Illustrated Course Guide Microsoft Office 365 and Access 2016 Introductory 1st edition Friedrichsen Solutions Manual

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Illustrated Course Guide Microsoft Office 365 and Access 2016 Introductory 1st edition Friedrichsen Solutions Manual

MODULE 2
Building and Using Queries

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Module 2: Building and Using Queries

Concepts Review

Screen Labeling	Matching Items	Multiple Choice
1. Trips table field list	6. h	16. b
2. Duration field from Trips table in query grid	7. c	17. a
3. Ascending sort order on TripName field	8. d	18. d
4. Or criteria on two rows	9. j	19. b
5. And criteria on one row	10. e	20. a
	11. a	
	12. i	
	13. b	
	14. f	
	15. g	

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Skills Review

Data File: Salvage-2.accdb. Solution File: Salvage-2-Solution.accdb

1.-2. The final CenterDeposits query is shown below.

CenterDeposits

CenterName	DepositDate	Weight	ClubName
Student's Last Name Recycling	1/30/2017	80	Kansas City Frogman Club
Taney County Salvage	1/30/2017	150	Boy Scout Troop 6
Adair county Recycling	1/21/2017	170	Great Plains 4-H
Student's Last Name Recycling	1/20/2017	80	Bootstrap Club
A1 Salvage Center	1/20/2017	190	Junior League
Taney County Salvage	1/16/2017	85	Access Users Group
A1 Salvage Center	1/15/2017	175	Social Media Club
Taney County Salvage	1/14/2017	85	Junior League
A1 Salvage Center	1/13/2017	100	Bootstrap Club
Taney County Salvage	1/13/2017	125	Boy Scout Troop 6
Taney County Salvage	1/9/2017	90	Social Media Club
Adair county Recycling	1/9/2017	80	Kansas City Frogman Club
Adair county Recycling	1/8/2017	140	Junior League
Student's Last Name Recycling	1/7/2017	105	Kansas City Frogman Club
Adair county Recycling	1/7/2017	30	Boy Scout Troop 6
Taney County Salvage	1/7/2017	60	Great Plains 4-H
A1 Salvage Center	1/3/2017	205	Social Media Club
Student's Last Name Recycling	1/2/2017	45	Junior League
Taney County Salvage	12/8/2016	50	Access Users Group
A1 Salvage Center	12/6/2016	80	Social Media Club
Student's Last Name Recycling	12/3/2016	70	Social Media Club
Student's Last Name Recycling	12/1/2016	80	Access Users Group
Adair county Recycling	11/29/2016	90	Junior League

Record: 1 of 117 Unfiltered Search

Note:
1b: CenterName, DepositDate, Weight, ClubName fields
1c: Johnson Recycling was changed to a center name that has the student's last name.
2a: The first record (A1 Salvage Center with a DepositDate of 2/4/2014) has been deleted
2b: JavaScript KC (ClubName) has changed to Bootstrap Club.
2d: The date of 1/30/2017 is entered for the current first record

3-5: The final 100PlusDeposits query is shown below:

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100PlusDeposits

FName	LName	ClubName	DepositDate	Weight
SI	Hickman	Access Users Group	2/13/2014	200
SI	Hickman	Access Users Group	2/13/2015	185
SI	Hickman	Access Users Group	2/18/2015	185
SI	Hickman	Access Users Group	3/7/2015	145
SI	Hickman	Access Users Group	4/19/2015	115
SI	Hickman	Access Users Group	5/1/2015	105
SI	Hickman	Access Users Group	1/30/2015	100
SI	Hickman	Access Users Group	2/22/2016	100
SI	Hickman	Access Users Group	2/26/2014	100
Cory	Harding	Bootstrap Club	2/28/2016	125
Cory	Harding	Bootstrap Club	4/3/2016	115
Cory	Harding	Bootstrap Club	1/13/2017	100
Charles	Schaffer	Boy Scout Troop 6	4/30/2015	205
Charles	Schaffer	Boy Scout Troop 6	2/20/2015	200
Charles	Schaffer	Boy Scout Troop 6	2/20/2014	200
Charles	Schaffer	Boy Scout Troop 6	5/7/2015	190
Charles	Schaffer	Boy Scout Troop 6	1/30/2017	150
Charles	Schaffer	Boy Scout Troop 6	1/13/2017	125
Charles	Schaffer	Boy Scout Troop 6	4/18/2016	105
Charles	Schaffer	Boy Scout Troop 6	11/2/2016	100
Renaldo	Bartles	Great Plains 4-H	1/21/2017	170
Amy	Moon	Junior League	9/24/2015	200
Amy	Moon	Junior League	1/20/2017	190

Record: 1 of 41 Unfiltered Search

Note:
3c: FName, LName, ClubName, DepositDate, Weight fields
3d: All Weight values are >=100 saved in Query Design View
4a: Ascending sort order is placed on the ClubName field and descending sort order is placed on Weight field in Query Design View
4c: Boy Scout Troop 324 (ClubName) has been changed to Boy Scout Troop 6.
4d: Trey in FName field is changed to student's initials (SI in figure above)
5a **Filter** the records for ClubName equals Access Users Group.
5b **Filter** the records from step 5a for DepositDate >=1/1/2015 as shown below:
5c Print the datasheet if requested by the instructor. Note that filters are temporary and not saved with the query, so if you want to grade step 5, the student must produce this printout.

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100PlusDeposits

FName	LName	ClubName	DepositDate	Weight
SI	Hickman	Access Users Group	2/18/2015	185
SI	Hickman	Access Users Group	2/13/2015	185
SI	Hickman	Access Users Group	3/7/2015	145
SI	Hickman	Access Users Group	4/19/2015	115
SI	Hickman	Access Users Group	5/1/2015	105
SI	Hickman	Access Users Group	2/22/2016	100
SI	Hickman	Access Users Group	1/30/2015	100

6a: Save the 100PlusDeposits query as 100PlusDeposits2016.
6c. The criteria entry Like "*/*/2016" should be in the DepositDate field in Query Design View. Alternatively, the criteria >=1/1/2016 and <= 12/31/2016 or >12/31/2015 and <1/1/2017 are also equivalent ways to select all records in the year 2016 as shown below:

100PlusDeposits2016

FName	LName	ClubName	DepositDate	Weight
SI	Hickman	Access Users Group	2/22/2016	100
Cory	Harding	Bootstrap Club	2/28/2016	125
Cory	Harding	Bootstrap Club	4/3/2016	115
Charles	Schaffer	Boy Scout Troop 6	4/18/2016	105
Charles	Schaffer	Boy Scout Troop 6	11/2/2016	100
Jordan	Smith	Kansas City Frogman Club	8/20/2016	105
Trixie	Cho	Social Media Club	8/19/2016	205

7. Save the 100PlusDeposits query as 100PlusDeposits2Clubs. The solution is shown in Figure 2-20. Note: 7b-7c. All records have ClubName = Social Media Club or Access Users Group and Weight >=100

8a. For the Centers table, the Times New Roman font with 14-point font size is applied
8b. All columns have been resized so data and field names are visible.
8c-8d. If creating a printout, the printout should be in landscape orientation and use narrow margins so that it fits on a single sheet of paper.

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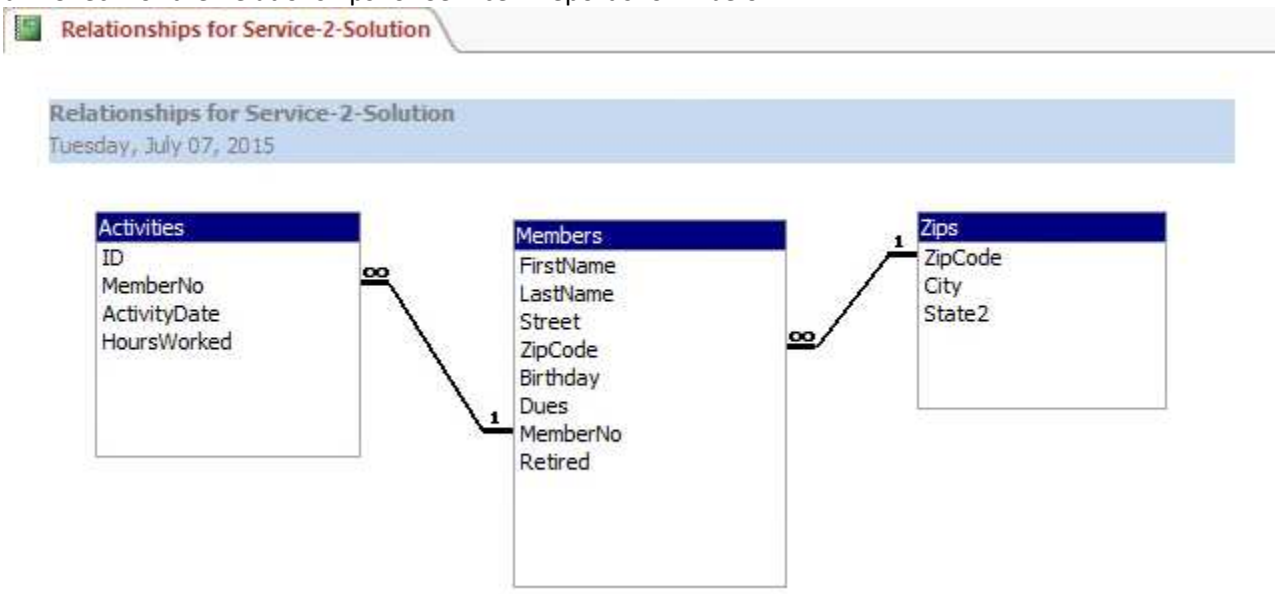
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Independent Challenge 1

Data File: Service-2.accdb. Solution File: Service-2-Solution.accdb

The solution to this exercise is shown in Figure 2-21.

d. Check for the Relationships for Service-2 report shown below:



e. Create a query (named March2017 in step i) with these fields: FirstName, LastName, ActivityDate, HoursWorked. The solution to this is shown in Figure 2-21.

g. Add criteria to select only those records in March 2017.

h. In Query Design View, apply an ascending sort order on the LastName and ActivityDate fields.

i. Make sure that the student's name has replaced Quentin Garden and that the columns have been widened to clearly display all data and field names.

Independent Challenge 2

Data File: HouseOfReps-2.accdb. Solution File: HouseOfReps-2-Solution.accdb

The final solution is shown in Figure 2-22. Note:

c. The fields are in the following order: StateAbbrev, StateName, Capital, FName, LName

d. An ascending sort order on StateName then LName.

e. Criteria to select only Ohio or Pennsylvania using OH and PA criteria in the StateAbbrev field.

f. The query is named OhioAndPenn.
The student's name is entered instead of Butterfield.

Independent Challenge 3

Data File: VetClinic-2.accdb. Solution File: VetClinic-2-Solution.accdb

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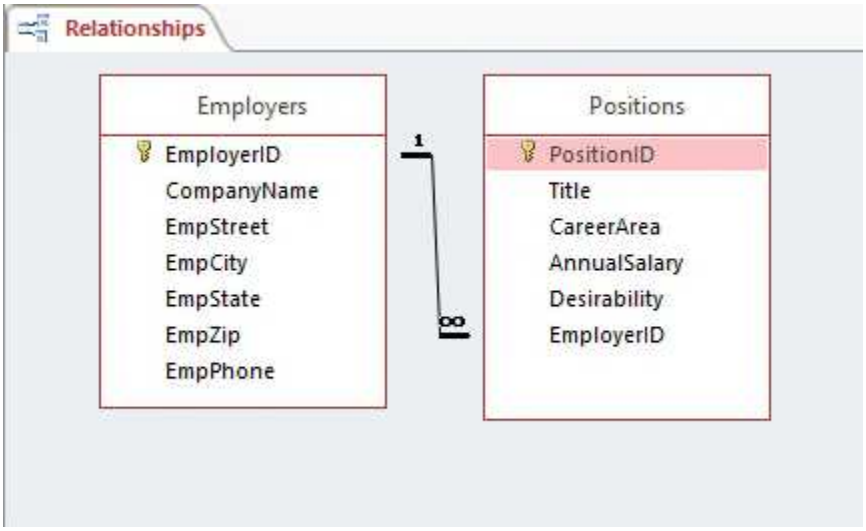
The solution is shown in Figure 2-23. Note:

c. Student Name is added as a new record in Vets table.
e. ClinicVetListing is the new query name with the following fields: VetLast, VetFirst, ClinicName, and Phone. (Note the order of fields is changed in step h.)
f. Animal Haven (ClinicName) changed to Animal Emergency Shelter.
g. In Query Design View, criteria is added to the ClinicName field to select only Animal Emergency Shelter or Veterinary Specialists.
h. In Query Design View, the ClinicName field is moved to the first field column and an ascending sort order is added to the ClinicName and VetLast fields.
i. Fields are resized to show all data.

Independent Challenge 4

No Data File. Solution File: Jobs-Solution.accdb

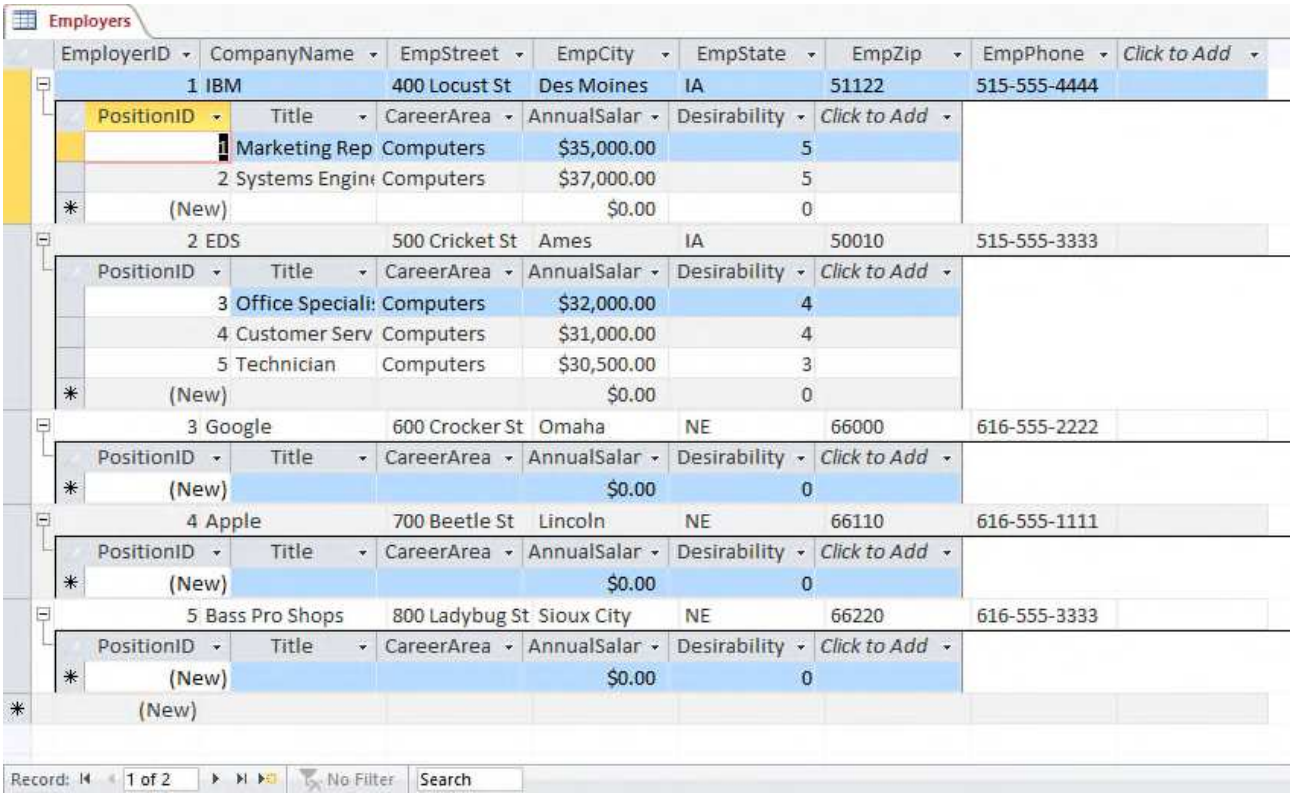
b. Check Table Design View of the Positions table. The field names, data types, and descriptions should match this step.
c. Check Table Design View of the Employers table. The field names, data types, and descriptions should match this step.
d. Make sure EmployerID is the primary key field of the Employers table.
Make sure PositionID is the primary key field of the Positions table.
e. Make sure the relationships window looks like the following:



f-g. Answers will vary, but a potential solution is shown below. There should be five valid records in the Employers table, and five valid records in the Positions table. The records in the Positions table can be attached to any employer record.

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Employers

EmployerID	CompanyName	EmpStreet	EmpCity	EmpState	EmpZip	EmpPhone	Click to Add
1	IBM	400 Locust St	Des Moines	IA	51122	515-555-4444	

PositionID	Title	CareerArea	AnnualSalar	Desirability	Click to Add
1	Marketing Rep	Computers	$35,000.00	5	
2	Systems Engin	Computers	$37,000.00	5	
(New)			$0.00	0	

EmployerID	CompanyName	EmpStreet	EmpCity	EmpState	EmpZip	EmpPhone	Click to Add
2	EDS	500 Cricket St	Ames	IA	50010	515-555-3333	

PositionID	Title	CareerArea	AnnualSalar	Desirability	Click to Add
3	Office Speciali	Computers	$32,000.00	4	
4	Customer Serv	Computers	$31,000.00	4	
5	Technician	Computers	$30,500.00	3	
(New)			$0.00	0	

EmployerID	CompanyName	EmpStreet	EmpCity	EmpState	EmpZip	EmpPhone	Click to Add
3	Google	600 Crocker St	Omaha	NE	66000	616-555-2222	

PositionID	Title	CareerArea	AnnualSalar	Desirability	Click to Add
(New)			$0.00	0	

EmployerID	CompanyName	EmpStreet	EmpCity	EmpState	EmpZip	EmpPhone	Click to Add
4	Apple	700 Beetle St	Lincoln	NE	66110	616-555-1111	

PositionID	Title	CareerArea	AnnualSalar	Desirability	Click to Add
(New)			$0.00	0	

EmployerID	CompanyName	EmpStreet	EmpCity	EmpState	EmpZip	EmpPhone	Click to Add
5	Bass Pro Shops	800 Ladybug St	Sioux City	NE	66220	616-555-3333	

PositionID	Title	CareerArea	AnnualSalar	Desirability	Click to Add
(New)			$0.00	0	

(New)

Record: 1 of 2 No Filter Search

h. A potential solution to the JobList query is shown below. (Answers will vary based on the records entered in the Positions table). Make sure the query contains these fields: CompanyName, Title, CareerArea, AnnualSalary, and Desirability. Make sure the records are sorted in descending order on the Desirability field.



JobList

CompanyName	Title	CareerArea	AnnualSalary	Desirability
IBM	Systems Engineer	Computers	$37,000.00	5
IBM	Marketing Representative	Computers	$35,000.00	5
EDS	Customer Service Rep	Computers	$31,000.00	4
EDS	Office Specialist	Computers	$32,000.00	4
EDS	Technician	Computers	$30,500.00	3

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Visual Workshop

Data File: Baseball-2.accdb. Solution File: Baseball-2-Solution.accdb

The solution is shown in Figure 2-24. Make sure the correct fields are selected: TeamName, PlayerLast, PlayerFirst, and Position.
Make sure only Position 1 and 2 are selected and an ascending sort order is added to the TeamName and PlayerPosition fields in Query Design View.

Aaron Campanella should be changed to the student's name.

The query should be saved with the name PitchersAndCatchers.

All fields should be widened to see all of the data.

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Access Module 2: Building and Using Queries

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 module summary.

This document is organized chronologically, using the same heading in **blue** that you see in the textbook. Under each heading you will find (in order): Lecture Notes that summarize the section, Teacher Tips, Classroom Activities, and Lab Activities.

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

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Module Objectives

Students will have mastered the material in Access Module 2 when they can:

- Use the Query Wizard
- Work with data in a query
- Use Query Design View
- Sort and find data
- Filter data
- Apply AND criteria
- Apply OR criteria
- Format a datasheet

Access 28: Use the Query Wizard

LEARNING OUTCOMES

- Describe the purpose for a query
- Create a query with the Simple Query Wizard

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LECTURE NOTES

- Introduce the **Simple Query Wizard** in FIGURE 2-1 and, depending on the background of students, show them that using the wizard spares students having to write **SQL (Structured Query Language)** code.
- Make sure students realize that a **query** is merely a question – it is not a duplication of the data even though the datasheet that is presented (the **logical view** of the data, shown in FIGURE 2-2) can be used for data entry and updates.
- Be sure students understand that a query allows you to focus on specific information that answers the query question.
- Emphasize the wide and extensive use of queries to the database user.

TEACHER TIPS

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

Querying is one of the main benefits of creating a database. Users want to be able to find answers quickly to questions concerning the data.

CLASSROOM ACTIVITIES

1. Critical Thinking: Ask students to come up with reasons they would use a query (versus opening a table datasheet). Answers include:
   - To view fields from more than one table in a single datasheet.
   - To view subsets of records rather than all the records in a table datasheet (filtering and adding criteria – covered later in Unit B).
   - To create calculated fields.
   - To collect the fields and records needed for forms and reports.

2. Class Discussion: Ask students for sample questions that might be asked of a student database.

Access 30: Work with Data in a Query

LEARNING OUTCOMES

- Edit records in a query
- Delete records in a query

LECTURE NOTES

- Compare entering and editing data in a query datasheet to the same tasks in a table datasheet.
- Use FIGURES 2-3 and 2-4 to show the effects of updating a record in the query datasheet and deleting another record.

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TEACHER TIP
Inherent to students' understanding of how relational databases work is understanding that every other object is built "on top of" the tables. Any time data is being edited, it is being changed/stored in table objects. Tables, queries, and forms can all be used to enter and update data, but data is only physically stored in tables. Without this understanding students may be led to believe that they need to update data every place it is presented – in every query, form, or report where it is shown. This is not true. Once data is changed, for example, once the name Friedrichsen is changed to Franklin, every other object that displays that data is automatically updated as well.

CLASSROOM ACTIVITIES

1. Class Discussion: Ask students to brainstorm some real-world scenarios in which they would make the kinds of modifications demonstrated in this section.
2. Critical Thinking: Querying means asking questions. What kind of questions do you ask in a typical day? Would a database be able to answer those questions?

Access 32: Use Query Design View

LEARNING OUTCOMES

- Work in Query Design View
- Add criteria to a query

LECTURE NOTES

- Point out the various parts of the **Query Design View** window in FIGURE 2-5, and the resulting query in FIGURE 2-6.
- Explain that students should be extremely familiar with Query Design View, **criteria**, field lists, **join lines** (**link lines**), and the **query design grid**.
- Point out the one-to-many relationship line between related tables in the query in FIGURE 2-5.
- Distinguish between the use of the **Save command** on the File tab and the **Save Object As command**, reminding students that Access saves data automatically as they move from record to record.

TEACHER TIPS
Note that when there is no scroll bar in a field list, it means that all fields are visible.

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.

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.

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CLASSROOM ACTIVITIES

1. Quick Quiz:
    1. How is the relationship between two tables displayed? (Answer: With a join line, or link line)
    2. What does the query design grid display? (Answer: The field names, sort orders, and criteria used within the query)

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

Access 34: Sort and Find Data

LEARNING OUTCOMES

- Apply short orders to a query
- Find and replace data in a query
- Undo edits in a query

LECTURE NOTES

- Make sure students understand how ascending and descending sort orders apply to each different type of field, for example text, number, currency, and date/time data.
- Make sure students know that they can click any field and use it to sort the records. Point out the **field selector** in FIGURE 2-7. Access never sorts just a single field/column at a time. Review the result of the new sort orders in the datasheet in FIGURE 2-9.
- Review the features of the Find and Replace dialog box in FIGURE 2-8.

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?

2. Quick Quiz:
    1. Deleting a field from a query deletes it from the underlying table. T/F? (Answer: False)
    2. Sort orders always work from right to left. T/F? (Answer: False)

LAB ACTIVITY

Using the query shown in FIGURE 2-7, have students practice sorting on more than one field such as Category and TripName. Ask them to sort by duration within each category. Show them how to move the Price field to the left of the Category field, select both fields, and apply a sort to the two fields at the same time to achieve the desired sort.

Access 36: Filter Data

LEARNING OUTCOMES

- Apply and remove filters in a query
- Use wildcards in criteria

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LECTURE NOTES

- **Filtering** data is a *temporary* activity. As soon as the filter is removed, it is not saved. Therefore, if a question about the data is asked over and over again, it should be saved as a query so that the query can simply be opened to see the resulting data.
- Simple filters require only that students click the field they want to filter on (such as Adventure in the Category field), and click the Selection button. Any filtering done with two or more fields requires the use of the advanced filter tools.
- Contrast the use of the **Filter By Selection** feature with the use of **Filter By Form** feature.
- Use TABLE 2-2 to compare filters and queries. Point out to students, however, that queries are by far more powerful. Discuss the filter buttons shown in TABLE 2-3 and when each one would be used.
- Review the wildcard characters shown in the Clues to Use box.

TEACHER TIPS

Be sure to have students view the navigation buttons after each filter to get a sense of how many records they are viewing at any one time. This will help them answer the "reasonableness" test question. Is the answer I'm seeing reasonable? (or not?) Students may not know the answer to this when working with sample database files provided by this textbook, but they certainly would be able to answer that question in the real world when working with their own data.

Note that while a filter is not the same thing as a query, if you create a filter and decide that you would like to reuse it, and therefore should have created a query, a filter can be saved as a query object and reused. For the most part, however, filters are temporary views of data and do not contain as much power as queries (see TABLE 2-2).

Filtering produces a subset of the table. This is useful when you need to update a field in several records with the same value but do not need an update query.

Make sure students understand the difference between the Toggle Filter button and the Clear All Filters button. The Toggle Filter button redisplays all records but does not clear any filters that have been applied.

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.

CLASSROOM ACTIVITIES

1. Class Discussion: Consider circumstances in which the Filter By Selection feature is the tool to use. When is Filter By Form better to use?

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2. Critical Thinking: Why does Microsoft provide so many different features (filters versus queries for example) that overlap in functionality? (Even though there are times when more than one tool could do a job, depending on the nature of the problem there is generally a "best" way to accomplish a task. Providing many different tools gives the user the choice of several ways to tackle a problem. It is incumbent on the user to be trained well enough to know which tool is most productive and best for each job.)

3. Critical Thinking: Compare the two methods of finding records presented in this chapter: searching and filtering. Which do you consider to be more efficient? As a database user, when do you think it would be best to use filtering rather than searching?

Access 38: Apply AND Criteria

LEARNING OUTCOMES

- Enter AND criteria in a query
- Define criteria syntax
- Use comparison operators with criteria

LECTURE NOTES:

- Being able to master query criteria is absolutely essential to the success of every Access user. Do not let students go beyond this lesson until they completely understand it.
- Note that the use of "AND" means that BOTH criteria must be true in order for the record to be selected.
- The **AND criteria** are entered in one row of the query grid as shown in FIGURE 2-13. It is absolutely essential that students understand what AND criteria is as well as how to enter it in the query grid.
- Discuss the support that Access provides with **criteria syntax** and review the function of the comparison operators in TABLE 2-4.
- Explain how to search for blank fields using the Clues to Use box.

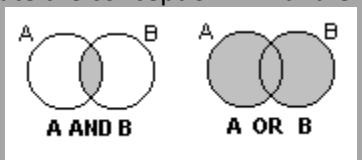
TEACHER TIPS

Comparison operators are used with both numeric and text data. The order of the greater than or equal to (>=) and less than or equal to (<=) operators is fixed; they cannot be reversed.

The difference between putting criteria in one versus two rows is extremely important and is covered in the lessons on AND versus OR criteria. At this point, students are starting to see how important precision is when working with databases.

Be sure students understand that they can go back and forth between Datasheet and Query Design View to make sure you get the records desired. The most common errors would be not entering the criteria on one row or making a typo.

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



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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. Quick Quiz:
   1. With AND criteria, all criteria must be true to select the record. T/F? (Answer: True)
   2. Criteria syntax are rules that specify how to enter criteria. T/F? (Answer: True)

Access 40: Apply OR Criteria

LEARNING OUTCOMES

- Enter OR criteria in a query
- Rename a query

LECTURE NOTES:

- Explain the difference between AND and **OR criteria** in the query grid. Students show know how it is entered (as shown in FIGURE 2-15) as well as how many records are selected (as shown in FIGURE 2-16).
- Note that OR criteria always retrieves more records. AND criteria always narrows the number of records selected. OR criteria always expands the number of records selected.

CLASSROOM ACTIVITIES

Critical Thinking: How would you write a query to find all trips where the state was Colorado and the duration was either 7 or 10 days?

1. Quick Quiz:
   1. You use AND criteria when one criterion must be true in order for the record to be selected. T/F? (Answer: False)

Access 42: Format a Datasheet

LEARNING OUTCOMES

- Zoom in print preview
- Format a datasheet
- Change page orientation

LECTURE NOTES:

- Many of the buttons and tools students will use to format a datasheet are already familiar to them from Word and Excel such as Bold, Italic, Underline, Font Color, Font Face, Font Size, and Fill. The Alternate Fill/Back Color button helps readers differentiate different lines on datasheet printouts.
- Note that the entire datasheet is formatted as a single unit. You do not format individual cells as you do in Excel.

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TEACHER TIP:
Point out the differences between a color and black and white printer. On a black and white printer, all colors are converted to shades of gray. Bright colors may be converted to solid black boxes. Always encourage students to print preview before printing.

CLASSROOM ACTIVITIES

1. Assign a Project: Have students open a datasheet and apply at least three formats that they feel enhance the printout. Print the datasheets, pair students up, and have them critique each other's printouts. Remind students that some formatting embellishments, such as too much color, font size too small to read, font face too fancy to be legible, can actually detract from readability and professionalism.

2. Group Activity: Ask students to apply three different formats to a datasheet in three different categories (font face, font size, color) and print them. Have them write down the formatting embellishments on the back of the paper. Pass the papers around the class and ask students to vote on the one they like best and explain why.

End of Module Material

- **Concepts Reviews** consist of multiple choice, matching, and screen identification questions.
- **Skills Reviews** provide additional hands-on, step-by-step reinforcement.
- **Independent Challenges** are case projects requiring critical thinking and application of the module skills. The Independent Challenges increase in difficulty, with the first one in each module being the easiest. Independent Challenges 2 and 3 become increasingly open-ended, requiring more independent problem solving.
- **Independent Challenge 4: Explore** contain practical exercises to help students with their everyday lives by focusing on important and useful essential skills, including creating photo montages for scrapbooks and photo albums, retouching and color-correcting family photos, applying layer styles and getting Help online.
- **Visual Workshops** are practical, self-graded capstone projects that require independent problem solving.

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