# Instructor’s Manual Exploring Microsoft Access 2019, Chapter 2

## Available Instructor Resources

|  |  |  |
| --- | --- | --- |
| **Resource** | **File Name** | **Found** |
| **Student Data Files** | [Various](#_PROJECTS_AND_EXERCISES), click link to see file list | Online Instructor Resource Center |
| **Solution Files** | [Various](#_PROJECTS_AND_EXERCISES), click link to see file list | Online Instructor Resource Center |
| **Answer Keys** |  | Online Instructor Resource Center |
| Matching | a02\_answerkey\_match.docx |  |
| Multiple Choice | a02\_answerkey\_mc.docx |  |
| Concepts Checks | a02\_answerkey\_concepts.docx |  |
| **Scorecards** | a02\_p1Books\_scorecard.xlsx | Online Instructor Resource Center |
| **Scoring Rubrics** | a02 \_rubric.docx | Online Instructor Resource Center |
| **Annotated Solution Files** | a02p1Books\_annsolution.pdf | Online Instructor Resource Center |
| **Scripted Lecture (Script)** | a02\_script.docx | Online Instructor Resource Center |
| Scripted Lecture Data | a02\_script\_data.accdb |  |
| Scripted Lecture Solution | a02\_script\_solution.accdb |  |
| **PowerPoint Presentation** | a02\_powerpoint\_accessible.pptx | Online Instructor Resource Center |
| **Testbank** | a02\_testbank.docx | Online Instructor Resource Center |
| **Instructor's Manual (lesson plans incl.)** | a02\_instructormanual.docx | Online Instructor Resource Center |
| **Assignment Sheet** | a02\_assignsheet.docx | Online Instructor Resource Center |
| **Prepared Exam (Chapter & App)** |  | Online Instructor Resource Center |
| Prepared Exam-Chap instruction | a02\_exam\_chap\_instruction.docx |  |
| Prepared Exam-Chap Data | a02\_exam\_chap\_data.accdb |  |
| Prepared Exam-Chap Solution | a02\_exam\_chap\_solution.accdb |  |
| Prepared Exam-Chap Annotated Sol. | a02\_exam\_chap\_annsolution.pdf |  |
| Prepared Exam-Chap Scorecard | a02\_exam\_chap\_scorecard.xlsx |  |
| Prepared Exam-App instruction | a02\_cumexam\_instruction.docx |  |
| Prepared Exam-App Data | a02\_cumexam\_data.accdb |  |
| Prepared Exam-App Solution | a02\_cumexam\_solution.accdb |  |
| Prepared Exam-App Annotated Sol. | a02\_cumexam\_annsolution.pdf |  |
| Prepared Exam-App scorecard | a02\_cumexam\_scorecard.xlsx |  |
| **File Guide** | a02\_fileguide.xlsx | Online Instructor Resource Center |
| **Objective Map** | a02\_objectivesmap.xlsx | Online Instructor Resource Center |
| **Grader Project** |  |  |
| Grader Instruction | a02\_grader\_instruction.docx | Online Instructor Resource Center |
| Grader Data | a02\_grader\_data.accdb |  |
| Grader Solution | a02\_grader\_solution.accdb |  |
| Grader Annotated Solution | a02\_grader\_annsolution.pdf |  |
| Grader Scorecard | a02\_grader\_scorecard.xlsx |  |

## CHAPTER OBJECTIVES

### When students have finished reading this chapter, they will be able to:

* Design a table
* Create and modify tables and work with data
* Import data from external sources
* Establish table relationships
* Create a single-table query
* Use the Query Wizard
* Specify query criteria
* Specify query sort order and run a query
* Copy and modify a query
* Create a multitable query
* Modify a multitable query

## CHAPTER OVERVIEW

The students will be asked to analyze existing records before they are converted into an Access application. Students also will be asked to create a sample Access database made up of customers, accounts, and the bank’s respective branches.

### The major sections in this chapter are:

1. **Table Design, Creation, and Modification.** In this section, the student will learn to design a table, create a table in Datasheet view, delete a field, set a primary key, work with field properties, create a new field in Design view, and modify the table in Datasheet view.
2. **Multiple-Table Databases.** In this section, students will learn how to import data from an external source into a database, modify an imported tables’ design, and add data to an imported table. Students also will learn to establish table relationships and enforce and test referential integrity.
3. **Single-Table Queries.** In this section, students will learn to use the Simple Query Wizard and specify query criteria in Query Design view. Students also will learn to specify query sort order, run a query, copy and modify a query, and change query data.
4. **Multitable Queries.** In this section students will learn to add additional tables and fields to an existing query and create a multitable query from scratch. Students also will learn to modify a multitable query by adding and deleting fields and use a Total Row to summarize data.

## CLASS RUN-DOWN

1. Have students turn in homework assignments.
2. Talk about the chapter using the discussion questions listed below.
3. Use a PowerPoint presentation to help students understand the chapter content.
4. Explain table design, creation, and modification.
5. Demonstrate and explain how to import external data into a database.
6. Demonstrate how to use the Query Wizard single and multitable queries.
7. [Run through the Scripted Lecture for the chapter. Give special attention to areas in which students might be challenged.](#_WHEN_USING_SCRIPTED)
8. Have students complete the Capstone Exercise for Access Chapter 2.
9. Use MyITLab for in-class work or to go over homework.
10. Give students the homework handout for the next class period.

## LEARNING OBJECTIVES

### At the end of this lesson students should be able to:

* Design a Table
* Create a Table in Datasheet View
* Delete a Field
* Set a Table’s Primary Key
* Work with Field Properties
* Create a New Field in Design View
* Modify the Table in Datasheet View
* Import Excel Data
* Import Access Data
* Modify an Imported Table’s Design
* Add Data to an Imported Table
* Establish Table Relationships
* Enforce and Test Referential integrity
* Create a Single-Table Query
* Use the Simple Query Wizard
* Use Query Design View
* Specify query Criteria
* Specify query Sort Order
* Run a Query
* Copy and Modify a Query
* Change Query Data
* Add Additional Tables and Fields to an Existing Query
* Create a Multitable query from Scratch
* Modify a Multitable Query
* Add and Delete Fields in a Multitable Query
* Use a Total Row to Summarize Data in a Query

## KEY TERMS

**AND logical operator (condition)–**A condition in a query, returns only records that meet all criteria.

**AutoNumber–**A number that automatically increments each time a record is added.

**Caption property–**A property that is used to create a more understandable label than a field name that displays in the top row in Datasheet view and in forms and reports.

**Cascade Delete Related Records–**When the primary key value is deleted in a primary table, Access will automatically delete all records in related tables that contain values that match the primary key.

**Cascade Update Related Fields–**An option that directs Access to automatically change all foreign key values in a related table when the primary key value is modified in a primary table.

**Comparison operator–**An operator such as greater than (>), less than (<), greater than or equal to (>=), and less than or equal to (<=) used to limit query results that meet the criteria.

**Criteria row–**A row in the query design grid that determines which records will be selected.

**Data redundancy–**The unnecessary storing of duplicate data in two or more tables.

**Data type–**Determines the type of data that can be entered and the operations that can be performed on that data.

**Field property–**A characteristic of a field that determines how it will look and behave.

**Foreign key–**A field in a related table that is the primary key of another table.

**Input mask–**Simplifies data entry by providing literal characters that are typed for every entry.

**Join line–**A line used to create a relationship between two tables using a common field.

**One-to-many relationship–**When the primary key value in the primary table can match many of the foreign key values in the related table.

**OR condition–**A query condition that returns records meeting any of the specified criteria.

**Referential integrity–**Rules in a database that are used to preserve relationships between tables when records are added, deleted, or changed.

**Simple Query Wizard–**Provides a step-by-step guide to help you through the query design process.

**Validation rule–**Checks the data for allowable value when the user exits the field.

**Wildcard–**A special character that can represent one or more characters in the criterion of a query.

## DISCUSSION QUESTIONS

* Explain the relationship of the primary key in one table to the foreign key in a related table.
* Explain how table relationships can be viewed and corrected when necessary.
* What is redundant data? Why is it a problem?
* Give an example when you would use the OR condition in a query.
* What is the advantage of printing a Relationship Report before creating queries?

## WHEN USING SCRIPTED LECTURE IN CLASS, DEMONSTRATE HOW TO:

* Design a Table
* Create a Table in Datasheet View
* Delete a Field
* Set a Table’s Primary Key
* Work with Field Properties
* Create a New Field in Design View
* Modify the Table in Datasheet View
* Import Excel Data
* Import Access Data
* Modify an Imported Table’s Design
* Add Data to an Imported Table
* Establish Table Relationships
* Enforce and Test Referential Integrity
* Create a Single-Table Query
* Use a Simple Query Wizard
* Use Query Design View
* Specify Query Criteria
* Specify Query Sort order
* Run a Query
* Copy and Modify a Query
* Change Query Data
* Add Additional Tables and Fields to an Existing Query
* Create a Multitable Query from Scratch
* Modify a Multitable Query
* Add and Delete Fields in a Multitable Query
* Use a Total Row to Summarize Data in a Query

## CONNECTIONS PRACTICAL PROJECTS AND APPLICATIONS

* Give students a printout listing tables and their fields. Ask them to identify primary and foreign keys for each table.
* On the board, have students create a database table listing books, author name, publisher name, and price. (Amazon is a great resource.) What kinds of queries might be run on this single table?
* Divide the class into groups. Using a fictitious hospital, have each group come up with as many tables as they can think of that would be needed in administering the hospital. Have them share their results with the class.
* Have students come up with possible reasons for query errors.

## TEACHING NOTES

### Table Design, Creation, and Modification

In this section, the student will learn the essentials of good table design. Students also will learn to create and refine tables by changing the properties of various fields.

* A table is a collection of records. Each record is made up of fields that contain bits of information about that record.
* Plan necessary fields for each table before starting to build.
* Determine types of data each field will store.
* Determine the order of the fields.
* Determine the primary key.

#### Designing a Table

* Determine what reports might be necessary to ensure the correct fields are included in the table.
* Create a rough draft of tables and fields for the database.
* Design for the future too. Try to anticipate future needs.
* Break data down to the smallest part. Instead of customer\_name, use customer\_last and customer\_first.
* Determine primary keys.
* Plan for common fields between tables (foreign keys) for building relationships between tables.
* Design tables to accommodate calculations.
* **Teaching Tips:** Create a rough draft of tables and fields for the database.
* **Teaching Tips:** Avoid data redundancy that can lead to errors in the data.
* **Teaching Tips:** Common fields between tables must have the same data type.

#### Creating and Modifying Tables and Working with Data

* Tables can be modified to include new fields or to change existing fields.
* Field names should be descriptive of the data.
* Determine data type when creating fields.
* Set the primary key.
* Determine foreign keys (common fields) on related tables.
* Set field properties.
* The field size determines the amount of space a field uses in a database.
* Design view is used to create and modify the table structure.
* Datasheet view is used to add, edit, and delete records.
* **Teaching Tips:** Field names can be 64 characters in length, including letters, numbers, and spaces.
* **Teaching Tips:** Field names cannot begin with a leading zero.
* **Teaching Tips:** Field properties define the characteristics of a field.
* **Teaching Tips:** Access does not require a primary key for each table.
* **Teaching Tips:** If a field name is cut off in Datasheet view, widen the column to display the entire name.
* **Teaching Tips:** When in Design view, use the F6 function key to toggle to the field properties for the selected field.

### Multiple-Table Databases

In this section, students will learn how to import data from Excel and Access to populate a database. Students also will learn to modify tables, create indexes, create relationships between tables, and enforce referential integrity.

#### Importing Data from External Sources

* Data from Excel spreadsheets, other Access databases, and text files, such as .csv (comma delimited text files) can be sources for importing data to Access.
* To use an outside source without importing the data into Access, link to it from within your database.
* When Excel worksheets are imported into Access, the column headings will be field names in the Access Table.
* Tables, queries, forms, reports, pages, macros, and modules from other Access databases can be imported into your database.
* Modifications may be required for imported tables using Design view to modify data types, field sizes, and other properties.
* **Teaching Tips:** After a table is imported and modified to work well with your database, use the Datasheet view to add new data or modify existing records.

#### Establishing Table Relationships

* Establishing table relationships provides the benefit of combining data from related tables to create queries, forms, and reports.
* Referential integrity preserves relationships between tables when records are added, deleted, or changed.
* If referential integrity is enforced, a value must exist in the primary key field of the primary table before it can be entered as a foreign key value in a related table.
* When you select the Cascade Update Related Fields and Cascade Delete Related Records options, Access updates automatically when a record containing the primary key value is added or deleted. This can cause data to be lost.
* A one-to-many relationships means the primary key value in the primary table matches many of the foreign key values in a related table.
* The Relationships window uses join lines to show which fields are related in a relationship.
* **Teaching Tips:** When referential integrity is set between tables, common fields must have the same data type.
* **Teaching Tips:** Be careful changing data types, since data can be lost.

### Single-Table Queries

In this section, students will learn to use the Simple Query Wizard and Query Design view to create queries from one table.

#### Creating a Single-Table Query

* A query questions a database about the data stored inside and provides answers to the questions by creating subsets or summaries of data in a datasheet.
* Queries can be copy, modified, and exported to other databases.
* Queries update automatically as data changes in the underlying database tables and can be based on a single table or multiple tables.
* Changes made in the query subset are reflected in the underlying table the query is based upon.
* Changes made in tables are automatically mirrored in queries based on those tables.
* A Select query limits output to a specific value or subset from the original table data.
* **Teaching Tips:** When creating a query, start by identifying the table that contains the data you need.
* **Teaching Tips:** You can add, modify, or delete records from a Datasheet view of a query.
* **Teaching Tips:** In Query Design view, the Criteria row is used to set the rules that control which records will be selected.
* **Teaching Tips:** If a query doesn’t provide the expected results, you can return to Design view, make changes, and run the query again.

#### Using the Query Wizard

* The Simple Query Wizard is a step-by-step process that guides users through query design.
* The wizard allows you to select a table or query, select necessary fields, choose between a detail or summary query, and name the query.

#### Specifying Query Criteria

* Criteria limit (or filter) the records to display only those required in the query results.
* Delimiters, special characters that surround a criterion’s value, may be required based on the field’s data type. Text requires quotation marks and dates require pound sign (#) delimiters.
* Wildcards, special characters that represent one or more characters in a text value, can be used in the Criteria row of a query.
* Comparison operators (=,<>,>,<,>=,>=) can be used in query criteria to limit the results to only records that meet the criteria, such as students aged 18 years or higher (>=18).
* The BETWEEN operator specified inclusive values in a range, such as BETWEEN 12 AND 15.
* Null is the term Access used for a blank field. Not Null is the term for a populated field.
* The AND condition or logical operator is used to display results that meet all specified criteria.
* The OR condition (logical operator) is used to display results that meet only one of the specified criteria. The NOT logical operator displays all results that do not meet the criteria.
* **Teaching Tips:** Discuss errors that are common in creating queries.
* **Teaching Tips:** Discuss the wildcard characters and how they are used (\*,?,[], [!]).

#### Specifying Query Sort Order and Running a Query

* The order of records in a query’s Datasheet view is determined by the query sort order.
* It may be necessary to rearrange files or add and delete columns in the query design grid to modify sort order.
* **Teaching Tips:** Save the query before running it.
* **Teaching Tips:** Demonstrate different ways to run a query.

#### Copying and Modifying a Query

* If you need the same tables in fields in a new query, duplicate a current query to save time.
* Give the duplicate query a new name and modify the criteria to give the correct results.

### Multitable Queries

In this section, students will learn different ways to create and modify multitable queries.

#### Creating a Multitable Query

* To create a multitable query, the tables must have a relationship.
* Multitable queries can be created by adding additional tables and fields to an existing query, copying an existing query and modifying it, and creating it from scratch using the Query Wizard or the Query Design tool.
* **Teaching Tips:** Verify relationships between tables before creating the query.
* **Teaching Tips:** Print the Relationship Report for easy reference while creating a multitable query.

#### Modifying a Multitable Query

* To modify a multitable query use the same methods that you used for single-table queries.
* When tables are not related, temporary join lines can be established for a query. However, permanent join lines, or relationships, are preferred.
* If two tables do not have a relationship, but both have a relationship with a third table, add the third table to the query design.
* In Design view, add a Total row to summarize values in the query.
* **Teaching Tips:** Relationships between tables are inherited from the database.
* **Teaching Tips:** Explain the Total row functions, such as Sum, Average, and Count.

## OBJECTIVE TESTS IN MYITLAB

To find an objective test to help your students practice for tests, have them sign in to MyITLab:   
[www.myitlab.com](http://www.myitlab.com).

## ADDITIONAL WEB RESOURCES

1. Create a Access Desktop Database: <https://support.office.com/en-us/article/video-create-an-access-desktop-database-1446ab07-b54a-4b8a-b38e-63bb5db8f9da?ui=en-US&rs=en-US&ad=US>
2. Build Tables and Set Data Types: <https://support.office.com/en-us/article/video-build-tables-and-set-data-types-997c250d-aec6-4430-8de5-a08671e13921?wt.mc_id=otc_access>
3. Build Tables with Table Designer: [https://support.office.com/en-us/article/video-build-tables-with-the-table-designer-ac5a2bfb-4537-469c-8580-50eb24053383?ocmsassetID=ac5a2bfb-4537-469c-8580-50eb24053383&ui=en-US&rs=en-US&ad=US](%20https:/support.office.com/en-us/article/video-build-tables-with-the-table-designer-ac5a2bfb-4537-469c-8580-50eb24053383?ocmsassetID=ac5a2bfb-4537-469c-8580-50eb24053383&ui=en-US&rs=en-US&ad=US)
4. Get Started with Table Relationships: <https://support.office.com/en-us/article/video-get-started-with-table-relationships-728d53ff-f332-4ac6-9382-574ee271500a?wt.mc_id=otc_access>
5. Copy Data from Excel: <https://support.office.com/en-us/article/video-copy-data-from-excel-b0bee2b9-e721-4332-869d-51fc9180f411?wt.mc_id=otc_access>
6. Get Started with Queries: <https://support.office.com/en-us/article/video-get-started-with-queries-07e75b65-5eda-414f-b822-ea4e7aaf1ccb?wt.mc_id=otc_access>

## PROJECTS AND EXERCISES

|  |  |  |
| --- | --- | --- |
|  | **Data file** | **Save As** |
| Hands-On Exercise 1 | Blank Database | a02h1Bank\_LastFirst.accdb |
| Hands-On Exercise 2 | a02h1Bank\_LastFirst.accdb a02h2Accounts.accdb | a02h2Bank\_LastFirst.accdb |
| Hands-On Exercise 3 | a02h2Bank\_LastFirst | a02h3Bank\_LastFirst.accdb |
| Hands-On Exercise 4 | a02h3Bank\_LastFirst.accdb | a02h4Bank\_LastFirst.accdb |
| Practice Exercise 1 | Blank Database | a02p1Books\_LastFirst.accdb |
| Practice Exercise 2 | a02p2Insurance.accdb a02p2Employees.accdb | a02p2Insurance\_LastFirst.accdb |
| Mid-Level Exercise 1 | a02m1Games.accdb | a02m1Games\_LastFirst.accdb |
| Mid-Level Exercise 2 | a02m2Hotel.accdb a02m2Location.xlsx | a02m2Hotel\_LastFirst.accdb |
| BYC General | a02r1NCCTS.accdb | a02r1NCCTS\_LastFirst.accdb |
| BYC Disaster Recovery | a02d1Traders.accdb | a02d1Traders\_LastFirst.accdb |
| Capstone | a02c1Foodies.accdb a02c1Products.xlsx a02c1Suppliers.xlsx | a02c1Suppliers\_LastFirst.accdb |

## CHAPTER REVIEW/ANSWERS TO END OF CHAPTER MATERIAL

### Key Terms Matching Answer Key

1. Connects two tables together by their common field in the Relationships window.

**m. Join line**

2. The unnecessary storing of duplicate data in two or more tables.

**h. Data redundancy**

3. Determines the type of data that can be entered and the operations that can be performed on that data.

**i. Data type**

4. A number that automatically increments each time a record is added.

**b. AutoNumber**

5. A field in one table that is also the primary key of another table.

**k. Foreign key**

6. Characteristic of a field that determines how it looks and behaves.

**j. Field property**

7. Used to create a more understandable label than a field name label that displays in the top row in Datasheet view and in forms and reports.

**c. Caption property**

8. Checks the data for allowable value when the user exits the field.

**s. Validation rule**

9. Simplifies data entry by providing literal characters that are typed for every entry.

**l. Input mask**

10. Rules in a database that are used to preserve relationships between tables when records are changed.

**q. Referential integrity**

11. An option that directs Access to automatically update all foreign key values in a related table when the primary key value is modified in a primary table.

**e. Cascade Update Related Fields**

12. When the primary key value is deleted in a primary table, Access will automatically delete all foreign key values in a related table.

**d. Cascade Delete Related Records**

13. When the primary key value in the primary table can match many of the foreign key values in the related table.

**n. One-to-many relationship**

14. Enables you to ask questions about the data stored in a database and provides answers to the questions in a datasheet.

**p. Query**

15. A row in the Query Design grid that determines which records will be selected.

**g. Criteria row**

16. Provides a step-by-step guide to help you through the query design process.

**r. Simple Query Wizard**

17. Special character that can represent one or more characters in the criterion of a query.

**t. Wildcard**

18. Uses greater than (>), less than (<), greater than or equal to (>=), and less than or equal to (<=), etc. to limit query results that meet these criteria.

**f. Comparison operator**

19. Returns only records that meet all criteria.

**a. AND condition**

20. Returns records meeting any of the specified criteria.

**o. OR condition**

### Multiple Choice Answer Key

1. All of the following are suggested guidelines for table design *except*:

**c. avoid date arithmetic.**

2. Which of the following determines the amount of space a field uses in the database?

**a. Field size**

3. When entering, deleting, or editing data:

**b. the table must be in Datasheet view**.

4. With respect to importing data into Access, which of the following statements is *true*?

**c. You can assign a primary key while you are importing Excel data.**

5. The main reason to set a validation rule in Access is to:

**a. limit the entry of incorrect values in a table.**

6. An illustration of a one-to-many relationship would be:

**b. a customer may have more than one account in an accounts table.**

7. A query’s specifications as to which records to include must be entered on the:

**d. Criteria row of the query design grid.**

8. When adding date criteria to the Query Design view, the dates you enter will be delimited by:

**b. pound signs (#).**

9. It is more efficient to make a copy of an existing query rather than to create a new query when which of the following is *true*?

**b. The existing query and the new query use the same tables and fields.**

10. Which of the following is *true* for the Query Wizard?

**a. No criteria can be added as you step through the Wizard.**

### Quick Concept Check Answer Key

1. **Explain why it is important to “Plan for common fields” when designing database tables.**

Common fields will enable you to create relationships in the database. Setting relationships will help you to extract data from more than one table when creating queries, forms, and reports.

1. **Consider why it is important to set a primary key in a table.**

When designing your database tables, it is important to determine the primary key because this is the field whose values will uniquely identify each record in a table. For example, in a Customers table, the CustomerID field will uniquely identify each customer in the database. The primary key enables you to join the table to a related table via a common field and is indexed for faster data retrieval.

1. **Discuss how the Validation Rule field property helps to control data entry and why that is important.**

The Validation Rule property restricts data entry in a field to ensure that correct data are entered. The validation rule checks the data entered when the user exits the field. If the value entered violates the validation rule, an error message displays and prevents the invalid data from being entered into the field. For example, you can set a validation rule that prevents users from entering invalid dates or values outside of a specific range.

1. **Describe a scenario that may require you to import an Access table into your database.**

If there is an object in an external database (such as a table) that contains valuable data or suits another purpose in your application, there is no need to recreate it entirely. You can import an existing table’s design only or a table with usable data into your database. A common scenario would be a Customers table that exists in a different database that contains data that is applicable to yours.

1. **Discuss the purpose of enforcing referential integrity between two tables.**

Referential integrity helps to guarantee consistency between related tables by enforcing rules in a database that are used to preserve relationships between tables when records are added, deleted, or changed. The purpose is to disallow a value in a related table that does not exist in a primary table; for example, entering an account for a customer who does not exist in the Customers table.

1. **Explain why you would you use the Cascade Update option when setting a relationship.**

You would use the Cascade Update Related Fields option so that when the primary key value is modified in a primary table, Access will automatically update all foreign key values in a related table. For example, if you change a CustomerID value in a Customers table, it will automatically update to his/her related accounts or orders or any other related table.

1. **Describe two database tables that you might design that would contain a one-to-many relationship.**

A bank customer’s personal information is entered into a Customers table one time. The same customer could set up multiple accounts that would be recorded in the Accounts table (i.e., checking, savings, and credit card). The CustomerID would display one time in the Customers table and three times in the Accounts table. Therefore, the relationship between Customers and Accounts would be described as one-to-many.

1. **Compare why you would create a single-table query as opposed to filtering a table.**

A single table query enables you to ask questions about the data stored in a single database table. An example of a query would be to display the accounts with a balance of $5,000 or greater. A query can be saved as a named, permanent object in your database, modified, copied, exported, etc. A table that has been filtered is a temporary view of the datasheet.

1. **Discuss an example of how to use a comparison operator to find certain records in a table.**

Comparison operators enable you to limit the query results to only those records that meet the criteria. For example, if you only want to find accounts that have a balance greater than $5,000, you can limit results by entering >5000 in the Criteria row of the Balance field.

1. **Examine how you would use an AND condition in a query.**

To create an AND condition, you can specify two or more criteria in different fields in the same Criteria row. The query results will display only records that match all criteria. When the criteria are in the same row of the query design grid, Access interprets this as an AND condition. For example, a Customer who uses the “Campus” branch AND has a balance greater than $5,000.

1. **Discuss why you would want to copy an existing query.**

You can create a duplicate copy of an existing query to use as the basis for creating a similar query. Rather than starting from scratch, duplicating a query saves time when you need the same tables and fields but with slightly different criteria. A query that displays account balances >5000 can be copied and modified to display balances <=5000 with a minor change to the criterion.

1. **Discuss the advantage of creating a multitable query.**

Multitable queries contain two or more tables and enable you to take advantage of the relationships that have been established in your database. When you extract information from a database with a query, often you will need to pull data from multiple tables. One table may contain the core information that you want, while another table may contain the related data that make the query provide the complete results. The advantage is that data can be stored in separate tables but pulled together to create meaningful information.

1. **Explain a situation where you would use a Total row in a query.**

The Total row enables you to summarize records by using functions such as Sum, Average, Count, etc. You could group accounts together by their branch name and count the number of customers in each branch.

1. **Consider what happens when you create a query with tables that have no common field.**

Access will return every record from both tables rather than limiting the results to only records where there are matching values. The results of the query will be unpredictable and contain many more records than expected.