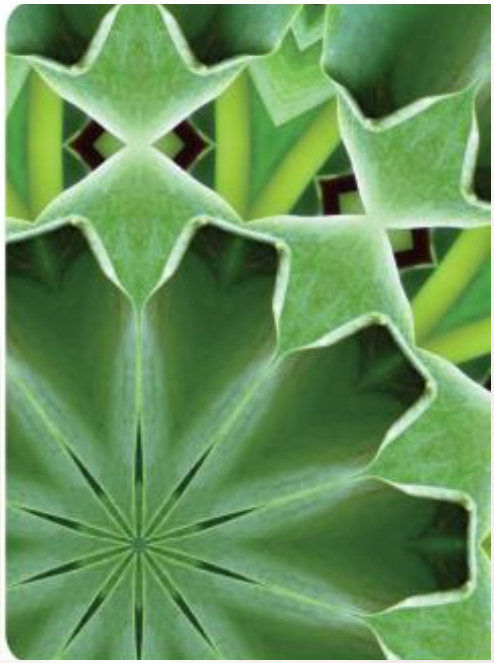
MICROSOFT®
Office 2007
Windows XP Edition

Access Tutorial 3

Maintaining and Querying a Database



NEW PERSPECTIVES

FIRST COURSE

Objectives

- Find, modify, and delete records in a table
- Learn how to use the Query window in Design view
- Create, run, and save queries
- Update data using a query datasheet
- Create a query based on multiple tables
- Sort data in a query
- Filter data in a query

Objectives

- Specify an exact match condition in a query
- Change the font size and alternating row color in a datasheet
- Use a comparison operator in a query to match a range of values
- Use the And and Or logical operators in queries
- Create and format a calculated field in a query
- Perform calculations in a query using aggregate functions and record group calculations
- Change the display of database objects in the Navigation Pane

Updating a Database

- **Updating**, or **maintaining**, a database is the process of adding, modifying, and deleting records in database tables to keep them current and accurate
  - Navigation mode
  - Editing mode

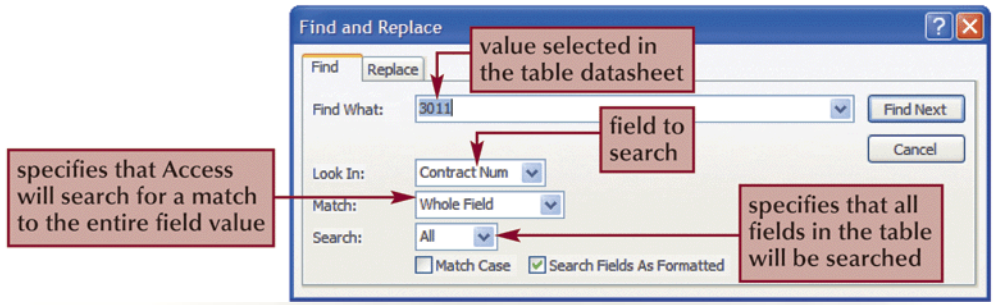
Figure 3-1 Navigation mode and editing mode keystroke techniques

Press	To Move the Selection in Navigation Mode	To Move the Insertion Point in Editing Mode
←	Left one field value at a time	Left one character at a time
→	Right one field value at a time	Right one character at a time
Home	Left to the first field value in the record	To the left of the first character in the field value
End	Right to the last field value in the record	To the right of the last character in the field value
↑ or ↓	Up or down one record at a time	Up or down one record at a time and switch to navigation mode
Tab or Enter	Right one field value at a time	Right one field value at a time and switch to navigation mode
Ctrl+Home	To the first field value in the first record	To the left of the first character in the field value
Ctrl+End	To the last field value in the last record	To the right of the last character in the field value

Finding Data in a Table

- The **Find command** allows you to search a table or query datasheet, or a form, to locate a specific field value or part of a field value

Figure 3-3 Find and Replace dialog box

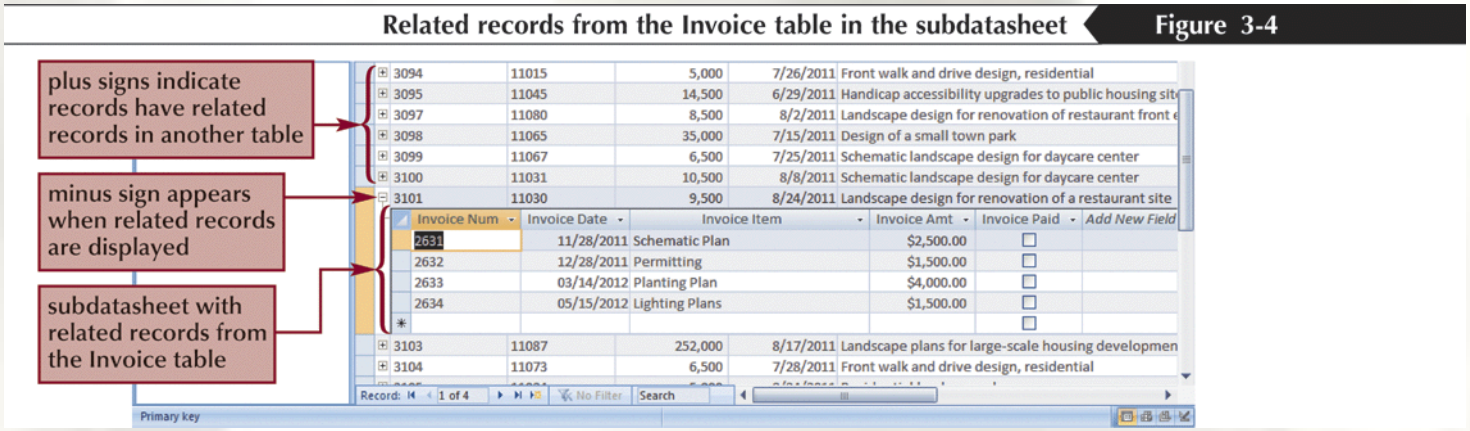


Deleting a Record

- With the table in Datasheet view, click the row selector for the record you want to delete
- In the Records group on the Home tab, click the Delete button (or right-click the row selector for the record, and then click Delete Record on the shortcut menu)
- In the dialog box asking you to confirm the deletion, click the Yes button

Deleting a Record

Related records from the Invoice table in the subdatasheet Figure 3-4



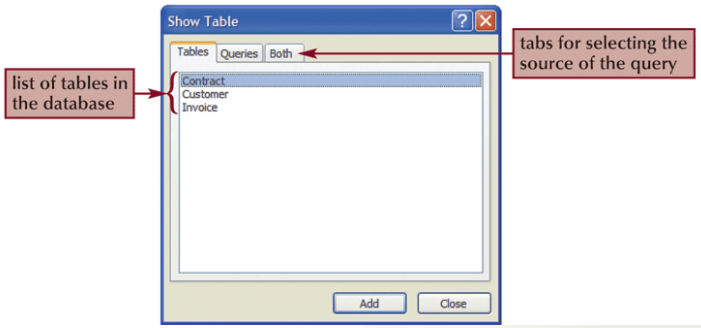
Introduction to Queries

- Access provides powerful query capabilities that allow you to do the following:
  - Display selected fields and records from a table
  - Sort records
  - Perform calculations
  - Generate data for forms, reports, and other queries
  - Update data in the tables in a database
  - Find and display data from two or more tables
- A **Query Wizard** prompts you for information by asking a series of questions and then creates the appropriate query based on your answers

Query Wizard

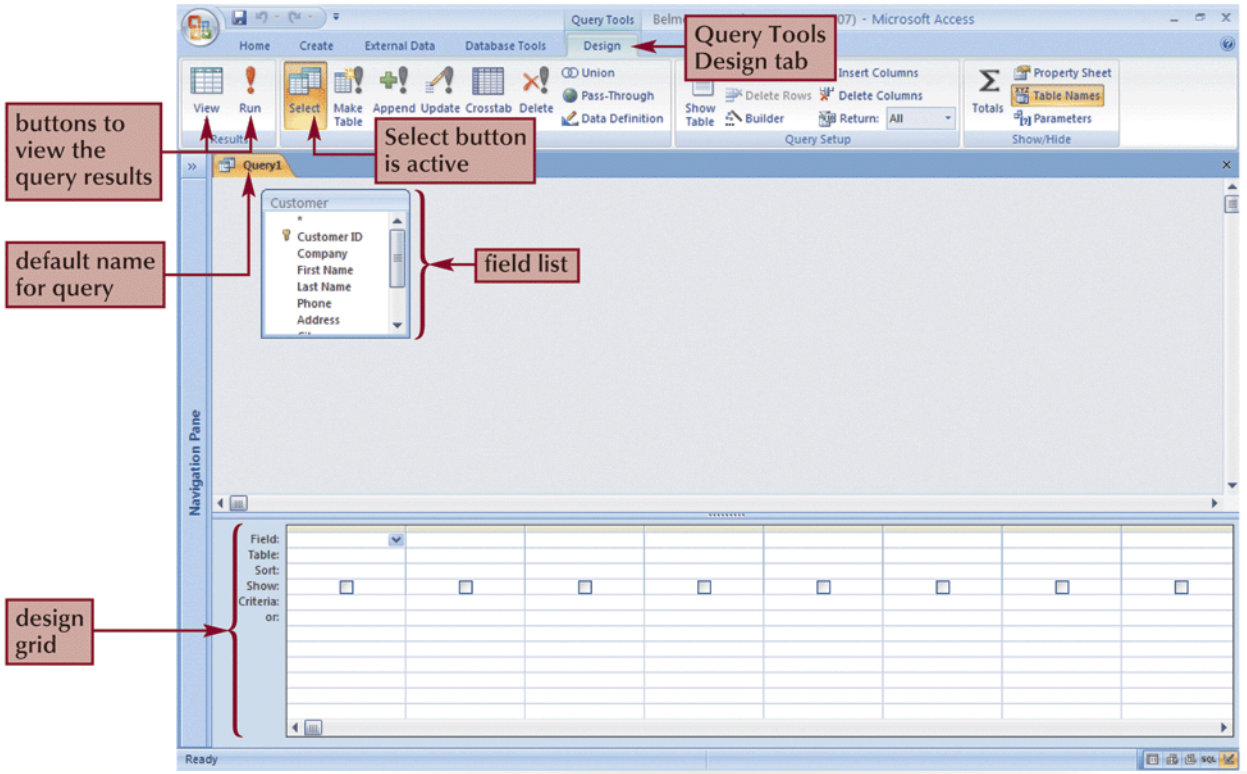
- When you use **query by example** (**QBE**), you give Access an example of the information you are requesting
- Click the **Create** tab on the Ribbon
- In the Other group on the Create tab, click the **Query Design** button

Show Table dialog box Figure 3-5



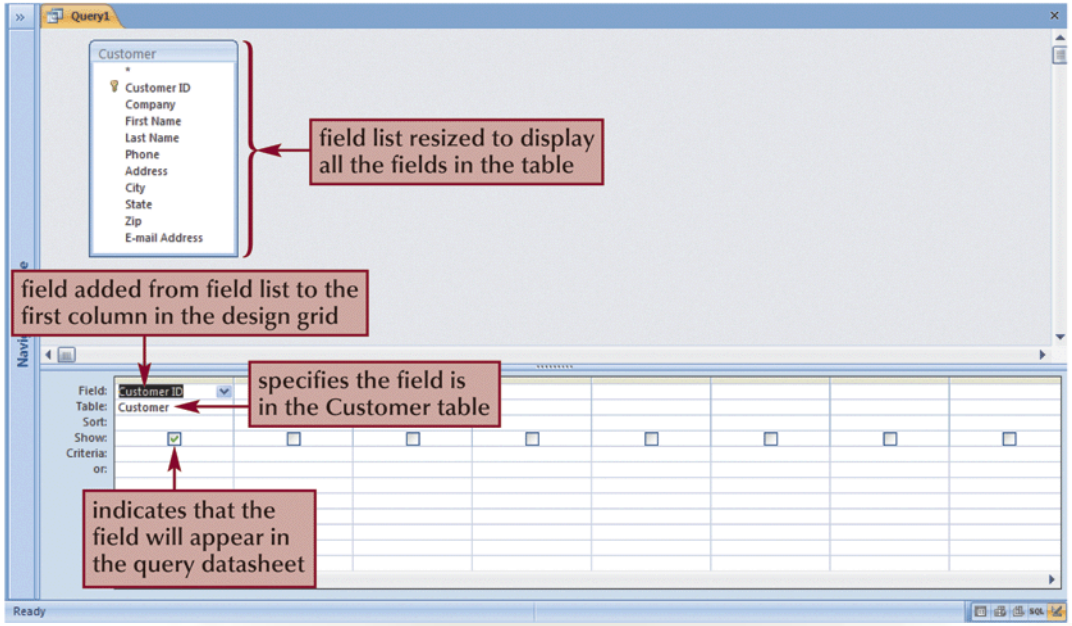
Query Wizard

Figure 3-6 Select query in Design view



Creating and Running a Query

Figure 3-7 Field added to the design grid



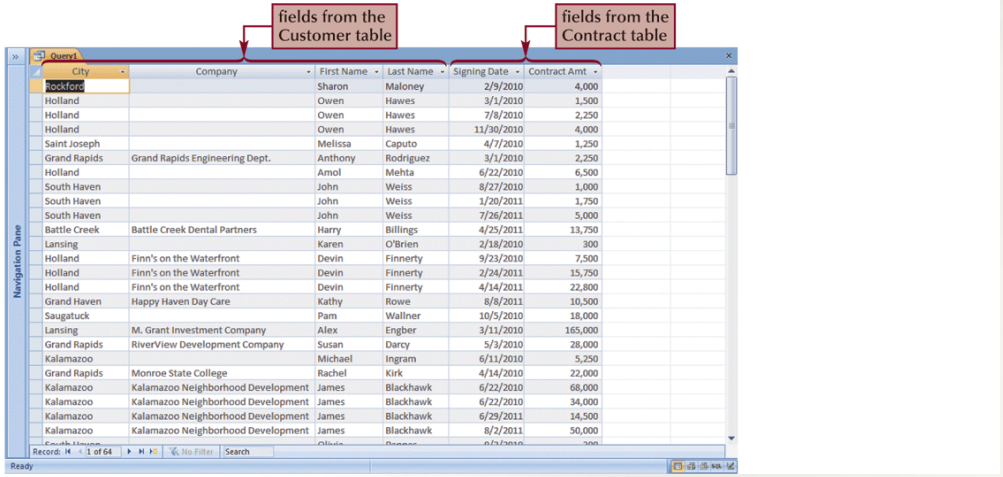
Updating Data Using a Query

- You can update the data in a table using a query datasheet
- After updating the query, close the table

Creating a Multitable Query

- A multitable query is a query based on more than one table
- If you want to create a query that retrieves data from multiple tables, the tables must have a common field

Datasheet for query based on the Customer and Contract tables **Figure 3-9**



Sorting Data in a Query

- **Sorting** is the process of rearranging records in a specified order or sequence
- To sort records, you must select the **sort field**, which is the field used to determine the order of records in the datasheet

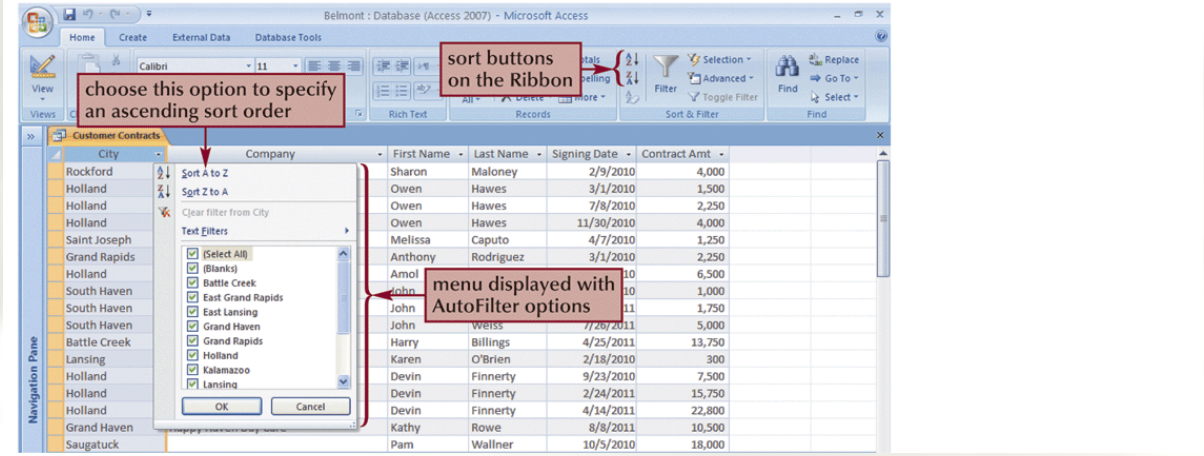
Figure 3-10 Sorting results for different data types

Data Type	Ascending Sort Results	Descending Sort Results
Text	A to Z	Z to A
Number	lowest to highest numeric value	highest to lowest numeric value
Date/Time	oldest to most recent date	most recent to oldest date
Currency	lowest to highest numeric value	highest to lowest numeric value
AutoNumber	lowest to highest numeric value	highest to lowest numeric value
Yes/No	yes (check mark in check box) then no values	no then yes values

Using AutoFilter to Sort Data

- The **AutoFilter** feature enables you to quickly sort and display field values in various ways
- Clicking the arrow in a column heading displays the AutoFilter menu

Using AutoFilter to sort records in the datasheet Figure 3-11



Sorting a Query Datasheet

- In the query datasheet, click the arrow on the column heading for the field you want to sort
- In the menu that opens, click Sort A to Z for an ascending sort, or click Sort Z to A for a descending sort

or

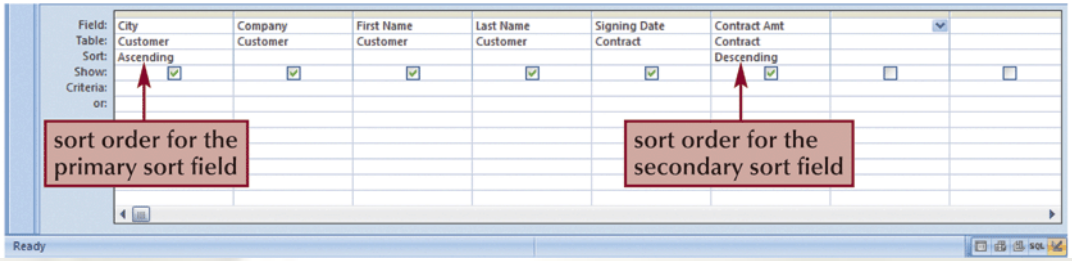
- In the query datasheet, select the column or adjacent columns on which you want to sort
- In the Sort & Filter group on the Home tab, click the Ascending button or the Descending button

or

- In Design view, position the fields serving as sort fields from left to right
- Click the right side of the Sort text box for the field you want to sort, and then click Ascending or Descending for the sort order

Sorting a Query Datasheet

Selecting two sort fields in Design view — Figure 3-12

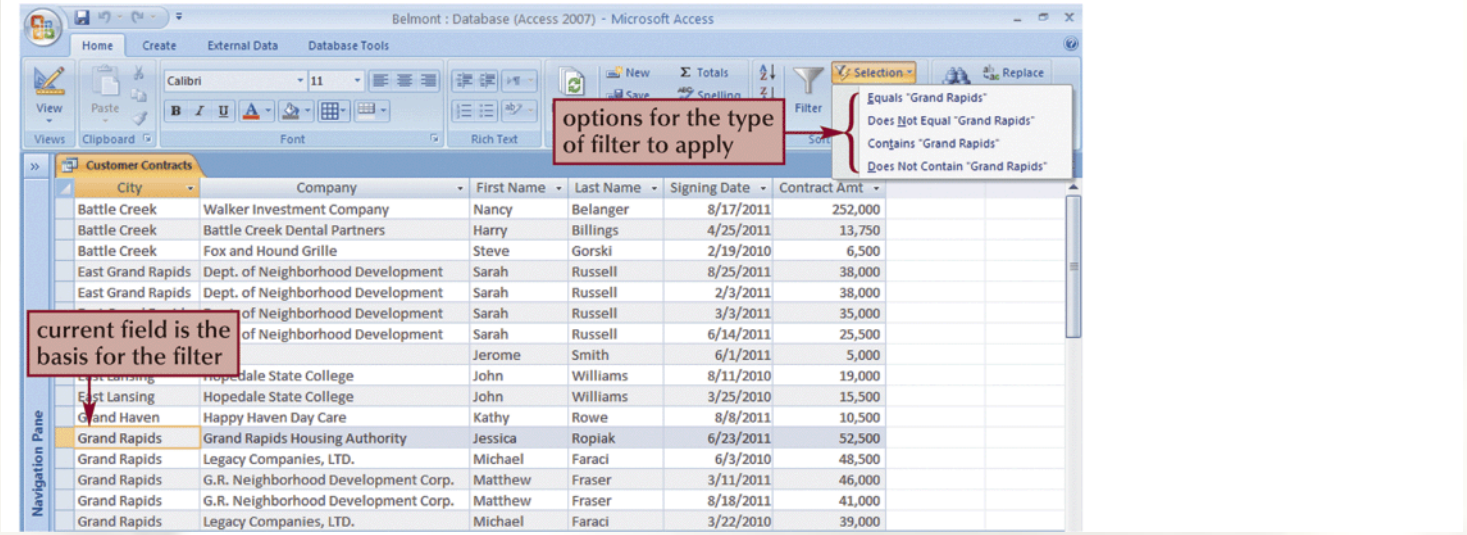


Using Filter By Selection

- A **filter** is a set of restrictions you place on the records in an open datasheet or form to *temporarily* isolate a subset of the records
- In the datasheet or form, select part of the field value that will be the basis for the filter; or, if the filter will be based on the entire field value, click anywhere within the field value
- In the Sort & Filter group on the Home tab, click the Selection button, and then click the type of filter you want to apply

Using Filter By Selection

Using Filter By Selection Figure 3-14



Defining Record Selection Criteria for Queries

- Just as you can display selected fields from a database in a query datasheet, you can display selected records
- To tell Access which records you want to select, you must specify a condition as part of the query
- A **comparison operator** asks Access to compare the value in a database field to the condition value and to select all the records for which the relationship is true

Defining Record Selection Criteria for Queries

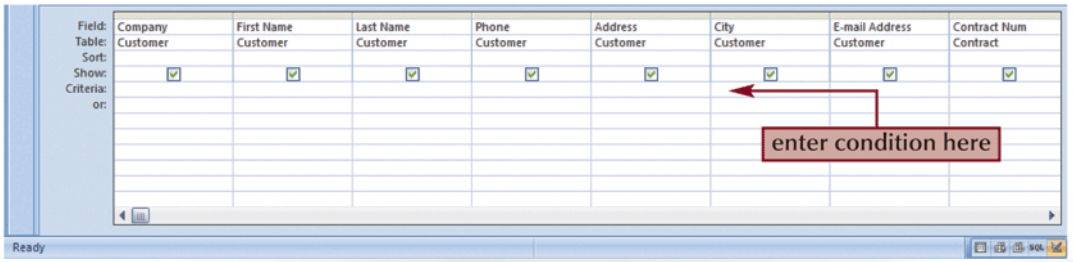
Access comparison operators Figure 3-16

Operator	Meaning	Example
=	equal to (optional; default operator)	="Hall"
<	less than	<#1/1/99#
<=	less than or equal to	<=100
>	greater than	>"C400"
>=	greater than or equal to	>=18.75
<>	not equal to	<>"Hall"
Between ... And ...	between two values (inclusive)	Between 50 And 325
In ()	in a list of values	In ("Hall", "Seeger")
Like	matches a pattern that includes wildcards	Like "706*"

Specifying an Exact Match

- With an **exact match**, the value in the specified field must match the condition exactly in order for the record to be included in the query results

Figure 3-17 Query in Design view

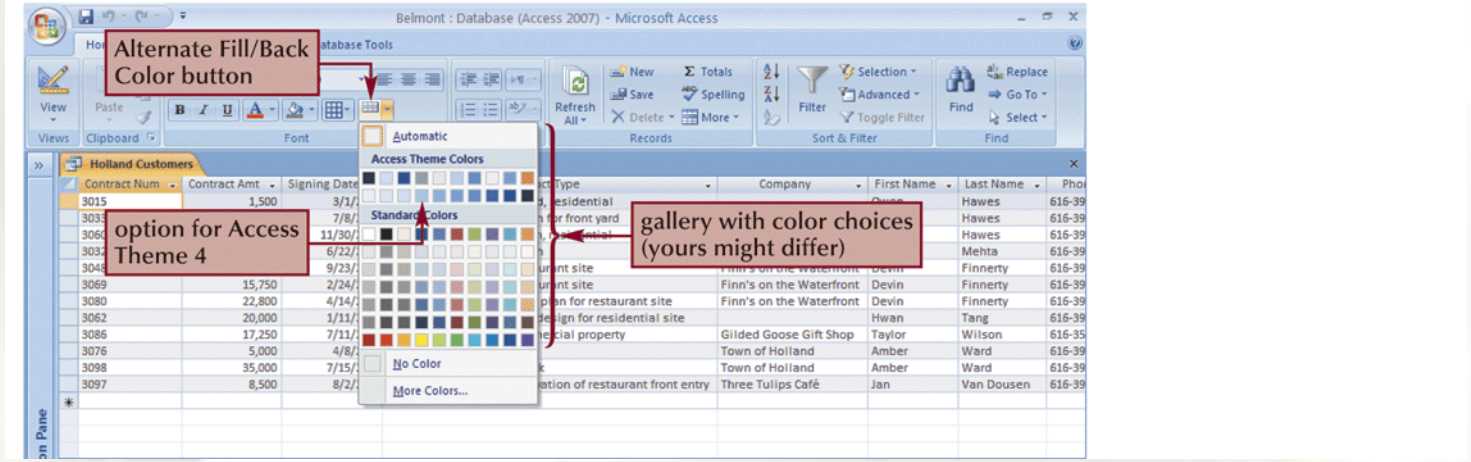


Changing a Datasheet's Appearance

- You can change the characteristics of a datasheet, including the font type and size of text in the datasheet, to improve its appearance or readability
- By default, the rows in a datasheet are displayed with alternating background colors of white and light gray

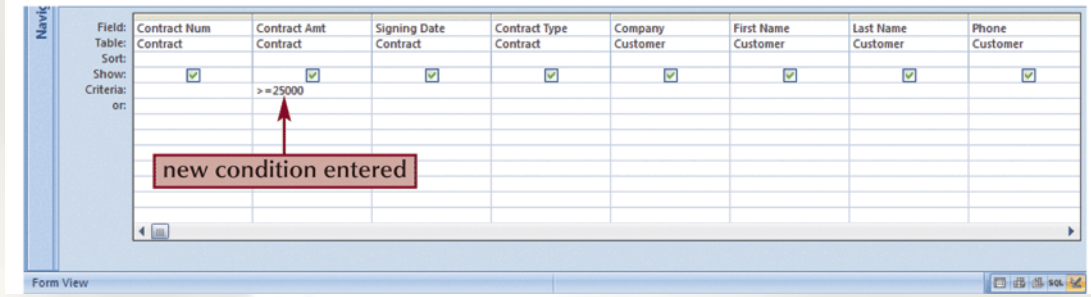
Changing a Datasheet's Appearance

Gallery of color choices for alternate fill color — Figure 3-23



Using a Comparison Operator to Match a Range of Values

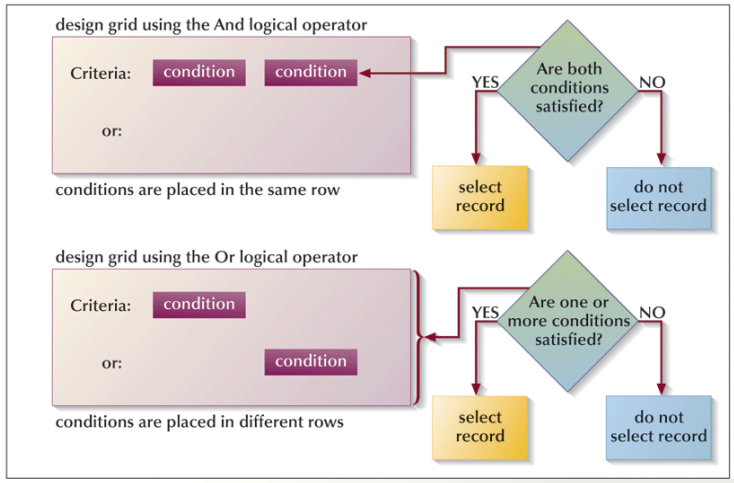
Criteria entered for Contract Amt field — Figure 3-25



Defining Multiple Selection Criteria for Queries

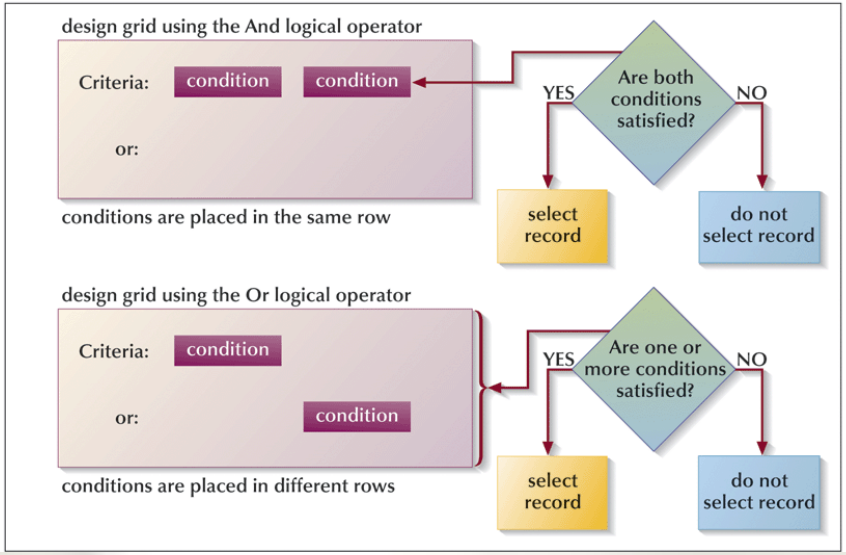
- Multiple conditions require you to use **logical operators** to combine two or more conditions
  - **And logical operator**
  - **Or logical operator**

Logical operators And and Or for multiple selection criteria Figure 3-28

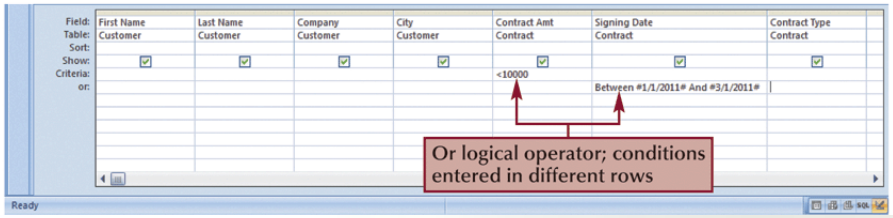


Defining Multiple Selection Criteria for Queries

Logical operators And and Or for multiple selection criteria — Figure 3-28



Query window with the Or logical operator — Figure 3-31

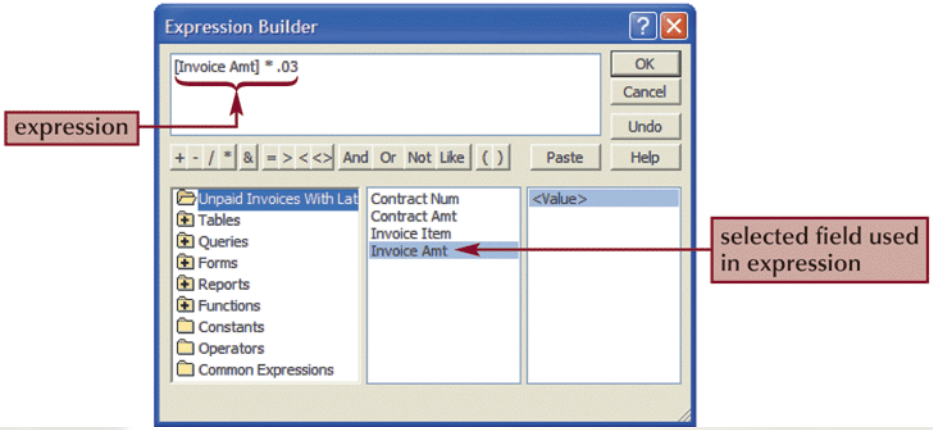


Creating a Calculated Field

- In addition to using queries to retrieve, sort, and filter data in a database, you can use a query to perform calculations
  - **Expression Builder**
- Open the query in Design view
- In the design grid, position the insertion point in the Field text box of the field for which you want to create an expression
- In the Query Setup group on the Query Tools Design tab, click the Builder button
- Use the expression elements and common operators to build the expression, or type the expression directly
- Click the OK button

Creating a Calculated Field

Completed expression for the calculated field **Figure 3-33**



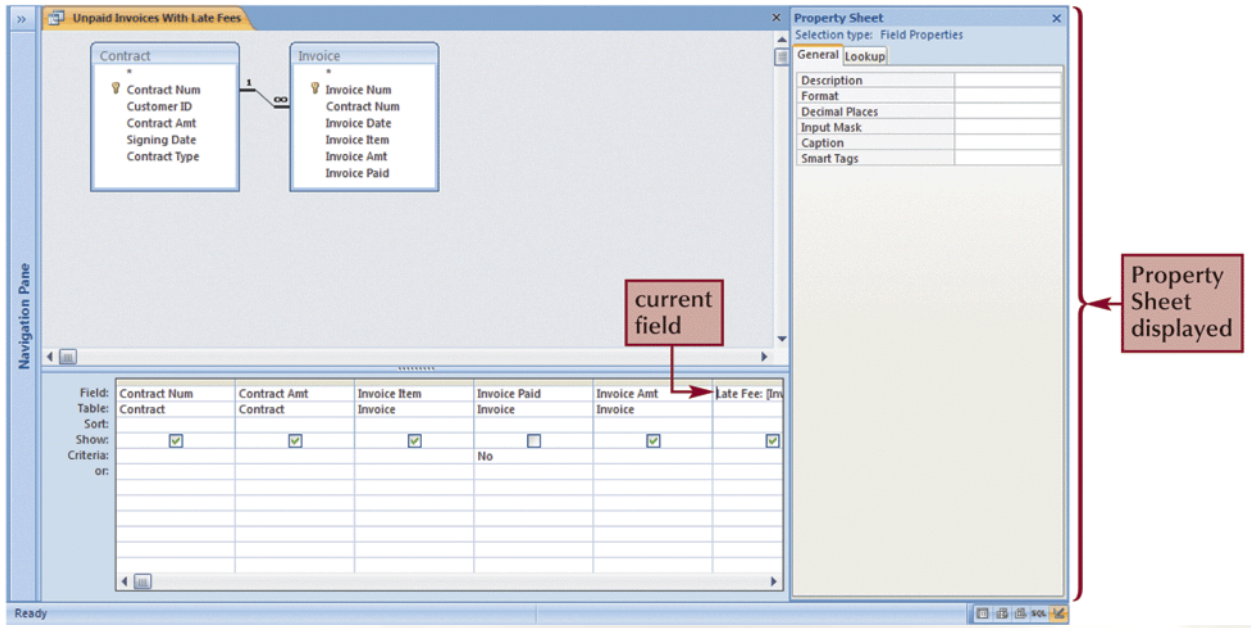
Tip

You can also type an expression directly into the expression box, instead of clicking field names, operators, and so on.

Formatting a Calculated Field

- You can specify a particular format for a calculated field, just as you can for any field, by modifying its properties

Figure 3-35 Property Sheet for the calculated field



Using Aggregate Functions

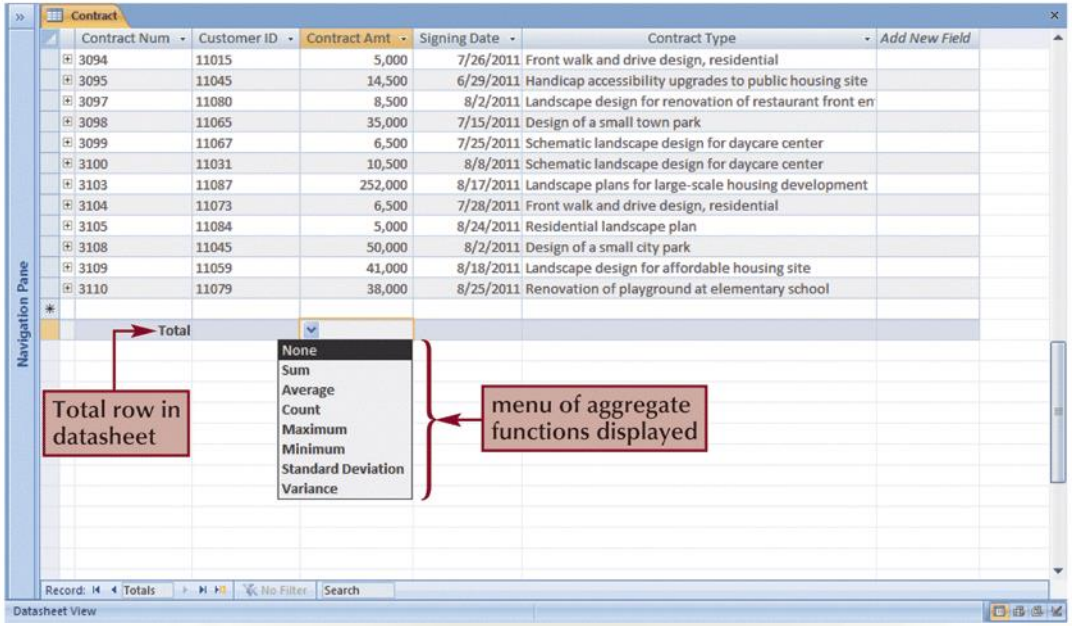
- **Aggregate functions** perform arithmetic operations on selected records in a database
- If you want to quickly perform a calculation using an aggregate function in a table or query datasheet, you can use the Totals button on the Home tab

Frequently used aggregate functions — Figure 3-36

Aggregate Function	Determines	Data Types Supported
Average	Average of the field values for the selected records	AutoNumber, Currency, Date/Time, Number
Count	Number of records selected	AutoNumber, Currency, Date/Time, Memo, Number, OLE Object, Text, Yes/No
Maximum	Highest field value for the selected records	AutoNumber, Currency, Date/Time, Number, Text
Minimum	Lowest field value for the selected records	AutoNumber, Currency, Date/Time, Number, Text
Sum	Total of the field values for the selected records	AutoNumber, Currency, Date/Time, Number

Using Aggregate Functions

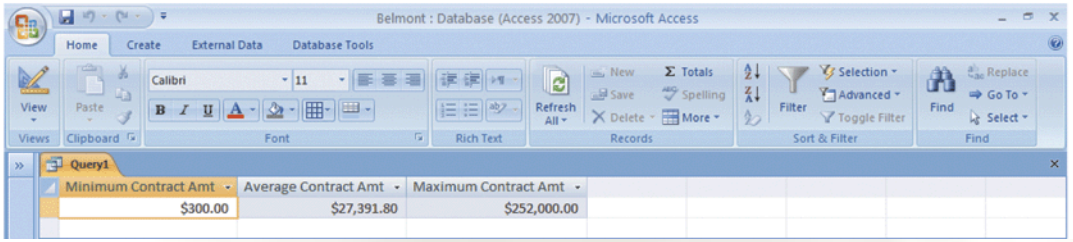
Figure 3-37 Using aggregate functions in the Total row



Creating Queries with Aggregate Functions

- Aggregate functions operate on the records that meet a query's selection criteria

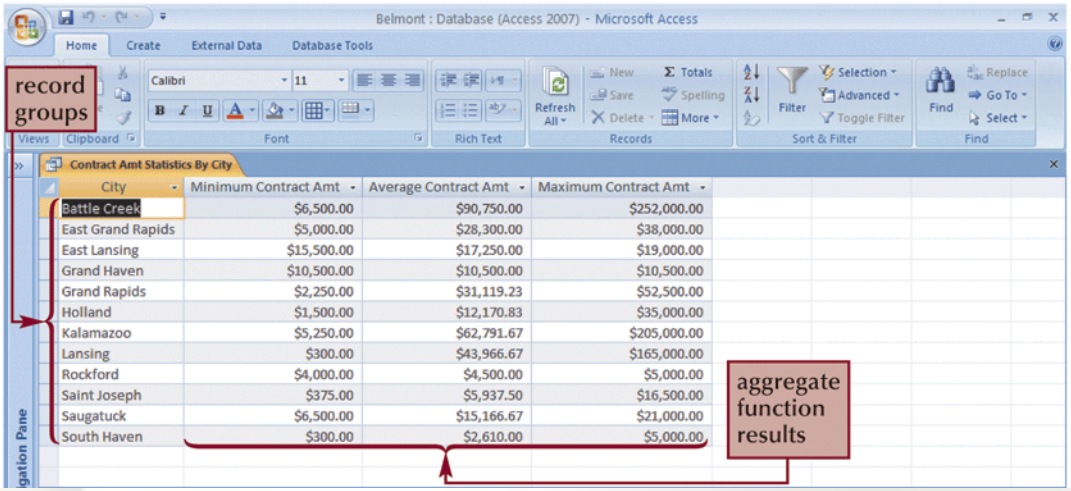
Figure 3-39 Result of the query using aggregate functions



Using Record Group Calculations

- The **Group By operator** divides the selected records into groups based on the values in the specified field

Aggregate functions grouped by City **Figure 3-40**



Working with the Navigation Pane

- The Navigation Pane divides database objects into categories, and each category contains groups
  - **Tables and Related Views**
  - **All Tables**

Figure 3-41 Navigation Pane menu