Access Queries (Office 2003)

Technical Support Services

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Course Description

This is the second in a series of six workshops about Microsoft Access. It deals specifically with queries, plus some information about filters.

Many databases contain large varied amounts of information. There are times when you will need to narrow the focus of the information in the database or combine information from multiple tables. This is done through the use of queries. Queries allow you to view, change, and analyze data in different ways. You can also use them as a source of records for forms and reports.

The purpose of this session is to familiarize you with some of the different types of queries and how they can be used. Our goal is to assist you to learn the software, understand some basic concepts and show you some tips and techniques so you can develop your database management/programming skills over time.

The six Access workshops are:
- Introduction to Access
- Access Queries
- Access Reports
- Access Database Design
- Access Form Design
- Access Macros and Advanced Features

Thank you,

The OIT Technical Support Services Trainers

West Virginia University

What is a Query?

In the strictest sense, a query is a way to answer questions about the data in your tables. It allows you to retrieve items in a database that meet a set of criteria that you specify. However, within the realm of modern databases, a specialized form of a query can also be used to:

- Define database objects

- Perform calculations

- Make new tables

- Append, delete, or update records

- Produce data summaries

Access contains some other features that are not strictly classified as queries but they can be used to achieve query-like results. These are sorting and filters. Sorting was covered in the Introduction to Access workshop. We will discuss filters today before we tackle actual queries. We also learned how to use the find command in the ***Introduction to Access*** workshop. Wildcards (*, ?, NULL) will also work for filters and queries.

Filters

A filter can be used to select or exclude a set of records from a table that meets specified criteria.

Types of Filters

Filter	Action	Menus	Toolbar	Shortcut Menu
Filter by Selection	Uses selected text as criteria	X	X	X
Filter by Exclusion	Uses all text except selected text as criteria	X		X
Filter By Form	Uses sample text entered into a blank record as criteria	X	X	
Advanced Filter/Sort	Uses the Query by Example (QBE) grid to set criteria	X		

Limitations of Filters

While filters are powerful in their search and retrieval capabilities, they do have limitations.

- Selection limited to one table
- Cannot calculate new data
- Must retrieve the entire record

Notes on Filters

- A filter can be saved as a query. You must be in the Advanced Filter/Sort view and then choose **File > Save as Query** from the menus
- To remove a filter and view all records within a table, select Remove Filter/Sort from the toolbar, Records menu, or shortcut menu
- Multiple fields can be used in a filter, Filter will evaluate from left to right
- For each specified field in an Advanced Filter, you can indicate either a sort order or criteria or both

Activity 1: Creating and Using Filters

1. Open the Northwind database
2. Open the **Customers** table
3. Click in any **ContactTitle** field that has a value of "Owner"
4. Perform a **Filter by Selection**: use the button on the toolbar (funnel with lightning bolt), or right click and use the shortcut menu, or use the menu under **Record > Filter**
5. You should now see _____ records, displaying only those individuals who are owners.
6. Remove the Filter: click on the funnel button on the toolbar, the shortcut menu, or in the menu bar under **Record > Filter**
7. Choose **Advanced Filter/Sort** from the menu bar under **Record > Filter**
8. In the lower portion of the screen, *ContactTitle* should be listed in the field row. Click in the field textbox of the next column
9. Using the drop down list, choose the *Country* field
10. Enter "Sales Manager" in the criteria area of the *ContactTitle* field and "USA" in the criteria area of the *Country* field
11. Click on the **Apply Filter** button
12. Choose **Advanced Filter/Sort** from the menu bar under **Record > Filter**
13. Remove the criteria from *ContactTitle* field
14. Enter "Canada" and "Mexico" in the textboxes below USA in the **Country** field.
15. Choose **File > Save As Query** from the menu (while you are viewing the advanced filter).
16. Save the query with the name **NAFTA**
17. Apply the filter. How many customers are from one of these countries? _____
18. Remove the filter
19. Close the **Customers** table
20. Click on the **Queries** object and open the NAFTA query by double clicking on it.
21. Switch to **Design View** (click on the blue triangle in the upper left).
22. Close the NAFTA query
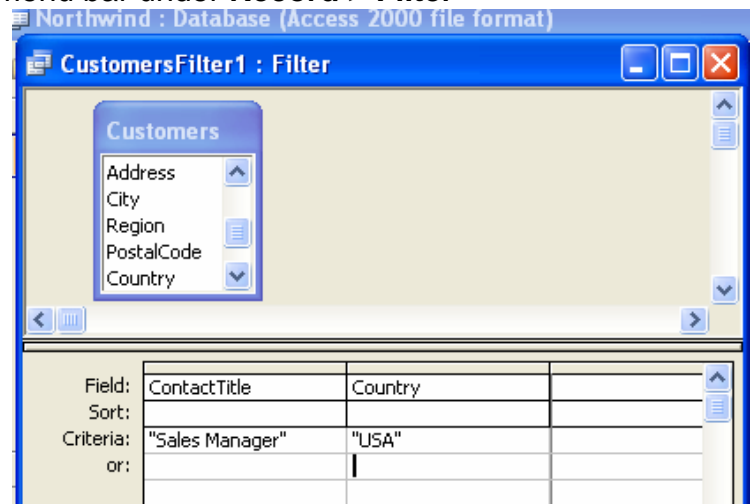
On your own:

1. Open any table in the database.
2. Perform a **filter by selection** using any technique. When would you want to do this?
3. Remove the filter.
4. Perform a **filter by exclusion** using the Record menu or the shortcut menu. Can you think of any reasons why you might want to use this feature?
5. Remove the filter and close the table.

Queries

Why Use Queries?

In most cases, the real reason for using a database to store data records is so they can be retrieved using some criteria that is specified interactively. Since this is the definition of a query, we could logically assume that queries are the main reason for using a database. Access gives you a great deal of flexibility and power with queries. You can use them to:

- **Choose fields:** You can select the exact fields needed to satisfy the query. You do not have to include all of the fields of a record in a query

- **Choose records:** You can select records from a table based on a specified criteria

- **Sort records:** You can view the results of the query in a specified order

- **Access multiple tables:** You can select data from several different tables and place the results in a single dynaset. You can even access data from other database management systems

- **Perform calculations:** You can add new fields in the dynaset that contains the results of calculations involving other fields

- **Provide data source:** You can use a query as a source of data for forms, reports, and other queries

- **Update data:** You can update, delete, or append a group of records in one step. You can even create a new table that includes some or all of the records from an existing table or tables

Using a query

Microsoft Access contains a number of query wizards or you can create one from scratch using a form of *Query by Example* - where you specify the retrieval criteria by placing typical values in columns. You can then treat the columns of sample data as an example for the query. This is the exact same concept that we used for the advanced filter earlier. However, a query is more complex than a filter, since it can:

- Apply to multiple tables

- Select individual fields instead of full records

- Be saved and reused

Types of Queries

Query Type	Description
Select Query	A select query is used to view, analyze, or update the data in one or more tables. It is the most common type of query in Access and it is very similar to the previously discussed filter.
Crosstab Query	A crosstab query is used to present the data in rows and columns like a spreadsheet. It can summarize large amounts of data in an easy-to-read format and it blends well with reports and charts.
Make-Table Query*	Creates a new table from the results of a select query. It can be used to make table backups, to archive old data, or to extract a table of matched data for exporting.
Update Query*	Lets you make global changes to data in one or more tables. Allows you to enter one set of changes that could be posted to many records with minimal effort.
Append Query*	Allows you to add records to the end of a table. It can be used to merge tables together by appending one table to the end of another.
Delete Query*	Deletes a group of records from one or more tables. Could be used in conjunction with the Make Table query to delete archived records from a table after an archive table was created and filled.
Union Query	A union query is used to combine the matching fields from two or more tables.
Pass-Through Query	A pass-through query is used to send commands to a SQL database.
Data Definition Query	A data definition query creates, changes, or deletes tables in an Access database using SQL statements.

* These are action queries. When these queries are run design changes are made to the database in some manner.

Creating a Query

Queries can be created in several different ways. When you click on the **New** button in the Queries object you can choose between the following methods to create a query:
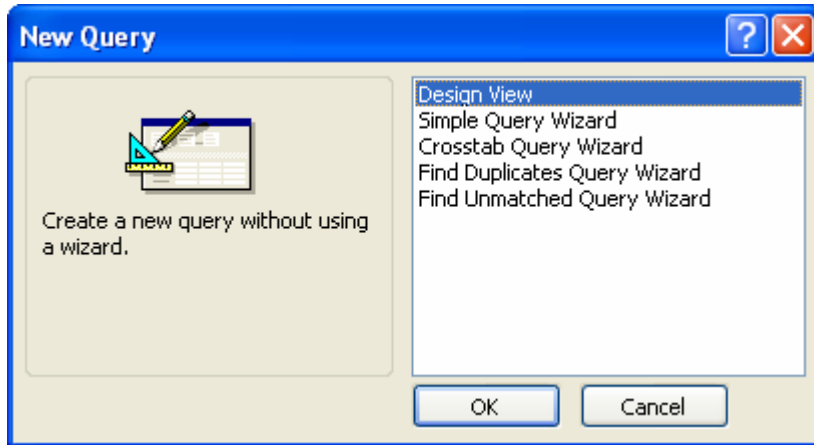
Design View

- Create a query from scratch. You will get a blank QBE[1] grid

Simple Query Wizard

- Create a select query from one or more tables for simple selections and calculations

Crosstab Query

- Create a crosstab table based on a single table or previously created query

Find Duplicates Wizard

- Find duplicate records within a single table or query

Find Unmatched Wizard

- Find records in one table that do not match records in a related table

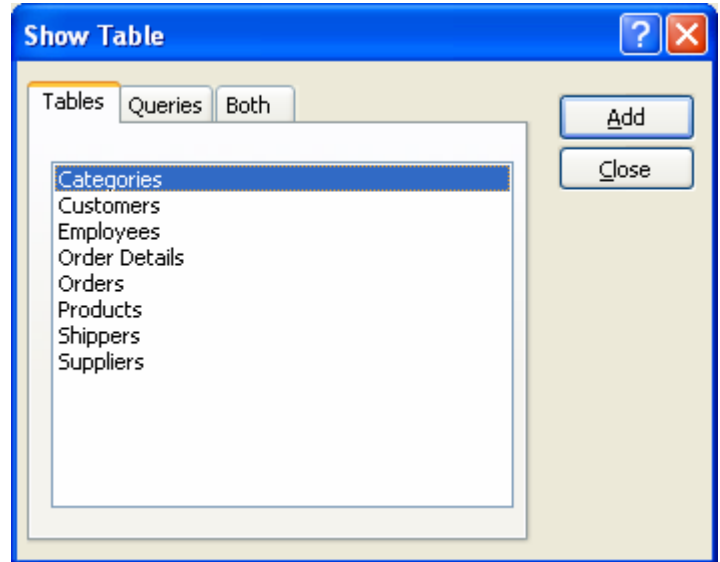Select the method that you wish to use and click on **OK**.

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[1] QBE: Query By Example – you create a query by selecting fields and specifying criteria instead of typing out SQL statements. SQL is "Standard Query Language".
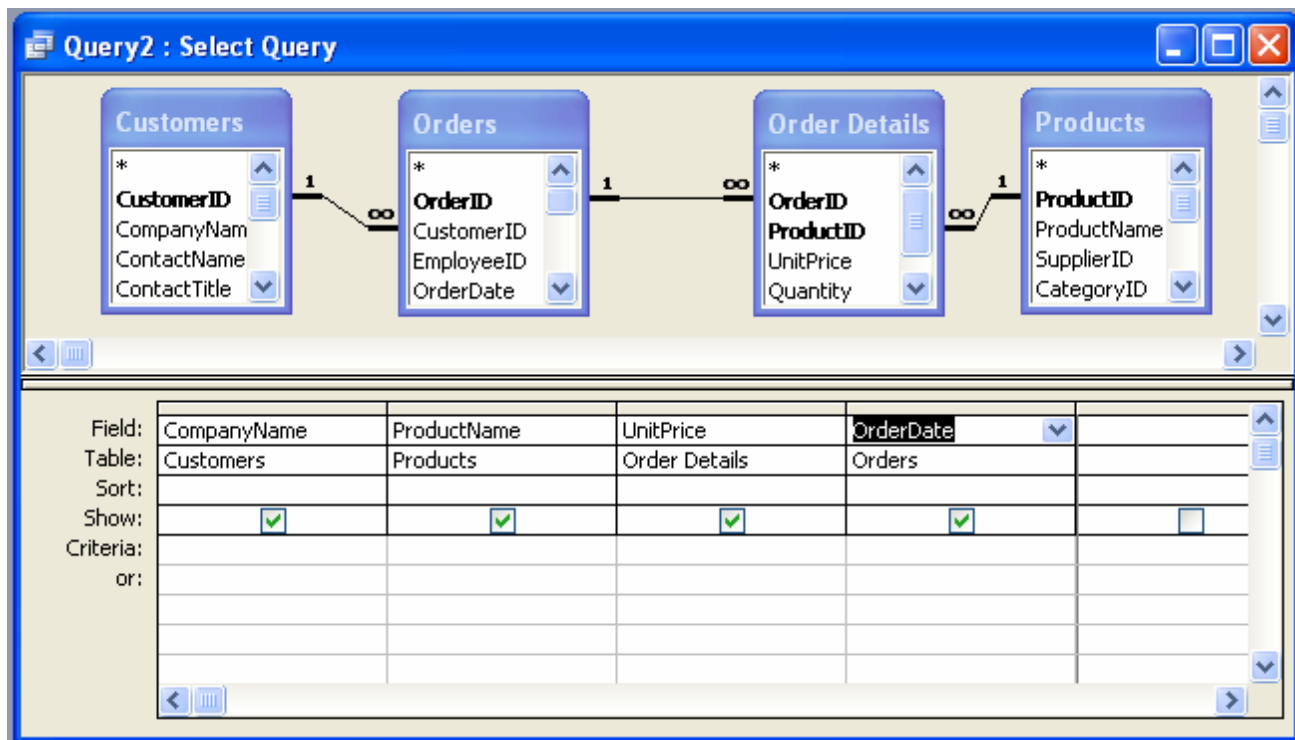
Using Design View to Create Queries

Select a data source

1. Click on the name of the table or query that you wish to use in your query.

2. Click on **Add**

3. Repeat for each table that you want to add to the current query

4. Click on **Close** when finished

Alternative technique: you can double click on the table names to add them to the query.

Show Table

Tables | Queries | Both

Categories
Customers
Employees
Order Details
Orders
Products
Shippers
Suppliers

Add
Close

Query By Example Window

Query2 : Select Query

Customers	Orders	Order Details	Products
*	*	*	*
CustomerID	**OrderID**	**OrderID**	**ProductID**
CompanyNam	CustomerID	**ProductID**	ProductName
ContactName	EmployeeID	UnitPrice	SupplierID
ContactTitle	OrderDate	Quantity	CategoryID

Field:	CompanyName	ProductName	UnitPrice	OrderDate	
Table:	Customers	Products	Order Details	Orders	
Sort:					
Show:	☑	☑	☑	☑	☐
Criteria:					
or:					

Query Notes:

- If more than one table is selected, join lines should be displayed between the tables to show the relationships (a primary key in one table is tied to a foreign key in another table). You will learn how to establish relationships in the Access Database Design workshop.

- You can add tables to a query at any time by choosing **Show Table** from the **Query** menu or clicking on the Show Table button.

- The type of query that you are creating is displayed in the title bar of the query window. You can change this by selecting the desired query type from the Query menu. Most of the queries in today's workshop will be Select queries.

Selecting Fields

Only the fields that are added to the QBE grid will be displayed in the resulting dynaset[2]. Fields can be added from multiple tables as long as there is a connection or relationship between the two tables.

Fields can be added to the Query in one of three ways:

1. In the Field row of the QBE grid, click on the drop down menu and choose the field name that you want to add.

2. Click and drag the field that you want to add from the table listing in the top portion of the screen to the lower portion.

3. Double click on the field name that you want to add from the table listings; the field should then appear in the right-most column of the QBE grid.

Use any combinations of these methods to add all of the fields to the query that you wish to include.

Query Views

View	Description
Design View	use the QBE grid to create or modify queries
Datasheet View	view to results of the query in a table-like view
SQL View	view or modify the code associated with the query
PivotTable View	view the results of a query as a PivotTable
PivotChart View	view the results of a query as a PivotChart
Print Preview	view the results as they would appear in print

‣ Print Preview is only available on the **File** menu.

‣ Design, Datasheet, and SQL views are available using the View button on the toolbar and on the **View** menu.

‣ PivotTable and PivotChart views are only available if you created the query using the PivotTable wizard.

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[2] **Dynaset** is the official name for the table of results from running a query.

Activity 2: Create a Simple Query

1. Click on the **Queries** object, if it is not already selected.
2. Click on the **New** button
3. Select **Design View**
4. Click on **OK**
5. Add the **Customers** table
6. Click on **Close**
7. Add the fields **ContactName**, **ContactTitle**, **CompanyName**, and **Country** to the QBE grid
8. Type the word "Owner" in the criteria row below **ContactTitle**
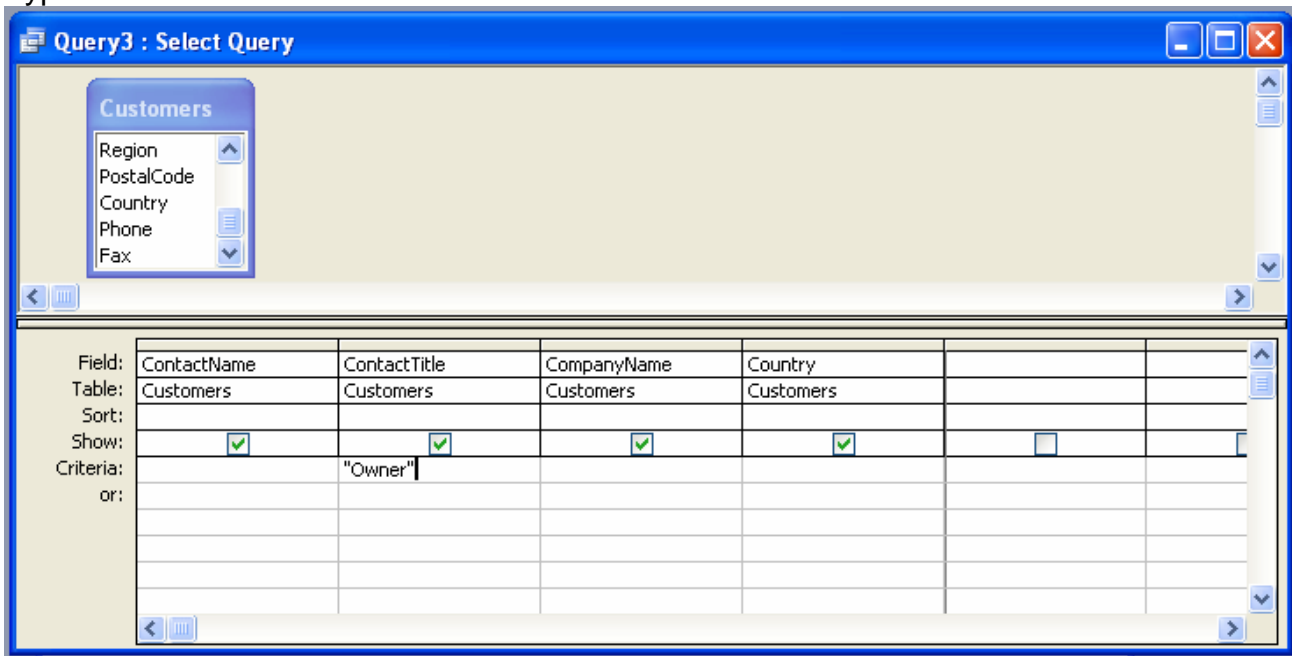
9. Run the query by clicking on the **!** button or by switching to **Datasheet View**
10. Close the query and save it with the name **FindOwners**

On your own:

A.
  ‣ Create a simple, single table query on any table in the Northwind database.
  ‣ Select 2 or more fields from the table using your favorite technique.
  ‣ Specify a criteria for at least one of the fields (you might need to preview the data first).
  ‣ Save and close the query.

B.
  ‣ Open (run) an existing query that comes with the Northwind database.
  ‣ Look at it in Design View.
  ‣ Look at it in SQL View.
  ‣ Close the query.

Query Utilities

Rearranging, Inserting, or Deleting Fields

While you are selecting the fields to be used in the query, it's easy to alter the query structure if needed.

Moving a field

To move a field left or right in the grid, click on the header bar to highlight the field. Then click on it again and drag it to a new location.

Deleting a field

To delete a field, click on the header bar to highlight the field. Then press the Delete key.

Inserting a field

To insert a field, select it from a table field list and drag it to the column position where you want it inserted. The other columns will shift to the right to make room for it.

Specifying Sort Order

When you view the results of a query, it's often easier to interpret the data if it is sorted into some logical sequence. Sorts can be specified directly in the Query By Example (QBE) grid.

- Click in the Sort cell for the field that is to be the sort key, pull down the sort options menu, and select the desired sort order

- To sort on multiple fields, arrange them from left to right in the desired sort key order and select the desired sort options for each field

Excluding Fields from the Dynaset

Fields can be used as part of the selection criteria but excluded from the resulting dynaset. To exclude a field from the displayed dynaset, remove the check from the box in the Show cell of the QBE grid.

Specifying Criteria

To select certain records from the database tables, we can specify selection criteria that a record must meet in order to be selected. The criteria is specified in the form of an expression.

- A simple expression would be a value. The query would search for all records with that value in that field

- You can use <, >, <=, >=, and <> (not equal to) along with a value. For example, a criteria of *<200* could be specified for a cost field

- More complex expressions can be created to search for a range of values or the difference between values. The expression builder can be used to create the expression that forms the criteria of the query. Start the expression builder and click on the Help button for more information on using the builder

- If you know the syntax of the expression, you can simply type it in the criteria cell

- Wildcards can be used to specify the criteria. You can use ? in place of any single character, * in place of any number of characters, and # in place of any single numeric digit

Combining Selection Criteria

Selection criteria entered into the Query By Example grid can be combined within columns or across columns. The logical operators AND and OR are available for use but are generally implied by the position of the criteria within the grid.

- To use a multiple OR condition within a column, list the first criteria in the cell marked Criteria and placed successive items in the cells directly below the first

- A multiple AND condition within a column is generated by placing both criteria in the same cell separated by the keyword AND

- An AND condition across columns is created by placing the specifications in cells along the same criteria row

- An OR condition across columns is created by placing the specifications in cells in different rows

Viewing the Resulting Dynaset

After the criteria specifications are entered in the Query By Example (QBE) grid and the query is executed, Access extracts the resulting data from the table and places it in the Dynaset.

You can view the Dynaset by choosing **View > Datasheet** from the menu bar or by clicking on the Datasheet button on the Toolbar. The dynaset (sometimes referred to as a recordset) resulting from a query appears to have all of the characteristics of a table, but it isn't quite the same.

It is called a virtual table because it exists in the memory of the computer only. When you exit Access, the dynaset is lost unless you take some direct measures to save it. Procedures for converting the dynaset to a table are described later in this handout.

Saving the Query

When you save a query, it becomes part of the database and appears under the **Queries** entry in the **Objects** list in the Database window.

Saving a query saves only the structure of the query itself. It does not save the dynaset results from running the query. When you open the query in the future, it will re-run the query and display a new dynaset result.

- To save a query, choose the **Save** command from the **File** menu while in the Design view. If you have not yet saved your query, Access will prompt you to do so when you attempt to close the query.

- Give the query a meaningful name then click the **OK** button.
  Caution: do not give a query the same name as one of your tables. Also, if you will be creating a serious database project, do not use blanks or symbols in your query's name (other than numbers and underscores); Visual Basic for Applications modules will be easier to create if you have used simpler object names. One naming convention uses the letter "q" at the beginning of all query names.

Printing Query Results

You can print the results of the query by selecting the Datasheet View and choosing the **Print** command from the **File** menu. The output will be presented in table form with no formatting.

To produce a nicely formatted report, you will have to create a report. We will discuss that topic in the next workshop.
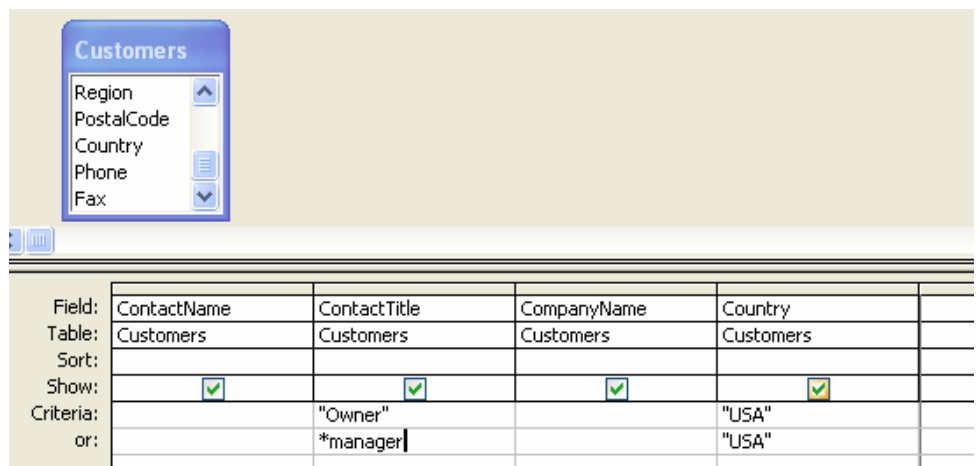
Activity 3: Combining Criteria in a Single Field

Query will find all products with a price of $25 or greater and less than or equal to $100

1. Click on **New** in the Query objects
2. Select **Design View**
3. Click on **OK**
4. Add the **Products** table
5. Click on **Close**
6. Add the fields **ProductName** and **UnitPrice**
7. Enter **>25 AND <100** in the criteria area under **UnitPrice**
8. Run the query
9. Switch to **Design View**
10. Change the criteria to **>= 25 AND <= 100**
11. Run the query – What is the difference between these two criteria?
12. Close the query and save it with the name **Products between $25 and $100**

Activity 4: Combining Criteria using Multiple Fields

Query will find all customers from the USA who are listed as owner or some type of manager in the contact title field.

1. Click on **New** in the Query objects
2. Select **Design View**
3. Click on **OK**
4. Add the **Customers** table
5. Click on **Close**
6. Add the fields **ContactName**, **ContactTitle**, and **Country** to the grid
7. Set "USA" as the criteria for **Country**. Repeat this on the second row
8. Set the first criteria under **ContactTitle** as Owner
9. Set the second row of the criteria for **ContactTitle** as *manager
10. Run the query
11. Close the query and save it with the name **USA Owners and Managers**

Field:	ContactName	ContactTitle	CompanyName	Country	
Table:	Customers	Customers	Customers	Customers	
Sort:					
Show:	☑	☑	☑	☑	
Criteria:		"Owner"		"USA"	
or:		*manager		"USA"	

Activity 5: Creating a Multi-table Sorted Query

1. Click on **New** in the Query objects

2. Select Design View

3. Click on **OK**

4. Add the **Customers**, **Orders**, **Order Details**, and **Products** tables

5. Click **Close**

6. Add the fields **CompanyName**, **ProductName**, **UnitPrice** (from Order Details), **Quantity**, and **OrderDate**
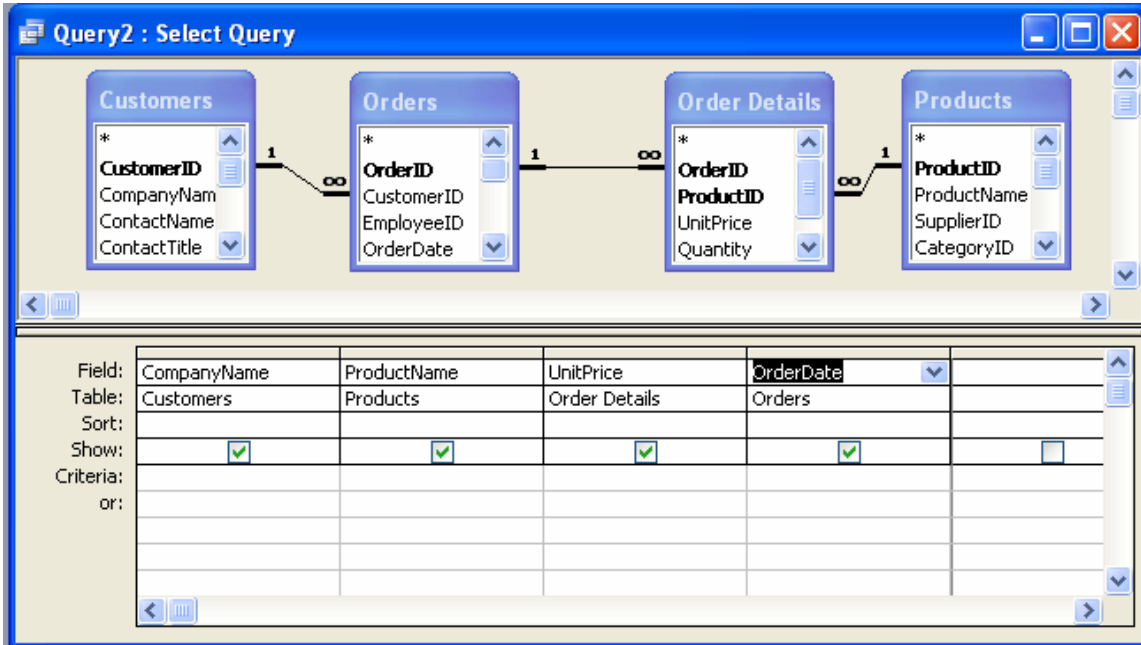
7. In the Sort row, under CompanyName, change it to **Ascending**

8. In the Sort row, under OrderDate , change it to **Descending**

9. Run the query

10. Close the query and save it with the name **Order Info Sorted by Company**

On your own:

1. Create your own query, using one or more tables.

2. Sort by one or more fields.

3. Specify a criteria, if you want to.

4. Run the query.

5. Save and close the query.

Saving Query Results in a Table

The dynaset that results from a query can be saved by creating a new table to hold the data. This is done by creating a Make-Table query. When a Make-Table query is run:

- Access checks to see if there is an existing table with the name that you have specified. If one exists, it will be deleted. If you have not changed the default settings, you will see a warning dialog window before this happens.

- Selects the data according to the criteria.

- Pastes the data into the new table. If you have not changed the default settings, you will see a warning dialog window before this happens.

Activity 6: Make Table Query

1. Click on **New** in the query objects

2. Select **Design View**

3. Click on **OK**

4. Add the **Employees** table

5. Click on **Close**

6. Choose any fields to add to the query

7. Add criteria and sorting, if you want

8. Run the query to view the results

9. Switch back to **Design View**

10. Choose **Make Table** from the **Query** menu

11. Enter a name for the table (Make sure that the name you enter is different than any object that already exists in the database.)

12. Click on **OK**

13. Run the query – running the query is the only way that the table will be created.

14. Close the query and save it with the name **Make Table Test**

15. Notice the different icon that this query has. This is because it is an action query.

16. Click on the **Tables** object

17. Open your table and review the contents – it should appear the same as when you ran the query in step 8

18. Close the table.

Note that this table you created is a static snapshot of the database – if you update or add to the original table the query was based on, this snapshot will not change.

Calculations

Within Access you can perform calculations to display results in a field that are not stored in the database tables. Expressions are used to within a query to define the desired calculations

- Calculations can be entered manually or they can be created using the Expression Builder

- When entering a calculation, you can zoom to expand the input area.
  Press **Shift F2** to zoom in on a text box

- You can change the properties of a calculated field by right clicking on the calculation and choosing **Properties**

Expression Rules

- When the expression refers to other fields in the QBE grid, their field names must be enclosed in square brackets: **[field name]**. You can label fields and use their labels instead

- If you want to refer to a field in another table (or if you have a field by the same name in another table), then the name must be preceded by the table name, also in brackets, and separated by an exclamation point: **[table name]![field name]**

- To assign a heading to the column, precede the calculation with a label followed by a colon **label:[table name]![field name]**. If you don't assign a label to a calculated field, Access will assign one of the form (Expr1, Expr2, ...) for you

- The **&** operator can be used to concatenate text fields into one field

- Standard mathematical operations can be used in expressions (+, -, *, /, ^)

Activity 7: Performing Calculations

1. Click on **New** in the Query objects

2. Select **Design View**

3. Click on **OK**

4. Add the **Orders**, **Order Details**, and **Products** tables

5. Click on **Close**

6. Add the fields **UnitPrice** and **Quantity**

7. In the field row of the 3rd column enter the expression
   Total: [Order Details]![UnitPrice]*Quantity

8. Press Shift F2 to Zoom in, if that will help you see what you're typing.
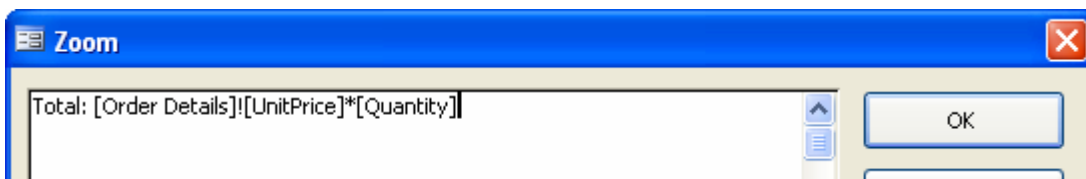
9. Add the fields ProductName and ShipCity

10. Choose **Totals** from the **View** menu

11. In the **Totals** row, change the entry under the calculated field to **Expression**

12. Sort the calculated field **Descending**

13. Sort ProductName and ShipCity in ascending order.

14. Remove the check in the **Show** row from the **UnitPrice** and **Quantity** fields
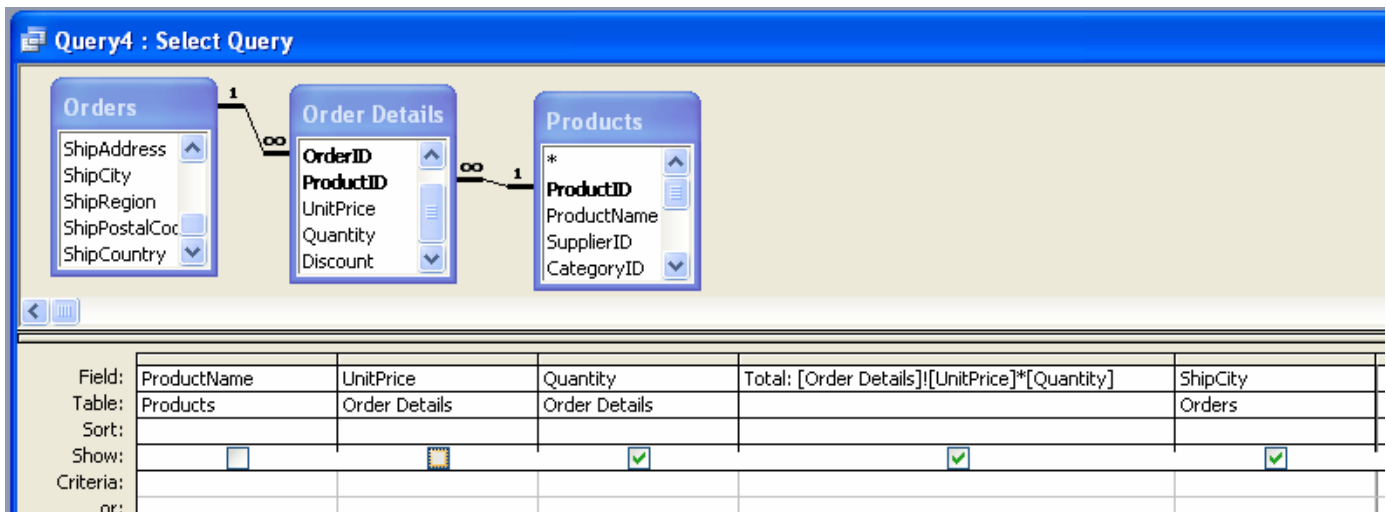
15. Run the query

16. Close the query and save it with the name **Order Totals**

Activity 8: Concatenating Names and Calculate Age

1. Click on **New** in the Query objects
2. Select **Design View**
3. Click on **OK**
4. Add the **Employees** table
5. In the field row of the 1st column type: **Name: LastName & ", " & FirstName**
6. Add the **BirthDate** field
7. In the field row of the 3rd column type: **Age: (Now()-BirthDate)/365.25)**
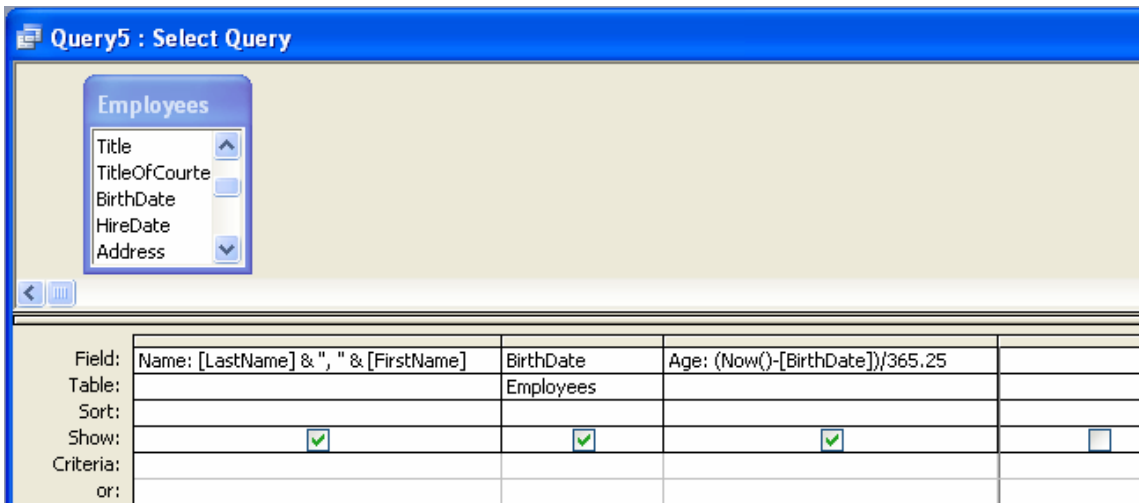
8. Choose **Totals** from the **View** menu
9. In the **Totals** row, change the entry under the **Age** calculated field to **Expression**
10. Remove the check in the **Show** row from the BirthDate field
11. Run the query
12. Close the query and save it as Employee Age

Note

To reduce the decimal places in the Age field

1. Switch back to **Design View**
2. Right click in the field row of the **Age** calculation and choose **Properties**
3. Using the drop down menu under **Format**, choose **Fixed**
4. Enter 2 for the number of decimal places

Functions Available

A standard set of calculation functions is available within Access to perform calculations on groups of records or to be included in expressions.

Function	Computes	AutoNumber	Currency	Date/Time	Number	Yes/No	Text	ALL
Sum	The total of the values in the field	X	X	X	X	X		
Avg	The average of the values in the field	X	X	X	X	X		
Min	The lowest value in the field	X	X	X	X	X	X	
Max	The highest value in the field	X	X	X	X	X	X	
Count	The number of non-blank values in the field							X
StDev	The standard deviation of the values in the field	X	X	X	X	X		
Var	The variance of the values in the field	X	X	X	X	X		
First	The value from the first record							X
Last	The value from the last record							X

To use these functions:

1. Create your query as you normally would
2. Choose **Totals** from the **View** menu
3. For the field that you want to use a function in, choose the function from the list in the **Total** row (click in the cell then click on the down triangle).
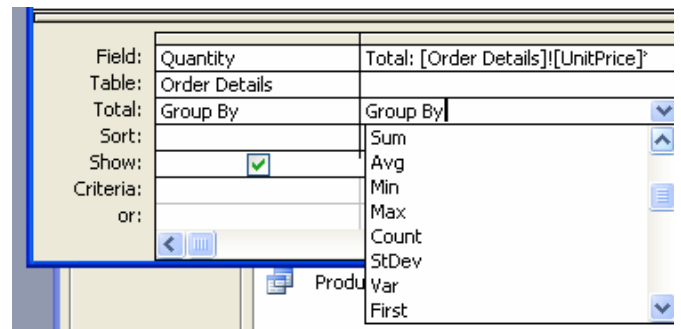
Action Queries

Action queries are used to change or delete data in a table. This category includes Update, Delete, Append, and Make Table queries. Since these actions are very fast and could damage your files if they are not constructed correctly, you should always back up your data before using them.

Update queries add a special Update row to the QBE grid. After entering the fields that are to be updated in the grid and specifying the selection criteria, the new value is placed in the Update cell. If the value in the field matches the criteria, it is replaced with the value in the Update cell. Note that the value in the Update cell could be a expression or a calculation.

Append queries add a special *Append To* row to the QBE grid. Fields and criteria are entered into the grid to select the records from the table that are to be appended to another table. The *Append To* row is used to specify the table that the records are to be appended to. This could be another table in this database or it could be in another database.

The **Delete** query allows you to specify the fields and criteria that is to be used to select records for deletion. A special form of this query allows you to delete records from multiple tables.

The **Make-Table** query allows you to create a new table from the results of a query. The fields and criteria are used to select records for the new table. Access prompts you for the name of the new table. (see page 16)

A combination of these queries is frequently used to complete a change to a database. A Make-Table query might be used to create a copy of completed records from a table. A Delete query might then be used to remove the records completely from the original table. Finally, an Append query might be used to merge the copy of completed records that were deleted from the active data into a table that contains other completed records.

Parameter query

A parameter query prompts you for the selection criteria when you run the query. To create a parameter query:

1. Create a normal select query but omit the criteria. In place of the criteria, place a parameter (generally in the form of a question) inside square brackets. This text will be your meaningful prompt to enter information. Repeat this for each field that you want to define as a parameter

2. Choose **Parameters** from the **Query** menu to bring up the Parameter Dialog Box

3. In the dialog box, enter the first parameter exactly as it is in the criteria cell but without the square brackets. The data type of the parameter should match the data type of the field

4. *Repeat for each parameter in the sequence that you want to be prompted for and then click* **OK**

Notes on Parameters

- If you have more than 1 parameter in a query, you will be prompted for the input in the order that the fields are entered into the Query Parameter dialog window

- You can use a wildcard in your parameter specification. When you enter your parameter into the criteria area, add the work **like** in front of the criteria – **Like [Country?]**
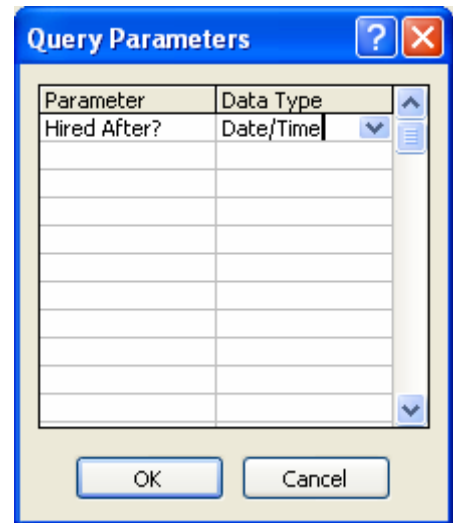
Activity 9: Parameter Query

1. Click on **New** in the Query objects

2. Select **Design View**

3. Click on **OK**

4. Add the **Customer** table

5. Click on **Close**

6. Add the **CompanyName**, **City**, and **Country** fields

7. In the criteria row under the Country field enter **[Country?]**

8. Choose **Parameters** from the **Query** menu

9. Type **Country?** In the first cell of the first row

10. Leave the data type as Text

11. Run the query – you will be prompted to supply a country name.

12. Close the query and save it as **CompanyByCountry**
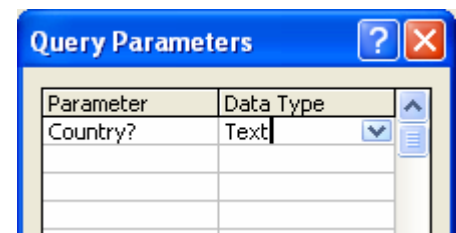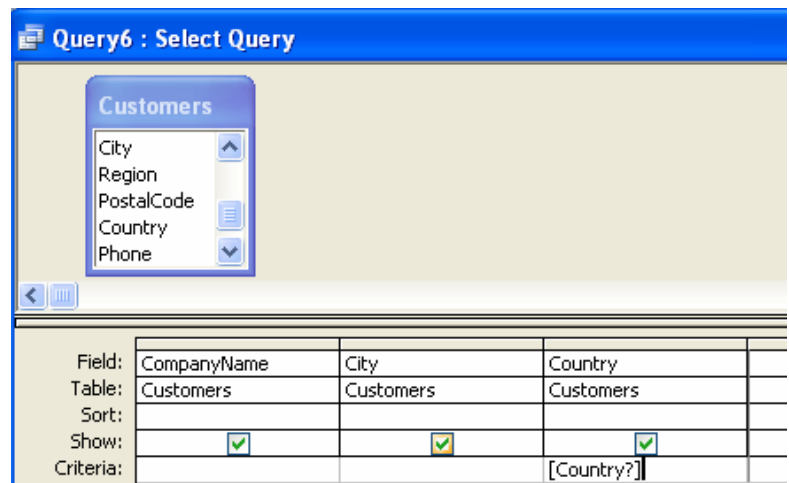
Activity 9b: Another Parameter Query

1. Repeat Activity 9 but use the Employees table.

2. For the criteria, specify >[Hired After?].

3. Don't forget to modify the Query > Parameters to make the data type "Date/Time".

Field:	FirstName	LastName	HireDate
Table:	Employees	Employees	Employees
Sort:			
Show:	☑	☑	☑
Criteria:			>[Hired After?]
or:			

Query Properties

‣ From the Queries Object view (list of queries), change to Details view by clicking on the Details button.

‣ Right click on the query and choose Properties from the shortcut menu.

‣ Enter a meaningful description and click on OK.
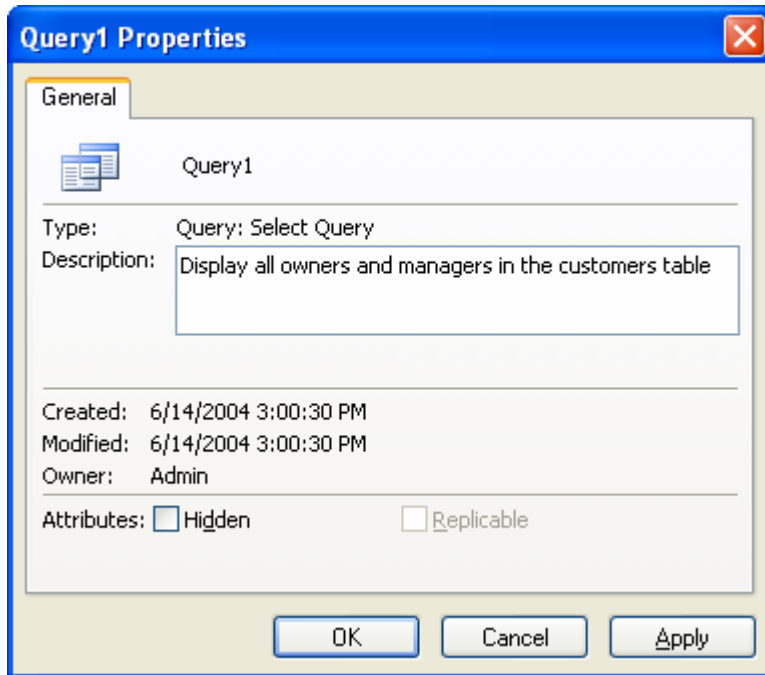
Crosstab Query

You can use this type of query to summarize a large table or query dynaset. If you plan to perform this query on another query, create the base query first.

1. Pick a query or table. I created a simple query ahead of time from Products, Customers, Orders, and Order Details and chose that. Click on the radio button to see queries instead of tables.

2. Choose a row field. I chose Product.

3. Choose a column field. I chose country

4. Choose a data field. I chose OrderDate as the field and Last as the function.

5. Name the query to save it and choose to view its results.

Append Query

1. Create a duplicate of the Employees Table by creating a simple Make-Tables query.
2. Edit the duplicate table – delete some records and modify some of the information.
    a. You will have to go to Design view to change the ID number from Autonumber to Number (long integer).
    b. Change the ID numbers to numbers higher than 9.
    c. Change the hire date to today's date using Ctrl ; trick.
    d. Close the new table.
3. Return to the Queries tab and create a new query based on the small table you created above. Double click on the * to include all fields.
4. Change the query to an append query: Query > Append Query.
5. Supply Employees as the name of the table to append it to.
6. Save the query as AddDuplicates.
7. Run the query by clicking on the **!** . Click on Yes to the warning.
8. Look at your Employees table. You should see additional rows. Close the table.
9. Now run the Find Duplicates query on your Employees table.

Find Duplicates Query

1. Start a new query and choose the Find Duplicates Query Wizard.
2. Select the Employees table.
3. Choose LastName, FirstName, BirthDate as fields
4. Choose HireDate and City as additional fields.
5. Save the query with the name of your choice.
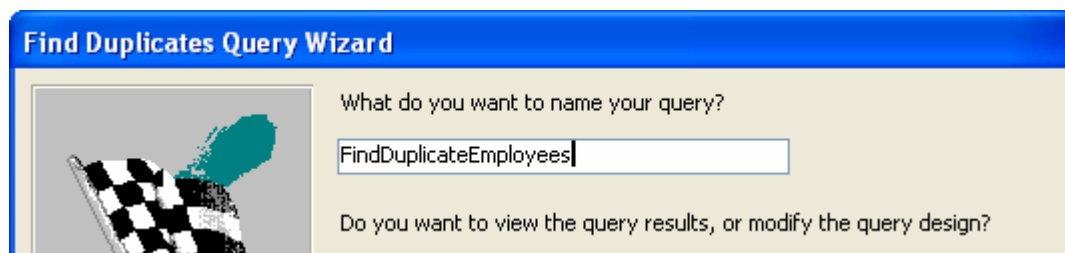
6. Choose *View Results* instead of *Modify Design*.
7. Click on the Finish button to view the results.