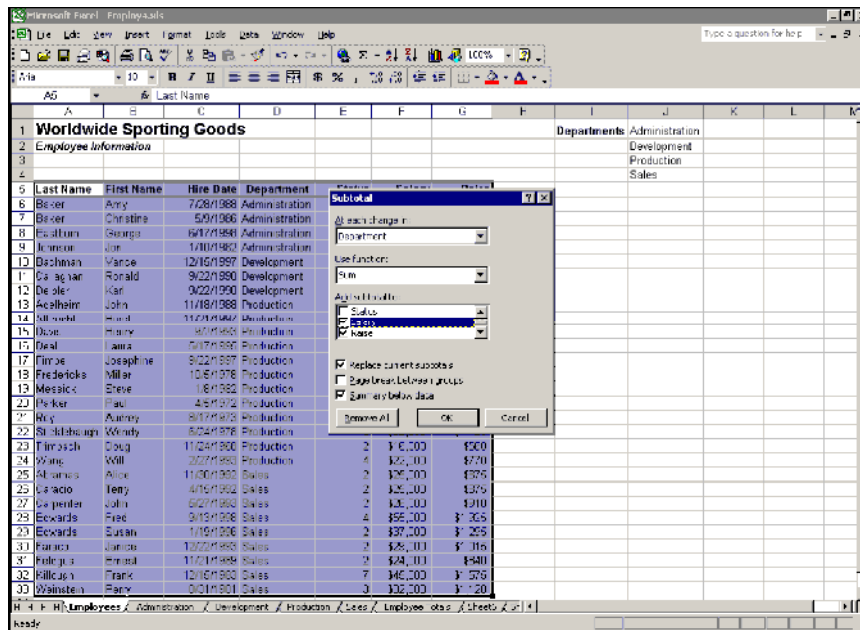
CREATING SUBTOTALS IN A LIST

Discussion


You can create subtotals for lists that are grouped. When a database is sorted by the values in a field, records containing identical values are grouped together. Therefore, when you sort a list by department, all records from the same department, such as the sales department, are grouped together and appear consecutively in the list.


Once a list is grouped, you can calculate the subtotals of fields. For example, summing the salaries by departments would provide the salary subtotals for each department: administrative, development, production, and sales. Besides the SUM function, other functions can be used for subtotal calculations, including COUNT, AVERAGE, MIN, and MAX. Multiple fields can be subtotaled within a group.

When a list is subtotaled, Excel inserts a summary row under each group with the group name and resulting subtotals, and a final grand total at the bottom of the list. In addition, outlining is automatically applied to the list. Subtotaled groups appear with outline symbols. Using the symbols, you can display or hide the group details.



Creating subtotals in a list






 You can calculate different functions for the same group. First, create the subtotals for the first function. Then, reopen the Subtotals dialog box, select the second function and the fields you want to calculate, and deselect the **Replace current subtotals** option.

 A list must be sorted first by the same field in which you want to report grouped subtotals.

Step-by-Step

Create subtotals in a list.

<i>Steps</i>	<i>Practice Data</i>
1. Select a cell in the column containing the field you want to group. <i>The cell is selected.</i>	Click cell D6

Steps	Practice Data
2. Click the Sort Ascending button on the Standard toolbar. <i>The list is sorted in ascending order based on the entries in the selected column.</i>	Click 
3. Select the Data menu. <i>The Data menu appears.</i>	Click D ata
4. Select the Subtotals command. <i>The Subtotal dialog box opens.</i>	Click S ubtotals...
5. Select the At each change in list. <i>A list of fields appears.</i>	Click A t each change in 
6. Select the same field in which the list is sorted. <i>The field name appears in the At each change in box.</i>	Click D epartment
7. Select the Use function list. <i>A list of functions appears.</i>	Click U se function 
8. Select the desired function. <i>The function appears in the Use function box.</i>	Click S um, if necessary
9. Select the field you want to calculate in the Add subtotal to list box. <i>The desired field is selected.</i>	Click  S alary
10. Select or deselect additional fields as desired. <i>The fields are selected or deselected.</i>	Click  R aise, if necessary
11. Select OK . <i>The Subtotal dialog box closes, outlining is applied to the list, and subtotals appear for each group.</i>	Click O K

Scroll to the bottom of the list to view the **Grand Total** row. Scroll back to the top of the worksheet.

Select the level 2 outline symbol to collapse the outline details. Click the show detail outline symbol next to row 27 to expand the **Production** group. Display all the details by selecting the level 3 outline symbol.

REMOVING SUBTOTALS FROM A LIST

Discussion

You can remove the subtotals from a list when you no longer need the results. Removing the subtotals also removes the outlining and grand total information.

Step-by-Step

Remove subtotals from a list.

<i>Steps</i>	<i>Practice Data</i>
1. Select a cell in the list containing the subtotals you want to remove. <i>The cell is selected.</i>	Click cell A6, if necessary
2. Select the Data menu. <i>The Data menu appears.</i>	Click <u>D</u>ata
3. Select the Subtotals command. <i>The Subtotal dialog box opens.</i>	Click <u>S</u>ubtotals...
4. Select Remove All . <i>The Subtotals dialog box closes and the subtotals and outlining are removed from the list.</i>	Click <u>R</u>emove All

Close **EMPLOY4.XLS**.

EXERCISE

WORKING WITH DATABASES

Task

Work with databases.

1. Open **Person4** and display the **PartTime** worksheet, if necessary.
2. Create field labels in row 5 as shown in the following table:

Cell	Field label
A5	LastN
B5	FirstN
C5	Status

3. Add the following three records to the database:

Field	Field Data		
Last Name	Barnes	Jefferson	Stevens
First Name	Kelly	Althea	Robert
Status	4	2	2

4. Insert the following new record in the database above the Robert Stevens record:

Field	Field Data
Last Name	Davis
First Name	Mary
Status	3

5. Insert a new field before the **Status** field and label it **Department**.
6. Select the **Employees** worksheet.
7. Sort the records by the **Status** field and then by the **Department** field within each status.
8. Create subtotals to sum the salaries by the **Status** field.

	Last Name	First Name	ID Number	Department	Birthdate	Status	Salary
6	Aceffheim	John	4862	Administration	6/10/1975	2	\$23,000
7	Callaghan	Ronald	3151	Development	5/21/1945	2	\$52,000
8	Dowler	Kurt	3874	Development	8/28/1972	2	\$74,000
9	Altshuld	Harold	8800	Production	11/2/1948	2	\$41,000
10	Davis	Henry	7302	Production	10/6/1951	2	\$20,000
11	Deal	Laura	2736	Production	4/15/1956	2	\$30,000
12	Finnel	Josephine	8403	Production	6/10/1955	2	\$40,000
13	Perker	Paul	7364	Production	8/6/1954	2	\$48,000
14	Moxy	Rudolf	4774	Production	9/20/1963	1	\$28,000
15	Trumbach	Donny	9884	Production	6/1/1949	2	\$15,000
16	Alvarez	Alisa	1921	Sales	04/19/95	2	\$21,000
17	Carroll	Terry	3083	Sales	06/18/72	2	\$25,000
18	Cayanan	John	1788	Sales	2/12/1975	2	\$25,000
19	Ewards	Susan	2583	Sales	1/25/1990	2	\$37,000
20	Fasaco	Jenice	7562	Sales	6/16/1956	2	\$29,000
21	Fedigas	Ernest	8074	Sales	5/28/1974	2	\$24,000
22				2 Total			\$493,000
23	Eastburn	George	8493	Administration	12/22/1951	2	\$50,000
24	Jackson	Jon	1083	Administration	6/21/1966	2	\$25,000
25	Fredericks	Miller	3403	Production	2/2/1990	2	\$40,000
26	Messick	Steve	6271	Production	1/1/1956	2	\$23,000
27	St. Akabaugh	Wendy	2384	Production	6/15/1996	2	\$32,000
28	Weinstein	Perry	8474	Sales	2/12/1971	2	\$32,000
29				3 Total			\$207,000
30	Baker	Amy	2634	Administration	8/11/1946	4	\$19,000
31	Baker	Chester	4473	Administration	3/6/1962	4	\$22,000
32	Wang	Will	9409	Production	6/22/1976	4	\$22,000
33	Edwards	Fred	0402	Sales	6/12/1956	4	\$55,000

9. Remove the subtotals.
10. Create validation limits on the data in the **Birthdate** field. Limit the data entry to dates between 1/1/1940 and 1/1/1990.
11. Create a **Warning** error alert with the title **Date Limit Error** and the message **Recheck the date. Select Yes to enter the date or No to enter another date!**
12. Enter the date **6/10/95** in cell E6. Select **No** and change the date entry to **6/10/65**.
13. Clear all data validation from the **Birthdate** field.
14. Close the workbook without saving it.