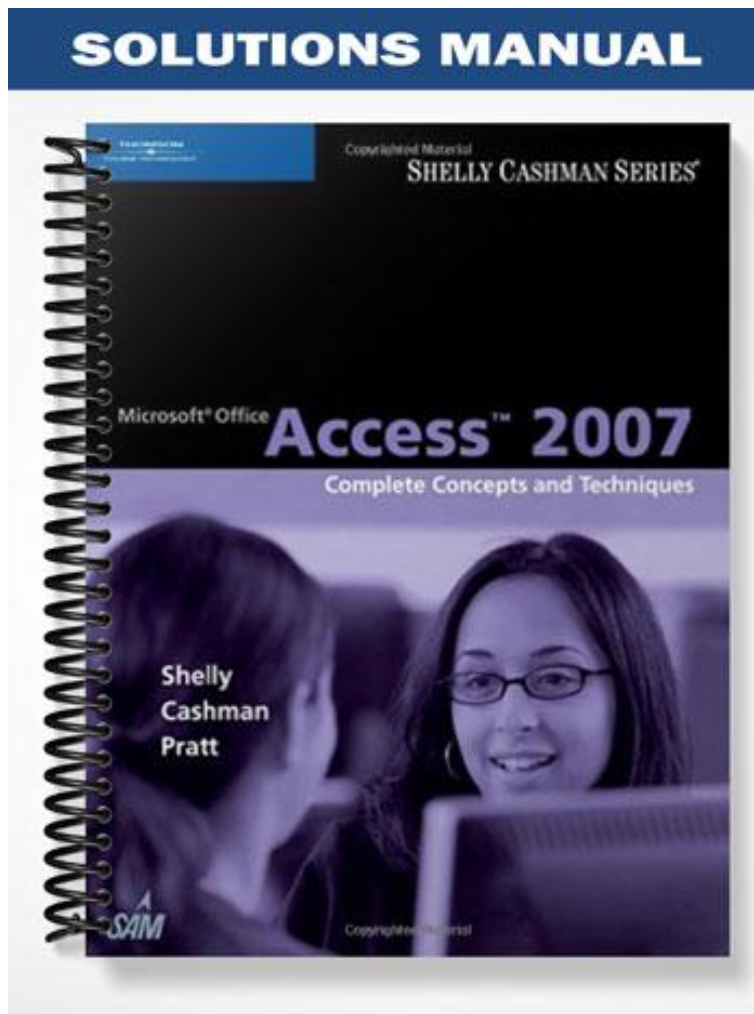


SOLUTIONS MANUAL



Microsoft Office Access 2007

Chapter Two: Querying a Database

A Guide to this Instructor's Manual:

We have designed this Instructor's Manual to supplement and enhance your teaching experience through classroom activities and a cohesive chapter summary.

This document is organized chronologically, using the same heading in **red** that you see in the textbook. Under each heading you will find (in order): Lecture Notes that summarize the section, Figures and Boxes found in the section, if any, Teacher Tips, Classroom Activities, and Lab Activities. Pay special attention to teaching tips, and activities geared towards quizzing your students, enhancing their critical thinking skills, and encouraging experimentation within the software.

In addition to this Instructor's Manual, our Instructor's Resources CD also contains PowerPoint Presentations, Test Banks, and other supplements to aid in your teaching experience.

For your students:

Our latest online feature, CourseCasts, is a library of weekly podcasts designed to keep your students up to date with the latest in technology news. Direct your students to <http://coursecasts.course.com>, where they can download the most recent CourseCast onto their mp3 player. Ken Baldauf, host of CourseCasts, is a faculty member of the Florida State University Computer Science Department where he is responsible for teaching technology classes to thousands of FSU students each year. Ken is an expert in the latest technology and sorts through and aggregates the most pertinent news and information for CourseCasts so your students can spend their time enjoying technology, rather than trying to figure it out. Open or close your lecture with a discussion based on the latest CourseCast.

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Chapter Objectives

Students will have mastered the material in Chapter Two when they can:

- Create queries using the Simple Query Wizard
- Print query results
- Create queries using Design View
- Include fields in the design grid
- Use text and numeric data in criteria
- Create and use parameter queries
- Save a query and use the saved query
- Use compound criteria in queries
- Sort data in queries
- Join tables in queries
- Create a report from a query
- Perform calculations in queries
- Calculate statistics in queries
- Create crosstab queries
- Customize the Navigation Pane

AC 74: Introduction

LECTURE NOTES

- Introduce the topic of querying a database

TEACHER TIPS

Introduce this chapter by reminding students that when use an online search engine, such as Google they are really asking questions of a database. When they access the online card catalog at the library, they also are querying a database.

1. Quick Quiz:

- 1) What is a query? (Answer: A question presented in a way that Access can process)

AC 74: Project — Querying a Database

LECTURE NOTES

- Review the types of questions that you can ask a database, such as JSP Recruiters using Figure 2-1
- Review the tasks that will be covered in this chapter:
 - Creating queries using the Simply Query Wizard and Design view
 - Using criteria in queries
 - Creating and using parameter queries
 - Sorting data in queries
 - Joining tables in queries
 - Performing calculations in queries
 - Creating crosstab queries

FIGURES and TABLES: Figures — 2-1

CLASSROOM ACTIVITIES

1. Ask students for other questions they could ask the JSP Recruiters database.
2. Ask students for sample questions that might be asked of a student database. Ask students for other examples of searching or querying a database.

AC 76: Plan Ahead Box (Critical Thinking): Query Design Guidelines

LECTURE NOTES

- Discuss the general guidelines for query design:
 - Identify the fields
 - Identify restrictions
 - Determine whether special order is required
 - Determine whether more than one table is required
 - Determine whether calculations are required
 - If data is to be summarized, determine whether a crosstab query would be appropriate

TEACHER TIPS

These guidelines are intended to help students with their critical thinking skills. Students should understand the principles of query design. Spend a significant amount of class time reviewing each of these guidelines and use example databases to which students can relate. These points are emphasized at appropriate locations in the chapter. Also, Cases and Places 3, 4, and 5 challenge students to apply these guidelines to creating queries.

CLASSROOM ACTIVITIES

1. Assign a Project: Divide the class into small groups. Assign each group a different database and have them create five sample queries. Example databases include: University database (Students, Teachers, Courses); Employment database (Employees, Departments); Bookstore database (Books, Authors, Publishers); and Video Store database (Movies, Directors, Actors, DVDs). When they have created queries, have them apply the guidelines.

AC 77: Starting Access

LECTURE NOTES

- For figures that match those in the book, change screen resolution to 1024 x 768
- Start Windows Vista and click Microsoft Office Access 2007
- Review the steps to start Access
- Review the steps to open a database

TEACHER TIPS

Review any special log on procedures for your location at this time.

You can use the Lecture Success System for Access in conjunction with the Figures in the Book. To do this, start Access and open the database from the appropriate folder. Then, start your slide show containing the figures for the project. You can switch back and forth between the slide show and Access by using the ALT+TAB key combination. You can use the Figures in the Book to show the steps students should follow. If students need additional reinforcement or ask questions about the task, you can switch to Access to do a live demonstration.

AC 78: Creating Queries

LECTURE NOTES

- Define query
- Use Figures 2-2 through 2-4 to review how to use the Simply Query wizard to create a query
- Using Figure 2-5, discuss the various ways you can use a query:

- View the results
- Print the results
- Change the design
- Define criterion
- Use Figures 2-6 through 2-9 to review how to use a criterion in a query
- Review the steps to print the results of a query
- Describe the steps to create a query in Design view using Figures 2-10 and 2-11
- Use Figure 2-12 to review the step to add fields to the design grid

FIGURES and TABLES: Figures — 2-2, 2-3, 2-4, 2-5, 2-6, 2-7, 2-8, 2-9, 2-10, 2-11, 2-12

BOXES:

1. Other Ways: Encourage your students to explore other ways of viewing query results.

TEACHER TIPS

Use Figure 2-11 to point out the field row and the criteria row in the design grid. A query can be a subset of the records in a table, a subset of the fields in a table, or a subset of both records and fields. The order of the fields also can be changed. Access uses Query-by-Example (QBE) to query a database. Query-by-Example is a query manipulation language for relational databases in which users indicate the action to be taken by completing on-screen forms. The query feature of Microsoft Excel uses QBE as does Microsoft Works.

CLASSROOM ACTIVITIES

1. Assign a Project: Have students research QBE, an early language for creating queries and then share the results of their research with the class.

AC 85: Entering Criteria

LECTURE NOTES

- Use Figures 2-13 and 2-14 to review the steps to use text data in a criterion
- Define wildcard and explain the difference between an asterisk and a question mark
- Use Figures 2-15 and 2-16 to review the steps to use a wildcard
- Describe the steps for using criteria for a field not included in the results using Figures 2-17 through 2-19
- Discuss parameter queries and point out the advantages
- Use Figures 2-20 through 2-22 to describe the steps to create a parameter query
- Review the steps to save a query using Figures 2-23 and 2-24
- Use Figure 2-25 to describe using a saved query
- Use Figures 2-26 and 2-27 to review the steps to use a number in a criterion
- Use Figures 2-28 and 2-29 to define comparison operator and review the specific comparison operators
- Discuss using compound criterion and explain the difference between AND criterion and OR criterion
- Use Figures 2-30 and 2-31 to review the steps to use AND criterion
- Use Figures 2-32 and 2-33 to review the steps to use OR criterion

FIGURES and TABLES: Figures — 2-13, 2-14, 2-15, 2-16, 2-17, 2-18, 2-19, 2-20, 2-21, 2-22, 2-23, 2-24, 2-25, 2-26, 2-27, 2-28, 2-29, 2-30, 2-31, 2-32, 2-33

BOXES:

1. BTW: *Removing a Table from a Query*. Review the step to remove a table from a query.
2. BTW: *The BETWEEN Operator*. Describe the purpose of the BETWEEN operator.
3. Other Ways: Encourage your students to explore other ways of saving a query.

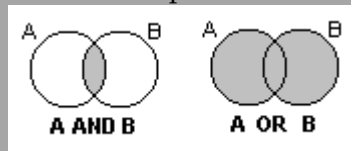
TEACHER TIPS

Students should understand that although the answer displays in Datasheet view, no table exists. It is a dynamic or virtual set of records. When a query design is saved, only the design is saved not the answer. Query results, therefore, always show the most current data.

When a criterion is entered in a query, the criterion is an example of the expected result. Entering criterion in a query is similar to entering an author's name in a search of a library card catalog or an electronic library database. The asterisk and question mark wildcards are the same wildcards that are used with the search features in Windows and other Microsoft applications. Access automatically adds the LIKE operator and quotation marks to criteria that use wildcards.

Comparison operators are used with both numeric and text data. The order of the greater than or equal to (\geq) and less than or equal to (\leq) operators is fixed; they cannot be reversed. The \lt operator also can be used to indicate NOT.

You can use a Venn diagram to illustrate the concept of AND and OR criterion visually:



Several of the exercises at the end of the chapter require students to use compound criteria.

You can use either the View button or the Run button to view query results. The Run button appears on the Design tab only.

CLASSROOM ACTIVITIES

1. Class Discussion: Design a truth table on the board and fill in the values with the students. Ask students for other uses of a truth table.
2. Class Discussion: Place the students in small groups and ask them brainstorm other uses for parameter queries.
3. Quick Quiz:
 - 1) If "H*" is entered as a criterion in a field in the design grid, what does it mean? (Answer: That the value in the field must start with "H" followed by any collection of characters)
 - 2) If "H?" is entered as a criterion in a field in the design grid, what does it mean? (Answer: That the value in the field must start with "H" followed by any single character)

- 3) What is the purpose of the Show check box in the design grid? (Answer: The Show check box indicates whether a field is displayed in the result. A check mark in the check box indicates that a field is to be included in the result. If there is no check mark, a field will not appear in the results.)
- 4) What five comparison operators can be used in queries? (Answer: >, <, >=, <=, NOT)

LAB ACTIVITIES

1. Have students use Access Help to find other wildcards that can be used in queries.
2. Have students do the queries in this section and vary the case of the letters in the criteria, for example, enter fd89 instead of FD89 and report on their findings.
3. Have students research the IN operator and use the operator in a query.

AC 97: Sorting

LECTURE NOTES

- Define sort, sort key, major key, primary sort key, minor key, secondary sort key
- Discuss the reasons for sorting records
- Use Figure 2-34 to illustrate clearing the design grid
- Use Figures 2-35 through 2-37 to illustrate sorting data in a query
- Use Figures 2-38 through 2-40 to illustrate omitting duplicates
- Use Figures 2-41 and 2-42 to illustrate sorting on multiple keys
- Use Figures 2-43 and 2-44 to illustrate creating a top-values query

TEACHER TIPS

Students often have a difficult time understanding the difference between a major key and a minor key. Emphasize that the major key must be to the left of the minor key. Mention that it is not possible to sort on an asterisk. To sort a query that includes an asterisk, add the individual fields that must be sorted to the design grid and remove the check mark from the Show check box.

If students right-click a field and a property sheet other than the Query Properties sheet appears, it probably is because they did not right-click in the second field of the grid. Close the sheet that appears, and position the mouse in the second field of the grid.

It is very important that students either close a query or reset the value in the Return box to All after they complete a top-values query. Otherwise, the next query they create may have incorrect results.

FIGURES and TABLES: Figures — 2-34, 2-35, 2-36, 2-37, 2-38, 2-39, 2-40, 2-41, 2-42, 2-43

BOXES:

1. BTW: OR Criteria in a Single Field. Explain how to combine two criteria with OR in a single field.
1. Other Ways: Encourage your students to explore other ways of opening the property sheet.

TEACHER TIPS

Students often have problems sorting on multiple keys because they do not understand the phrasing of sort questions. For example, in the phrase *city within state*, the major sort key is state which follows the

word within. In this type of query, however, it is usual to display the city field before the state field. To display city before state but sort by city within state, add the state field again to the design grid and remove the check mark from the first state field (major sort key). The Access Help system provides additional information on the procedure.

CLASSROOM ACTIVITIES

1. Critical Thinking: Sorting means ordering records in a particular way. When would it be useful to sort data in ascending order? Why? When would it be useful to sort data in descending order? Why?

AC 97: Plan Ahead Box (Critical Thinking): Determine Whether Special Order Is Required

- Determine whether sorting is required
- Determine the sort key(s)
- If using two sort keys, determine major and minor keys
- Determine sort order
- Determine restrictions

AC 103: Joining Tables

LECTURE NOTES

- Explain about joining tables using Figure 2-45
- Use Figures 2-46 through 2-49 to describe how to join tables
- Review the step to save a query using Figure 2-50
- Use Figures 2-51 through 2-53 to describe how to change join properties
- Review the steps to create a report involving a join using Figures 2-54 through 2-57
- Review the step to print a report
- Use Figures 2-58 and 2-59 to describe how to restrict records in a join

FIGURES: 2-45, 2-46, 2-47, 2-48, 2-49, 2-50, 2-51, 2-52, 2-53, 2-54, 2-55, 2-56, 2-57, 2-58, 2-59

BOXES:

1. BTW: *Join Types*. Review the different types of joins.

TEACHER TIPS

There are two primary reasons why Access would not add a join line between two related tables: (1) the fields do not have matching names or (2) the data type and data length are not identical on both fields. If fields are identical but do not have matching names, students should click the appropriate field in one of the tables and drag a join line to the matching field in the other table. If the fields do not have identical data types and data length, students should open the table that is in error in Design view, correct the problem, and then create the query. If students do not correct the error now, they will be unable to create the relationship between the Recruiter and Client tables in Chapter 3.

The specific type of join shown in this chapter (option 2) is a right outer join because all the records in the one table in the relationship will display. Changing the join type to option 3 would create a left outer join because all records in the many table in the relationship would display.

AC 104: Plan Ahead Box (Critical Thinking): Determine Whether More Than One Table Is Required

- Determine whether more than one table is required
- Determine the matching fields
- Determine whether sorting is required
- Determine restrictions
- Determine join properties

TEACHER TIPS

Use Figure 2-45 to explain joining to students. One of the key features of relational database management systems is the ability to join tables on matching fields.

CLASSROOM ACTIVITIES

1. Assign a Project: Divide the class into small groups. Assign each group a different database. Example databases include: University database (Students, Teachers, Courses); Employment database (Employees, Departments); Bookstore database (Books, Authors, Publishers); and Video Store database (Movies, Directors, Actors, DVDs). Ask students to create sample questions that would rely on data from more than one table.
2. Critical Thinking: Identify some reasons for changing the join type properties.

AC 113: Calculations**LECTURE NOTES**

- Explain calculated field
- Use Figures 2-60 through 2-63 to describe how to use a calculated field in a query
- Use Figures 2-64 and 2-65 to review the steps to change a caption
- Define aggregate function and discuss the different built-in functions
- Use Figures 2-66 through 2-69 to review the steps to calculate statistics
- Use Figures 2-70 through 2-72 to describe how to use criteria in calculating statistics
- Use Figures 2-73 and 2-74 to discuss grouping and review the steps to use grouping

FIGURES and TABLES: Figures — 2-60, 2-61, 2-62, 2-63, 2-64, 2-65, 2-66, 2-67, 2-68, 2-69, 2-70, 2-71, 2-72, 2-73, 2-74

BOXES:

1. BTW *Expression Builder*. Have students read the information on the Expression Builder.
2. Other Ways: Encourage your students to explore other ways to open a property sheet.

TEACHER TIPS

Review the mathematical operators that can be used in calculated fields. When more than one mathematical operator appears in an expression, multiplication and division are performed before addition and subtraction. To change the order of precedence, use parentheses. Make sure students understand that only field names must be enclosed in brackets. If constants, such as .05, are used in an expression, they are not enclosed in brackets.

Explain the aggregate functions that Access supports:

COUNT	Determines the number of items or values.
SUM	Adds the values.
AVG (average)	Determines the arithmetic mean of values.
MAX (largest value)	Determines the greatest value.
MIN (smallest value)	Determines the smallest value.
STDEV (standard deviation)	Measures how widely values are dispersed from the average value.
VAR (variance)	Squares the standard deviation.
FIRST	Determines the first item or value.
LAST	Determines the last item or value.

AVG, SUM, STD, and VAR can be used only with numeric fields. An aggregate function is different from a calculated field. A calculated field is a mathematical operation performed on individual records. An aggregate function is performed on groups of records.

AC 113: Plan Ahead Box (Critical Thinking): Determine Whether Calculations Are Required

- Determine whether calculations are required
- Determine a name for the calculated field
- Determine the format for the calculated field

TEACHER TIPS

Point out to students that storing data that easily can be calculated from other fields wastes space. It also makes the database more difficult to maintain.

CLASSROOM ACTIVITIES

1. Class Discussion: Use the JSP Recruiters database to determine if additional calculated fields are useful. Would any calculated fields be useful in the Recruiter table.

LAB ACTIVITIES

1. Have students use the expression builder to create queries that use calculated fields. Students should report on how useful they found the expression builder.

AC 122: Crosstab Queries

LECTURE NOTES

- Discuss crosstab queries using Figure 2-75
- Use Figures 2-76 through 2-81 to review the steps to create a crosstab query

- Describe how to customize the Navigation Pane using Figures 2-82 and 2-83
- Review the step to quit Access

FIGURES and TABLES: Figures — 2-75, 2-76, 2-77, 2-78, 2-79, 2-80, 2-81, 2-82, 2-83

BOXES:

1. *BTW Certification*: For more information on the MCAS program see Appendix F or visit the Access 2007 Certification Web page.
2. *BTW Quick Reference*: Point out the location of the Quick Reference Summary and the Access 2007 Quick Reference Web page.

TEACHER TIPS

Use Figure 2-75 to help students understand the row and column data. Crosstab queries can be created in Design view but it is much easier to use the Crosstab Query Wizard.

End of Chapter Material

- Learn It Online is a series of online student exercises that test your knowledge of chapter content and key terms.
- Apply Your Knowledge is a student assignment that helps you to reinforce the skills and apply the concepts you learned in this chapter.
- Extend Your Knowledge is a student assignment that challenges you to extend the skills you learned in this chapter and to experiment with new skills. You may need to use Help to complete the assignment.
- Make It Right is a student assignment that requires you to analyze a presentation and correct all errors and/or improve the design.
- In the Lab (Lab): In the Lab is a series of student assignments that ask you to design and/or create a presentation using the guidelines, concepts, and skills presented in this chapter. The assignments are listed in order of increasing difficulty.
- Cases and Places is a series of student assignments where you apply your creative thinking and problem solving skills to design and implement a solution.

Glossary of Key Terms

- aggregate function (AC 117)
- alias (AC 113)
- AND criterion (AC 95)
- asterisk (*) (AC 87)
- calculated field (AC 113)
- comparison operator (AC 94)
- compound criterion (AC 95)
- criterion (AC 81)
- grouping (AC 121)
- join (AC 103)
- join line (AC 105)
- join properties (AC 108)
- major key (AC 97)
- minor key (AC 97)
- OR criterion (AC 95)
- parameter query (AC 89)
- primary sort key (AC 97)
- property sheet (AC 100)
- queries (AC 78)
- query (AC 74)
- question mark (?) (AC 87)
- secondary sort key (AC 97)
- sort (AC 97)
- sort key (AC 97)
- text data (AC 86)
- top-values query (AC 102)
- wildcards (AC 87)

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