

Microsoft
Access 2007
Creating Queries
For

University of California

Berkeley

Haas School of Business



DASH DESIGNS CONSULTING

Technology Training and Consulting Services

**Microsoft Access 2007
Creating Queries
For
The Haas School of Business,
University of California**

Revised: March 2, 2008

COPYRIGHTS AND TRADEMARKS

**© 2008, DASH DESIGNS CONSULTING, JERRY MALETSKY
SAN RAFAEL, CA 94903
EMAIL: JERRY@DASHDESIGNSCONSULTING.COM
WEB SITE: WWW.DASHDESIGNSCONSULTING.COM
FAX (415) 491-1490**

Dash Designs Consulting gives permission to the Haas School of Business of the University of California at Berkeley to reprint this training manual for internal use only. No re-sale of this material or renunciation of copyrights are granted by this author.

Any mention or use of Microsoft[®], University of California, or any third party products is hereby acknowledged by Dash Designs Consulting to be for the sole purpose of editorial and educational use of this training manual and for the benefit of the mentioned parties.

CREATING QUERIES WITH MICROSOFT ACCESS 2007

Table of Contents

Chapter 1: Query Fundamentals 1

Chapter 2: Using Criteria In A Query 17

Reference Database: ***Global Cycling-Queries.accdb***


USING QUERIES AS A DATABASE TOOL

A query is a fundamental tool in database management. Queries are a process of asking questions about information stored in a table. A query can be based on one or more tables or another query.

A query does not store any data. Queries simply display the results of the request made by the user. They are dynamic. That is, they will always display the most current result from the data that is stored in the underlying tables. As records get added or edited in the table, the query reflects those changes the next time it is run. This link works both ways in that, when changes are made to records in a query window, the table will reflect that data the next time it is opened.

Queries are excellent sources for forms and particularly for reports. Whereas forms and reports can't display specifically requested data (i.e., just the customers from New York), queries perform that role and thus allow you to control the data that you want to display in a form or a report.

There are several different types of queries. There are queries that perform actions on the underlying tables such as changing or deleting records. The fundamental type of query is called a **Select Query**. Its function is to just display the records that match the conditions specified in the query. Access calls the resulting window a **Dynasheet** and the records that display as the **RecordSet**.



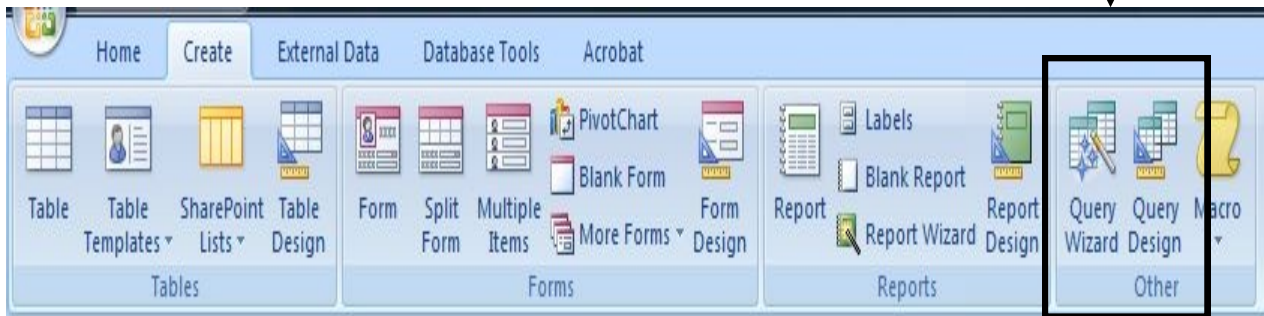
When you query 2 or more related tables the result will reflect all the records in the related table that match (through the Primary Key field) records in the primary side. For example, if you query the tblCustomers and tblOrders tables the result will reflect all the records in tblOrders (related table) that match a record in tblCustomers (primary table).

There are several ways to create a select query. The two primary methods are using the **Simple Query Wizard** and using the **Design View**.

STARTING A QUERY

Steps:

- ⇒ Open the database for which you want to create the query
- ⇒ Click the **Create tab** in the Access command ribbon
- ⇒ In the **Other Group**, select **Query Wizard** or **Query Design** command



CREATING A QUERY IN THE QUERY WIZARD

The Simple Query Wizard is a series of dialog boxes that can assist you in creating basic queries. You are asked to select which tables or query from which you want to base this new query. Then you can select which fields you want to display in the result. In addition, you can specify whether you want to display all records or display a summary of those records (if one of the fields selected is a number or currency field).

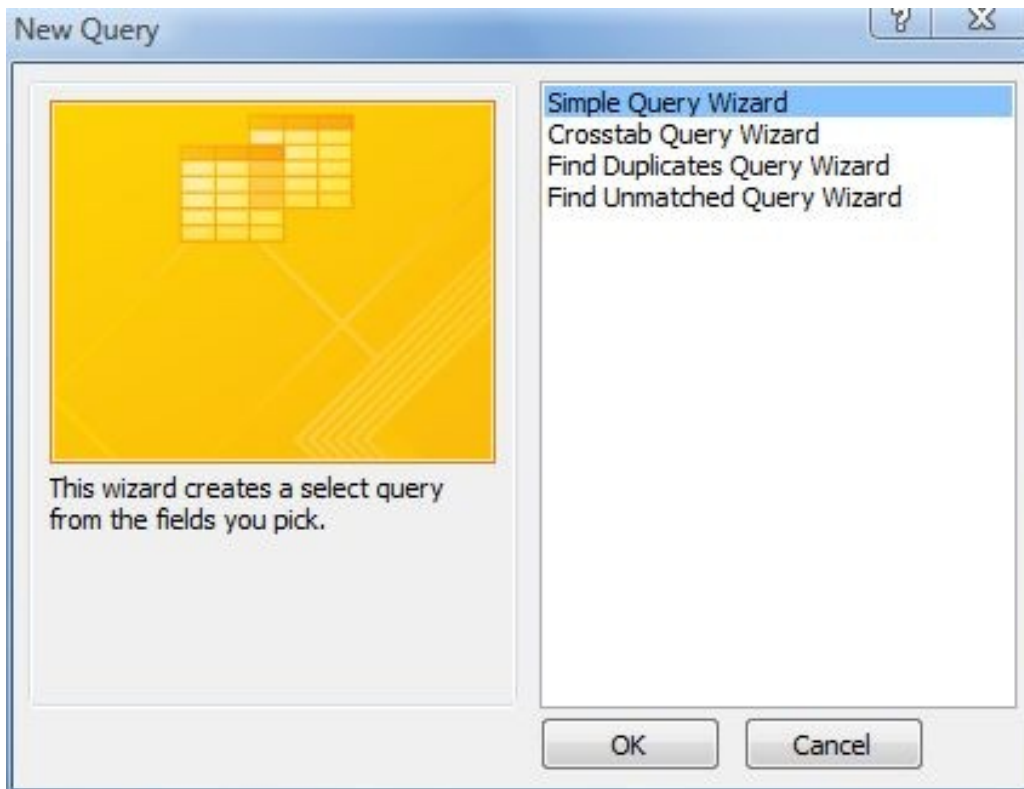
A limitation of using the Query Wizard is that it does not provide an option to add criteria to that query. You must do this in the **Design View** of that query once the Query Wizard is completed.

Steps:

- ⇒ Open the database (if necessary)
- ⇒ Click the **Create** tab in the Access command ribbon
- ⇒ In the **Other Group**, select **Query Wizard** command
- ⇒ In the **New Query** dialog box, select **Simple Query Wizard**
- ⇒ In the **first Query Wizard box**, select the object (table or query) from which you want to base the new query
- ⇒ **Select the fields** that you want displayed in the query (move to right side of dialog box - look for caret button (>))
- ⇒ Click **Next**
- ⇒ Select **Detail** (every record) or **Summary** (grouped records)
- ⇒ Click **Next**
- ⇒ **Type a name** for the new query (i.e. qryOrderSummary)
- ⇒ Click **Finish** to display the results (RecordSet) in the query window

CREATING A QUERY IN THE QUERY WIZARD

New Query Dialog Box



⇒ In the **New Query** dialog box, select **Simple Query Wizard**

CREATING A QUERY IN THE QUERY WIZARD

Query Wizard Box #1



⇒ Select the object (table or query) from which you want to base the new query

CREATING A QUERY IN THE QUERY WIZARD

Query Wizard Box #2

Simple Query Wizard

Which fields do you want in your query?
You can choose from more than one table or query.

Tables/Queries
Table: tblOrdersSummary

Available Fields:

Selected Fields:

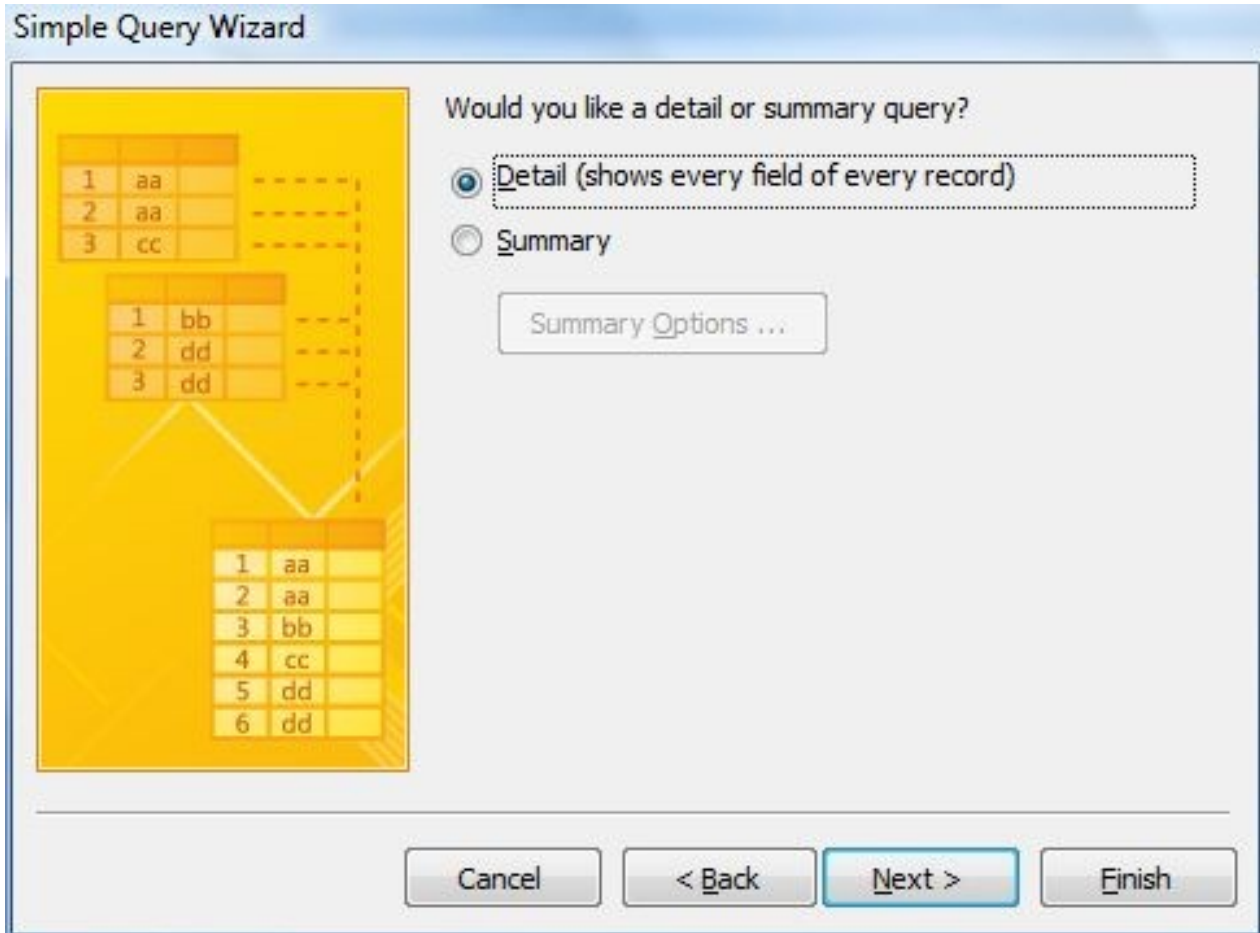
- lngOrdNum
- lngCustID
- dtmOrdDate
- dtmShipDate

Buttons: Cancel, < Back, Next >, Finish

⇒ Select the fields that you want displayed in the query (move to right side of dialog box - look for caret button (>)

CREATING A QUERY IN THE QUERY WIZARD

Query Wizard Box #1



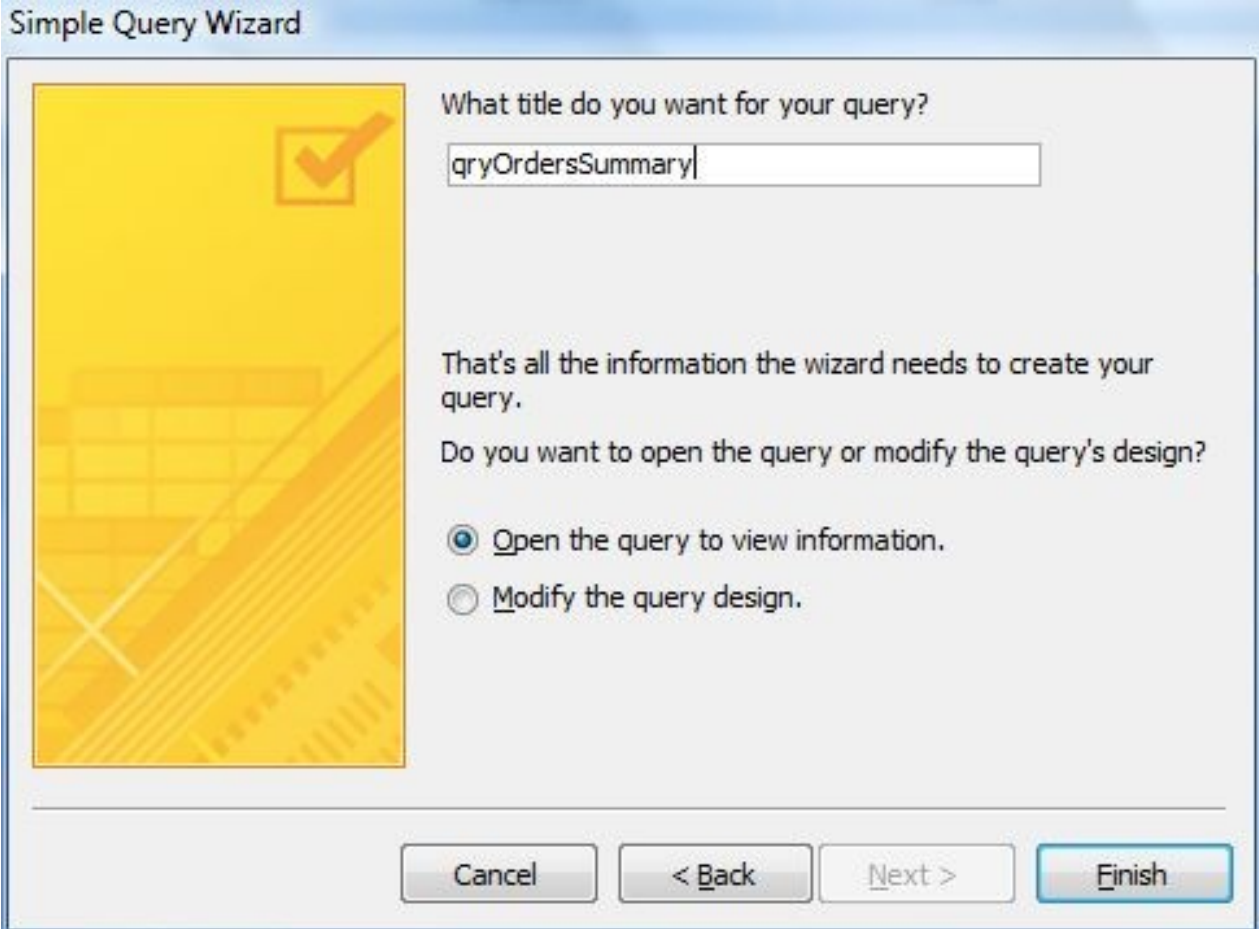
⇒ Select **Detail** (every record) or **Summary** (grouped records)

⇒ Click **Next**

CREATING A QUERY IN THE QUERY WIZARD

Query Wizard Box #2

Simple Query Wizard



What title do you want for your query?

qryOrdersSummary

That's all the information the wizard needs to create your query.

Do you want to open the query or modify the query's design?

Open the query to view information.

Modify the query design.

Cancel < Back Next > Finish

⇒ **Type a name** for the new query (i.e. qryOrderSummary)

⇒ Click **Finish** to display the results (RecordSet) in the query window

CREATING A QUERY IN THE QUERY WIZARD

Practice Exercise:

1. Open the My Project Database (if necessary)
2. Click the **Create tab** in the Access command ribbon
3. In the **Other Group**, select **Query Wizard** command
4. In the New Query dialog box, select Simple Query Wizard
5. In the first Query Wizard box, select **tblOrdersSummary**
6. Select all fields by clicking the **double-caret button (>>)**
7. Click Next
8. Select **Detail** (every record)
9. Click Next
10. Name the new query **qryOrderSummary**
11. Click Finish to display the results (RecordSet)
12. View the results

CREATING A QUERY IN THE QUERY WIZARD

Result of Query Wizard (RecordSet)

Order Numbr	Customer ID	Order Date	Shipping Date
10000	1072	1/5/2006	1/20/2006
10001	1112	1/7/2006	1/22/2006
10002	1113	1/9/2006	1/24/2006
10003	1141	1/11/2006	1/26/2006
10004	1142	1/13/2006	1/28/2006
10005	1007	1/15/2006	1/30/2006
10006	1047	1/17/2006	2/1/2006
10007	1081	1/19/2006	2/3/2006
10008	1082	1/21/2006	2/5/2006
10009	1083	1/23/2006	2/7/2006
10010	1084	1/25/2006	2/9/2006
10011	1085	1/27/2006	2/11/2006
10012	1086	1/29/2006	2/13/2006
10013	1087	1/31/2006	2/15/2006
10014	1088	2/2/2006	2/17/2006

Design View of Query Wizard Results

Field:	IngOrdNum	IngCustID	dtmOrdDate	dtmShipDate	
Table:	tblOrdersSummary	tblOrdersSummary	tblOrdersSummary	tblOrdersSummary	
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:					
or:					

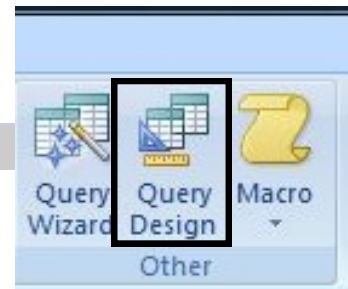
CREATING A QUERY USING DESIGN VIEW

The Query Design View lets you customize how a query is created. When you create a query in Design view, you add the fields from the field list of the tables to the query grid below it. You can then add criteria to further control the results you desire.

As mentioned previously, the Query Wizard does not provide an area to enter criteria so the Query Design is necessary to add criteria to any query.

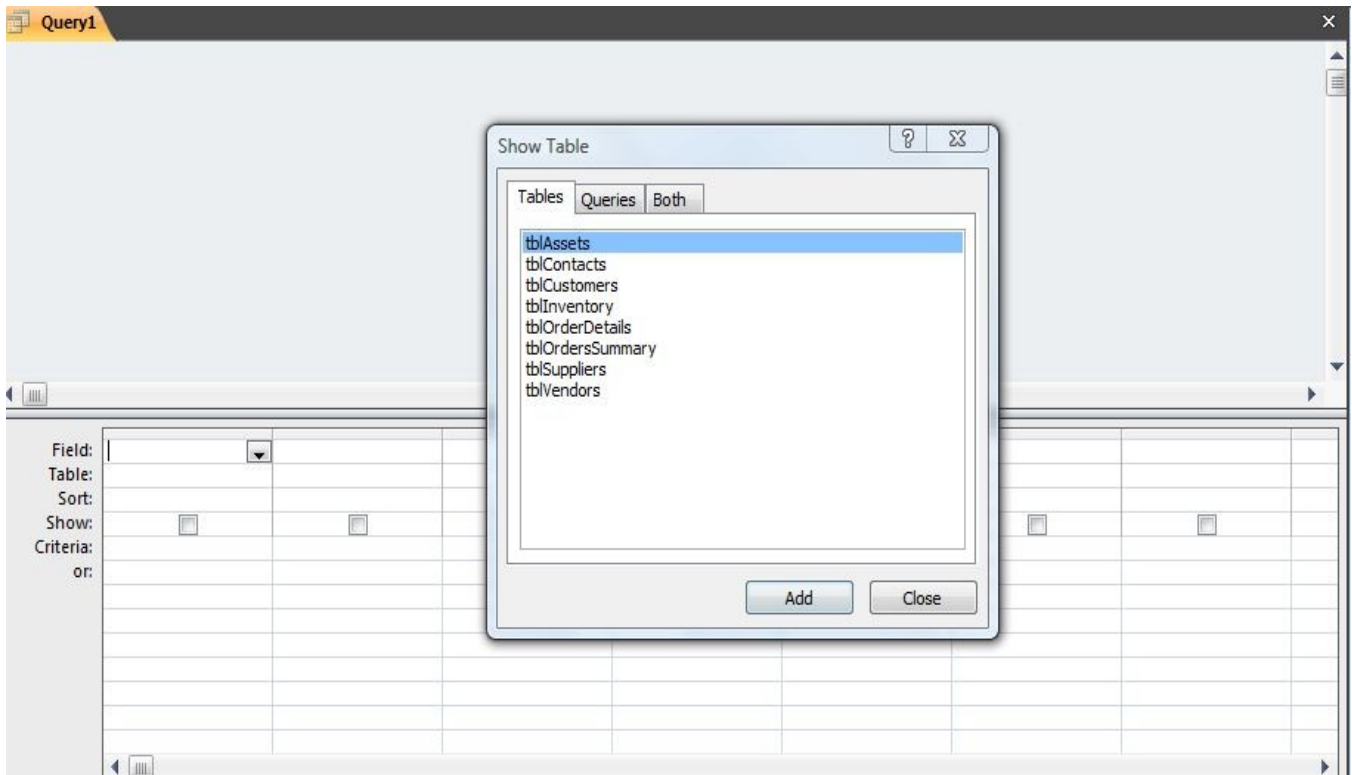
Steps:

- ⇒ Open the database (if necessary)
- ⇒ Click the **Create** tab in the Access command ribbon
- ⇒ In the **Other Group**, select **Query Design** command
- ⇒ In the **Show Table box**, select the objects (tables or query) from which you want to base the new query and **click Add button**
- ⇒ **Add the fields to the query grid** by any of the options below...
 - double clicking each field
 - drag each field into the grid
 - open the field list cell and manually choose a field
- ⇒ From the **Design tab**, **Run** the query (to establish a accurate baseline)
- ⇒ Return to Design View and add any criteria to further filter the results
- ⇒ **Run** the query again to view results (RecordSet)
- ⇒ Save the query results (i.e. qryOrderDetails)



CREATING A QUERY USING DESIGN VIEW

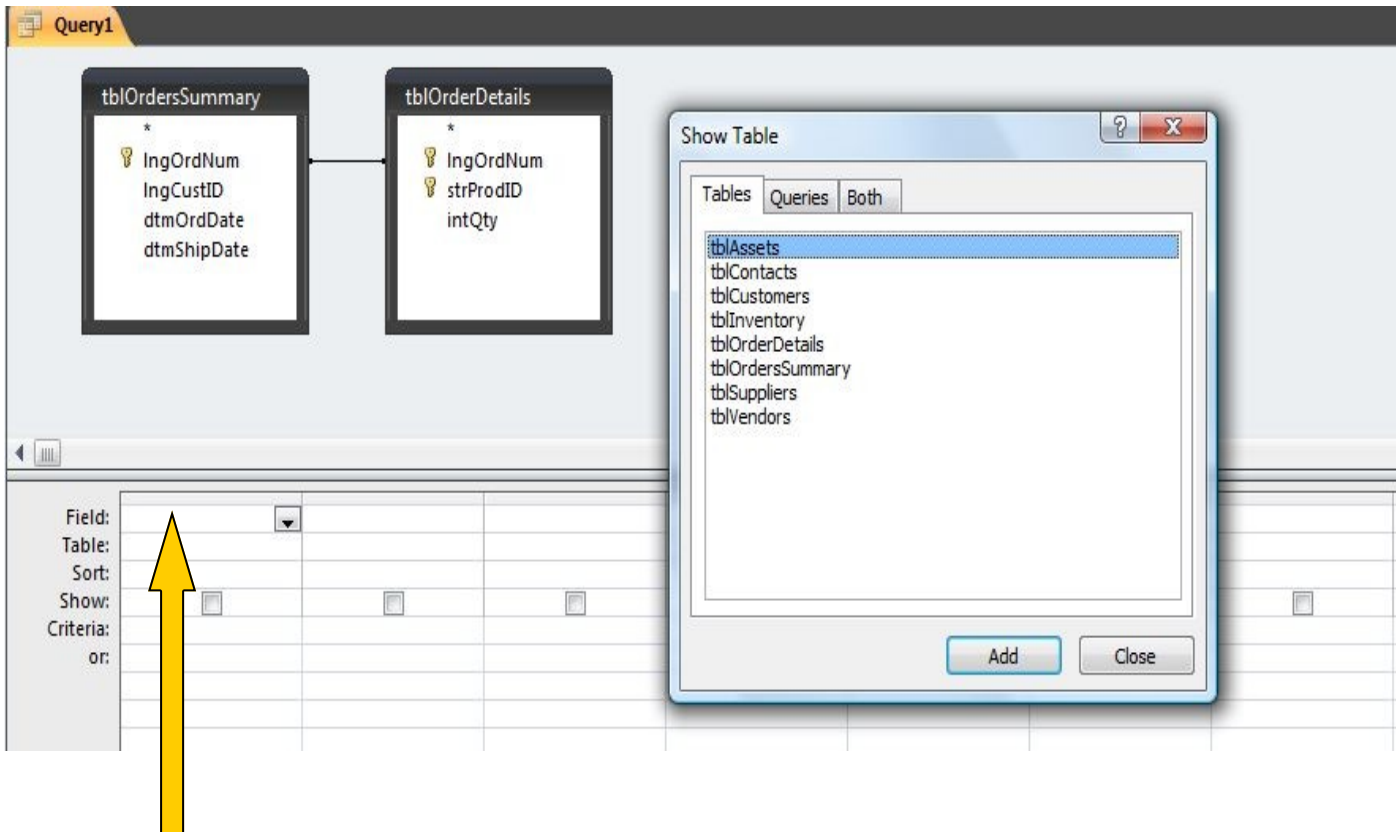
Query Design Step #1



⇒ In the **Show Table box**, select the objects (table or query) from which you want to base the new query and **click Add button**

CREATING A QUERY USING DESIGN VIEW

Query Design Step #2



⇒ **Add the fields to the query grid (field row)** by any of the options below...

- double clicking each field
- drag each field into the grid
- open the field list cell and manually choose a field

CREATING A QUERY USING DESIGN VIEW

Query Design Step #3

The screenshot shows a query design view for 'Query1'. It features two tables: 'tblOrdersSummary' and 'tblOrderDetails'. 'tblOrdersSummary' has fields: IngOrdNum (primary key), IngCustID, dtmOrdDate, and dtmShipDate. 'tblOrderDetails' has fields: IngOrdNum (primary key), strProdID, and intQty. A line connects the IngOrdNum fields of both tables, indicating a one-to-many relationship. Below the design view is a grid with the following data:

Field:	IngOrdNum	IngCustID	dtmOrdDate	strProdID	intQty	
Table:	tblOrdersSummary	tblOrdersSummary	tblOrdersSummary	tblOrderDetails	tblOrderDetails	
Sort:						
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:						
or:						

⇒ Click the **Run button** (Design Tab) to process the query (to establish a accurate baseline)



CREATING A QUERY USING DESIGN VIEW

Query Result (RecordSet) For Baseline Accuracy



Order Number	Customer ID	Order Date	Product ID	Quantity Sold
10000	1072	1/5/2006	MJ-4500	25
10000	1072	1/5/2006	MT-500	60
10000	1072	1/5/2006	RR-9000	35
10000	1072	1/5/2006	RT-500	60
10000	1072	1/5/2006	VB-100	40
10001	1112	1/7/2006	BH-2500	25
10001	1112	1/7/2006	BS-2300	15
10001	1112	1/7/2006	CR-4000	15
10001	1112	1/7/2006	MJ-4500	15
10001	1112	1/7/2006	PPB-Helmet	25
10001	1112	1/7/2006	PPB-Shirt	50
10001	1112	1/7/2006	PPB-Shoe	25
10001	1112	1/7/2006	PPB-Short	50
10002	1113	1/9/2006	BH-2500	15
10002	1113	1/9/2006	CR-4000	10

Record: 1 of 1228 No Filter Search

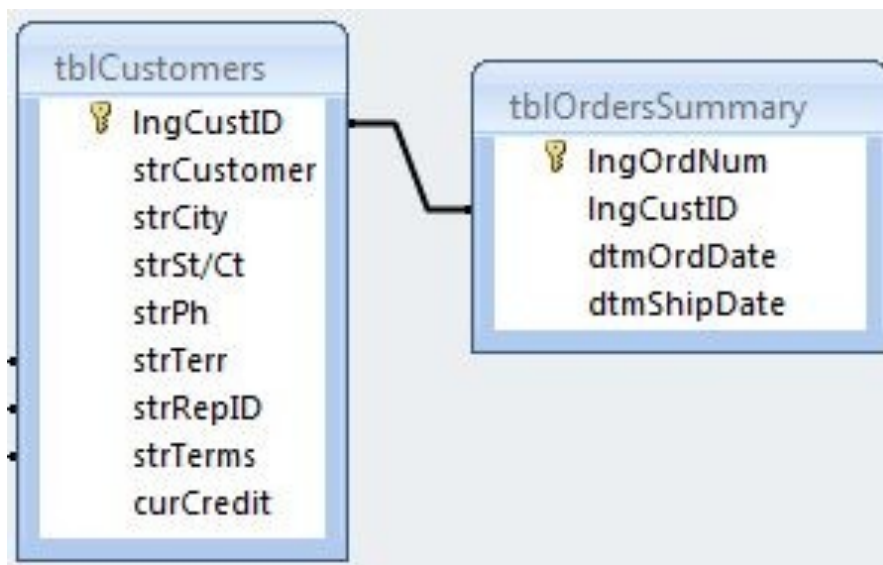
In the above query results (RecordSet) 1,228 records were returned. We would describe that as there being 1,228 records in the tblOrdersSummary table that match records in the tblOrderDetails table.

CREATING A QUERY USING DESIGN VIEW

Establishing Baseline Accuracy

In order to ensure that you have the correct number of records in the RecordSet (query results) **you should run the query without criteria first**. This way, an accurate number of records can be established before criteria filters out more records.

When you query two or more tables, the RecordSet will display **only** the number of records in the related table that match the related field in the primary table such as in a **One-To-Many** relationship - the Customers table (One/Primary) to Orders table (Many/Related). For example, if the Orders table contains 500 records but only 493 of them match a valid CustomerID in the Customers table, then only 493 records will display in the RecordSet when those two tables are queried together. That means that 7 records will not be accounted for in that RecordSet of that query. Note that with **Referential Integrity** set (see Relationships in Module 1) all the records in the related table **must** match a record in the primary table.



If there are records in tblOrdersSummary containing a Customer ID (lngCustID) not found in tblCustomers **they will not display** in the query results (RecordSet)!

Using Criteria In A Query

Reference Database: *Global Cycling-Queries.accdb*

ADDING CRITERIA TO A QUERY

The Query Design View lets you specify conditions that would control what data displays in the resulting **Dynasheet**. You add criteria in the **Criteria Row** in the Query Design View.

Criteria can be entered as a specific fully-typed entry (i.e., Joe's Sports Shop) or as partial entries using wildcard characters. Common wildcards are the **asterisk** (*) and the **question mark** (?).

Access will add its own "proper" syntax when necessary. For example, you will see **quotation marks** (" ") around an alphanumeric entry in a text field and **number signs** (#) around criteria in a date field.

When you run the query only the records that match the criteria specified will display in the result.

Criteria In Text Fields

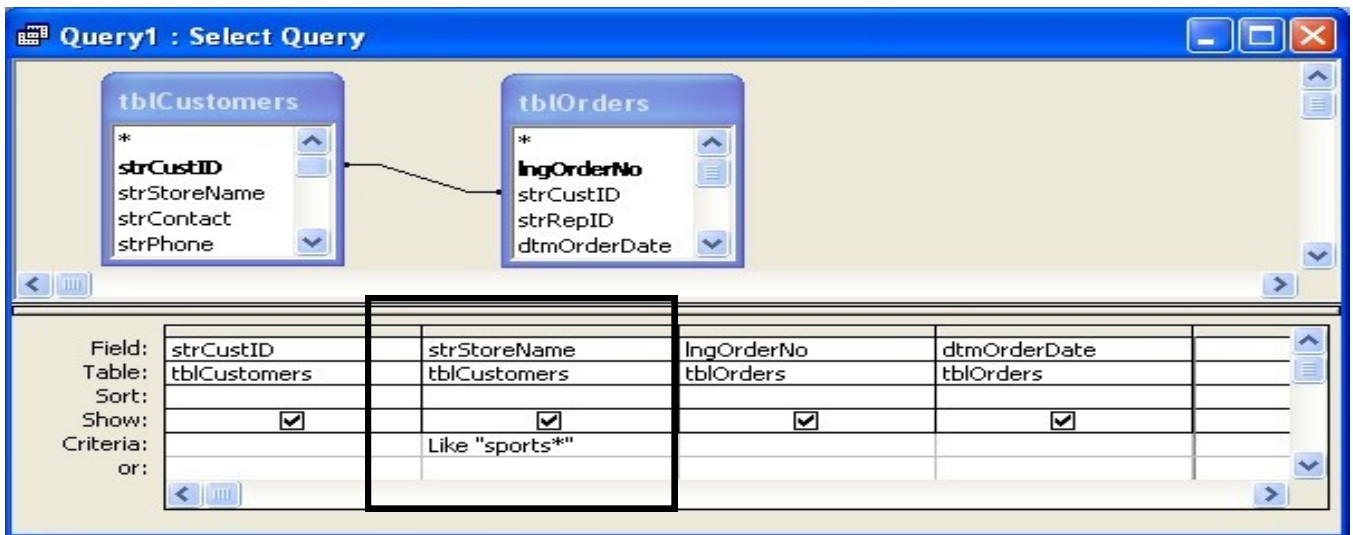


Great Tip!

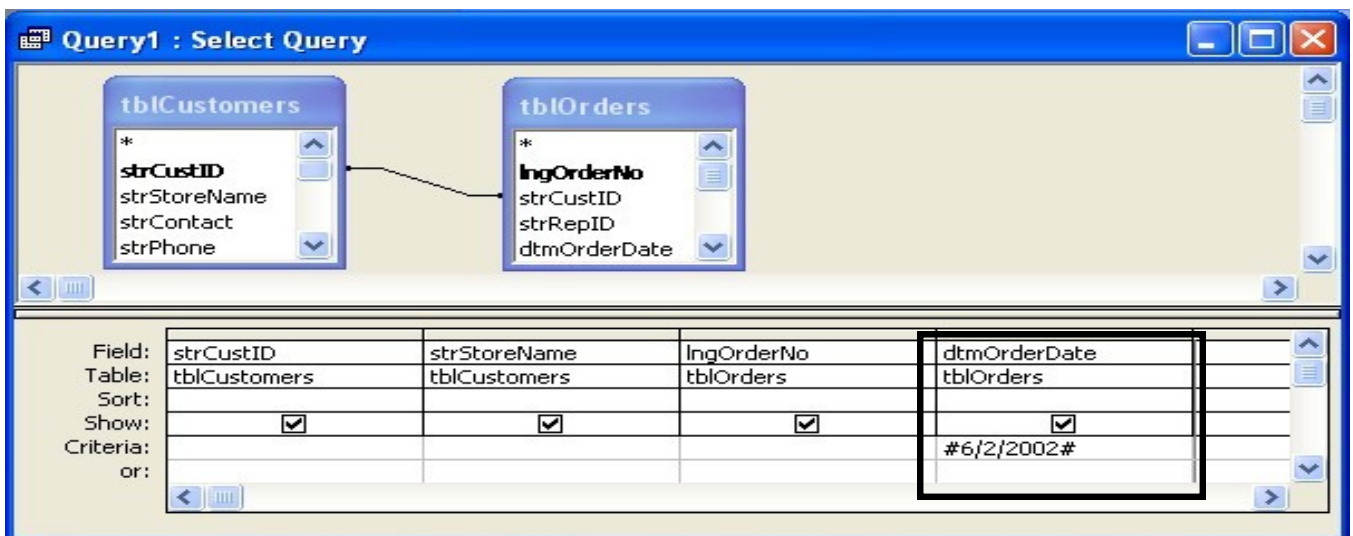
To remove old criteria click into cell and press
**<Esc> and then **

ADDING CRITERIA TO A QUERY

Criteria With Wildcard (*)



Criteria In Date Fields



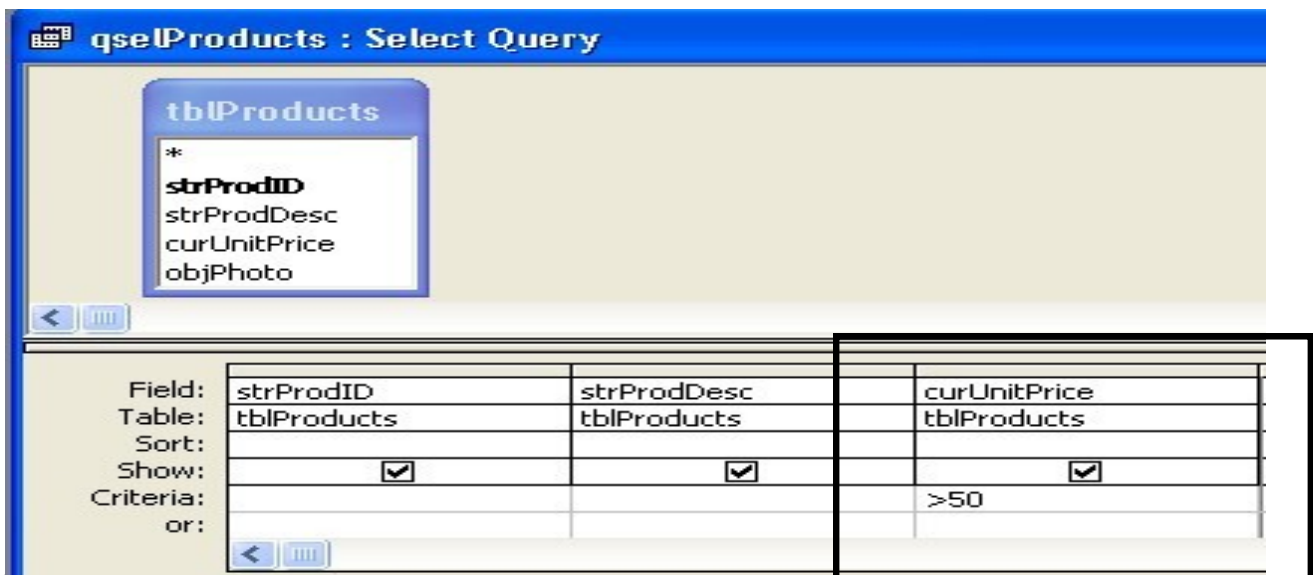
FINDING A RANGE OF RECORDS WITH CRITERIA

You can use comparison operators to show a range of records in a query. For example, all orders where the quantity ordered is greater than 100 or all orders placed within the last 30 days.

The comparison operators you can use are the following:

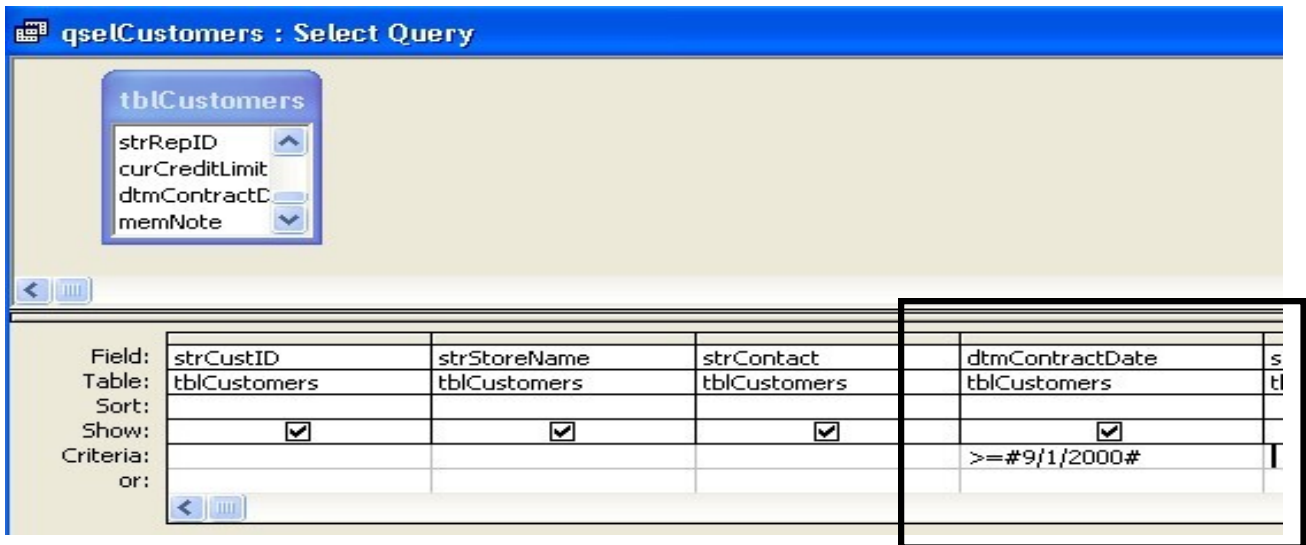
Operator	Description
<	Less than
>	Greater than
<=	Less than or Equal to
>=	Greater than or Equal to
=	Equal to
<>	Not Equal to
Not	Not (that value)
Between ... And...	Greater Than ... And Less Than ...

Criteria Using Comparison Operators (Greater Than Comparison)

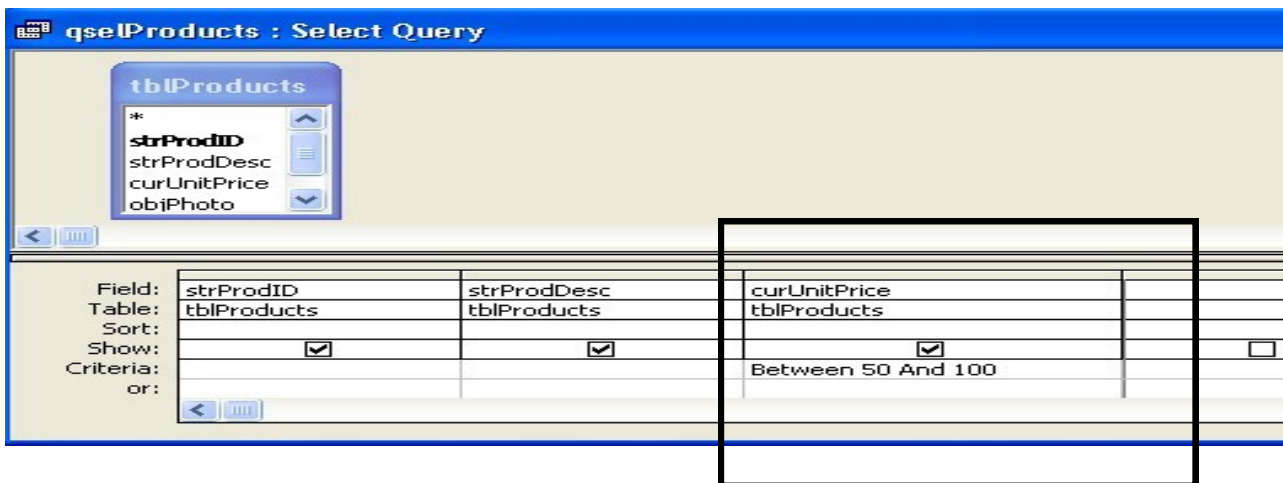


FINDING A RANGE OF RECORDS WITH CRITERIA

Criteria Using Comparison Operators (Greater Than Or Equal To Comparison)



Criteria Using Comparison Operators (Between... And... Comparison)



FINDING A RANGE OF RECORDS WITH CRITERIA

Steps:

- ⇒ Open the database.
- ⇒ Display the **Queries Object** tab.
- ⇒ Select the **New** button in the Database window.
- ⇒ Select the **Design View** and click **OK**.
- ⇒ In the **Show Table** box select the tables or queries required.
- ⇒ Click the **Close** button in the Show Table box when done.
- ⇒ Place each field in the field row you want to see in the result.
- ⇒ Add criteria with the desired comparison operators.
- ⇒ Run the Query.

Practice Exercise:

1. In the **Global Cycling** database
2. Create a new query in the **Design View**
3. Add the **tblOrdersSummary table**
4. Select the following fields:
 - lngOrderNumber**
 - strCustID**
 - dtmOrderDate**
5. Add the following criteria in the **dtmOrderDate field**
<=10/1/06
6. Run the Query (!)
7. Return to Design View
8. Remove the existing criteria (**<Esc>**, ****)
9. Add the following criteria in the **dtmOrderDate field**
Between 10/1/06 and 12/31/06
10. Save the query as **qry4thQtr2006Orders**
11. Run the Query

USING AND CONDITIONS

And conditions allow you to specify that only records that meet more than one condition will display in the result. For example, specifying that only customers from New York **and** have credit limits above \$5000.

You can use the **And** operator in a single field or in different fields. Using the **And** operator in a single field would display records that fall within a range of values. For example, customers in the Customers table that have a credit limit ≥ 2000 **And** ≤ 5000 .

Note: another way of writing the above example is:

Between 2000 and 5000.

Field:	strCustID	strStoreName	curCreditLimit	strContact
Table:	tblCustomers	tblCustomers	tblCustomers	tblCustomers
Sort:				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			>=2000 And <=5000	
or:				

Using the **And** condition under different fields requires that you place that criteria in the **same row** of the query grid.

Field:	strCustID	strStoreName	strState/Province	curCreditLimit	strContact
Table:	tblCustomers	tblCustomers	tblCustomers	tblCustomers	tblCustomers
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			"ny"	>5000	
or:					

USING AND CONDITIONS

Steps:

- ⇒ Open the database
- ⇒ Display the **Queries Object** tab
- ⇒ Select the **New** button in the Database window
- ⇒ Select the **Design View** and click **OK**
- ⇒ In the **Show Table** box select the tables or queries required
- ⇒ Click the **Close** button in the Show Table box when done
- ⇒ Place each field in the field row you want to see in the result
- ⇒ Type the criteria under the desired field using the **And** condition between the range of values ----- or -----
type the criteria for different fields on the same criteria row
- ⇒ Run the Query

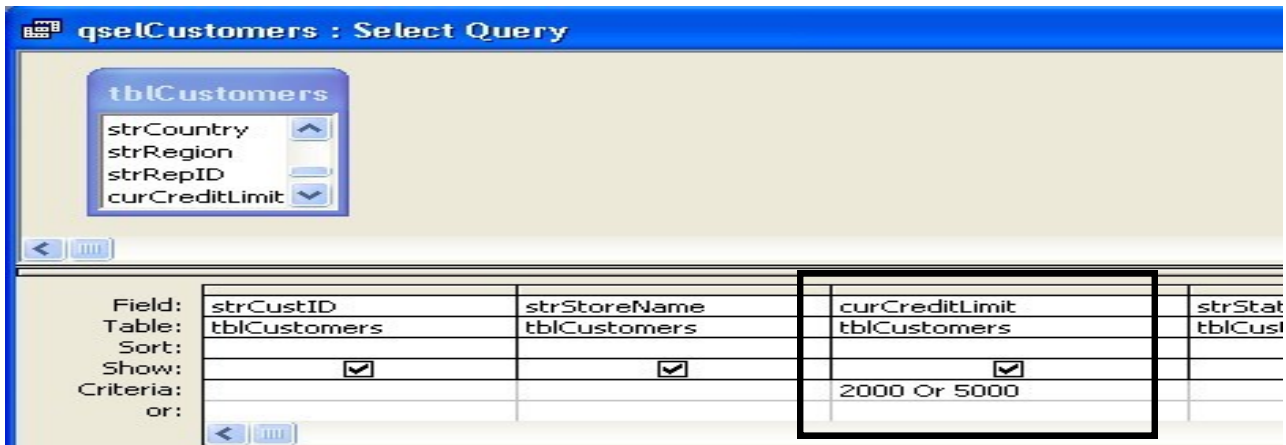
Practice Exercise:

1. In the **Global Cycling** database
2. Create a new query in the **Design View**
3. Add the **tblCustomer** table.
4. Select the following fields:
strCustID
strStoreName
strState/Province
curCreditLimit
5. Add the following criteria in the **curCreditLimit field**
>=2000 And <=5000
6. Run the query
7. Save the query as **qryCreditLimit2k-5k**
8. Close the query

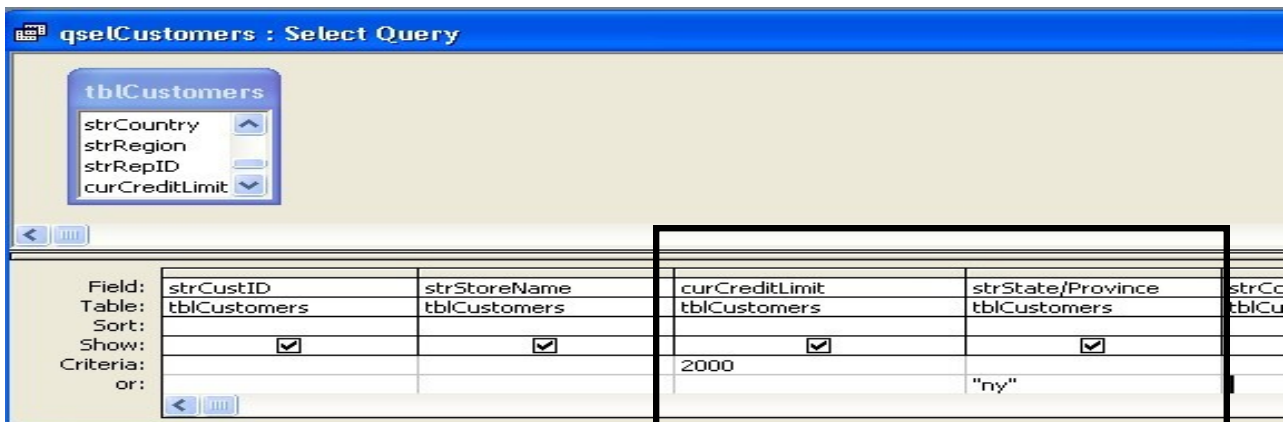
USING OR CONDITIONS

OR conditions allow you to specify that records that meet one of several conditions will display in the result. For example, specifying that only records for Customers that are from New York **OR** have credit limits above \$5000.

You can use the **OR** operator in a single field or in different fields. Using the **OR** operator in a single field would display records that match either of several values. For example, customers in the Customers table that have a credit limit 2000 **OR** 5000.



Using the **Or** condition under different fields requires that you place that criteria in a different row of the query grid.



There are additional **OR** rows available in the *Query Design* window. They can be accessed by scrolling down in the window and/or using the **Insert menu: Row command**.

USING OR CONDITIONS

Steps:

- ⇒ Open the database
- ⇒ Display the **Queries Object** tab
- ⇒ Select the **New** button in the Database window
- ⇒ Select the **Design View** and click **OK**
- ⇒ In the **Show Table** box select the tables or queries required
- ⇒ Click the **Close** button in the Show Table box when done
- ⇒ Place each field in the field row you want to see in the result
- ⇒ Type the criteria under the desired field using the **OR** condition between the range of values ----- or -----
type the criteria for different fields on the different criteria rows
- ⇒ Run the Query

Practice Exercise:

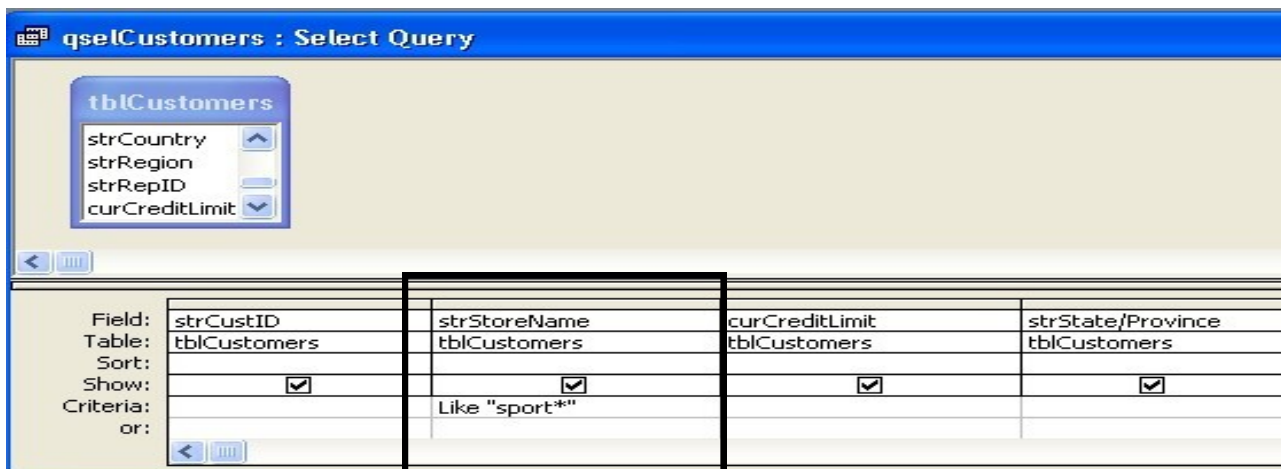
1. In the **Global Cycling** database
2. Create a new query in the **Design View**
3. Add the **tblCustomer** table
4. Select the following fields:
strCustID
strStoreName
strState/Province
curCreditLimit
5. Add the following criteria in the **curCreditLimit** field:
2000 OR 5000
6. **Run** the Query
7. **Save** the query as **qryCreditLimit2kor5k**
8. Close the query

USING WILD CARD OPERATORS IN QUERIES

Wildcard operators allow you to be more flexible in entering criteria so that you don't have to know exactly how to spell a specific value.

Wildcards you can use in Access to specify criteria are as follows:

Wildcard	Represents	Examples
*	Any number of characters	Sport* *tion 9/*/00
?	One character per ?	Sp??? Sp?t
[]	Characters within brackets	S[pt]* any text starting with an S, where the second letter is either p or t .
[!]	Not the character in the brackets	Sp[!a]* any text starting with an S, where the third letter is <u>not</u> an a.
[-]	Range of characters within brackets	S[m-t]* any text starting with an S, where the second letter is from m through a t.
#	Number	#th 5 th , 6 th , etc.



Access inserts the word Like when a wildcard is used and places quotes around text field criteria.

EXAMPLES OF CRITERIA IN QUERIES

CRITERIA	DESCRIPTION
Smith	Finds all occurrences of the name Smith .
Sm*	Finds all occurrences of names that start with Sm .
Sp*t	Finds all occurrences of values that starts with Sp and ends in t .
sport	Finds all occurrences of values that contains the word sport in that field.
Between Ace And Marlin	Finds all occurrences of exact values between and including Ace through Marlin .
FedEx Or UPS	Finds all occurrences of the values FedEx OR UPS only .
In(France, Germany, Japan)	Finds all occurrences of values where the values are France OR Germany OR Japan only .
Like "[A-D]*"	Finds all occurrences of values that begin with A through those values that start with D .
Right([OrderID], 2) = "99"	Finds all occurrences of values for the OrderID field, orders with ID values ending in 99 .
Null	Finds all occurrences of values in a field where there is no entry .
Not Null	Finds all occurrences of values in a field where there is an entry .

EXAMPLES OF CRITERIA IN QUERIES

CRITERIA	DESCRIPTION
500	Finds all occurrences of the value 500.
>500	Finds all occurrences of values greater than 500.
>=500	Finds all occurrences of values greater than or equal to 500.
Between 500 And 1000	Finds all occurrences of values that are between and including 500 through 1000.
>=2000 And <=5000	Finds all occurrences of values between and including 2000 through 5000
2000 Or 5000	Finds all occurrences of the values 2000 OR 5000 only .
Not 500	Finds all occurrences of values except 500.
7/4/03	Finds all occurrences of the date 7/4/03.
>=5/1/2003	Finds all occurrences of dates including and after 5/1/03
< 6/1/03	Finds all occurrences of dates prior to 6/1/03.
< Date() - 30	Finds all occurrences of for an Date field, where values are more than 30 days old
Between 1/1/02 And 12/31/02	Finds all occurrences of dates in the year 2002.

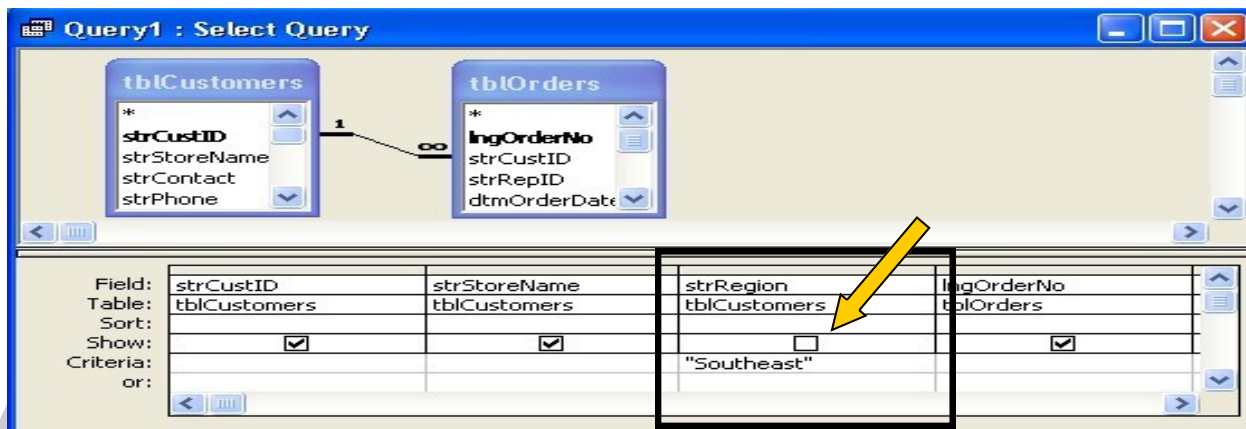
SORTING THE RESULTS IN A QUERY

The Query Design View lets you specify the sort order of the data that displays in the resulting *Dynasheet*. You can sort in Ascending or Descending order. You can specify the sort in the **Sort Row** in the Query Design View.



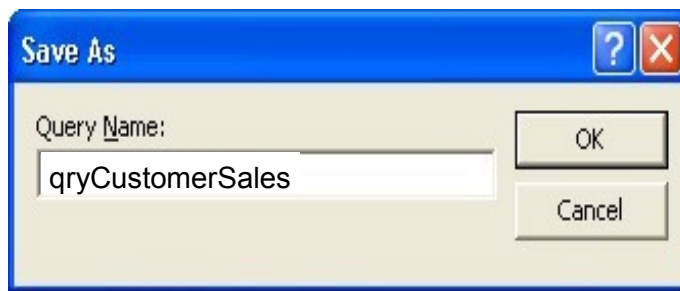
SHOWING THE RESULTS IN A QUERY

The Query Design View lets you control whether a field you are using in a query will display in the resulting *Dynasheet*. By default, each field you place in the Query Grid will display in the result. However, you may not want to show a particular field you are using in a query particularly if the entries will be repetitive. For example, you may want to show all the customers in the Southeast region so you specify that criteria in the Criteria Row of that field. You don't need to see the entry for Southeast in every record so you "hide" that field in the result. You can specify whether to show a field or hide it in the **Show Row** in the Query Design View.



SAVING A QUERY

You save the results of your query just as you would any other object in Access. That is, by using the **File: Save or Save As** command. Once saved that query is a permanent object in your database. Each time you run that query, the results displayed will match the current records for the underlying table or query it was based on. In addition, a saved query can become the basis for a new report or query.

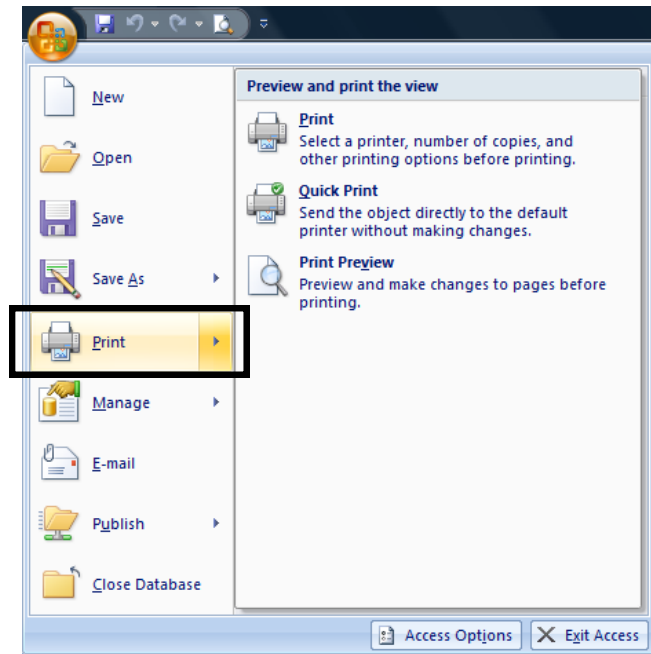


PRINTING THE RESULTS IN A QUERY

You can print records in a resulting **Dynasheet** simply by clicking the **Print** command in the **Office Button**.

Only those records that displayed in the result will print.

You can also preview the records prior to printing by clicking the **Print, Print Preview** command in the **Office Button**.



Print Preview and **Print** Buttons as they appear in the **Quick Access Toolbar** (if added)