CGS 2545: Database Concepts
Fall 2010

LAB #2

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Lab #2

- The objective of this lab is to continue to familiarize yourself with the basic workings of the Access DBMS while learning to form more advanced query expressions.
- Based upon your first lab and lab assignment, you should be familiar with posing queries which are basic selections of rows in a single relation which are based upon a filter.
- This lab will extend your ability to pose queries against an Access database into situations which involve more elaborate techniques and then next week we'll see how to involve two or more relations in a single query. Again, we will use the sample Northwind sample database in Access.

NOTE: In the slides that follow, if the call-out symbol is outlined in red, it means that there is something for you to try, if the call-out is outlined in blue, I am simply giving you some information about what is displayed on that page.

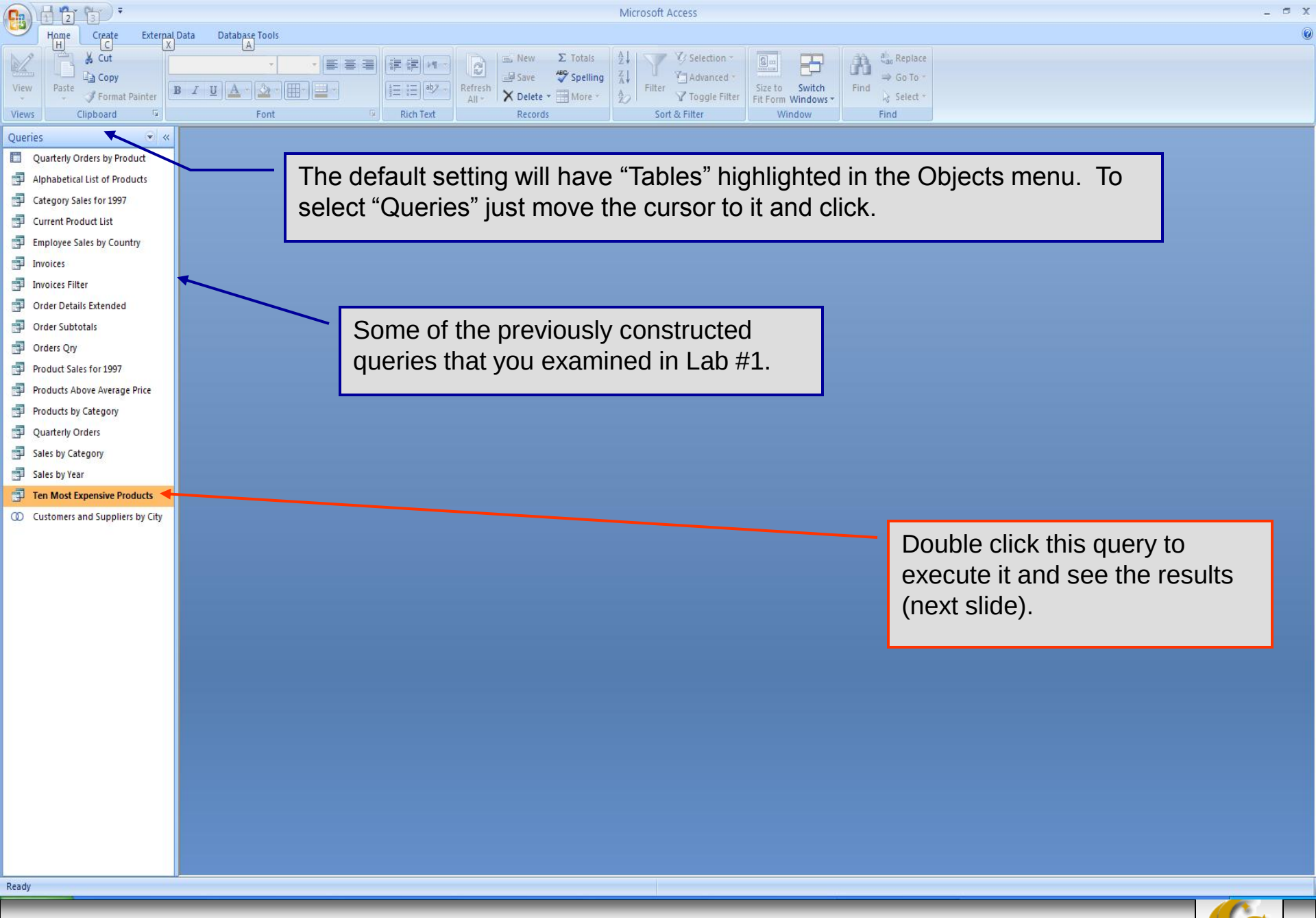
Lab #2

- Step #1 – Start Access from the main Program menu from the Start menu in Windows.
- Step #2 – Download the sample database Northwind from CGS 2545 WebCourses.

NOTE: In the slides that follow, if the call-out symbol is outlined in red, it means that there is something for you to try, if the call-out is outlined in blue, I am simply giving you some information about what is displayed on that page.

Lab #2

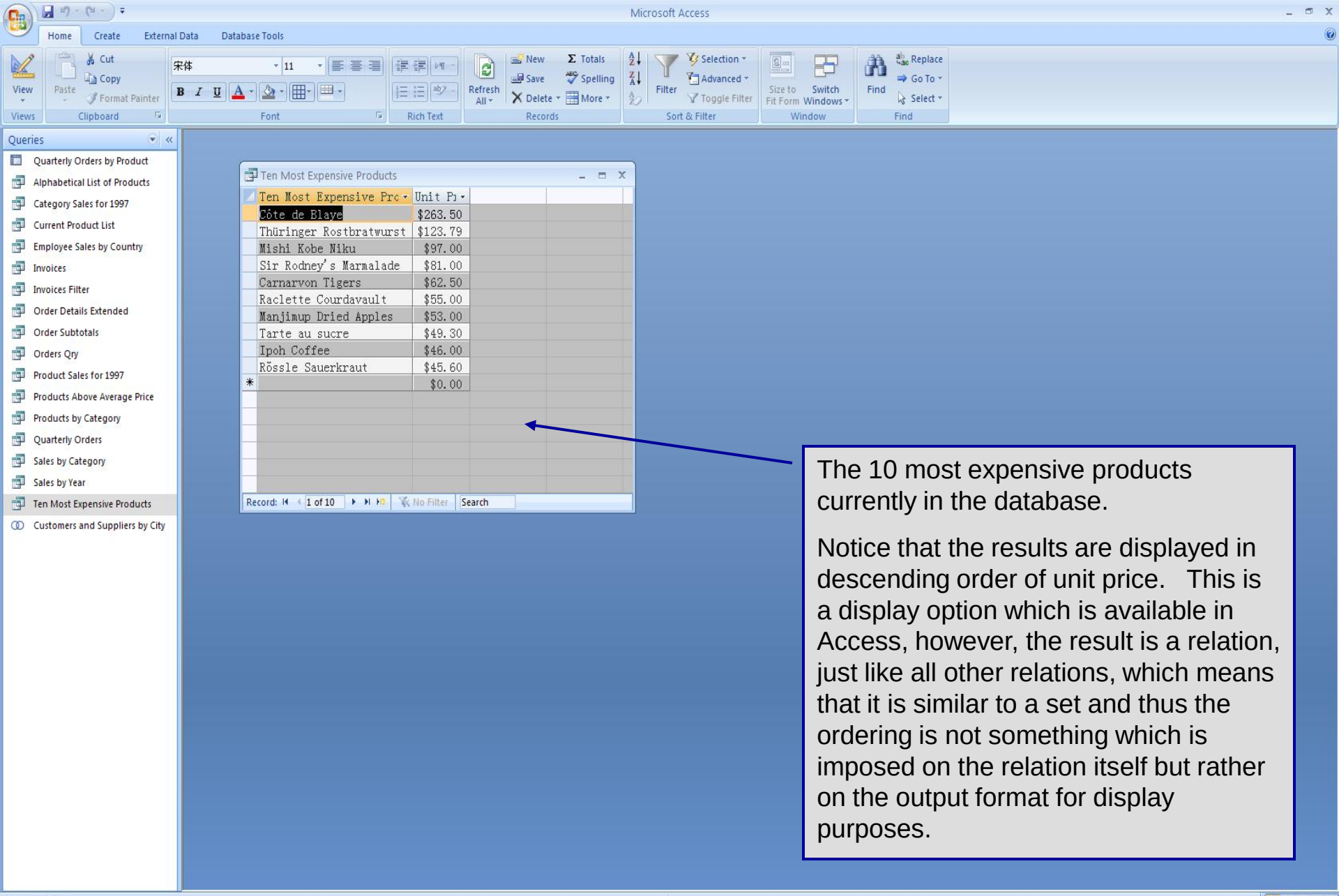
- To simply the design of a basic selection query involving only a single table we can use a different technique than the filter technique you used in the first lab assignment.
- To utilize this more advanced technique you'll need to enter the query mode within Access. To do this follow these steps:
  - Step #1 – Start Access from the main Program menu from the Start menu in Windows.
  - Step #2 – Open the sample database Northwind from Office button (on the top-left corner of access window) >> Open option.
  - Step #3 – Close the main switchboard for the Northwind database. You should see the screen shown on the following page.



The default setting will have "Tables" highlighted in the Objects menu. To select "Queries" just move the cursor to it and click.

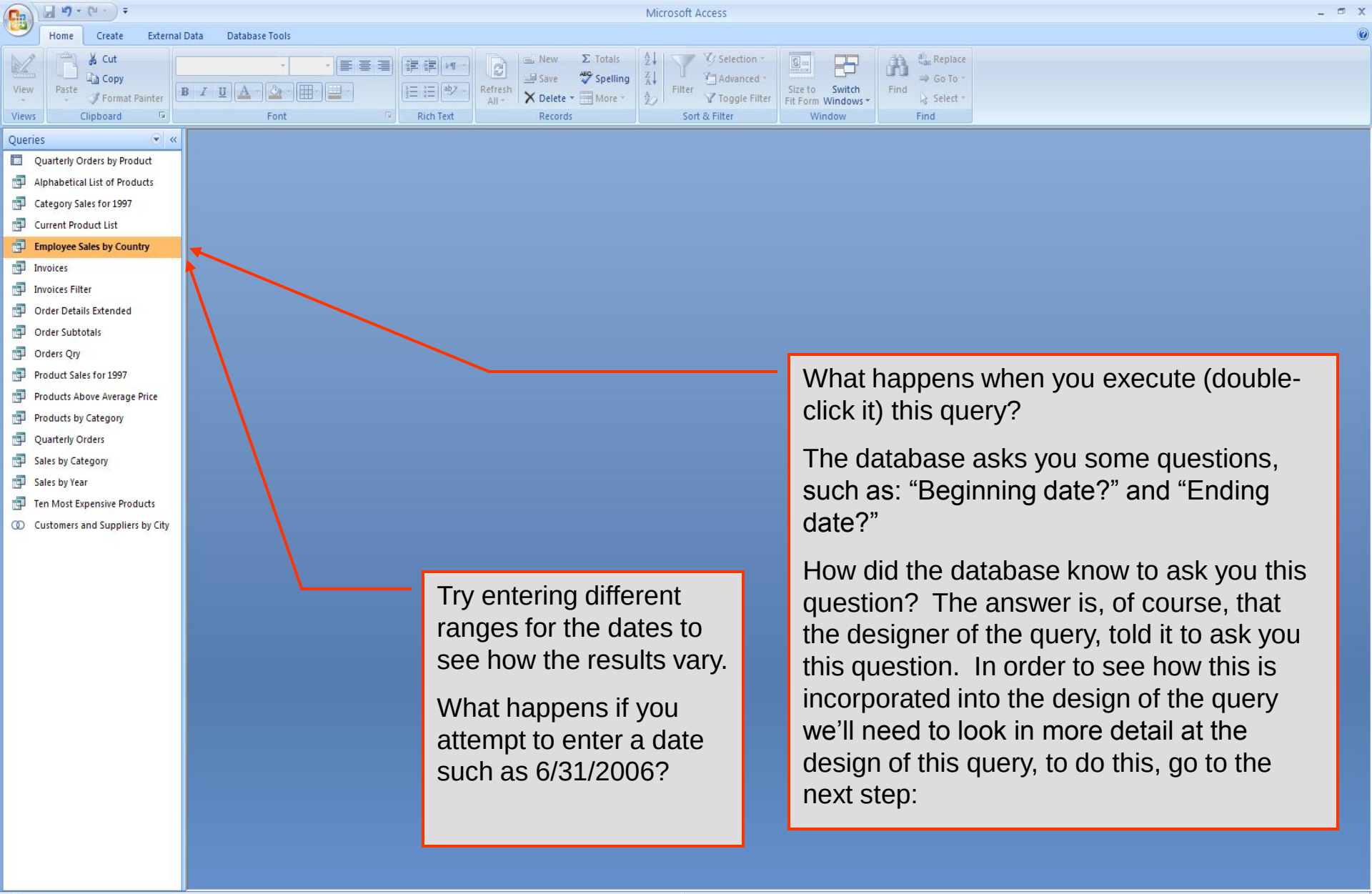
Some of the previously constructed queries that you examined in Lab #1.

Double click this query to execute it and see the results (next slide).



The 10 most expensive products currently in the database.

Notice that the results are displayed in descending order of unit price. This is a display option which is available in Access, however, the result is a relation, just like all other relations, which means that it is similar to a set and thus the ordering is not something which is imposed on the relation itself but rather on the output format for display purposes.


Microsoft Access
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Create
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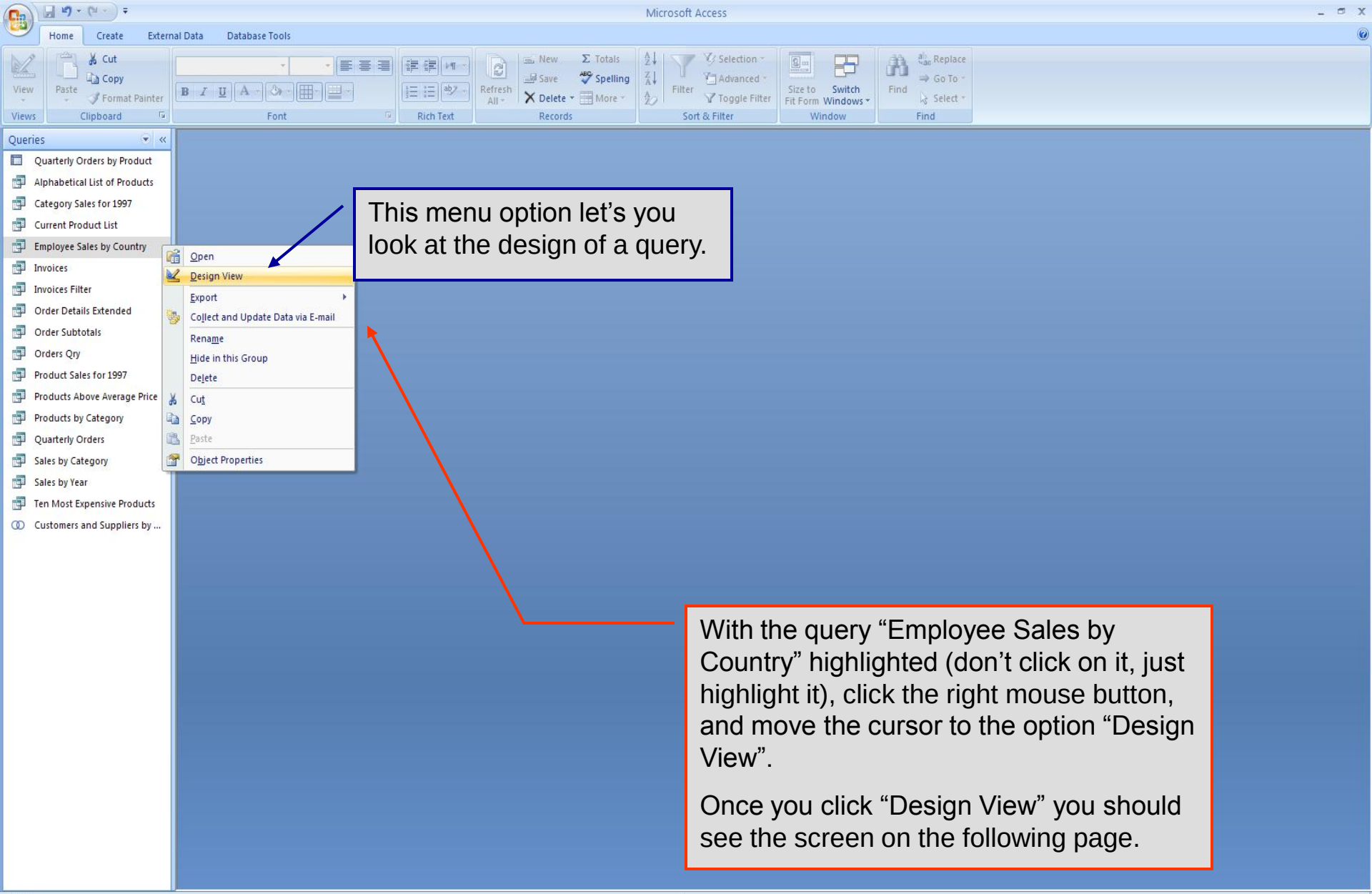
Database Tools
Queries
Quarterly Orders by Product
Alphabetical List of Products
Category Sales for 1997
Current Product List
Employee Sales by Country
Invoices
Invoices Filter
Order Details Extended
Order Subtotals
Orders Qry
Product Sales for 1997
Products Above Average Price
Products by Category
Quarterly Orders
Sales by Category
Sales by Year
Ten Most Expensive Products
Customers and Suppliers by City
Try entering different ranges for the dates to see how the results vary.
What happens if you attempt to enter a date such as 6/31/2006?
What happens when you execute (double-click it) this query?
The database asks you some questions, such as: “Beginning date?” and “Ending date?”
How did the database know to ask you this question? The answer is, of course, that the designer of the query, told it to ask you this question. In order to see how this is incorporated into the design of the query we’ll need to look in more detail at the design of this query, to do this, go to the next step:
Ready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Order Details Extended
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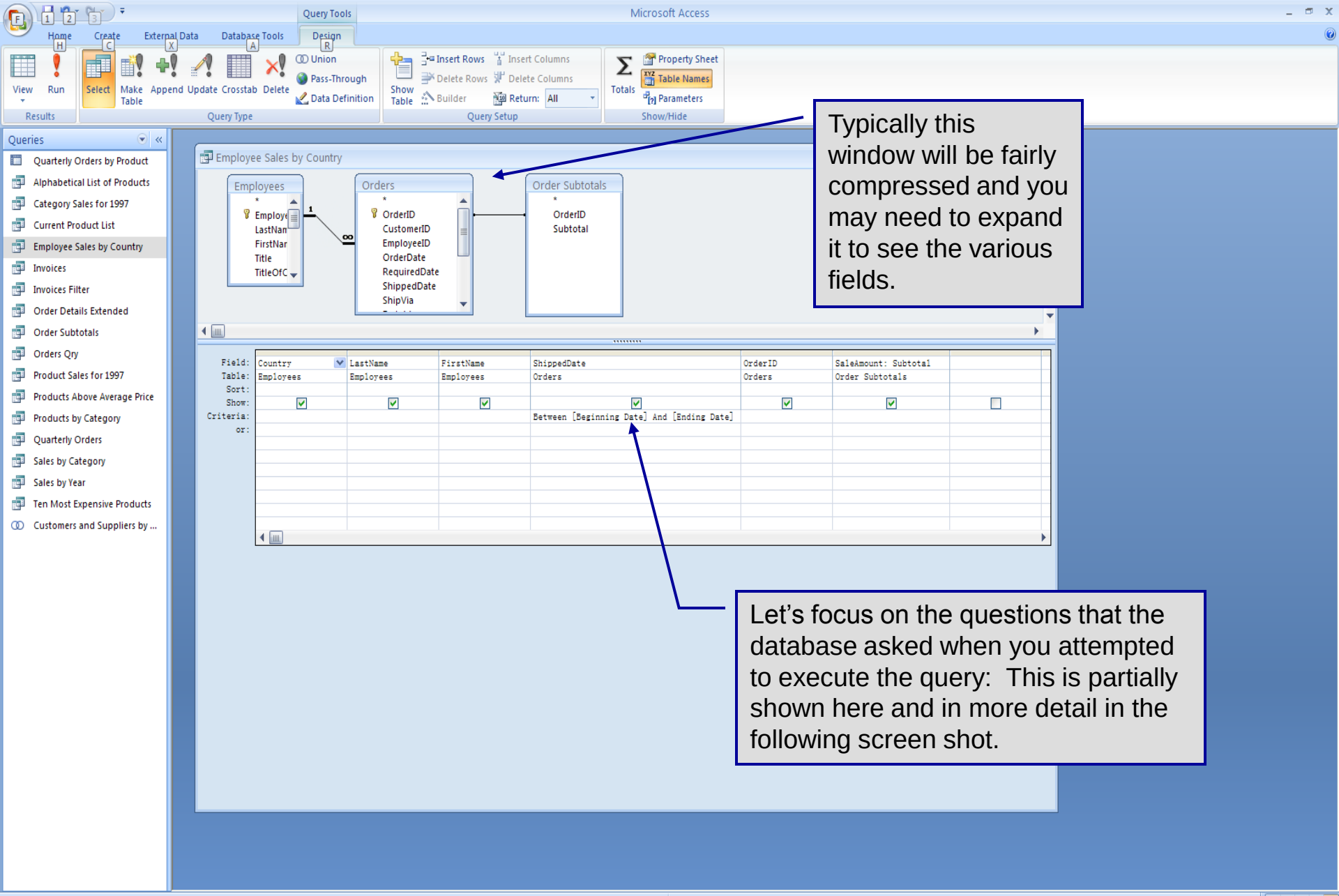
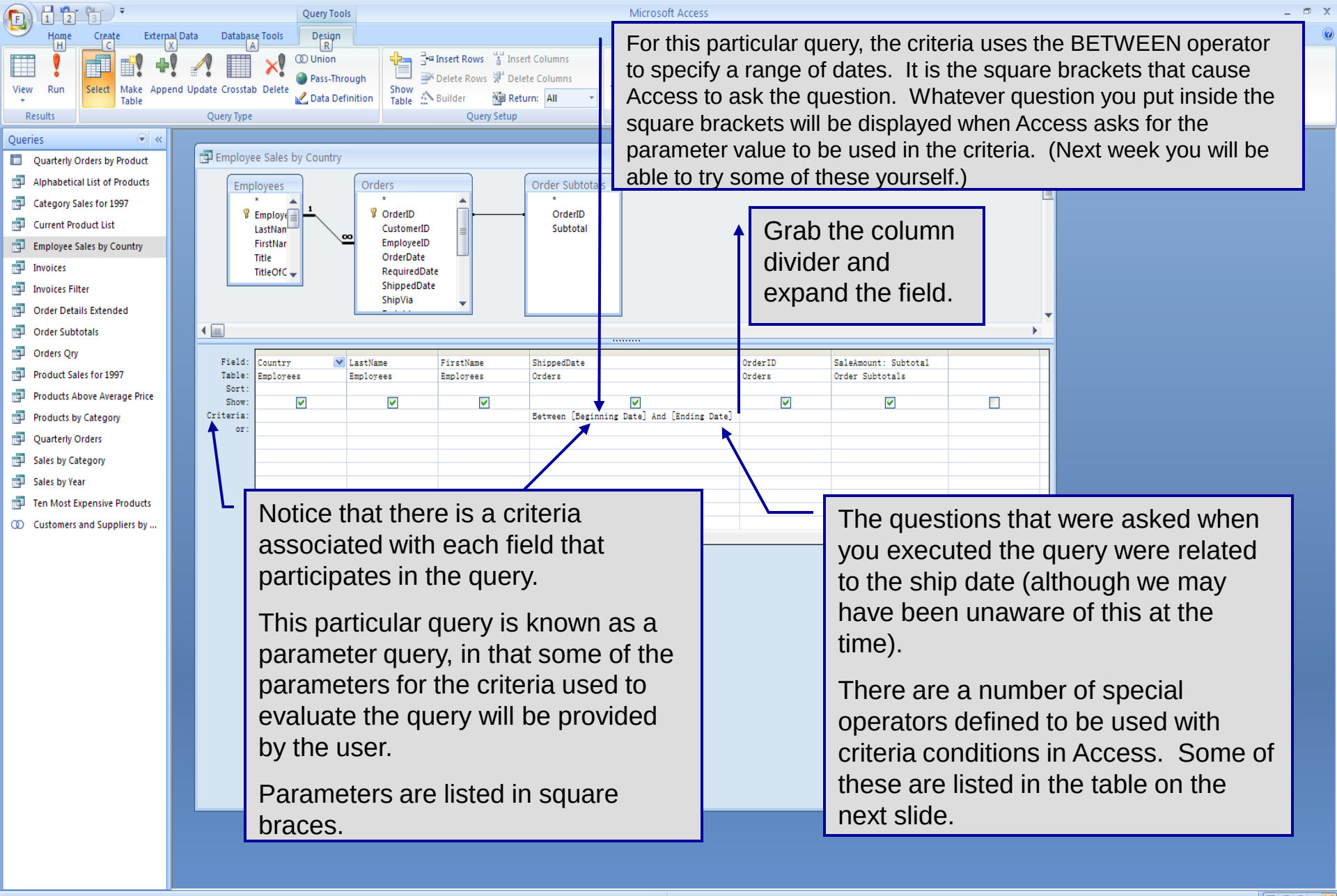
Orders Qry
Product Sales for 1997
Products Above Average Price
Products by Category
Quarterly Orders
Sales by Category
Sales by Year
Ten Most Expensive Products
Customers and Suppliers by ...
Open
Design View
Export
Collect and Update Data via E-mail
Rename
Hide in this Group
Delete
Cut
Copy
Paste
Object Properties
This menu option let's you look at the design of a query.
With the query "Employee Sales by Country" highlighted (don't click on it, just highlight it), click the right mouse button, and move the cursor to the option "Design View".
Once you click "Design View" you should see the screen on the following page.
Ready



Typically this window will be fairly compressed and you may need to expand it to see the various fields.

Let's focus on the questions that the database asked when you attempted to execute the query: This is partially shown here and in more detail in the following screen shot.



For this particular query, the criteria uses the BETWEEN operator to specify a range of dates. It is the square brackets that cause Access to ask the question. Whatever question you put inside the square brackets will be displayed when Access asks for the parameter value to be used in the criteria. (Next week you will be able to try some of these yourself.)

Grab the column divider and expand the field.

Notice that there is a criteria associated with each field that participates in the query.

This particular query is known as a parameter query, in that some of the parameters for the criteria used to evaluate the query will be provided by the user.

Parameters are listed in square braces.

The questions that were asked when you executed the query were related to the ship date (although we may have been unaware of this at the time).

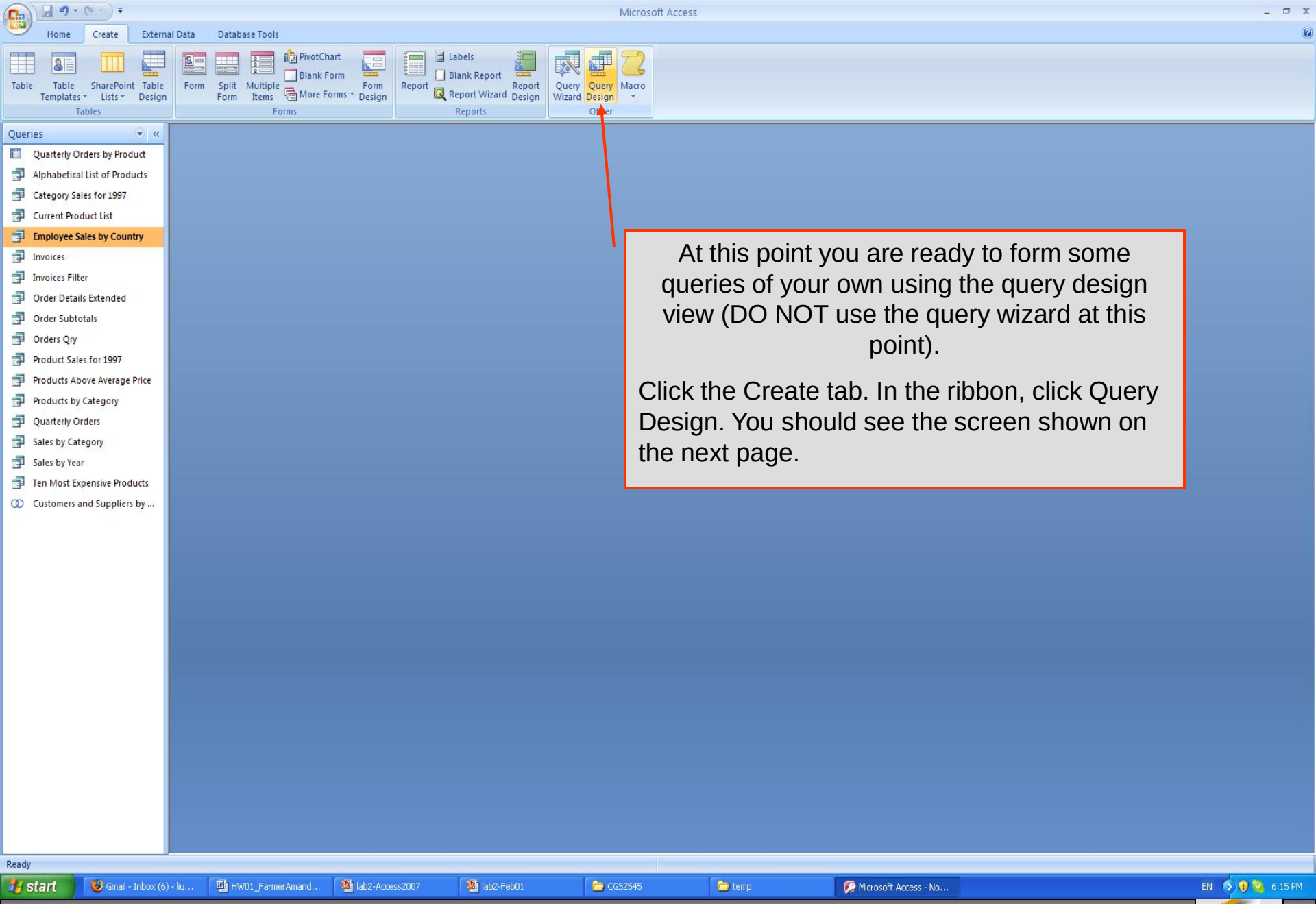
There are a number of special operators defined to be used with criteria conditions in Access. Some of these are listed in the table on the next slide.

Query Criteria Operators in Access

Operator	Meaning
=	equal to
> >=	greater than and greater than or equal to
< <=	less than and less than or equal to
?	wildcard – stands for any single character
*	wildcard – stands for any sequence of characters
AND	must satisfy both of two criteria
OR	must satisfy either of two criteria
NOT	used in front of another criteria to find items which do not match the criteria
BETWEEN	used to specify a range of values
IN	used to specify a list of values
LIKE	used to search for patterns in text fields

Assessment Point #1

- At this point, play around with a few of the sample queries and look at their design views in order to see how some of these queries are formed in Access.
- For some examples with various features look at:
  - "Sales by Category" and look at criteria for OrderDate.
  - "Sales by Year" and look at the criteria for ShippedDate.
- When you looked at several different query designs and have examined a few of the features of using criteria in a query, then continue on.


Microsoft Access
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SharePoint Lists
Table Design
Tables
Form
Split Form
Multiple Items
PivotChart
Blank Form
More Forms
Form Design
Forms
Report
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Blank Report
Report Wizard
Report Design
Reports
Query Wizard
Query Design
Macro
Other
Queries
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Product Sales for 1997
Products Above Average Price
Products by Category
Quarterly Orders
Sales by Category
Sales by Year
Ten Most Expensive Products
Customers and Suppliers by ...
At this point you are ready to form some queries of your own using the query design view (DO NOT use the query wizard at this point).
Click the Create tab. In the ribbon, click Query Design. You should see the screen shown on the next page.
Ready
start
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HW01_FarmerAmand...
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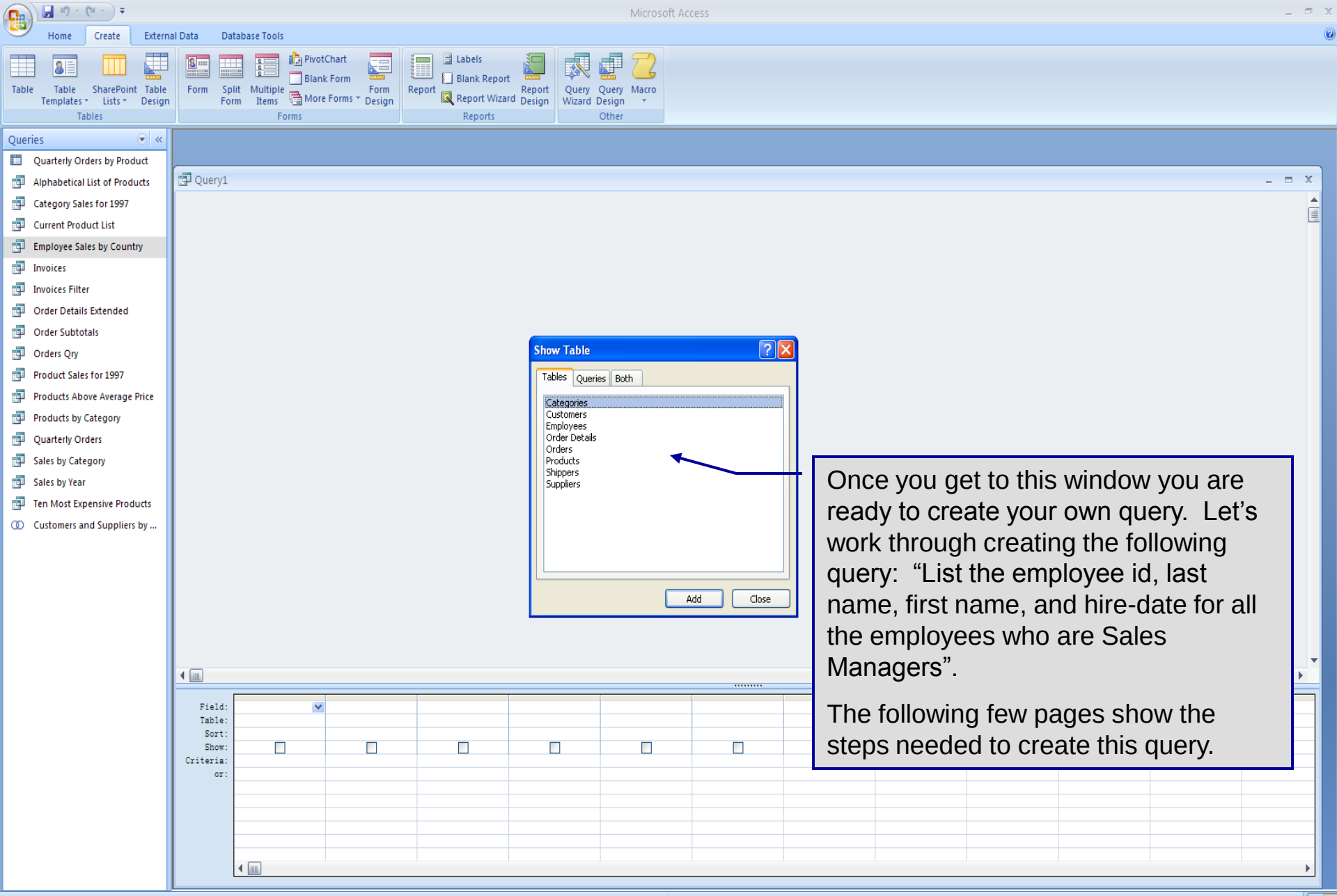
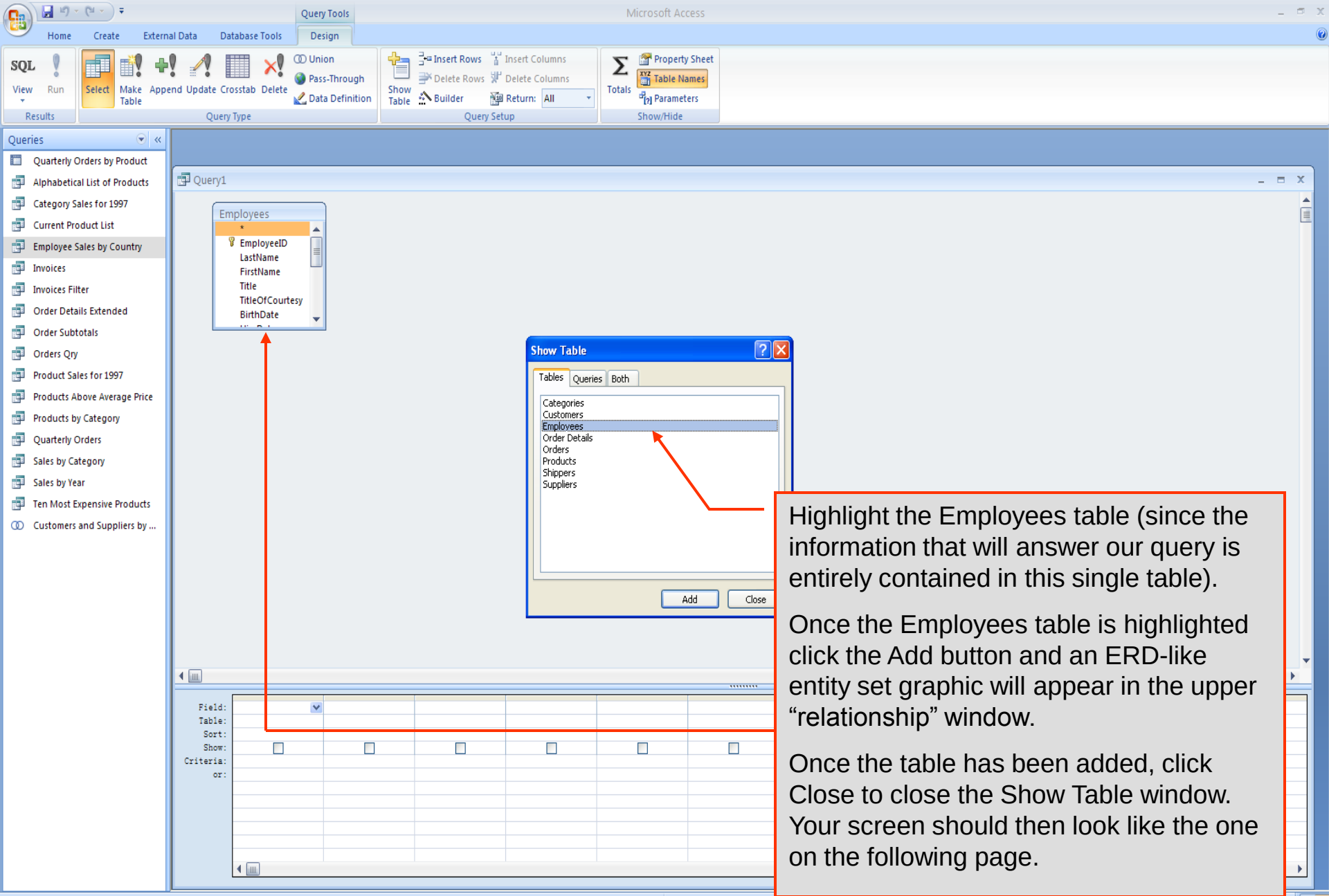


Once you get to this window you are ready to create your own query. Let's work through creating the following query: "List the employee id, last name, first name, and hire-date for all the employees who are Sales Managers".

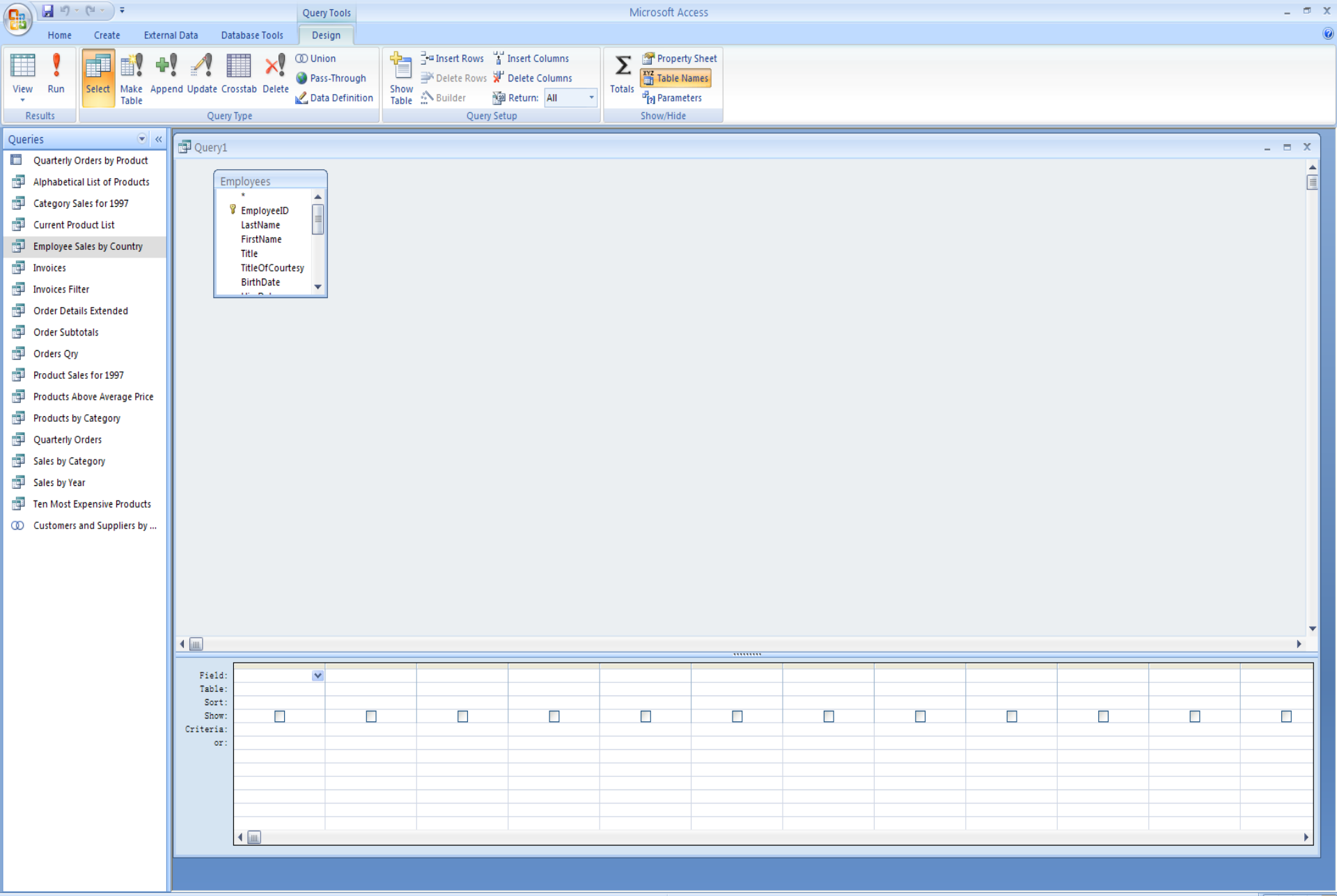
The following few pages show the steps needed to create this query.



Highlight the Employees table (since the information that will answer our query is entirely contained in this single table).

Once the Employees table is highlighted click the Add button and an ERD-like entity set graphic will appear in the upper "relationship" window.

Once the table has been added, click Close to close the Show Table window. Your screen should then look like the one on the following page.


Query Tools
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Return: All
Query Setup
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Table Names
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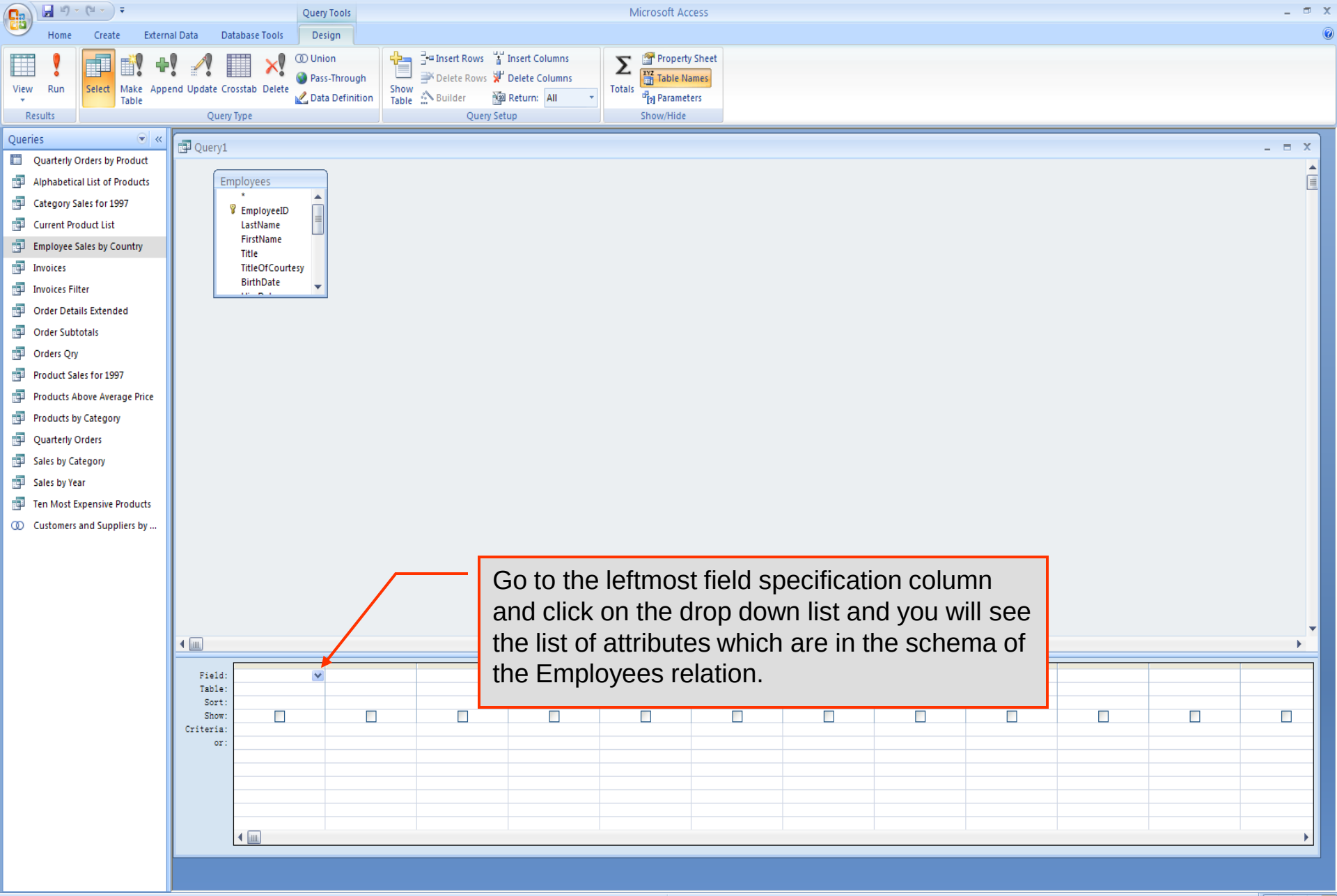
Current Product List
Employee Sales by Country
Invoices
Invoices Filter
Order Details Extended
Order Subtotals
Orders Qry
Product Sales for 1997
Products Above Average Price
Products by Category
Quarterly Orders
Sales by Category
Sales by Year
Ten Most Expensive Products
Customers and Suppliers by ...
Query1
Employees
*
EmployeeID
LastName
FirstName
Title
TitleOfCourtesy
BirthDate
Field:
Table:
Sort:
Show:
Criteria:
or:
Ready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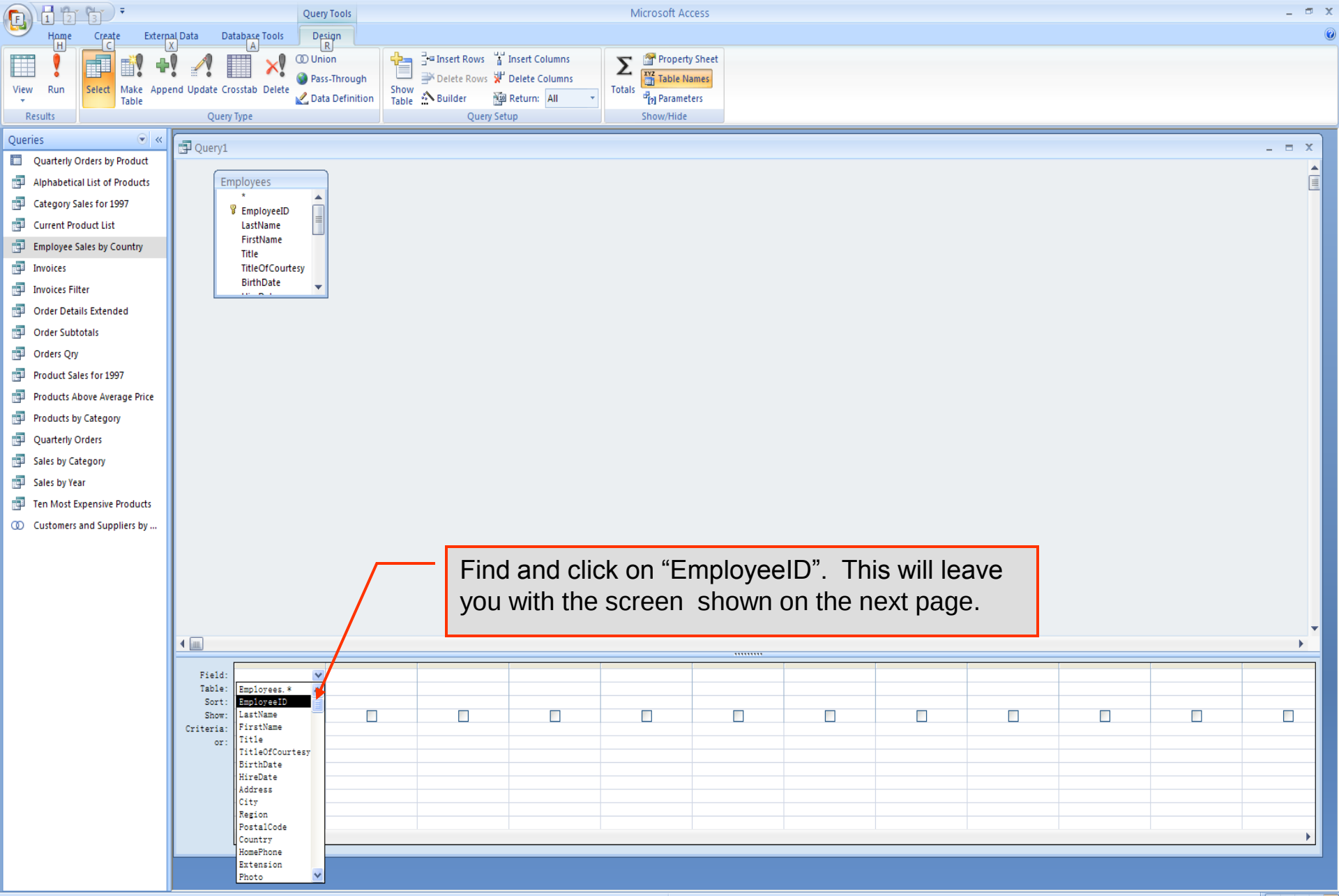
Employees
*
EmployeeID
LastName
FirstName
Title
TitleOfCourtesy
BirthDate
Field:
Table:
Sort:
Show:
Criteria:
or:
Go to the leftmost field specification column and click on the drop down list and you will see the list of attributes which are in the schema of the Employees relation.
Ready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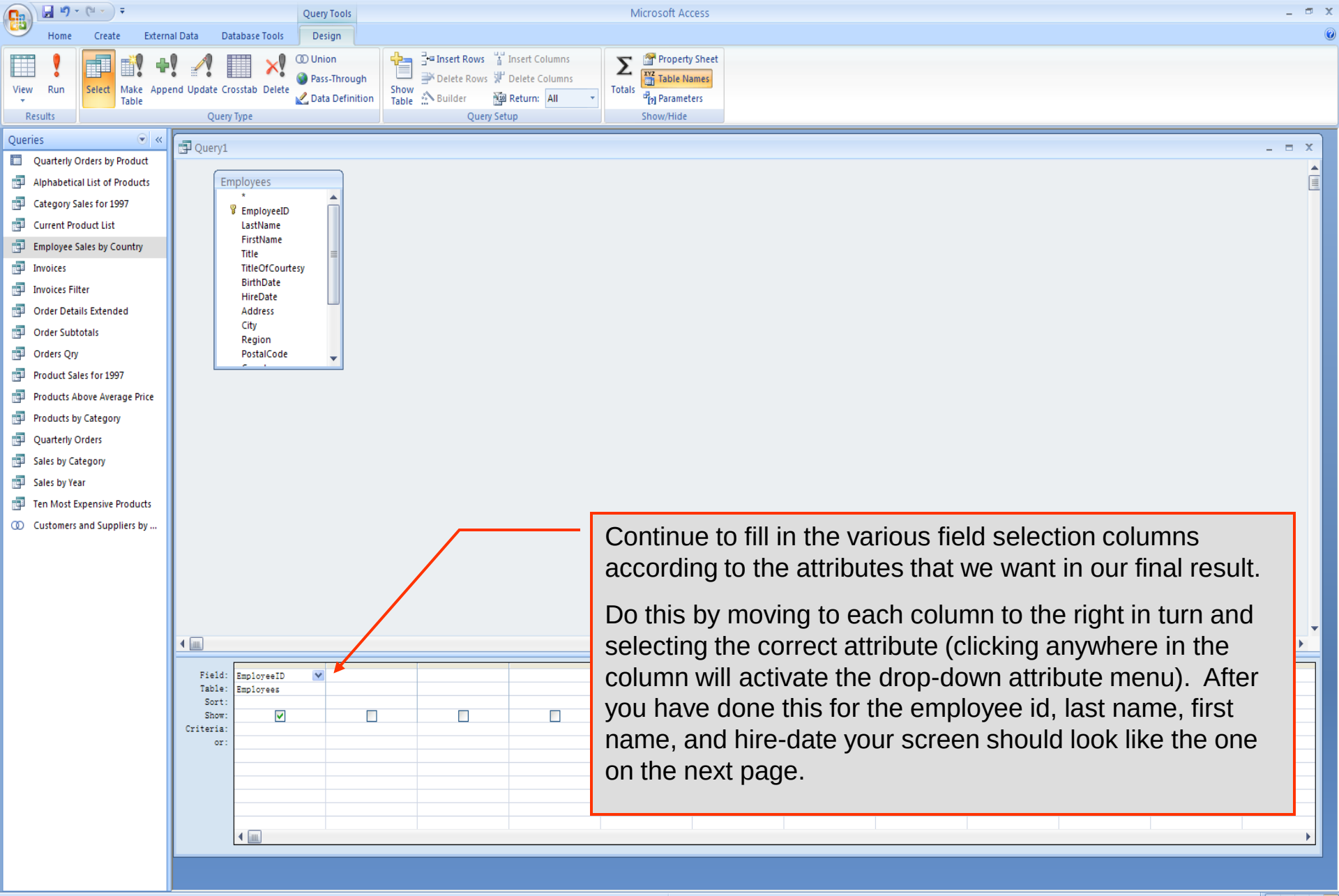
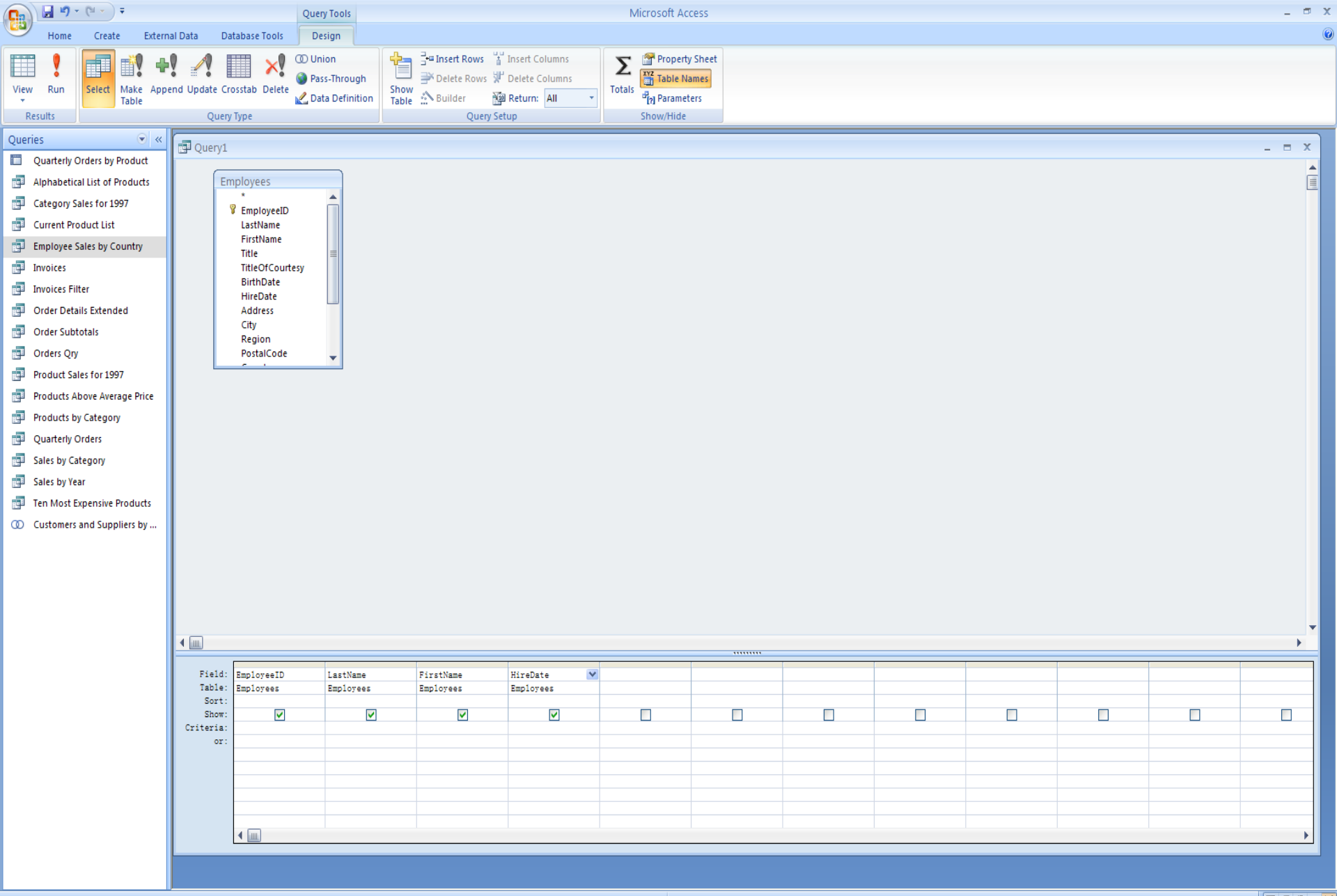
Products by Category
Quarterly Orders
Sales by Category
Sales by Year
Ten Most Expensive Products
Customers and Suppliers by ...
Query1
Employees
*
EmployeeID
LastName
FirstName
Title
TitleOfCourtesy
BirthDate
Field:
Table:
Sort:
Show:
Criteria:
or:
Employees.*
EmployeeID
LastName
FirstName
Title
TitleOfCourtesy
BirthDate
HireDate
Address
City
Region
PostalCode
Country
HomePhone
Extension
Photo
Find and click on “EmployeeID”. This will leave you with the screen shown on the next page.
Ready



Continue to fill in the various field selection columns according to the attributes that we want in our final result.

Do this by moving to each column to the right in turn and selecting the correct attribute (clicking anywhere in the column will activate the drop-down attribute menu). After you have done this for the employee id, last name, first name, and hire-date your screen should look like the one on the next page.


Query Tools
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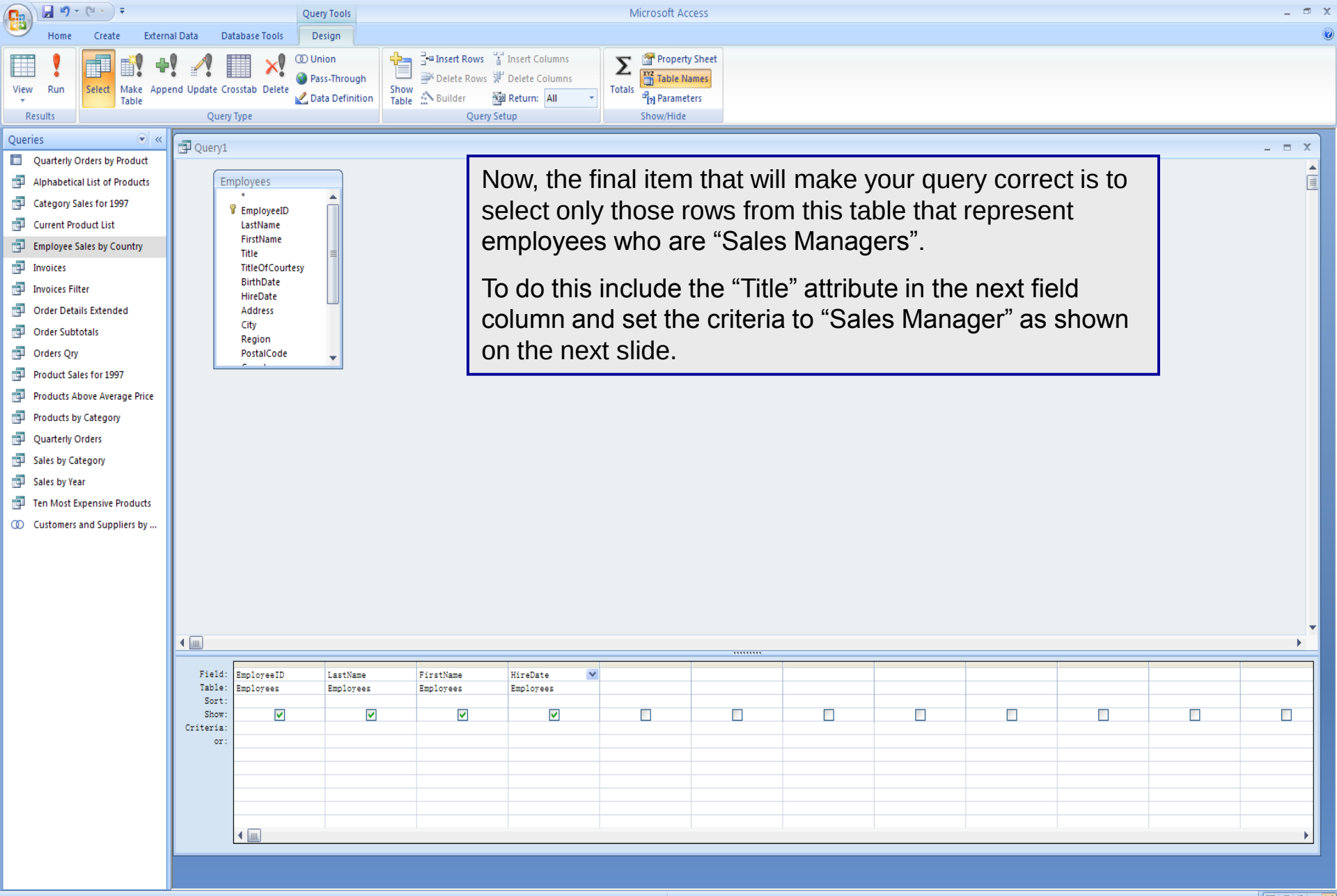
Query1
Employees
*
EmployeeID
LastName
FirstName
Title
TitleOfCourtesy
BirthDate
HireDate
Address
City
Region
PostalCode
Field:
Table:
Sort:
Show:
Criteria:
or:
EmployeeID
LastName
FirstName
HireDate
Employees
Ready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Products by Category
Quarterly Orders
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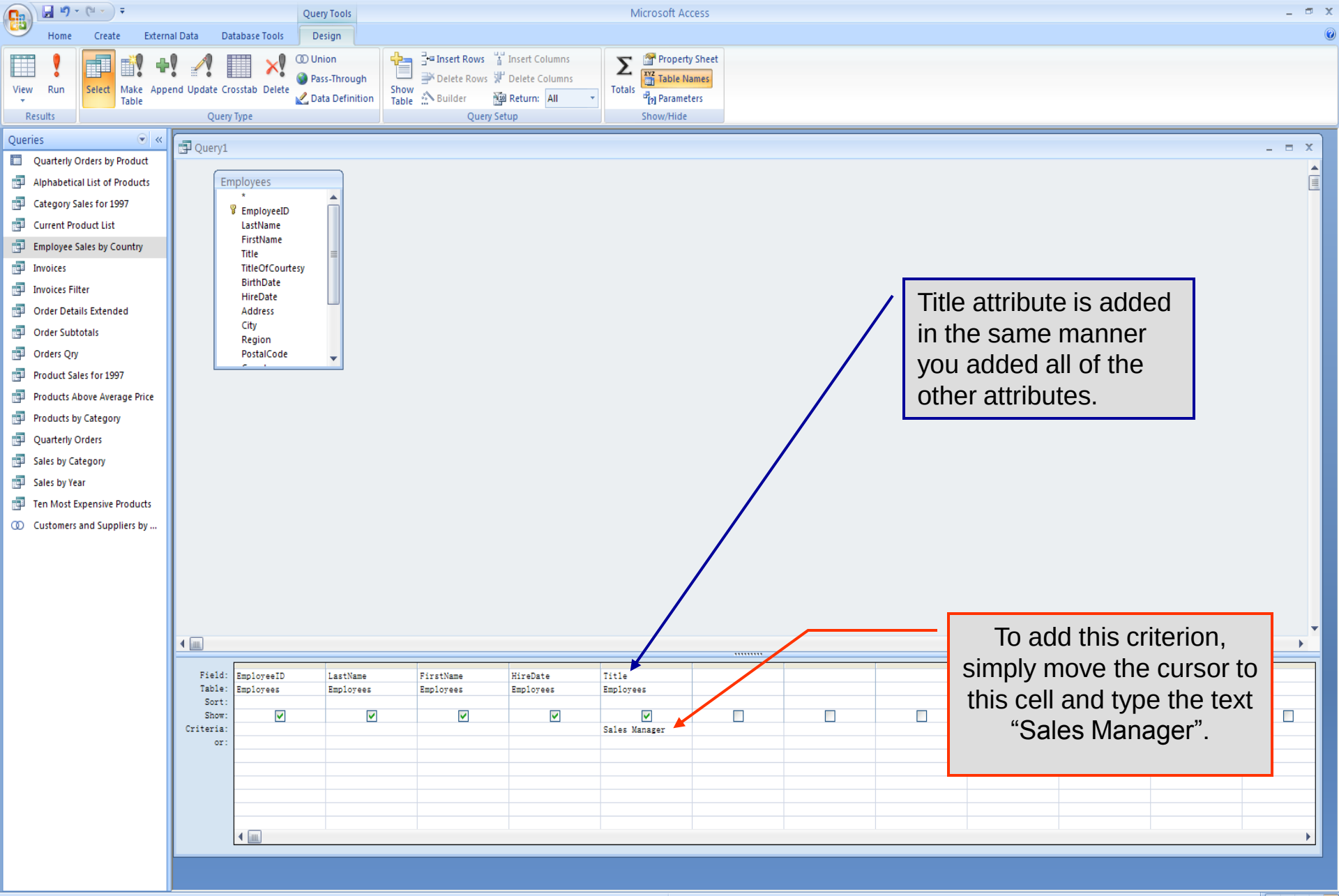
Sales by Year
Ten Most Expensive Products
Customers and Suppliers by ...
Query1
Employees
*
EmployeeID
LastName
FirstName
Title
TitleOfCourtesy
BirthDate
HireDate
Address
City
Region
PostalCode
Now, the final item that will make your query correct is to select only those rows from this table that represent employees who are “Sales Managers”.
To do this include the “Title” attribute in the next field column and set the criteria to “Sales Manager” as shown on the next slide.
Field:
Table:
Sort:
Show:
Criteria:
or:
EmployeeID
LastName
FirstName
HireDate
Employees
Ready


Query Tools
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Sales by Year
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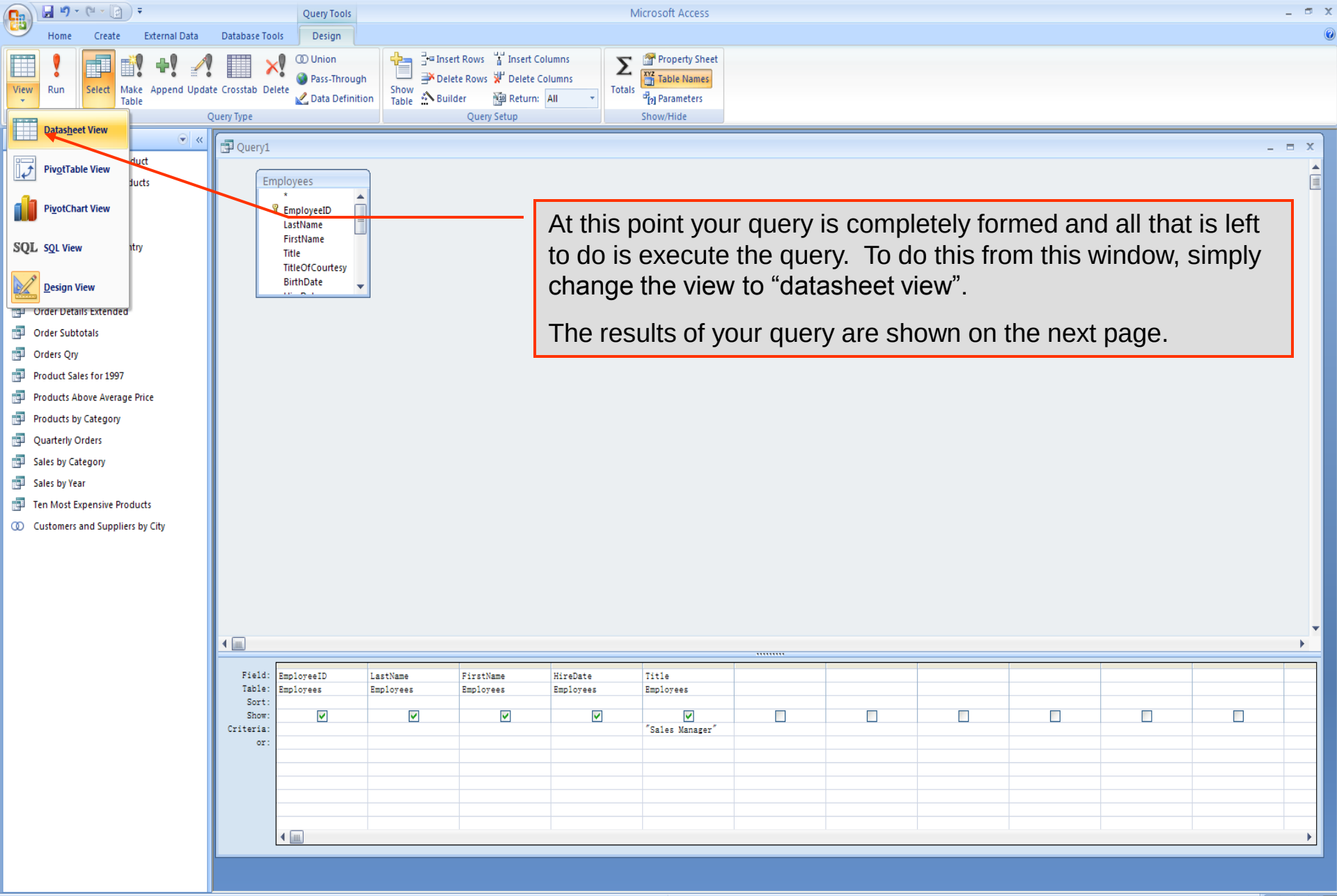
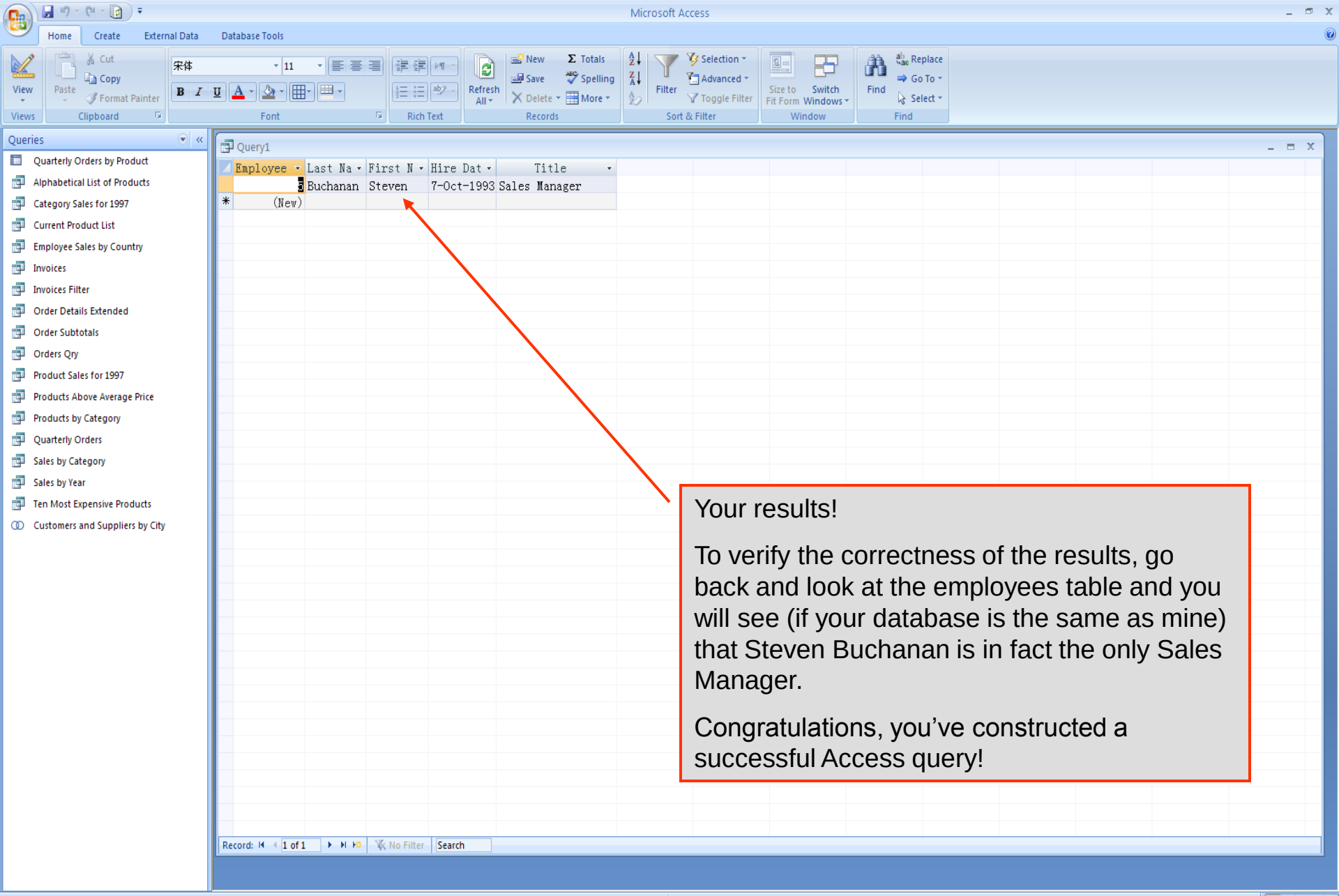
Customers and Suppliers by ...
Query1
Employees
*
EmployeeID
LastName
FirstName
Title
TitleOfCourtesy
BirthDate
HireDate
Address
City
Region
PostalCode
Field:
Table:
Sort:
Show:
Criteria:
or:
EmployeeID
LastName
FirstName
HireDate
Title
Employees
Sales Manager
Title attribute is added in the same manner you added all of the other attributes.
To add this criterion, simply move the cursor to this cell and type the text “Sales Manager”.
Ready



At this point your query is completely formed and all that is left to do is execute the query. To do this from this window, simply change the view to "datasheet view".

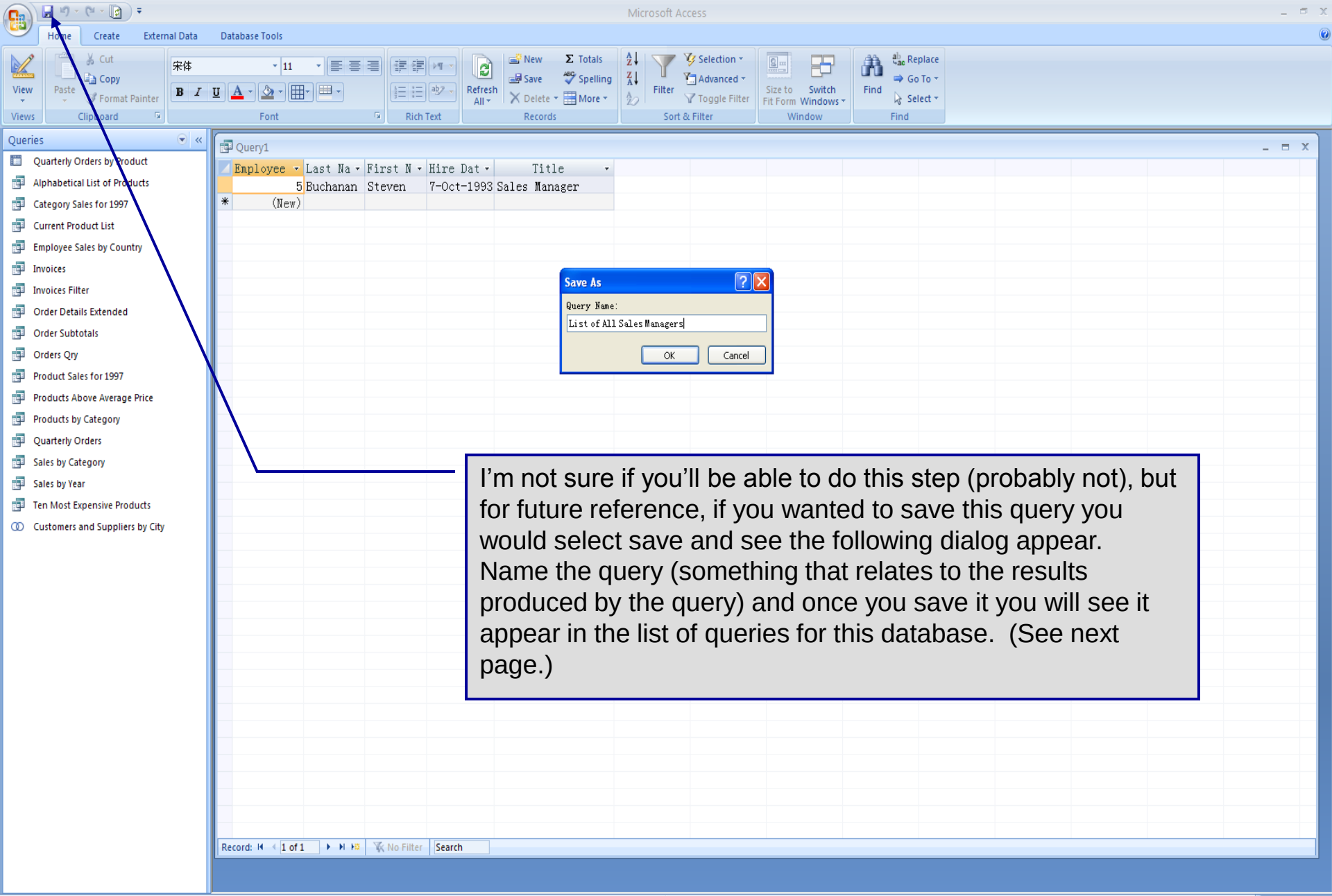
The results of your query are shown on the next page.



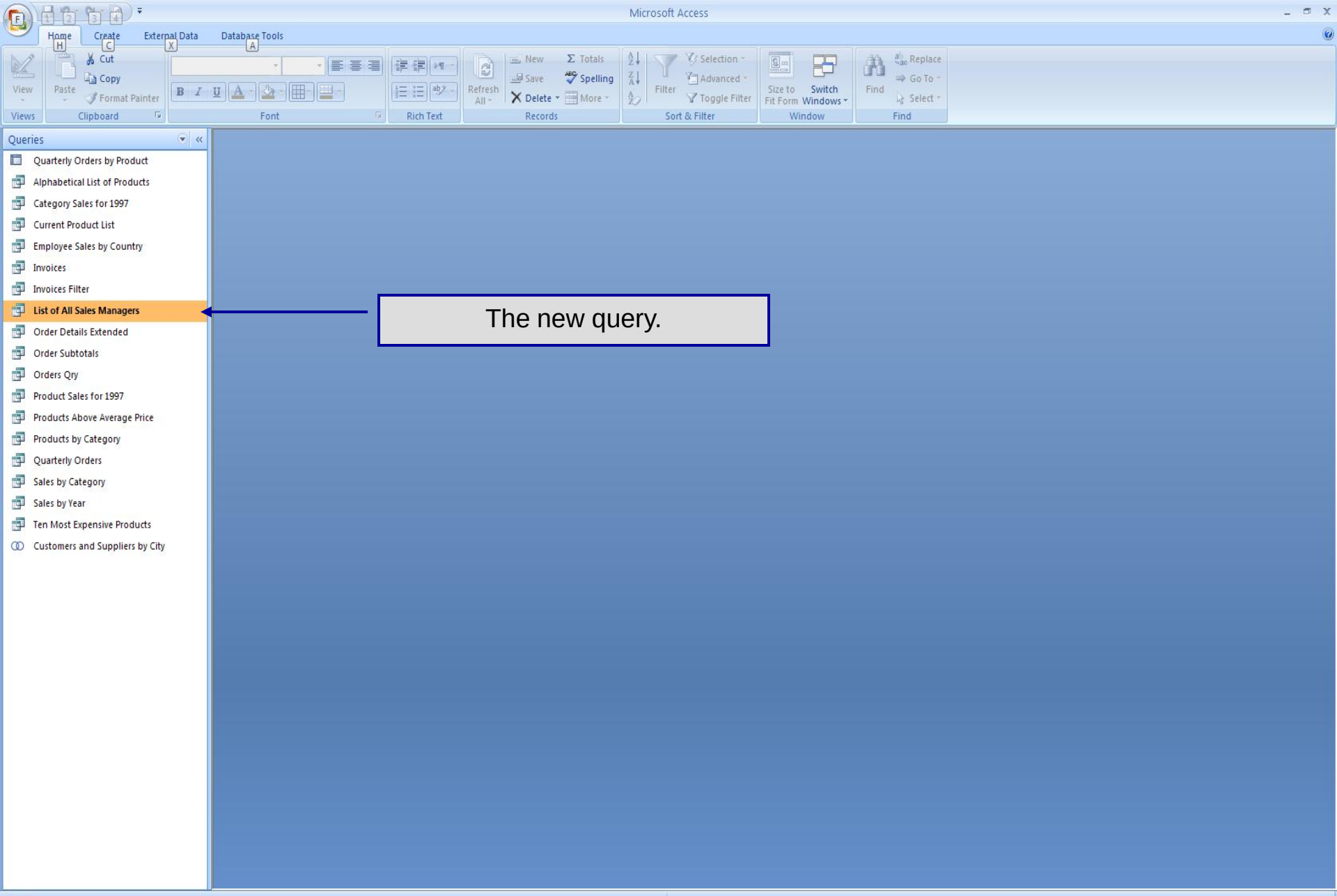
Your results!

To verify the correctness of the results, go back and look at the employees table and you will see (if your database is the same as mine) that Steven Buchanan is in fact the only Sales Manager.

Congratulations, you've constructed a successful Access query!



I'm not sure if you'll be able to do this step (probably not), but for future reference, if you wanted to save this query you would select save and see the following dialog appear. Name the query (something that relates to the results produced by the query) and once you save it you will see it appear in the list of queries for this database. (See next page.)


Microsoft Access
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Employee Sales by Country
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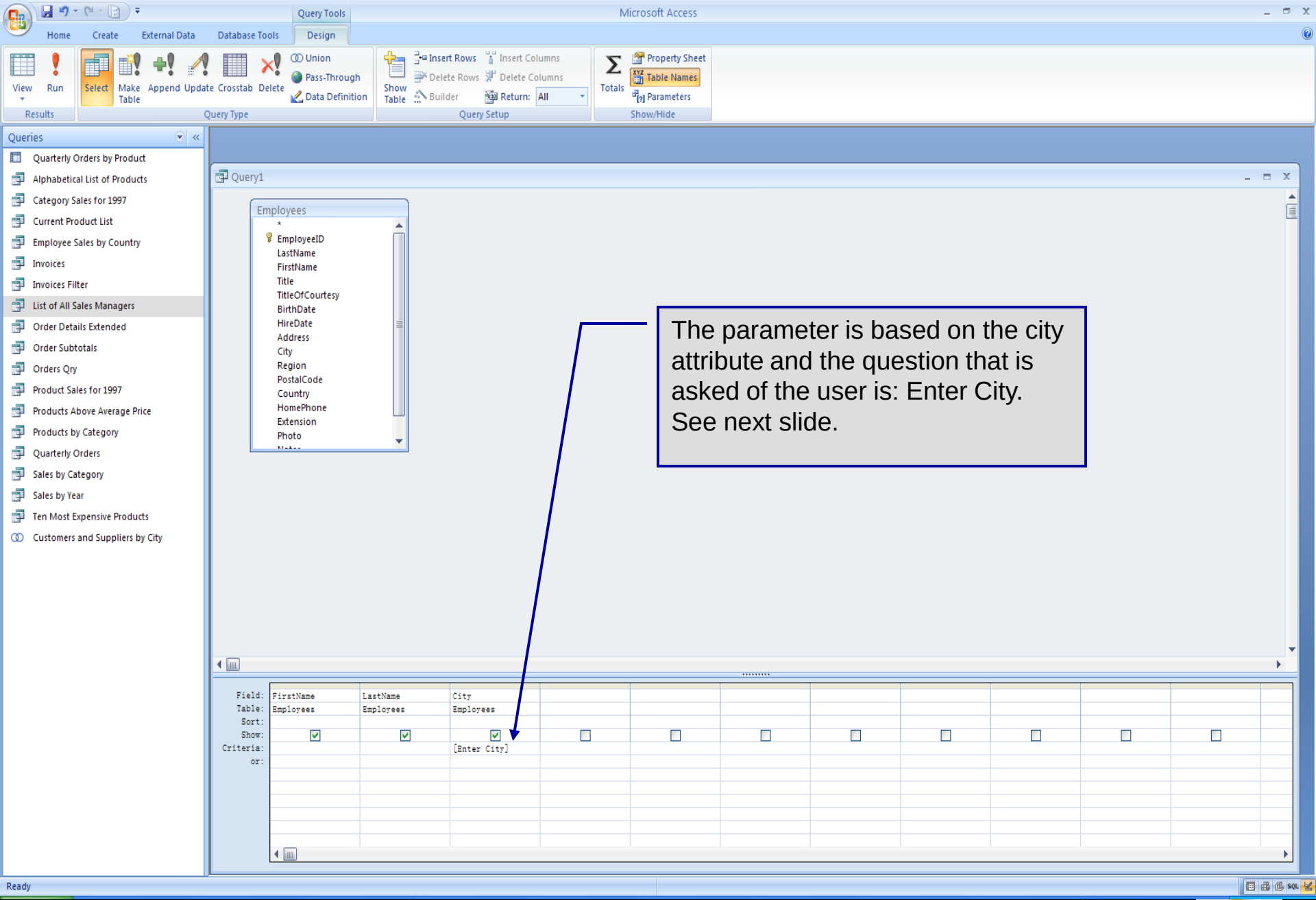
List of All Sales Managers
Order Details Extended
Order Subtotals
Orders Qry
Product Sales for 1997
Products Above Average Price
Products by Category
Quarterly Orders
Sales by Category
Sales by Year
Ten Most Expensive Products
Customers and Suppliers by City
The new query.
Ready

Assessment Point #2

- At this point you should be able to construct basic criteria based queries involving a single table from the database.
- For more practice, try creating additional queries using the technique we've just covered.
- Try generating a parameter based query.
  - For example, try generating the query: "List the first and last names of those employees in the city of <blank>". Where <blank> is to be supplied by the user.
  - Try it first yourself…a solution appears on the next slide.


Query Tools
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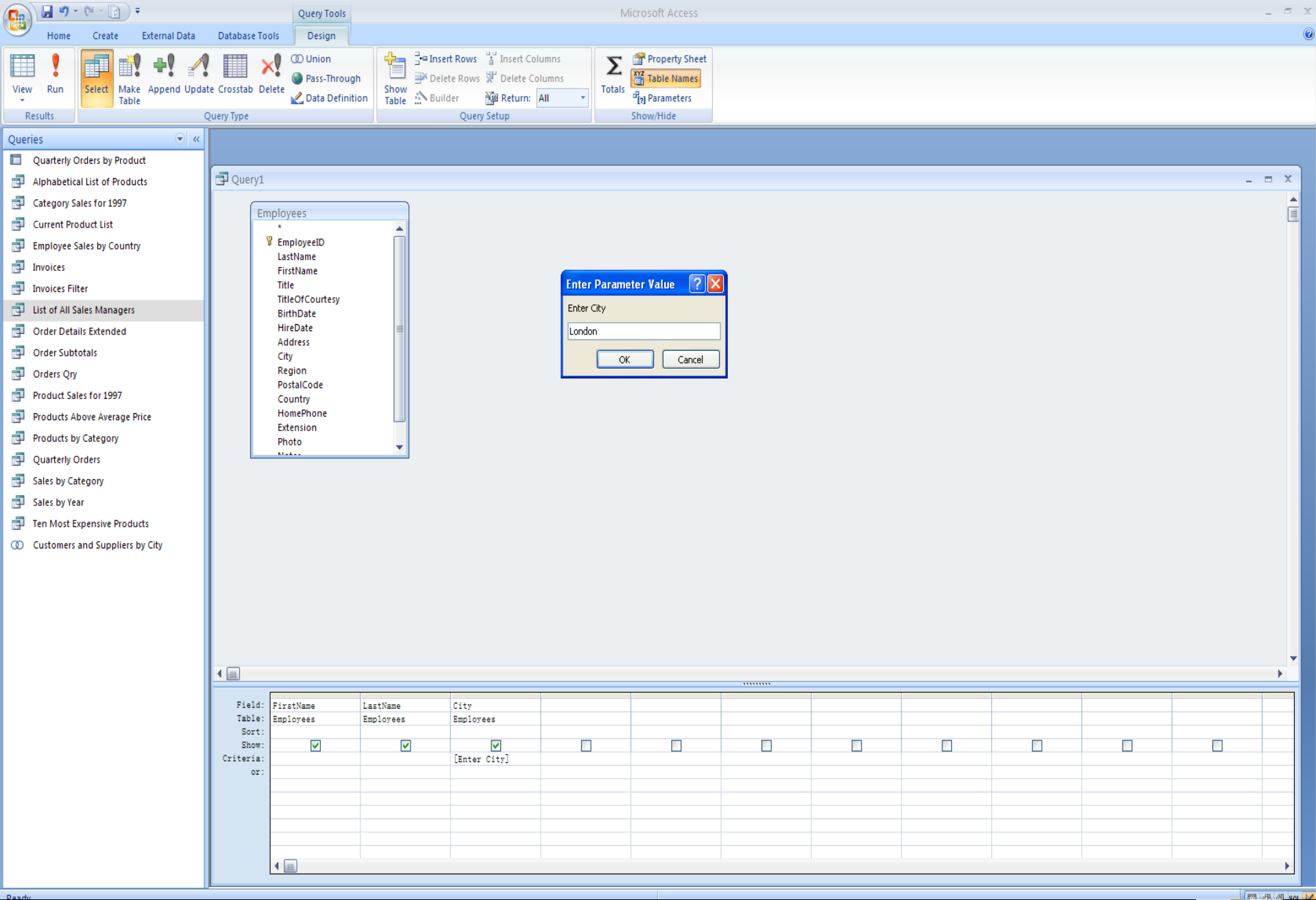
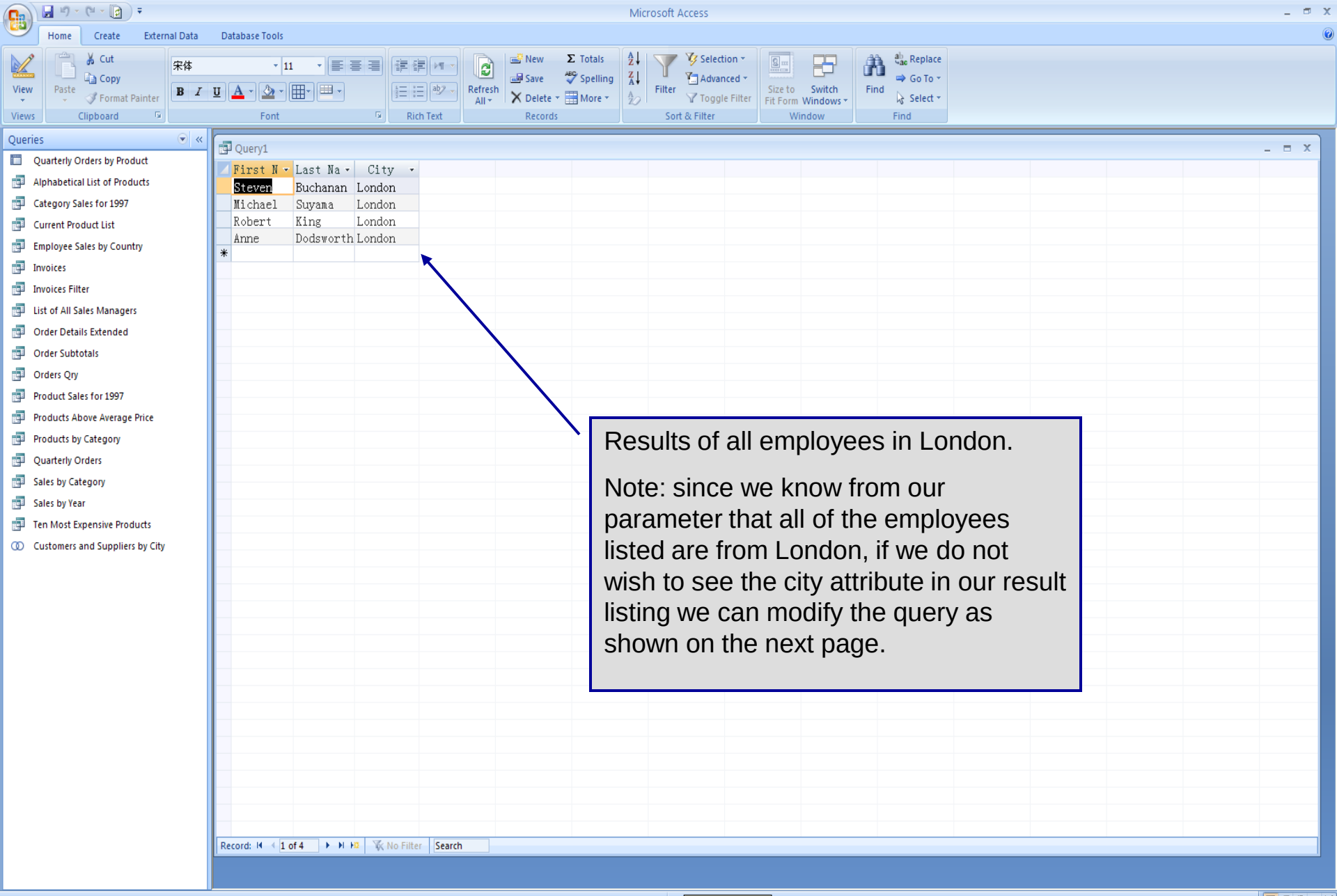
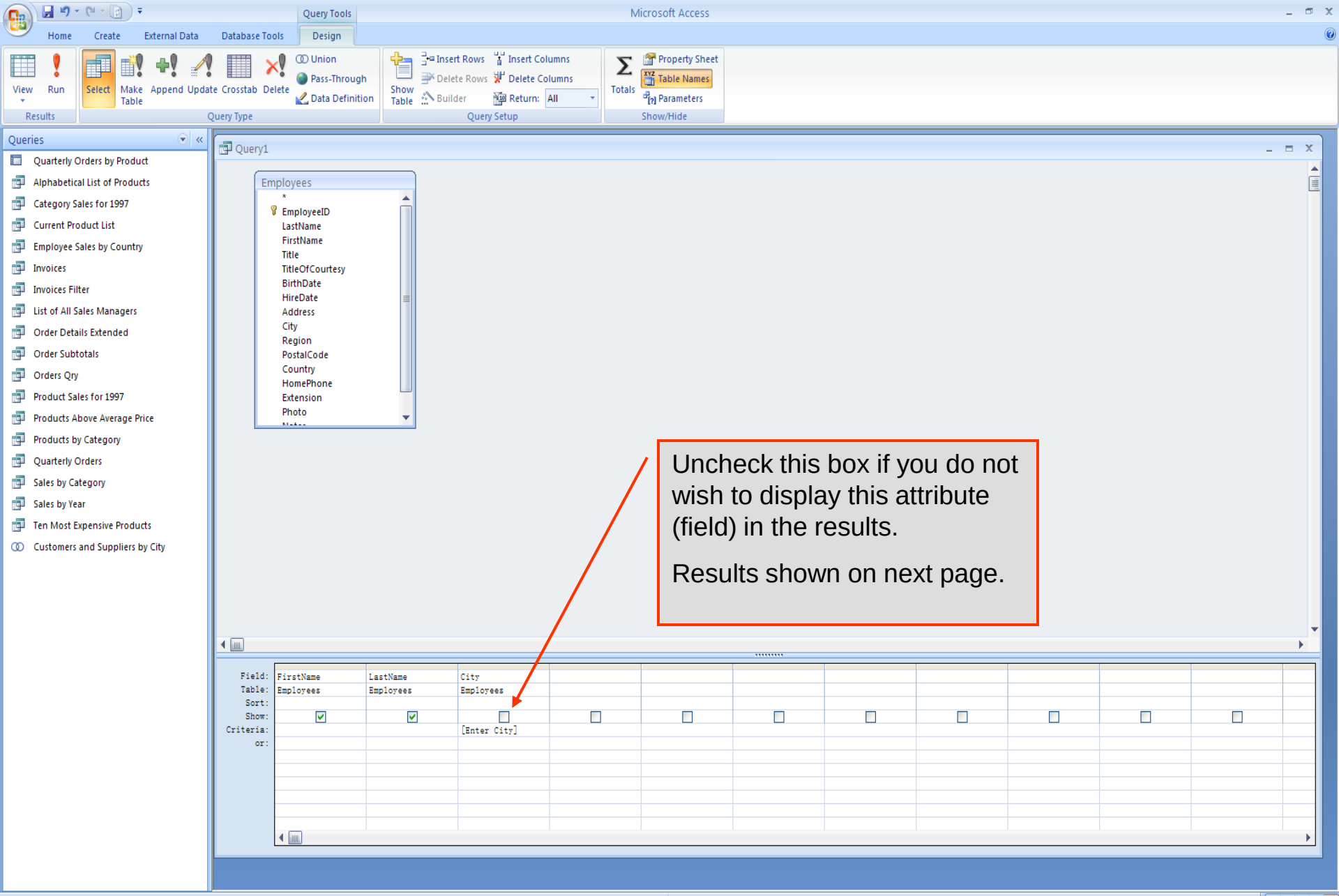
Orders Qry
Product Sales for 1997
Products Above Average Price
Products by Category
Quarterly Orders
Sales by Category
Sales by Year
Ten Most Expensive Products
Customers and Suppliers by City
Query1
Employees
*
EmployeeID
LastName
FirstName
Title
TitleOfCourtesy
BirthDate
HireDate
Address
City
Region
PostalCode
Country
HomePhone
Extension
Photo
The parameter is based on the city attribute and the question that is asked of the user is: Enter City. See next slide.
Field:
Table:
Sort:
Show:
Criteria:
or:
FirstName
LastName
City
Employees
Employees
Employees
[Enter City]
Ready


Query Tools
Microsoft Access
Home
Create
External Data
Database Tools
Design
View
Run
Select
Make Table
Append
Update
Crosstab
Delete
Union
Pass-Through
Data Definition
Insert Rows
Delete Rows
Builder
Insert Columns
Delete Columns
Return: All
Show Table
Totals
Property Sheet
Table Names
Parameters
Results
Query Type
Query Setup
Show/Hide
Queries
Quarterly Orders by Product
Alphabetical List of Products
Category Sales for 1997
Current Product List
Employee Sales by Country
Invoices
Invoices Filter
List of All Sales Managers
Order Details Extended
Order Subtotals
Orders Qry
Product Sales for 1997
Products Above Average Price
Products by Category
Quarterly Orders
Sales by Category
Sales by Year
Ten Most Expensive Products
Customers and Suppliers by City
Query1
Employees
*
EmployeeID
LastName
FirstName
Title
TitleOfCourtesy
BirthDate
HireDate
Address
City
Region
PostalCode
Country
HomePhone
Extension
Photo
Enter Parameter Value
Enter City
London
OK
Cancel
Field:
Table:
Sort:
Show:
Criteria:
or:
FirstName
LastName
City
Employees
Employees
Employees
[Enter City]
Ready



Results of all employees in London.

Note: since we know from our parameter that all of the employees listed are from London, if we do not wish to see the city attribute in our result listing we can modify the query as shown on the next page.


Query Tools
Microsoft Access
Home
Create
External Data
Database Tools
Design
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Make Table
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Crosstab
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Union
Pass-Through
Data Definition
Insert Rows
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Delete Rows
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Show Table
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Sales by Category
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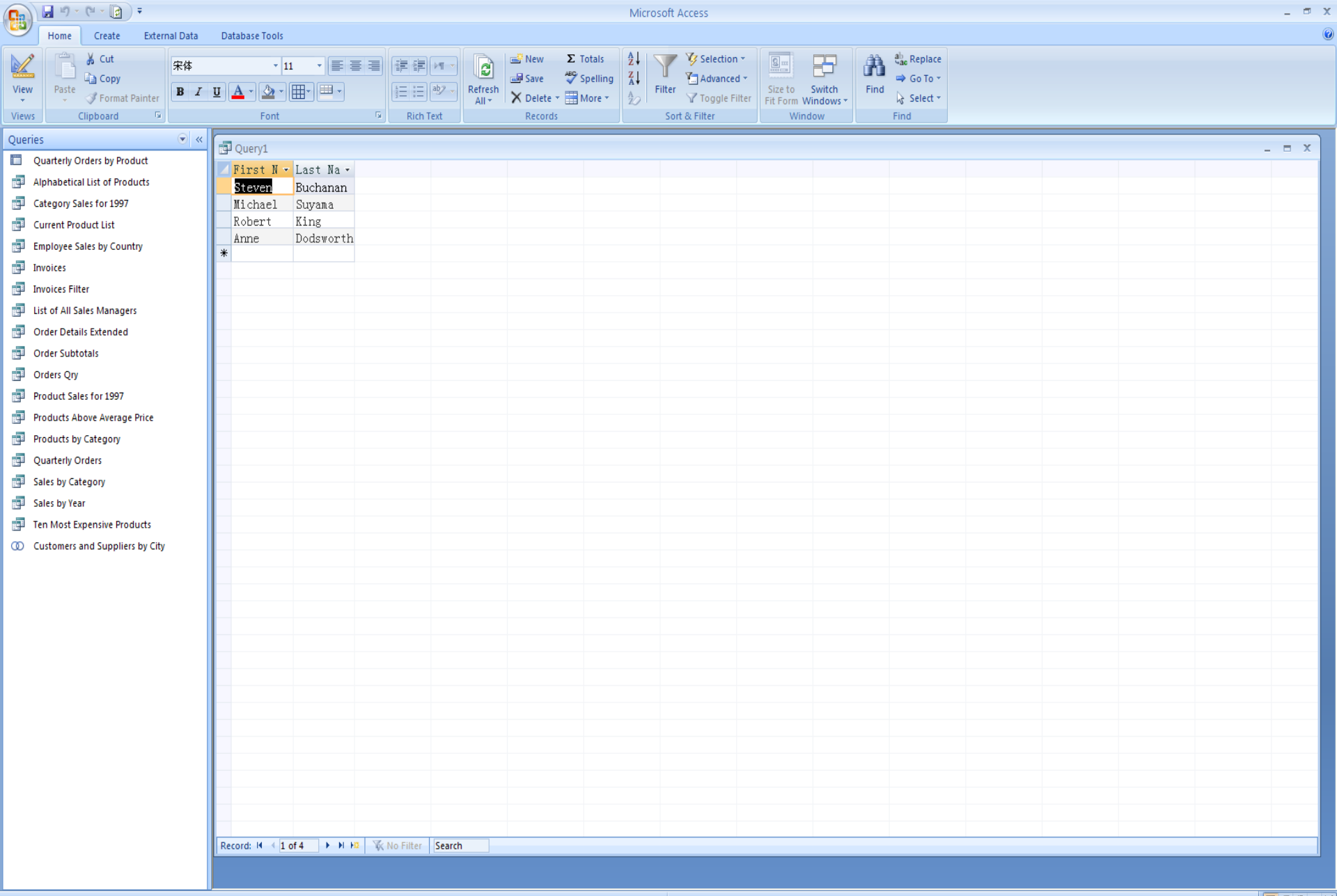
Ten Most Expensive Products
Customers and Suppliers by City
Query1
Employees
*
EmployeeID
LastName
FirstName
Title
TitleOfCourtesy
BirthDate
HireDate
Address
City
Region
PostalCode
Country
HomePhone
Extension
Photo
Uncheck this box if you do not wish to display this attribute (field) in the results.
Results shown on next page.
Field:
Table:
Sort:
Show:
Criteria:
or:
FirstName
LastName
City
Employees
Employees
Employees
[Enter City]
Ready


Microsoft Access
Home
Create
External Data
Database Tools
Queries
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Alphabetical List of Products
Category Sales for 1997
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Orders Qry
Product Sales for 1997
Products Above Average Price
Products by Category
Quarterly Orders
Sales by Category
Sales by Year
Ten Most Expensive Products
Customers and Suppliers by City
Query1
First N
Last Na
Steven
Buchanan
Michael
Suyama
Robert
King
Anne
Dodsworth
Record: 1 of 4
No Filter
Search
Ready

Lab Assignment #2

Lab Assignment #2 – Due September 21st by 11:55 pm (WebCourses time) – 25 points

Submit the results of 5 different queries against 5 different tables that are part of the Northwind sample database. Each of your queries should use the criteria method as a means for limiting the number of rows in the result. At least one of your queries should include a user supplied parameter. Use whatever criteria are necessary so that the results of each of your queries contains no more than 15 rows. Clearly identify, in English, each of your queries and the print out the results (cut and paste is fine, you do not need to generate reports yet).

The next page shows one sample format for your submission.

NOTE: Please use the following naming convention for your uploaded files:

HW02_LastNameFirstName.doc or HW02_LastNameFirstName.pdf

A Word document or similar.

Query #1

English version: List the names of employees from a particular city.
(Value of City is user supplied.)

Access version: