Excel 2003 Database for Windows

Course Description

Learn how to set up a database and how to use the data commands to manipulate the information.

Intended Audience

Anyone who has a need to organize and manage large amounts of data and to easily retrieve the data.

Database Definition

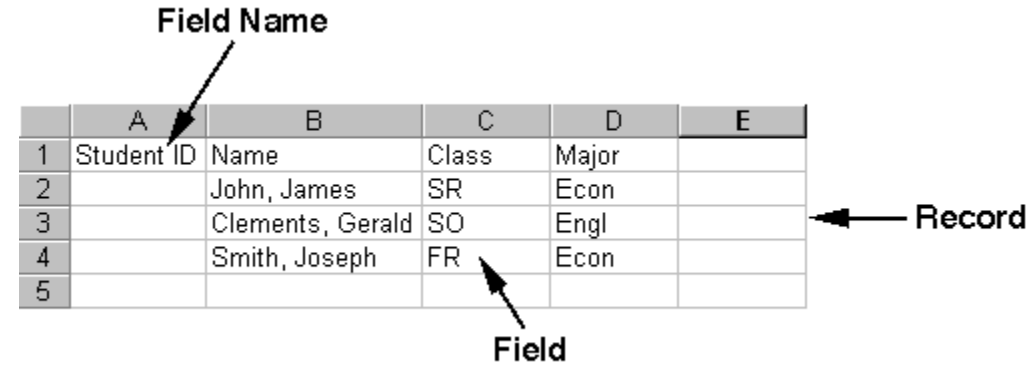
A database is a computerized record-keeping system. It is a tool for organizing, managing, and retrieving information. Its overall purpose is to maintain information and to make that information available on demand. The information can be anything that is of significance to an individual or organization.

A database can be compared to a filing cabinet. A filing cabinet contains files of information stored in a certain sequence. Files in a filing cabinet are called records in a database. Specific information in a record is called a field. A group of fields make up a record and a group of records make up a database. A row of entries is recognized as a record. The individual cells by column are fields. Each column may contain only one specific type of information for all the records.

Consistency with data entry is important. Information such as dates, abbreviations, etc. should be consistent.

At a minimum, a database is a cell range consisting of one or more columns and at least two rows. The first row of the database contains field names and the following rows contain records. Usually a record consists of the name of some item (student, employee, equipment, etc.) and additional data pertaining to the item.

Database Parts



Field names. The first row labels are referred to as field names that identify the contents of each column. The field names are required. No two field names can be the same. Field names must be text. If a number is used as a field name it must be formatted as text. It is recommended that you keep field names short. Keeping the names short will allow you to view more of the database in one window.

Fields. Each column in a database is a separate field and each of the cells in a column is a field. Fields can contain text, numbers, dates or formula or a field can be blank. Break your information down into as small of fields as necessary to perform retrieval and sort functions. For example, if you want to sort or retrieve based on zip codes, make zip code a separate field from the city and state fields.

Records. A record is a single row in a database. Each record contains the same type of data as all other records in the database.

The **data commands** are used for database management. Until you use the commands to process a database, it is just a collection of cell entries like a regular worksheet. In creating a database, you can use all of the Excel commands you use to create, revise, format and print a worksheet.

Creating a Database

- Click on the Start button; choose All Programs> Microsoft Office> Microsoft Office Excel 2003

- Type the database shown on the next page

	A	B	C	D	E	F
1	Student ID	Name	Class	Major	GPA	
2		John, James	SR	Econ	3.45	
3		Clements, Gerald	SO	Engl	4.00	
4		Smith, Joseph	FR	Econ	3.75	
5		Anderson, Sue	JR	Hist	3.95	
6		Smyth, Amy	SO	Math	2.33	
7		Clawson, Barbara	FR	Math	3.25	
8		Johnson, Tim	SO	Math	3.75	
9		Thomas, Connie	FR	Hist	3.75	
10		Rex, Brenda	SR	Econ	2.50	
11		Johnsen, Robert	JR	Engl	2.50	
12		Smith, Joseph	FR	Econ	3.75	

As you can see the database file was created just as you create a worksheet.

- Move to cell E2 and select E2 through E12
- To format our GPA column to two decimal places, choose Style under the Format menu; change the Style Name from Normal to Comma and click **OK**
- Save your worksheet as **class.xls**

Note: You can also use the Comma tool on the Formatting toolbar. 

Editing a Database

A database is edited the same way as a worksheet. You can add or delete rows and columns, format cell entries, copy data, etc.

It is possible to add a row at the end of other entries, even in the middle of a current database. To add a row, click on a cell in the place where you would like the row(s) added. You do not need to click on any particular column. For example, we will add a record between Rows 8 and 9.

- Click any cell in Row 9
- Select the Rows command under the Insert menu
- Add the following record

  Sowards, Susan JR Biol 4

To delete rows, you need to select the entire row(s). Otherwise, Excel will simply delete particular cells, move other cells to fill in the space, and your records will be misaligned.

- Highlight the entire first record containing *Smith, Joseph* by clicking on the Row number

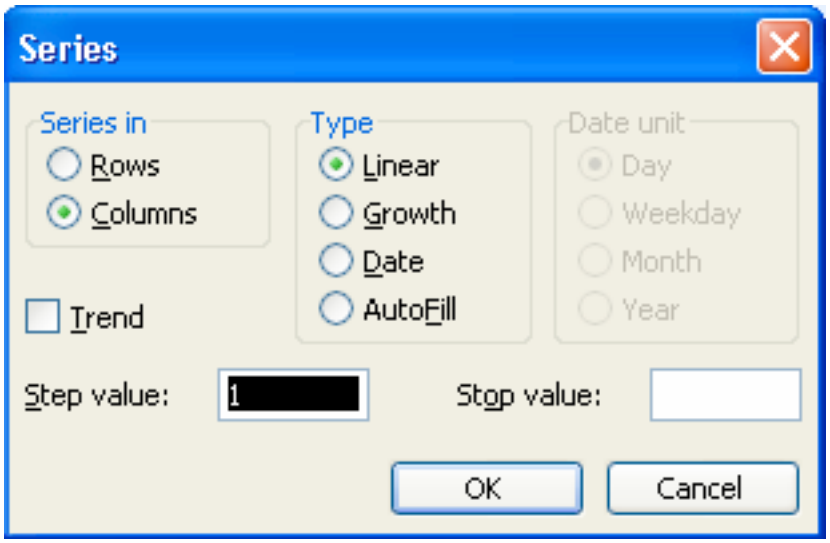
- Choose Edit> Delete

We do not need to restore the record since it is a duplicate, but if you did, you would choose Edit> Undo.

Data Series

The Data Series command is used to fill a range with a sequence of numbers in ascending or descending order with a specified increment or decrement. Using the example database, we will assign numbers to each record.

- Move to cell A2 and type *1* and press <Enter>
- Select cells A2 through A12
- Choose Edit> Fill> Series



- In the Series dialog box make sure the Step Value is 1 and then click the **OK** button
- Click anywhere to deselect

One reason for numbering the records is that if you sort the database and then want to restore it to its original order, you can use the numbers to sort on.

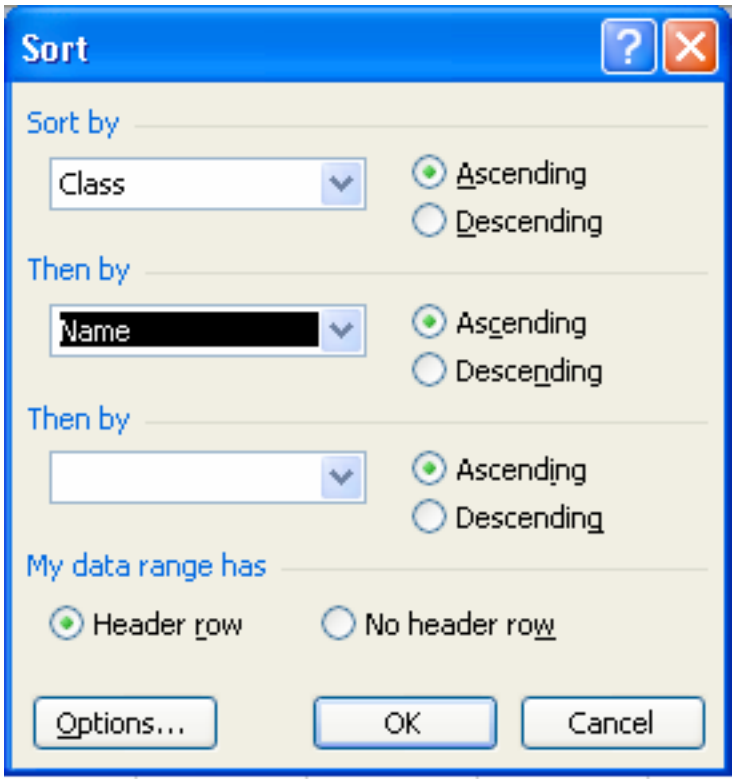
The Data Series command can be used with any type of worksheet; not just a database.

Data Sort

You may want to change the order of your database records. You can sort the list of students in our example database alphabetically by name, class or major, or numerically sort the GPA in ascending or descending order.

We will first sort the records alphabetically by class and then the student names alphabetically within the class.

- Choose the range to sort: cells A1 through E12
- Choose Data> Sort



- In the first “Sort by” option box, choose Class
- In the “Then by” option box, choose Name
- Click the **OK** button

You can use the Undo Sort command on the Edit menu to immediately restore your database to its original order or you can do it by sorting on the Student ID field.

- Restore your database to its original order
- Click anywhere to deselect

You can sort on more than three field names by sorting two or more times. Since the most recent sort takes precedence, the first three field names should be the least important fields. Of those three fields, use the most important as the first field name, the next most important as the second field, and the least important as the third field. Then sort using the next three field names, again using the most important of the three as the first field.

Data Form

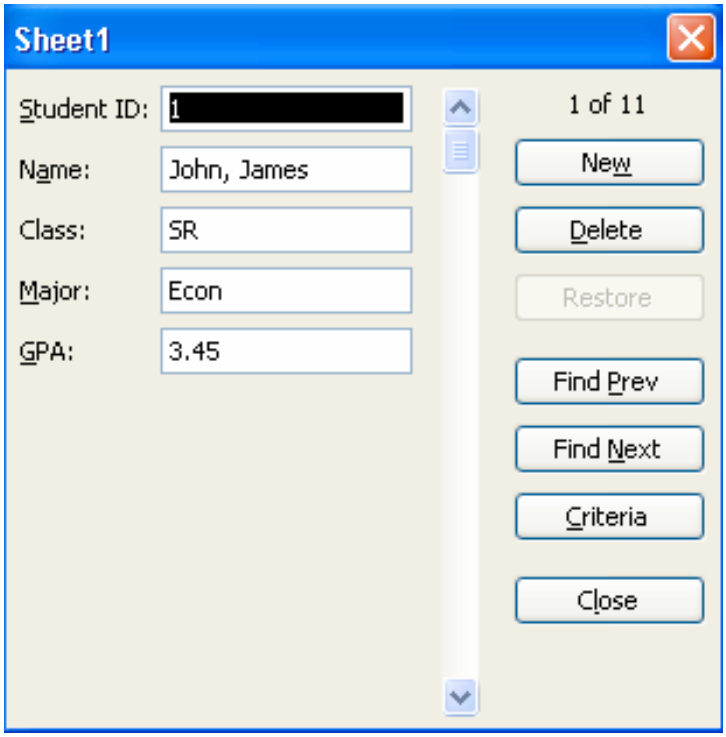
A data form is a dialog box that provides an alternative way to view, change, add and delete records in your database. You can view one complete record at a time. The data form can display only a maximum of 25 fields and you cannot scroll through the fields as you can when viewing in the worksheet format.

The data form can be used to initially set up a database and then enter your records rather than typing in the records in the usual worksheet format.

When using the data form method to set up your database, type your field names, select the field names and then use the Form command on the Data menu.

We will insert another record in our database using the data form. Make sure a cell is selected in your current database.

- Choose Data> Form



Notice in the upper right corner the first record is listed in addition to the number of records in your database.

- Click the **New** button and type the following information in the appropriate fields:
  Note: Do not press <Enter> after each field, press <Tab> instead

  12 Allen, Sandy SR Engl 3.5

- Press <Enter> and the record appears in the database

  Use the **Find Prev** and the **Find Next** buttons to move between the records in the Data Form.

Deleting Records

The **Delete** button will remove the displayed record. Excel will prompt with a dialog box giving you the opportunity to cancel.

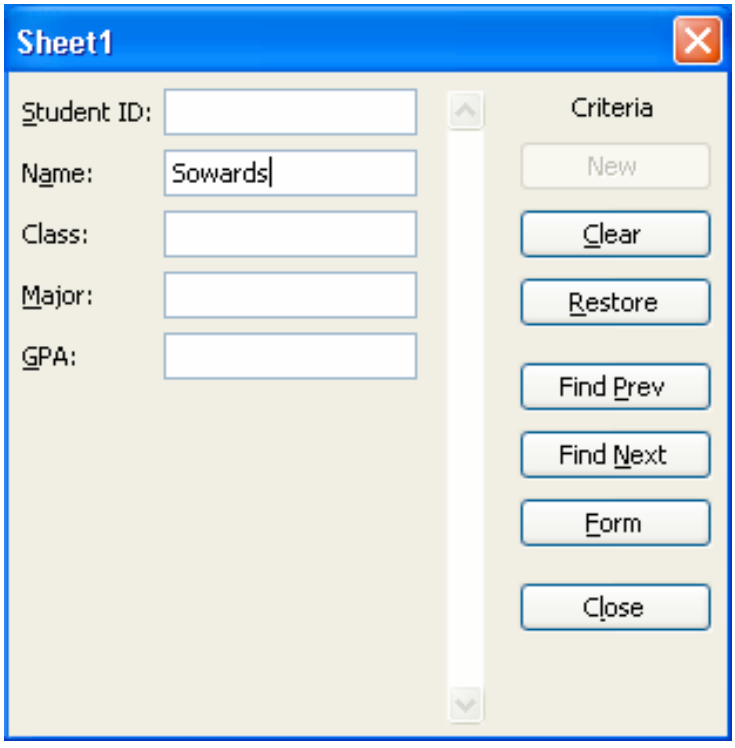
Finding Records Using the Data Form

The data form can be used to find records quickly in your database.

- Click on the **Criteria** button

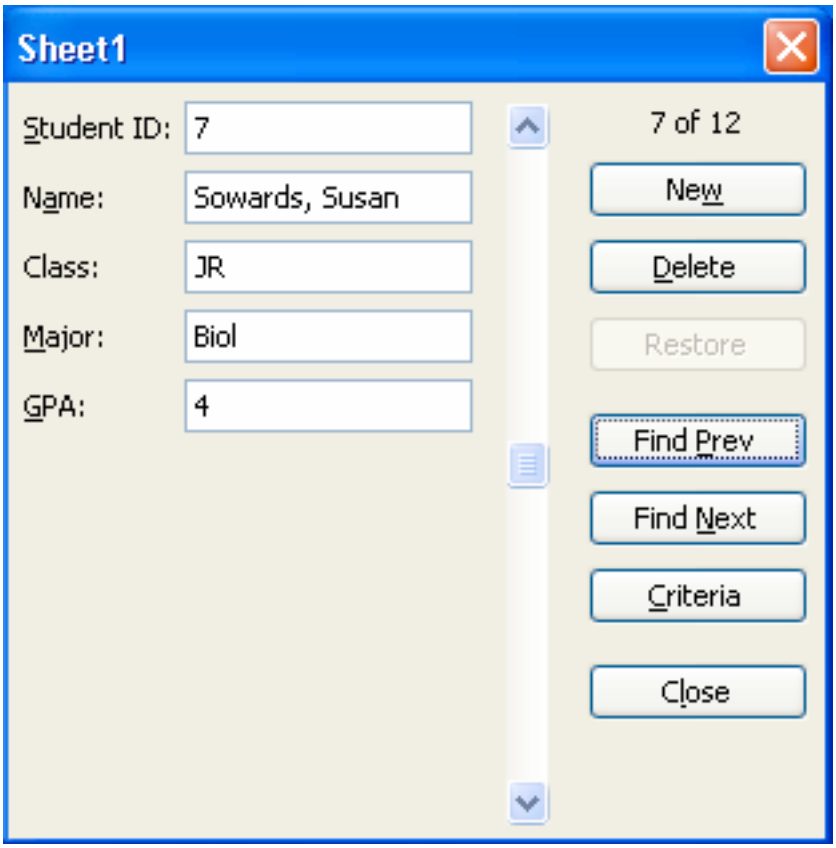
  The record number indicator changes to the word 'Criteria', the Criteria button changes to Form and the Delete button changes to Clear. The Clear button clears all existing criteria.

- In the Name field type in *Sowards*



  The Find Next button searches forward in the database and the Find Prev button searches backward in the database.

- Click the **Find Prev** button - depending on where you are in the records, you may need to click the **Find Next** button



Changing Criteria

- Click the **Criteria** button
- Delete Sowards in the Name field
- Enter *SR* for the Class field
- Select **Find Prev** or **Find Next** to find matching records

Searching For Multiple Criteria

- Click on the **Criteria** button
- Enter *FR* in the Class field
- In the Major field, type *Econ*

- Click **Find Prev** or **Find Next**

Searching for Values

If you want to search for exact values, enter the value as the criterion. The format does not need to match the format of the value in the database. For example, $35 matches 35 or 35.00. You can also search for values that meet a condition, such as all entries greater than 3.75 for the GPA. We will find all GPAs greater than 3.75.

- Click on the **Criteria** button
- Clear the criterion previously entered
- In the GPA field, type *>3.75*
- Click on **Find Prev** or **Find Next**

Editing Records During a Find

When using the Form, you can edit the records you find. Move to the record you want to edit, select the appropriate cell and make your corrections.

- Move to John, James
- Select the Class field and change to a *SO*
- Move to the Major field
- Change the Major to *Engl*
- Click the **Close** button

Filtering a List Using AutoFilter

AutoFilter enables you to display a subset of your list according to different criteria.

- Choose Data> Filter> AutoFilter

  You should see drop-down arrows next to each column label. The item you select in a column drop-down list is called the filter criterion.

- To make a filtered list of all Economics majors, choose *Econ* in the drop-down box next to the Major column heading

	A	B	C	D	E	F
1	Student	Name	Class	Major	GPA	
10	9	Rex, Brenda	SR	Econ	2.50	
12	11	Smith, Joseph	FR	Econ	3.75	
14						

You can filter your list further by choosing another criterion from another column.

- To make a filtered list of all senior Economics majors, click on the drop-down box next to the Class column heading and choose **SR**

- To view all of the records again, click on the Major drop-down box again, choose (All)

- Click on the Class drop-down box and choose (All)

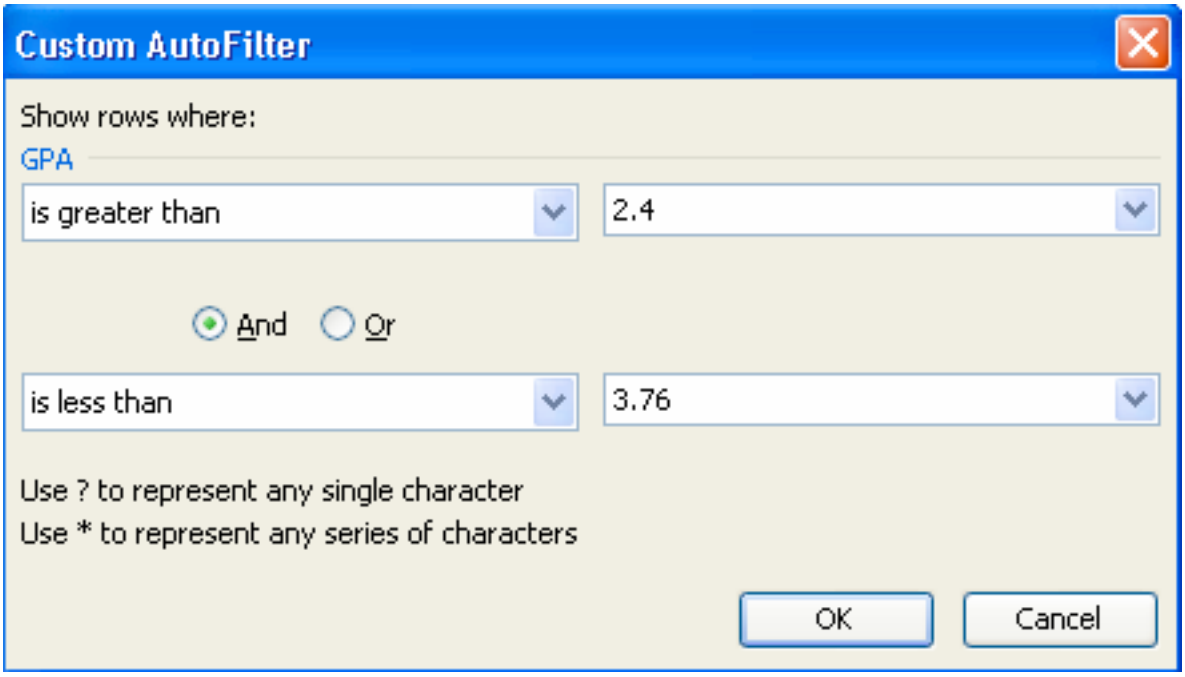
Using Custom Criteria with AutoFilter

With AutoFilter, you can specify *custom criteria* for each column. This is useful when you want to display rows that contain either of two items in a text field, or to display rows that contain values that fall within a range of values.

- To make a filtered list of all students with GPAs between 2.5 and 3.75, click on the drop-down box next to the GPA column heading and select (Custom...)

- Use the drop-down boxes to choose the comparison operators (equals, does not equal, is greater than, etc.)

- You can either type in the numerical values, or you can use the drop-down boxes to click and choose among values that appear in the database



- Click the **OK** button
- Again, to show all of the records, choose (All) in the GPA drop-down box

Extracting Records

Extracting copies records matching your criteria from your database and lists them in a separate area of the worksheet. The easiest way to do this is simply obtain the subset of information through AutoFilter, and then copy it into another location on the worksheet using the copy and paste feature.

- Use AutoFilter to obtain a subset of all the economics majors
- Highlight this block of data
- Choose Edit> Copy

  There should be a “marching ants” border around each record selected while using AutoFilter.

  You can show all of the records by selecting (All) in the drop-down box next to Major.
- Click on a cell below the rest of the records
- Select Edit> Paste

- To exit the AutoFilter mode, choose Data> Filter> AutoFilter

Linking Files

You can link data from one cell in a worksheet or database to another file. This saves you from having to manually update information in two different files. For example, our database file contains all students enrolled at Macalester. We will make another file containing just the workstudy students. Every time a workstudy student changes departments or the dollar amount changes in the workstudy file, it will automatically update in our student database.

- Open a new worksheet
- Type the following information

	A	B	C	D
1	Name	Dept	Amount	
2	Anderson, Sue	Hist	1700	
3	Johnson, Tim	Math	1500	
4	Rex, Brenda	Econ	2000	

- Save your workbook as *workstudy*
- Under the Window menu, choose your *class* workbook
- Add two column labels: *Workstudy Dept* in F1 and *Amount* in G1

The formula to set up links is: **=[name of workbook]name of worksheet!cell or range**. For example to link Sue's department entry (stored in cell B2) in the *workstudy* database to the *class* database, the formula would be **=[workstudy.xls]Sheet1!B2**. But you don't have to type in the formulas. To link the three workstudy students with the *class* database, do the following:

- Select cell F4 and type an = sign
- Using the Window menu switch to the *workstudy* workbook and click on the cell you want to link -- in this case B2
- Press the <Enter> key

  You are immediately switched back to the *class* workbook -- notice the formula is filled in.

Finish the link for Sue for the salary (put it in G4) and then continue setting up the links for Tim (B3..C3) and Brenda (B4..C4). You can just type the formulas in if you don't want to switch back and forth between the worksheets.

- In the *workstudy* workbook, change one of the salaries and one of the departments
- Switch back to *class* -- notice the entries are updated

Admin\citstaff\instruct\windows\excel 2003 database
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