MICROSOFT ACCESS XP

Instructional Technology Center

Microsoft Access XP

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Introduction

- **What is a database?**

  A collection of related information organized so that analysis and reporting are easy-to-handle functions.

- **When should you use a database?**

  When there is a need to store and manipulate data to provide information.

- **How is a database different from word-processors and spreadsheets?**

Word processors	Work with text, graphics, publishing on paper
Spreadsheets	Numbers, complex tables (multilevel headings), scenarios, data modeling, statistical analysis
Database	Use the same data for many purposes; store non-quantitative information about a subject and report it in a variety of ways; see and work with various subsets of information; track a process or project

Kinds of databases

Flat

- Information in a single list
- Only one table contains the information
- Easily sorted and examined
- Example: Telephone book (Last name, first name, address, phone number)

Relational

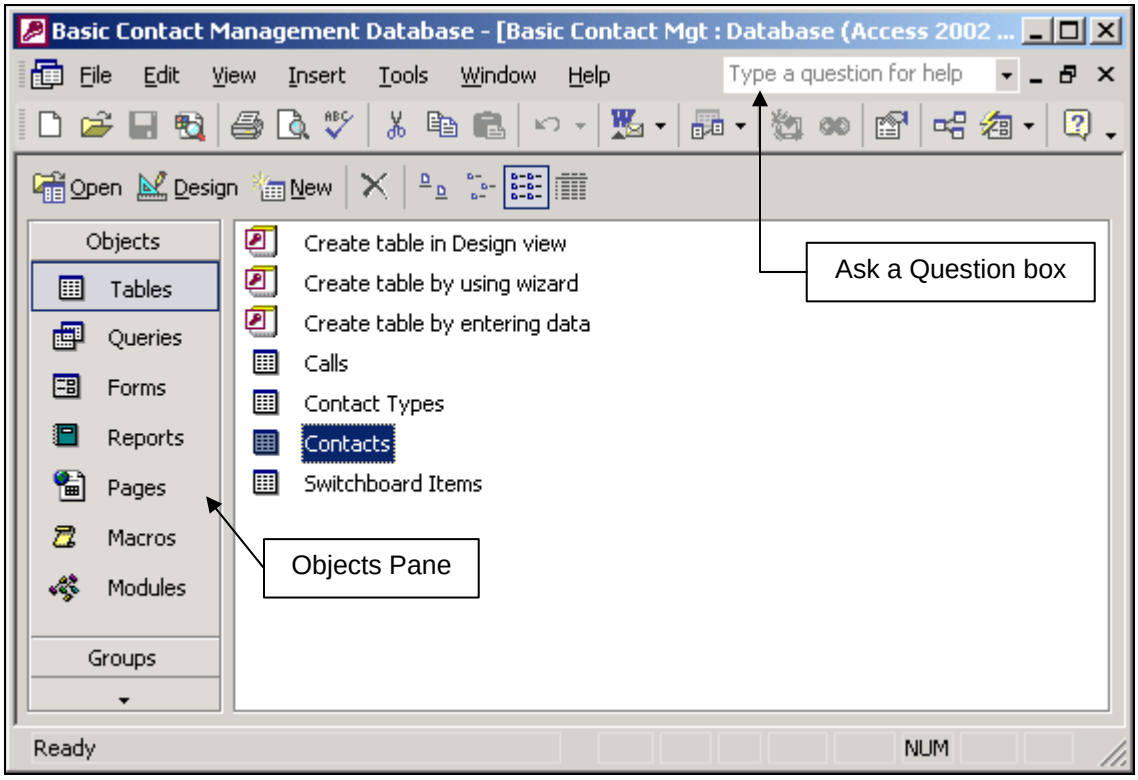
- Information in several tables
- The same field occurs in several tables to connect or "relate" the data.
- Complex information
- Example: Student Registration

Courses	Sections	Registrations	Students
Course ID	Term	Student ID	Student ID
Title	Course ID	Term	Student Name
Credits	Section #	Course ID	Address
Etc.	Instructor ID	Section #	Telephone
	Etc.	Etc.	Etc.

Open and close databases

Double-clicking on this icon will open the Access database called Basic Contact Mgt.mdb.

The Database Window



Objects	Descriptions
Tables	Data collections in rows with column fields
Queries	Requests to retrieve data
Forms	Formatted displays of table data for updating or viewing.
Reports	Presentations of data for printing
Pages	Displays shortcuts to data access pages
Macros	Sets of instructions to automate actions
Modules	Blocks of code to perform complex procedures

Toolbars

Database toolbar

Table Datasheet toolbar

Icon	Name	Function
	Datasheet View	Displays table as a datasheet. Icon displays when design view is selected.
	Design View	Displays design of table, allows changes. Icons displays when datasheet view is selected.
	Sort Ascending	Initiates sort in ascending order
	Sort Descending	Initiates sort in descending order
	Filter by Selection	Displays records which match contents of selected field
	Filter by Form	Displays records based on criteria entered into a form
	Apply/Remove Filter	Applies filter to select records
	Find	Finds a record based on a specified criteria
	New Record	Initiates process to add new record
	Delete Record	Deletes currently selected record(s)
	Database Window	Displays database window to access reports, queries, tables, etc.

Formatting (Datasheet) toolbar:

Icon	Name	Function
	Gridlines Style	Changes settings for display of horizontal and vertical gridlines in datasheet view.
	Special Effect	Applies raised, sunken, or flat appearance.

Filter/Sort toolbar:

Icon	Name	Function
	Save As Query	Allows the current filter to be saved as a query for later use.
	Clear Grid	Clears criteria from previous filter.
	Apply/Remove Filter	Applies filter to select records.

More on Filters:

- Filter by form or filter by selection methods are available using either datasheet or form view.
- Used primarily for temporary viewing or editing of data.
- Always a good idea to "Clear Grid" before starting.
- Filters can be saved as queries. For more info, consult the Office Assistant, using "save a filter" as the search string.

Navigation

Icon	Name	Function
	First record	Positions to first record in table
	Previous record	Positions to previous record in table
	Next record	Positions to next record in table
	Last record	Positions to last record in table
	New record	Gets next available key and clears fields to enter new record.

Shortcut keys to navigate in Datasheet view

Going to a specific record	**Press**
Move to the record number box; then type the record number and press ENTER	F5
Navigating between fields and records	**Press**
To move to the next field	TAB, ENTER, or RIGHT ARROW
To move to the last field in the current record, in Navigation mode	END
To move to the previous field	SHIFT+TAB, or LEFT ARROW
To move to the first field in the current record, in Navigation mode	HOME
To move to the current field in the next record	DOWN ARROW
To move to the current field in the previous record	UP ARROW
Navigate to another screen of data	**Press**
To go down one screen	PAGE DOWN
To go up one screen	PAGE UP
To go right one screen	CTRL+PAGE DOWN
To go left one screen	CTRL+PAGE UP

Datasheet View

Change column width

Method	**Change Width**	**Best Fit**
Click right border at top of column	Drag either left or right	Double click
Right click on column heading and choose Column Width	Specify width in number of characters	Click Best Fit button
Format | Column Width	Specify width in number of characters	Click Best Fit button

Reasons to change column width

- Reduce size of columns to see more columns on the screen.
- Enlarge size of columns to see all the data.

Move Columns

Change the position of columns in order to see what is most important.

1. Click once on the column header.
2. Click again on the column header holding down the left mouse button so that a box appears at the end of the pointer.
3. Move the pointer until a double black line appears in the desired location.
4. Release the mouse and the column will move.

Freeze Columns

If there are many columns in the table and you want to freeze one or more columns to identify the record:

1. Select the column or columns
2. Right click in the selected area.
3. Choose Freeze Columns

OR

1. Click in the column you want to freeze.
2. Choose Format | Freeze Column.

The frozen column(s) will move to the leftmost position in the datasheet.

To unfreeze the columns: Choose Format | Unfreeze All Columns

Hide Columns

If there are many columns in the table and you want to hide some of them from the datasheet view:

1. Select the column or columns.
2. Right click in the selected area.
3. Choose Hide Columns.

OR

1. Click in the column you want to hide.
2. Choose Format | Hide Columns.

The hidden column(s) will disappear from the datasheet.

To unhide the columns: Choose Format | Unhide Columns. Then select the columns that you would like to redisplay.

Reverting to Original Column Layout

If you do not want to keep any revisions to the column arrangement permanently:

1. Close the table.
2. Click "NO" when you are asked if you want to save the changes to the layout of the table.

Add records

- Records are added in datasheet view at the end of the table.
- Save added records or modifications by moving to another record, or by hitting <shift+enter>.

Input masks, data entry rules, or links to other tables.

- Input masks are used to make data consistent

Phone number mask	(___) ___-____
Date Mask	__/__/__
Social Security Number	___-__-____

- Data entry rules are used to prevent inappropriate or out-of-bounds information to be added.

>0	Value must be greater than zero
Between 100 and 999	Value must be in the range 100-999
"A" or "B" or "C"	Value must be either A or B or C

- If a field is linked to another table, the value must be in the other table before it can be inserted.

Shortcut keys to navigate in Form view

Go to a specific record	**Press**
To move to the record number box; then type the record number and press ENTER	F5
Navigate between fields and records	**Press**
To move to the next field	TAB
To move to the previous field	SHIFT+TAB
To move to the last field in the current record, in Navigation mode	END
To move to the first field in the current record, in Navigation mode	HOME
To move to the current field in the next record	CTRL+PAGE DOWN
To move to the current field in the previous record	CTRL+PAGE UP
Navigate in forms with more than one page	**Press**
To go down one page; at the end of the record, moves to the equivalent page on the next record	PAGE DOWN
To go up one page; at the end of the record, moves to the equivalent page on the previous record	PAGE UP

Notes: Additional shortcuts are available. Just click on the Office Assistant and enter 'keyboard shortcuts'.

Data entry tips

To move the insertion point…	**Click in the field, then press…**
One character to the right/left	RIGHT/LEFT ARROW
One word to the right/left	CTRL+RIGHT/LEFT ARROW
To the end of the field, in single-line fields	END
To the end of the field, in multiple-line fields	CTRL+END
To the beginning of the field, in single-line fields	HOME
To the beginning of the field, in multiple-line fields	CTRL+HOME
Undoing changes (also refer to note below on "Undo changes")	**Press**
To undo typing	CTRL+Z or ALT+BACKSPACE
To undo changes in the current field or current record; if both have been changed, press ESC twice to undo changes first in the current field and then in the current record	ESC
Entering data in Datasheet or Form view	**Press**
To insert the current date	CTRL+SEMICOLON (;)
To insert the current time	CTRL+COLON (:)
To insert the default value for a field	CTRL+ALT+SPACEBAR
To insert the value from the same field in the previous record	CTRL+APOSTROPHE (')
To add a new record	CTRL+PLUS SIGN (+)
To delete the current record	CTRL+MINUS SIGN (-)
To save changes to the current record	SHIFT+ENTER
To insert a new line	CTRL+ENTER
Refreshing data after adding/deleting records	**Press**
To refresh data so that all new records are accessible	SHIFT+F9

Notes: If the insertion point isn't visible, press F2 to display it.
Additional shortcuts are available for data entry. Refer to the online help for keyboard shortcuts.

Undo changes when adding or editing records

- Click Undo on the toolbar to take back your most recent change. 
- Click Undo Saved Record on the Edit menu if you have already saved changes to the current record, or have moved to another record.

Note: As soon as you begin editing another record, apply or remove a filter, or switch to another window, you will not be able to use these methods to "undo" changes.

Filtering Records

Filters provide an alternative to locate records that match criteria in certain fields. For example, a filter could be used to identify those with an address in Pennsylvania, or those with a grade point average greater than 3.0.

The Filter/Sort toolbar changes, depending upon the most recent action. Some of the icons from this toolbar are:

 Filter by Selection.

 Filter by Form

 Applies the filter, or if a filter is currently applied, removes the filter.

Filter by Selection

1. In a field on a form or datasheet, find one instance of the value you want records to contain in order to be included in the filter's results.
2. Select the value, and then click Filter By Selection on the toolbar.
3. Repeat step 2 until you have the set of records you want.
4. To remove the filter, click Remove Filter on the toolbar.

Note: You can also filter for records that do not have a certain value. Select a value, right-click on it, and then click Filter Excluding Selection.

Filter by Form

1. Click Filter By Form on the toolbar to switch to the Filter By Form window.
2. Click the field in which you want to specify the criteria that records must meet to be included in the filtered set of records.
3. Enter your criteria by selecting the value you're searching for from the list in the field (if the list includes field values), or by typing the value into the field.
4. If you specify values in more than one field, the filter returns records only if they contain the same values you specified in each of those fields.
5. Click Apply Filter on the toolbar to filter the records.
6. To remove the filter, click Remove Filter on the toolbar.

Note: For more information on filters, click on the Office Assistant and enter 'filter data'.

Getting Help

OnLine Help

The Office Assistant is available from the Help menu to provide answers to your questions. Help is also available from the Contents, Answer Wizard, or Index, but you must first turn off the Office Assistant. To turn off the Office Assistant:

1. Right-click on the Office Assistant and choose Options.

2. Deselect “Use the Office Assistant”, then click OK.

After turning off the Office Assistant, choose “Microsoft Access Help” from the Help menu. Click Options, then Show tabs to access the Contents, Answer Wizard and Index tabs.

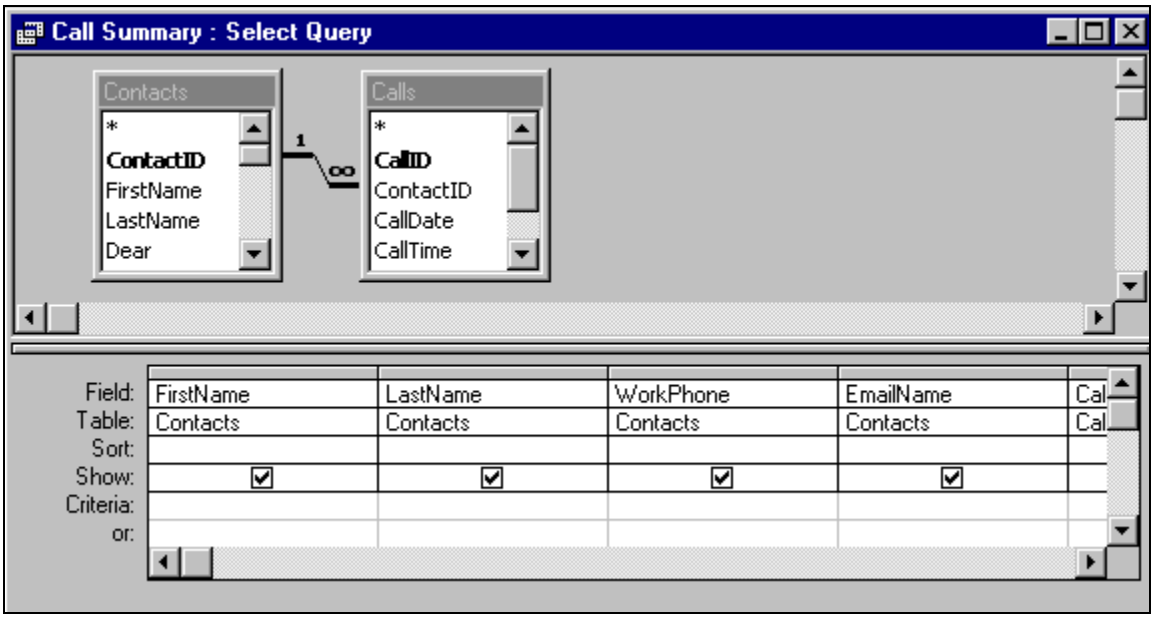
If you turn off the Office Assistant, you can access it by selecting “Show the Office Assistant” from the Help menu.

Queries

Designing a query in the design view:

1. Select the Queries tab.
2. Click on New.
3. Select Design View.
4. Select the table to be included in the query and click Add. Repeat for additional tables.
5. Click Close.
6. Add fields to the query grid using one of the following methods.
   - Click on field name in the table box and drag to the field line in the grid.
   - Double click on the field name in the table box.
   - Click on the field line on the query grid and select a field name from the drop-down list.
7. Adjust information on the Sort, Show, and Criteria lines.
8. Click on the Run icon to run the query.
9. If changes are needed, click on Design icon to return to the query design window.
10. Close window.
11. Click Yes to save the changes.
12. Name the query in the Save As box.

Query Design Window



Query Design Window

Sort

- The query may be sorted in either ascending or descending order by one or more fields.
- Click on the Sort line in the column to be sorted and select the desired order.
- Sorting is done from left to right.
- Fields may need to be rearranged to obtain the desired sort order.

Show

- The square box on the Show Line should be checked if the field is to appear in the query.
- If the field is not to appear, the check should be removed.
- Reasons for a field not to appear.
  The field is used just for sorting.
  The field is used for criteria selection only.

Criteria

- The criteria line is used to limit the selection of records to those with particular values.
- For example, if the listing were to include only those persons living in Pennsylvania, then PA should be inserted on the Criteria line in the State column.
- Automatic additions by Access after you press enter:
  Quotation marks (“) are inserted around text.
  Number signs (#) are inserted around dates and times.
  “Like” is inserted before wildcard expressions.
  “Is” is inserted before “null” or “not null”.
  These can be inserted directly, if you prefer.
- Expressions can be used on the Criteria line.

Symbol	**Meaning**	**Examples**
= (Optional—can be omitted)	Equal	“PA”, =100
<	Less Than	<50
>	Greater Than	>0
<=	Less Than or Equal	<=#12/25/96#
>=	Greater Than or Equal	>=”M”
<>	Not Equal	<>”Indiana”
Between --- and ---	Between a range	Between #1/1/97# And #12/31/97#
*	Wildcard of 1 or more	Like “(412)*”, Like “*shaw”
?	Wildcard of 1 character	Like “5?5”, Like “sm?th”

- If the entire expression is not visible, Shift F2 will show the expression in a Zoom Box.

Multiple Criteria: AND vs. OR

- The criteria for a selection may combine AND and OR relationships.
- Specifications on different criteria lines create an "OR" relationship.
- More than one specification on an individual criteria line creates an "AND" relationship.

Examples:

OR: This selection will include
Grimshaw OR
Peacock OR
any record with a Work Phone starting with (412).

Field:	LastName	WorkPhone	EmailName
Table:	Contacts	Contacts	Contacts
Sort:			
Show:	☑	☑	☑
Criteria:	"Grimshaw"		
or:	"Peacock"		
		Like "(412)*"	

Example illustrating selection using *OR*

AND: This selection will include
Grimshaw AND a Start Date after 7/10/97 OR
Peacock AND a Call Date after 7/10/97 OR
any record with a Work Phone starting with (412) AND a Call Date after 7/10/97

Field:	LastName	WorkPhone	EmailName	CallDate
Table:	Contacts	Contacts	Contacts	Calls
Sort:				
Show:	☑	☑	☑	☑
Criteria:	"Grimshaw"			>#7/10/97#
or:	"Peacock"			>#7/10/97#
		Like "(412)*"		>#7/10/97#

Example illustrating selection using *AND*

Total Line

You can add a total line to the query grid by:

- Clicking on the Totals icon Σ

  OR

- View | Totals

Some functions available on the Total Line:

- Group By - Default
- Sum
- Count
- Avg
- Min
- Max

The number of fields in a Totals query should be limited to the field or fields that are being grouped and the field that is being totaled.

Access changes the column name of the field being processed to the function and the name of the field, such as TotalOfSalary or CountOfProducts or AvgOfPrices.

Field:	ContactID	CallID
Table:	Calls	Calls
Total:	Group By	Count
Sort:		
Show:	☑	☑
Criteria:		
or:		

Example resulting in the number of calls for each contact

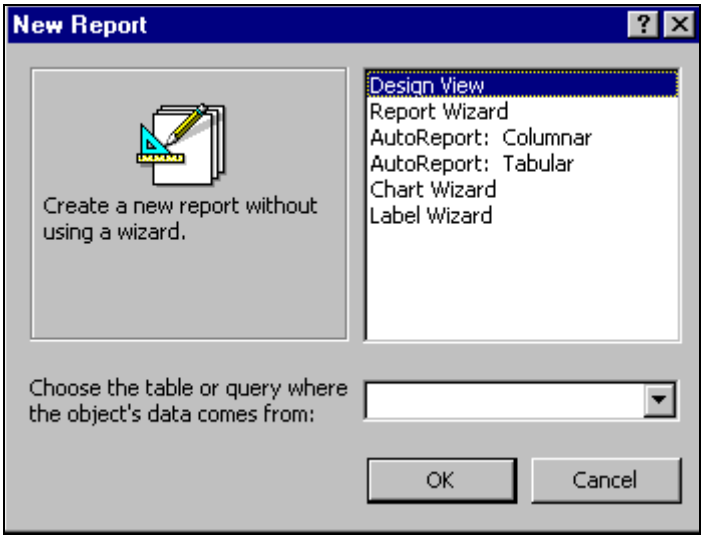
Call Count : Select Query

Contact ID	CountOfCallID
Davolio,Nancy	2
Lockhart,Janet	1
Fuller,Andrew	1
Peacock,Margaret	2

Results of example illustrated above

Creating Reports

To create a new report in Access, click the New button on the Reports object view to display the various options:



New Report Method	Description
Design View	Create a report on your own
Report Wizard	Wizard automatically creates the report based on selected fields.
AutoReport: Columnar	Wizard creates a columnar report (titles in column along left margin) in one step based on a table or query.
AutoReport: Tabular	Wizard creates a tabular report (titles on top) in one step based on a table or query.
Chart Wizard	Wizard creates a chart based on a table or query.
Label Wizard	Wizard creates a report in label format based on a table or query.

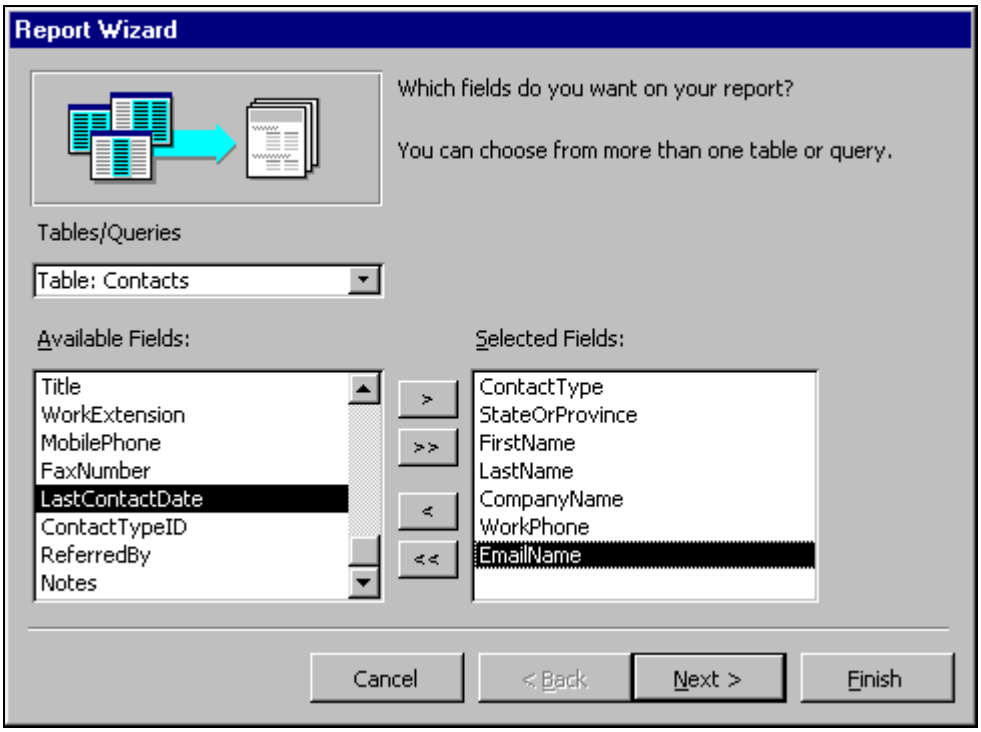
For the AutoReports, the Chart Wizard, and the Label Wizard, a single table or query must be selected in the New Report box. Since the Design View and Report Wizard enable you to use more than one table or query, you do not have to specify a table or query on the initial New Report box.

The AutoReports are excellent for creating a quick report based on one entire table or query, or for creating a base report which you can further customize.

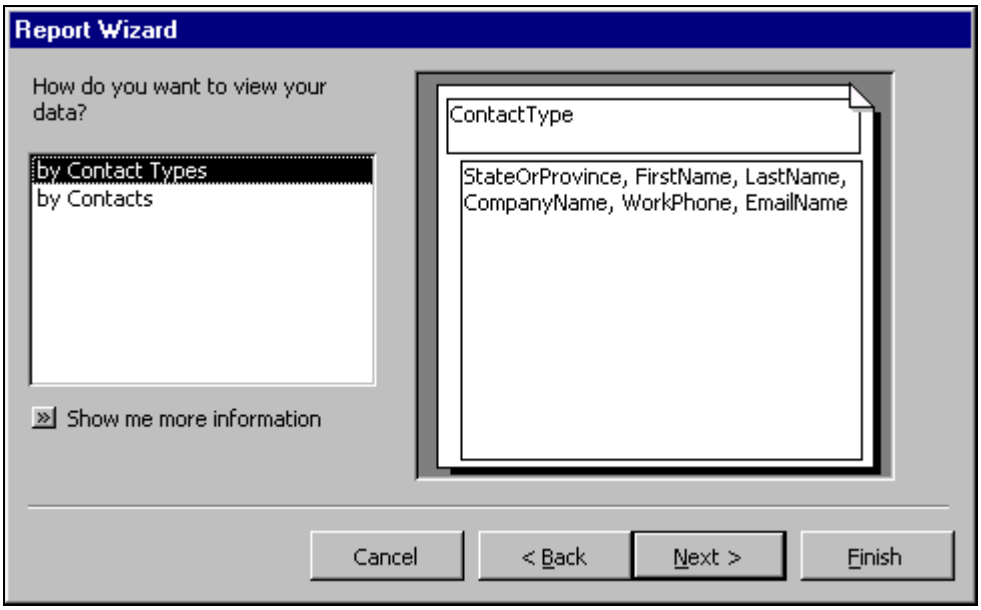
Report Wizard

The Report Wizard creates an automated report with more flexibility in selecting the fields, format, and sorting.

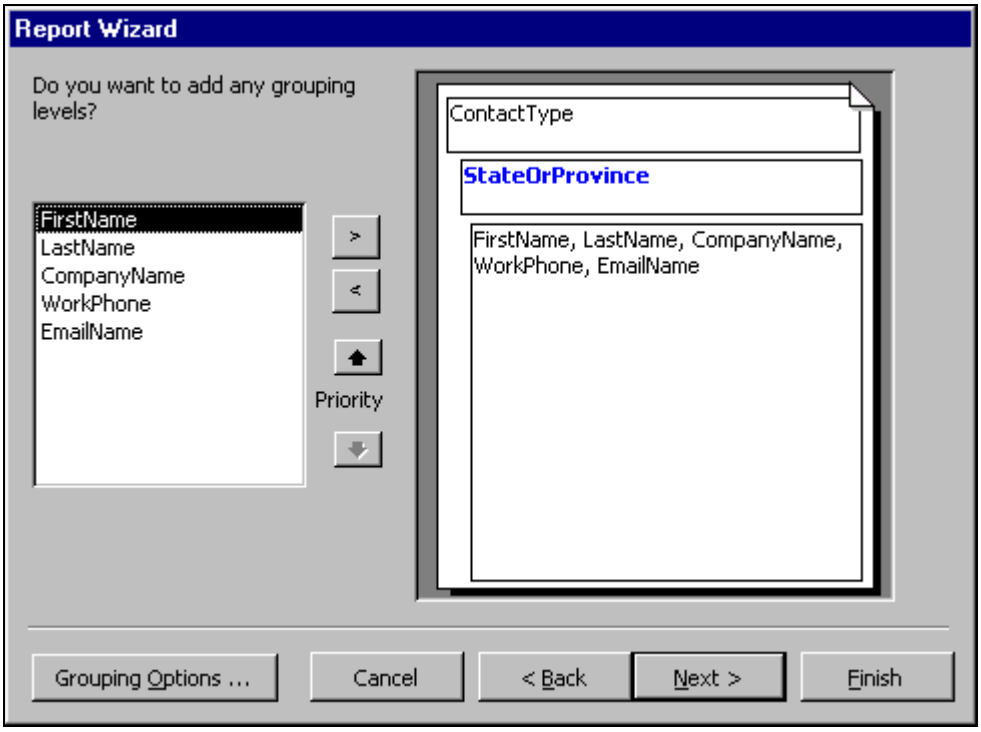
1. You can select specific fields from one or more table or query.



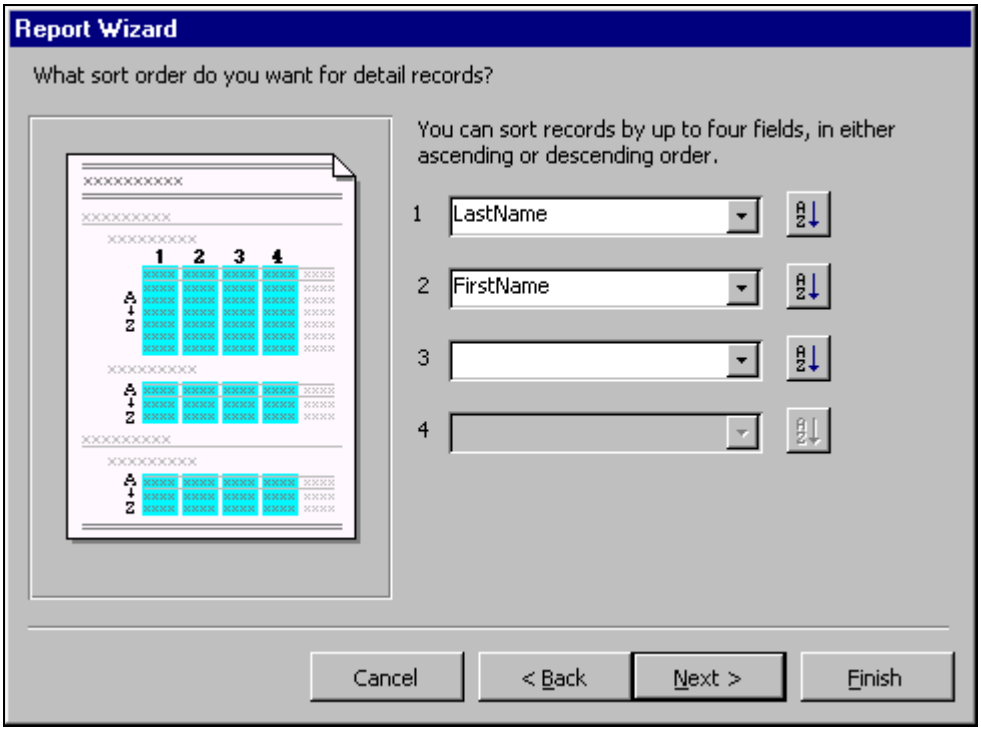
2. You can specify grouping by a particular field or choose not to have any grouping. In the diagram below, grouping by **Contact Type** was selected from the box at the left.



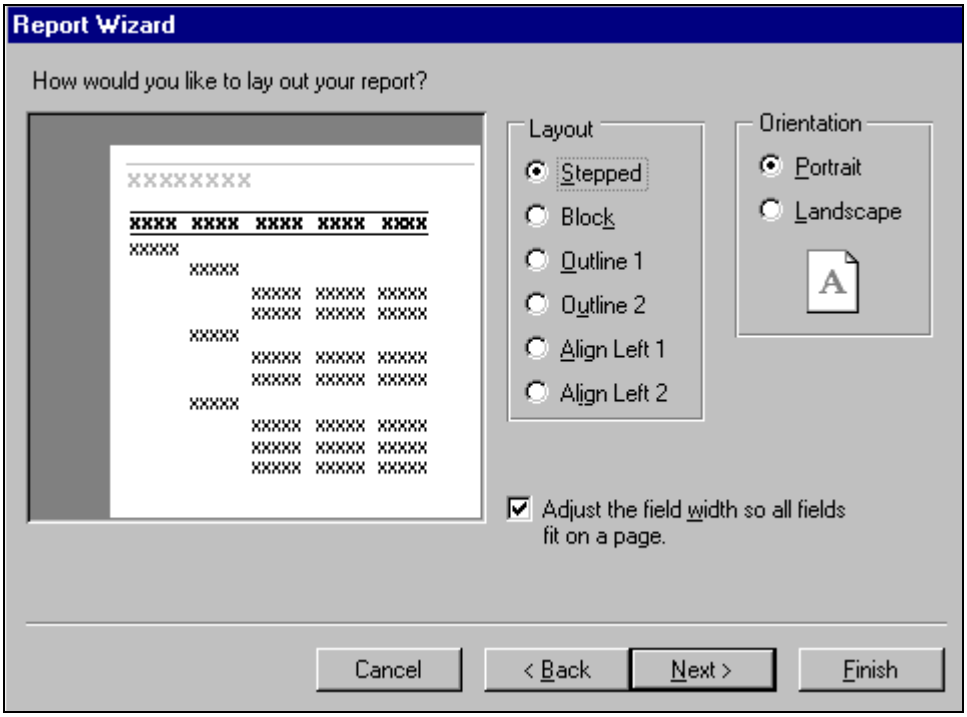
3. Additional grouping levels may also be selected. In the diagram below, we are grouping by **Contact Type** and then by **State or Province**.



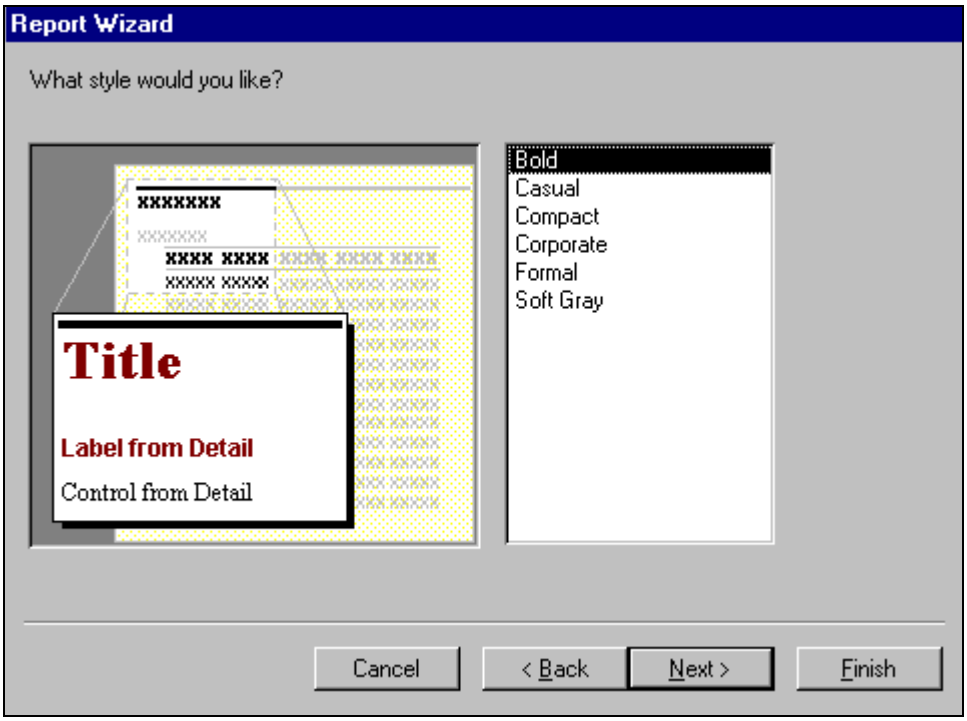
4. You can specify a sort order of up to four fields, either ascending or descending.



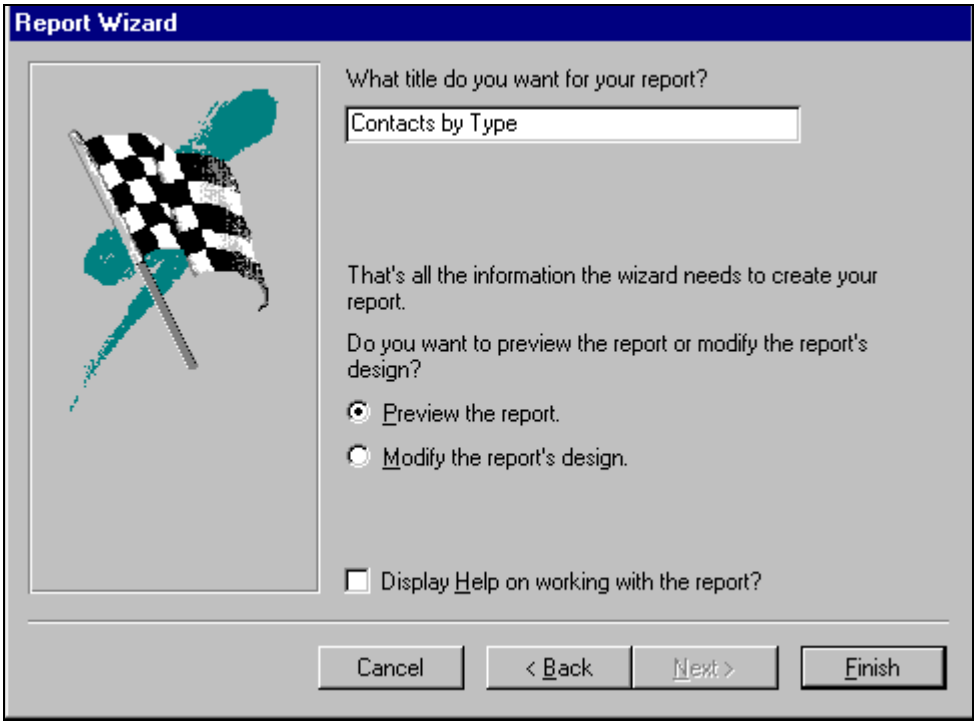
5. You can specify the layout of the report as listed in the diagram below.



6. You can select a style. Bold is indicated in the diagram below.



7. The final step is to give the report a title.



8. The start of the completed report based on these selections looks like this:

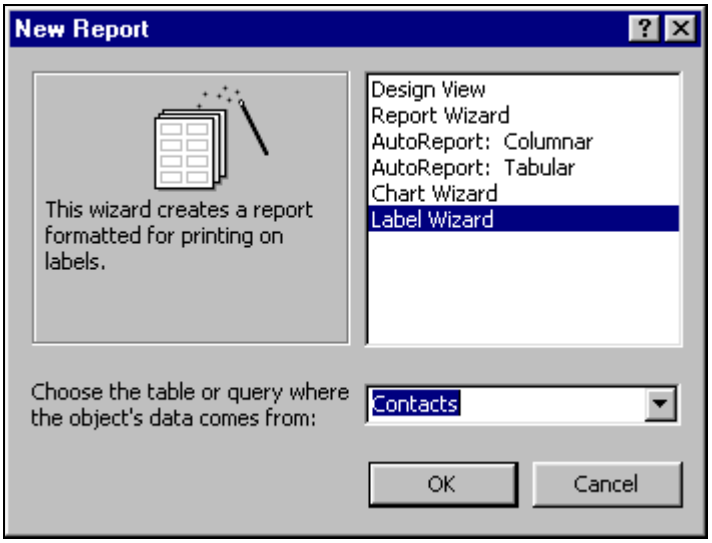
Contacts by Type

Contact Type	StateOrProv	Last Name	First Name	Institution/Co	Work Phone	Email Name
Current Stude						
	PA					
		Clark	Nancy	Community Colle	(412) 555-9857	nancyd@anywh
Prospective St						
	PA					
		Clark	Kelly		(412) 555-8418	
		Lockhart	Janet		(412) 555-3412	janetl@anywher
Alumnus						
	PA					
		Bilik	Michael		(412) 555-8100	mbilik@anywhe
		Kirk	Melissa	Villa Maria Acade	(814) 555-8191	mkirk@anywher

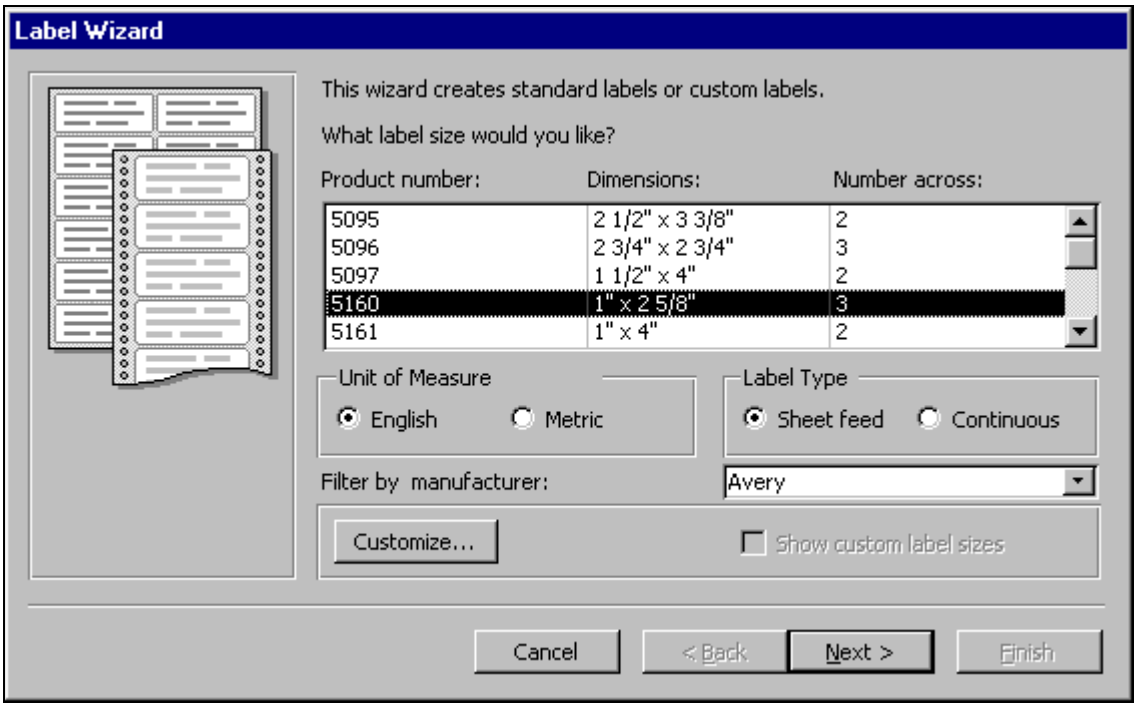
Label Wizard

Labels can be easily generated from a database:

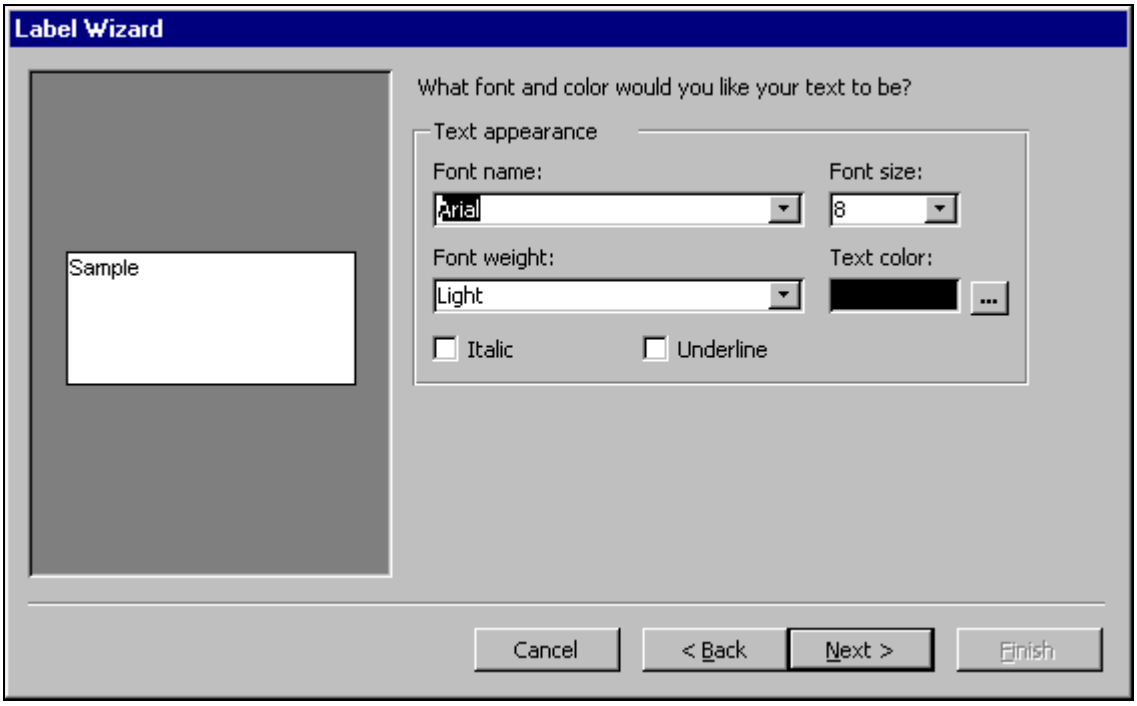
1. Click the New button on the Reports tab.
2. Select Label Wizard, then select the data source. The data source can be a table or query.



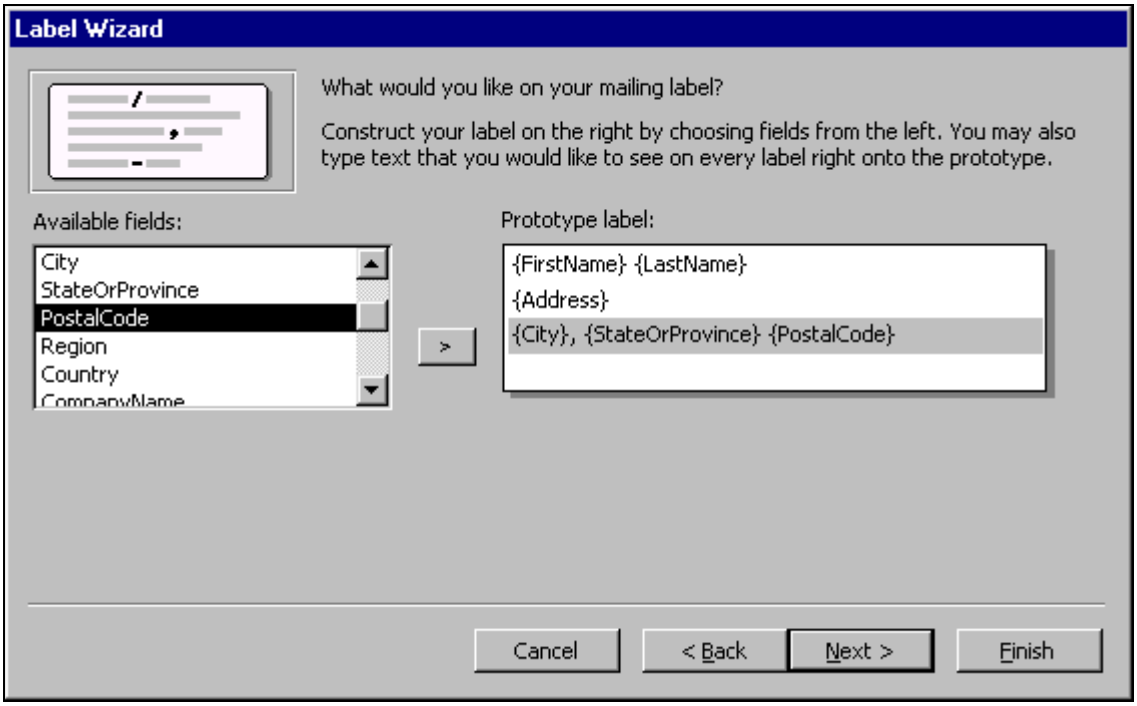
3. Select the label manufacturer from the pull-down list, then select the label size and sheet type.



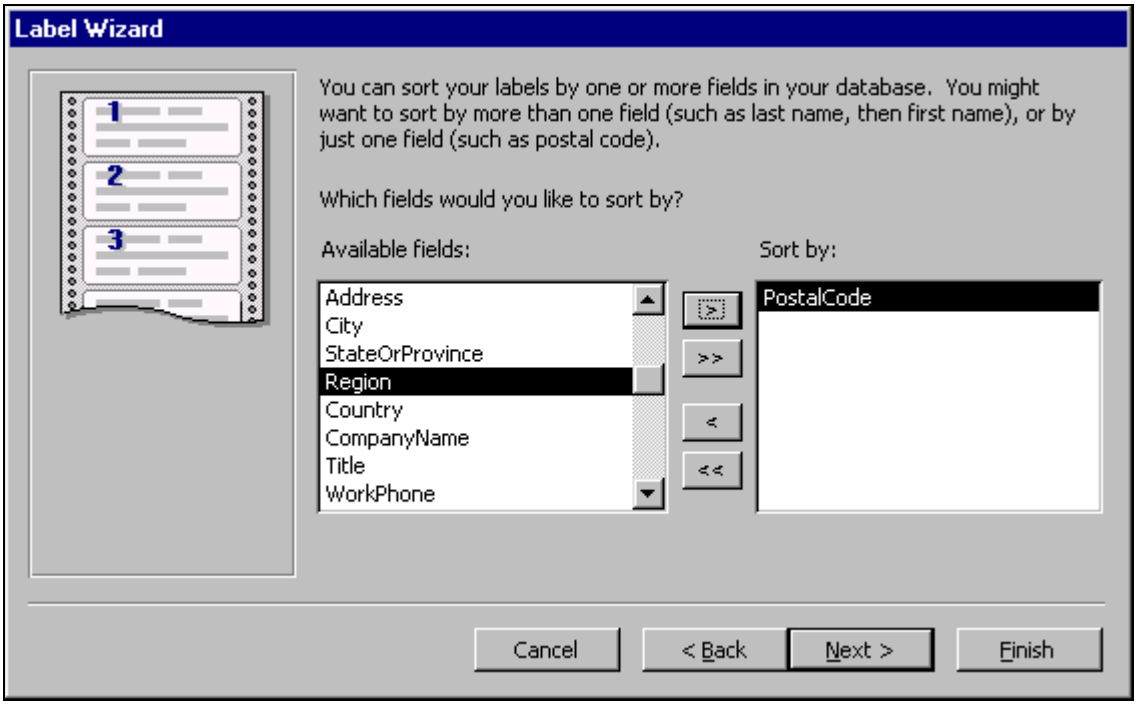
4. Select font and color.



5. Select the fields desired for the label. Text can be added between fields, such as the space added between First Name and Last Name below and the comma and space inserted after City.



6. A sorting field can be selected.

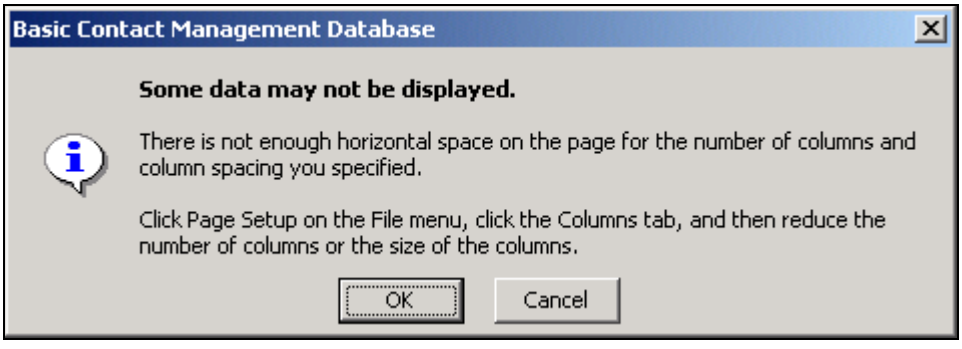


7. You'll be asked to name the label report.
8. Access creates the labels in the proper format as shown below:

William Brainstorm
2600 Lakeside Blvd
Suite 101
Princeton, NJ 085402218

Nancy Clark
507 Meyran Avenue
Apt. 2A
Pittsburgh, PA 15102

Note: If you've selected three-across labels, you may see the following error:



According to Microsoft, this message is a warning and you can safely ignore it. You should not experience any loss of data when you print the labels.

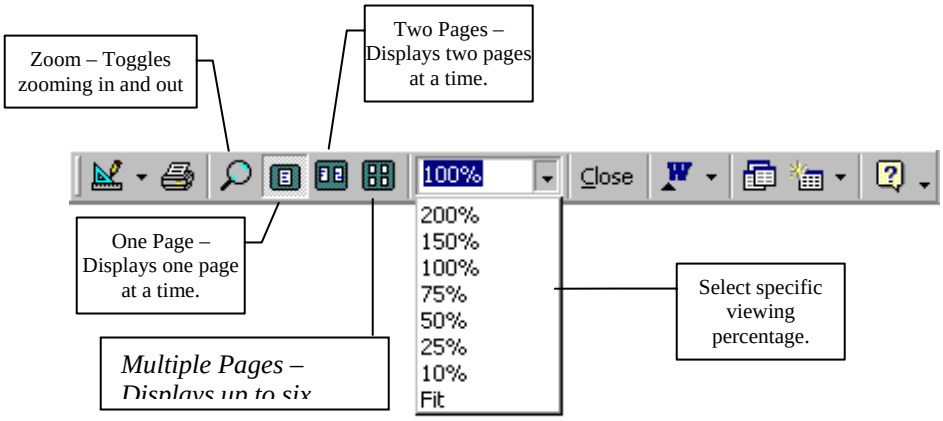
Printing Tables and Reports

Tables, Queries, Forms, and Reports can all be printed by using File | Print or the printer icon. Using the File menu to print will provide you with the Print options dialog box.

Print Preview

To get a preview of the printed page, click on the Print Preview icon. The Report objects view of the database window has the option to go directly to Preview.

The toolbar for the print preview has a number of options:



Export or copy query output into an Excel spreadsheet

Often it may be useful to export a query to Excel so that it may be manipulated in spreadsheet format. To do this:

1. Click on Queries in the Objects list.
2. Select desired query.
3. From the File menu, choose Export.
4. Locate the folder where you wish to save the spreadsheet. Select the folder so that you see the folder name in the "Save in" box.
5. Using the "Save as type:" pull down list, select "Microsoft Excel 97-2002 (*.xls)" from the list.
6. If "Save Formatted" is not selected, select it.
7. Select "Autostart" if you want to start Excel and open the new spreadsheet.
8. Click on Export.

Note: *A query can also be exported using the Office Links button on the toolbar, however, this method automatically saves the spreadsheet in your default directory, which is generally the O drive. Keep in mind that any file saved in the O drive will be available to anyone in your office. If your data is confidential, it is strongly recommended that you use the steps outlined above to export a spreadsheet. This will provide you with greater control over where the spreadsheet is saved.*

Linking to Tables in another Database

IUP is developing databases with historical information about budgets, enrollments, revenues, etc. Authorized users will be able to read the data, but will not be able to change or manipulate the original data. In order to use the information, a new database must be created that can access the information.

Ways to obtain information from another database:

- Import the data
  The data is loaded into a new database.
  The data becomes part of the new database and can be changed.
  Adjustments to the original data are not reflected in the new database.
- Link the data
  The data is "attached" or "linked" to the new database.
  The linked data cannot be changed using the new database; it may only be change in the database that contains the data.
  Any adjustments to the original data are reflected in the new database.

It is preferable to link the data.

Steps to create a new database that links to data in another database:

1. Open Access.
2. From the File menu, choose New.
3. Choose “Blank Database” from the New File task pane.
4. Click OK.
5. In the file New Database box enter information about the new database:
   Save in: drive or folder name
   File Name: name of new database
   Save as type: Microsoft Access Databases (*.mdb)
6. Click on Create.
7. Select Tables from the Objects list, then click New.
8. Select Link Table.
9. Click OK.
10. In the Link box locate and highlight the name of the database to be linked to.
11. Click Link.
12. In the Tables box highlight the table names to be included in the new database or click Select All.
13. Click OK.
14. In the new database, the tables will appear with an arrow at the left of the table icon to indicate a linked table.
15. Set up your own queries and reports from the linked table. You cannot change the data, but you can select from it, arrange it, sort it, and list it any way you prefer.

Getting Help

OnLine Help

The Office Assistant is available from the Help menu to provide answers to your questions. To turn off the Office Assistant:

3. Right-click on the Office Assistant and choose Options.
4. Deselect "Use the Office Assistant", then click OK.

You can access the Office Assistant by selecting "Show the Office Assistant" from the Help menu.

Another new feature in Access 2002 is the Ask a Question box. This box allows you to quickly enter a question or phrase to search for help on that topic. The online help will display items related to your search phrase.

Recommended Reference Books

Microsoft Access 2002 – Step by Step (Online Training Solutions, Inc.)
Using Microsoft Access 2002 – Special Edition (Que)

Microsoft Office Web Site

http://office.microsoft.com/assistance