



Access 2003: Basics Learning Guide

Database Basics

A database, at its very core, is a structured collection of data. Access stores all your data in the form of a *table* that is composed of rows and columns.

Each row, called a *record*, contains data about a single object, person, or concept. In the table below, row 2 (*Record 2*) contains all the information about *Blue Moon Swamp*, a CD released in 1997 by John Fogerty.

	Tracking	Artist	Album Name	Released	Location
	1	Farm Dogs	Immigrant Sons	1998	Home
▶	2	John Fogerty	Blue Moon Swamp	1997	Car
	3	Barenaked Ladies	Stunt	1998	Office
	4	CPR	CPR	1998	Home
	5	Elton John	Tumbleweed Connection	1971	Home
	6	Sting	Bring on the Night	1985	Car
	7	Fleetwood Mac	Rumors	1977	Home
*					

Each column, called a *field*, contains a specific type of data (numbers, text, currency, dates, etc.). In the table below, field 2 (*Artist Name*) contains artist information for all the records.

	Tracking	Artist	Album Name	Released	Location
▶	1	Farm Dogs	Immigrant Sons	1998	Home
	2	John Fogerty	Blue Moon Swamp	1997	Car
	3	Barenaked Ladies	Stunt	1998	Office
	4	CPR	CPR	1998	Home
	5	Elton John	Tumbleweed Connection	1971	Home
	6	Sting	Bring on the Night	1985	Car
	7	Fleetwood Mac	Rumors	1977	Home
*					

Once this structure is in place, you can access your information directly through the table, or use other database components to provide a greater level of flexibility in the display and organization of your data. For example, you can enter data using forms or create reports to present your data.

Tracking	Artist	Album Name	Released	Location	Notes	Condition
1	Farm Dogs	Immigrant Sons	1998	Home	2nd album	
2	John Fogerty	Blue Moon Swamp	1997	Car	live	
3	Barenaked Ladies	Stunt	1998	Office		
4	CPR	CPR	1998	Home	Crosby & son	
5	Elton John	Tumbleweed Connection	1971	Home		
6	Sting	Bring on the Night	1985	Car		
7	Fleetwood Mac	Rumors	1977	Home	great disc	
8						

Record: 8 of 8

sample table

Music List

Artist: Farm Dogs

Album Name: Immigrant Sons

Released: 1998

Notes: 2nd album

Condition:

Location: Home

Record: 1 of 7

sample form

MusicList

Released	Artist	AlbumName	Notes	Condition	Location
1971	Elton John	Tumbleweed Conn			Home
1977	Fleetwood Mac	Rumors	great disc		Home
1985	Sting	Bring on the Night			Car
1997	John Fogerty	Blue Moon Swamp	live		Car
1998	Barenaked Ladies	Stunt			Office
1998	CPR	CPR	Crosby & son		Home
1998	Farm Dogs	Immigrant Sons	2nd album		Home

Page: 1 of 1

sample report

Is Access the right tool to manage your data?





Although Access provides great flexibility and powerful tools for managing your data, developing a database often takes a great deal of time. Before creating your database, consider whether other data management tools might be more appropriate for your project:

- **Word tables:** quick and easy to create; good for data that does not need to be sorted
- **Excel spreadsheets:** Easier to create than a database; provides sorting and calculation capabilities

When considering how to manage your data, remember that you can upgrade your data structure – Word tables can be converted to Excel spreadsheets, which can then be imported into Access tables.

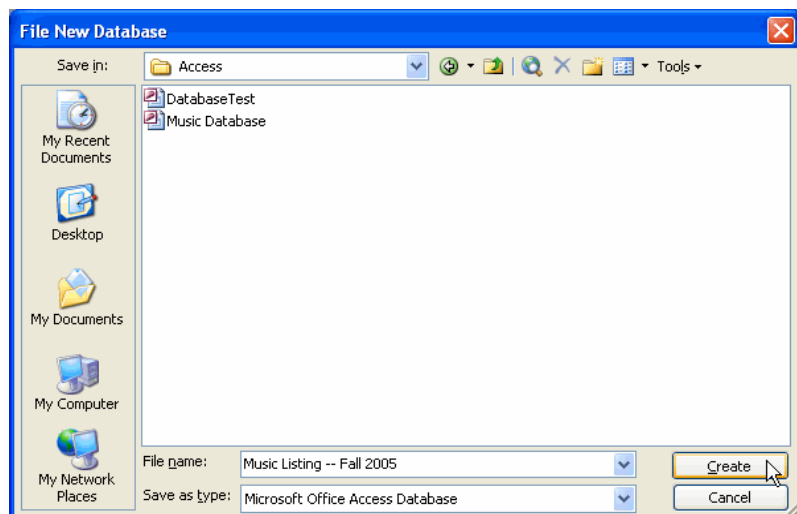
Exploring an Access database

Access databases have four primary types of components, each of which has a different purpose. All of the components can be accessed and managed from the database window.

The Access Object . . .	Indicated by the icon . . .	Allows you to . . .
Tables		Contain and structure data
Queries		Saved questions that retrieve data from a database
Forms		Permit data entry and simple data searches
Reports		Templates for printing retrieved data

Creating a new database

- From the **File** menu, select **New**.
- The **New File View** of the Task Pane will appear.
- Click on the link labeled **Blank Database**.
- The **File New Database** window will appear.
- Click on the down-facing arrow located next to the box labeled **Save in**.
 - Navigate to the location where you wish to save your new database.
 - In the box labeled **File name**, type a descriptive name for your database.
 - Click on the button labeled **Create**.

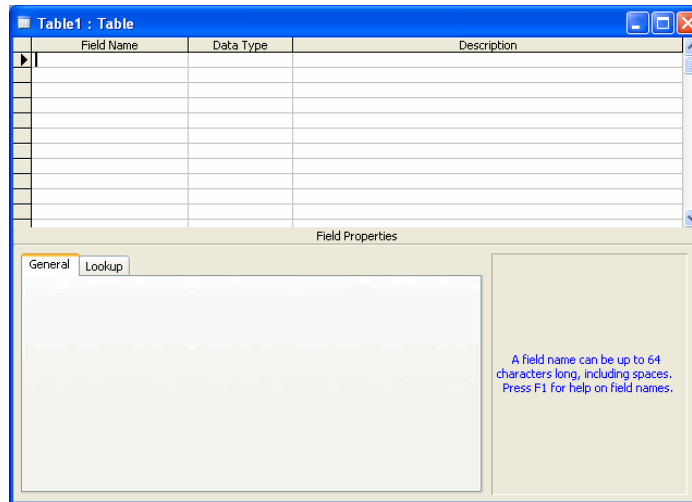


Creating a table

Once you save your database, you can begin entering data into the tables. There are three ways to create tables: by Design View, by using a Design Wizard, and by Entering Data.

Creating a table with the design wizard

- From the **Database** window, doubleclick on **Create table in Design View**.
- The **Table** window will appear.



In this window, you can create fields and specify what type of data each one will hold. To create a new field:

- Click in the first empty cell of the **Field Name** column.
- In the cell, type the name of your new field. Be sure to generate a name that will be descriptive of the field's contents.
- Move your cursor to the **Data Type** column.
- Select the type of data you wish to include in the new field.

Below is a list of the most commonly used field types:

- Text
- Number
- Date/Time
- Currency (*a specially-formatted number field*)
- Yes/No
- AutoNumber (*a unique number for each record*)

- Move your cursor to the **Description** column.
- Type a brief description of the data that will be included in this field.
- Using additional rows in the **Table Design** window, repeat these steps to create one field for each piece of data that you wish to capture in your database.

Tip: Setting Primary Key

Primary keys are used in establishing appropriate relationships between tables. They are created in Design View and identified by a small key icon located to the left of the field name. If you use the Table Design Wizard, access will set a primary key for you.

- When you have finished creating all the desired fields, click on the **Save** button located in the toolbar at the top of the window.



- Click on the **Close** button located at the top right corner of the window.

Tip: Changing or adding field names or types

To change a field name or type:

- Open up your table in design view
- Double-click on the field name or data type column you wish to change
- Type the new field name or select the new data type

To add a field to a table:

- Open up your table in design view
- Click on the row below where you wish to add the field
- Click on the **Insert Rows** button located on the toolbar



To add the field to the end of the table:

- In the first blank row of your table, type in the Field Name
- Select the Data Type you desire
- Add in a Description

Entering records in a Table

Access allows you to enter records directly into your table in **Datasheet View**, as well as through a **Form**.

- To enter records in **Datasheet View**:
 - Find the table in the **Database** window that contains your data.
 - Double-click on the table's icon to open up the table in its own window.



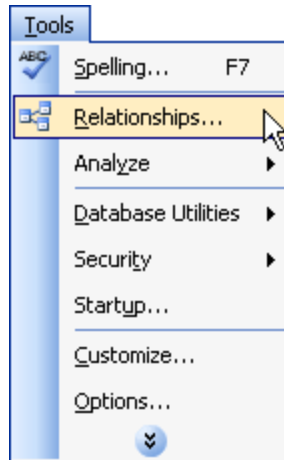
- To add a record, click in an empty field and begin typing. Access will automatically create a record to contain that data.
- To move between fields:
 - Press the **Tab** key on your keyboard to move one field to the right
 - Simultaneously hold down the **Shift** key and the **Tab** key to move one field to the left.
 - Click in any field to move to that field.
- To edit data that has already been entered, move your cursor to that field. Any data in that field can be edited as if it were text in any other document.
- Once you have finished adding records, click on the **Close** button at the top right corner of the window.



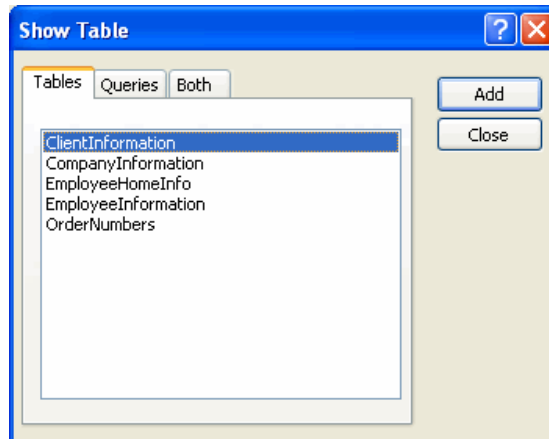
Adding a relationship between tables

You can create relationships between tables in a database to show how the columns in one table are linked to those in another table. Relationships help to prevent redundancy in data.

- Close any tables you have open.
- From the **Tools** menu, select **Relationships**.



- The **Show Table** window will appear with all of your tables listed.

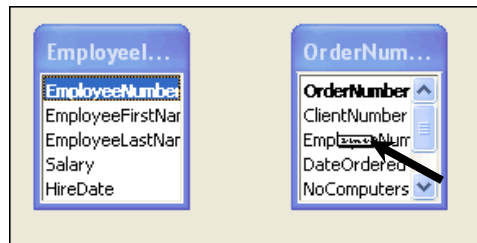


- To add a table to include a relationship:
 - Click on the name of the table
 - Click on the button labeled **Add**.
 - Continue these steps until you have added all the tables you wish.
- Click on the button labeled **Close**.

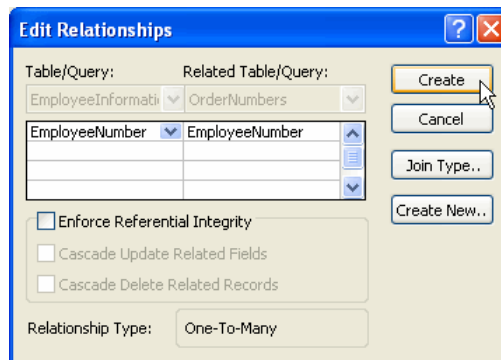
- All of the tables you added will appear in the window labeled **Relationships**.



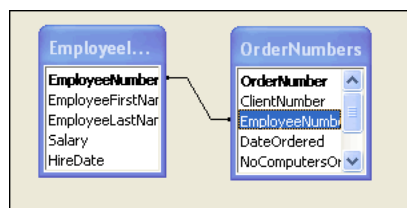
- To add a relationship:
 - Click on the name of the field in the first table.
 - Drag it over the name of the field in the second table.



- The **Edit Relationships** window will appear.
- Click on the button labeled **Create**



- A line will be drawn in the **Relationships** window to denote that the relationship has been added.



Resizing columns and rows

In order to accommodate more data, columns and rows may be resized in a table, query, or form through datasheet views in Access.

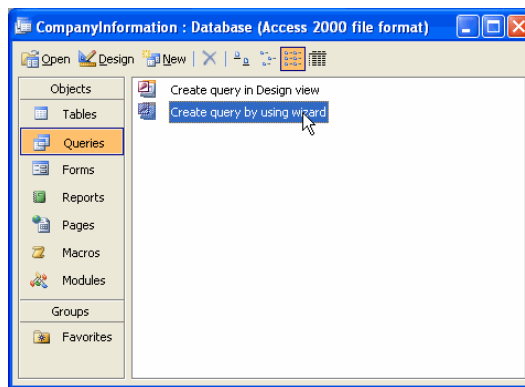
- To resize a column to a specific width:
 - Place your cursor on the right edge of the column you want to resize.
 - Drag the cursor until the column is the size you desire.
- To size a column to fit data, double-click on the right-edge of the column heading.
- To resize a row:
 - Place the cursor between any two record selectors at the left side of the datasheet.
 - Drag your cursor until the rows are the desired size.

Creating a query

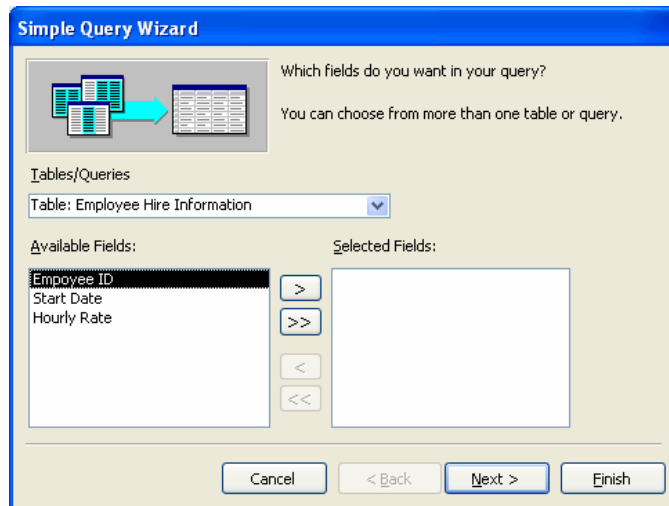
A query is an Access object that displays data from one or more tables in an orderly fashion. A query will retrieve select fields from every record in a database and may be executed from tables and previously created queries. Queries may be set up in Design View, or via The Query Wizard.

Create a query with the Query Wizard

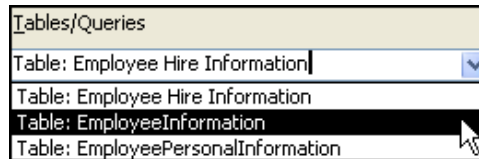
- In the **Database** window:
 - Click on the button labeled **Queries**.
 - Double-click on the link labeled **Create query by using wizard**.



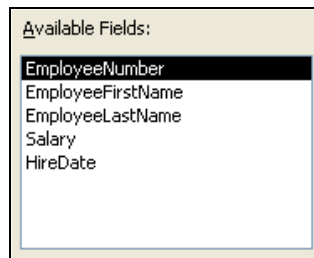
- The **Simple Query Wizard** window will appear.



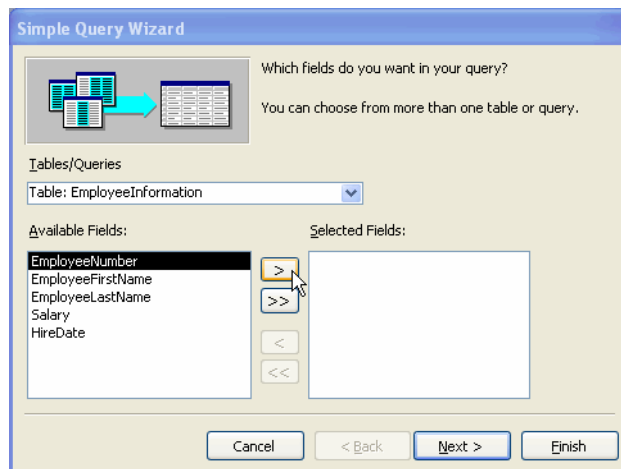
- Click on the down-facing arrow located next to the box labeled **Tables/Queries**.
- From the list that appears:
 - Click on the name of the first table you wish to use in your query (In this example we will use Table: EmployeeInformation).



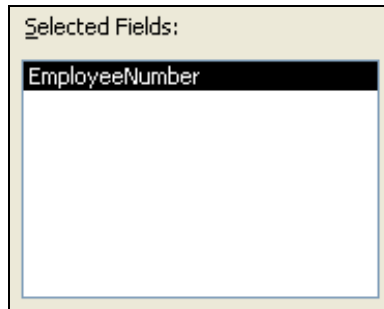
- The fields from the first table will appear in the box labeled **Available Fields**.



- Repeat these steps to include additional tables or queries.
- To add a single field to your query:
 - In the box labeled **Available Fields** click on the name of the field you wish to add (for example, EmployeeNumber).
 - Click on the button with the **right-facing arrow**.

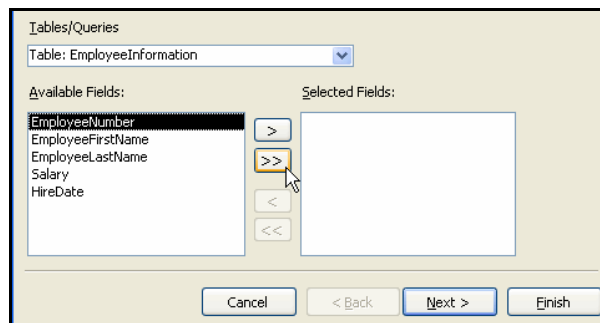


- The name of the field will now appear in the box labeled **Selected Fields**.

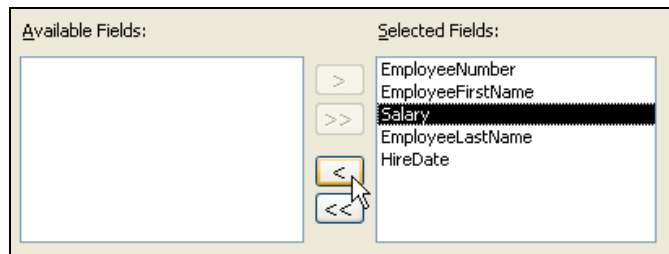


Tip: An alternative way to add a field to your query is to simply double-click on the field you wish to add. The field will then move into the box labeled **Selected Fields** to show that it has been added to your query.

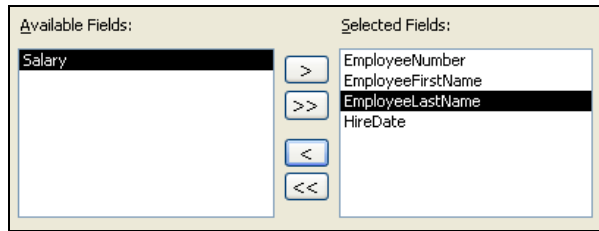
- To select all of the fields shown in the box labeled **Available Fields**:
 - Click on the button with the **double right-facing arrow**.



- All available field names will now appear in the box labeled **Selected Fields**.
- To remove a selected field:
 - Click on the field that you wish to remove.
 - Click on the **left-facing arrow** button.

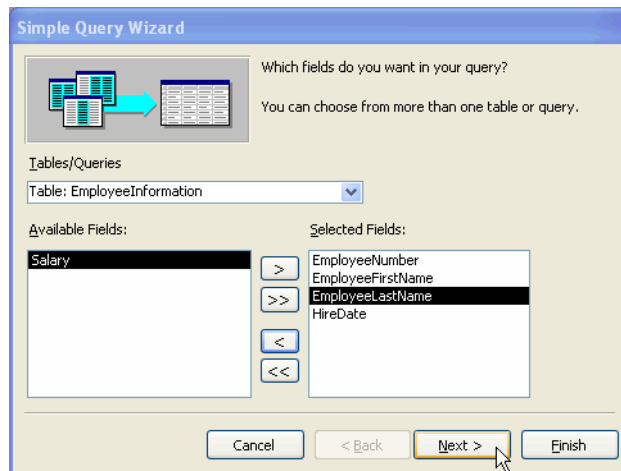


- The field will be removed from your query and will now appear in the **Available Fields** box.

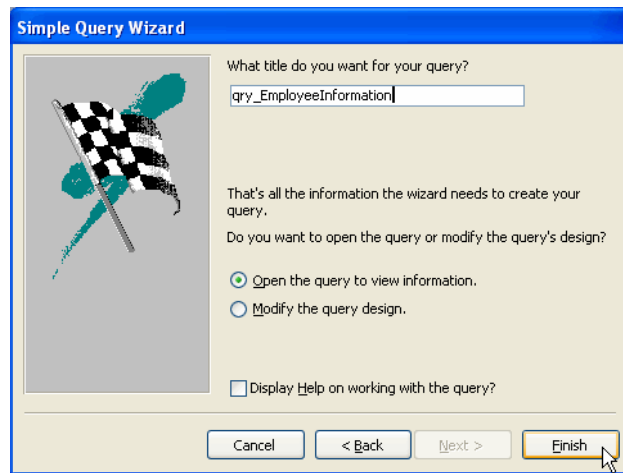


***Tip:** An alternative way to remove your field is to simply double-click on the field you wish to remove. The field will then move back to the box labeled **Available Fields**.*

- Once you have finished selecting the fields you wish to include in your query, click on the button labeled **Next**.



- The **Simple Query Wizard** window will appear.
- In the box labeled **What title do you want for your query?** type the name you wish to give your query.
 - Use a naming convention so you can easily tell from its title that your query is not a table. Many database developers designate their queries with a “qry_” prefix before its name. (For example: qry_EmployeeInformation).

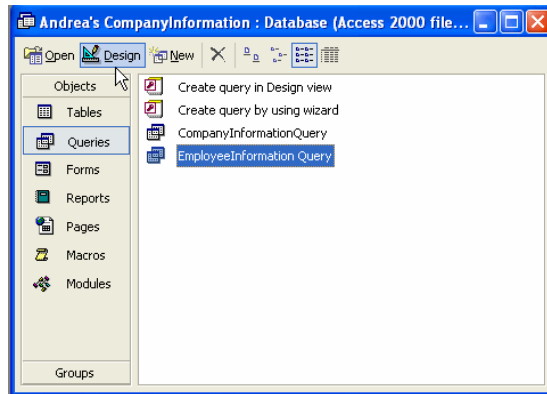


- Click on the button labeled **Finish**. Your query will then open up and display the data retrieved from your database.

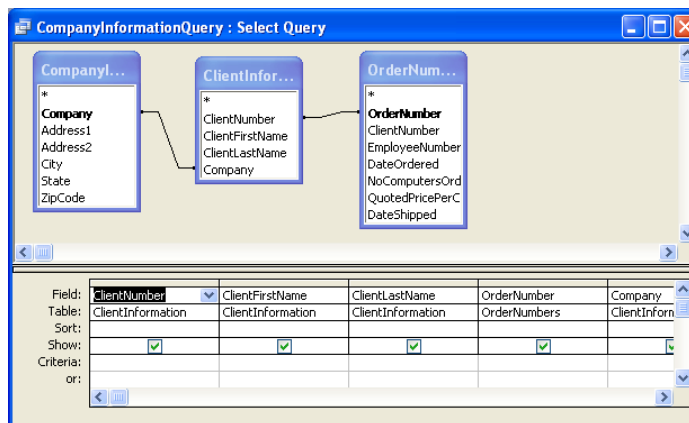
Making changes to a query

Once a query has been created, Access allows you to reopen the query in **Design View**. Queries may be revised to retrieve a different set of data from your database.

- In the **Database** window:
 - Click on the button labeled **Queries**.
 - Select the name of the query you wish to alter.
- Click on the button labeled **Design** located at the top of the Database window.



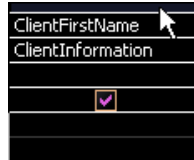
- The query you selected will then open up in **Design View** for you to revise.



- The top of the **Design View** window displays a summary of the tables that are included in the query.

Deleting a field from the query

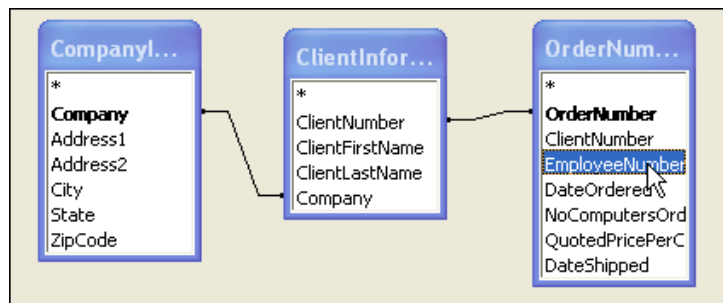
- Select the field you wish to delete by clicking on the gray box above the field's name.
 - Once the field is selected, it will be highlighted in black.



- Press the **Delete** key on your keyboard.

Adding a field to the query

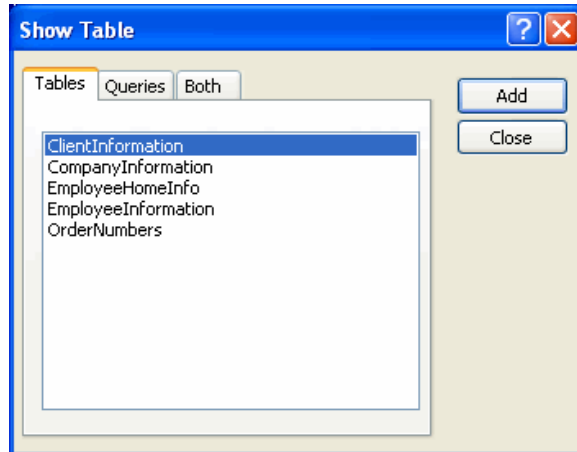
- To add a new field from a table that is already included in the query:
 - Locate the appropriate table at the top of the **Design View** window.
 - Double-click on the name of the field you wish to add.



- To add a new field from a table that is not yet included in the query:
 - Click on the **Show Table** button located on the toolbar at the top of the Access window.



- The **Show Table** window will appear.

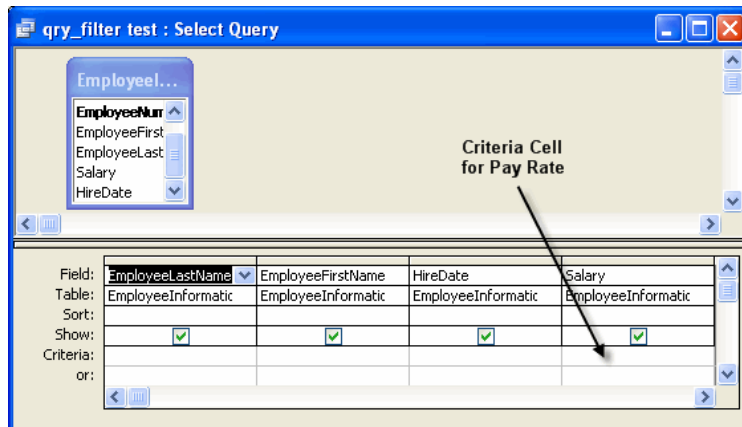


- Select the name of any data source you wish to add to your query.
- Click on the button labeled **Add**.
- After you have finished adding your data source(s), click on the button labeled **Close**.
- The new table(s) will appear at the top of the query in the **Design View** window
- To add a field from the new table(s), follow the steps described above.

Filtering query results

Filtering data returned by your query allows you to only view data that meets certain conditions. One or more filtering criteria can be added to each field in the query to only retrieve the records you desire. To create a filter:

- Open up an existing query in **Design View**.
- Decide which field you wish to use in your filter, and select a criterion that must be met by any data that is retrieved.
 - In the example below, **qry_filter test** answers the question “*Who do I employ, and what is each one’s salary?*”
 - Use of a filtering criterion might produce a more restrictive set of data that retrieves data to answer “*Which of my employees are paid less than \$40,000 per year?*”
 - In this case, the chosen filtering criterion is *less than \$40,000/year*.
- In the design grid, click in the **Criteria** cell for the field that will receive a filtering criterion (in this example, click in the **Criteria** cell for **Pay Rate**).



- In the **Criteria** cell, type in the filtering criterion for your field.

Salary
EmployeeInformatic
<input checked="" type="checkbox"/>
<40000

- Filters can be created using the following operators:

Operator	Description
>	Greater Than
<	Less Than
=	Equal To
>=	Greater Than or Equal To
<=	Less Than or Equal To

- Click on the **Save** button located on the toolbar.
- To see the results of your query:
 - Click on the **View** to switch from **Design View** to **View** mode.

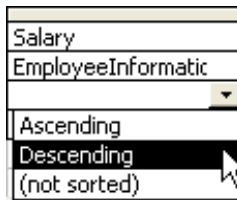


- Once you are in **View** mode, click on the **View** button a second time to return to **Design View**.

Sorting query results

Access allows you to sort data retrieved by a query so that it will be displayed in a logical order.

- Open up an existing query in **Design View**.
- Locate the field you wish to use to sort your data.
 - In the previous example, **qry_filter test** asks the question “*Who do I employ, and what is each one’s salary?*” One reasonable way to sort the retrieved data is in decreasing order by rate of pay.
- Click on the down-facing arrow located to the right of the cell.

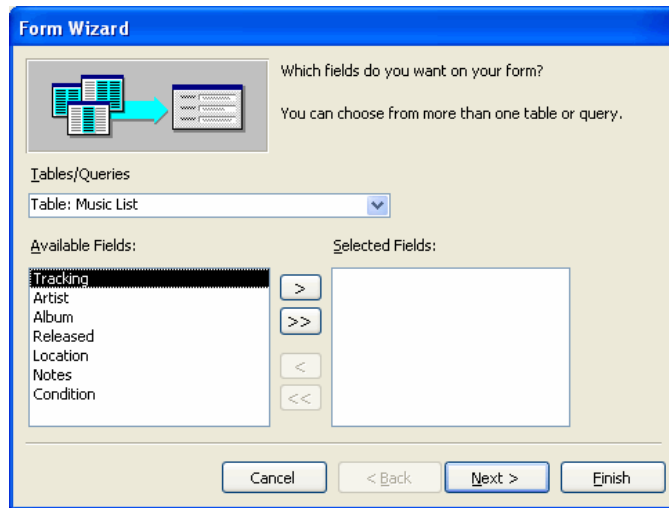


- From the list that appears, select the sort order you wish to apply to your query.
 - An ascending sort order will arrange your data from the **smallest** to **largest** value in the sort field.
 - A descending sort order will arrange your data from the **largest** to **smallest** value in the sort field.
- Click on the **Save** button located on the toolbar.
- To see the results of your query:
 - Click on the **View** button located to switch from **Design View** to **View** mode.

Creating a form

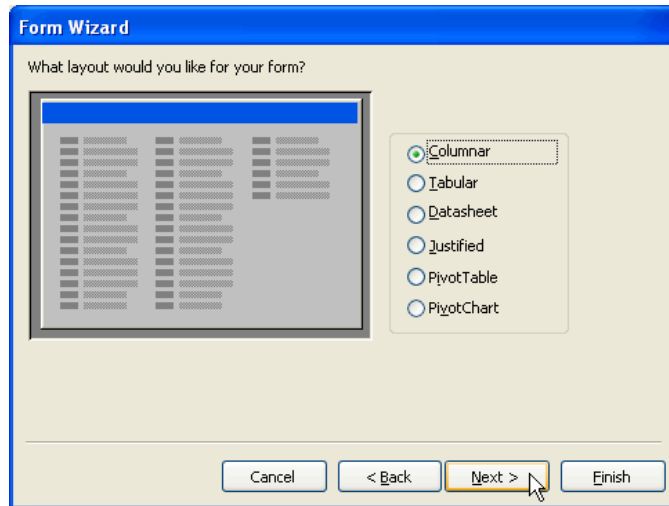
To create a form for data entry:

- Click on **Forms** in the **Database** window's left-hand navigation bar.
- Double-click on the link labeled **Create form by using wizard**.
- The **Field Wizard** window will appear

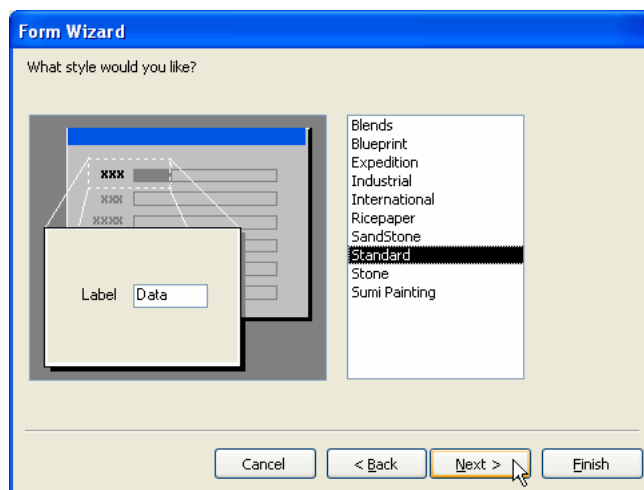


- From the **Tables/Queries** menu, select the name of the table into which you wish to enter data.
- From the box labeled **Available Fields**, double-click on the name of each field to be included in your form.
 - To include all of the fields in your table, click on the **double-arrow button** to the right of the box.
- Click on the button labeled **Next**.

- The **Layout Wizard** window will appear

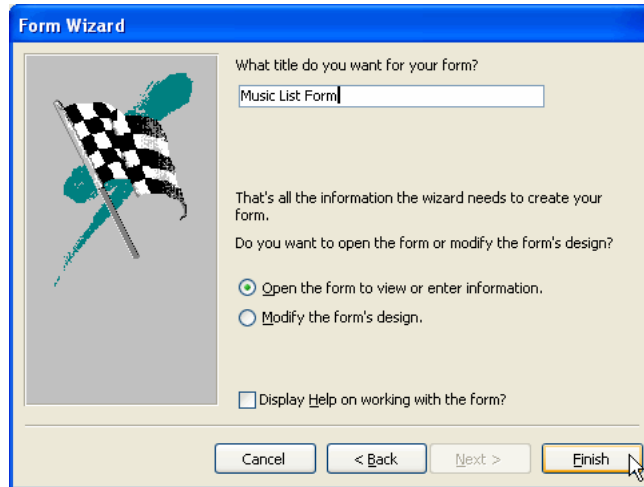


- Select a layout for your form.
 - The **Columnar** layout displays fields from the top to the bottom of the form.
 - The **Tabular** layout displays fields from the left to the right of the form.
- Click on the button labeled **Next**.
- The **Style Wizard** window will appear.



- Select a style for your form. Access provides several preconfigured styles for use in the Form Wizard. Notice that when you click on the name of each style, the Form Wizard will preview that style at the left of the dialog box.
- After you have selected a style, click on the button labeled **Next**.

- The **Title Wizard** window will appear.



Form Wizard

What title do you want for your form?
Music List Form

That's all the information the wizard needs to create your form.
Do you want to open the form or modify the form's design?

Open the form to view or enter information.
 Modify the form's design.

Display Help on working with the form?

Cancel < Back Next > Finish





- In the box labeled **What title do you want for your form?** type a name for your form.
- Click on the button labeled **Finish**.

Entering Records Using a Form

Records can be entered using a form that has already been created. Although datasheets can display multiple records at once, most forms will only display a single record at a time.



- To use a form to enter data in a record, simultaneously press down the **Tab** and **Shift** keys to move between fields.
- To move to other records in your database, use the arrow keys in the navigation bar at the bottom of the form.

	Display the first record in the data document
	Display the previous record
	Display the next record
	Display the final record in the data document

- To create a new record, click on the button at the far right of the navigation bar.

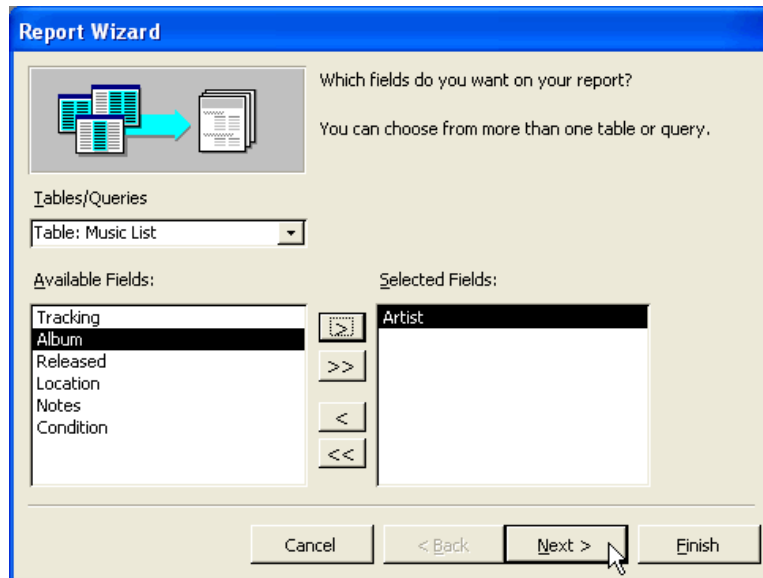


- Access will create a new record at the end of your database that can immediately accept data entry.

Creating a report

To create a form for data entry:

- Click on **Reports** in the **Database** window's left-hand navigation bar.
- Double-click on the link labeled **Create report by using wizard**.
- The **Report Wizard** window will appear.

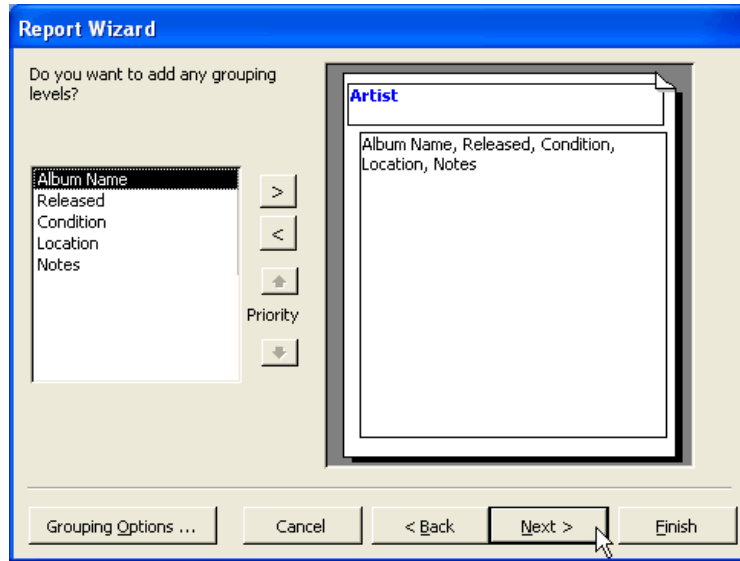


- From the **Tables/Queries** menu, select the name of the table from which you wish to draw data.
- From the **Available Fields** box, doubleclick on the name of each field to be included in your report.
 - To include all of the fields in your table, click on the **double-arrow button** located to the right of the box.



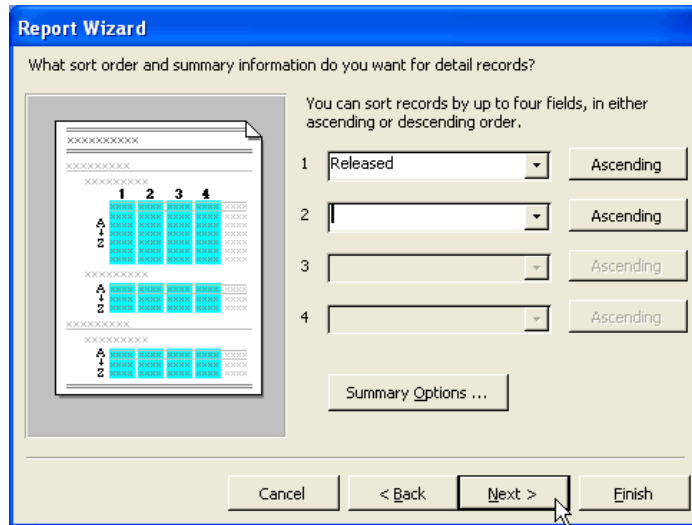
- Click on the button labeled **Next**.

- The **Grouping Wizard** window will appear.

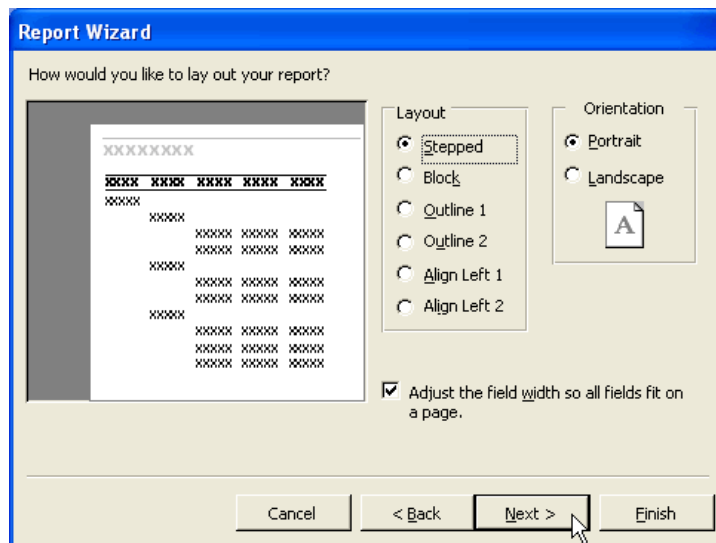


- Specify the field(s) you wish to **group** the data in your report. *In the example above, all of the albums in the database by a specific artist will be listed together. In addition, a blank line will separate the albums by one artist from the albums by another.*
- After specifying your **grouping** options, click on the button labeled **Next**.

- The **Sort Order and Summary Information** window will appear.



- Select up to 4 fields by which your data will be **sorted** within the groups you already defined. *Above, each group of albums by an artist is sorted by each album's release date in ascending order.*
- Click on the button labeled **Next**.
- The **Layout Wizard** window will appear.



- Select a **layout** and an **orientation** for your report. As you select these design characteristics, notice their appearance in the preview area at the left of this dialog box. Based upon this preview, select a style that will be appropriate for your data.
- Click on the button labeled **Next**.

- The **Style Wizard** window will appear.



- Select a style for your report.
- Click on the button labeled **Next**.
- Type a title that you want to appear in the header of your report.
- Click on the button labeled **Finish**.

Planning a database

A little planning goes a long way in creating a database that will be a useful and powerful tool for accomplishing your professional and organizational goals. Be certain to take plenty of time to plan and test your database before you implement it and put it to work.

Below are some ideas to consider in your planning process:

- What is the goal of your project?
- What is the goal of your database? (Is it the same as the goal of your project?)
- Who will use the database?
- What kinds of information must be captured and made accessible?
- What specific data do you want to track and manage?
- How will you need to retrieve and output your data?
- What fields will be necessary to capture the data?

Tip: Consider creating a prototype of your database to be tested with a subset of your data. This prototype will allow you to work with your database and your data so you can make necessary revisions.