

# CGS 2545: Database Concepts Spring 2014

## LAB #2

**Includes Lab Assignment #2 – Due March 14<sup>th</sup>**

Course Instructor : Dr. Mark Llewellyn

Lab Instructors : Arup Ghosh and Rui Hou

Department of Electrical Engineering and Computer Science  
Computer Science Division  
University of Central Florida



# 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 if you haven't already done so.

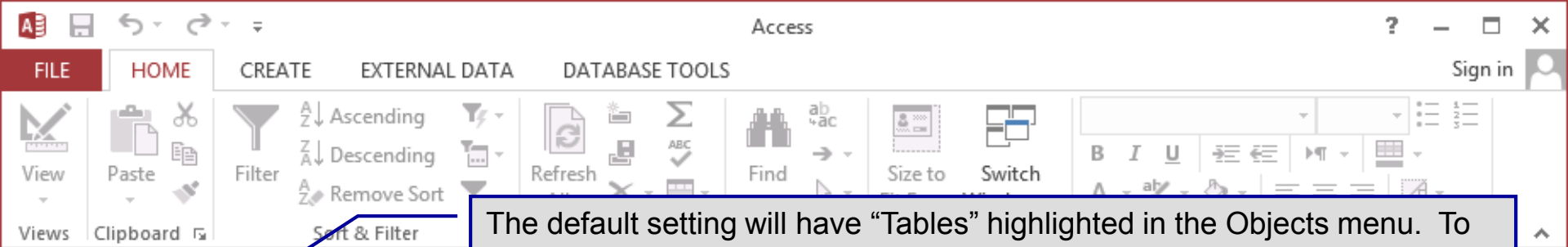
**NOTE:** In the slides that follow, if the call-out symbol is outlined in red, it means that there is something for you to try, if the call-out is outlined in blue, I am simply giving you some information about what is displayed on that page.



# Lab #2

- To simplify 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.
    - As an option to steps 1 and 2, you can simply double click the Northwind database icon in your folder and it should open Access for you.
  - 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.

### All Access Objects

- Invoices
- Invoices Filter
- List of All Sales Managers
- Order Details Extended
- Order Subtotals
- Orders Qty
- Product Sales for 1997
- Products Above Average P...
- Products by Category
- Quarterly Orders
- Sales by Category
- Sales by Year
- Ten Most Expensive Prod...
- Customers and Suppliers ...
- Forms**
  - Categories
  - Customer Labels Dialog
  - Customer Orders

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

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



Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Paste Filter Sort & Filter Records Find Window Text Formatting

Ascending Descending Remove Sort Refresh All Find Size to Fit Form Switch Windows Calibri 11 B I U

All Access Objects

- Invoices
- Invoices Filter
- List of All Sales Managers
- Order Details Extended
- Order Subtotals
- Orders Qty
- Product Sales for 1997
- Products Above Average P...
- Products by Category
- Quarterly Orders
- Sales by Category
- Sales by Year
- Ten Most Expensive Prod...**
- Customers and Suppliers ...
- Forms
  - Categories
  - Customer Labels Dialog
  - Customer Orders

Ten Most Expensive Products

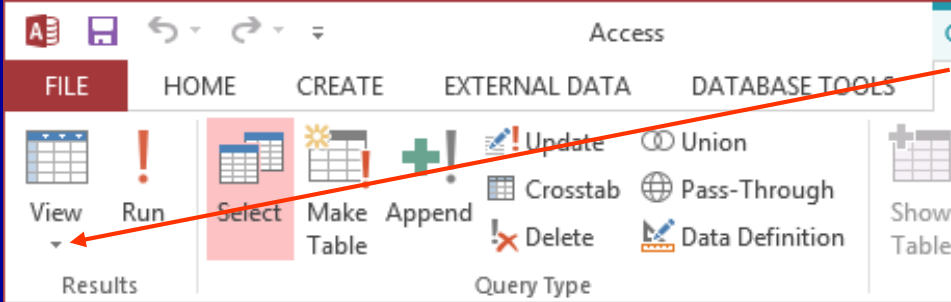
Ten Most Expensive Product	Unit Price		
Côte de Blaye	\$263.50		
Thüringer Rostbratwurst	\$123.79		
Mishi Kobe Niku	\$97.00		
Sir Rodney's Marmalade	\$81.00		
Carnarvon Tigers	\$62.50		
Raclette Courdavault	\$55.00		
Manjimup Dried Apples	\$53.00		
Tarte au sucre	\$49.30		
Ipoh Coffee	\$46.00		
Rössle Sauerkraut	\$45.60		
*	\$0.00		

Record: 1 of 10 No Filter Search

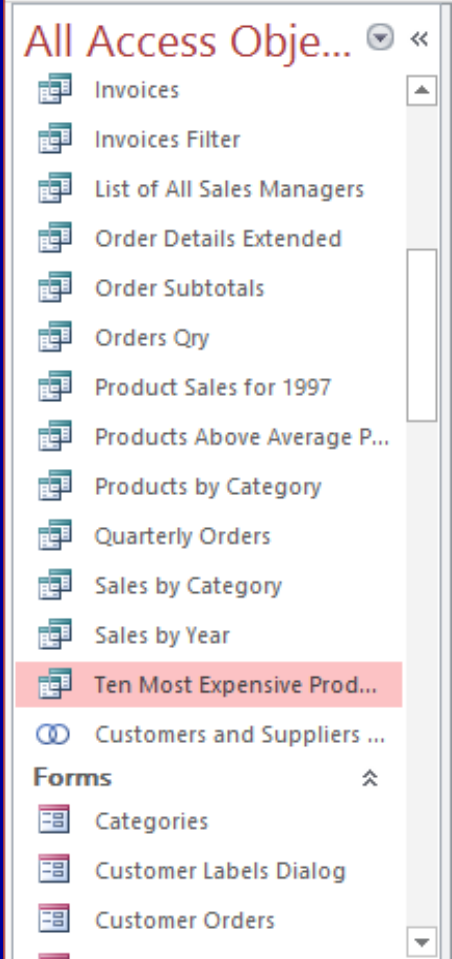
The 10 most expensive products currently in the database.

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. (Go to the next page.)





Click the expand icon in the View option and you'll see a list containing three different views (datasheet view, SQL view, and design view). Select the SQL view and you'll see the screen below, which is the SQL version of the "Ten Most Expensive Products" query.



```
SELECT TOP 10 Products.ProductName AS  
TenMostExpensiveProducts, Products.UnitPrice  
FROM Products  
ORDER BY Products.UnitPrice DESC;
```

Remember from our initial look at SQL in class that if you want to specifically order the results of a query, the ORDER BY clause is what you need to use. For the ordering in the "Ten Most Expensive Products" query the results are ordered in descending order of the unit price attribute.

The TOP clause is an SQL that allows you to specify the number of records to return in a result. In other words, you don't want all of the records in the table to appear in the results. The number can also be expressed as a percentage and if so is followed by the keyword PERCENT.



Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table

Results Query Type

CREATE a modified version of the “Ten Most Expensive Products” query that returns the “Top Ten Percent Of The Most Expensive Products”

Try it yourself before you look at the solution on the next page. There are 77 records in the Products table. How many records should your query return?

- All Access Objects
- Invoices
  - Invoices Filter
  - List of All Sales Managers
  - Order Details Extended
  - Order Subtotals
  - Orders Qty
  - Product Sales for 1997
  - Products Above Average P...
  - Products by Category
  - Quarterly Orders
  - Sales by Category
  - Sales by Year
  - Ten Most Expensive Prod...
  - Customers and Suppliers ...
- Forms
- Categories
  - Customer Labels Dialog
  - Customer Orders

```
SELECT TOP 10 Products.ProductName AS  
TenMostExpensiveProducts, Products.UnitPrice  
FROM Products  
ORDER BY Products.UnitPrice DESC;
```



Access QUERY TOOLS DESIGN

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Run Select Make Table Append Update Union Crosstab Pass-Through Insert Rows Insert Columns Parameters Property Sheet Delete Delete Rows Delete Columns

Results Query Type

Since there are 77 records in the Products table, the top ten percent will return 8 records as shown in the inset.

- All Access Objects
- Product Sales for 1997
  - Products Above Average P...
  - Products by Category
  - Quarterly Orders
  - Sales by Category
  - Sales by Year
  - Ten Most Expensive Prod...
  - TopTenPercentMostExpen...**
  - Customers and Suppliers ...
- Forms
- Categories
  - Customer Labels Dialog
  - Customer Orders
  - Customer Orders Subform1
  - Customer Orders Subform2
  - Customer Phone List
  - Customers
  - Employees

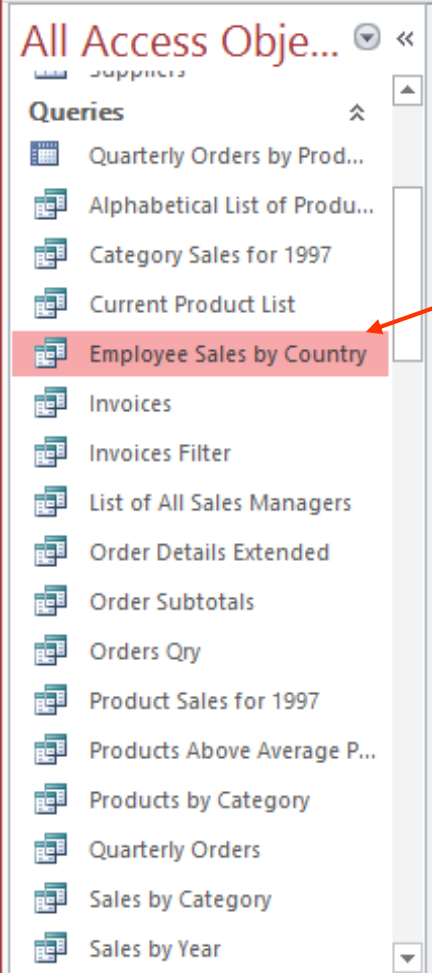
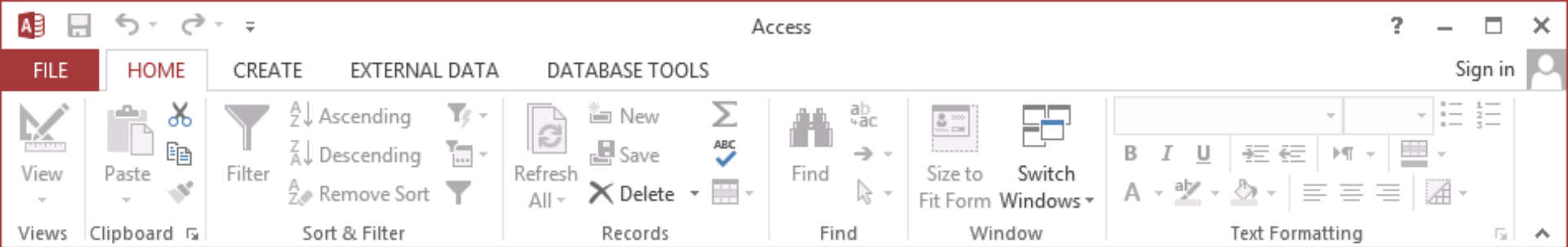
```
SELECT TOP 10 PERCENT Products.ProductName AS TopTenPercentMostExpensiveProducts,
Products.UnitPrice
FROM Products
ORDER BY Products.UnitPrice DESC;
```

There is no BOTTOM operator similar to the TOP operator in SQL, so a query to find the 10 least expensive products is a bit more complicated. We'll see how to do it later when you know a bit more SQL.

TopTenPercentMostExpensiveProducts

Product Name	Unit Price
Côte de Blaye	\$263.50
Thüringer Rostbratwurst	\$123.79
Mishi Kobe Niku	\$97.00
Sir Rodney's Marmalade	\$81.00
Carnarvon Tigers	\$62.50
Raclette Courdavault	\$55.00
Manjimup Dried Apples	\$53.00
Tarte au sucre	\$49.30





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:



Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Paste Filter Sort & Filter Records Find Window Text Formatting

Views Clipboard Sort & Filter Records Find Window Text Formatting

All Access Objects

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 Query
- Product Sales for 1997
- Products Above Average Price
- Products by Category
- Quarterly Orders
- Sales by Category
- Sales by Year

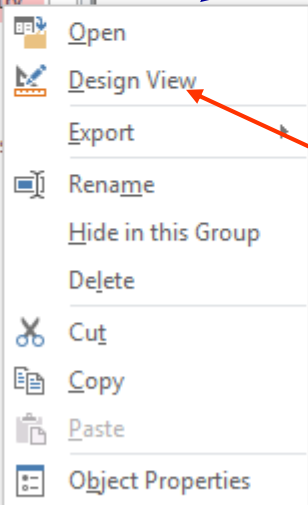
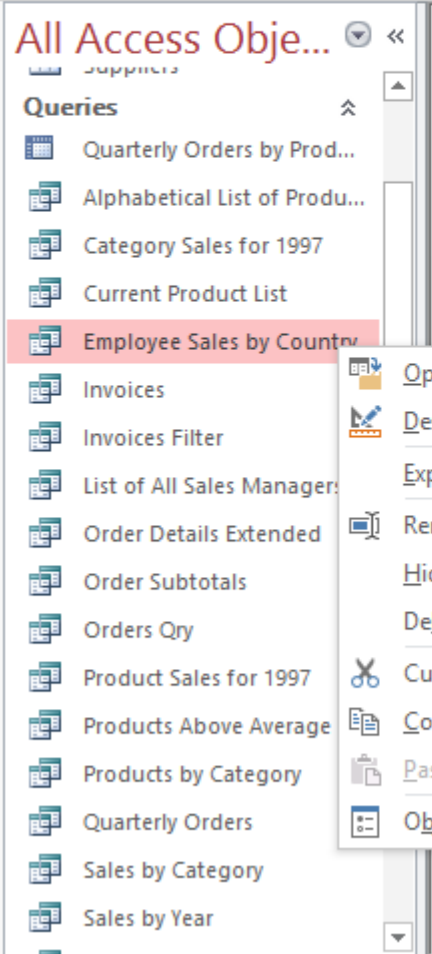
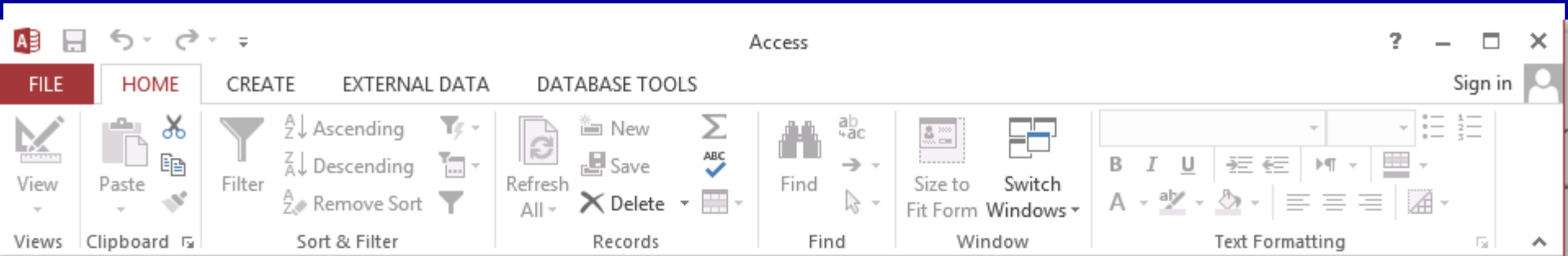
Enter Parameter Value

Beginning Date

OK Cancel

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?



This menu option let's you look at the design of a query.

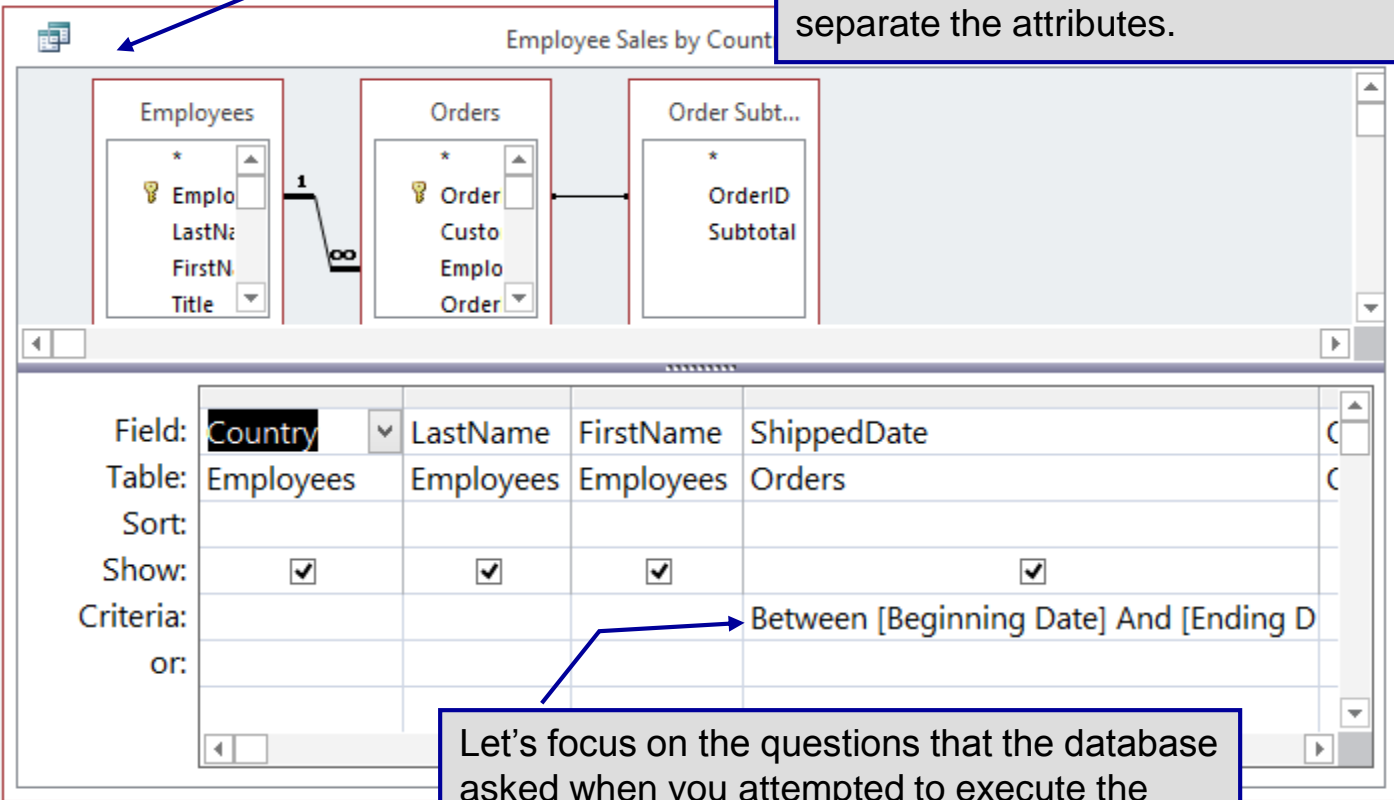
With the query "Employee Sales by Country" highlighted (don't click on it, just highlight it), click the right mouse button, and move the cursor to the option "Design View".

Once you click "Design View" you should see the screen on the following page.



Typically this window will be fairly compressed and you may need to expand it to see the various fields. All of the fields can be resized by simply dragging the vertical lines that separate the attributes.

- All Access Objects
- 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



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.

Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Run Select Make Append Update Crosstab Delete Pass-Through Data Definition

Results Query Type Query Setup Show/Hide

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.

All Access Obj...

Queries

- Quarterly Orders by Pr...
- Alphabetical List of Pr...
- Category Sales for 1997
- Current Product List
- Employee Sales by Co...
- Invoices
- Invoices Filter
- List of All Sales Manag...
- Order Details Extended
- Order Subtotals
- Orders Qry

Employee Sales by Country

Field:	Country	LastName	FirstName	ShippedDate	OrderID
Table:	Employees	Employees	Employees	Orders	Orders
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:				Between [Beginning Date] And [Ending Date]	

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

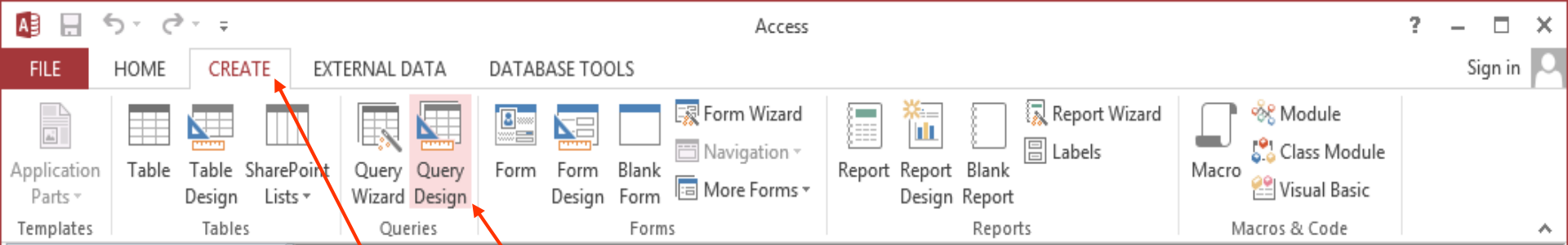
Operator	Meaning
=	equal to
> >=	greater than and greater than or equal to
< <=	less than and less than or equal to
?	wildcard – stands for any single character
*	wildcard – stands for any sequence of characters
AND	must satisfy both of two criteria
OR	must satisfy either of two criteria
NOT	used in 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.





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.



Access QUERY TOOLS

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

SQL View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: All Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Access Obj... <<

Queries

- Quarterly Orders by Pr...
- Alphabetical List of Pr...
- Category Sales for 1997
- Current Product List
- Employee Sales by Co...
- Invoices
- Invoices Filter
- List of All Sales Manag...
- Order Details Extended
- Order Subtotals
- Orders Qry
- Product Sales for 1997
- Products Above Avera...
- Products by Category
- Quarterly Orders
- Sales by Category
- Sales by Year

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".

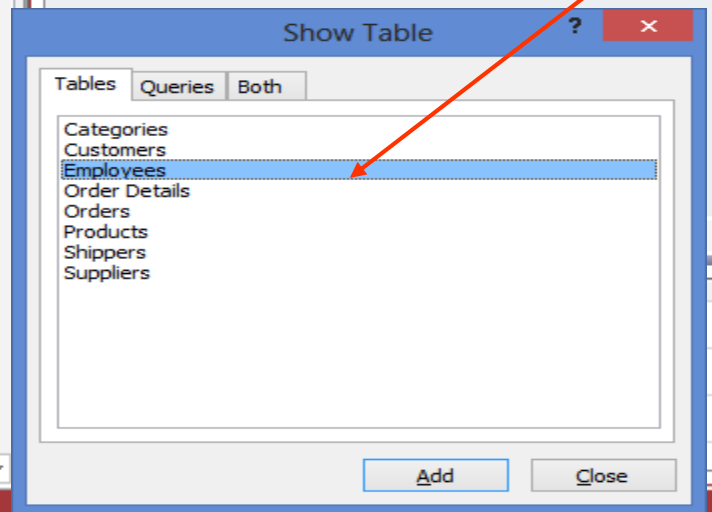
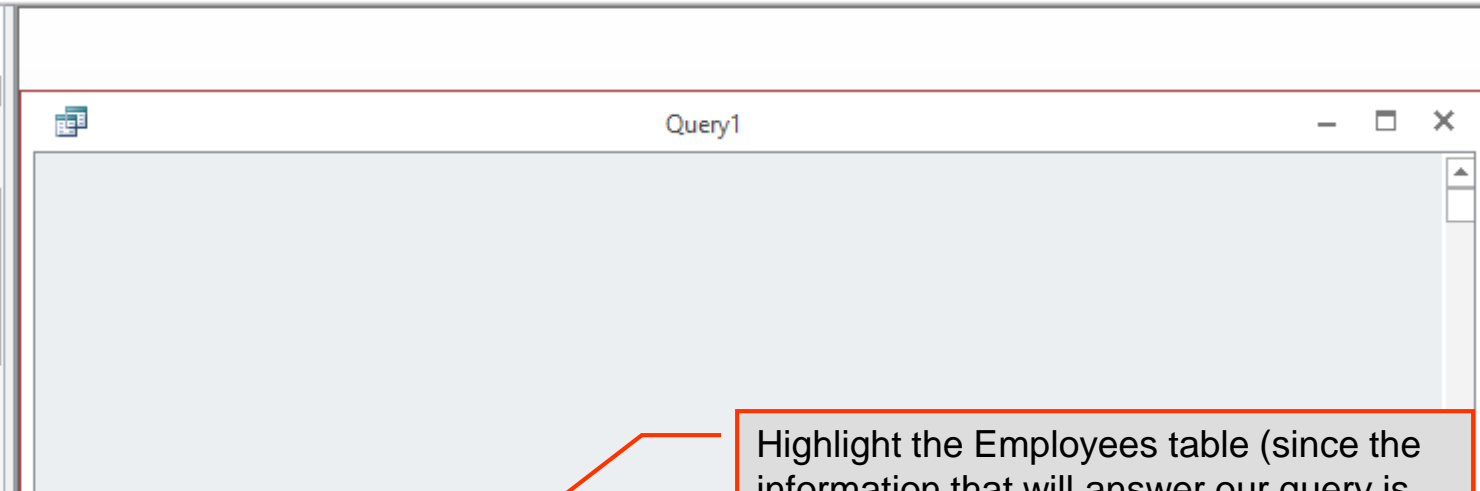
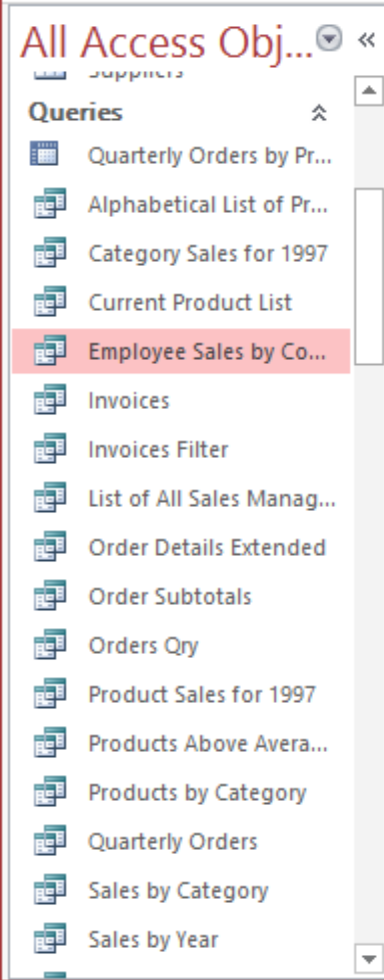
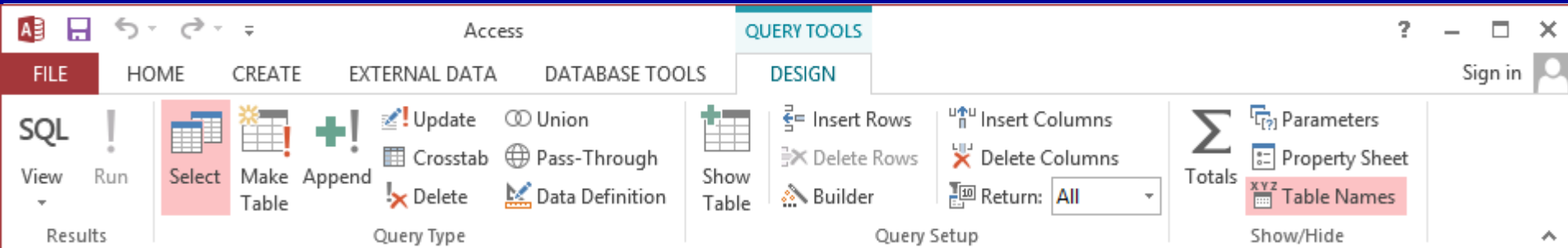
The following few pages show the steps needed to create this query.

Show Table

Tables Queries Both

- Categories
- Customers
- Employees
- Order Details
- Orders
- Products
- Shippers
- Suppliers

Add Close



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.



Access ? - □ ×

**FILE** HOME CREATE EXTERNAL DATA DATABASE TOOLS **QUERY TOOLS** DESIGN Sign in

View Run Select Make Table Append Update Crosstab Pass-Through Delete Data Definition Show Table Insert Rows Delete Rows Insert Columns Delete Columns Return: All Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

- All Access Obj... <<
- Queries
- Quarterly Orders by Pr...
  - Alphabetical List of Pr...
  - Category Sales for 1997
  - Current Product List
  - Employee Sales by Co...**
  - Invoices
  - Invoices Filter
  - List of All Sales Manag...
  - Order Details Extended
  - Order Subtotals
  - Orders Qry
  - Product Sales for 1997
  - Products Above Avera...
  - Products by Category
  - Quarterly Orders
  - Sales by Category
  - Sales by Year

Query1

Employees

\*

EmployeeID

LastName

FirstName

Title

TitleOfCourtesy

Field:					
Table:					
Sort:					
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Access QUERY TOOLS DESIGN

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Run Select Make Table Append Update Union Crosstab Pass-Through Delete Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: All Totals Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Access Obj... <<

Queries

- Quarterly Orders by Pr...
- Alphabetical List of Pr...
- Category Sales for 1997
- Current Product List
- Employee Sales by Co...
- Invoices
- Invoices Filter
- List of All Sales Manag...
- Order Details Extended
- Order Subtotals
- Orders Qry
- Product Sales for 1997
- Products Above Avera...
- Products by Category
- Quarterly Orders
- Sales by Category
- Sales by Year

Query1

Employees

- \* EmployeeID
- LastName
- FirstName
- Title
- TitleOfCourtesy
- BirthDate
- HireDate
- Address
- City
- Region
- PostalCode

Field:									
Table:									
Sort:									
Show:									

(1) Expand the table box in order to see all the attributes of the Employees table

(2) 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.

Access QUERY TOOLS DESIGN

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Pass-Through Delete Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: All Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Access Obj... <<

Queries

- Quarterly Orders by Pr...
- Alphabetical List of Pr...
- Category Sales for 1997
- Current Product List
- Employee Sales by Co...
- Invoices
- Invoices Filter
- List of All Sales Manag...
- Order Details Extended
- Order Subtotals
- Orders Qry
- Product Sales for 1997
- Products Above Avera...
- Products by Category
- Quarterly Orders
- Sales by Category
- Sales by Year

Query1

Employees.\*

- EmployeeID
- LastName
- FirstName
- Title
- TitleOfCourte
- BirthDate
- HireDate
- Address
- City
- Region
- PostalCode
- Country
- HomePhone
- Extension
- Photo

Field: Table: Sort: Show:

Find and click on "EmployeeID". This will leave you with the screen shown on the next page.

Access QUERY TOOLS DESIGN

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Delete Rows Builder Insert Rows Delete Columns Insert Columns Return: All Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Access Obj... <<

Queries

- Quarterly Orders by Pr...
- Alphabetical List of Pr...
- Category Sales for 1997
- Current Product List
- Employee Sales by Co...
- Invoices
- Invoices Filter
- List of All Sales Manag...
- Order Details Extended
- Order Subtotals
- Orders Qry
- Product Sales for 1997
- Products Above Avera...
- Products by Category
- Quarterly Orders
- Sales by Category
- Sales by Year

Query1

Employees

- \* EmployeeID
- LastName
- FirstName
- Title
- TitleOfCourtesy
- BirthDate
- HireDate
- Address
- City
- Region
- PostalCode

Field:	EmployeeID							
Table:	Employees							
Sort:								
Show:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Continue to fill in the various field selection columns according to the attributes that we want in our final result (employee ID, last name, first name, and hire date).

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.

Access ? - □ ×

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS **QUERY TOOLS** DESIGN Sign in

View Run Select Make Table Append Update Union Show Table Insert Rows Insert Columns Totals Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

Update Crosstab Pass-Through Delete Data Definition Delete Rows Delete Columns Return: All

- All Access Obj... <<
- Queries >>
- Quarterly Orders by Pr...
  - Alphabetical List of Pr...
  - Category Sales for 1997
  - Current Product List
  - Employee Sales by Co...
  - Invoices
  - Invoices Filter
  - List of All Sales Manag...
  - Order Details Extended
  - Order Subtotals
  - Orders Qry
  - Product Sales for 1997
  - Products Above Avera...
  - Products by Category
  - Quarterly Orders
  - Sales by Category
  - Sales by Year**

Query1

Employees

- \*
- EmployeeID
- LastName
- FirstName
- Title
- TitleOfCourtesy
- BirthDate
- HireDate
- Address
- City
- Region
- PostalCode

Field:	EmployeeID	LastName	FirstName	HireDate		
Table:	Employees	Employees	Employees	Employees		
Sort:						
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:						

Access

QUERY TOOLS

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition

Show Table Builder Insert Rows Delete Rows Insert Columns Delete Columns Return: All

Totals Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Access Obj...

Queries

- Quarterly Orders by Pr...
- Alphabetical List of Pr...
- Category Sales for 1997
- Current Product List
- Employee Sales by Co...
- Invoices
- Invoices Filter
- List of All Sales Manag...
- Order Details Extended
- Order Subtotals
- Orders Qry
- Product Sales for 1997
- Products Above Avera...
- Products by Category
- Quarterly Orders
- Sales by Category
- Sales by Year

Query1

Employees

- \* EmployeeID
- LastName
- FirstName
- Title
- TitleOfCourtesy
- BirthDate
- HireDate
- Address
- City
- Region
- PostalCode

Field: EmployeeID LastName FirstName HireDate

Table: Employees Employees Employees Employees

Sort:

Show:

Criteria:

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.

Access QUERY TOOLS DESIGN

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Run Select Make Table Append Update Crosstab Pass-Through Delete Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: All Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Access Obj... Queries

- Quarterly Orders by Pr...
- Alphabetical List of Pr...
- Category Sales for 1997
- Current Product List
- Employee Sales by Co...
- Invoices
- Invoices Filter
- List of All Sales Manag...
- Order Details Extended
- Order Subtotals
- Orders Qry
- Product Sales for 1997
- Products Above Avera...
- Products by Category
- Quarterly Orders
- Sales by Category
- Sales by Year

Query1

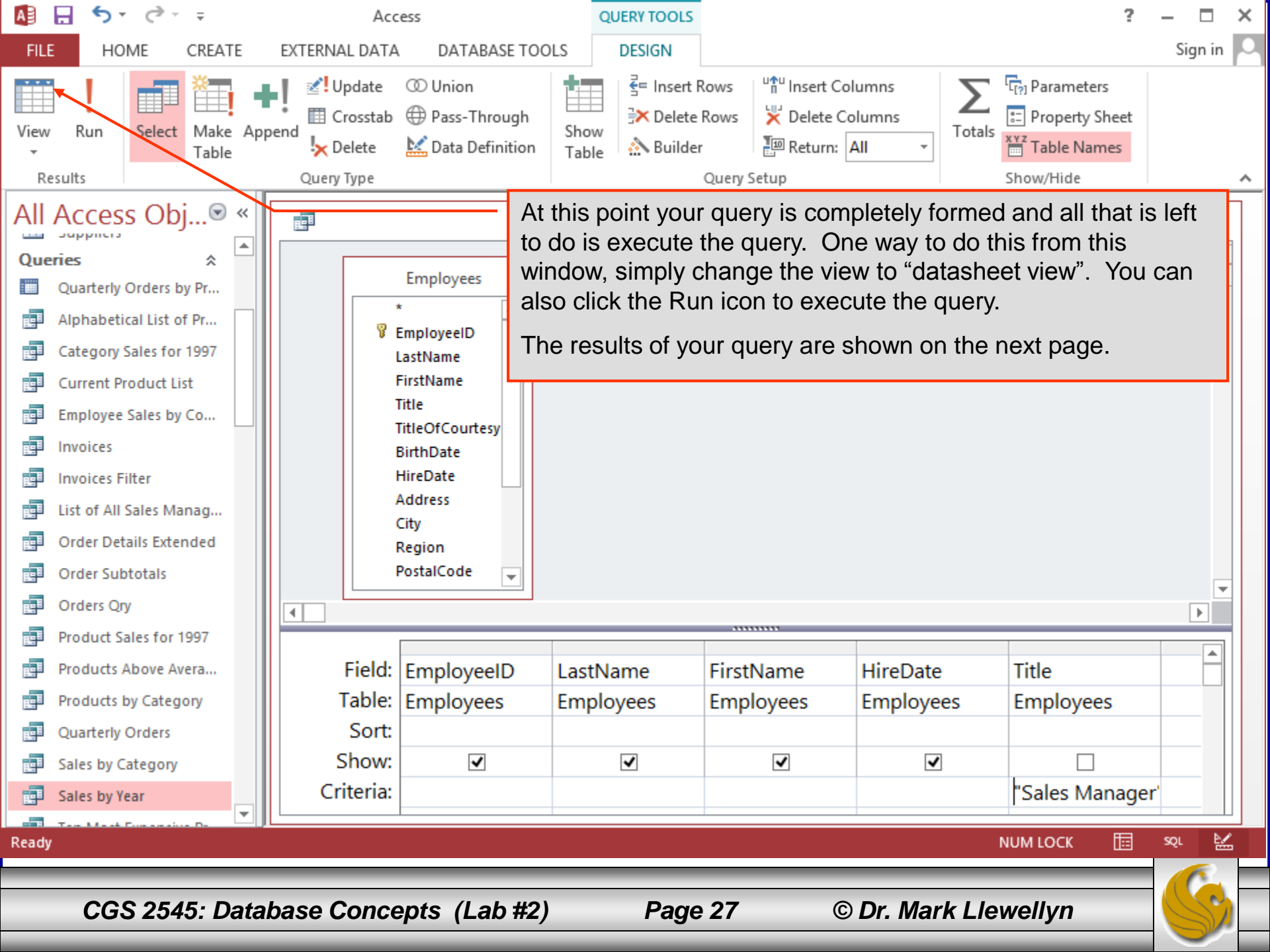
Employees

- \* EmployeeID
- LastName
- FirstName
- Title
- TitleOfCourtesy
- BirthDate
- HireDate
- Address
- City
- Region
- PostalCode

Field:	EmployeeID	LastName	FirstName	HireDate	Title
Table:	Employees	Employees	Employees	Employees	Employees
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:					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". Uncheck the "Show" box as we don't want to see this in our result.



At this point your query is completely formed and all that is left to do is execute the query. One way to do this from this window, simply change the view to “datasheet view”. You can also click the Run icon to execute the query. The results of your query are shown on the next page.

Field:	EmployeeID	LastName	FirstName	HireDate	Title	
Table:	Employees	Employees	Employees	Employees	Employees	
Sort:						
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Criteria:					<= Sales Manager	



Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Paste Filter Sort & Filter Records Find Window Text Formatting

Ascending Descending Remove Sort Refresh All Delete Find Size to Fit Form Switch Windows

Calibri 11 B I U A

All Access Obj...

Queries

- Quarterly Orders by Pr...
- Alphabetical List of Pr...
- Category Sales for 1997
- Current Product List
- Employee Sales by Co...
- Invoices
- Invoices Filter
- List of All Sales Manag...
- Order Details Extended
- Order Subtotals
- Orders Qry
- Product Sales for 1997
- Products Above Avera...
- Products by Category
- Quarterly Orders
- Sales by Category
- Sales by Year

Query1

Employee I	Last Nam	First Nam	Hire Date
5	Buchanan	Steven	17-Oct-1993
*	(New)		

Record: 1 of 1 No Filter Search

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!



Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Paste Filter Sort & Filter Records Find Window Text Formatting

Ascending Descending Remove Sort Refresh All Delete Find Size to Fit Form Switch Windows

Calibri 11 B I U A

All Access Obj...

Queries

- Quarterly Orders by Pr...
- Alphabetical List of Pr...
- Category Sales for 1997
- Current Product List
- Employee Sales by Co...
- Invoices
- Invoices Filter
- List of All Sales Manag...
- Order Details Extended
- Order Subtotals
- Orders Qry
- Product Sales for 1997
- Products Above Avera...
- Products by Category
- Quarterly Orders
- Sales by Category
- Sales by Year

Query1

Employee I	Last Nam	First Nam	Hire Date
5	Buchanan	Steven	17-Oct-1993
*	(New)		

Record: 1 of 1 No Filter Search

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!



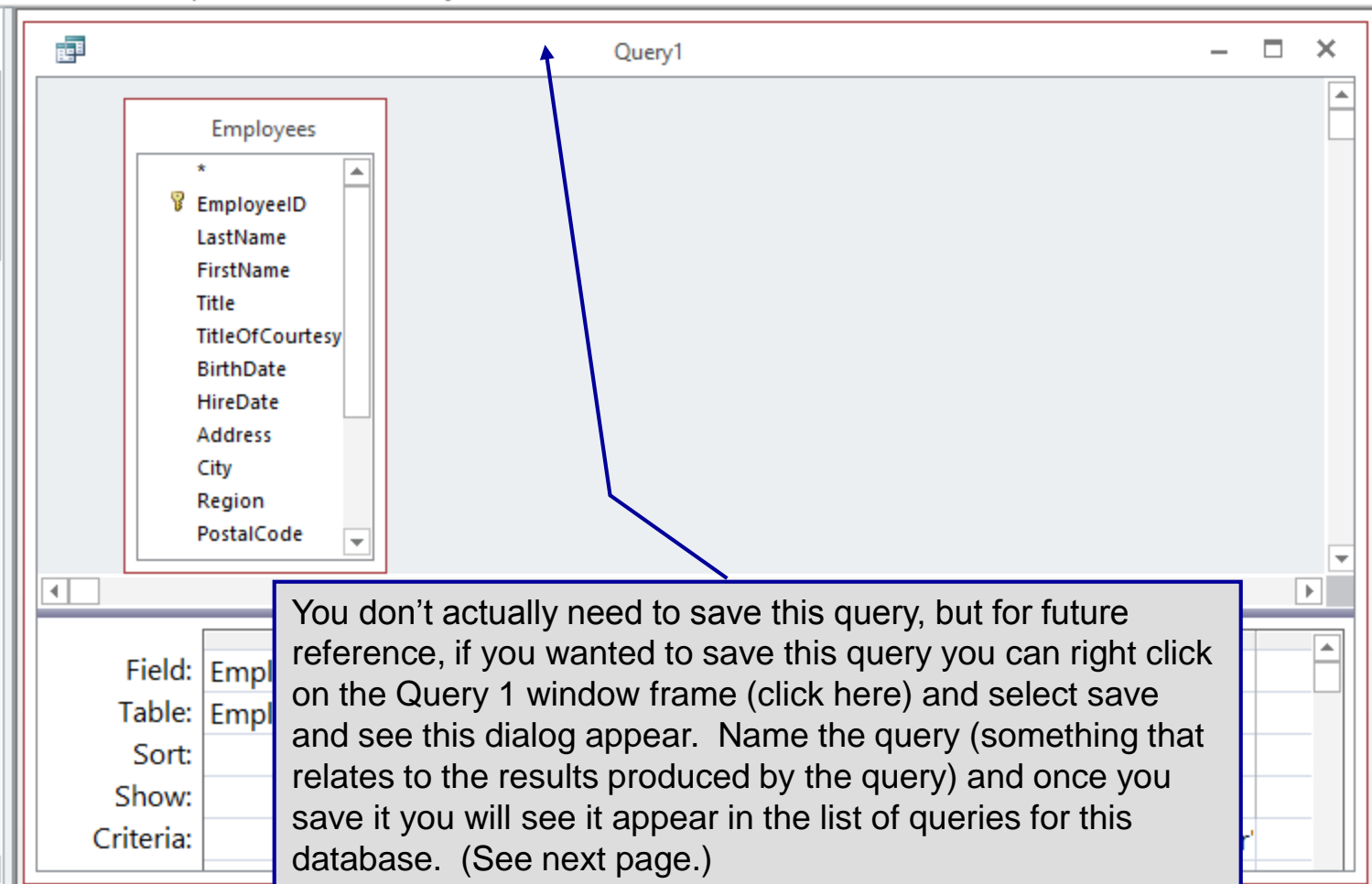
- All Access Obj... <<
- Tables**
- Categories
  - Customers
  - Employees
  - Order Details
  - Orders
  - Products
  - Shippers
  - Suppliers
- Queries**
- Quarterly Orders by Pr...
  - Alphabetical List of Pr...
  - Category Sales for 1997
  - Current Product List
  - Employee Sales by Co...
  - Invoices
  - Invoices Filter
  - List of All Sales Manag...
  - Order Details Extended

Query1

Employees

- \* EmployeeID
- LastName
- FirstName
- Title
- TitleOfCourtesy
- BirthDate
- HireDate
- Address
- City
- Region
- PostalCode

Field: Empl  
Table: Empl  
Sort:  
Show:  
Criteria:



You don't actually need to save this query, but for future reference, if you wanted to save this query you can right click on the Query 1 window frame (click here) and select save and see this 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.)

Access **QUERY TOOLS** DESIGN

FILE HOME CREATE EXTERNAL DATA **DATABASE TOOLS** DESIGN

Compact and Repair Database Tools Visual Basic Macro Run Macro Relationships Object Dependencies Relationships Analyze Database Documenter Analyze Performance Analyze Table Access SharePoint Move Data Add-Ins Add-Ins Switchboard Manager Administrator

All Access Obj... <<

**Tables**

- Categories
- Customers
- Employees
- Order Details
- Orders
- Products
- Shippers
- Suppliers

**Queries**

- Quarterly Orders by Pr...
- Alphabetical List of Pr...
- Category Sales for 1997
- Current Product List
- Employee Sales by Co...
- Invoices
- Invoices Filter
- List of All Sales Manag...
- Order Details Extended

Query1

Employees

- \* EmployeeID
- LastName
- FirstName
- Title
- TitleOfC
- BirthDat
- HireDate
- Address
- City
- Region
- PostalCode

**Save As** ? X

Query Name:  
Names Of Sales Managers

OK Cancel

Field:	EmployeeID	LastName	FirstName	HireDate	Title
Table:	Employees	Employees	Employees	Employees	Employees
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:					"Sales Manager"

Access **QUERY TOOLS** DESIGN

FILE HOME CREATE EXTERNAL DATA **DATABASE TOOLS** DESIGN

Compact and Repair Database | Visual Basic | Run Macro | Relationships | Object Dependencies | Database Documenter | Analyze Performance | Analyze Table | Access Database | SharePoint | Add-Ins | Switchboard Manager

Tools | Macro | Relationships | Analyze | Move Data | Add-Ins | Administer

- All Access Objects
- Current Product List
  - Employee Sales by Country
  - Invoices
  - Invoices Filter
  - List of All Sales Managers
  - Names Of Sales Managers**
  - Order Details Extended
  - Order Subtotals
  - Orders Qry
  - Product Sales for 1997
  - Products Above Average P...
  - Products by Category
  - Quarterly Orders
  - Sales by Category
  - Sales by Year
  - Ten Most Expensive Produ...
  - TenCheapestProducts
  - TopTenPercentMostExpen...

Names Of Sales Managers

Employees

- \* EmployeeID
- LastName
- FirstName
- Title
- BirthDate
- HireDate
- Address
- City
- Region
- PostalCode

The new query.

Field:	EmployeeID	LastName	FirstName	HireDate	Title
Table:	Employees	Employees	Employees	Employees	Employees
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:					"Sales Manager"

# 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.



Access QUERY TOOLS DESIGN

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: All Totals Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

- All Access Ob...
- Current Product List
  - Employee Sales by Co...
  - Invoices
  - Invoices Filter
  - List of All Sales Mana...
  - Names Of Sales Mana...**
  - Order Details Extended
  - Order Subtotals
  - Orders Qry
  - Product Sales for 1997
  - Products Above Avera...
  - Products by Category
  - Quarterly Orders
  - Sales by Category
  - Sales by Year
  - Ten Most Expensive Pr...
  - TenCheapestProducts
  - TopTenPercentMostEx...

Query1

Employees

- \* EmployeeID
- LastName
- FirstName
- Title
- TitleOfCourtesy

Field:	LastName	FirstName	City		
Table:	Employees	Employees	Employees		
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:			[Enter City]		
or:					

The parameter is based on the city attribute and the question that is asked of the user is: Enter City. See next slide.



Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS QUERY TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: All Parameters Property Sheet Table Names

Results Query Type Query Setup Show/Hide

All Access Ob...

- Current Product List
- Employee Sales by Co...
- Invoices
- Invoices Filter
- List of All Sales Mana...
- Names Of Sales Mana...**
- Order Details Extended
- Order Subtotals
- Orders Qry
- Product Sales for 1997
- Products Above Avera...
- Products by Category
- Quarterly Orders
- Sales by Category
- Sales by Year
- Ten Most Expensive Pr...
- TenCheapestProducts
- TopTenPercentMostEx...

Query1

Employees

- \* EmployeeID
- LastName
- FirstName
- Title
- TitleOfCourtesy

Enter Parameter Value

Enter City

London

OK Cancel

Field:	LastName				
Table:	Employees				
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:			[Enter City]		
or:					

Click "Run" to execute the query, when the dialog box pops-up, enter a city name.

Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Paste Filter Sort & Filter Records Find Window Text Formatting

Ascending Descending Remove Sort Refresh Save Delete Find Size to Fit Form Switch Windows Text Formatting

Calibri 11

B I U

A

- All Access Ob...
- Current Product List
  - Employee Sales by Co...
  - Invoices
  - Invoices Filter
  - List of All Sales Mana...
  - Names Of Sales Mana...**
  - Order Details Extended
  - Order Subtotals
  - Orders Qty
  - Product Sales for 1997
  - Products Above Avera...
  - Products by Category
  - Quarterly Orders
  - Sales by Category
  - Sales by Year
  - Ten Most Expensive Pr...
  - TenCheapestProducts
  - TopTenPercentMostEx...

Query1

Last Nam	First Nam	City
Buchanan	Steven	London
Suyama	Michael	London
King	Robert	London
Dodsworth	Anne	London
*		

Record: 1 of 4 No Filter

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.

Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition

Query Type

Insert Rows Delete Rows Builder

Query Setup

Insert Columns Delete Columns Return: All

Totals Parameters Property Sheet Table Names

Show/Hide

- All Access Objects
- Current Product List
  - Employee Sales by Co...
  - Invoices
  - Invoices Filter
  - List of All Sales Mana...
  - Names Of Sales Mana...**
  - Order Details Extended
  - Order Subtotals
  - Orders Qry
  - Product Sales for 1997
  - Products Above Avera...
  - Products by Category
  - Quarterly Orders
  - Sales by Category
  - Sales by Year
  - Ten Most Expensive Pr...
  - TenCheapestProducts
  - TopTenPercentMostEx...

Query1

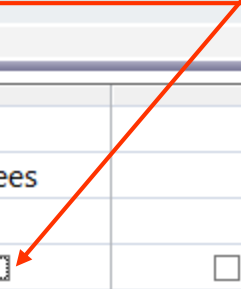
Employees

- \* EmployeeID
- LastName
- FirstName
- Title
- TitleOfCourtesy

Field:	LastName	FirstName	City		
Table:	Employees	Employees	Employees		
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:					
or:					

Uncheck this box if you do not wish to display this attribute (field) in the results.

Results shown on next page.



Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS Sign in

View Paste Filter Sort & Filter Records Find Window Text Formatting

Ascending Descending Remove Sort Refresh All Delete Find Size to Fit Form Switch Windows

Calibri 11 B I U

- All Access Objects
- Current Product List
  - Employee Sales by Co...
  - Invoices
  - Invoices Filter
  - List of All Sales Mana...
  - Names Of Sales Mana...**
  - Order Details Extended
  - Order Subtotals
  - Orders Qry
  - Product Sales for 1997
  - Products Above Avera...
  - Products by Category
  - Quarterly Orders
  - Sales by Category
  - Sales by Year
  - Ten Most Expensive Pr...
  - TenCheapestProducts
  - TopTenPercentMostEx...

Query1

Last Nam	First Nam
Buchanan	Steven
Suyama	Michael
King	Robert
Dodsworth	Anne
*	

Record: 1 of 4 No Filter Search



# SQL Queries In Access

- Now that you've had some exposure to basic SQL queries in class, we'll see how to construct simple (one table queries) using SQL in Access.
- While Access provides the mechanisms you've just seen to develop queries, SQL is the language that you really want to learn in the database world. From this point forward, the queries you construct in Access will all be constructed using SQL.
- Start by going back and clearing the main window of anything that you've been doing in Access and then select the CREATE tab and then select QUERY DESIGN and close the Select Table dialog box that appears. From the VIEW option, select SQL and you should be on a screen that looks like the next page.



Access

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS QUERY TOOLS DESIGN

View Run Select Make Table Append Update Crosstab Delete Union Pass-Through Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: [ ] Totals Parameters Property Sheet Table Names Show/Hide

Results Query Type Query Setup

All Access Ob... <<

Suppliers

Queries

- Quarterly Orders by Pr...
- Alphabetical List of Pr...
- Category Sales for 1997
- Current Product List
- Employee Sales by Co...
- Invoices
- Invoices Filter
- List of All Sales Mana...
- Names Of Sales Mana...**
- Order Details Extended
- Order Subtotals
- Orders Qry
- Product Sales for 1997
- Products Above Avera...
- Products by Category
- Quarterly Orders
- Sales by Category

Query1

```
SELECT;
```

Press the delete key to remove the default SELECT; if you wish, otherwise position the cursor after the letter T and before the semicolon to begin typing your query.

Enter the SQL Select statement that will list the product name and product cost for all the products supplied by the supplier with supplierID = 1 from the products table.

Try constructing the Select statement yourself before you look at the answer on the next page.

Access QUERY TOOLS DESIGN

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Union Crosstab Pass-Through Delete Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: [ ] Totals Parameters Property Sheet Table Names Show/Hide

Results Query Type Query Setup

All Access Ob... <<

Tables

- Categories
- Customers
- Employees
- Order Details
- Orders
- Products
- Shippers
- Suppliers

Queries

- Quarterly Orders by Pr...
- Alphabetical List of Pr...
- Category Sales for 1997
- Current Product List
- Employee Sales by Co...
- Invoices
- Invoices Filter
- List of All Sales Mana...
- Names Of Sales Mana...

Query1

```
SELECT productName, unitPrice
FROM products
WHERE supplierID = 1;
```

Query1

Product Name	Unit Price
Chai	\$18.00
Chang	\$19.00
Aniseed Syrup	\$10.00
*	\$0.00

Record: 1 of 3 No Filter Search

Did you get it correct? Is this the result set you see?

Try this one: Write an SQL query that will return the total number of orders placed by the customer named Ernst Handel.

Answer on next slide.

Access

QUERY TOOLS

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS DESIGN

View Run Select Make Table Append Update Union Crosstab Pass-Through Delete Data Definition Show Table Insert Rows Delete Rows Builder Insert Columns Delete Columns Return: [ ] Totals Parameters Property Sheet Table Names Show/Hide

Results Query Type Query Setup

### All Access Objects

Tables

- Categories
- Customers
- Employees
- Order Details
- Orders**
- Products
- Shippers
- Suppliers

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

Query1

```
SELECT Count(*) AS NumberOfOrdersPlaced
FROM Orders
WHERE Orders.customerID = "ERNSH";
```

Query1

NumberOfOrdersPlaced
31

Record: 1 of 1 No Filter Search

Did you get it correct? Is this the result set you see?

This one was more difficult because the customerID that you needed was not the name of the customer so you had to look it up manually in the Customer table before you could write your query. In class we'll be looking at SQL techniques that would allow us to construct this query without that manual lookup. It requires joining related table.

# Lab Assignment #2

Lab Assignment #2 – Due March 14<sup>th</sup> by 11:59 pm (WebCourses time) – 50 points

1. 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 then print out the results (cut and paste is fine, you do not need to generate reports yet).
2. Submit the SQL Select statements and the results for the 5 queries shown below:
  - a) List all of the customer name and contact title for any customer for whom the contact title is some form of a manager (i.e., a sales manager or accounting manager, etc.).
  - b) List the last name, first name and birth date for every employee from the UK.
  - c) List the number of different shippers in the shippers table. Display the result as TotalNumberOfShippers.
  - d) List the sum of all freight charges that appear in the orders table.
  - e) List the employee last name, first name, and birthdate for all employees who live in London and order them from youngest to oldest.

The last two pages show an example format for your submission for parts 1 and 2 above.

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

HW02\_LastNameFirstName.doc or HW02\_LastNameFirstName.pdf



For Part 1

### Query #1

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

Access version:

The screenshot displays the Microsoft Access interface. The ribbon is set to 'DESIGN' under 'QUERY TOOLS'. The 'All Access Objects' pane on the left shows 'Lab 2 - SQL Query (d)' selected. The 'Query1' design grid is shown with the following fields and criteria:

Field:	LastName	FirstName	Country		
Table:	Employees	Employees	Employees		
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:			[Enter Country]		

The 'Enter Parameter Value' dialog box is open, showing 'Enter Country' with 'USA' entered in the text box. The preview window shows the following data:

Last Nam	First Nam
Davolio	Nancy
Fuller	Andrew
Leverling	Janet
Peacock	Margaret
Callahan	Laura
*	

A Word document or similar.



For Part 2

A Word document or similar.

Query #2(a)  
SQL SELECT statement:

The screenshot shows the Microsoft Access interface. The 'All Access Objects' pane on the left lists various objects, with 'Ten Most Expensive Products' selected. The 'Query Design' ribbon is active, and the 'SQL View' tab is selected. The SQL statement is displayed in a text box:

```
SELECT TOP 10 Products.ProductName AS  
TenMostExpensiveProducts, Products.UnitPrice  
FROM Products  
ORDER BY Products.UnitPrice DESC;
```

Results

The screenshot shows the results of the 'Ten Most Expensive Products' query in a table view. The table has two columns: 'Ten Most Expensive Product' and 'Unit Price'. The data is as follows:

Ten Most Expensive Product	Unit Price
Côte de Blaye	\$263.50
Thüringer Rostbratwurst	\$123.79
Mishi Kobe Niku	\$97.00
Sir Rodney's Marmalade	\$81.00
Carnarvon Tigers	\$62.50
Raclette Courdavault	\$55.00
Manjimup Dried Apples	\$53.00
Tarte au sucre	\$49.30
Ipoh Coffee	\$46.00
Rössle Sauerkraut	\$45.60
*	\$0.00

