Microsoft

Course Orientation

40572A
Microsoft Access expert 2019
Student version

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Contents

Microsoft

Microsoft

Microsoft

Microsoft

Microsoft

Microsoft

Microsoft

Microsoft

Microsoft

Microsoft

Student Guide

40572A
Microsoft Access expert 2019

Module 1: Introduction to databases and Microsoft Access

Contents

Microsoft

Module overview

Description

Database concepts are all around you and you probably don't notice them until you analyze your surroundings. For example, when you consider a store, a school, or a restaurant, someone there is probably working with a database. Users typically work with databases on computers to store and work with data, request information from data, and process outputs from that data. A database is an information warehouse that includes a digital structure of tables containing records, which is similar to a traditional warehouse that has aisles and shelves that organize products.

An example that helps you relate the two concepts is that of a supermarket. A supermarket selling cereal needs to know how many boxes of cereal are available, prior to making their next order request. If they request and process a *query*, which is a question about the data, then that query will provide results that inform store personnel about the number of boxes on the shelves. This module builds your foundational knowledge and understanding of the uses of a database. You'll learn about the Microsoft Access 2019 environment, database organization, data sources, and the basics of designing a database.

The following table outlines the lessons in this module and their corresponding Microsoft Office Specialist (MOS) exam objectives.

Lesson	Learning objective	MOS exam objective(s)
Overview of databases	Understand the purpose of a database, define database terms, and explore data sources	None
Designing databases	Understand database design principles and plan tables	None
Understanding Access basics	Identify the parts of the Access interface and the items in an Access file, hide and display objects in the **Navigation Pane**, and open tables, queries, forms, and reports	1.1.3

Lesson	Learning objective	MOS exam objective(s)
Cornerstone: Evaluate the design of an Access database, and identify database and Access elements	Assess a database for its design and identify database components and their purpose and function	1.1.3

Table 1: The objectives by lesson

Scenario

The Community Supported Agriculture (CSA) program at Munson's Pickles and Preserves Farm is exploding in popularity. With the growth of the program, there's also an increase in information and the number of tasks that the CSA team needs to manage. One of these tasks is to ensure that members' contact information and preferences are kept current, especially with details such as allergy information. Some other tasks include efficiently and correctly filling boxes to match member orders, and tracking which produce is available for each farm box. You and the CSA team recognize that Munson's is still running the program operations the same way they always have, when the program was much smaller. There are paper checklists and calendars, lists in Excel spreadsheets, index cards, and other information is scattered on everyone's desks. This makes the planning and running of the CSA program very labor-intensive and prone to mistakes.

With the Munson's plan to use Access databases for managing data, you realize it would be useful for the CSA team to have an Access database to streamline the many tasks. From your time as an intern with the harvesting team at Munson's, you recall that they had an Access database to track the harvesting data. You plan to connect with the harvesting team to review how they initially planned their database, how they use it, and what they've learned along the way that can help you. But before you talk with the harvesting team, you'll need to understand some of the basics about databases and Access.

Cornerstone

This module concludes with a Cornerstone project, in which you'll apply the concepts you learned in this module to assess a database for use of good design. You'll also identify database components, and their purpose and function. In addition, you'll use database features to demonstrate your knowledge of the Microsoft Access interface and workflow.

Lesson 1: Overview of databases

Overview

In this lesson, you'll learn the basics about using and organizing a database. Gaining this knowledge will enhance your ability to perform simple data management tasks before you move on to complex and multiple-table operations later in the course. Building this skill set will help you make informed decisions and become aware of certain anomalies within the data for Munson's Pickles and Preserves Farm.

Warm-up

Use these questions to find out what you already know about this lesson's topics:

1. Which of the following are types of databases?

   Select all that apply.

   a. Field

   b. Relational

   c. Queries

   d. Flat

2. _____ is the process of applying rules to a database design to check for correct table structure.

   Fill in the blank space.

3. A relational database:

   Select all that apply.

   a. Can join tables to make a connection.

   b. Provides meaningful information.

   c. Stores data in rows inside tables.

   d. Stores data without a structured table.

4. Microsoft Access is used to manage _____ databases.

   Fill in the blank space.

Topic 1: Understand the purpose of a database

Think about some of the uses of data in your life. When you last arrived at school and checked into your class, that instance created a data transaction. Your teachers might analyze the correlation between your attendance record and the degree of your academic success. That analysis accompanies a story, which is typically, "Students who attend school regularly are more successful academically."

Think about the last time you purchased a beverage from a machine. That was a data transaction. If you purchased a specific flavor, you're providing information to the person who owns that vending machine. This information tells that person that you and those who purchase from the vending machine prefer certain beverages over the others. Simple decisions follow that data analysis: provide what the consumers want.

At Munson's, think about all the orders that everyone is filling manually, by using cards, notes, paper invoices, and phone calls. All of this is considered data; however, storing and maintaining data in this manner makes you prone to mistakes. It also leads to a failure to recognize and respond to trends and reduces the ability to meet customer requirements. Establishing a database with a designed protocol of entering names, orders, addresses, delivery frequency, preferences of produce, and billing information is crucial to Munson's growth and future success. This will empower Munson's to prepare, communicate, and serve their customers in an efficient manner.

Additional information

For more information on the purpose and use of databases, refer to: [What is a database?](#)
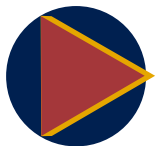
Video

To review the video on database concepts, refer to: [Organizing with databases](#)
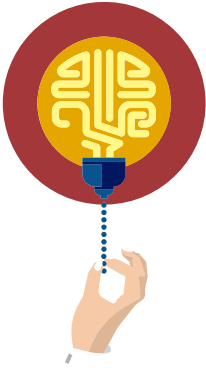
Did you know?

Prior to 1960, database systems were developed for the use of public organizations such as hospitals, libraries, and governmental agencies. Some of their concepts are still considered and used within current systems.

What is a database?

A database is a collection of organized information that provides efficient retrieval of data. Databases often begin as a list of items that are relevant. As that list grows to a second list with relevant data, you might find redundancies. Organizing such lists is helpful and aids in the process of adding a retrieval mechanism without inconsistencies or redundancies. A database management system (DBMS) facilitates the organization of information for quick and efficient retrieval of data.

Why do you need databases?

A database allows users to efficiently store and retrieve large volumes of information. After establishing the structure of the database, users can continue to add items to their tables. They can also remove data; for example, they can remove the details of previous customers or discontinued products. A database helps users review information from different perspectives within a company and share discoveries easily to promote better decision-making.
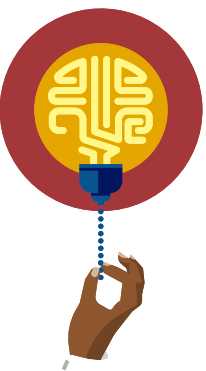
Did you know?

One of the benefits of the digital transformation age is the widespread availability of data to the general public. The internet can give you access to databases with all kinds of intriguing information to explore. Examples include pop culture and entertainment data such as movies and music, family and genealogy data including historical records and DNA tracing, scientific information for everything from astronomy to zoology, and even a database that is an archive of the internet itself!

Caution

This course uses database files that follow a general storyline for the CSA program at Munson's Pickles and Preserves Farm. These database files are the Learning Activity Resource files that you'll use to work on each module's activities and try-its. Each Learning Activity Resource file contains the data and objects, such as tables, queries, forms, and reports, that you need to complete a corresponding activity.

Due to this course's modular nature, the objects and data in these files might vary across activities or try-its. Therefore, it's important that you start your activities or try-its only with the designated files, as per applicable instructions. You also should note that screenshots in the topic content are for illustration purposes only and might appear different than those that are in the Learning Activity Resource files.

Activity: Think-pair-share

In this activity, the teacher will play the video on database concepts, Organizing with databases. After reviewing the video, pair up with a classmate and begin identifying objects around you and your life that could form datasets for potential databases. Then, share your findings with another pair of classmates or with the entire class.

Resources required

- None

Activity instructions

Participate in the activity by following these instructions:

1. Find a classmate to discuss possible databases that are part of your everyday lives.

2. Share your responses with the teacher to check if there are similarities or redirections.

3. Participate in further discussions with other classmates on their descriptions of databases.

Try-it: Understand the purpose of a database

Gaining a foundational knowledge of a database will enhance your ability to use data to influence your decisions. In this standalone try-it activity, you'll identify objects around you that could form datasets for potential databases.

Resources

You'll need the following resources for this try-it:

- None

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Review the lists in the following table.

Object	Properties
School	- Grades - Courses - Teachers - Class periods - Students - Attendance - Graduation years - Classroom locations - Required courses/elective courses
Clothes	- Types of clothing - Sizes - Colors - Availability/in stock
Music	- Artists - Genres - Durations - Albums - Release dates - Composers

Object	Properties
Vehicles	• Makes • Models • Years • Colors • Trims • Extra features
Frozen desserts	• Type • Add-ins • Cone types • Size

Table 2: Datasets

2. Identify the list that is most familiar to you.

3. With the list you selected, consider why and how a database with this information might be important and the ways in which you can use it. Make note of your ideas.

4. Be ready to share your ideas with the class about the purpose of a database for your selected list.

Topic 2: Define database terms

You want to identify Munson's least popular vegetable. You're aware of the database, but don't know what term you should use to discover the answer to your question, "Which vegetable gets the least number of orders?" In this topic, you'll define key terms and identify some features connected to each term. All of these terms are also in the module glossary.

Common terms around databases

In its most basic definition, a *database* is a collection of information organized to provide efficient retrieval and use of data. Databases often begin as a list of items that have similar pieces of information and might even be non-computerized; for example, because they're handwritten on paper. A single list, also known as a *flat database*, includes all the information about each item in a *record*, and is usually presented in a single row. Each piece of information, or *value*, is stored in a *field*, and is usually presented as a column. This layout of information is also commonly referred to as a *table*. A table has many similarities to a spreadsheet. Refer to the following screenshot

for an example of a table named **tblCropHarvesting** with records (rows) and fields (columns) in Access:

HarvestID	HarvestDate	HarvesterFirs	HarvesterLast	Crop
1	1/30/2020	Marcos	Serna	Apples
2	1/30/2020	Danielle	Gousse	Beans
3	1/30/2020	Fernando	Vasquez	Honey
4	1/30/2020	Hilary	Brennan	Tomatoes
6	1/30/2020	Fen	Long	Strawberries
7	1/31/2020	Danielle	Gousse	Apples
8	1/31/2020	Marcos	Serna	Beans
9	1/31/2020	Fen	Long	Apples

Figure 1: An example of a table with records (rows) and fields (columns) in Access

To review the records and fields in **tblCropHarvesting** in table format, refer to the following table.

HarvestID	HarvestDate	HarvesterFirstName	HarvesterLastName	Crop
1	1/30/2020	Marcos	Serna	Apples
2	1/30/2020	Danielle	Gousse	Beans
3	1/30/2020	Fernando	Vasquez	Honey
4	1/30/2020	Hilary	Brennan	Tomatoes
6	1/30/2020	Fen	Long	Strawberries
7	1/31/2020	Danielle	Gousse	Apples
8	1/31/2020	Marcos	Serna	Beans
9	1/31/2020	Fen	Long	Apples

*Table 3: The records and fields in **tblCropHarvesting***

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For example, you might start a list to keep track of the farm boxes the members of Munson's CSA program purchase. At first, it might be a simple list such as the one in the following table.

Member Name	Member Phone	Purchase Date	Farm Box Purchased	Farm Box Contents
Akia Kassis	555-0101	2/1/2020	Large	Tomatoes, apples, beans, strawberries
Alain Margand	555-0199	2/1/2020	Medium	Beans, apples, tomatoes

Table 4: A simple list of farm box purchases by members

As a list grows in either the number of records or the number of fields, or both, it can become more difficult to manage, because redundancies and inconsistencies might start to appear. Even if you computerize a list, adding and editing it can become labor-intensive, and finding data can be challenging and limited in options. In the previous table, imagine entering the information for numerous purchases on the same day. This would be repetitive, inefficient, and highly prone to errors. It would also be difficult to retrieve answers from the list. For example, consider the following scenarios:

- How many times would you need to enter the word "medium" or the word "tomatoes" and what are the chances you'd misspell them at least once?
- How would you sort the list by customer last name alphabetically?
- How would you count how many customers purchased apples?

When a list becomes difficult to manage because of its large size, it's a good idea to transfer or convert the data into a *relational database*. In a relational database, the information is divided into separate, subject-based tables. You can then form relationships between the tables, based on shared key fields that bring the information together as needed when you're retrieving data.
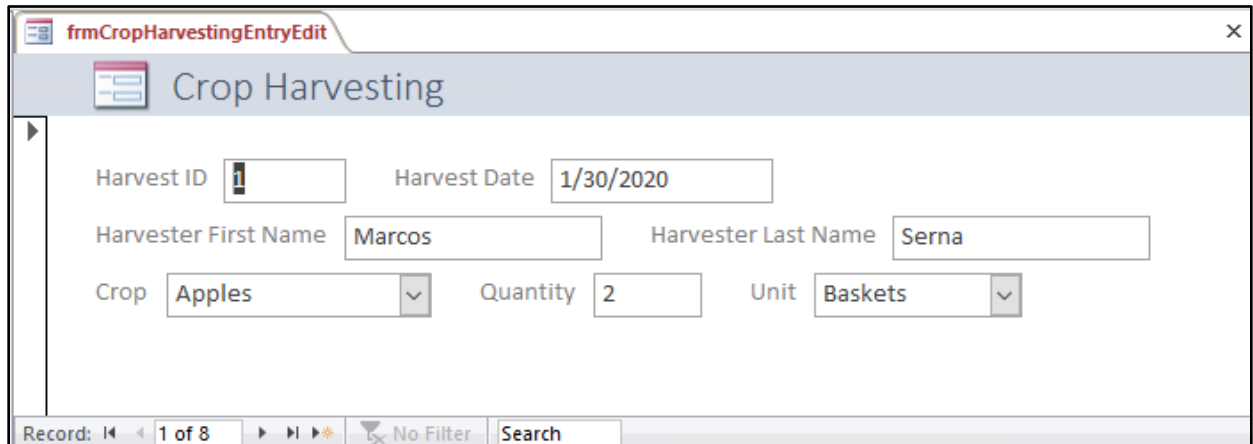
Later modules will cover in more detail the practice of adding specific information to tables. For now, think of a table that contains only the data about the members. Each member record could contain values in the fields for first name, last name, address, phone, email, and other specific information that pertains to that member. In another table, you could store data in records for each farm box that's available. This could be in fields for farm box name, size, or contents, and include quantities of each fruit and vegetable, and other relevant information. Each table would only store information about its own items; for example, you wouldn't put any farm box information in the table containing members.

The previous topic introduced you to the term, database management system (DBMS). A DBMS is used to manipulate, retrieve, and manage data within the database structure. When you create a table, the DBMS identifies the data within the table and submits it to the rules within the database when running other transactions. The term *Relational Database Management System (RDBMS)*, is simply the more specific term for a program or application that relational databases use. Access is both a DBMS and an RDBMS and has parts within it that are governed by those rules.

In a DBMS such as Access, a database file is technically a container of objects, or components, that are used to store, add, edit, find, present, and otherwise manage the data inside a database. Tables that store data are one type of object. The other types of objects are as follows:

- Queries. To help you ask questions of data, queries have a common function to retrieve specific data from one or more tables within the database to provide the answers. When data is spread across multiple tables, a query returns related data from each table that the user requests by following the relationships between the tables. Query results are presented in **Datasheet** view, similar to the usual view of a database table. Using queries can provide excellent detail for actionable items. For example, Munson's could find them especially useful when setting up delivery routes and harvesting schedules, identifying members who match certain criteria, summarizing produce quantities, and performing other useful tasks.

- Forms. Entering data in a table's **Datasheet** view with one horizontal row for each record is usually not the easiest method. For an interface that is user-friendly and controllable when entering data, you can create forms. Most database users prefer to use forms for reviewing, entering, and editing data in the tables. Forms can have names that are specific to the data that is being entered and edited, such as "Members Form". You can also design forms to provide more guidance to the user to help them enter data correctly. Refer to the following screenshot for an example of an Access form for data entry:

Figure 2: Example of an Access form for data entry

- Reports. You can use a report to present a summary of the data that might or might not include the detailed records. When you're generating a report, you can retrieve data from one or more tables. Typically, you can do this by basing a report on a query. You can then configure the report to present the data in an easy-to-use format and include design elements such as borders, colors, graphic objects, and page numbering. Refer to the following screenshot for an example of an Access report:

Crop Harvesting Report

Crop	Harvest Date	Harvester Name	Quantity	Unit
Apples	1/30/2020	Marcos Serna	2	Basket
	1/31/2020	Danielle Gousse	1.5	Basket
	1/31/2020	Fen Long	2.5	Basket
		Total Quantity	6	
Beans	1/30/2020	Danielle Gousse	1	Bushel
	1/31/2020	Marcos Serna	2	Bushel
		Total Quantity	3	
Honey	1/30/2020	Fernando Vasquez	3	Pint
		Total Quantity	3	
Strawberries	1/30/2020	Fen Long	3	Pint
		Total Quantity	3	
Tomatoes	1/30/2020	Hilary Brennan	2.5	Bucket
		Total Quantity	2.5	

Figure 3: An example of an Access report

- Macros. You can create macros with a simplified programming tool to add functionality to your database; for example, to automate tasks. Macros are an advanced topic outside the scope of this course.
- Modules. Similar to macros, modules add functionality to your database. You can create modules in Visual Basic Applications (VBA) programming language. A module is a collection of procedures, statements, and declarations that are stored together as a unit. Modules are an advanced topic outside the scope of this course.

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Additional information

For more information on database objects, refer to: [The parts of an Access database](#)

Video

To review the video on getting started with databases, refer to: [Get started with databases](#)

Activity: Terminology matching

In this activity, you'll work with a classmate to determine your familiarity with the database terms.

Resources required

- Module 1 Glossary

Activity instructions

Think about the new terms you've learned, and how they play a role within a database. Making connections between the terms will support your continued learning throughout the remaining modules.

Participate in the activity by following these instructions:

1. Partner with a classmate.

2. Take turns stating a term or a definition. Ask your partner to match the term to the definition or the definition to the term.

3. Switch partners and repeat one additional practice each. Share and discuss the terms that still seem misunderstood.

Try-it: Define database terms

Gaining a foundational knowledge of a database begins with knowing and properly identifying concepts within the database environment. In this try-it activity, you'll identify terms within databases in association with the lists in the following table. You might need to work with a partner to check if you both correctly identify the use of the terms with a selected list.

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Resources

You'll need the following resources for this try-it:

- None

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Review the lists in the following table.

Object	Properties
School	- Grades - Courses - Teachers - Class periods - Students - Attendance - Graduation years - Classroom locations - Required courses/elective courses
Clothes	- Types of clothing - Sizes - Colors - Availability/in stock
Music	- Artists - Genres - Durations - Albums - Release dates - Composers
Vehicles	- Makes - Models - Years - Colors - Trims - Extra features

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Object	Properties
Frozen desserts	- Type - Add-ins - Cone types - Size

Table 5: Datasets

2. Identify which of the lists is most familiar to you.

3. Incorporating the terminology included within this topic, create a structure, or suggest where the items in the list and any related information would belong within a database. Consider the following terms:

    o   Field

    o   Value

    o   Record

    o   Table

4. Share your list and matching terms with a partner to examine similarities.

5. Be prepared to share results with the class and also to explain your rationale.

Topic 3: Explore data sources

Data comes in many different forms. Think of all the pieces of data that influence your life directly or indirectly, such as phone contact lists, music playlists, a soccer game, or a ballet performance. Data, when you're aware of it, can cause humans to evaluate circumstances and behavior and possibly make changes. For example, pedometers are part of many devices that keep track of the steps you take throughout the day. The data that a person's pedometer records might inspire that person to take more steps each day. What type of data is Munson's currently collecting? How is the data collected and stored? What changes in data collection can Munson's make to improve their services?

What are data sources?

In Access, you input data in a digital environment. However, the method to collect the data prior to input might be different. Munson's might count bushels of a produce during a certain harvesting activity. The process of getting that data into Access evolves from the person counting, to recording the counts in a paper notepad, to inputting data in a Microsoft Excel spreadsheet, and then inputting or importing that data into Access.

You can also collect and track data through community sources. Community sources provide data about things like weather, illnesses, and population, and all these items could play a role in a farm like Munson's. Being aware of the data you want to collect and how that data will influence your decisions is a critical part of designing your database. There are many ways to collect data and the data sources for Munson's have mostly remained the same, but they might require some initial testing.

For example, in a database for a restaurant, you might have the following existing and potential data sources and database input methods.

Subject	Existing data sources	Potential data sources
Employees	• Job application form (paper, manual data entry) • New employee forms (paper, manual data entry)	• Employee online portal for self-entry (import into database)
Food products	• Food items on the shelves (paper, manual data entry) • Handwritten inventory list (paper, manual data entry) • Excel spreadsheets (import into database)	• Downloaded data from supplier websites of available products (import into database)
Customers	• Reservation book (paper, manual data entry) • Completed customer satisfaction cards (paper, manual data entry)	• Loyalty program membership forms (paper or on website, manual data entry or import into database)

Table 6: Possible data sources for a restaurant
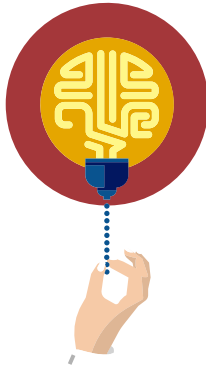
Did you know?

Data collection has been happening for centuries. Some of the most prolific data sources include history in story form, poems, birth records, and immigration documents. Many of these records are added to databases to track human movement throughout the ages.

A recently popular data source has been that of DNA testing, which involves the collection of samples of DNA (perhaps through saliva). To link people to where their ancestors originated, DNA testing maps their DNA strands back to where the most prominent levels of that strand were found.

Activity: Discuss and learn

In this activity, follow along as the teacher leads a discussion about where and how data has been collected. What sources are you aware of that have not yet been mentioned?

Resources required

- None

Activity instructions

Think about the new discoveries that are being made daily. Here's an example that might inspire you. In recent years, scientists have begun to use mosquitoes as data collection agents, turning them into allies, to potentially prevent outbreaks of diseases. Describe what data they might source for this and how they collected it. Use this example as a foundation for other ideas that your classmates or teacher might introduce.

Participate in the activity by following these instructions:

1. Observe your teacher's description of a data source that is intriguing.

2. Partner with a classmate and begin to discuss other methods of collecting data and through what means you can source the data.

3. With your partner, collaborate by thinking of at least two additional innovations where data is collected to improve your local community.

4. Participate in the discussion by sharing what you and your partner have observed.

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Try-it: Explore data sources

Gaining a foundational knowledge of data entry and collection within a database can be helpful when you're designing a database or performing database management tasks. In this try-it, you'll recognize and identify existing or potential data sources, including how the data could be collected and prepared for entry into the database.

Resources

You'll need the following resources for this try-it:

- None

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Review the lists in the following table.

Object	Properties
School	- Grades - Courses - Teachers - Class periods - Students - Attendance - Graduation years - Classroom Locations - Required courses/elective courses
Clothes	- Types of clothing - Sizes - Colors - Availability/in stock
Music	- Artists - Genres - Durations - Albums - Release dates - Composers

Object	Properties
Vehicles	- Makes - Models - Years - Colors - Trims - Extra features
Frozen desserts	- Type - Add-ins - Cone types - Size

Table 7: Datasets

2. Choose one of the lists most familiar to you.

3. With your selected list, make a list of possible existing and potential sources for the data in that list.

4. For each data source in your list, identify and add how you might add that data to a database.

5. Be prepared to share your list with the class and explain your rationale.

Wrap-up

Use these questions to check what you learned in this lesson:

1. What is a database?

   Select the correct option.

   a. A collection of information stored for effective retrieval

   b. A table of values used to test formulas

   c. A contact list that allows easy integration to social media

   d. A computer program to create spreadsheets

2. In a database, list data is stored in a _____ and arranged in rows and columns.

   Fill in the blank space.

3. Each row in a list contains information for one list item and is referred to as a
   _____.

   Fill in the blank space.

4. Pieces of information about each list item are stored in _____
   which are arranged in columns.

   Fill in the blank space.

5. Data can be found in many forms, which are referred to as data sources. Which of
   the following could potentially be used as data sources?

   Select all that apply.

   a. Index cards containing student information

   b. Labels on products in a store

   c. Computer monitors in an office

   d. A document created in Microsoft Word

Lesson 2: Designing databases

Overview

In this lesson, you'll learn the correct design steps to create an effective database that will serve your data needs. You'll analyze the value of a good database design and how it'll help you assist database owners in making decisions from the data that is displayed. You'll review key items needed when working with tables, queries, forms, and reports. You'll understand the importance of a primary key when setting up a table and also the concept of relationships between tables.

A good database design is important to help ensure a simple user experience to find complex information. Some of the preliminary items to consider when designing a database are:

- Naming conventions (how you name objects such as tables, or fields such as **MemberName**)
- Longevity and scalability (capacity for growth) of your database
- Normalization (organizing the data to maintain data integrity and avoid redundancy of entries)
- Practice of desired outcomes through testing of your database queries

Warm-up

Use these questions to find out what you already know about this lesson's topics:

1. A well-designed database has the following steps completed during the design of the database:

   Select all that apply.

   a. As much data as possible included in the initial table

   b. Information grouped and divided into tables

   c. Primary key fields identified

   d. Table relationships determined

   e. The same information included in multiple tables

2. Storing information in its _____ logical part is useful when retrieving individual facts later.

   Select the correct option.

   a. Smallest

   b. Largest

   c. Valued

   d. Calculated

3. Certain principles guide the database design process. The first principle is that _____ is bad, because it wastes space and increases the likelihood of errors and inconsistencies.

   Select the correct option.

   a. Redundant data

   b. Correctness of information

   c. Completeness of information

   d. Using subject-based tables

4. Good database design recommends:

   Select all that apply.

   a. Subject-based tables with a unique identifier for each record

   b. Use of naming conventions

   c. Multiple tables with repeated data

   d. Applying of normalization rules

   e. Testing or practice of the desired results

Microsoft

Topic 1: Overview of database design guidelines

As with most things that you build, creating and following a good design plan is essential to a successfully completed project. Consider what might happen if you simply start nailing boards together when you want to build a house, rather than preparing a design beforehand. A properly designed database provides you with access to up-to-date, accurate information with the least amount of effort needed to build and maintain it. A good design is essential to achieving your goals in working with a database, so spending the time to learn the principles of good design makes sense. In the end, you're much more likely to end up with a database that meets your needs and can easily accommodate change.

Designing a good database

Certain principles guide the database design process. The first principle is that duplicate information (also called redundant data) is bad, because it wastes space and increases the likelihood of errors and inconsistencies. The second principle is that the correctness and completeness of information is important. If your database contains incorrect information, any reports that pull information from the database will also contain incorrect information. As a result, any decisions you make that are based on those reports will then be misinformed.

Therefore, a good database design is one that:

1. Divides your information into subject-based tables to reduce redundant data.

2. Provides Access with the information it requires to join the information in the tables together as needed.

3. Helps support and ensure the accuracy and integrity of your information.

4. Accommodates your data processing and reporting needs.

The database design process

Any database design should follow a logical series of steps. This helps ensure that you include all the required considerations to enable the best possible outcome with a minimum of backtracking and rework. It's important to note that you need to complete all of these steps in the design phase, before you even open Access. You can do this on paper, whiteboard, or whatever tool you use that allows for easy editing. Ideally, this process also includes input from and collaboration with at least one or more key people who will be using the database. To design your database:

1. Establish your database's purpose and intended uses. This will be the foundation for all your design decisions.

2. Search for, find, and arrange the data that you need. Collect all the types of information you might want to include in your database in their current and potential formats. This might include information such as employee addresses on index cards or in an Excel workbook and categories of produce on signs or labels.

3. Sort the information into tables. Sort your information items into main subjects, such as **Produce** or **Employees**. These subjects will be the basis for the tables in your database.

4. Convert data items into fields. Decide what data belongs in each table, based on the subject of the table. Access will display each field as a column in the table. For example, an **Employees** table might include fields such as **First Name** and **Date of Hire**, and any fields about crops belong in the **Crops** table.

5. Assign primary keys. Each table must have a field (or combination of fields) designated as a primary key, which is the information that uniquely identifies each item in the table, or record. If a primary key doesn't already exist, you can have Access create one for you. **Product ID** and **Order Number** are possible examples of primary keys.

6. Determine the table relationships. Review the tables in your database design and identify how the data in these tables relate to each other. You might have to clarify these relationships by adding fields to your tables or creating new tables, as needed. For example, you might add a **Customer ID** as a field in an **Orders** table to relate each order to a customer in a **Customers** table.

7. Review and polish your design. Analyze your design for errors. It might help to create the tables and add a few records of sample data. Do you get the results you want from your tables? Do you need to adjust the design?

Microsoft

8. Apply data integrity and normalization rules. The basic rules for correct table structure include ensuring that:

    o   Each table contains fields about only one subject.

    o   Fields store the smallest logical piece of information.

    o   Redundancy and repetition don't occur in the data.

    To check for correct table structure, apply the data normalization (normal form) rules. If the tables are not structured correctly, you need to adjust them.

So far in this module, you've been preparing for steps 1 and 2 in this list. In the next topic of this lesson, you'll start steps 3 and 4, which are the basic steps for forming tables. You'll learn more about the remaining steps in later modules.

Additional information

For more information on the database design process, refer to:
Database Design Basics

Activity: K-W-L

In this activity, you'll create a three-column table. In the "K" column, you'll record what you currently know about designing a good database. In the "W" column, you'll record what you wonder about designing a good database. In the "L" column, you record what you need to learn to be proficient in designing a good database.

Resources required

•   A table or a datasheet that has three columns

Activity instructions

Think about what you've learned in Lesson 1 and what you have just learned in this topic. Participate in the activity by following the prompts:

1. Create a three-column table with a K, W, and L in the column names (fields).

2. In the "K" column, record what you currently know about designing a good database.

3. In the "W" column, record what you wonder about designing a good database.

4. In the "L" column, record what you need to learn to be proficient in designing a good database.

5. Be ready to explain what you record in the "K" column.

Microsoft

6. Be attentive to others as they share their list within the "K" column as it might provide answers to your "W" column.

7. Seek opportunities to ask questions about your "L" column throughout this lesson.

Try-it: Overview of database design guidelines

Many amazing structures around the world started out as concepts. Then, they were designed and constructed correctly. Similarly, the design and construction of your database need to unite with the concept if you want to create an effective database. In this try-it activity, you'll understand and define the steps of the database design process and then apply that understanding.

Resources

You'll need the following resources for this try-it:

- The links in the **Additional information** callout immediately preceding this topic's activity
- **L2_T1_try_design_steps.docx** in this lesson's **Learning Activity Resources** folder
- **L2_T1_sample_database_design.docx** in this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Review the lists in the following table.

Object	Properties
School	- Grades - Courses - Teachers - Class periods - Students - Attendance - Graduation years - Classroom Locations - Required courses/elective courses

Object	Properties
Clothes	• Types of clothing • Sizes • Colors • Availability/in stock
Music	• Artists • Genres • Durations • Albums • Release dates • Composers
Vehicles	• Makes • Models • Years • Colors • Trims • Extra features
Frozen desserts	• Type • Add-ins • Cone types • Size

Table 8: Datasets

2. Review the information on good database design on the resource webpages.

3. Open **L2_T1_try_design_steps.docx**. In the table in this document, provide a brief description in your own words of each step in the database design process. Your teacher will provide directions.

4. Refer to the lists of datasets in the table, or any other database idea of your choice, and add some information to help illustrate your description. For example, in the case of the restaurant database:

   o For step 1, the example purpose might be, "To store data about employees, food products, and customers to enable tracking and reporting on restaurant operations. This will include shift scheduling, inventory management, and customer communications."

Microsoft

- o For step 3, some table ideas could be employees, food products, customers, and work shifts.
- o For step 5, an example could be **Employee Number** for the employees table.
5. Open **L2_T1_sample_database_design.docx** and review this example of a completed database design plan to improve your understanding of the database design process. If necessary, make any adjustments to your completed **L2_T1_try_design_steps.docx**.

Topic 2: Develop table plans

The design process includes a few steps while planning. Planning takes much of the labor out of the actual setup and often can be greatly beneficial to the overall goals of the individuals who are conducting the data design. If needed, refer to Topic 1 and review the list of design steps to follow when designing a database. In this topic, you'll be focusing on design steps 3, 4, and 5 while exploring the concepts of building and developing table plans. The process of developing plans for the tables you'll have in your database becomes simpler by applying design steps 3, 4, and 5. Review these steps in the following list:

- Step 3: Sort the information into tables. Sort your information items into main subjects, such as **Produce** or **Employees**. These subjects will be the basis for the tables in your database.
- Step 4: Convert data items into fields. Decide what data belongs in each table, based on the subject of the table. Access will display each field as a column in the table. For example, an **Employees** table might include fields such as **First Name** and **Date of Hire**, and any fields about **Crops** belong in the **Crops** table.
- Step 5: Assign primary keys. Each table must have a field (or combination of fields) designated as a primary key, which is the information that uniquely identifies each item in the table or record. If a primary key doesn't already exist, you can have Access create one for you. **Product ID** and **Order Number** are examples of primary keys.

Forming tables

When you're working on step 3 to divide into tables the information you want to include in your database, you need to think about deciding on a subject for each table. You can then start to identify patterns and groupings by selecting possible table subjects and understanding how each piece of information fits in. For example, if your collection of information includes facts about the produce at Munson's and the employees harvesting that produce, you might propose a table about produce. However, when you review information about the employees, you realize that subject doesn't belong in a table about produce, so you'd add the subject of employees as another potential table.

To apply step 4 to forming tables, one goal you'll work toward is making each field contain the smallest logical part of the information that is meaningful. Consider the use of people's names as an example. If you were to include both first and last names in the same column, you would be unable to apply certain features, such as sorting by using last name or using the greeting, "Dear Mr. Hurtado," when personalizing a letter.

Remember that each record in a table represents one item in a list and will need to be uniquely identified by one of its fields. It can be helpful to identify possible unique identifiers early in this process, so that you can ask yourself if a piece of information describes that unique identifier. Within this same table of people's information, you wouldn't include the name of fruit or the order frequency because those items do not describe the subject, which is the people's data. The name of the fruit or vegetable sold would be in a separate table.

Use the following table as a guide during steps 3 and 4. If you can answer "yes" to each of the following questions, then your table development plan is efficient enough to accurately process your information.

Will each fact only be stored once?	Yes
Does every table contain fields about only one subject?	Yes
Will each field store the smallest logical part of information?	Yes
Is every field non-repetitive within a table?	Yes

Table 9: A question guide

Activity: One step back, two forward

In this activity, you'll think about what you've learned within the context of this topic and in previous topics and lessons. You'll then predict where that knowledge will take you in the current topic.

Resources required

- A note card, piece of paper, or a digital method to record thoughts

Activity instructions

Think about what you've learned in Lesson 1 and what you just learned in Lesson 2, Topic 1. Participate in the activity by following the prompts. Respond to the following questions:

- What was the most important thing you learned or performed in the previous lesson or topics?
- List two things you think you might learn in this topic.

Try-it: Develop table plans

Tables are the foundation of a relational database. Becoming familiar with their purpose and structure is paramount to comprehending the overall database function. In this try-it, you'll practice planning tables and fields. Refer to steps 3, 4, and 5 in the database design process.

Resources

You'll need the following resources for this try-it:

- A way to record your results from the instructions
- **L2_T2_sample_database_design.docx** in this lesson's Learning Activity Resources

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Use an idea from the following list of database project ideas, or an idea of your own to complete the try-it. Compare your results to your classmates when finished. Consider creating a database:

   o For an animal shelter to track animals taken in, food and supplies, and adoptions.
   o For a food bank to manage inventory, recipients, or volunteers.
   o For a school cafeteria to manage menu planning, food and supplies, employee shifts, and student accounts.

- o For an organization to manage their vending machines and stock them with items.
- o For a community radio station to organize their music collection and playlists.
- o For a school to track courses and course details and to produce a catalog.
- o For a clothing exchange or store to track donations or purchases of merchandise, recipients or customers, and transactions.
- o For a youth sports league to track players and other people, fields or venues, games, and tournaments.
- o For a sports team to manage their inventory of sporting equipment by tracking information such as members' equipment, issue dates, and return dates.
- o For a family business to manage employees, products or services, customers, sales, and equipment.
- o For a charity to manage fundraising operations with donors and volunteers.
- o For a referral service that helps people experiencing homelessness find and contact resources.
- o For a water conservation agency to manage, analyze, and report on the impact of the community's efforts to save water.
- o For a parks and recreation organization to manage their resources and public programs.
- o For you or a public library to organize a book collection.
- o For you to track something for another class; for example, homework assignments, history data, or science experiments.

2. For the database project idea that you selected, identify groupings of information by subject that could be the basis for tables. Refer to step 3 of the database design process.

3. Identify information that could become fields for the tables from the last instruction. Refer to step 4 of the database design process.

4. Identify a unique identifier field for each table that could be the primary key. Refer to step 5 of the database design process.

5. Share your work with your classmates to compare your results.

Wrap-up

Use these questions to check what you learned in this lesson:

1. A _____ contains data about one aspect of the table subject, such as first name or email address.

   Fill in the blank space.

2. Each table in a relational database should store data about one subject. Select the appropriate examples:

   Select all that apply.

   a. A customers table that lists a company's customers and their addresses

   b. An employees table that tracks the customer orders taken by each employee

   c. A products table that lists the products that you sell, including prices and pictures for each item

   d. A products table that lists the products ordered by each customer

3. A _____ key consists of one or more fields that uniquely identify each record that you store in the table.

   Fill in the blank space.

4. Keeping data separated in related tables produces the following benefits:

   Select all that apply.

   a. Consistency

   b. Efficiency

   c. Comprehensibility

   d. Redundancy

Lesson 3: Understanding Access basics

Overview

In this lesson, you'll explore the elements of the Access environment, and work with the database interface and tools. You'll also discover how Access presents objects and data in a database, and how you can interact with them.

Warm-up

Use these questions to find out what you already know about this lesson's topics:

1. The **Navigation Pane** in Access provides a list of the _____ contained in a database file, which can include tables, queries, forms, and reports.

   Fill in the blank space.

2. For a table, the view that you use to add data is called:

   Select the correct option.

   a. **Design** view

   b. **Datasheet** view

   c. **SQL** view

   d. **Layout** view

3. The view that you use to specify the data being requested for a query is called:

   Select the correct option.

   a. **Design** view

   b. **Datasheet** view

   c. **Form** view

   d. **Print** view

4. For a form, the view that you use to review, add, and edit data is called:

    Select the correct option.

    a. **Design** view

    b. **Form** view

    c. **Layout** view

    d. **Print** view

5. The different views that are used to configure the presentation of data in a report are called:

    Select all that apply.

    a. **Design** view

    b. **Report** view

    c. **Layout** view

    d. **Print Preview**

Topic 1: Explore the Access environment

The Access interface has some similarities to other Microsoft Office apps that you'll likely recognize, such as:

- The **Backstage** view where you can create new database files or open existing ones.
- The **Quick Access Toolbar** that you can customize.
- The ribbon with familiar tabs such as **File**, **Home**, and **Help**, and other tabs that are specific to the Access app, such as **Create**, **External Data**, and **Database Tools**. Similar to other Office apps, Access also provides contextual tabs when you're working on particular tasks or functions. You'll also find familiar commands such as **Cut**, **Copy**, **Spelling**, and **Text Formatting**.
- The **Status Bar** that provides contextual information as you work in the program.

Unlike the other apps, you cannot use Access to create a single document in a file. Each file in Access is actually a container for one or more objects, such as tables, queries, forms, reports, macros, and modules. Remember that this course does not cover using macros and modules.

Navigation Pane

Within a database file, the objects it contains are listed in the **Navigation Pane**. The **Navigation Pane** is where you can browse between certain parts of your database as you analyze data. Your tables, queries, forms, reports, modules, and macros are all objects that you can find in the **Navigation Pane**. By default, these objects are grouped by object type.

The **Navigation Pane** also contains a **Search** box, which is helpful for databases that contain many objects. Another feature that is helpful for large databases is the ability to hide objects in the **Navigation Pane**. Hiding an object or group can also be a better option than deleting it when the object or group is not in use, or you want to restrict access to it. The following screenshot depicts the **Navigation Pane** in Access:
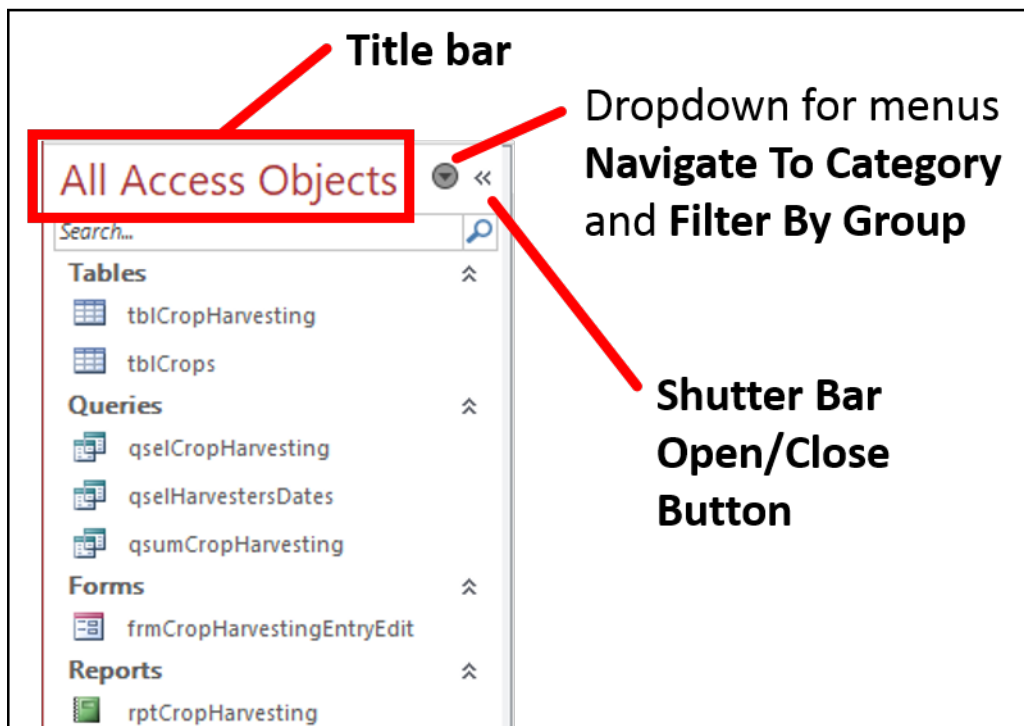
*Figure 4: The **Navigation Pane** in Access*

Some tips for working with the **Navigation Pane** include:

- If you open an Access database and the **Navigation Pane** is not available, select the F11 key on your keyboard.
- You can expand or collapse each object group heading by selecting it. This can reduce the need for repeated scrolling through the object list.

- There is a "hidden" menu for changing how the **Navigation Pane** behaves and is presented. To access this menu, right-click or access the context menu for the title bar of the **Navigation Pane**.
- For instructions on common tasks and hiding and displaying objects and groups, refer to the links in the following callout for additional information.

> **Additional information**
>
> For more information on using the **Navigation Pane** in Access, refer to:
>
> Use the Navigation Pane > Common Tasks
>
> Use the Navigation Pane > Hide and unhide objects and groups

Activity: Each one, teach one

In this activity, you'll reach out to a classmate and use the resources to learn how to perform certain actions by using the **Navigation Pane** in Access.

Resources required

You'll need the following resources for this try-it:

- **L3_T1_act_harvest_tracking.accdb** in this lesson's **Learning Activity Resources** folder
- The links in the **Additional information** callout immediately preceding this activity

Activity instructions

1. Open **L3_T1_act_harvest_tracking.accdb**.
2. Review the material from the links in the **Additional information** callout.
3. Find a partner.
4. Teach your partner something new that you learned.
5. Allow your partner to teach you something new that they learned.

Try-it: Explore the Access environment

In this standalone try-it activity, you'll explore the Access environment by using a sample database.

Resources

You'll need the following resources for this try-it:

- **L3_T1_try_harvest_tracking.accdb** in this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Start Access and open the database **L3_T1_try_harvest_tracking.accdb**.

2. Note the groupings and objects listed in the **Navigation Pane** and answer the following questions:

    o First group header: _____
    How many of those objects? _____

    o Second group header: _____
    How many of those objects? _____

    o Third group header: _____
    How many of those objects? _____

    o Fourth group header: _____
    How many of those objects? _____

3. In the **Navigation Pane**, select the title bar or the drop-down arrow to open the **Navigate To Category** and **Filter By Group** menus. What are the selected options for each menu?

    a. **Navigate To Category**: _____

    b. **Filter By Group**: _____

4. Select a different option in the **Navigate To Category** section of the menu.

    a. Note the changes to the **Filter By Group** section of the menu.

    b. Identify what items have moved or have been rearranged.

5. Repeat step 4, selecting each of the other options in the **Navigate To Category** section.

6. In the **Navigate To Category** and **Filter By Group** menus, restore the settings to what you noted in step 3.

7. In the **Navigation Pane** title bar, select the **Shutter Bar Open/Close Button**. Identify what changed in the Access interface.

8. Reverse the action by selecting the **Shutter Bar Open/Close Button** again.

Microsoft

Topic 2: Explore an Access file

Now that you know where to find the **Navigation Pane** and how to use it to identify and locate the objects contained in a database file, you can continue to explore the harvesting team's database and its objects and data. You'll identify what an employee might be working on when they first begin to enter crop harvesting data and other important duties that the harvesting team performs.

Earlier in this module, you learned about the different types of objects in an Access database. In this topic, you'll review and understand these objects specifically from an Access perspective, and how you can identify objects and their meaning or purpose.

Naming conventions

You won't be naming objects until later in the course, when you create those objects. However, it's important to have an awareness of naming conventions now, as you start to explore an Access database. This is a general term in the digital world for the recommended practice of naming things to a designated standard. This helps users to identify items more easily, especially when they are out of context. For example, with Access, you might find a reference to an object in a design document. It's much simpler and shorter to identify "tblProducts" than "a table called Products", or worse, something just called "Products." It's also clearer when there is the potential to have items with the same name, such as "tblProducts" and "frmProducts."

You might encounter or already have your own naming conventions for folders, files, objects in Access, worksheet tabs in Excel, and more. These could be specific to a team, an organization, or an industry. Typically, with Access, you will use prefixes for object names and keep the rest of the name concise and clean. This means no spaces, no characters other than letters, digits, and underscores, and limited use of hyphens and suffixes. With Access databases, you might find various levels and differences in naming conventions in the real world. However, the most important thing to remember about naming conventions is to be as consistent as possible.

Tables

Tables are the only objects in a database that contain, or store, data. Access will present tables in a format called a datasheet, which is similar to a spreadsheet with rows and columns. Each row represents a record and each column represents a field. Basic naming conventions will typically have table names with a "tbl" prefix.

Queries

Queries are primarily used to *select* data, which means that they search the tables to find and display the data that is stored in those tables. Queries are how you ask questions of the data. In Access, you'll learn later that in a query, you can specify from which tables you want to retrieve which fields and usually, the conditions for which records you want to include in the query results. For example, from a table about employees, you want first name and last name for any employee who lives in a specific city.

You can also use queries to not only select the data but also summarize it. For example, you can find a total of sales amounts for all orders placed by each customer. You can use other types of queries for more complex results, or to perform actions such as adding, updating, and deleting records, or making new tables.

Basic naming conventions will usually have query names with at least a "qry" prefix. Specifically, you could use "qsel" for select queries, "qsum" for summary queries, and others for the action queries such as "qdel" for a delete query.

Forms

You can use forms to facilitate the process of data entry, editing, and review. Forms help you:

- Present the data in a more user-friendly manner.
- Protect existing data.
- Control and validate the data as it's entered.
- Combine data from related tables to enable users to get complete information about the data.

For example, you might come across forms for customers' information that also include the ability to enter and edit each customer's orders. Basic naming conventions will usually have form names with at least a "frm" prefix. You might also encounter a prefix of "frmsub" or "fsub" for a subform, which is a form inside another form. You'll learn more about these objects later in this course. Sometimes you'll come across an object name that has a suffix, such as "_datasheet" or "_split" that further identifies a type or purpose of the form.

Reports

Reports provide a way to present data from the database in many ways, from simple lists or labels, to complex detailed and summarized reports, including charts. You can design reports for on-screen review, printing, or exporting to a format such as PDF.

Basic naming conventions will usually have report names with at least a "rpt" prefix. You might also encounter a prefix of "rptsub" or "rsub" for a subreport, which is a report inside another report, much like a form and subform.

Macros and modules

Macros and modules are objects that help you automate tasks and add functionality in an Access database. Basic naming conventions would use the prefixes of "mcr" and "mod." For the purposes of this course, that's all you need to know, but be sure to put it on your list for future, advanced learning of Access.

Additional information

For more information on the Access database objects, refer to:
Database Basics > The parts of an Access database

Video

To review the video on database objects, refer to: Get to know database objects

Activity: Rapid fire quiz

In this activity, your teacher will divide your class into teams and pose several questions. The goal for you and your teammates is to answer the questions as fast as you can.

Resources

You'll need the following resources for this try-it:

- **L3_T2_act_harvest_tracking.accdb** in this lesson's **Learning Activity Resources** folder.

Activity instructions

1. Open the database file.

2. Review each of the features within the file.

3. Recall the definitions found earlier within this module.

4. Respond as a group to the teacher's rapid-fire quiz questions.

Try-it: Explore an Access file

Gaining a foundational knowledge of the Access interface can enhance your ability to perform various tasks within a database. However, the DBMS and the application of a good database design are what make a database exceptional when you're running reports, queries, and adding data. In this standalone try-it activity, you'll identify certain features that you'll use throughout all the modules of this course. Identifying the features is your goal for now, and in upcoming modules, you'll get a chance to use, apply, and become proficient with these features.

Resources

You'll need the following resources for this try-it:

- Open the **L3_T2_try_harvest_tracking.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the database file.

2. Select each ribbon tab and explore the groups and commands within each one.

3. When you have explored each of the tabs, return to the **Home** tab.

Take note of the groups and commands on the **Home** tab and answer the following questions:

1. On the **Home** tab, many of the commands are not available because

   _____

   Fill in the blank space.

2. Which commands on the **Home** tab are for working with records?

   Select all that apply.

   a. Spelling

   b. Form

   c. New

   d. Totals

3. What other command groups are included in the **Home** tab?

   Select all that apply.

   a. Reports

   b. Find

   c. Views

   d. Design

   e. Sort & Filter

Select the **Create** tab. Note the groups and commands on this tab and answer the following questions.

1. Which command group on the **Create** tab contains commands to help you ask questions of the database?

   Select the correct option.

   a. Templates

   b. Tables

   c. Queries

   d. Forms

   e. Reports

2. How many tools on the **Create** tab enable you to create reports?

   Select the correct option.

   a. 4

   b. 2

   c. 3

   d. 6

Select the **External Data** tab. Note the groups and commands on this tab and answer the following question.

1. Which of the following options on the **External Data** tab enable you to share data from the database?

   Select all that apply.

   a. Email

   b. Saved Imports

   c. PDF or XPS

   d. Excel

   e. PowerPoint

Select the **Database Tools** tab. Note the groups and commands on this tab and answer the following question.

1. Which command on the **Database Tools** tab do you think might help you identify how tables are connected to each other?

   Select all that apply.

   a. Compact and Repair Database

   b. Run Macro

   c. Analyze Performance

   d. Relationships
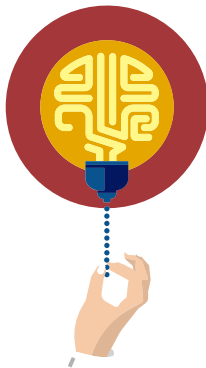
Did you know?

Database functions and structure are integrated to help ensure accuracy in manipulating data.

Additional information

To learn more about the features within an Access database, refer to: [Learn the structure of an Access database](#)

Topic 3: Open Access objects

In Access, you can work with each of the four main types of objects in at least two modes. One mode is for creating and configuring the object, and the other is for using the object. These modes are called *views*. Every object has a **Design** view, which is for creating and configuring the object. The active view might also provide different ribbon tabs and change the enabled commands within the ribbon tabs. The views for each of the four main object types are:

- **Tables: Datasheet** view and **Design** view
- **Queries: Datasheet** view, **SQL** view, and **Design** view
- **Forms: Form** view, **Layout** view, and **Design** view
- **Reports: Report** view, **Layout** view, **Design** view, and **Print Preview**

You'll learn more specifically about each of these views in later modules in this course. For now, you only need to know that multiple views are available for objects.

To open an object in a specific view, use one of the following steps:

- With the object selected in the **Navigation Pane**, select the Enter key on the keyboard. You can also double-click the object. This will open the object in a default view for using the object.
- With the object open in any view, you can select the **Home** tab and select the **View** drop-down list. This command also has variable default actions, but you can specifically choose a view by selecting one of the options in the drop-down list.
- Alternatively, you can right-click or access the context menu for an object in the **Navigation Pane** and select a specific view.

Opening database objects

Opening tables, queries, forms, and reports will be a first for most of the class. This is an exciting time as you begin to explore the objects in an Access database. Multiple careers require employees to know how to manage and interpret data. Today is your start to that exciting future. What will the data indicate to you and to Munson's Pickles and Preserves Farm?

In this topic, you'll be opening and closing many database objects. When the objects are open, note the supporting contextual tabs that become available on the ribbon and the different views that are available with each object.

Activity: Show me how

In this activity, you will instruct the teacher how to open objects and change views in a database file. You'll also work on other tasks that the teacher asks of you in reference to the Access interface. Pay close attention to what is asked and what steps your classmates suggest. This will be helpful as you recall certain steps that work and other steps that might not be solutions.

Resources

You'll need the following resources for this try-it:

- **L3_T3_act_harvest_tracking.accdb** in this lesson's **Learning Activity Resources** folder

Instructions:

1. Open the database file.

2. Pay attention to the teacher's prompts for students to answer questions and provide suggestions and instructions to complete tasks in the database file.

3. Explore the database file yourself to find solutions to the teacher's questions.

Try-it: Open Access objects

Opening tables, queries, forms, and reports are the first steps to realizing the power of a database. Let's continue our quest to help Munson's Pickles and Preserves Farm by opening objects within Access. Examining an existing database will help you to understand how the well-designed database is constructed so that Munson's employees can efficiently manage data and use it effectively to gain insights and make informed business decisions.

Resources

You'll need the following resources for this try-it:

- **L3_T3_try_harvest_tracking.accdb** in this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the database file.

2. Open the first table listed and examine it. Answer the following questions.

    a. What is the name of the table? _____

    b. What is the currently active **View** for the table? _____

    c. How many fields does the table have? _____

    d. Which field do you think is the primary key? _____

    e. How many records are in the table? _____

    f. Can you think of any other information that Munson's could find helpful to store in this table? _____

3. Change to **Design View** for the table. Answer the following questions.

    a. How is the primary key field identified? _____

    b. What is the **Field Name** of the primary key? _____

    c. What is the **Data Type** of the primary key? _____

    d. What is the **Description** for the second field? _____

    e. What contextual ribbon tabs are available? _____

4. Change to **Datasheet View** for the table. Answer the following questions.

    a. What contextual ribbon tab is available? _____

    b. How many records are in the table? _____

    c. Can you think of a question that Munson's might want to ask about data in this table? _____

5. Open the first query listed and examine it. Answer the following questions.

    a. What is the name of the query? _____

    b. How is the data in the query different from the data in the table that's open? _____

    c. How many rows are in the query results? _____

    d. What contextual ribbon tab is available? _____

    e. Can you think of a question that Munson's might ask that could be answered by this query? _____

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6. Change to **Design View** for the query. Answer the following questions.

   a. From which table(s) does the query retrieve data? _____

   b. Can you identify the primary key in the table(s)? _____

   c. What contextual ribbon tab is available? _____

7. Open the form and examine it.

   a. Do you think Munson's employees would find it easier or more difficult to use the form instead of the table to enter data? _____

   b. What aspects of the form cause you to make that choice? _____

8. Open the first report listed and examine it.

   a. What is the name of the report? _____

   b. What information can Munson's employees find in this report that they can't get from reviewing the other objects (tables, queries, forms)? _____

   c. What aspects of the report cause you to make that choice?

9. Are there any other observations that you have from examining this Access database and the objects in it, especially in your role as an intern at Munson's Pickles and Preserves Farm? _____

10. Wait for the teacher's instructions before closing the Access database file.

Wrap-up

Use these questions to check what you learned in this lesson:

1. The objects included in the **Navigation Pane** include:

   Select all that apply.

   a. Views

   b. Tables

   c. Relationships

   d. Queries

   e. Fields

2. You can use the **Navigation Pane** to:

   Select all that apply.

   a. Search

   b. Calculate totals

   c. Filter by group

   d. Navigate to a category

   e. Create objects

3. Which view is available in all of these objects: tables, queries, forms, and reports?

   Select the correct option.

   a. Datasheet view

   b. Design view

   c. Layout view

   d. Print view

   e. Report view

4. When you select a table that is open in **Design** view, which item can you identify?

   Select the correct option.

   a. Primary key

   b. Related queries

   c. Relationship to other tables

   d. Reports that reference the table

5. When you select a query that is open in **Design** view, which information is available?

   Select all that apply.

   a. Primary keys for tables

   b. Selected fields

   c. Relationships between tables

   d. Reports based on the query

Glossary

Anomalies	Irregularities, differences, or variances that can be caused by an inefficiently designed database. These can occur more often in unnormalized databases (also known as flat databases).
Data type	A property of a field that indicates the kind of data that can be stored in that field.
Database	A tool for collecting information that is organized to provide efficient retrieval of data. Databases often begin as a list of items that have some form of relevance.
Database Management System (DBMS)	A software program (application) that is used to create, store, manipulate, find, and manage data in a database.
Datasheet	An interactive presentation of a table with fields in columns and records in rows, which is similar to an Excel spreadsheet.
Field	A single descriptive item of information about items in a list, organized into columns within a table.
Flat database	A single list organized with records in single rows and fields in columns.
Form	An Access object that allows the user to view, enter, and edit data in a user-friendly and controlled interface.
Key fields	Fields that uniquely identify a record (primary key) or connect a record to a record in another table (foreign key).
Macro	Access object that uses a simplified programming language to add functionality to a database, often used to automate actions and tasks. (Not covered as part of this course.)

Module	Access object that is a collection of programming procedures, statements, and declarations that are stored together as a unit. (Not covered as part of this course.)
Naming conventions	Recommended practice of naming items such as folders, files, and Access objects to a designated standard.
Normalization	A step in the database design process of reviewing a preliminary data structure according to specific rules to ensure that data is divided appropriately into tables to be most efficient and useful.
Null value	A value that doesn't exist.
Objects	Access components that are used to store, find, and otherwise manage data in a database.
Queries	Access objects within a database that are used to ask questions of data and retrieve specific data from one or more tables in the database and display it.
Record	A collection of fields about an item in a list, usually organized into rows in a table.
Relational database	A database in which data is divided into separate, subject-based tables, which are linked together by shared key fields into relationships to bring the data together as needed for meaningful information and insights.
Relational Database Management System (RDBMS)	A software program (application) that is used to create, store, manipulate, find, and manage data in a relational database.
Relationship	A designated connection between two tables through shared key fields to allow retrieval of related information from both tables.
Report	Access object used to present distilled or summarized data in an easily consumable format.

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Table   Access object in which data is stored in an organized structure similar to a spreadsheet.

Value   A value is the data stored in a field. Fields that are used as a primary key in a table cannot have a null value.

View   The term for how Access objects that are active are always presented for creating, designing, or using the object.

Table 2: Glossary terms and definitions

Cornerstone

Overview

In the Cornerstone project, you'll assess an Access database for good database design, and identify Access and database elements. Throughout this module, you and your classmates have had discussions and reviewed examples of what a database is and how a database is designed. You've also explored the Access interface and an Access database file. In this Cornerstone, you'll open a database file, analyze its design quality, and make speculations or suggestions on the table structure, the field names, the potential naming conventions, and any other item that is not consistent with good database design. You'll also identify parts of the Access interface and the database file.

A helpful tip for completing this Cornerstone project is to consider the terms listed within the Glossary section of this module.

Objectives

The following table outlines the Cornerstone objectives and their corresponding MOS exam objectives.

Understand the purpose of a database	Not mapped
Define database terms	Not mapped
Explore data sources	Not mapped
Understand database design principles	Not mapped
Plan tables	Not mapped
Identify the parts of the Access interface	Not mapped
Hide and display objects in the **Navigation Pane**	1.1.3: Hide and display objects in the **Navigation Pane**
Identify the items in an Access file	Not mapped

Open tables, queries, forms, reports	Not mapped
Use object views	Not mapped

Table 10: The Cornerstone objectives

Duration

50 minutes

Instructions

1. Complete the tasks below.

2. Follow your teacher's directions for where to save any files and a naming convention of saving your file.

3. When you're done with the Cornerstone, assess your completion and enter the points you think you earned within the task lists below. You can take the help of your teacher if required.

Tasks

You'll work with one file in this Cornerstone:

- **Cornerstone_harvest_tracking.accdb** in this Cornerstone's **Learning Activity Resources** folder

Explore the database file and recognize good design practices where applicable. Identify where poor design practice is presented and which design principle is not being followed. Throughout the completion of this Cornerstone, you'll also need to understand terminology and be able to identify elements of the Access interface and the database file itself. The following section includes the tasks you need to do in the file.

File: Cornerstone_harvest_tracking.accdb

Task: Open and examine the database (12 points)

1. Open the database file and examine the list of objects in the **Navigation Pane**. (1 point)

2. Identify and list any hidden objects in the **Navigation Pane**.

   _____ (3 points) (1.1.3: Hide and display objects in the Navigation Pane)

3. Determine and describe what you think is the purpose of this database.

   _____ (2 points)

4. Are there any elements of poor database design present?

   _____ (1 point)

   o If you answered **Yes**, list any elements and explain why they are poor database design choices:

      _____ (5 points)

Points scored: _____ / 12

Task: Open and examine a database table (28 points)

1. Open **tblCropHarvesting**. (1 point)

2. Identify and describe the subject of this table.

   _____ (1 point)

3. Are there any elements of poor database design in the table?

   _____ (1 point)

   o If you answered **Yes**, list any elements and explain why they are poor database design choices:

      _____ (5 points)

4. Which fields don't belong in this table?

   _____ (5 points)

5. What value is located in the sixth record in the **Unit** field?

   _____ (1 point)

6. Switch to the **Design View** for the table. (1 point)

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7. Which field is the primary key for this table?

    _____ (1 point)

8. Why is this field appropriate or inappropriate as the primary key for the table?

    _____ (5 points)

9. For the field called **Quantity**:

    o   What **Data Type** is assigned?

        _____ (2 points)

    o   What **Field Size** is assigned?

        _____ (2 points)

10. In the field named **Unit**, the data type is assigned as **Short Text**. What is the **Field Size** of this field?

    _____ (2 points)

11. Switch to the **Datasheet View** for the table. (1 point)

    Points scored: _____ / 28

Task: Open and examine a database query (20 points)

1. Open **qselHarvestersDates**. (1 point)

2. Describe the data results of this query. What question(s) of the data does it answer?
    _____ (5 points)

3. How many rows are in the query results? _____ (2 points)

4. Switch to the **Design View** for the query. (1 point)

5. From which table(s) does the query retrieve data? _____ (3 points)

6. What are the primary key field(s) in the table(s)? _____ (3 points)

7. Which field(s) is/are used to sort the results and what sorting order is applied?
    _____ (2 points)

8. If Munson's wants to use the query results to contact each employee in the results of the query, which field(s) should be added to the design of the query?
    _____ (3 points)

Points scored: _____ / 20

■■ Microsoft

Task: Open and examine a database form (5 points)

1. Open **frmEmployees**. (1 point)

2. What do forms allow users to do within the database? _____ (2 points)

3. How many records are presented on the form? _____ (1 point)

4. What is the value for the **Employee First Name**? _____ (1 point)

Points scored: _____ / 5

Task: Open and examine a database report (9 points)

1. Open **rptCropQuantities**. (1 point)

2. Which **View** is active for the report? _____ (3 points)

3. How many crops are listed on the report? _____ (1 point)

4. What is the **Unit** listed for **Strawberries**? _____ (1 point)

5. Which tables in the database do you think are included as sources for the report? _____ (3 points)

Points scored: _____ / 9

TOTAL POINTS: _____ /74
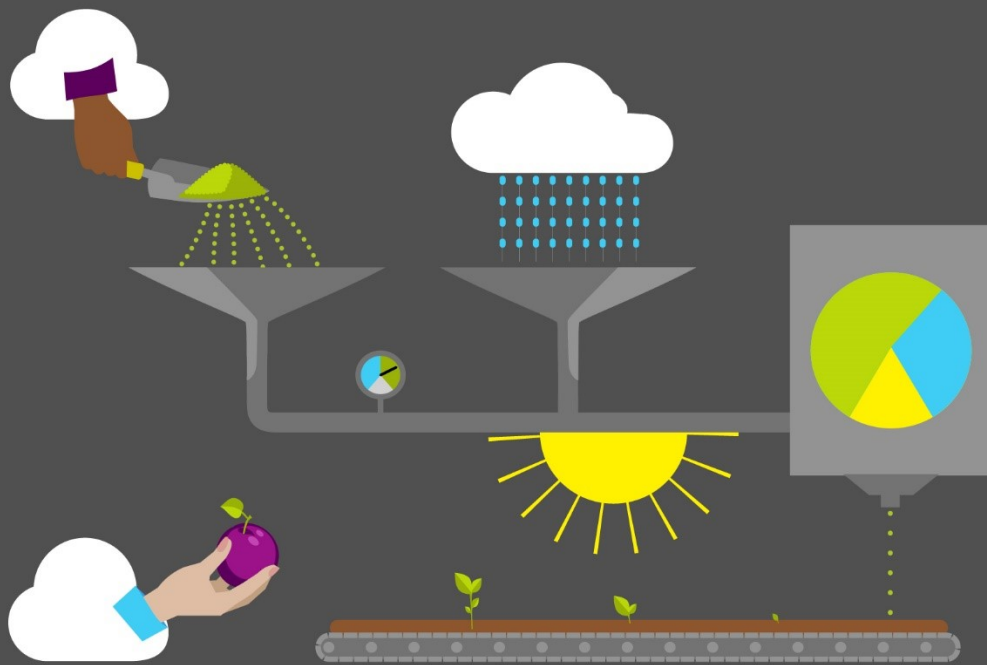
Student Guide

40572A
Microsoft Access expert 2019

Module 2: Designing and setting up data structure

Contents

Microsoft

Microsoft

Module overview

Description

Now that you've had a chance to review an existing database and explore the Microsoft Access 2019 interface, it's time to begin planning and creating your own database. This module introduces you to organizing related data into databases. You'll become familiar with database tables, lists, and data types. You'll also learn about primary keys and their purpose. Finally, you'll learn about creating Access files and tables, using **AutoNumber**, setting the primary key, and creating table fields. You'll have plenty of opportunities to apply these concepts.

You'll begin by learning how to organize related data into tables, and then define and describe a primary key. Next, you'll create an Access database file with multiple tables, utilize **AutoNumber**, and set the primary key. Finally, you'll create text, numeric, **Date/Time**, and **Yes/No** fields in a table, and set various field properties.

The following table outlines the lesson objectives and their corresponding Microsoft Office Specialist (MOS) exam objectives.

Lesson	Learning objective	Exam objectives
Starting the database design	Organize related data into tables, describe data types and primary keys and describe their purpose.	• Not mapped
Starting an Access database	Create an Access database file, create tables and add table descriptions, use **AutoNumber**, and set the primary key.	• 1.2.3 • 2.1.2 • 2.1.3 • 2.2.3 • 2.4.6
Creating table fields	Create text, numeric, **Date/Time**, and **Yes/No** fields in a table, and set field properties.	• 2.4.1 • 2.4.2 • 2.4.3 • 2.4.4 • 2.4.5

Microsoft

Lesson	Learning objective	Exam objectives
Cornerstone: Create the CSA Operations database and tables	Design and create an Access database, create table fields, import tables, link tables from a Microsoft Excel spreadsheet.	• All the preceding exam objectives

Table 1: MOS objectives by lesson

Scenario

Your visit with the Harvesting team at Munson's Pickles and Preserves Farm was very worthwhile. They demonstrated how they use their database and described the thinking process that they used to decide which data to store and how to label that data to maximize its usefulness in their decisions. It's now time to sit down with your Community Supported Agriculture (CSA) program team to figure out what data you need to store and to think about how you want to use the data. The answers to those two questions will dictate your next steps—creating tables and fields to store the data.

Cornerstone

At the end of this module, you'll work on a Cornerstone project, in which you'll design and create a database file. You'll organize related data into the basis for tables, use **AutoNumber** and set the primary key, create table fields, and also compact and repair the database.

Lesson 1: Starting the database design

Overview

In this lesson, you'll discuss how to sort data into tables, determine field names, and predict the data type based on field names. You'll then partner with a classmate to identify unique information based on field names and types to include in the table. At the end of this lesson, you'll be able to organize related data into tables and lists. You'll then describe data types and define and explain the purpose of a primary key.

Warm-up

Use these questions to find out what you already know about this lesson's topics:

1. What is the storage structure for data in an Access database?

   Select the correct option.

   a. Forms

   b. Queries

   c. Reports

   d. Tables

2. Which of the following are data types in Access?

   Select all that apply.

   a. **Yes/No**

   b. **Table**

   c. **Large Number**

   d. **OLE Object**

3. _____ are columns that uniquely identify each row stored in the table.

   Fill in the blank space.

Topic 1: Organize related data

Properly designing a database will provide you access to up-to-date, accurate information. Because a correct design is essential to achieving your goals in working with a database, it makes sense to invest the time required to learn the principles of good design. In the end, you're much more likely to create a database that meets your needs and can easily accommodate change. In this topic, you'll learn how to design a database properly.

The design process

The design process consists of the following steps:

1. Determine the purpose of your database. Note down what you intend to use the database for and the purpose you want to achieve.

2. Find and organize the information required. Gather all the types of information that you might want to record in the database, such as product name and order number.

3. Divide the information into tables. Divide your information items into major entities or subjects, such as Products or Orders. Each subject then becomes a table.

4. Turn information items into columns. Decide what information you want to store in each table. Each item is a field and is displayed as a column in the table. For example, an Employee table might include fields such as Last Name and Hire Date.

Dividing the information into tables

To divide the information into tables, choose the major entities, or subjects. For example, after finding and organizing information for a product sales database, the preliminary list might look like this:

- Customers
  - Name
  - Address
  - Email
- Suppliers
  - Company name
  - Contact name
  - Address

- Products
    - o Product name
    - o Price
    - o Units in stock
- Orders
    - o Order number
    - o Order date
    - o Product

The major entities included here are the customers, the suppliers, the products, and the orders. Therefore, it makes sense to start with these four tables: one for facts about products, one for facts about suppliers, one for facts about customers, and one for facts about orders. Although this doesn't complete the list, it's a good starting point. You can continue to refine this list until you have a design that works well.

Turning information items into columns

To determine the columns in a table, decide what information you need to track about the subject recorded in the table. For example, for the Customers table, Name, Address, and Email comprise a good starting list of columns. Each record in the table contains the same set of columns so that you can store Name, Address, and email information for each record. For example, the Address column contains customers' addresses. Each record contains data about one customer, and the address field contains that customer's address.

Additional information

For more information about database design, refer to: [Database design basics](#)

Caution

This course uses database files that follow a general storyline for the CSA program at Munson's Pickles and Preserves Farm. These database files are the Learning Activity Resource files that you'll use to work on each module's activities and try-its. Each Learning Activity Resource file contains the data and objects, such as tables, queries, forms, and reports, that you need to complete a corresponding activity.

Due to this course's modular nature, the objects and data in these files might vary across activities or try-its. Therefore, it's important that you start your activities or try-its only with the designated files, as per applicable instructions. You also should note that screenshots in the topic content are for illustration purposes only and might appear different than those that are in the Learning Activity Resource files.

Activity: Think-pair-share

In this activity, you'll sort related information into appropriate tables.

Resources required

- None

Activity instructions

Participate in the activity by following these instructions:

1. Pair with a classmate.

2. Review the field names that your teacher provided.

3. Review the table names and descriptions that your teacher provided.

4. Discuss your grouping and sorting options with your partner.

5. Place the fields in the appropriate table.

6. Ask clarification questions.

Try-it: Organize related data

In this standalone try-it activity, you'll think about the information to include in the Munson's Pickles and Preserves Farm CSA database, and you'll create a list of tables and fields to group and organize relevant information.

Resources

You'll need the following resource for this activity:

- None

Instructions

1. Review the module scenario.

2. Think about at least two tables that you would use to group information collected for use in the database.

3. List at least five fields to include for each table.

4. Share your ideas.

5. Ask clarification questions.

Topic 2: Overview of data types

Careful selection of data types can help you take advantage of more Access features, such as data validation and functions, and improve the accuracy of the information that you're storing. In this topic, you'll learn that when creating tables in Access, you must select a data type for each column of data.

The following table lists the data types available in Access.

Data type	Usage	Size
Short Text	Alphanumeric data, such as names and titles	Up to 255 characters.
Long Text	Large amounts of alphanumeric data, such as sentences and paragraphs	Up to approximately 1 gigabyte (GB), but controls to display a long text are limited to the first 64,000 characters
Number	Numeric data	1, 2, 4, 8, or 16 bytes
Large Number	Numeric data	8 bytes
Date/Time	Dates and times	8 bytes
Currency	Monetary data, stored with four decimal places of precision	8 bytes
AutoNumber	A unique value generated by Access for each new record	4 bytes (16 bytes for Replication ID)

Data type	Usage	Size
Yes/No	Boolean (true/false) data; Access stores the numeric value zero (0) for false, and -1 for true.	1 byte
OLE Object	Pictures, graphs, or other ActiveX objects from another Windows–based application	Up to approximately 2 GB
Hyperlink	A link address to a document or file on the internet, an intranet, a local area network (LAN), or your local computer	Up to 8,192 (each part of a Hyperlink data type can contain up to 2048 characters)
Attachment	You can attach files such as pictures, documents, spreadsheets, or charts; each Attachment field can contain an unlimited number of attachments per record, up to the storage limit of the size of a database file. Note that the Attachment data type isn't available in MDB file formats.	Up to approximately 2 GB
Calculated	You can create an expression that uses data from one or more fields. You can designate different result data types from the expression. Note that the Calculated data type isn't available in MDB file formats.	Depends on the data type of the **Result Type** property. **Short Text** data type results can have up to 243 characters. **Long Text**, **Number**, **Yes/No**, and **Date/Time** should match their respective data types.
Lookup Wizard	The **Lookup Wizard** entry in the Data Type column in **Design View** is not a data type. When you choose this entry, a wizard starts to help you define either a **simple lookup** or a **complex lookup** field. A **simple lookup** field uses the contents of another table or a value list to validate the contents of a single value per row. A **complex lookup** field allows you to store multiple values of the same data type in each row.	Dependent on the data type of the **lookup** field.

Table 2: Data types available in Access

Additional information

For more information on data types, refer to: [Data types for Access desktop databases](#)

Activity: Pose a challenge

In this activity, you'll think about the fields that your teacher provided and determine what kind of data type you should use in the table field.

Resources required

- None

Activity instructions

Participate in the activity by following these instructions:

1. Review the field name that your teacher provided in Topic 1.

2. Determine the correct data type for each field.

3. Discuss your choice options.

4. Ask clarification questions.

Try-it: Overview of data types

In this standalone try-it activity, you'll determine data types of the Munson's Pickles and Preserves Farm CSA database.

Resources

You'll need the following resource for this try-it:

- Your list from Topic 1 of fields to include in the Munson's Pickles and Preserves Farm CSA database.

Instructions

You'll perform the following general tasks during this try-it:

1. Review the list of tables and fields that you created in Topic 1 for information to collect for the Munson's Pickles and Preserves Farm CSA database.

2. Review the type of data types available in Access.

3. Identify which type of data type you'll collect for each field.

4. Discuss the options for your choice.

5. Ask clarification questions.

Topic 3: Create primary keys

When creating a database, you should identify at least one unique number column for each table, such as an employee ID number or a serial number. Access uses the unique identification to quickly associate data from multiple tables and collect that data for you. In this topic, you'll learn how to create a column that uniquely identifies each row stored in a table.

Specifying primary keys

In database terminology, this unique identification number is called the *primary key* of the table. If you already have a unique identifier for a table, such as a product number that uniquely identifies each product in your catalog, you can use the product number as the identifier and set it as the table's primary key.

You can only do this if the values in the product number column will always be different for each record. You can't have duplicate values in a primary key. For example, don't use people's names as a primary key, because names are not unique. You could easily have two people with the same name in the same table.

A primary key must always have a value. If a column's value can become unassigned or unknown (a missing value) at some point, it can't be a component in a primary key.

Setting a primary key

Unless you have a specific reason not to, you should specify a primary key for a table. Access automatically creates an index for the primary key, which can help improve database performance. Access also makes sure that every record has a value in the primary key field, and that the value is always unique. Unique values are crucial because without them, there is no way to distinguish one row from other rows reliably.

1. Select the table whose primary key to set or change.

2. On the **Home** tab, in the **Views** group, select **View**, and then select **Design View**.

3. In the table design grid, select the field or fields to use as the primary key.

   o To select one field, select the row selector for the field that you want, as depicted in the following screenshot.
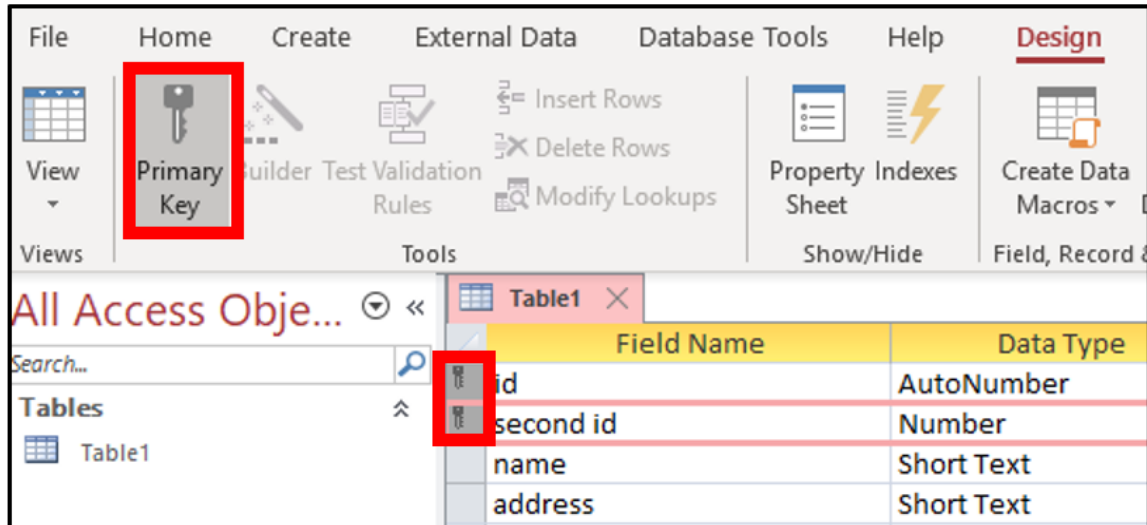
Figure 1: Setting fields as the primary key

   o To select more than one field, use CTRL, and then select the row selector for each field.

4. On the **Design** tab, in the **Tools** group, select **Primary Key**.

A key indicator is found to the left of the field or fields that you specify as the primary key.

Remove the primary key

1. Select the table whose primary key you want to remove.

2. On the **Home** tab, in the **Views** group, select **View**, and then select **Design View**.

3. Select the row selector for the current primary key. If the primary key consists of multiple fields, use CTRL, and then select the row selector for each field.

4. On the **Design** tab, in the **Tools** group, select **Primary Key**.

When you're saving a new table without setting a primary key, Access prompts you to create a new field for the primary key. If you select **Yes**, Access creates an ID field that uses the AutoNumber data type to provide a unique value for each record. If your table already includes an **AutoNumber** field, Access uses it as the primary key. If you select **No**, Access does not add a field and no primary key is set.

Additional information

For more information on primary keys, refer to: <u>Specifying primary keys</u>, <u>Setting a primary key</u>, and <u>Add or change a table's primary key in Access</u>

Activity: Discuss and learn

In this activity, you'll discuss what kinds of information are unique to people. Then you'll examine the information that you discussed and determine if that information is the best option as a unique identifier.

Resources required

- None

Activity instructions

Participate in the activity by following these instructions:

1. Participate in the discussion by providing examples of unique identifiers for a specific database.

2. Ask clarification questions.

Try-it: Create primary keys

In this standalone try-it activity, you'll determine the unique identifier for the Munson's Pickles and Preserves Farm CSA database tables.

Resources

- Your list from Topic 1 and Topic 2 of fields to include in the Munson's Pickles and Preserves Farm CSA database.

Instructions

You'll perform the following general tasks during this try-it:

1. Review the list of tables and fields that you created for your Munson's Pickles and Preserves Farm CSA database tables.

2. Think about the information that would be included in each field column and identify any issues with using that field column as the primary key.

Microsoft

Wrap-up

Use these questions to check what you learned in this lesson:

1. What is the first step in the design process?

    Fill in the blank space.

    _____

2. Which of the following data field types do you use to include pictures, graphs, or other ActiveX objects from another Windows–based application?

    Select the correct option.

    a. Calculated

    b. OLE object

    c. Hyperlink

    d. Attachment

3. If you don't set a primary key, Access will ask if you would like to set one.

    Select the correct option.

    a. True

    b. False

Lesson 2: Starting an Access database

Overview

At the end of this lesson, you'll be able to create an Access database file, create tables in multiple ways, add table descriptions, use AutoNumber, and set the primary key. You'll explore the available database templates, and learn how to compact and repair a database. You'll then follow a demonstration of the methods for creating database tables and predict how to create a unique ID for records.

Warm-up

Use these questions to find out what you already know about this lesson's topics:

1. What happens when you attempt to create a database but do not supply a file name?

   Select the correct option.

   a. Access does not create the database.

   b. Access creates a temporary, unnamed database.

   c. Access creates a database in the default location, with the name Database followed by a sequential number.

   d. Access creates a database in the default location, with the name MyDatabase followed by a sequential number.

2. In Access, a template is which of the following?

   Select the correct option.

   a. A database to manage contacts

   b. Where a database is stored

   c. Two tables linked together

   d. A ready-to-use database

3. When you create a new blank database, Access opens a database that contains which of the following?

    Select the correct option.

    a. One of each type of database object

    b. A table

    c. Sample data

    d. A template

Topic 1: Create an Access file

Access comes with a variety of templates that you can use as provided or as a starting point. A template is a ready-to-use database that contains all the tables, queries, forms, macros, and reports needed to perform a specific task. Some templates contain a few sample records to help demonstrate their use. If you're not interested in using a template, you can create a database by building tables, forms, reports, and other database objects. In this topic, you'll learn how to organize your information by creating a new blank database, and then prevent or fix problems that arise by using the **Compact and Repair Database** command.

Create a database by using a template

1. On the **File** tab, select **New**, and then select the template that you want to use. Several sets of templates are available in the **New** tab.

2. Enter a file name in the **File Name** box. To change the location of the file from the default, select **Browse for a location to put your database**, browse to the new location, then select **OK**.

3. Select **Create**.

Create a blank database

1. On the **File** tab, select **New**, and then select **Blank Database**.

2. Enter a filename in the **File Name** box. To change the location of the file from the default, select **Browse for a location to put your database**, browse to the new location, and then select **OK**.

3. Select **create**. Access creates the database with an empty table named Table1 and then opens Table1 in **Datasheet** view. The cursor is placed in the first empty cell in the **Click to Add** column.

Microsoft

4. Begin entering the data. Entering data in **Datasheet** view is designed to be very similar to working in an Excel worksheet. Create the table structure automatically as you enter data. Define new fields as you add a new column to the datasheet in the table. Access automatically sets each field's data type, based on the data that you enter.

Additional information

For more information about creating databases, refer to: [Create a new database](#)

Compact and repair a database

Database files can quickly grow as you use them, sometimes affecting performance. Files can also occasionally become corrupt or damaged. You can use the **Compact and Repair Database** command to prevent or fix these problems. The compact process does not compress your data—it makes your database file smaller by eliminating unused space. The **Compact and Repair Database** command can also help improve your database's performance.

Explore ways to compact and repair a database

You can use several approaches to compact and repair a database. One common practice is to automatically compact and repair a database when it closes. Also, you can manually run the **Compact and Repair Database** command when you have a database open. You can also run it on a database that isn't open.

Automatically compact and repair a database when it closes

You can select the **Compact on Close database** option if you want to automatically compact and repair a database when it closes. Setting this option affects only the database that is currently open. Set this option separately for each database that you want to automatically compact and repair. In multiuser databases, you might not want to set this option because it can momentarily disrupt database availability.

1. On the **File** tab, select **Options**.

2. In the **Access Options** dialog box, select **Current Database**.

3. In the **Application Options** section, select the **Compact on Close** check box.

4. Select **OK**.

5. Close and reopen the database for the option to take effect.

Manually compact and repair a database that you have open

- On the **File** tab, select **Info** then **Compact & Repair Database**.

Access creates a copy of the compacted and repaired database in the same location.

> **Additional information**
>
> For more information about compacting and repairing a database, refer to: [Compact and repair a database](#)

Activity: Discuss and learn

In this activity, you'll review the available database templates in Access, then discuss when it's advisable to use a template and when you should use a blank database. Lastly, you'll follow along as your teacher demonstrates the **Compact and repair** feature.

Resources required

- None

Activity instructions

Participate in the activity by following these instructions:

1. Open Access and follow along as your teacher demonstrates how to create a database by using a template.

2. Discuss the included template options and the tables and fields in the template that you choose.

3. Participate in the discussion about when you would choose a template and when you would choose a blank database.

4. Follow along as your teacher demonstrates the **Compact and Repair database** command.

5. Ask clarification questions.

Try-it: Create an Access file

In this standalone try-it activity, you'll put into practice what you learned in the activity by creating a blank database file.

Resources

- None

Instructions

You'll perform the following general tasks during this try-it:

1. Create a new blank database for the Munson's Pickles and Preserves Farm CSA program and name the database **CSA**.

2. Set the database to automatically compact when it closes.

Topic 2: Create a table

In this topic, you'll learn how to create a new table in an existing database, copy data from another source, and import, append, or link to data from another source to an existing table in Access.

Add a table

You can add new tables to an existing database by using the commands on the **Create** tab in the **Tables** group.
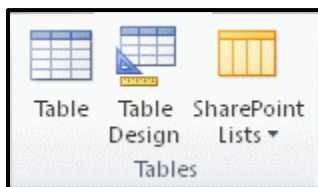
*Figure 2: **Tables** group options*

Create a table, starting in **Datasheet** view. In **Datasheet** view, you can enter data immediately and let Access build the table structure for you. Field names are assigned numerically (Field1 and Field2, for example), and Access automatically sets each field's data type, based on the data that you enter.

1. On the **Create** tab, in the **Tables** group, select **Table**. Access creates the table and selects the first empty cell in the **Click to Add** column.

2. On the **Fields** tab, in the **Add & Delete** group, select the type of field that you want to add. If you don't find the type that you want, select **More Fields**.

3. You can move the field by dragging it. When you drag a field in a datasheet, a vertical insertion bar appears.

4. To add data, begin entering the information in the first empty cell.

5. To rename a column (field), select the column heading, and then enter the new name. You should give a meaningful name to each field so that you can tell what it contains when you find it in the **Field List** pane.

Additional information

For more information about adding tables, refer to: Creating a table

Copy data from another source

If your data is in another program, such as Excel, you can copy and paste it into an Access table. In general, this works best if your data is already separated into columns, as they are in an Excel worksheet. If your data is in a word-processing program file, it's best to use tabs or tables to separate the columns of data in that file before you copy the data. If your data needs editing or manipulation (for example, separating full names into first and last names), you might consider doing this before you copy the data.

When you paste data into an empty table, Access sets the data type of each field according to what kind of data it finds there. For example, if a pasted field contains nothing but date values, Access applies the **Date/Time** data type to that field. If the pasted field contains only the words yes and no, Access applies the **Yes/No** data type to the field.

Microsoft

If Access assigns generic field names, you should rename the fields as soon as possible to avoid confusion. Use the following procedure:

1. On the **Home** tab, in the **Records** group, select **Save** to save the table.

2. On the **Home** tab, in the **View** group, select **Datasheet View**, select each column heading, and then enter a descriptive field name for each column.

3. **Save** the table again.

You can also rename the fields by switching to **Design View** and editing the field names there. To switch to **Design View**, on the **Home** tab, in the **View** group, select **Design View**.

Additional information

For more information, refer to: Copy data from another source into an Access table

Import, append, or link to data from another source

You might have stored data in another application, and you want to import that data into a new table or append it to an existing table in Access. Or you might collaborate with people who keep their data in other applications, and you want to work with that data in Access by linking to it. Either way, Access makes it easy to work with data from other sources. You can import data from an Excel worksheet from a table in another Access database, from a SharePoint list, or from a variety of other sources. The process that you use differs slightly depending on your source, but you can use the following procedure to get started.

1. On the **External Data** tab, in the **Import & Link** group, select **New Data Source**, and then select the type of file that you're importing, as depicted in the following screenshot.
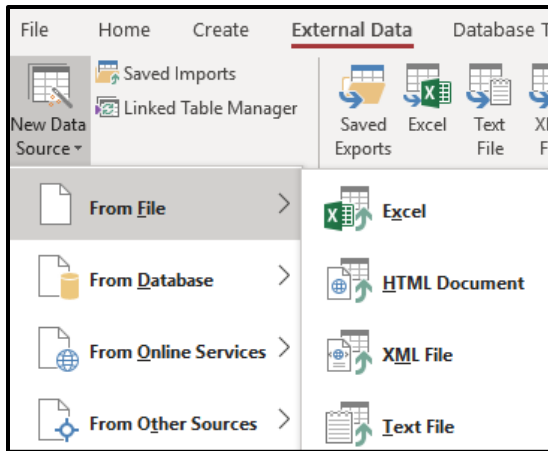
Figure 3: **External Data** options

For example, if you're importing data from an Excel worksheet, select **Excel**. If you don't find the application type that you need, select **More**.

2. In the **Get External Data** dialog box, select **Browse** to find the source data file, or type the full path of the source data file in the **File name** box.

3. Select the option that you want. Note that all programs let you import, and some let you append or link.

4. In the **Specify** section, choose how and where you want to store the data in the current database. You can create a new table that uses the imported data or, with some programs, you can append the data to an existing table or create a linked table that maintains a link to the data in the source program.

   o If a wizard starts, follow the instructions on the wizard, and on the last page of the wizard, select **Finish**.

   o If you import objects or link tables from an Access database, either the **Import Objects** or **Link Tables** dialog box is revealed. Choose the items that you want and then select, **OK**.

     • The exact process that you use depends on whether you choose to import, append, or link data.

5. Access prompts you about whether you want to save the details of the import operation that you just completed. If you think that you'll perform this same import operation again in the future, select **Save import steps**, and then enter the details. You can then easily repeat the operation in the future by selecting **Saved Imports** on the **External Data** tab in the **Import & Link** group; if you don't want to save the details of the operation, select **Close**.

   o If you chose to import a table, Access imports the data into a new table and then displays the table under the **Tables** group in the **Navigation Pane**.

   o If you chose to append data to an existing table, Access adds the data to that table.

   o If you chose to link to data, Access creates a linked table under the **Tables** group in the **Navigation Pane**.

Additional information

For more information, refer to: Import, append, or link to data from another source

Activity: Show and tell

In this activity, you'll observe as your teacher demonstrates how to create a new blank table, create a linked table, and import data from an external data source.

Resources required

- None

Activity instructions

Participate in the activity by following these instructions:

1. Follow along as your teacher demonstrates how to create a new blank table, create a linked table, and import data from an external data source.

2. Participate in the discussion about when you could use the various options when creating a table.

3. Ask clarification questions.

Try-it: Create a table

In this standalone try-it activity, you'll link and import table data.

Resources

- Your **CSA.accdb** from the previous topic or **L2_T2_try_sample_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.
- The **customer_sample.accdb** and **order_sample.xlsx** in this lesson's **Learning Activity Resources** folder.

Instructions

You'll perform the following general tasks during this try-it:

1. Save **customer_sample. accdb** and **order_sample.xlsx** from this lesson's **Learning Activity Resources** folder to your class folder.

2. If it isn't open already, open your **CSA.accdb** from the previous topic or **L2_T2_try_sample_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

3. Import the content from the **customer_sample. accdb** and name the table **customer sample**.

4. Link the content from the **order_sample.xlsx** and name the table **order_sample**.

Topic 3: Use AutoNumber and set the primary key

Unless you have a specific reason not to specify a primary key for a table, specify one. Access automatically creates an index for the primary key, which can help improve database performance. Access also makes sure that every record has a value in the primary key field, and that the value is always unique. Unique values are crucial because without them, there is no way to distinguish a particular row from other rows reliably. In this topic, you'll learn how to set the primary key by using an AutoNumber field.

1. In the navigation pane, select the table to which you want to add the primary key.

2. Open the table in **Design View** by selecting the **Home** tab and **View** group, and then select **Design View**.

3. Locate the first available empty row in the table design grid.

4. In the **Field Name** column, enter a name, such as CustomerID

5. In the **Data Type** column, select the drop-down arrow and select **AutoNumber**.

6. In the **Field Properties** section, in **New Values**, select **Increment** to use incrementing numeric values for the primary key, or select **Random** to use random numbers.
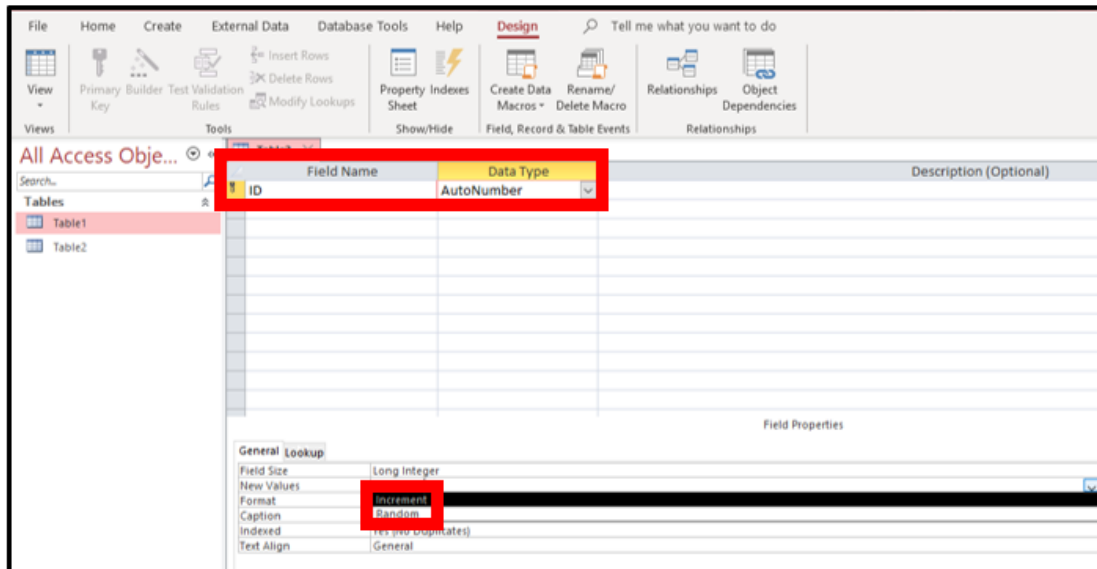
*Figure 4: **AutoNumber** field property options*

When you create a new table in **Datasheet** view, Access automatically creates a primary key for you and assigns it to the AutoNumber data type.

Additional information

For more information, refer to: Add an AutoNumber field as a primary key

Activity: Pose a challenge

In this activity, you'll determine the steps to set a unique identifier or primary key, when no natural ID exists.

Resources required

- None

Activity instructions

Participate in the activity by following these instructions:

1. Think back to the discussion in Lesson 1, Topic 3 about creating unique identifiers or primary keys, when creating a database table.

2. How could you uniquely identify records when no natural ID exists?

3. Discuss your ideas about creating the primary key.

4. Ask clarification questions.

Try-it: Use AutoNumber and set the primary key

In this standalone try-it activity, you'll set the primary key by using **AutoNumber** and compact and repair the database.

Resources

*   Your **CSA.accdb** from the previous topic or **L2_T3_try_sample_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

You'll perform the following general tasks during this try-it:

1. If it's not open already, open your **CSA.accdb** from the previous topic or **L2_T3_try_sample_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

2. Open the **customer sample** table and add a column as the primary key, and set it as **AutoNumber** with **increment** values.

3. Open the **order_sample** table and add a column as the primary key, and set it as **AutoNumber** with **random** values.

Microsoft

Wrap-up

Use these questions to check what you learned in this lesson:

1. Entering data in **Datasheet** view is similar to entering data in a(n) _____.

   Fill in the blank space.

2. The **Templates** group is located on which of the following tabs?

   Select the correct option.

   a. Home

   b. Create

   c. Database Tools

   d. Datasheet

3. Before you rename a table or other database object, you should do which of the following?

   Select the correct option.

   a. Save it.

   b. Close it.

   c. Edit it.

   d. Open it.

Lesson 3: Creating table fields

Overview

In this lesson, you'll learn how to create a variety of table fields, and then set the properties of each field depending on the data that you are collecting. You'll also participate in discussions and follow demonstrations on creating text fields, numeric fields, **Date/Time** fields, and **Yes/No** fields.

Warm-up

1. Which of the following is not a field property?

    Select the correct option.

    a. Column Template

    b. Field Size

    c. Caption

    d. Allow Zero Length

2. Which field property requires users to enter data in a specific format?

    Select the correct option.

    a. Validation Text

    b. Default Value

    c. Required

    d. Input Mask

3. **Short Text** fields can have up to how many characters?

    Select the correct option.

    a. 50

    b. 100

    c. 155

    d. 255

Topic 1: Create text fields

To store a new piece of data about something for which you already have an Access table, add a field to the table. For example, suppose you have a table that stores the last name, first name, email address, telephone number, and mailing address of each of your customers. If you want to start tracking each customer's preferred means of communication, you add a field to store that data. In this topic, you'll learn to add and configure text fields in an Access table.

Adding fields

Every field has certain essential characteristics, such as a name that uniquely identifies the field within a table, a data type that defines the data's nature, the available operations, and the storage space to set aside for each value.

Before you create fields, try to separate data into its smallest useful parts. It is much easier to combine data later than it is to separate it. For example, instead of a **Full Name** field, consider creating separate fields for Last Name and First Name. Then, you can easily search or sort by First Name, Last Name, or both. If you plan to report, sort, search, or calculate on a data item, put that item in a field by itself.

To enter data in the Add New Field column

1. Create or open a table in **Datasheet** view by selecting the **Home** tab and **View** group, and then selecting **Datasheet** view.

2. In the **Click to Add** column, select the data type of the field that you would like to create.

3. Enter the name of the field that you want to create. Use a descriptive name to make the field easier to identify.

4. Enter data in the new field.

> **Additional information**
>
> For more information, refer to: [Adding fields](#)

Create a Short Text field

You add a **Short Text** field to a table when you need to store small amounts of textual data. **Short Text** fields can store up to 255 alphanumeric characters. You can apply custom display formats, and you can also apply input masks that control how users enter data.

You can add a **Short Text** field in **Datasheet** view as previously explained, or you can add and set field properties in **Design View**.

1. Open the table in **Design View** by going to the **Home** tab and **View** group, and then select **Design View**.

2. In the **Field Name** column, select the first blank row, and then enter a name for the field.

3. Select the adjacent cell in the **Data Type** column, and then select **Short Text** from the list.

4. Save your changes.

Set or change Short Text field properties

1. Use **Design View** to set all available properties by selecting the **Home** tab and **View** group, and then select **Design View**.

2. On the **General** tab in the lower section of the table designer, in the **Field Properties** section, locate the property that you want to change. As depicted in the following screen clipping.

General	Lookup
Field Size	255
Format	@
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Allow Zero Length	Yes
Indexed	No
Unicode Compression	No
IME Mode	No Control
IME Sentence Mode	None
Text Align	General

*Figure 5: **Short Text** field properties*

3. Select the field next to the property name. Depending on the property, you can enter data or select an option from a list.

   For information about how to use each field property, select the property and then Select F1.

Additional information

For more information, refer to: [Create or delete a Short Text field](#)

Create or delete a Long Text field

A **Long Text** field can be useful for storing large amounts of information, such as notes, comments, and descriptions. The **Long Text** data type stores up to 65,536 alphanumeric characters and supports rich text formatting, such as different colors, fonts, and highlighting.

You can add a **Long Text** field in **Datasheet** view, as previously explained, or you can add and set field properties in **Design View**.

1. Open the table in **Design View** by selecting the **Home** tab and **View** group, and then select **Design View**.

2. In the **Field Name** column, select the first blank row and then enter a name for the field.

3. Select the adjacent cell in the **Data Type** column, and then select **Long Text** from the list.

4. Save your changes.

Set or change Long Text field properties

1. Use **Design View** to set all available properties by selecting the **Home** tab and **View** group, and then select **Design View**.

2. On the **General** tab in the lower section of the table designer, in the **Field Properties** section, locate the property that you want to change. The following screenshot depicts this.

General	Lookup
Format	@
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Allow Zero Length	Yes
Indexed	No
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Text Format	Plain Text
Text Align	General
Append Only	No

*Figure 6: **Long Text** field properties*

Microsoft

3. Select the field next to the property name. Depending on the property, you can enter data or select an option from a list.

For information about how to use each field property, select the property, and then select F1.

Additional information

For more information, refer to: [Create or delete a Long Text field](#)

Activity: Show and tell

In this activity, the teacher will demonstrate how to create a field in **Datasheet** view and then switch to **Design View** for additional field property options.

Resources required

- None

Activity instructions

Participate in the activity by following these instructions:

1. Participate in the discussion by sharing fields that should be text, and then identify it as **Short Text** or **Long Text**.

2. Follow along as your teacher demonstrates how to create new fields and sets the data type and field properties.

Try-it: Create text fields

In this try-it activity, you'll create the text fields that you identified in your list for the CSA database, and then you'll set the field properties for each field.

Resources

You'll need the following resource for this try-it:

- Your **CSA.accdb** from the previous topic or **L3_T1_try_example_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

You'll perform the following general tasks during this try-it:

1. Refer to your list that you created in Lesson 1 of the tables and fields that you need for the Munson's Pickles and Preserves Farm CSA database.

2. Add each table then add each text field needed to the appropriate table by using the **Datasheet** view.

3. Set the properties for each field by using the **Design View.** You should include a variety of field properties.

Topic 2: Create numeric fields

You add a **Number** or **Currency** field to a table when you need to store numeric data, such as sales and revenue figures or population data. Consider the optimal field size and additional properties such as decimal places, uniqueness, and whether the field is required when you create numeric data. In this topic, you'll learn to add and configure numeric fields in an Access table.

Create a numeric field

You add a **Short Text** field to a table when you need to store small amounts of textual data. **Short Text** fields can store up to 255 alphanumeric characters. You can apply custom display formats, and you can also apply input masks that control how users enter data.

You can add a numeric field in **Datasheet** view, as previously explained, or you can add and set field properties in **Design View**.

1. Open the table in **Design View** by selecting the **Home tab** and **View** group, and then select **Design View**.

2. In the **Field Name** column, select the first blank row, and then enter a name for the field.

3. Select the adjacent cell in the **Data Type** column, and then select **number** or **long number** from the list.

4. Save your changes.

Set or change numeric field properties

1. Use **Design View** to set all available properties by going to the **Home tab** and **View** group, and then select **Design View**.

2. On the **General** tab in the lower section of the table designer, in the **Field Properties** section, locate the property that you want to change, as depicted in the following screenshot.

General Lookup	
Field Size	Long Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	
Default Value	0
Validation Rule	
Validation Text	
Required	No
Indexed	No
Text Align	General

*Figure 7: **Numeric** field properties*

3. Select the field next to the property name. Depending on the property, you can enter data or select an option from a list.

4. For information about how to use each field property, select the property and then select F1.

Additional information

- For more information, refer to: Create or delete a Number or Currency field

Activity: Discuss and learn

In this activity, the teacher will demonstrate how to create and set the field properties for a numeric field, and then demonstrate what happens when entering text into the numeric field.

Resources required

- None

Activity instructions

Participate in the activity by following these instructions:

1. Participate in the discussion by sharing fields that should be numeric, and then identify how to set the field properties.

2. Follow along as your teacher demonstrates how to create the new fields and set the data type and field properties.

Try-it: Create numeric fields

In this try-it activity, you'll create the numeric fields that you identified in your list for the CSA database, and then you'll set the field properties for each field.

Resources

You'll need the following resource for this try-it:

- Your **CSA.accdb** from the previous topic or **L3_T2_try_example_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

You'll perform the following general tasks during this try-it:

1. Refer to your list that you created in Lesson 1 for the tables and fields that you need for the Munson's Pickles and Preserves Farm CSA database.

2. Add each **Numeric** field needed to the appropriate table by using the **Datasheet** view.

3. Set the properties for each field by using the **Design View**. You should include a variety of field properties.

Topic 3: Create Date/Time fields

You add a **Date/Time** field to a table when you need to store dates and times. You can use date and time data for a variety of personal and business purposes, such as birthdays, shipping and billing information, and employee timecards. In this topic, you'll learn how to create and configure **Date/Time** fields.

Microsoft

Understand Date/Time fields

When you use an Access database, you might find date and time values in numerous formats, such as a European format (28.11.2006 or 28-11-2006), a South Asian format (28/11/2006), or the U.S. format (11/28/2006).

Regardless of how Access formats the date and time data, and regardless of how you enter the date or time data, **Date/Time** fields store the dates and times using a system called serial dates. The following table represents a typical serial date and time value.

December 24, 2003 Date Component	9:00 PM Time Component
37979	875
Number of days elapsed since 12/30/1899	Fraction of 24 hours

Figure 8: Example of serial date

The integer portion of the value, to the left of the decimal point, represents the date. The fractional portion, to the right of the decimal point, represents the time.

Add a Date/Time field

You can add a **Date/Time** field in **Datasheet** view as previously explained, or you can add and set field properties in **Design View**.

1. Open the table in **Design View** by selecting the **Home** tab and **View** group, and then select **Design View**.

2. In the **Field Name** column, select the first blank row and then enter a name for the field.

3. Select the adjacent cell in the **Data Type** column, and then select **Date/Time** from the list.

4. Save your changes.

Set or change Date/Time field properties

1. Use **Design View** to set all available properties by selecting the **Home** tab and **View group**, and then select **Design View**.

2. On the **General** tab in the lower section of the table designer, in the **Field Properties** section, locate the property that you want to change, as depicted in the following screenshot.

*Figure 9: **Date/Time** field properties*

3. Select the field next to the property name. Depending on the property, you can enter data or select an option from a list.

4. For information about how to use each field property, select the property and then select F1.

Additional information

- Learn more from about **Date/Time** fields through Microsoft Support. For more information, refer to: Create or delete a Date/Time field

Restrict data input by using validation rules

You can validate data in Access by using validation rules. You can use the expression builder to help you format the rule correctly. Set validation rules can in either **Datasheet** view or **Design View**.

Microsoft

Validation rules in Access:

- **Field Validation Rule:** You can use a field validation rule to specify a criterion that all valid field values must meet. For example, a date field might have a validation rule that disallows values in the past.
- **Record Validation Rule:** You can use a record validation rule to specify a condition that all valid records must satisfy. You can compare values across different fields using a record validation rule. For example, a record with two date fields might require that values of one field always precede values of the other field (for instance, the StartDate is before the EndDate).

Create a field validation rule

1. Select the field that you want to validate.

2. On the **Fields** tab, in the **Field Validation** group, select **Validation**, and then select **Field Validation Rule**.

3. Use the **Expression Builder** to create the rule. For more information about using the **Expression Builder**, refer to the article: [Use the Expression Builder](#)

Create a message to display for field input that is not valid

1. Select the field that needs a message for input that is not valid. The field should already have a validation rule.

2. On the **Fields** tab, in the **Field Validation** group, select **Validation**, and then select **Field Validation Message**.

3. Enter an appropriate message. For example, if the validation rule is >10, the message might be: Enter a value that is less than 10.

4. For some examples of field validation rules and messages, refer to: [Validation rule reference](#)

Additional information

- Learn more from Microsoft Support. For more information, refer to: [Restrict data input by using validation rules](#)

Activity: Tell a story

In this activity, the teacher will demonstrate how to create a **Date/Time** field and then set a validation rule.

Resources required

- None

Activity instructions

Participate in the activity by following these instructions:

1. Participate in the discussion by sharing fields that should be **Date/Time** field and identify validation rules for this field.

2. Follow along as your teacher demonstrates how to create the new fields and set the data type and field properties.

Try-it: Create Date/Time fields

In this try-it activity, you'll create **Date/Time** fields for the CSA database, and then you'll set the validation rule for the field.

Resources

You'll need the following resource for this try-it:

- Your **CSA.accdb** from the previous topic or **L3_T3_try_example_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

You'll perform the following general tasks during this try-it:

1. Refer to your list that you created in Lesson 1 for the tables and fields that you need for the Munson's Pickles and Preserves Farm CSA database.

2. Add each **Date/Time** field needed to the appropriate table by using the **Datasheet** view. If you didn't initially list a field that will use the **Date/Time** data type, review your current tables to identify a table that requires this information, and then add the field.

3. Set the properties for the field, including a validation rule.

Topic 4: Create Yes/No fields

Use the **Yes/No** data type to store a Boolean value, such as **True** or **False**, **On** or **Off**, **Yes** or **No**, and any field that contains only one of two values. This data type often maps to a **Check Box** control on a form or report. In this topic, you'll learn how to add and set properties for the **Yes/No** field.

Add a Yes/No field

You can add a **Yes/No** field in **Datasheet** view, as previously explained, or you can add and set field properties in **Design View**.

1. Open the table in **Design View** by going to the **Home** tab and **View** group, and then select **Design View**.

2. In the **Field Name** column, select the first blank row and then enter a name for the field.

3. Select the adjacent cell in the **Data Type** column, and then select **Yes/No** from the list.

4. Save your changes.

Set or change Yes/No field properties

1. Use **Design View** to set all available properties by going to the **Home** tab and **View** group, and then select **Design View**.

2. On the **General** tab in the lower section of the table designer, in the **Field Properties** section, locate the property that you want to change, as depicted in the following screenshot.

General	Lookup
Format	True/False
Caption	
Default Value	No
Validation Rule	
Validation Text	
Indexed	No
Text Align	General

*Figure 10: **Yes/No** field properties*

3. Select the field next to the property name. Depending on the property, you can enter data or select an option from a list.

4. For information about how to use each field property, select the property and then select F1.

Additional information

Learn more about **Yes/No** fields through Microsoft Support resources. For more information, refer to: Create or delete a Yes/No field

Activity: Pose a challenge

The teacher will ask the class how to create a **Yes/No** field and types of properties for the type of field. Volunteer if you think that you can demonstrate the solution.

Resources required

You'll need the following resource for this activity:

- None

Activity instructions

Participate in the activity by following these instructions:

1. Think about how you've added other data type fields in your database, then predict how you'll set the field data type as **Yes/No**.

2. What properties do you think you could set for the **Yes/No** field?

3. Share your ideas with the class and participate in the discussion.

Try-it: Create Yes/No fields

In this try-it activity, you'll create **Yes/No** fields for the CSA database, and then set the properties for the field.

Resources

You'll need the following resource for this try-it:

- Your **CSA.accdb** from the previous topic or **L3_T4_try_example_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

You'll perform the following general tasks during this try-it:

1. Refer to your list that you created in Lesson 1 for the tables and fields that you need for the Munson's Pickles and Preserves Farm CSA database.

2. Add each **Yes/No** field needed to the appropriate table by using the **Datasheet** view. If you didn't initially list a field that should use the **Yes/No** data type, review your current tables and identify a table that requires this information, and then add the field.

3. Set the properties for the field.

Wrap-up

Use these questions to check what you learned in this lesson:

1. The **Date/Time** fields store the dates and times as a system called _____.

   Fill in the blank space.

2. To ensure that the information inputted in a field is in the correct format, Access allows you to create a _____.

   Fill in the blank space.

3. You should use the _____ data type if you would like to add a **Check Box** to collect a Boolean value such as **True** or **False**.

   Fill in the blank space.

Glossary

Field	A column in a database table.
Primary key	The column in a database that uniquely identifies each row.
Properties	Control the appearance or behavior characteristics for objects and related parts like fields and controls.
Table	The most basic database object; stores data in categories.
Template	A ready-to-use database that contains all the tables, queries, forms, and reports needed to perform a specific task.
Validation rule	An expression that limits the values that can be entered in the field.
Validation text	The text in the error message that appears when users violate a validation rule.

Table 3: Glossary terms and definitions

Cornerstone

Overview

This Cornerstone project requires you to plan and create a database. You'll use the skills that you learned in this module to create an Access file, create Access tables, use **AutoNumber**, and set the primary key. You'll also create table fields, and compact and repair the database.

Objectives

The following table outlines the Cornerstone objectives and their corresponding Microsoft Office Specialist (MOS) exam objectives.

Starting the database design	• Not mapped
Starting an Access database	• OD 1.2.3: Set Primary Keys • OD 2.1.2: Create linked tables from external sources • OD 2.1.3: Import tables from other databases • OD 2.2.3: Add table descriptions • OD 2.4.6: Configure fields to auto-increment
Creating table fields	• OD 2.4.1: Add and remove fields • OD 2.4.2: Add validation rules to fields • OD 2.4.3: Change field captions • OD 2.4.4: Change field sizes • OD 2.4.5: Change field data types

Table 4: Cornerstone objectives

Duration

40 minutes

Instructions

1. Complete the tasks for each file.

2. When saving your file, add your name to the end of the filename—for example, **You_pick_day_Dwayne_Espino**. Follow your teacher's directions for where to save your files.

3. After completing the Cornerstone, assess your completion, and then enter the points that you think you earned within the task lists in the following sections. You can ask your teacher for help, if necessary.

Tasks

You'll work with two supporting files in this Cornerstone:

- **information.accdb**
- **pictures.xlsx**

Task: Database design (11 points)

1. Think of a subject that interests you to create a database. Some examples would be sports statistics, animals, video games, student information, or a company database. (1 point) (Not mapped)

2. Plan your database by listing the information that you need to collect, and then organize that information in appropriate tables. You should list at least three tables and a total of at least 10 fields. (5 points) (Not mapped)

3. Plan the fields needed for each table and determine the data type. Be sure to include at least four different data types (5 points) (Not mapped)

Points scored: _____ / 11

Task: Create an Access file (7 points)

1. Create your database file and set it to compact and repair the database on close. (1 point) (Not mapped)

2. Create at least three tables. (3 points) (Not mapped)

3. Add a table description to each of the three tables. (3 points) (Exam objective 2.2.3)

Points scored: _____ / 7

Task: Create table fields (39 points)

1. Create fields with the appropriate data type in each of your tables. You must include at least 10 fields in total. (10 points) (Exam objective 2.4.1)

2. Establish a primary key for each of the tables. (3 points) (Exam objective 1.2.3)

3. Set at least one of the primary keys to **AutoNumber**. (1 point) (Exam objective 2.4.6)

4. Configure the field captions for each of the 10 fields. (10 points) (Exam objective 2.4.3)

5. Change the field size for each of the 10 fields. (10 points) (Exam objective 2.4.4)

6. Set the validation rules for at least five fields. (5 points) (Exam objective 2.4.2)

Points scored: _____ / 39

Task: Import tables from another source (10 points)

1. Import the **information to collect** table from the **information.accdb**. (5 points) (Exam objective 2.1.3)

2. Configure the **ID AutoNumber** properties to increment values. (2 points) (Exam objective 2.4.6)

3. Set captions for each of the three fields. (3 points) (Exam objective 2.4.3)
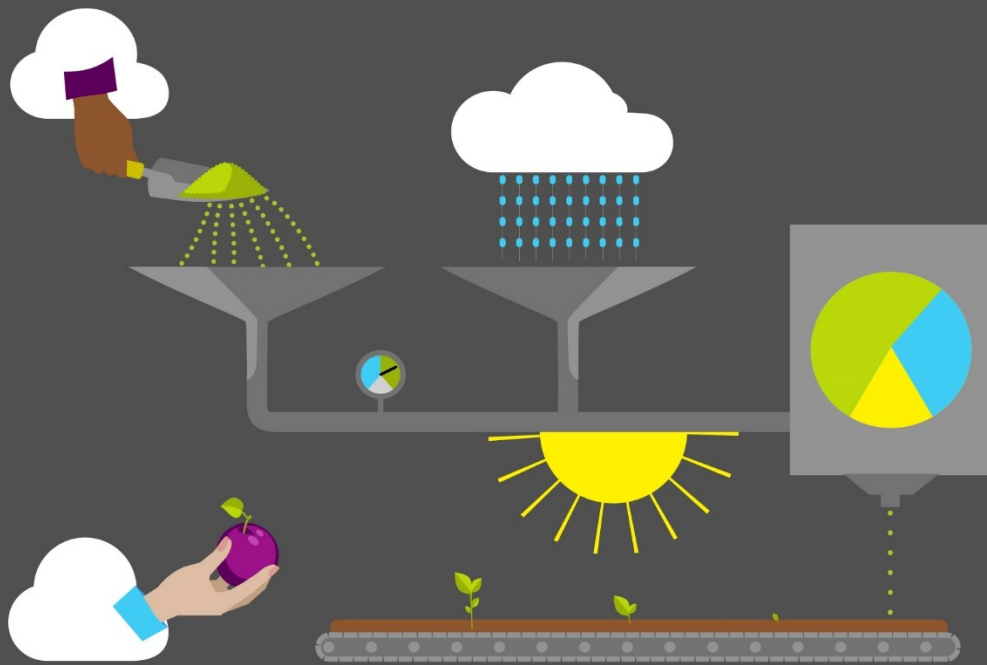
Points scored: _____ / 10

Task: Link a table from an Excel spreadsheet (10 points)

1. Link the **picture** table from the **pictures.xlsx** file. (5 points) (Exam objective 2.1.2)

2. Configure the **ID AutoNumber** properties to random values. (2 points) (Exam objective 2.4.6)

3. Set captions for each of the three fields. (3 points) (Exam objective 2.4.3)

Points scored: _____ / 10

Total points: _____ / 77

■■ Microsoft

Microsoft

Student Guide

40572A
Microsoft Access expert 2019

Module 3: Adding and editing data

Contents

Microsoft

Module overview

Description

Now that you know how to plan and create a database, you will want to add data to your database. In addition to adding data to your database one record at a time, you can also import larger datasets from other apps such as a Microsoft Excel workbook or another Access database.

As you are aware, data keeps changing and you might often want to modify existing data or delete unwanted data. Similar to adding or deleting contacts in your phone, you can add, modify, or delete records in a Microsoft Access 2019 database. Sometimes, you might want to make the same types of changes to multiple records or display a certain subset of data in a specific order. Access includes several features that you can use to perform data operations like these.

In this module, you will learn how to import data from Excel or other Access databases. You will also learn how to work with data in datasheets and forms, including how to add new data, change existing data or delete records, and how to use undo when editing and deleting records. You will learn to work with various features of datasheets and forms to work with data in a more efficient and consistent way, including using **Find and Replace** to make changes to multiple records. In both datasheets and forms, you will find records more quickly by using sorting and filtering.

The following table outlines the lesson objectives and their corresponding Microsoft Office Specialist (MOS) exam objectives:

Lesson	Learning objective	Exam objective(s)
Using datasheets	At the end of this lesson, you will be able to navigate datasheets, including hiding fields and adding totals rows, add and edit records in tables.	• 2.2.1: Hide fields in tables • 2.2.2: Add totals rows

Lesson	Learning objective	Exam objective(s)

Importing, sorting, and filtering data	At the end of this lesson, you will be able to copy data from Microsoft Excel to create a table and append data to an existing table, import a table from a Microsoft Access database, and sort and filter the data in various tables.	• 2.1.1: Import data into tables
		• 1.1.1: Import objects or data from other sources
		• 2.3: Manage table records
		  o 2.3.2: Sort records
		  o 2.3.3: Filter records

Improving data-entry efficiency	At the end of this lesson, you will be able to use **Find and Replace** to make changes to data, add choices and default values to tables, and create a form with an input mask. You will use the form to sort, add, and edit records.	• 2.3.1: Find and replace data • 2.4.7: Set default values • 2.4.8: Apply built-in input masks • 4.2.2: Sort records by form field
Cornerstone	Prepare a database for an upcoming launch of Munson's new preserves products by importing data from Excel and Access, creating forms, and working with the data through tables (datasheets) and forms.	• All of the preceding exam objectives

Table 1: The objectives by lesson

Scenario

You have created an Access database by using the information from your meeting with the Community Supported Agriculture (CSA) program team. You have also continued gathering the data you need to incorporate into your database from all the existing scattered information.

As you work through the vast amount of information, you realize that you need to be more efficient in adding data to the database. You use different methods such as import, copy and paste, and direct entry into table datasheets.

To arrange the data so that it is easy to locate and work with, you use techniques such as sorting, filtering, and finding and replacing. To make it easy for others in the team with less Access experience to observe, enter, edit, and sort or filter data, you create some basic forms.

Microsoft

Cornerstone

This module concludes with a Cornerstone in which you will use the skills you learned in the module to begin preparing the CSA Program database for the launch of a new line of preserves products at Munson's. In the Cornerstone, you'll:

- Add data to the database
- Edit data in the database
- Simplify data entry by configuring datasheets and forms

Lesson 1: Using datasheets

Overview

In this lesson, you will learn how to navigate datasheets using both buttons and keyboard commands. You'll hide fields (columns) that you don't need and add rows to datasheets that return averages and totals of the data in the table. You'll also practice adding new and editing existing records in tables, and using sorting and filtering to organize that table data.

Warm-up

A *keyboard shortcut* is selecting two or more keys, usually simultaneously, to perform an action. Keyboard shortcuts can significantly speed up certain activities on a computer. Before you learn new ways to navigate an Access datasheet using keyboard shortcuts, work with a classmate to find out how many keyboard shortcuts you already know from playing computer games or from other applications you use.

In the table provided, enter the keyboard shortcut in the first column and describe what it does in the second column. The table includes two examples to get you started.

Be prepared to share your results with the class.

Keyboard shortcut	What it does
Ctrl+S	Saves a file, a document, or an Access object.
Ctrl+C	Copies content from a file or spreadsheet to the clipboard

Keyboard shortcut	What it does

Table 2: Keyboard shortcuts

Topic 1: Navigate datasheets

Munson's has expanded their CSA business recently, which means that they have more members and orders in the database than when they started. Even though everyone is pretty happy about this, you and your fellow interns are starting to realize that managing all that data will require more skills. The first thing on the agenda is learning different ways to get around in, or, *navigate*, the records in a table datasheet.

What's a datasheet?

A *datasheet* is an object view that is made up of rows and columns. Rows contain records, and columns contain fields. The terms are used interchangeably, so don't be surprised if you come across, for example, fields referred to as columns.

In Access, datasheet views are available for tables, forms, and queries. With the exception of certain kinds of queries, you can work directly with your data in datasheets. You'll learn about forms later in this module, and queries later in the course.

The **Datasheet View** is the default view for tables, and the one you use while working with data in your tables.

Navigating a table datasheet

You can navigate a datasheet by using:

- The **Record** buttons.
- Vertical and horizontal scroll bars.
- Your keyboard, such as Page up or Page down keys and arrow keys, or keyboard shortcuts such as Ctrl+Right arrow.

The buttons are:

- **First record**
- **Previous record**

- **Current Record** box (the current record and the total number of records)
- **Next record**
- **Last record**
- **New (blank) record**
- **Filter indicator**
- **Search** box
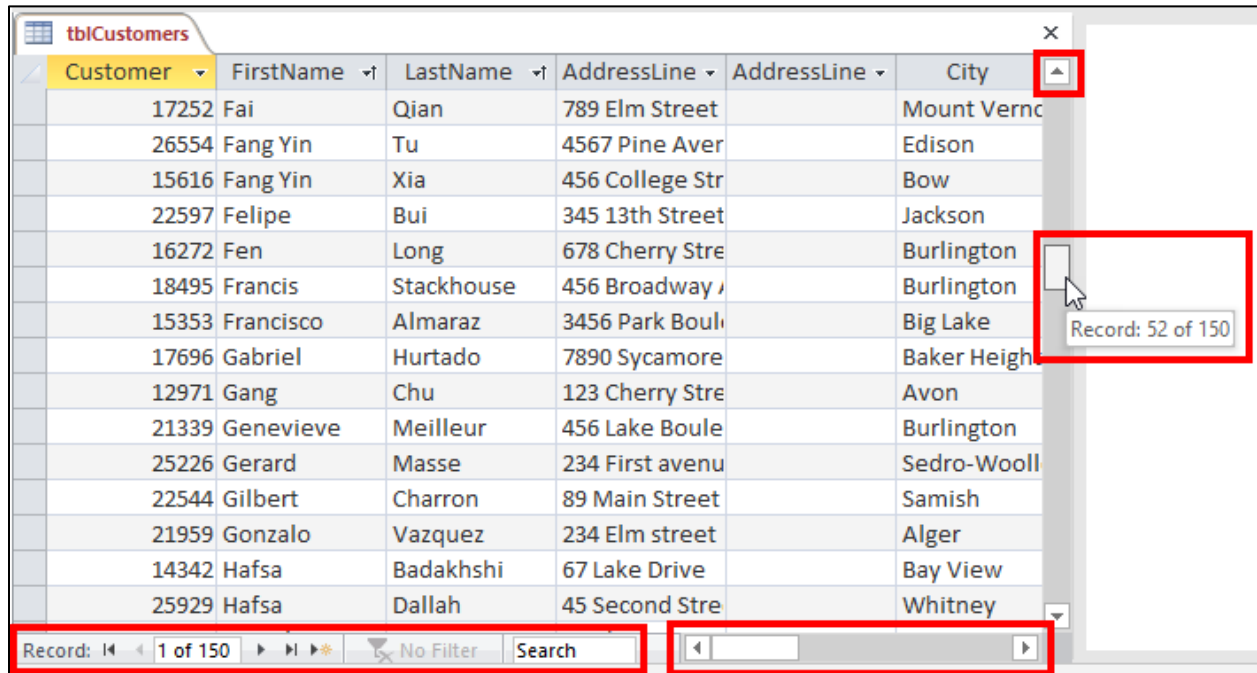
Figure 1: The buttons and scroll bars used to navigate a datasheet

When using the **navigation** buttons:

- Select a **navigation** button to move between records.
- Navigate to a specific record by entering a record number in the **Current Record** box and then selecting Enter.
- Quickly find a specific record by entering a search term in the **Search** box and then selecting Enter.

To use the scroll bars, select the arrow buttons on either end of the scroll bar. Alternatively, drag the scroll box to quickly move from one end of the scroll bar to the other. You can select the scroll box and then select the Up, Down, Left, and Right arrow keys to scroll through the datasheet. Dragging the scroll box vertically will reveal a tooltip that indicates the current record's position number in the datasheet.

Additional information

For more information on locating specific records, refer to: [Locate specific records in a database](#)

Using the keyboard to navigate a datasheet

To navigate within a datasheet, you can use your keyboard to navigate between cells or to refer to the beginning or end of a row, column, or datasheet. The following table provides keyboard shortcuts with descriptions:

Key or key combination	What it does
Tab or Enter or Right arrow	Moves one field to the right in the same record, and after the last field, moves to the next record. If it's the last record, it creates a new record.
Shift+Tab or Left arrow	Moves one field to the left in the same record. After the first field, moves to the previous record, if there is one.
Down arrow	Moves to the next record in the same field.
Up arrow	Moves to the previous record in the same field.
Home	Moves to the first field of the current record.
End	Moves to the last field of the current record.
Ctrl+Home	Moves to the first field in the first record.
Ctrl+End	Moves to the last field in the last record.
Page up	Scrolls up one screen
Page down	Scrolls down one screen
Ctrl+Page up	Scrolls left one screen
Ctrl+Page down	Scrolls right one screen

Table 3: Keyboard shortcuts with descriptions

Microsoft
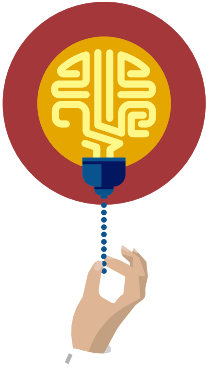
Did you know?

It is possible to use all the commands on the ribbon by using only your keyboard without ever using the mouse! Select the Alt key, and then select the Right and Left arrow keys to navigate between ribbon tabs.

For more information, please refer to: Navigate the ribbon with only the keyboard

Hide and unhide fields in datasheets

Think about circumstances when there was so much to notice, you couldn't focus on what you needed to find or do. For example, consider when you couldn't find something in the refrigerator because it was so full. Or, when unnecessary words in a sentence made it hard to understand. Hiding things temporarily can make a task much easier.

You can hide fields (columns) in a datasheet as a way to simplify using datasheets with many fields because there will be fewer fields to read. You can also hide fields temporarily to enter data into only a few fields, to print a datasheet with only some fields, or to hide fields that are no longer used, but which contain data you might need in the future.

The following screenshots compare the same datasheet without hidden fields and with hidden fields. Which printout would be easier to use for locating phone numbers of members?

MemberID	FirstName	LastName	AddressLine1	AddressLine	City	State	Zip	Phone	BoxSize	Frequency	Allergies	ActiveMemb
10061	Jacob	Schreiner	678 Cherry Street		Burlington	WA	88204	555-0143	Medium	Bi-weekly	Apples	☐
10075	Ruth	Miranda	3456 Park Boulevard		Burlington	WA	67839	555-0106	Small	Monthly	None	☑
10340	Alhasan	Homsi	678 Cherry Street		Bow	WA	55778	555-0120	Large	Bi-weekly	None	☑
10550	Kyle	Hatley	789 Cedar Avenue		Lyman	WA	23402	555-0114	Large	Monthly	None	☑
10553	Reem	Al-Zuhairi	678 Cherry Street		Baker Heights	WA	56984	555-0133	Large	Weekly	None	☐

*Figure 2: The **tblMembers** table with no hidden fields*

Microsoft

*Figure 3: The **tblMembers** table with some fields hidden*

If you save the table with the fields hidden, they will still be hidden the next time you open the table. If you don't want to save the table with the fields hidden, unhide the fields before closing the table, or don't save the table.

Caution

You can't use or enter data in a field while it is hidden, so be careful not to hide fields you might need later. It's best to unhide fields as soon as possible.

Hide fields

1. Select the field (or fields) that you want to hide.

2. On the **Home** tab, in the **Records** group, select the **More** drop-down list, and then select **Hide Fields**, as the following screenshot depicts. Alternatively, right-click or access the context menu for the selected columns, and then select **Hide Fields**.
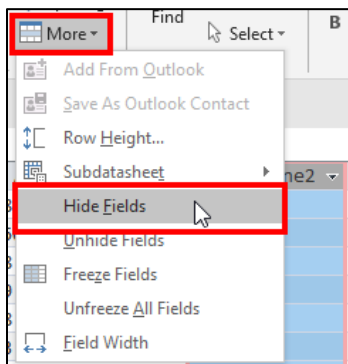
*Figure 4: The **More** button and **Hide Fields** selection*

 Microsoft

Unhide fields

1. On the **Home** tab, in the **Records** group, select **More**, and then select **Unhide Fields**, as the following screenshots depict. Alternatively, right-click or access the context menu for the selected columns, and then select **Unhide Fields**.

2. Select the check boxes for the fields you want to unhide, and then select **Close**.
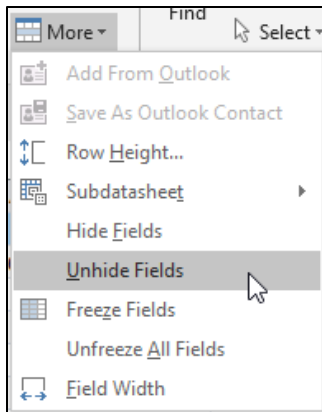
*Figure 5: The **More** button and **Unhide Fields** selection*
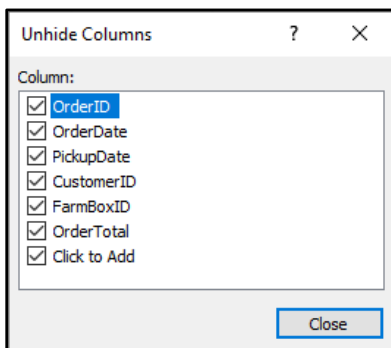
*Figure 6: Select all fields you want to be displayed in the datasheet in the **Unhide Columns** dialog box*
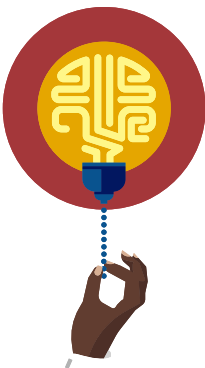
Did you know?

You can use the **Hide Fields** feature to hide the **Click to Add** column. Many database authors do this after they finish creating their database, to lessen the chances that they, or someone else, will accidentally add a new column.

Add Total rows to datasheets

A **Total** row is a row at the end of a datasheet that reveals totals and other calculations for the fields in the datasheet. Adding a **Total** row to a datasheet is useful because you can find and print totals quickly without having to perform more complicated steps, such as creating a report or a query. You can add a **Total** row as the last row in any datasheet including tables, queries, and forms. In this lesson, you'll discover how to add **Total** rows to tables.

Although the row itself is called a **Total** row, the calculations aren't always a total of a numerical field. For example, even if your datasheet doesn't have any fields with numbers, you can use a **Total** row to count the number of records.

In the following screenshot of the **Orders** table, the **Total** row indicates that there are nine records, by using the **Count** function in the **OrderDate** column. It indicates that the total amount of the orders is $170.21, by using a **Sum** function in the **OrderTotal** column.

*Figure 7: The **tblOrders** table with a **Total** row*

Add a Total row to a datasheet

1. Open a table in **Datasheet View**.

2. On the **Home** tab, select **Totals** as depicted in the following screenshot. The **Total** row is added after the **(New)** record row.

*Figure 8: The **Totals** button*

3. Select the cell in the **Total** row in the column where you want the total.

4. Select the down arrow to reveal the calculation options, and then select the function you want to use. Refer to the following screenshot:

*Figure 9: Calculation options in the **Total** row*

5. To save the **Total** row as part of the datasheet, select **Save** on the **Quick Access Toolbar**.
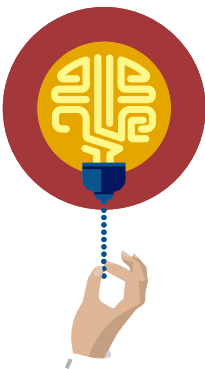
Did you know?

For fields that have a data type of number, decimal, or currency, the following functions are available: **Sum**, **Average**, **Count**, **Maximum**, **Minimum**, **Standard Deviation**, and **Variance**. For text fields, only the **Count** function is available.

Additional information

For more information about using **Total** rows, refer to: Display column totals in a datasheet using a Totals row

Caution

This course uses database files that follow a general storyline for the CSA program at Munson's Pickles and Preserves Farm. These database files are the Learning Activity Resource files that you'll use to work on each module's activities and try-its. Each Learning Activity Resource file contains the data and objects, such as tables, queries, forms, and reports, that you need to complete a corresponding activity.

Due to this course's modular nature, the objects and data in these files might vary across activities or try-its. Therefore, it's important that you start your activities or try-its only with the designated files, as per applicable instructions. You also should note that screenshots in the topic content are for illustration purposes only and might appear different than those that are in the Learning Activity Resource files.

Activity: Follow me

In this activity, you will follow along with your teacher to practice ways to navigate a datasheet using specific navigation techniques.

Resources required

You will need the following resources for the first part of this activity:

- Open **L1_T1_act_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.
- Open the **tblMembers** table.

Participate in the activity by following these instructions:

- Follow your teacher's instructions to navigate the table with the scroll bar, **navigation** buttons, and keys.
- If you cannot move between rows or columns, you might have begun to edit a record. Select the Esc key to return to the **navigation** mode.
- When you are using keys to navigate, do not use your mouse, and select only the required or keys and key combinations. Selecting other keys (letters, numbers, or backspace) can modify the data in the table.
- If you think you accidentally changed the data, ask your teacher for help.
  - When you are done, close the database.

Activity: Show me how

In this activity, observe your teacher demonstrate how to hide fields and add a **Total** row to a datasheet.

Resources required

None

Instructions

To participate in this activity:

- Pay attention to the methods that your teacher uses to perform data entry and editing.
- Be prepared to repeat these actions in the upcoming try-its.
- Ask questions to clarify anything that isn't clear to you.

Try-it: Navigate datasheets

The Sales department has asked for a printout of all the sales so far. They need a dollar amount for the total orders, and a count of how many orders there are. This information is in the **tblOrders** table. In this try-it activity, you will prepare the **tblOrders** table datasheet for printing by hiding fields and adding a **Total** row.

You'll hide the **MemberID** and the **FarmBoxID** fields because you don't want to include them in the printout.

Resources required

You will need the following resources for the first part of this activity:

- **L1_T1_try_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.
- The **tblOrders** table.

Instructions

The following are the general tasks to perform during this try-it:

1. Open **L1_T1_try_csa_program_starter.accdb**.
2. Open the **tblOrders** table.
3. In the **tblOrders** table, select the **MemberID** field and the **FarmBoxID** field, and hide them.
4. Add a **Total** row to the **tblOrders** table.

Microsoft

5. In the **Total** row, add a field total in the **OrderDate** field to display the number of records by using the **Count** function.

6. In the **Total** row, add a field total in the **OrderTotal** field to display the total of all orders by using the **Sum** function.

7. For this try-it activity, you don't need to print the datasheet. Instead, verify the following facts in your datasheet, and then ask your teacher to check your work:

Row 10 should be the (New) row for entering new records.

Row 11 should be the Total row. It should display 9 in the OrderDate column and $376.92 in the OrderTotal column.

OrderID	OrderDate	PickupDate	OrderTotal
1	12/23/2019	12/24/2019	$62.98
2	12/23/2019	12/24/2019	$35.98
3	12/23/2019	12/24/2019	$22.75
4	12/23/2019	12/24/2019	$42.50
5	12/30/2019	12/31/2019	$35.98
6	12/30/2019	12/31/2019	$62.98
7	1/3/2020	1/5/2020	$48.50
8	1/4/2020	1/5/2020	$22.75
9	1/5/2020	1/7/2020	$42.50
(New)			$0.00
Total	9		$376.92

*Figure 10: The **tblOrders** table with two fields hidden and a **Total** row*

8. Unhide all the fields.

9. Save the table with the **Total** row and then close it.

Topic 2: Add and edit records

Add records to a table

A quick way to add a new record is to enter the data directly in the table in the **Datasheet View**. To begin, navigate to the last row of the datasheet by selecting Ctrl+Down arrow or use the Tab key to navigate to the last record with data. Alternatively, select the **New (blank) record** button in the **record navigation** buttons, as the following screenshot depicts:
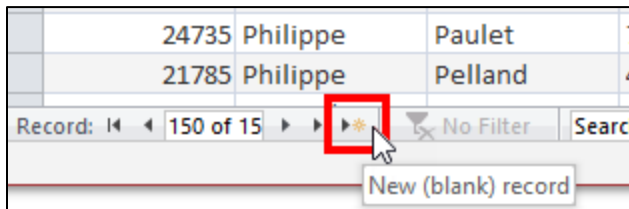
*Figure 11: The **New (blank) record** button*

Add a new record

1. There are several ways to add a new record:

   o On the **Home** tab, refer to the **Records** group, and then select **New**.

   o Navigate to the last row in the datasheet and enter data. An asterisk in the record selector indicates the last row.

   o Select **Ctrl++**(plus sign).

   o Select the **New (blank) record** button.

2. Enter data for each field and select Enter or Tab after each entry.

3. When you are done entering the data for the new record, do one of the following:

   o On the **Home** tab, in the **Records** group, select **Save**.

   o Select Shift+Enter.

- o Move the cursor to the next or previous record. The following **Did you know?** provides additional information.
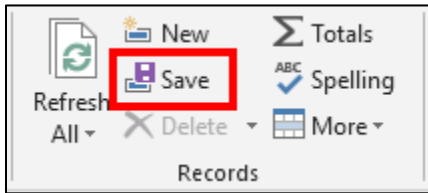
Figure 12: The **Save record** button
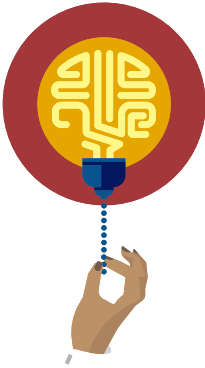
Did you know?

There is no need to select **Save record** to save your changes to a record. When you move to the next (or previous) record, Access saves your changes automatically. This takes some getting used to. Wouldn't it be great if it did other things for you too, such as homework?

When you close a table, Access prompts you to save, referring to the changes you made to the design of the table itself (such as hidden fields or a filter). Access is not prompting you to save changes to the data stored in the table, because those changes would have already been saved.

Notes about key (ID) fields

As you learned in Module 2, tables should have one field that contains unique values. This means that no two records can have the same value in that field. These are called **primary key** fields. You can identify which field is a **primary key** field from the table's **Design View**. **Primary key** field is typically the first field in the table, and sometimes has the word "ID" in the field name.

- When you enter data in the **primary key** field, you must be sure to always choose a value that hasn't been taken already. This is known as a *unique value*.
  - o If you try to reuse a value in the **primary key** field, when you try to save the record or move to a different record, the following error message displays: "The changes you requested to the table were not successful because they would create duplicate values in the index, primary key, or relationship…"

Microsoft

The following screenshot depicts the error message:
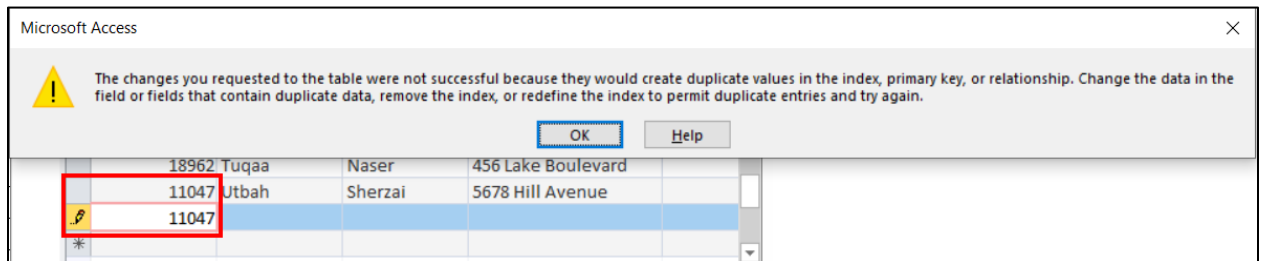
Figure 13: The error message when a primary key contains a value that is not unique

- If the **primary key** field has **(New)** in it, it means the data type is **AutoNumber**, and you can't (and don't need to) enter any values in this field. Access will generate the values for this field. Select the Enter or Tab key to advance the active cell one more field and begin typing in that field. A few things to note about **AutoNumber** fields:
  - o Do not use **AutoNumber** if you need a specific number for a record, because you cannot control which number is assigned to the record.
  - o If you cancel entering a new record (for example, by selecting the Esc key), or if you delete a record, the **AutoNumber** associated with the record cannot be reused.

*Figure 14: The new record row, with the **AutoNumber** field **OrderID***

Edit records in a table

To edit records in a table:

- Open the table and enter data directly in the datasheet.
- Select Tab or Enter to move to the next field after you enter or change data.

- By default, when you move the cursor to the next field, all the contents of that cell are selected. If you enter a cell and start typing, everything in the cell will be replaced.
- To enter the cell to change only part of the data, select the cell with a mouse or select the F2 key to clear the selection of all the cell contents and use an insertion point, and then use the following keys to move through and edit the data:
  - o Backspace or Delete to delete
  - o Left and right arrow keys to move left and right through the data
  - o Ctrl+arrow keys to move word-by-word
  - o Shift+arrow keys to select data
  - o Home to refer to the first insertion point in the cell
  - o End to refer to the end of the cell
  - o F2 to toggle between an insertion point and selecting all the contents of a cell
  - o Esc to cancel any changes in the cell and to stop editing the record.

You can copy and paste data using the buttons in the Clipboard group on the ribbon, by right-clicking or accessing the context menu, or by using keyboard shortcuts (Ctrl+C to copy, Ctrl+V to paste).

Additional information

For more information on editing records in Access, refer to: Ways to add, edit, and delete records

Recognize data entry symbols

Next to each record, there is a small symbol that indicates the current status of the record. The following screenshot depicts that the current record is indicated by a change in color in the record selector:
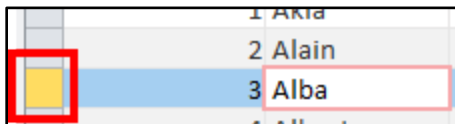
Figure 15: The record selector for the current record

As soon as you make a change to a record, a small pencil icon appears next to the record, indicating that you are editing the record, and changes have not yet been saved.

Microsoft

After making all the changes to a record, select **Save** on the ribbon, or select Tab or Enter to move to the next record. The pencil icon will disappear, and your changes will be saved to the database. The following screenshot depicts the pencil, which indicates that the record is being edited and the changes are not saved:

Figure 16: The pencil indicates that the record is being edited and the changes are not saved

The asterisk in the record selector of the last row in a table datasheet indicates that this is a new row for entering new records, as the following screenshot depicts:

Figure 17: The asterisk indicates the row to enter a new record

Entering dates

Date fields will display a button called a date picker that you can use to select a date from a calendar or select **Today** to enter today's date. You can also enter the date in the short date format, which is often month/day/year. For example, February 6, 2020 would be entered as 02/06/2020. The following screenshot depicts a date picker in a date field:
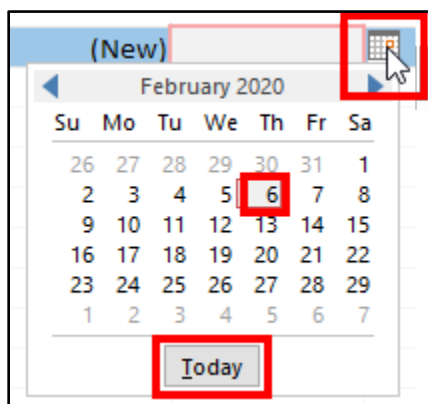
Figure 18: A date picker in a date field
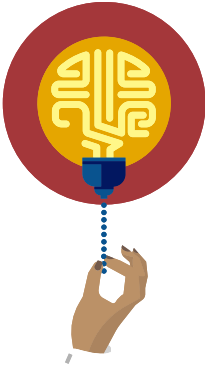
Did you know?

To enter today's date, you can also select Ctrl+; (semicolon).

Additional information

For more information on date and time fields, refer to: Format a date and time field

Delete a record in a table

To delete a record in a table:

1. Select the record selector for the record.

2. Select the Delete key, or on the **Home** tab, in the **Records** group, select the **Delete** button.

3. In the warning message that appears, select **Yes**.

Figure 19: The record selector and a selected record

*Figure 20: The **Delete** button on the ribbon*
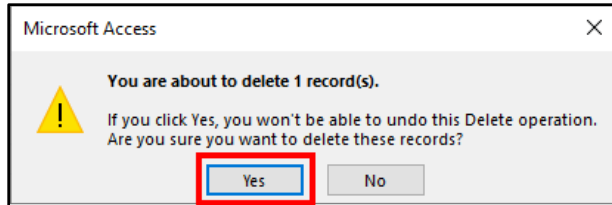
Figure 21: The warning message that appears when you are about to delete a record

Caution

Only delete records if you are absolutely sure they are not needed. When you delete a record (or multiple records), you cannot undo the action and that data is unrecoverable.

For this reason, it is a good idea to export the data or make a backup copy of a table before deleting multiple records.

Use undo when editing and deleting records

Access has both an **Undo** button and a keyboard shortcut (Ctrl+Z) to undo actions. You can undo up to the last 20 actions, in the reverse order that you performed the original action. In other words, you can't skip any. When you work with data in tables, the undo command works a little differently compared to other programs you're used to. Undo only affects one record at a time.

1. To undo the last action you made, select **Undo** or select Ctrl+Z.

2. To undo multiple actions, repeatedly select Ctrl+Z, or select the arrow next to **Undo Typing** in the **Quick Access Toolbar** and select from the list.

3. When working with table records, selecting **Undo** or selecting Ctrl+Z will undo changes to the current field if your cursor is still in it, or all the changes to the record as long as you haven't begun to edit another record. To illustrate this idea, imagine you are editing the table with member details, and you've just changed Alba's last name from "Smith" to "Sutton," and the address from "123 Pine Avenue" to "4567 Pine Avenue".

Name	Address
Alba Smith	123 Pine Avenue
Daniel Tijerina	678 Cherry Street

Table 4: The data before edits

Name	Address
Alba Sutton	4567 Pine Avenue
Daniel Tijerina	678 Cherry Street

Table 5: The data after edits

o   While your cursor is still in the address cell, **Undo** will revert the change to the address, but not the name.

o   After you move to the next record, **Undo** will revert all the changes you made in Alba's record, including the name and the address change.

o   After you make a change in Daniel's record, you can no longer undo anything in Alba's record.

Additional information

For more information on undoing changes, refer to: Undo or redo typing or design changes

For more information on adding, editing, and deleting records, refer to: Ways to add, edit, and delete records

Activity: Show me how

In this activity, observe your teacher briefly demonstrate the skills you will need in the upcoming try-its.

Resources required

None

Instructions

To participate in this activity:

- Pay attention to the methods that your teacher uses to perform data entry and editing.
- Be prepared to repeat these actions in the upcoming try-its.
- Ask questions to clarify anything that isn't clear to you.

Microsoft

Try-it: Add and edit records

In this leveled try-it activity, you will work in the **tblMembers** and **tblOrders** tables to add new records, edit records, and delete a record.

Try-it 1

You have been given order information that you need to add to the **tblOrders** table. You will also make corrections to some data and fill in some missing information in members' records.

Resources

You will need the following resources for this try-it:

- **L1_T2_try1_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. Open **L1_T2_try1_csa_program_starter.accdb**.

2. Open the **tblOrders** table.

3. Add a new order to the **tblOrders** table with the following data: (Note that the **OrderID** will now be revealed as **10**, or whatever the next highest value is. Because it is an **AutoNumber** field, you don't need to enter the ID number. Access will generate it automatically.)

   - **OrderDate:** today's date
   - **PickupDate:** one week from today's date
   - **MemberID:** 5
   - **FarmBoxID:** 3
   - **OrderTotal:** 62.98

4. Use the information in the following table to fill in missing or incorrect data in the **tblOrders** table:

OrderID	Field to edit	Value to enter
1	**OrderTotal**	62.98
3	**PickupDate**	12/24/2019
6	**MemberID**	2
7	**OrderTotal**	62.98
8	**FarmBoxID**	4

*Table 6: The **OrderID** fields to edit*

5. To save the last edited record, on the **Home** tab, in the Records group, select **Save**, or select Shift+Enter.

6. Close the **tblOrders** table and then close the database.

Try-it 2

You've been given the information to add a new member to the **tblMembers** table. You've also been alerted that one record was accidentally added twice, so you will delete the second, duplicate addition.

Resources

You will need the following resources for this try-it:

- **L1_T2_try2_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. Open **L1_T2_try2_csa_program_starter.accdb**.

2. Open the **tblMembers** table.

3. Add a new record with the following member's information:
   o MemberID**: 12**
   o FirstName**: Nihad**
   o LastName**: Homsi**
   o AddressLine1**: 456 Lake Boulevard**
   o AddressLine2**: Apt. 25**
   o City**: Mount Vernon**
   o State**: WA**
   o Zip**: 11215**
   o Phone**: 555-0190**
   o BoxSize**: Medium**
   o Frequency**: Weekly**
   o Allergies**: None**
4. Note that the records for **MemberID 10** and **11** in the **tblMembers** table are for the same person, Yue Ying Lin, and all the information except the **MemberID** number is the same.
5. Delete the record for Yue Ying Lin with the **MemberID** of **11**.
6. Begin entering data for a new member:
   a. **MemberID:** 13
   b. **FirstName**: your first name
   c. **LastName**: your last name
7. Select the Esc key or the **Undo** button in the **Quick Access Toolbar** twice (or more, if necessary), until the new entry disappears, and the new record row is blank.
8. Ask your teacher to check your work.
9. Close the **tblMembers** table and then close the database.
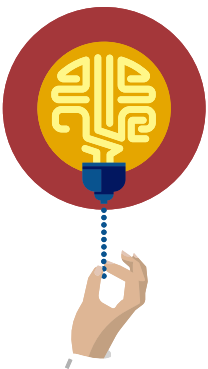
Did you know?

When you enter data, select Ctrl+' (the apostrophe) to copy the value from the previous record, so you don't have to enter it again.

Microsoft

Wrap-up

1. In a datasheet, what happens when you select Tab or Enter?

    Select the correct option.

    a. The active cell moves down.

    b. The active cell moves to the right.

    c. Access enters the data but doesn't move the active cell.

    d. Access creates a new record.

2. What's the correct sequence of steps that you must perform to add a **Total** row to add all the values in a field?

    Indicate the correct sequence by adding the numbers 1-4 next to the following items.

    a. Select Totals. _____

    b. Open a table in the **Datasheet View**. _____

    c. Select the drop-down arrow, and then choose the **Sum** function. _____

    d. Select the cell in the **Total** row in the field for which you want to enter a total. _____

3. True or False: A **Total** row in a table reveals totals with the **Sum** function. No other functions, such as **Average** or **Count**, are available in a **Total** row.

    a. True

    b. False

4. When you hide fields in a table, why should you follow the best practice of unhiding the fields as soon as possible?

    Select all that apply.

    a. You can't observe data in the field if it's hidden.

    b. You can't edit data in the field if it's hidden.

    c. Access doesn't save the hidden fields with the table.

5. Which of the following are the correct first steps for creating a new record?

   Select all that apply.

   a. Select the **New (blank) record** button in the navigation buttons.

   b. Enter data in the last row of the datasheet that has an asterisk in the record selector.

   c. Select Ctrl+N.

   d. On the **Home** tab, in the **Records** group, select **New**.

6. True or False: You can't undo a record deletion.

   a. True

   b. False

Lesson 2: Importing, sorting, and filtering data

Overview

In this lesson, you'll learn how to import data from an Excel workbook and tables from another Access database.

Warm-up

With a classmate as a partner, brainstorm and recollect at least three times in your real life when you reused something that someone already made instead of making it all over again. Enter your answers in the supplied space.

_____

Topic 1: Copy data from Excel

Because data lists in Excel and Access tables are laid out in the same way with fields and records (columns and rows), you can use **Copy** and **Paste** to copy data from Excel into Access. You can use this technique to create a new table, or to add data to an existing table, which is called *appending data*.

Prepare the Excel data before copying it to Access

Before you import data from Excel, ensure that your data is ready by checking all of the following points:

- There should be no blank (empty) rows or columns in your data.
- If you have headings, they should be in the first row, and should be no more than one row.
- The data types in each column in Access and the data types of the Excel data you are pasting must match.
- If you are adding (appending) data to an existing Access table and the Access table uses **AutoNumber** (usually for an ID field), you should not try to add an ID number from your data. Access will provide it for you.

- If you are adding (appending) data to an existing Access table, the Excel columns need to be in the same order as the Access table and be the same number. If your Excel data has fewer columns than the Access table, add columns with headings and no data, so that the Excel structure matches the Access structure.

The following screenshot depicts an example of Excel data with no ID column or data to match the Access table:

Figure 22: Example of Excel data with 1) no ID column and 2) column with no data to match Access table

Copy data from Excel to a new Access table

Follow these steps to copy data from an Excel sheet into a new table in Access:

1. In Excel, open the Excel workbook that contains the data.

2. Select the sheet that contains the data.

3. Select and drag through the cells that contain the data to select the cells. Alternatively, select cell **A1**, select Shift+Ctrl+Down arrow, and then select Shift+Ctrl+Right arrow. Copy the selected cells by selecting Ctrl+C, or by selecting **Copy** on the **Home** tab, as the following screenshot depicts:
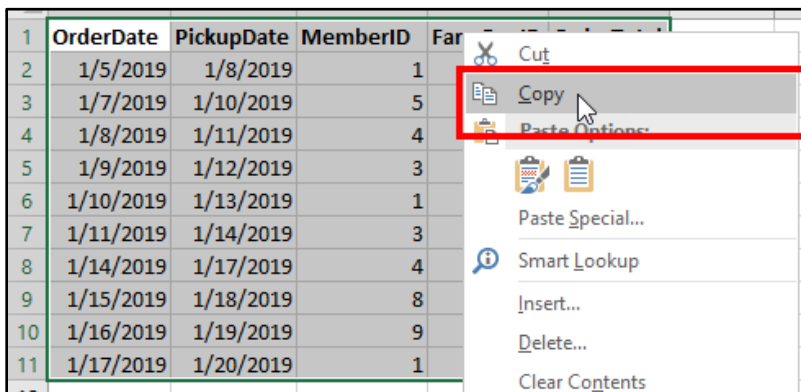
Figure 23: Copying selected cells in Excel

4. Switch to Access.

Microsoft

33

5. Right-click or access the context menu for the **navigation** pane and choose **Paste**, or activate the **navigation** pane and select Ctrl+V.
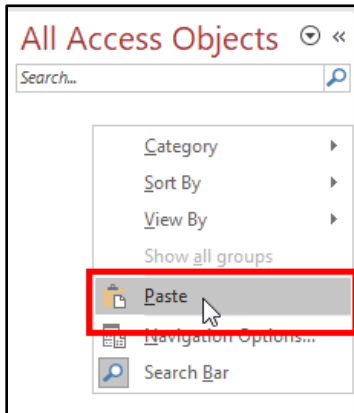
*Figure 24: Pasting in the **navigation** pane*

6. Access will display a dialog box asking if the first row of the copied data contains column headings. Select **Yes** or **No**. In the example in these instructions, you would select **Yes**, as the following screenshot depicts:
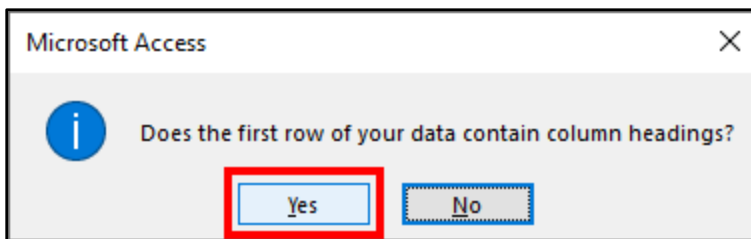
*Figure 25: The column headings **confirmation** dialog box*

7. In the **All objects were imported successfully** message box, select **OK**, as the following screenshot depicts:
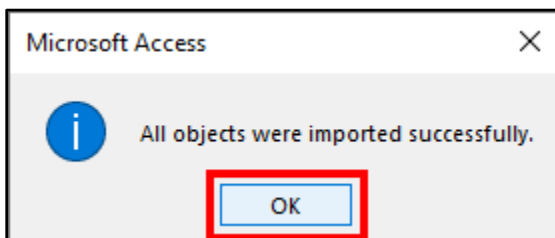
Figure 26: A message confirming that the data was successfully imported

Import data from Excel and add it to an existing Access table

Follow these steps to add data from an Excel sheet to an existing table in Access:

1. In Excel, open the Excel workbook that contains the data.

2. Navigate to the sheet that contains the data.

![Microsoft]

3. Select and drag through the cells that contain the data to select them, or select the first cell that you want, select Shift+Ctrl+Down arrow, and then select Shift+Ctrl+Right arrow.

4. Right-click or access the context menu, and then select Ctrl+C. Alternatively, on the **Home** tab, select **Copy** to copy the data, as the following screenshots depict:
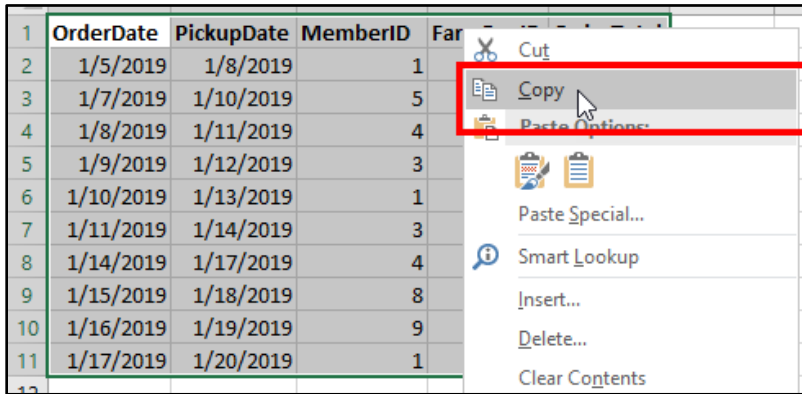
Figure 27: Copying selected cells in Excel
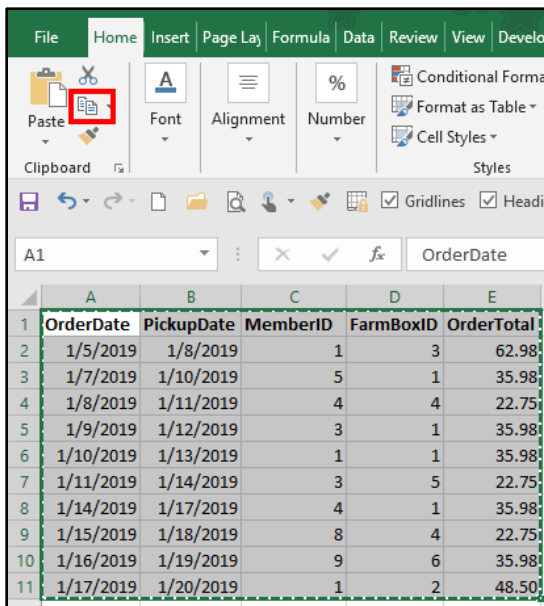
*Figure 28: Data in Excel that is selected and the **Copy** button*

5. Switch to Access.

6. Select the asterisk in the new record row to select it.

7. On the **Home** tab, select the **Paste** drop-down list, and then select **Paste Append**, as the following screenshot depicts:
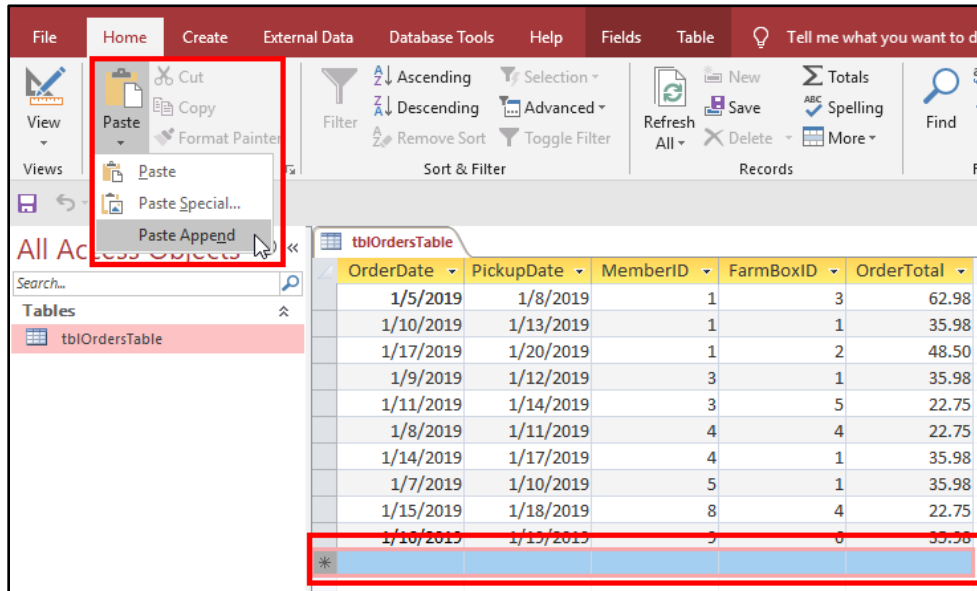
*Figure 29: The selected new record row and the **Paste Append** option*

8. In the dialog box confirming that you want to paste the records, select **Yes**, as the following screenshot depicts:
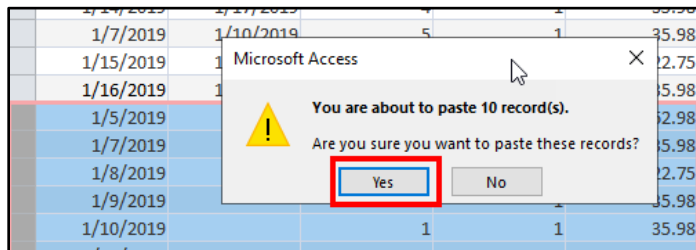
*Figure 30: The **confirmation** dialog box for appending new records*
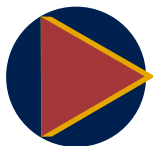
Video

To review the video on copying data from Excel to Access, refer to: Copy data from Excel

Activity: Show me how

In this activity, observe as your teacher demonstrates two ways to add data to Access from Excel:

1. Copy new member information from Excel and paste the data into the existing **tblMembers** table.

2. Copy payment information from Excel and paste the data as a new table in the Access database.

After the demonstration, participate in a brief discussion about the differences between appending data to an existing table and creating a new table, and how you can make a decision about which method to choose.

Resources required

None

Activity instructions

Participate in the activity by:

- Observing the teacher demonstrate the two methods to add Excel data to an Access database.
- Asking clarifying questions.
- Referring to your Student Guide to observe the steps for each method.
- Participating in a brief discussion about the advantages of each method, and how to choose between them.

Try-it: Copy data from Excel

In this standalone try-it, you will import data from Excel into your Access database.

Resources required

You will need the following resources for this activity:

- **L2_T1_try_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.
- **L2_T1_try_spreads.xlsx** in this lesson's **Learning Activity Resources** folder.
- **L2_T1_try_spreads_categories.xlsx** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. In Excel, open **L2_T1_try_spreads.xlsx**, and then select the four records in the range **A1:D5**.

2. Copy the selected range, and then switch to Access.

3. In **L2_T1_try_csa_program_starter.accdb**, in the **tblSpreads** table, append the four records using **Paste Append**. You should have a total of five spreads in the **tblSpreads** table.

4. Close the **tblSpreads** table.

*To copy the data for spread categories, open **L2_T1_try_spreads_categories.xlsx** in Excel, and then select and copy the range A1:C4.*

5. Note that the sheet name (on the **sheet** tab) is **tblSpreadsCategories**. This will become the new table's name in Access.

6. Switch to Access and paste the copied data to the **navigation** pane to create a new table named **tblSpreadsCategories**.

7. Open **tblSpreadsCategories** to reveal the three records. Note the column names are the same as in the Excel sheet, and the table has the same name as the **sheet** tab name in Excel.

8. Close the **tblSpreadsCategories** table.

Topic 2: Import a table from an Access database

You can import tables (and other objects such as queries or forms) from other Access databases. Importing tables can be useful if you want to:

- Consolidate all the tables in several databases into one database
- Use objects that colleagues have made in their databases
- Restore a table from a backup copy of the database

Import a table from an Access database

To import a table into an Access database from a different Access database:

1. Open the database into which you want to import the table.

2. On the **External Data** tab on the ribbon, in the **Import & Link** group, select **New Data Source** drop-down list and select **From Database**, and then select **Access**, as the following screenshot depicts:
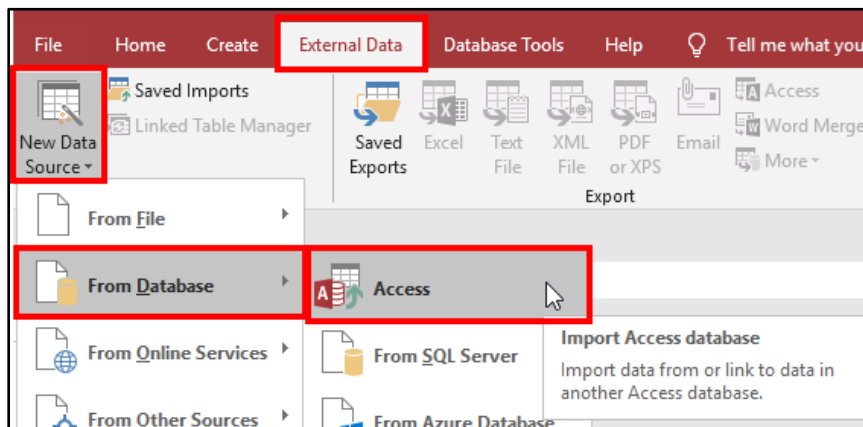
Figure 31: Choosing Access as an external data source

3. In the **Get External Data** dialog box, select **Browse**.

4. Navigate to the database file on your computer, select it, and then select **Open**.

5. In the **Get External Data** dialog box, select **OK**, as the following screenshot depicts:
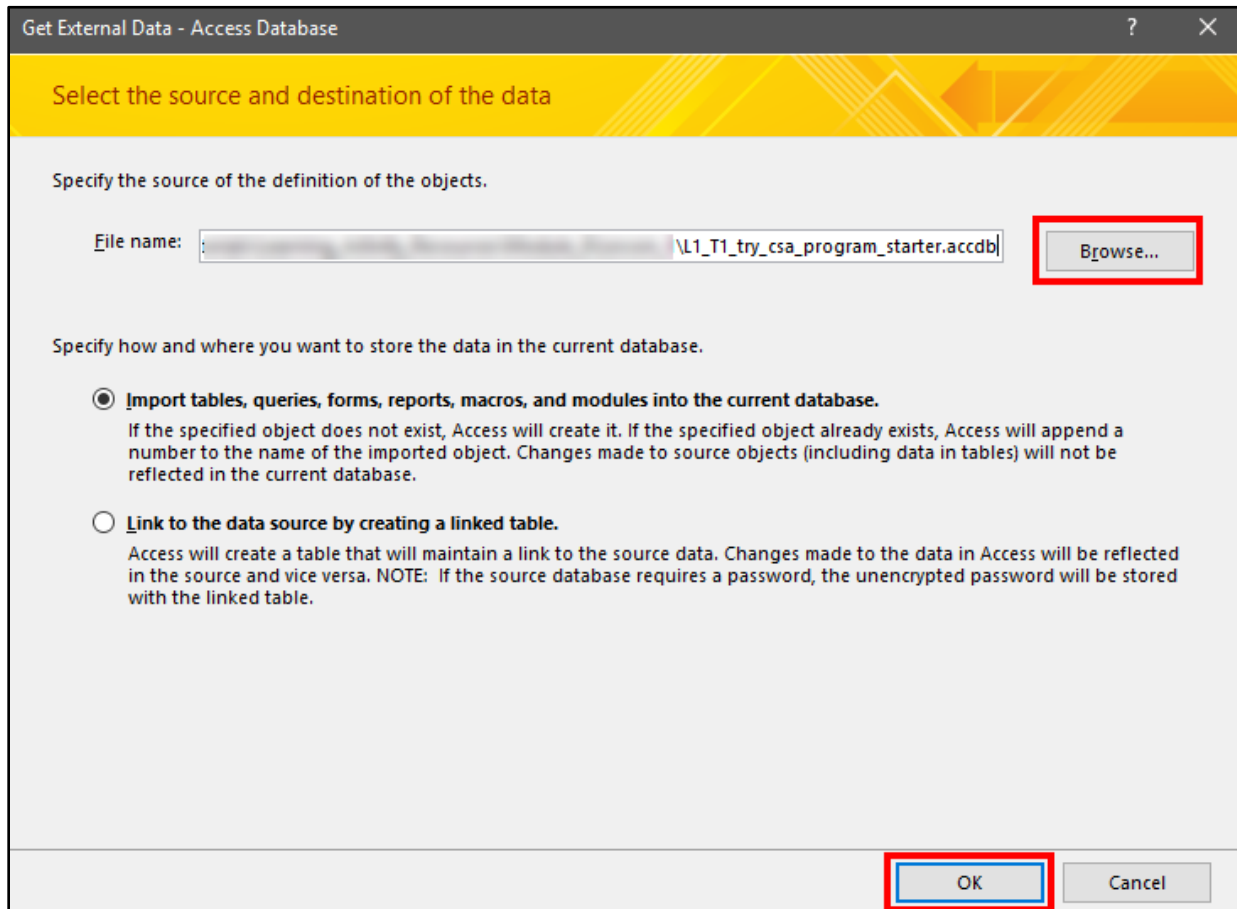
*Figure 32: The **Get External Data - Access Database** dialog box*

6. In the **Import Objects** window, choose the tab for the kind of object that you want to import:

- o **Tables**
- o **Queries**
- o **Forms**
- o **Reports**
- o **Macros**
- o **Modules**
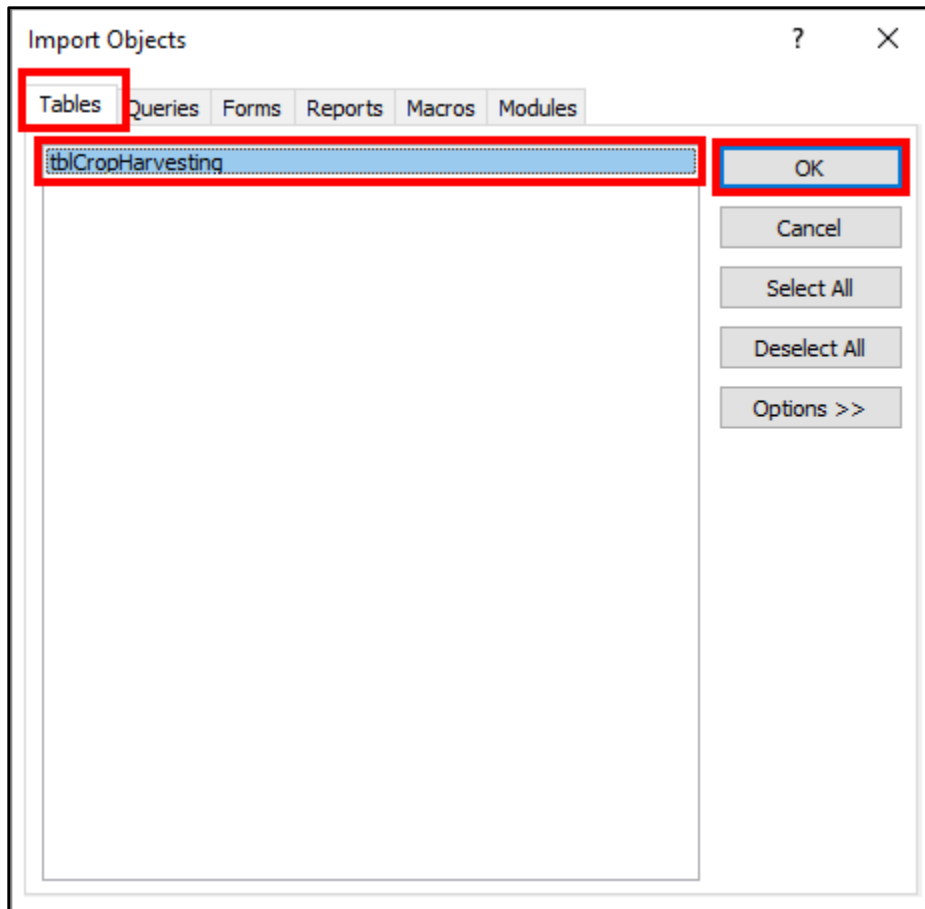
*Figure 33: Select the objects to import in the **Import Objects** window*

7. Select the object that you want to import, and then select **OK**.

8. On the **Save Import Steps** dialog box, select **Close**.
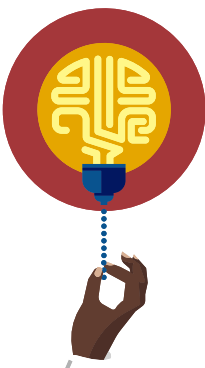
Did you know?

There is a wizard in Access you can use to import data from Excel and create a new Access table. The wizard steps are similar to importing a table from Access.

The wizard can be found on the **External Data** tab on the ribbon, in the **Import & Link** group. Open **New Data Source**, select **From file**, and then select **Excel**.

Activity: Pair and share

What circumstances can you imagine where it would be useful to import an object from a different database? Discuss ideas with a classmate, and then be prepared to share one idea with the class.

Resources required

None

Try-it: Import a table from an Access database

In this try-it, you will import two tables to the **L2_T2_try_csa_program_starter.accdb** database:

- A copy of the **tblOrders** table from a backup of the database.
- The **tblCropHarvesting** table in the **L2_T2_try_harvest_tracking.accdb** database.

Resources required

You will need the following resources for this activity:

- **L2_T2_try_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.
- **L2_T2_try_backup_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.
- **L2_T2_try_harvest_tracking.accdb** in this lesson's **Learning Activity Resources** folder.

General instructions

The following are the general tasks to perform during this try-it:

1. Open the **L2_T2_try_csa_program_starter.accdb** database.

2. Import the following tables:

   a. The **tblOrders table** from the **L2_T2_try_backup_csa_program_starter.accdb** database.

   b. The **tblCropHarvesting** table from the **L2_T2_try_harvest_tracking.accdb** database.
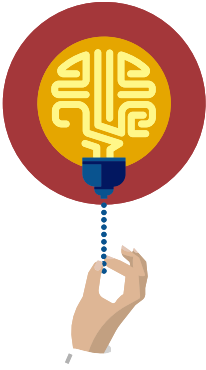
Did you know?

You can export tables and other Access objects as backup before you make significant changes, or before deleting the object entirely. This way, if you make a mistake or change your mind, you can import the earlier version from the backup.

Additional information

For more information on exporting Access objects, refer to: Export a database object to another Access database

Topic 3: Sort and filter data

When you have a large number of records, it can be hard to find what you are searching for. You can use sorting and filtering to organize your data, or temporarily hide data you don't need, to make working with the data easier.

Sorting records

Sorting arranges items in a meaningful order, such as the process of taking roll in alphabetical order.

The sort tools in Access provide you with two options to sort data:

- **Ascending**: In this option, text fields display in alphabetical order from A-Z, numerical data displays from the smallest number to the largest, and date fields display from the oldest date to the newest.
- **Descending**, which is the reverse of **Ascending**: text fields sort so that Z is at the beginning of the list, number fields sort from largest to smallest, and date fields sort from newest to oldest.

Sort records in a datasheet

To sort record, use one of the following methods:

- Select the drop-down arrow in the field name and then choose the sort option you want (For example, you can select **Sort A to Z**).
- Right-click or access the context menu for the field and choose the sort option you want (For example, you can select **Sort A to Z**).

Microsoft

- Select the field, and then, on the **Home** tab, in the **Sort & Filter** group, select **Ascending** or **Descending**.
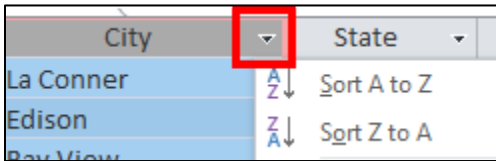
Figure 34: The field drop-down arrow
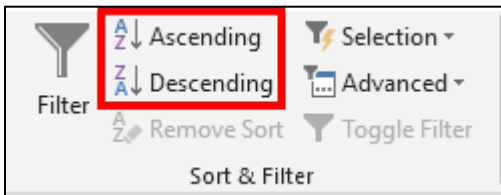
Figure 35: The sort buttons on the ribbon

Filtering records

Filtering is the process of keeping the parts you want, and temporarily hiding the parts you don't want. Consider how coffee is made. The hot water drips through the coffee grounds, and the coffee filter keeps the grounds from getting into your cup (most of the time).

Filtering table data doesn't remove the data from the table, it just hides the data you don't want to display, so you find only the data you want revealed.

For example, you could filter a list of members by city, searching for members who live in Baker Heights. When you review fewer records, it's easier to locate a particular member who lives in Baker Heights. Access also reveals a count of the number of records in the filtered result, so you know how many members live in Seattle. In the following table, data is filtered so the result you find only has records where the city is Baker Heights.

*Figure 36: The **Members** table filtered by Baker Heights*

The following conceptual diagram depicts a filter that displays records for Baker Heights in the **City** field:
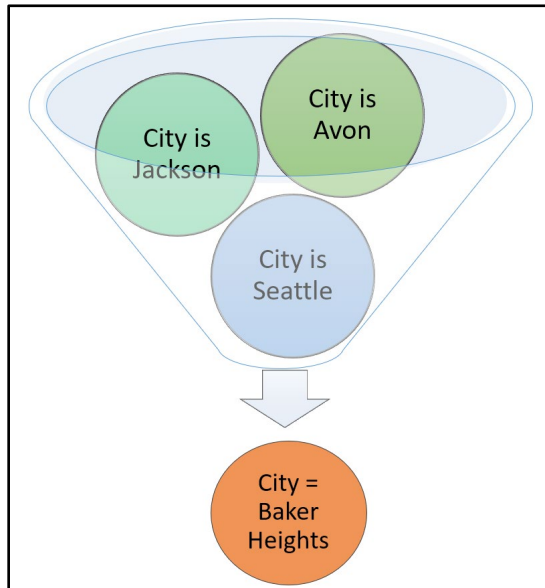
*Figure 37: Conceptual diagram of a filter that displays records where the value in the **City** field is Baker Heights*

You can combine filters by applying one filter immediately after another filter. For example, after applying the filter for **City** as Baker Heights, you could apply another filter to reveal only records where the **BoxSize** field contains Small. In the following example, there are three people who live in Baker Heights who order a small farm box. You can observe that the **City** and **BoxSize** fields both have filters applied because of the filter symbol on the drop-down arrow.

Figure 38: Two filters applied to a datasheet

Caution

Unless you want to combine filters, be sure to remove each filter before applying another one. If you don't remove a filter, any subsequent filter you add will be combined with previous filters.

Filter records in a datasheet

You can use the following four methods to filter a datasheet by a field.

Use the Filter button

1. In the field that contains the values that you want to sort by, select a cell or select the column.

2. On the **Home** tab, select the **Filter** button, as the following screenshot depicts:
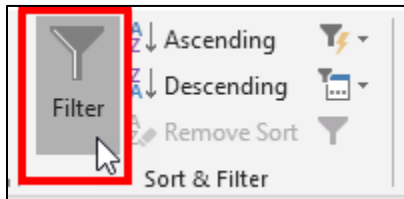
*Figure 39: The **Filter** button*

Use the field drop-down arrow to select check boxes

1. In the field that contains the values that you want to sort by, select the field's drop-down arrow.

2. Select or clear check boxes to choose the values that you want to refer to. For the selected check boxes, records with that value will display.

Use the field drop-down arrow to apply a custom filter

1. In the field that contains the values that you want to sort by, select the field's drop-down arrow.

2. Choose the filter appropriate for the field type: text, date, or number.

3. Select how you want to filter. You can choose from one of several options such as **Equals**, **Does Not Equal**, **Begins With**, and more.

4. In the **Custom Filter** window, enter the filter value you want to use, and then select **OK**.
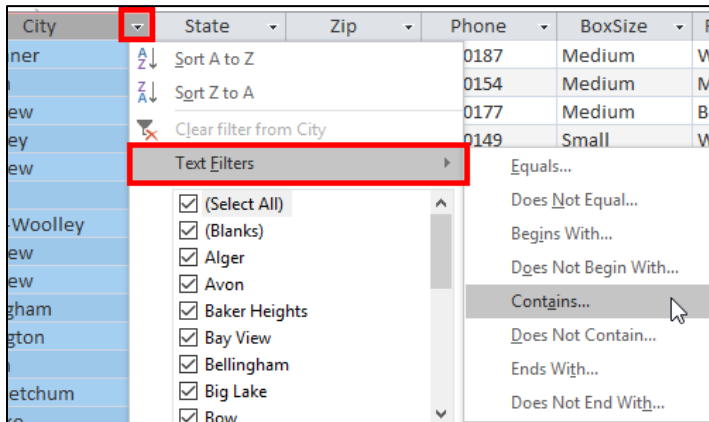
Figure 40: The field name drop-down list and ***Text Filters***
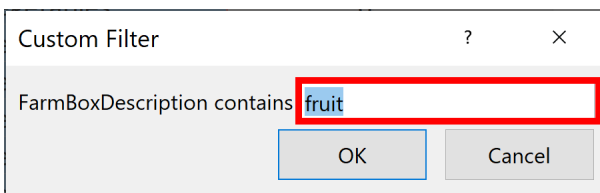
Figure 41: ***Custom Filter*** *window*

Use Filter by Selection

To filter by all the contents of the cell, in the field that contains the values you want to filter by, perform the following steps:

1. Insert the cursor in a cell.

2. Select **Filter by Selection**, and then choose one of following options:

   o **Equals**
   o **Does Not Equal**
   o **Contains**
   o **Does Not Contain**
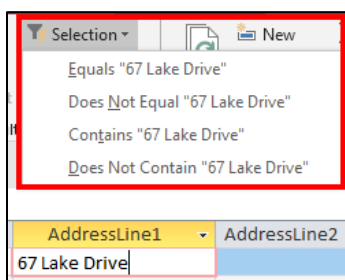
Figure 42: The ***Selection*** *choices when the cursor is in the field, but no text is selected*

To filter by part of the contents of a cell (a word, for example):

1. In the field that contains the values you want to filter by, select the text.

2. Select **Filter by Selection**, and then choose one of following options:

   o **Contains**
   o **Does Not Contain**
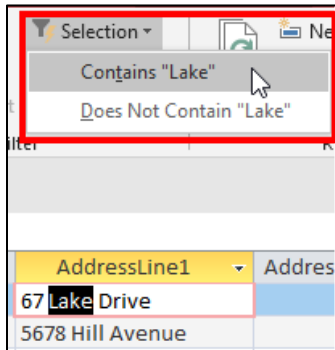
*Figure 43: The **Selection** choices when a word is selected in the field*

Clear a filter

To clear a filter from a datasheet, do one of the following:

- Select the drop-down list arrow in the field that has the filter and select **Clear filter from** *<field name>*, as the following screenshot depicts:
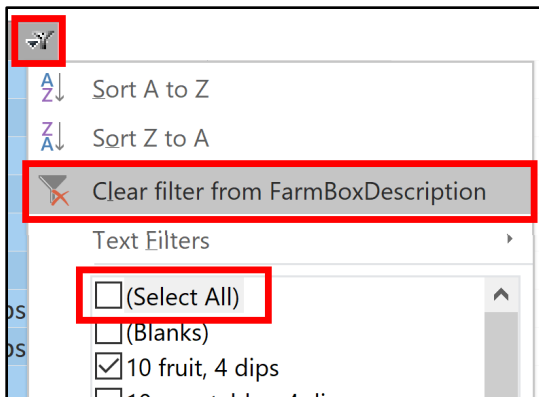
*Figure 44: The field drop-down list arrow, the **Clear filter** choice, and the **(Select All)** check box*

- To remove all filters applied to the datasheet, on the **Home** tab, select the **Sort & Filter** group, select **Advanced**, and then select **Clear All Filters**.

- In the **Sort & Filter** group, select the **Toggle Filter** button. Note that the **Toggle Filter** button doesn't clear the filter, it turns off the last filter that was applied. If you select the **Toggle Filter** button again, the last filter that was applied is reapplied.

Caution

It is possible to save one (and only one) filter with a datasheet, so that next time you open the datasheet, the filter is still on.

Generally, it is not a good idea to do this, because the next person who uses the datasheet won't observe the records that are hidden, which might be confusing. (That person might be you!)

Additional information

For more information on filtering data in a datasheet, refer to: Apply a filter to view select records in an Access database

Activity: Discuss and learn

The teacher will refer to three lists and ask you to find particular records. You will vote on which list is easiest to use, and then discuss which characteristics of the lists made the difference.

Resources required

None

Activity instructions

Participate in the activity by following these instructions:

1. One by one, examine the three lists that the teacher refers to, follow the teacher's instructions to find particular records, and count how many there are.

2. When you know the answer, indicate that you know the answer, but don't say the answer out loud.

3. Pay attention to how easy it was to find the records and count them, and which list you think was fastest to use.

4. You will be asked to vote on which list was fastest and easiest to use.

5. Participate in a brief discussion about the specific qualities of each list that made them harder or easier to use.

6. Follow along as your teacher demonstrates how to use the four methods of sorting outlined in your Student Guide.

Try-it: Sort and filter data

In this leveled try-it, you will sort columns of data and use various methods of filtering data in a datasheet.

Resources

- **L2_T3_try1_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.
- **L2_T3_try2_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Try-it 1

In this try-it, you will practice sorting data in the **tblFarmBoxes** table. You can use any of the sorting methods available. To challenge yourself, try to use at least two.

1. Open **L2_T3_try1_csa_program_starter.accdb**.

2. Open the **tblFarmBoxes** table.

3. Before you sort the data, examine the **tblFarmBoxes** table to review the field that the data is sorted by already, and then record your answer in the space provided: The data in the **tblFarmBoxes** is sorted by the _____ field.

4. Sort the table by the values in the **Weight** field, so the heaviest items are the first records in the list.

5. Is the original sort still in place? Indicate **Yes** or **No**.

6. Save the **tblFarmBoxes** table and close it.

7. Open the **tblFarmBoxes** table. Which field is the table sorted by and why? Record your answer in the space provided.

8. Close the table and the database.

Try-it 2

Work with a partner to use each of the following four methods of sorting or filtering to answer the questions given. You must use each of these sorting and filtering methods at least once:

1. Sorting (use any method)

2. The **Filter** drop-down list, select/clear check boxes

Microsoft

3. **Filter by Selection**

4. The **Filter** drop-down list and add a custom value

Instructions

For each question in the table, perform the following steps:

1. Open **L2_T3_try2_csa_program_starter.accdb**.

2. Open the **tblFarmBoxes** table.

3. Read the question in the first column of the table.

4. Decide together which sort or filter method you should try.

5. Apply the sort or filter to the datasheet.

6. If your sort or filter worked as expected:

    a. Enter your answer in the **Answer** column.

    b. Note in the **Sort or Filter method used** column the number of the method you used. For example, if you used sorting, enter the number **1**.

7. Clear the filter or sort, unless you need to use two filters at the same time.

8. At the end of the activity, clear all filters and close the table without saving any changes.

Question	Answer	Sort or filter method used 1: Sorting 2: Filter with select/clear check boxes 3: Filter by Selection 4: Filter with custom value
1. How many farm boxes weigh 10 pounds or more?		
2. How many farm boxes contain vegetables?		
3. How many farm boxes do not contain dips?		

Question	Answer	Sort or filter method used 1: Sorting 2: Filter with select/clear check boxes 3: Filter by Selection 4: Filter with custom value
4. How many farm boxes weigh less than 10 pounds?		
5. How many small farm boxes are there?		

6. Apply two filters to discover how many farm boxes:
 	
   o Include vegetables, and
   o Are five pounds or less		

Table 7: Using sort and filter methods

Wrap-up

Turn to a neighbor and share your favorite way to filter data, or anything else covered in the module. Be prepared to share with the class.

Next, use these questions to check what you learned in this lesson:

1. What are the steps to copy data from Excel and append it to an Access table?

   Indicate the correct sequence by adding the numbers 1-4 next to the following items.

   a. Select the asterisk (*****) in the new record row to select it. _____

   b. On the **Home** tab, select the **Paste** drop-down list, and then select **Paste Append**. _____

   c. Ensure you have no blank rows or columns in the Excel data and that only one heading row exists. _____

   d. Select and copy the Excel data. _____

2. What are the two choices for sorting a text field?

   Select the correct option.

   a. Up and down

   b. Left and right

   c. Ascending and descending

   d. Low and high

3. When you filter a datasheet, what is the action that you are actually performing?

   Select the correct option.

   a. Deleting the data that you don't want from the database.

   b. Moving the data that you don't want to a different table in the database.

   c. Temporarily hiding the data that you don't want to study, without altering the data or removing it from the database.

   d. Putting the data in ascending or descending order by the value in a field.

Lesson 3: Improving data-entry efficiency

Overview

Data entry is fundamental to the integrity of the data in the database, yet it can be time-consuming, tedious, and prone to typing mistakes.

To make entering data easier and more efficient, in this lesson, you will learn how to edit records in bulk by using **Find and Replace**, add choices and default values to fields to reduce data entry errors, and create forms. You'll use forms to sort records, and to add and delete records. To reduce the amount of data entry needed and increase data entry accuracy, you'll create a field with a list of values, add a default value to a form, and apply an input mask.

Warm-up

Discuss with a classmate any situations in your life where you have found a more efficient way to do something. Have you figured out a better way to study, or a faster way home from school? Is there a shortcut you take when you fix yourself a snack? Note some ideas in the space provided. Be prepared to share your ideas with the class.

_____

Topic 1: Use Find and Replace

Making changes to multiple records that need the same change can be faster if you can quickly find the data to change using **Find and Replace**. For example, if you find a misspelling of a street name or company name in many records, rather than find and change them one by one, you can find all of them and change them all at once.

Using Find and Replace to edit multiple records

1. Open the table or a form with the data you want to find and replace.

2. Select the field (column) in which you want to perform changes.

3. On the **Home** tab, select the **Find** group, and then select **Replace**, as the following screenshot depicts:
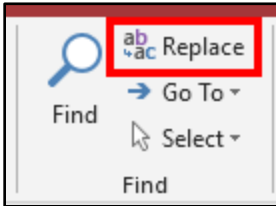
*Figure 45: The **Replace** button*

4. Depending on what you are searching for, fill in the **Replace** dialog box with the appropriate information in the following table. Note that all the information you add, taken as a whole, are called search criteria.

Setting	What it does
Find What	The text (or value) you want to find and be replaced. This is sometimes referred to as a *search term*.
Replace With	The text or value which will replace the original text.
Look In	The field that the **Find and Replace** will affect. Most of the time, you should keep this set to **Current field**, and be sure the active field is the correct one. This will prevent the **Find and Replace** from affecting other fields, where it might unintentionally change data.
Match	**Start of field** matches the **Find What** value with the first characters of the field. **Whole field** will match all of the contents of a field with the **Find What** value. Any part of field will search anywhere in the field's value for the **Find What** value.
Search	**All** will search all the records in the field or datasheet. **Up and Down** will search from the active row up, or down, respectively, and will not search the records on the other side of the active row.

*Table 8: The settings in the **Find and Replace** dialog box*

5. Select **Find Next** to find the first occurrence of the search term, and then (if **Find** is working as you expected) select **Replace**.

6. When you are confident that your search term is finding what you expected, select **Replace All** to replace all occurrences.

Microsoft

Caution

Undo is not available when you use **Find and Replace.** Before you select **Replace All**, be sure to use **Find and Replace** once to test your search criteria.
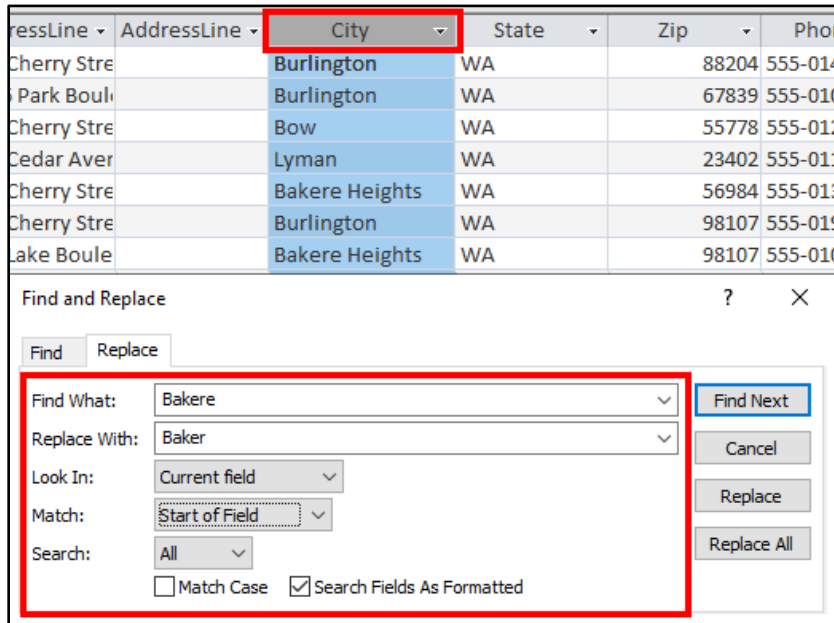
*Figure 46: A **Find and Replace** set up to replace Bakere with Baker in the **City** field*

Activity: Think-pair-share

After a brief demonstration by your teacher on how to use **Find and Replace**, you will participate in a think-pair-share activity to sharpen your find and replace skills.

Work with a classmate to determine how to set up the **Find and Replace** window to find all the records that match specific search terms and replace the values with an alternate term.

Resources required

The resources required for this activity are:

- **L3_T1_act_csa_program_starter.accdb** in the **Learning Activity Resources** folder.
- The **tblFind_Replace_Practice** table.

Activity instructions

1. Open **L3_T1_act_csa_program_starter.accdb**, and then open the **tblFind_Replace_Practice** table.

2. In Access, on the **Home** tab, select the **Find** group, and then select **Replace**.

3. For each of the following scenarios, share with your classmate what the **Find and Replace** window settings should be, and record your answer in the space provided.

4. Select the field in which you want to perform your find and replace.

5. Fill in the **Find and Replace** window in Access and select **Find Next** to test your search criteria.

6. When you are confident that your search criteria are working, either select **Replace** to replace one at a time, or select **Replace All** to replace all at once.

7. Examine the records to find whether the correct records were replaced.

8. Find in the **AddressLine1** field all occurrences of **avenue** and replace with **Avenue**.

   o Find What:
   o Replace With:
   o Look In: **Current Field**
   o Match:
   o Match Case:

9. Find in the **AddressLine1** field all occurrences of **Ave.** and replace with **Avenue**.

   o Find What:
   o Replace With:
   o Look In: **Current Field**
   o Match:
   o Match Case:

10. Find in the **City** field all occurrences of **Lynman** and replace with **Lyman**.

   o Find What:
   o Replace With:

Look In: Current Field

   o Match:
   o Match Case:

11. Find in the **Allergies** field all occurrences of **Sweet corn** and replace with **Sweetcorn**.

   o Find What:
   o Replace With:

Look In: Current Field

   o Match:
   o Match Case:

Microsoft

Try-it: Use Find and Replace

A fellow intern has noticed some incorrect information in the database, which is repeated many times throughout the **tblMembers** table. In this try-it, you will use **Find and Replace** to fix the data.

Resources

You will need the following resources for this try-it:

- **L3_T1_try_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

General instructions

The following are the general tasks to perform during this try-it:

1. Open **L3_T1_try_csa_program_starter.accdb**, and then open the **tblMembers** table.

2. In the **Frequency** field, replace **2x per week** with **Bi-weekly**.

3. In the **City** field, replace **Big Lk.** with **Big Lake**.

4. In the **Allergy** field, replace **Carotts** with **Carrots**.

5. In the **AddressLine1** field, replace **Lake Blvd.** with **Lake Boulevard**.
   Hint: There are multiple street addresses on Park Boulevard.

6. Close the **tblMembers** table and then close the database.

> **Additional information**
>
> For more information on using **Find and Replace**, refer to: Use the Find and Replace dialog box to change data

Topic 2: Add default values and values list fields

Adding default values to fields and pre-defined choices to a field, called a **values list** field, can help make data entry more consistent and faster:

- A *default value* is a value that is added automatically in a field when a new record is added. For commonly used values, using default values will reduce data entry. For example, if most of your customers are in Washington, you could add the default value of WA to the **State** field.

- **Values list** fields are a type of lookup field that contains a list of values you add (usually with the help of the **Lookup Wizard**) to restrict what can be entered into the field and make data entry easier and faster.

  When you add pre-defined choices, people using the database can't enter any values except those in the list, so you get more consistent data. For example, if you enter box size choices of Small, Medium, and Large, people adding a record to the Orders table can choose one of those choices.

  o Because people using the field choose what they want from a list, they need to enter less data, and you won't have to deal with spelling issues later (such as Med. for medium), which can cause issues when filtering data.

  o After you add choices to a field, you can use a drop-down menu in the table **Datasheet View** to choose a value from the list. You can also create a form and use various controls on the form to choose a value.

  *You can create a **values list** field in two ways: make a new field as a **values list** field or change an existing field to a **values list** field. Either way, you can use the Lookup Wizard to help you add choices to the field.*

Add a default value

1. Open the table that you want to work with.

2. To add a default value in the **Datasheet View**:

   a. Select the field to which you want to add a default value.

   b. In the **Properties** group, select **Table Tools**, select **Fields**, and then select **Default Value**.

c. In the **Expression Builder**, insert the cursor after the equals sign and enter a value. For example:

- Enter **WA** to enter **WA** in the **State** field

- Enter **=Date()** to automatically enter today's date in the **OrderDate** field.
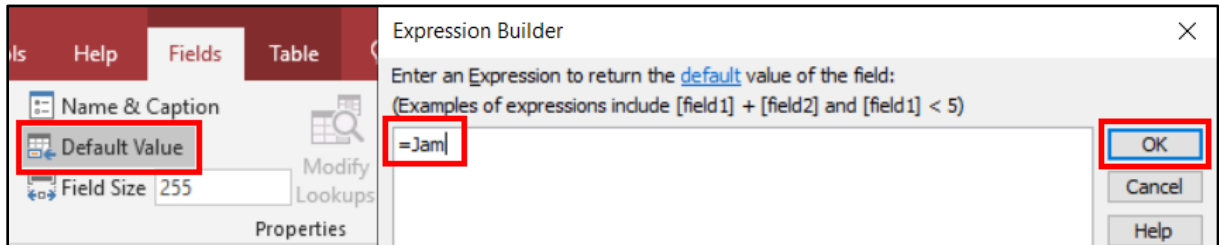
*Figure 47: Entering a text **Default Value** in the **Expression Builder***

3. To add a default value in the **Design View**:

a. To switch to the **Design View**, on the **Home** tab, in the **Views** group, select the **View** drop-down list, and select **Design View**.

b. In the **Design View**, select the row for the field to which you want to add a default value.

c. On the **General** tab, select **Field Properties**, and then enter a value in the **Default Value** property box.

Note that when you add text to the Default Value, Access adds quotation marks to surround the text, which is normal. Refer to the following screenshot:
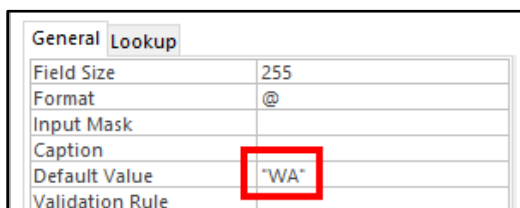
*Figure 48: A text **Default Value** in the **General** tab*

d. Save the table, select **View**, and then select **Datasheet View**.

4. To observe the **Default Value** in action, refer to the new record row, where the default value is already in the field, as the following screenshot depicts:

*Figure 49: The **Default Value** in a new record*

Microsoft

Add a new values list field

To add a new values list field that contains a list of choices, follow these steps:

1. Open the table to which you want to add the **values list** field.

2. If the table displays the **Click to Add** column, select the **Click to Add** drop-down list, and then select **Lookup & Relationship**.

   o Alternatively, on the ribbon, select **Table Tools**, and then select **Fields**. In the **Add & Delete** group, select **More Field**, and then select **Lookup & Relationship**.
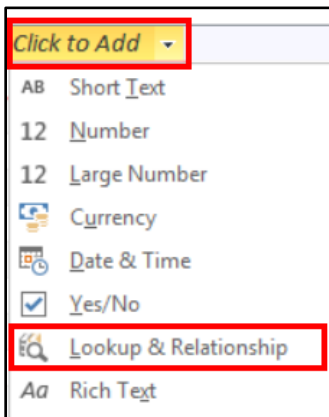
*Figure 50: Starting the **Lookup Wizard** from **Click to Add***
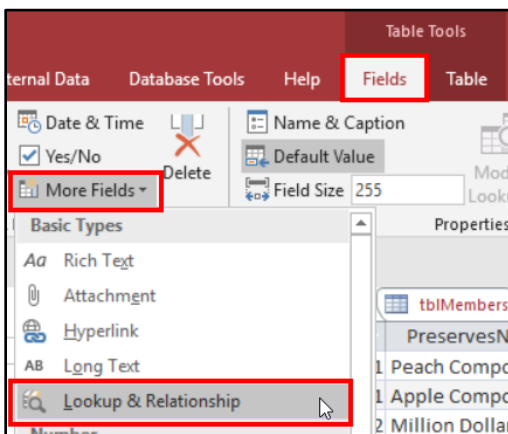
*Figure 51: Open the **Lookup Wizard** by selecting **Fields** on the **Table Tools** tab*

3. On the **How do you want your lookup field to get its values?** page of the **Lookup Wizard**, select **I will type in the values that I want**, and then select **Next**, as the following screenshot depicts:
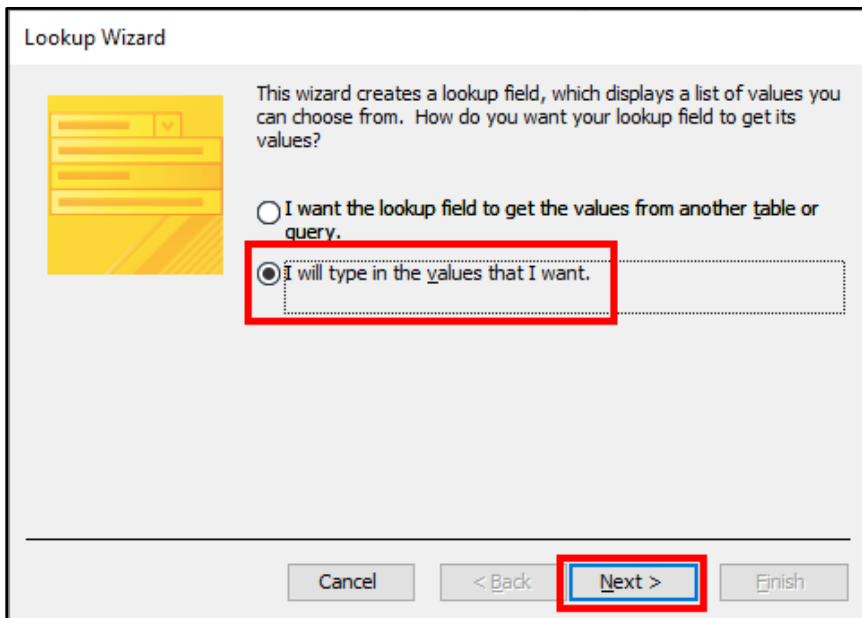
*Figure 52: The **Lookup Wizard** choice to indicate if values are from a table, query, or entered by typing*

4. On the **What values do you want to see in your lookup field?** page of the **Lookup Wizard**, enter the values you want in your list, by selecting the Tab key (not the Enter key) between each value, as the following screenshot depicts:
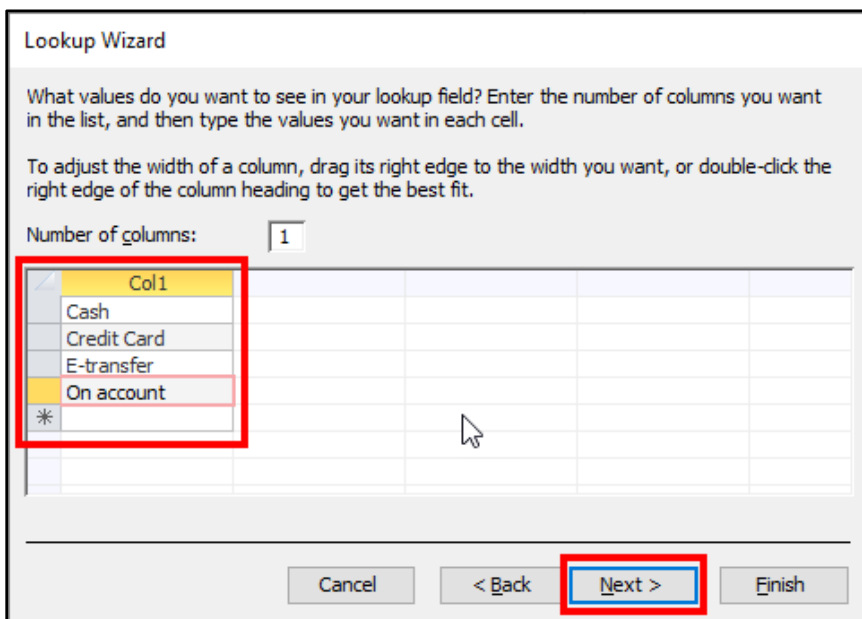
*Figure 53: The **Lookup Wizard** step for entering the list values*

Microsoft

5. When you finish entering your list, select **Next**.

6. On the **What label would you like for your lookup field?** page of the wizard:

   a. Enter a label for the lookup field.

   b. Select **Limit to List** to restrict the values entered in the field.

Figure 54: Adding a label and choosing not to allow entries not in the choices

Caution

While limiting choices to the values in the list is considered a good idea most of the time, keep in mind that no values other than those in your list of choices will be allowed. If you are not certain you have included all the values that might be needed, don't select this option.

   c. Optionally, select **Allow Multiple Values**. Typically, you do not choose this option, because it can make working with the data in the field more difficult.

   d. Select **Finish**.

   e. Select Save to save your table, and then open your datasheet by selecting **View** on the **Home** tab, and then selecting **Datasheet View**.

Change an existing field to a values list field

To add choices with a values list to a field that already exists, follow these steps:

1. Open the table that you want to work with in **Design View**:

    a. In the **navigation** pane, right-click or access the context menu for the table, and then select **Design View**.

    b. Alternatively, select the table in the **navigation** pane and then, on the **Home** tab, select the **View** drop-down list, and then select **Design View**.

2. In the **Design View**, in the row for the field to which you want to add choices, select the **Data Type** menu, and then select **Lookup Wizard**, as the following screenshot depicts:
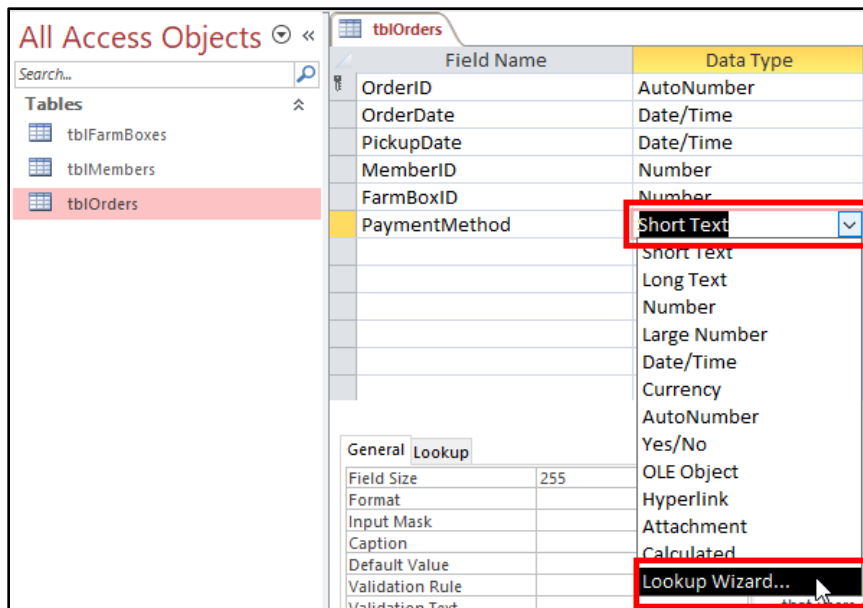
*Figure 55: The **Design View** of the table, choosing the **Lookup Wizard** for a field*

3. On the first page of the **Lookup Wizard**, select **I will type in the values that I want**, and then select **Next**, as the following screenshot depicts:
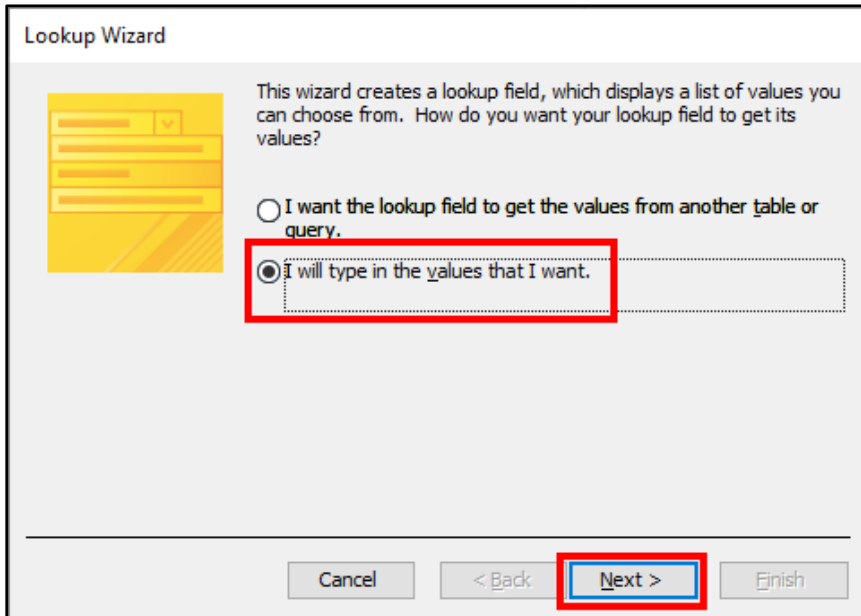
*Figure 56: The **Lookup Wizard** option to indicate if values are from a table, query, or entered by typing*

4. On the next page of the **Lookup Wizard**, enter the values you want in your list by selecting the Tab key (not the Enter key) to move between each value, as the following screenshot depicts:
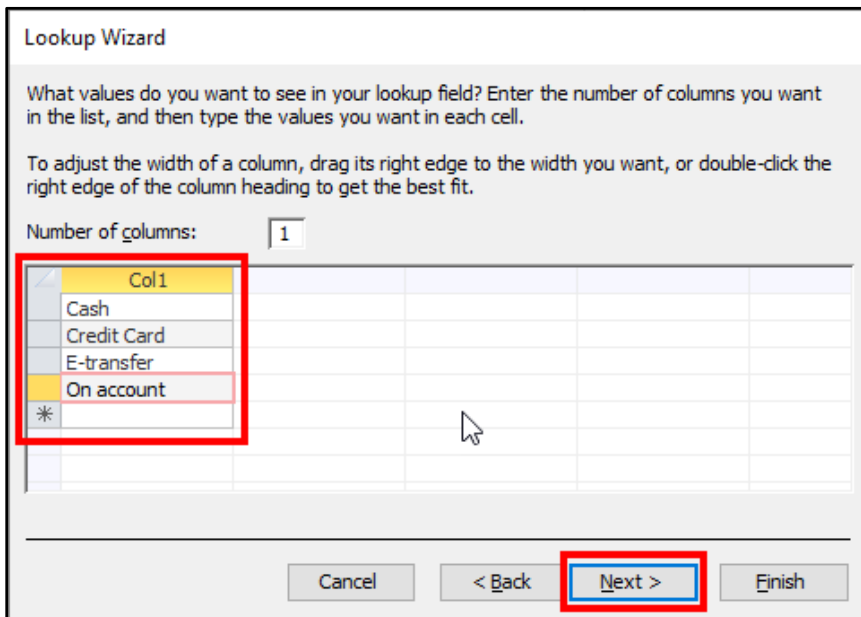
*Figure 57: The **Lookup Wizard** for entering the list values*

5. When you finish adding your list items, select **Next**.

6. On the next page of the wizard:

    a. Enter a label for the lookup field.

    b. Select **Limit to List** to restrict the values entered in the field.

> **Caution**
>
> While limiting choices to the values in the list is considered a good idea most of the time, keep in mind that no values other than those in your list of choices will be allowed. If you are not certain you have included all the values that might be needed, don't select this option.

    c. Optionally, select **Allow Multiple Values**. Typically, you do not choose this option, because it can make working with the data in the field more difficult.

    d. Select **Finish**.

Figure 58: Adding a label and choosing not to allow entries not in the choices

7. Save the table. You now can use a drop-down list of choices in the field, as the following screenshot depicts:
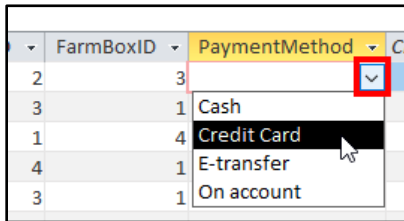
*Figure 59: A list of choices in the **values list** field*

8. If you enter a value that is not in the list, an error message opens, and you cannot enter the record, as the following screenshot depicts. Close the message and then choose an item from the list.
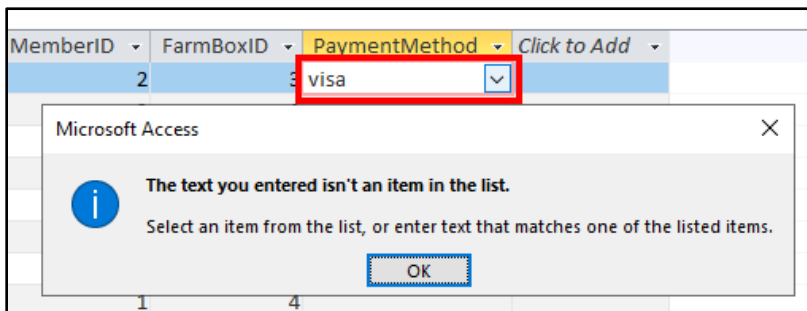
Figure 60: An error is displayed
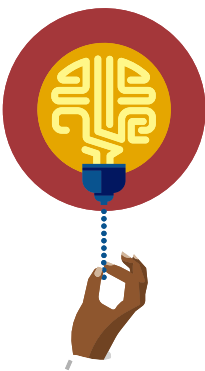
Did you know?

If you need to update the list of choices frequently, consider creating a table for your choices, and then using the **Lookup Wizard** in a form or table to research those values. This is an alternative to adding choices directly to fields. Maintaining the list in a table is easy to do and to understand, and it can be more flexible than adding choices directly to a field.

Additional information

For more information on **values list** fields, refer to: Create or delete a values list field

For more information about creating a lookup field, refer to: Create or delete a lookup field

Activity: Think-pair-share

After following your teacher's demonstration of adding choices and default values, consider the following three questions by yourself, and then share your answers with a classmate:

- Think of a time when having only a few choices made making a decision easier.
- Think of a time when you started a task, and something was completed for you already.
- How do you think having choices available and inserting default values might help someone using a database?

Be prepared to share your ideas with the class.

Try-it: Add default values and values list fields

In this leveled try-it, you will make data entry more streamlined by adding default values to fields and adding choices to fields with values lists.

Try-it 1

Recently, orders have been coming in without order dates or with incorrect order dates. Also, people have been entering different ways to state the payment method, such as entering credit card payments as CC pmts., Credit, credit cards, and so on. This is making it very difficult for the **Orders** department at Munson's to identify the most popular methods to pay.

In this try-it, you will:

- Add a default date of today's date to the **OrderDate** field.
- Add a new **values list** field to the **PaymentMethod** field, to control how the payment method is entered.

Resources

You will need the following resources for this try-it:

- Open **L3_T2_try1_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. Open **L3_T2_try1_csa_program_starter.accdb**, and then open the **tblOrders** table.

2. In the **tblOrders** table, add a default value of **=Date()** to the **OrderDate** field.

3. Use the **Lookup & Relationship** choice in the **Click to Add** column to add a new values list field.

4. In the **Lookup Wizard**, use the following settings:

   o Page 1: Select **I will type in the values that I want.**

   o Page 2: Enter the following values:

   - **Number of columns**: **1**

   - **Cash**

   - **Credit**

   - **Account**

   - **E-transfer**

   o Page 3: Enter the label **PaymentMethod** and select **Limit to List**

5. Save the table.

6. Add a new order with this data:

   o OrderDate: leave as the default value, which is today's date
   o PickupDate: leave empty
   o MemberID: **8**
   o FarmBoxID: **5**
   o PaymentMethod: **Credit**

7. Close the **tblOrders** table, and then close the database.

Try-it 2

Most of Munson's members live in Washington state, so you will add a default value of WA to the **State** field. Because Munson's only uses three sizes of boxes, you will add a list of choices to the **BoxSize** field so people doing data entry won't have to remember or enter them.

Resources

You will need the following resources for this try-it:

- Open **L3_T2_try2_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. Open **L3_T2_try2_csa_program_starter.accdb**.

2. Open the **tblMembers** table and switch to **Design View**.

3. In the **Field Properties** for the **State** field, add a default value of **WA**.

4. Select the **Data Type** for the **BoxSize** field and choose **Lookup Wizard** to add a values list to the field.

5. In the **Lookup Wizard**, use the following settings:

   o Page 1: Select **I will type in the values that I want.**

   o Page 2: Enter the following values:

   - **Small**

   - **Medium**

   - **Large**

   o Page 3: Leave the label **BoxSize** and select **Limit to List**

6. Save the **tblMembers** table and switch to **Datasheet View**.

7. In the new record row, add the following information as a new record:

   o FirstName: your name

LastName: your last name

   o AddressLine1: **567 Elm Street**
   o City: **Lake Ketchum**

*State: Tab through this field, because **WA** will already be entered*

   o Zip: **55778**
   o BoxSize: **Small**

8. Close the **tblMembers** table and then close the database.

Additional information

For more information on default values in Access, refer to: [Set default values for fields or controls](#)

For more information on adding list or combo boxes to forms, refer to: [Add a list box or combo box](#)

Microsoft

Topic 3: Create and use forms

You can use forms to review, edit, organize, and sometimes print data. The data itself is stored in tables, not in forms. You use forms as a "portal" to access the data.

Access includes different types and configurations of forms. The form you use depends partially on the data you have, and partially on what you need to do with the data. For example, a traditional form reveals one record at a time, which is great if you have a lot of fields. Sometimes, you want to work in a datasheet, like you have been so far in this module. You're in luck! You can create a form that is a datasheet. Most forms also have a **View** option to use the form in the **Datasheet View** (although sometimes this is turned off).

Create a form by using the Form tool

You can create forms from tables or queries, and the method is the same. You can create a form with one action by selecting **Form** in the **Create** tab. All the fields from the underlying table are added to the form.

To create a form by using **Form**:

1. In the **navigation** pane, select the table, or open it.

2. On the **Create** tab, in the **Forms** group, select **Form**, as the following screenshot depicts:
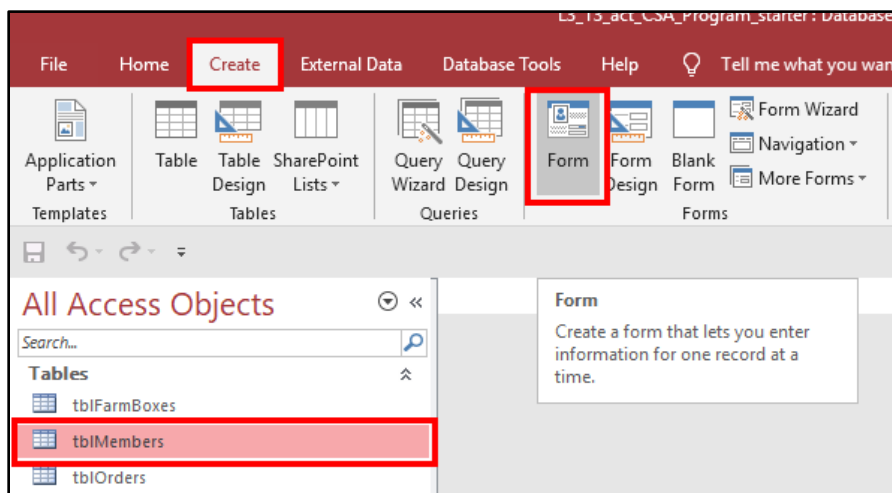
*Figure 61: Create a form from a table with the **Form** tool*

3. The form opens in the **Layout View**:

   o   To edit the form, stay in the **Layout View** or switch to the **Design View**.

   o   To edit your data, switch to the **Form View**.

4. Save your form. A common naming convention is to use **frm** at the beginning of the form's name.

Navigating records in a form

To move between records in a form, select the **record navigation** buttons, or select the Page up or Page down keys.

When using the **navigation** buttons:

- Select a **navigation** button to move between records.
- To refer to a specific record, enter a record number in the **Current Record** box, and then select Enter.
- To quickly find a specific record, enter a search term in the **Search** box, and then select Enter, as the following screenshot depicts:

*Figure 62: The **navigation** buttons and **Search** box in a form*

Form views

Every form has several views, which you can use either for editing the form or for working with the underlying table data. The following table describes the three default views of forms:

View name	What it's used for	Description
Form View	Editing data	The **Form View** is a common view for forms. Use this view for editing data.
Layout View	Editing the form	Use the **Layout View** to help you plan the layout of your form. Its appeal is that it resembles the **Form View**, and you can review the data of the first record of the underlying data. Therefore, it's easy to figure out, for example, how wide a field needs to be to reveal all the data in it. However, it can also be confusing because although it resembles the **Form View**, you can't edit data in this view. You can only use this view for editing the layout of the form.
Design View	Editing the form	The **Design View** is a more complicated view that is used for more advanced work in complex forms. You can't observe any data in this view.
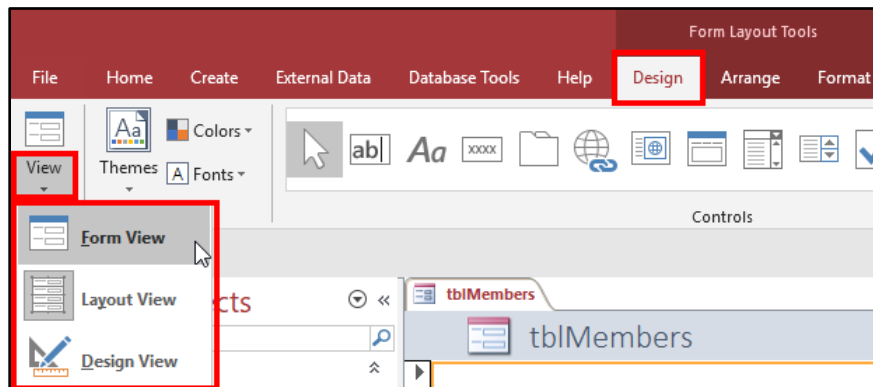
Figure 63: Changing form views
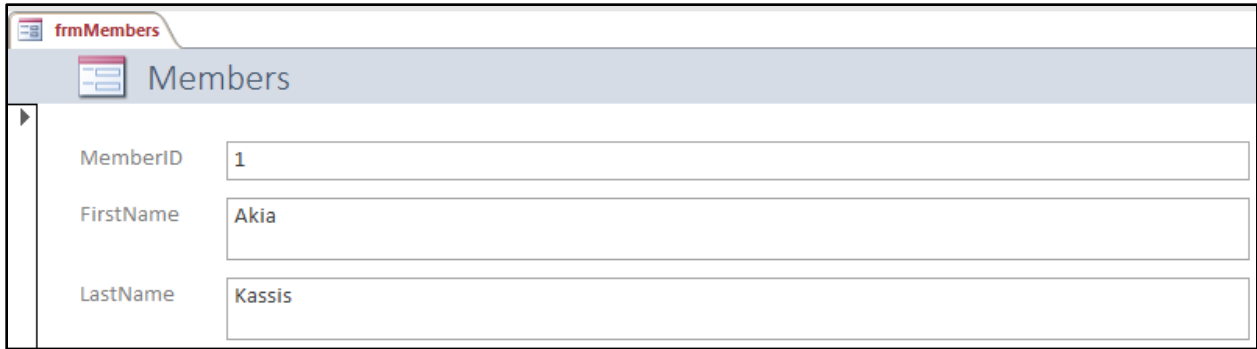
Figure 64: A form in **Form View**
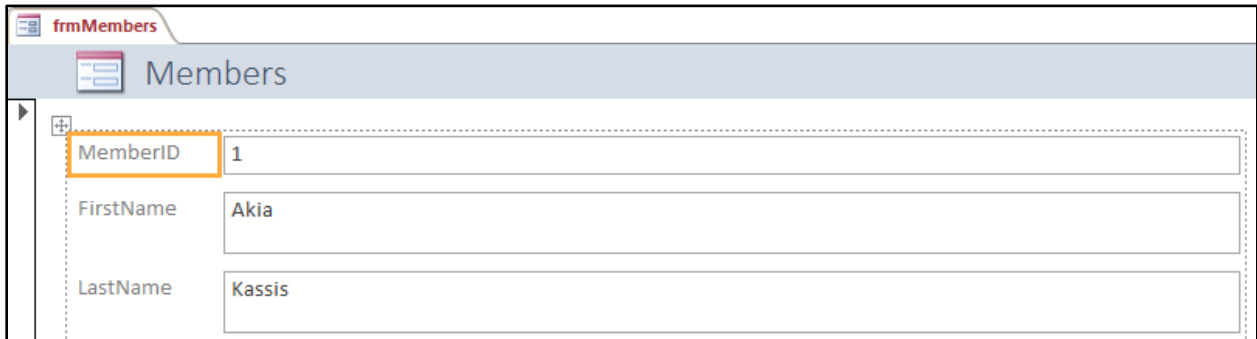
Figure 65: A form in **Layout View**

There is a fourth view, the **Datasheet View**, which resembles and works just like a table **Datasheet View**. By default, this option is not available in the **View** options. You can add it as an option in the form's properties.

In addition, you can make a form to specifically include the **Datasheet View** called a datasheet form. You will create datasheet forms in Module 8.
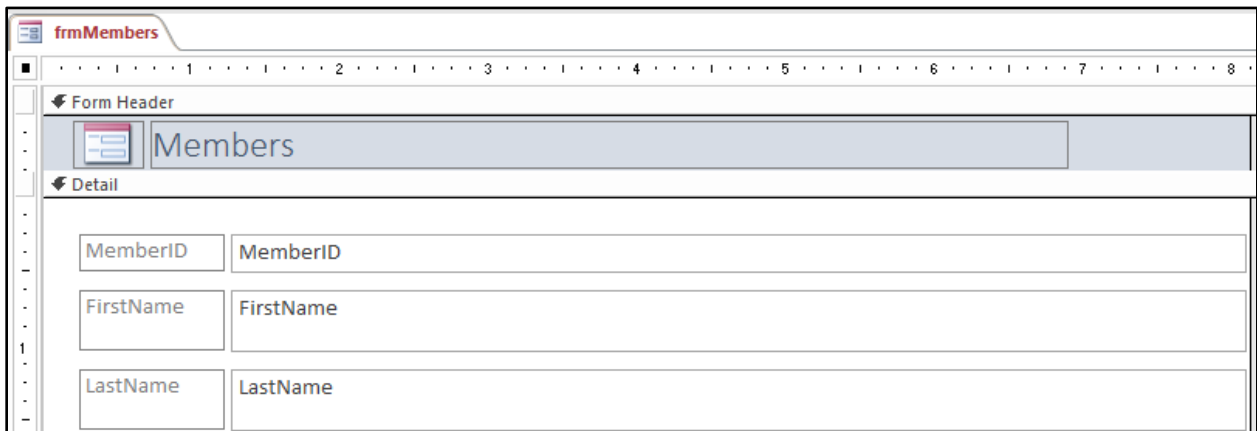
Figure 66: A form in **Design View**

To change views:

1. On the **Home** tab, select **View**.

2. From the list, select the view you need.

> **Additional information**
>
> For more information on creating forms, refer to: [Introduction to forms](#)

Sort records in a form

When you are working with data in a form, you can sort the records of the underlying table or query to help find and organize data. Sorting works for both forms in a **Datasheet View** and forms in a form view.

On the ribbon, in the **Sort & Filter** group, select the sort option you want: **Ascending** or **Descending**. Select **Remove Sort** to remove the sort from the form. Refer to the following screenshot:
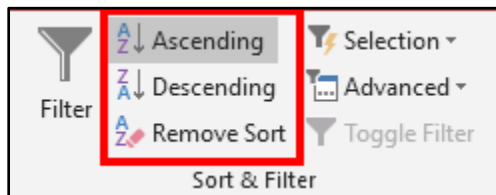
Figure 67: Choose the sort option or remove an applied sort

Save a sort in a form

Similar to sorting records in a table's **Datasheet View**, you can save a sort with a form. To save a sort, first apply the sort, and then save the form. The sort will still be active when the form is opened.

Apply input masks to form fields

An input mask is both a method to display data differently, and a method to help ensure that data is entered accurately in a form or table. It is an object property of a field (or, if applied in a form, a form control). It consists of letters, numbers, and symbols, which indicate the type of value (number, letter) that can be entered. Sometimes, input masks also contain literal text or symbols, such as the parenthesis around a phone number area code (206), so you don't have to enter them.

You can add input masks directly in the design of a table, but for flexibility, we recommend that you use input masks in forms.

Use input masks for fields that contain data that is formatted consistently, such as phone numbers. Input masks can reduce the amount of data entry required because you can use them to reveal characters, such as dashes and parenthesis, which are tedious or repetitive to enter. For example, the parenthesis, space, and dash in a phone number **(123) 555-0123**.

You can control data that you can enter into the database by applying an input mask that specifies the type of characters you can enter. For instance, you can specify whether the entries should be text or numbers, and whether they are optional or required. For example, imagine that you apply an input mask to a product number where the first three digits are letters, the last five are numbers, and the letters and numbers are separated by a dash. You want the data to match this: ABC-12345. The input mask >LLL\-00000 is applied so you enter abc12345. Here's how the mask works:

- The **>** formats the **abc** as capital letters (**ABC**).
- The **LLL** ensures that the first three characters entered are text (not digits or symbols).
- The **\-** inserts a dash after the letters.
- The **00000** ensures that the last five characters entered are digits, 0-9 (not text or symbols).

The following table lists a few examples of input masks at work. The first column is the data how you enter it, the second column is the string of characters that make up the input mask, and the third column is how the data appears with the input mask applied.

How the data is entered	The input mask	How the data displays with the input mask applied
abc12345	>LLL\-00000	ABC-12345
2065550123	(999) 000-0000	(206) 555-0123

Table 9: Examples of input mask

Caution

Don't use an input mask if:

- You might need to enter data that doesn't match the mask. An input mask does not allow exceptions.
- You plan to use a **Date Picker** control with a **Date/Time** field. Input masks are not compatible with the **Date Picker** control.

Apply an input mask to a form

1. Open the form in **Layout** or **Design View** that contains the field to which you want to apply an input mask.

2. Select the field's control on the form.

3. If necessary, open the **Property Sheet**:

   o On the **Form Layout Tools**, select the **Design** tab, and then in the **Tools** group, select **Property Sheet**, as the following screenshot depicts:
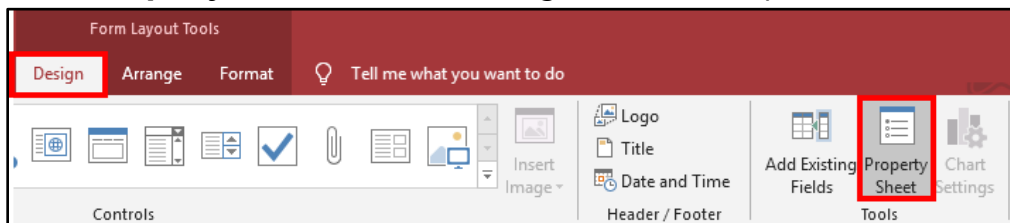
*Figure 68: Open the **Property Sheet***

4. On the **Data** tab, select the **Property Sheet** group, and then in the **Input Mask** property sheet, select the **Build** button to start the **Input Mask Wizard**, as the following screenshot depicts:
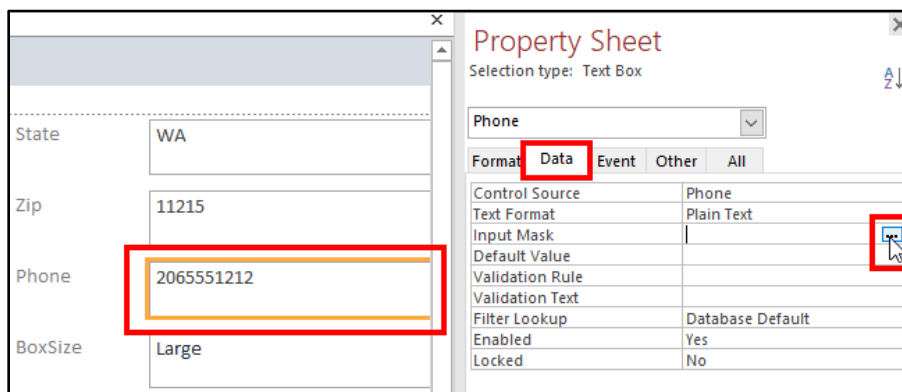
*Figure 69: Select the form control and the **Input Mask Build** button*

5. On the **Which input mask matches how you want data to look?** page of the **Input Mask Wizard**, in the **Input Mask** list, select the input mask you want to use, and then select **Next**, as the following screenshot depicts:
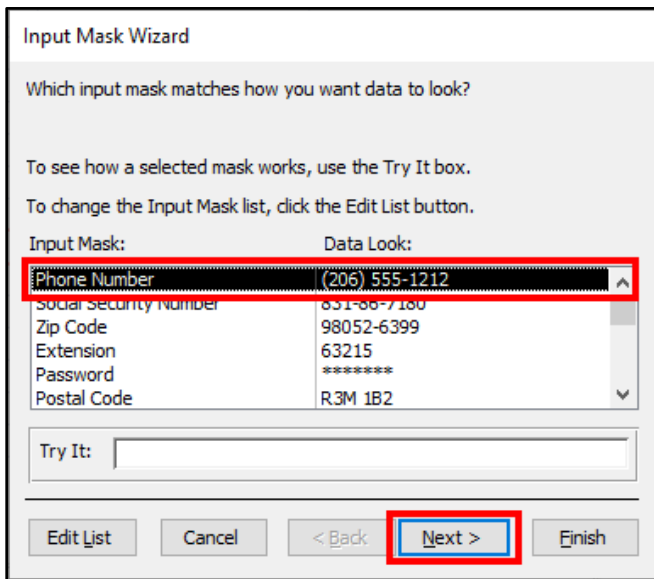
*Figure 70: The first page of the **Input Mask Wizard** allows you to select the **Input Mask***

6. On the **Do you want to change the input mask?** page of the **Input Mask Wizard**, in the **Try It** box, you can (optionally) enter characters as you would if you were entering data into the form field, to find out how the mask works, and then select **Next**, as the following screenshot depicts:
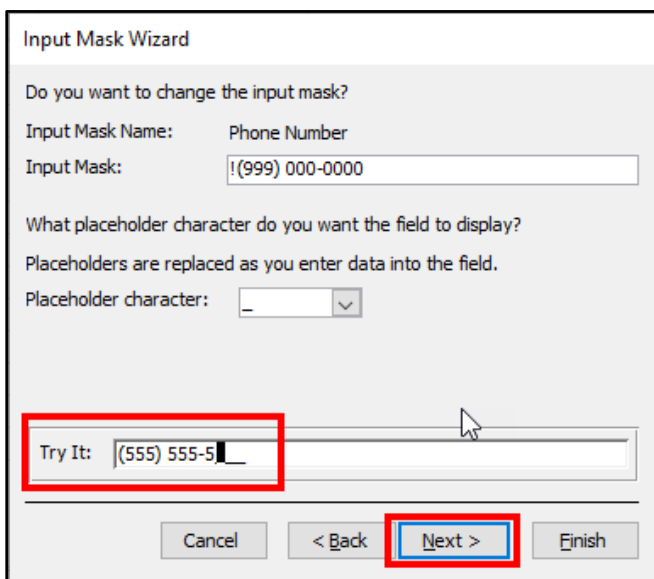
*Figure 71: The **Do you want to change the input mask?** page of the **Input Mask Wizard** allows you to try the mask*

7. On the **How do you want to store the data?** page of the **Input Mask Wizard**, choose how you want to store the data. Tip: If you want to observe the symbols all the time, select **With the symbols in the mask, like this**, as the following screenshot depicts:

*Figure 72: The **How do you want to store the data?** page of the **Input Mask Wizard** allows you to choose how you want to store the data*

8. On the **That's all the information the wizard needs to create your image mask.** page of the **Input Mask Wizard**, select **Finish**.

9. Save the form.

10. Be sure you are in the **Form View.** If you are not, select **View**, and then select **Form View** to try out the mask in the form.

Additional information

For more information on input masks in Access, refer to: Control data entry formats with input masks

Add an input mask

If you don't see the input mask you want, you can add it. Here are the steps to add an input mask for a phone number and then apply it to a field control:

1. Open the form in **Layout** or **Design View** that contains the field to which you want to apply an input mask.

2. Select the field's control on the form.

3. If necessary, open the **Property Sheet**:

    o On the **Form Layout Tools**, select the **Design** tab, and then in the **Tools** group, select **Property Sheet**, as the following screenshot depicts:

4. Select **Edit List**.

5. In the **Customize Input Mask Wizard**, select **New (blank record)**, as the following screenshot depicts.
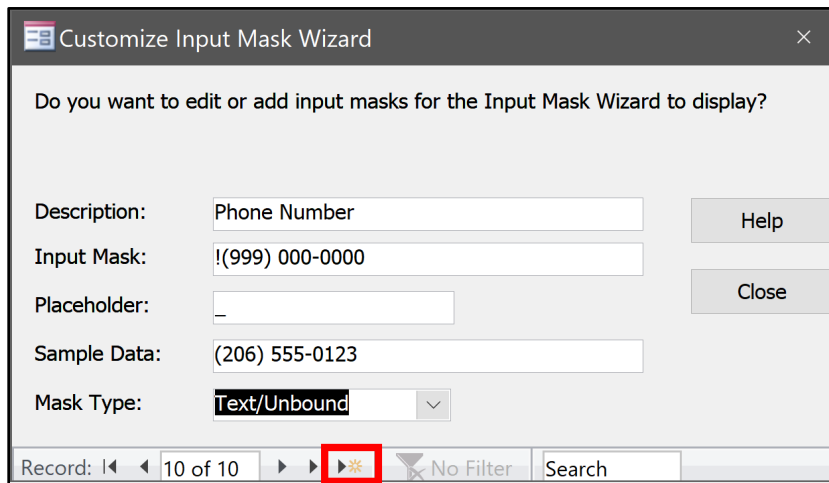
*Figure 73: The **Customize Input Mask Wizard** and the **New (blank) record** button*

6. In the new input mask record, enter the following information:

    a. Description: **Phone Number**

    b. Input Mask: **!(999) 000-0000**

    c. Placeholder: _

    d. Sample data: enter **2065550123**

    e. Mask Type: **Text/Unbound**

7. Select **Close**.

8. Select the **Phone Number** input mask, and then select **Finish**.

Use a form to add, edit, and delete records

When you add, edit, or delete a record in a form, you are actually making those changes directly to the data in the underlying table.

1. Open the form you want to use.

2. If necessary, switch to **Form View**.

3. Add a new record or find and edit an existing record:

   o To add a new record, on the **Home** tab, in the **Records** group, select **New**. Alternatively, select the **New (blank) record** button from the **navigation** buttons.

   *Figure 74: The **New Record** and **Save Record** buttons on the ribbon*
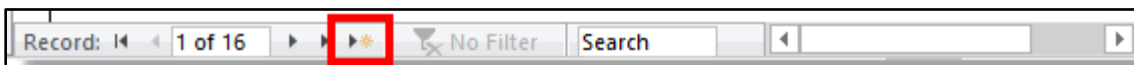
   *Figure 75: The **New Record** button in the **navigation** buttons*

   To edit a record, locate the record you want to edit by using one of the following methods:

   a. Use **Find** on the ribbon

   b. Select Ctrl+F

   c. Use a method such as sorting or filtering

   It is important to be sure you have the correct record selected before you start to do any work on a record.

4. Enter or make changes to your data. Note that while you are entering the new record, the pencil appears beside the record, indicating that the record is being edited, as the following screenshot depicts:
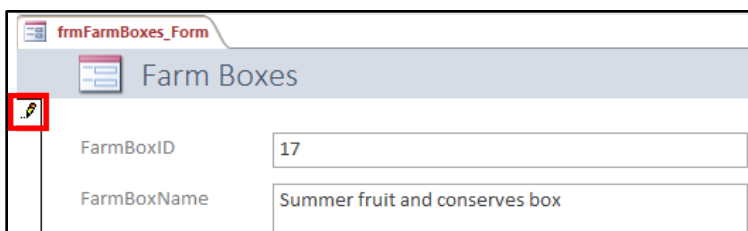
   Figure 76: The pencil indicates that the record is being edited

5. To move to the next field in the same record, select the Tab key. You can select Shift+Tab to move backward between fields. You can also use the Right or Left arrow keys or use a mouse to select the field you want to edit.

Microsoft

6. When you move to another record or close the form, Access saves the new record that you added, which is similar to working in a datasheet. To save changes to the current record, select Shift+Enter, or select **Save Record** on the ribbon.

Delete a record using a form

1. With the form open, navigate to the record you want to delete. Remember that you can't undo a record deletion, so make sure it's the right one.

2. On the ribbon, in the **Records** group, select the **Delete** drop-down list, and then select **Delete Record**, as the following screenshot depicts:
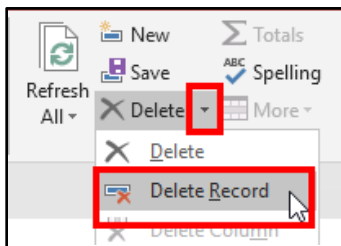
*Figure 77: The **Delete Record** button*

Activity: Experimentation

In this activity, you and a classmate will work together on one computer while trying to accomplish as many of the following tasks as possible in the time your teacher gives you. The person who is not using the computer can use the Student Guide to research instructions for doing the various tasks.

Resources needed

- Open **L3_T3_act_csa_program_starter.accdb**.
- Open the **frmFarmBoxes** form.

Instructions

With a partner, using one computer, find out how many of these tasks you can perform in the time given by your teacher.

- One person should operate the computer, the other should use the Student Guide (if necessary) to figure out how to perform each task and mark each task as it is done.
- If you have questions or don't know how to complete a task, ask your teacher or note it in the third column of the table.

Task to complete together	Mark ✓ when done	Note questions here
1. Open the **frmFarmBoxes** form.		
2. Use the **record navigation** buttons or select Page down to move to the fifth record. Confirm that the record is: o FarmBoxID: **5** o FarmBoxName: **Couple** o FarmBoxDescription: **5 fruits, 4 vegetables**		
3. Sort the records by the **FarmBoxName** field in ascending order. **FarmBoxID 5** should now be the first record.		
4. Save the form to save the sort with the form.		
5. Close and reopen the form, and confirm that it is still sorted by **FarmBoxName**.		
6. Find the record that has the **FarmBoxName Large**. Confirm that you have selected the correct record. You should observe, in the **Form View** section: o FarmBoxID: **3** o FarmBoxDescription: **6 fruits, 6 vegetables**		
7. Change the weight of **FarmBoxID 3**, the **Large** farm box, from **10** to **9**.		

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Task to complete together	Mark ✓ when done	Note questions here
8. The records with **FarmBoxID 15 and16** are duplicates. Find the record with FarmBoxID **16** and delete it, and then close the form.		
9. Open **frmMembers** in **Layout** or **Design View**, and then use the **Input Mask Wizard** to apply the built-in input mask **Phone Number** to the **Phone** field. If you don't see **Phone Number** in the list, you will need to edit the list and add an input mask.		
10. Test the input mask by attempting to (in any record) enter the text **abc** in the **Phone** field. (Hint: If you applied the mask correctly, you won't be able to do this.)		
11. Close the form and then close the database.		

Table 10: Tasks to complete

Try-it: Create and use forms

In this leveled try-it, you will create two forms: one based on the **tblFarmBoxes** table and one based on the **tblMembers** table. You'll apply sorts to both forms, use the forms to edit and delete records, and modify the members form with an input mask.

Try-it 1

Resources required
You will need the following resources for the first part of this activity:

- Open **L3_T3_try1_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. Open **L3_T3_try1_csa_program_starter.accdb**.

2. Create a form based on the **tblFarmBoxes** table by using the **Form** tool.

3. Save the form as **frmFarmBoxes**.

4. Create a form based on the **tblMembers** table by using the **Form** tool.

5. Apply the built-in **Phone Number** input mask to the **Phone** field and choose to store the symbols in the mask.

6. Save the form as **frmMembers**.

7. Close both forms and close the database.

Try-it 2

Resources required

You will need the following resources for the first part of this activity:

*   Open **L3_T3_try2_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. Open **L3_T3_try2_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

2. Open the **frmMembers** form.

3. In the **frmMembers** form, sort the records by the **LastName** field in descending order. Do not save the sort with the form.

4. The first record displayed should be **Xiang Zhong**. Make the following changes to this record:

    o   Add in the **AddressLine2** field: **Apt. 1304**

    o   Add the **206** area code to the value in the **Phone** field. Hint: With the input mask already applied to the form, it should match this: **(206) 555-0118**.

    o   If you don't see **Phone Number** in the list, you will need to edit the list and add an input mask.

5. Sort the member records by the **LastName** field in ascending order.

6. Save and close the **frmMembers** form.

7. Open the **frmFarmBoxes** form.

8. Sort the records by the **FarmBoxName** field in the ascending order.

9. Locate the two (duplicate) records (**FarmBoxIDs 17** and **18**) with the **FarmBoxName** of **Summer fruit and conserves box**.

10. Delete one of the duplicate **Summer fruit and conserves box** records.

11. Save and close the form, and then close the database.

Wrap-up

Use these questions to review what you learned in this lesson:

- Turn to a neighbor and share the favorite thing that you learned about **Find and Replace**, adding choices to fields, default values, creating forms, or anything else covered in the lesson.
- Be prepared to share with the class.

Then use these questions to review what you learned in this lesson:

1. The following datasheet is _____ by the **LastName** field.

Customer	FirstName	LastName	AddressLine1
24952	Michael	Yin	45 Second Street
18982	Fang Yin	Tu	4567 Pine Avenue
10828	Alba	Sutton	4567 Pine Avenue
13321	Sun	Li	45 View Avenue
22015	Archie	Lamb	67 Lake Drive
28887	Akia	Kassis	234 Main Street
27560	Manuel	Jerome	456 Lake Boulevard
17696	Cameron	Hyde	789 9th Street
18542	Iker	Dominguez	
22749	Maurice	Charron	
26269	Emery	Cate	

Table 11: A datasheet

Microsoft

Select the correct option.

a. Filtered by Last Name

b. Sorted in ascending order

c. Sorted in descending order

d. Selected

2. Examine the following **Find and Replace** options:

Find What: Lake

Look In: Current Field

Match: Start of Field

Search: All

Match case: selected

*Figure 78: The **Find and Replace** dialog box*

If you place your cursor in the **City** field in the **tblMembers** table, and select **Find Next**, which of the following record(s) will Access find?

Select all that apply.

a. Lake Ketchum

b. lake ketchum

c. Bow Lake

d. Big Lake

3. If you want to have a field filled in automatically when you create a new record, you add _____ to the field.

    a. An input mask

    b. A default value

    c. A values list field

    d. A sort order

4. True or False: When you apply a sort to records while you are using a form and then save the form, Access will save the sort with the form.

    a. True

    b. False

Note: If you have any concerns about any topics covered in this module, ask your teacher for assistance.

Glossary

append	To add to something that already exists. In Access, append means to add records to a table, usually multiple records, and usually by pasting them into the table, or by using a query.
criteria, search criteria	Search criteria includes all of the parameters of a search. This includes search terms, which field you are searching, whether you are researching for all the contents in a field or just part of the field, and so on.
datasheet	A view in Access that reveals data in a grid of columns (fields) and rows (records). Tables, queries, and forms all have datasheet views.
default value	A value that is automatically added to a field when you make a new record. You can add them to a field in a table, or in a form.
lookup field	A lookup field is a type of field in Access that gives a list of values to choose from. The lookup field can either search in a table for those values, or you enter them in (which is called a **values list** field). You use the **Lookup Field Wizard** to create both kinds of lookup fields.
navigate	To navigate is to move in, to, or through something, similar to a boat navigating the ocean. If you are asked to navigate to a file, or a particular record in a table, it means that you open folders (for a file), scroll, or perform a search (for records) to display it.
objects	People in the computer field use the term *object* to mean many things. In Access, tables, forms, queries, and reports are all objects, as are the controls on forms and reports. Generally, when you read about an Access object, it's probably referring to objects that are available in the Navigation Pane including tables, forms, and queries, as well as controls on forms.
search term	A search term is the text, numbers, and other criteria that you are searching for when you use the **Find** or **Find and Replace** feature.
values list field	A type of lookup field that you use in the **Lookup Field Wizard** to create, in which you enter values. When you use the field in a table datasheet or a form, you get a list of values from which to choose.

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view	Views give you a different appearance and allow you to do different things in objects such as tables, queries, reports, and forms. There are views for editing the object, such as **Design View**, and views for using the object to work with data, such as **Form View** (for forms) or **Datasheet View** (for tables).

Table 12: Glossary terms and definitions

Cornerstone

Overview

Munson's is considering adding new items to the products they sell. In this Cornerstone, you will begin preparing a database for the launch of a new line of preserves products at Munson's.

In this Cornerstone, you will use the skills you learned in this module to begin preparing the CSA program database for the launch of a new line of preserves products at Munson's. You will add data to the database, edit data in the database, and make data entry easier by configuring datasheets and forms.

Objectives

The following table outlines the Cornerstone objectives and their corresponding MOS exam objectives.

Import data from Excel to create a new table.	• OD 1.1.1: Import objects or data from other sources
Import a table from another Access database.	• OD 1.1.1: Import objects or data from other sources
Import data from Excel to append data to an existing table.	• OD 2.1.1: Import data into tables
Modify a datasheet by hiding fields.	• OD 2.2.1: Hide fields in tables
Modify a datasheet by adding a **Total** row.	• OD 2.2.2: Add totals rows
Modify records through a table's **Datasheet View**.	• OD 2.3: Manage table records
Sort records in a datasheet.	• OD 2.3.2: Sort records
Apply filters to a datasheet	• OD 2.3.3: Filter records

Find and replace data in a datasheet.	• OD 2.3.1: Find and replace data
Set default values and add choices for fields in a table, and use them when entering data.	• OD 2.4.7: Set default values
Sort records in a form by form fields.	• OD 4.2.2: Sort records by form field
Add an input mask to form and use it when entering data.	• OD 2.4.8: Apply built-in input masks

Table 2: The Cornerstone objectives

Duration

35 minutes

Instructions

1. Complete the following tasks for each file.

2. When saving your file, add your name to the end of the filename, for example: **Cornerstone_csa_program_starter_Alex**. Follow your teacher's directions for where to save your files.

3. When you finish the Cornerstone, assess your completion, and enter the points you think you earned within the following task lists. You can ask your teacher for help, if required.

Tasks

You will work with one database file directly in this Cornerstone. You will import data from one database file and two Excel files.

File 1: Cornerstone_csa_program_starter.accdb

Task: Import data from Access (6 points)

- In the file **Cornerstone_csa_program_starter.accdb**, import the **tblPickles** table from the **Cornerstone_preserves.accdb** Access database. (6 points) (Exam objective 1.1.1)

Points scored: _____ / 6

Task: Copy data from Excel (8 points)

1. In Excel, in **Cornerstone_spreads.xlsx**, select and then copy the **A1:D4** range on the **tblSpreads** worksheet. (2 points)

2. In the **Cornerstone_csa_program_starter.accdb** file, paste the copied data as a new table that has column headings. (Exam objective 1.1.1) (6 points)

Points scored: _____ / 8

Task: Copy data from Excel and append to an existing table (8 points)

1. In **Cornerstone_additional_orders.xlsx**, on the **Additional_order_data** sheet, select and copy the range **A1:F11**. (2 points)

2. In Access, in the **Cornerstone_csa_program_starter.accdb** file, **Paste Append** the copied data as new records to the **tblOrders** table. (6 points) (Exam objective 2.1.1)

Points scored: _____ / 8

Task: Hide fields in datasheets (6 points)

1. In the **tblMembers** table, hide the **MemberID** field, and then save and close the table. (3 points) (Exam objective 2.2.1)

2. In the **tblPreserves** table, hide the **PreservesCategoryID** field, and then save the table. (3 points) (Exam objective 2.2.1)

Points scored: _____ / 6

Task: Add a Total row in a datasheet (8 points)

1. In the **tblPreserves** table, add a **Total** row. (4 points) (Exam objective 2.2.2)

2. In the **Total** row, in the **PreservesName** column, select the **Count** function. (2 points) (Exam objective 2.2.2)

3. In the **Total** row, in the **WSCostPerJar** column, select the **Sum** function, and then save the table. (2 points) (Exam objective 2.2.2)

Points scored: _____ / 8

Task: Edit and add records in a datasheet (7 points)

1. In the **tblPreserves** table, in the record with a **PreservesID** of **6**, change the text in the **PreservesDescription** box so it matches: **Jam made from an assortment of berries** (2 points) (Exam objective 2.3)

2. Add a new record to the **tblPreserves** table with the following information: (5 points)

   o   PreservesID: **11**
   o   PreservesName: **Peach Compote**
   o   PreservesDescription: **Slow-cooked peaches with warm spices**
   o   PreservesCategory: **Compote**
   o   WSCostPerJar: **4.5**

Points scored: _____ / 7

Task: Sort records in a datasheet (3 points)

1. Sort the **tblPreserves** table by the **PreservesName** column in **Ascending** order. (2 points) (Exam objective 2.3.2)

2. Save the sort in the table. (1 point) (Exam objective 2.3.2)

Points scored: _____ / 3

Task: Find and replace data in a datasheet (12 points)

1. In the **tblMembers** table, in the **Allergies** field, replace all occurrences of **Carotts** with **Carrots**. (4 points) (Exam objective 2.3.1)

2. In the **AddressLine1** field, replace all occurrences of **Bolevard** with **Boulevard**. (4 points)

3. In the **AddressLine1** field, fix the capitalization of the word "avenue" for all records by finding **avenue** and replacing it with **Avenue**. (4 points)

Points scored: _____ / 12

Task: Apply filters to a datasheet (9 points)

1. In the **tblMembers** table datasheet, filter the **City** field to reveal only the rows where the value for City is **Samish**. Note how many records there are: _____
    (3 points) (Exam objective 2.3.3)

2. Clear the filter from the **City** field and then save the table. (2 points) (Exam objective 2.3.3)

3. Filter the **tblPreserves** table datasheet to reveal records that do not contain the word **Dill** in the **PreservesDescription** field, and then save the table. (4 points) (Exam objective 2.3.3)

Points scored: _____ / 9

Task: Set and use a default value in a table (9 points)

1. In the **tblPreserves** table, set a **Default Value** in the **PreservesCategory** field of **Jam**, and then save the table. (4 points) (Exam objective 2.4.7)

2. Enter a new record with these values: (5 points)

    o PreservesID**: 12**

    o PreservesName**: Munson's Marmalade**

    o PreservesDescription**: Thin-cut oranges and lemons in a classic morning spread**

    o PreservesCategory**: Default value of Jam**

    o WSCostPerJar**: 3**

Points scored: _____ / 9

Task: Create a new field with choices (values list field) (10 points)

1. In the **tblOrders** table, use the **Lookup Wizard** to create a new lookup values list field with these settings: (7 points)

    o How do you want your lookup field to get its values? **I will type in the values that I want.**

    o Number of columns: **1**

    o Col1 values:

        • **Same-day shipping**

        • **Next-day shipping**

        • **Carry-out**

    o Label: **DeliveryChoice**

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o   Limit To List check box: **selected**
2. For the first three records, select the Tab key to refer to the **DeliveryChoice** field, open the list, and choose an option from the list. (3 points)

Points scored: _____ / 10

Task: Sort data in a form (6 points)

1. In the **frmOrders** form, sort the records in the **OrderTotal** field smallest to largest, and enter down the amount in the **OrderTotal** field for the first record: _____ (2 points) (Exam objective 4.2.2)

2. Sort the records in the **PickupDate** field from newest to oldest, and enter the date in the **PickupDate** field for the first record: _____ (2 points) (Exam objective 4.2.2)

3. Sort the records in ascending order by the **OrderDate** field, and then save the table. (2 points) (Exam objective 4.2.2)

Points scored: _____ / 6

Task: Add and use an input mask in a form (10 points)

1. In the **frmMembers** form, apply a built-in input mask with these settings: (6 points) (Exam objective 2.4.8)

   o   Select this input mask: **Phone Number**
   Note: If you don't see **Phone Number** in the list, you will need to edit the list and add an input mask.

   o   On the **Do you want to change the input mask?** page, leave all the defaults.

   o   On the **How do you want to store the data?** page, choose: **With the symbols in the mask, like this:**

2. Sort the records in the form by the **LastName** field in **Ascending** order. (2 points) (Exam objective 4.2.2)

3. In the first record, in the **Phone** field, enter: **2045550129**, save the record, and then save and close the form. (2 points)

Points scored: _____ / 10

FILE 1 TOTAL POINTS: _____ /102

Microsoft

Student Guide

40572A
Microsoft Access expert 2019

Module 4: Asking questions of data

Contents

Microsoft

Module overview

Description

Now that you've learned how to create basic tables in your database and populate them with data, you're ready to begin asking questions of your database. You'll use what you learned about your database in earlier modules to build useful queries that you can reuse throughout the remainder of this course.

This module consists of two lessons during which you'll learn how to create and manage queries in Microsoft Access 2019. By the end of this module, you'll be able to create a query either manually or by using the **Query Wizard** and then modify and manage the query.

The following table outlines the lesson objectives and their corresponding Microsoft Office Specialist (MOS) exam objectives.

Lesson	Learning objective	MOS exam objectives
Introducing queries	Describe the use of queries in Access and create and save queries	• 3.1.1 • 3.1.6 • 3.1.7
Modifying queries	Modify fields in a query, sort and filter query data, and delete a query	• 1.1.2 • 3.2.1 • 3.2.2 • 3.2.3 • 3.2.4
Cornerstone: Ask reusable questions of data	Create, manage, and modify simple and complex queries	• All the preceding objectives

Table 1: MOS exam objectives by lesson

Scenario

Organizing and creating the database for the community supported agriculture (CSA) program at Munson's Pickles and Preserves Farm required a lot of thinking. Now, it's time to find out if all that preplanning and careful database construction will help in answering some of the questions you have about the members. Your team wants more information about the members who place orders, including who has allergies to certain fruits and vegetables. You want to be able to quickly get answers to these questions and to get the most current information. Other team members of the CSA program are also requesting data in different formats for other purposes.

Cornerstone

This module ends with a Cornerstone project, during which you'll use queries to ask questions about a sample database. In the Cornerstone, you'll:

- Create a query that lists customers' cities and states.
- Create a query that finds customer records with duplicate first and last names.
- Update the customers' cities and states query to include their postal codes.
- Sort the duplicate customers by last name.

Lesson 1: Introducing queries

Overview

Now that you've placed data into your database, you might start to have questions about your data. For example, you might want to know where your customers are located. You'll also eventually need more-detailed information about each customer so you can customize the customers' produce boxes to their individual needs and preferences.

In this lesson, you'll learn how to use queries to ask questions about your database. You'll learn how to create queries from scratch or by using special tools that make it easier to build complex queries. You'll also learn how to save and reuse your queries so you can repeatedly ask the same questions—even as your database changes over time.

Warm-up

Discussion

Your teacher will lead the class through a discussion on how to use queries to ask questions of a database. Be prepared to answer the following questions during the classroom discussion:

1. What information do you want to know about your customers?

   Fill in the blank space.

2. What are some questions you'd ask the database if the database could converse with you?

   Fill in the blank space.

3. Who on the farm would benefit from asking questions of the database?

   Fill in the blank space.

Topic 1: Overview of queries

You can use queries to ask questions of your Access database. In a typical database, the data you want to research usually resides in one or more existing database tables. A query can retrieve information from tables in your database, assemble that information into a format that makes logical sense, and then display that data to you. A query can answer a simple question, perform calculations, and even combine data from different tables for you.
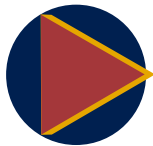
Video

For a basic introduction to queries, review the video at: Get started with queries

If you want to review data from a database table but have only certain fields from that table, you can build a basic select query. At its most fundamental level, a *select query* selects one or more fields from a table in the database. The following screenshot depicts how you can select five fields from the **tblCustomers** table in the database to display in your query.

Field:	AddressLine1	AddressLine2	City	State	PostalCode	
Table:	tblCustomers	tblCustomers	tblCustomers	tblCustomers	tblCustomers	
Sort:						
Show:	☑	☑	☑	☑	☑	
Criteria:						
or:						

Figure 1: Fields in a query
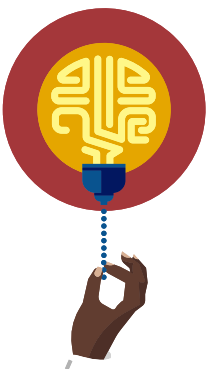
Did you know?

You can select the special asterisk wildcard inside quotation marks ("*") as a field to return all the fields in your database table.

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When you're building a query, the questions you ask of the database are called *criteria*. The following screenshot depicts a query that uses criteria to specify that only results having a last name of Doyon will display.

Figure 2: Criteria in a query

Create a query by using the Design view

To create a query within a database, you can use one of two methods. The first method uses the **Design** view, where you can build new queries from scratch. The next topic explains the second method, which uses the **Query Wizard**.

To display the **Design** view, go to the **Create** tab, and then in the **Queries** group, select **Query Design**, as the following screenshot depicts.
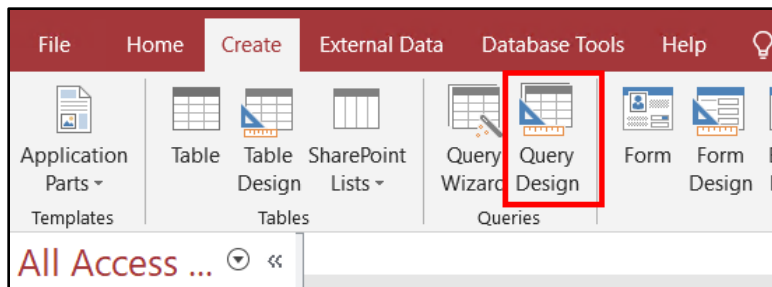
*Figure 3: The **Query Design** button on the **Create** tab*

Select source tables

To begin creating a query, you first select one or more database objects to use as the source of your query. For most queries, you'll use existing database tables. The following screenshot depicts the list of tables that the **Show Table** dialog box makes available.
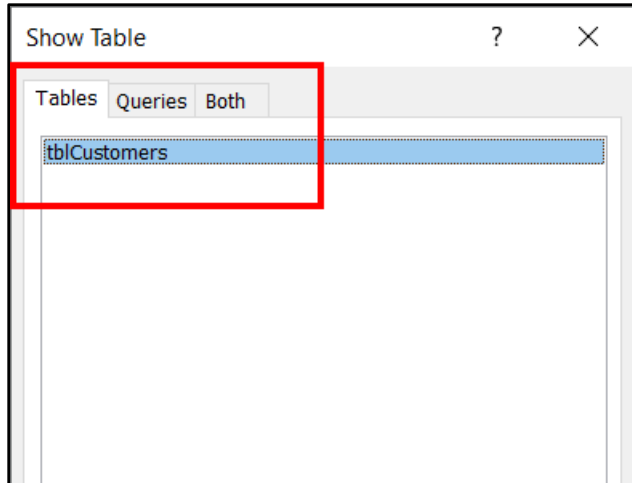
*Figure 4: The **Show Table** dialog box*
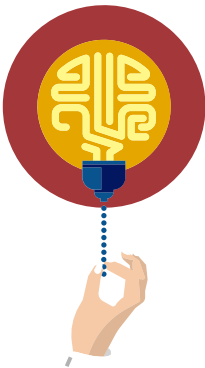
Did you know?

You can also select queries to use as the source of other queries. This might lead to exciting combinations of nested queries.

After you add the source tables, you'll notice that the query editor displays them. The following screenshot depicts an empty query editor that references only a single table.
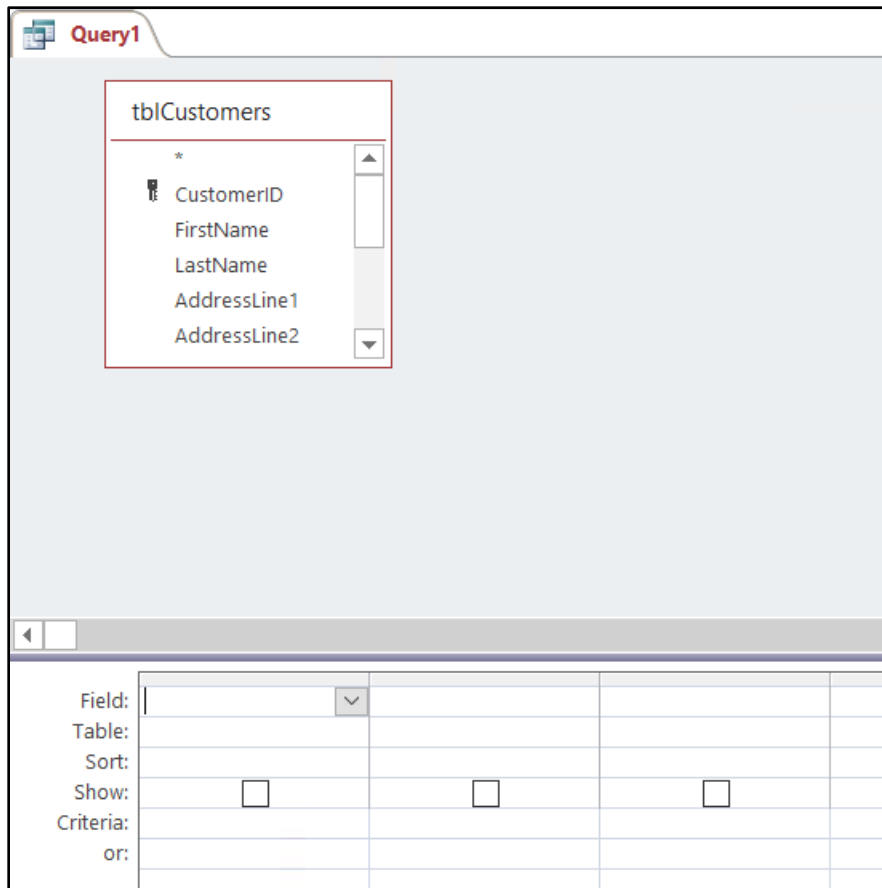
Figure 5: The query editor

Select basic query fields

You use the table in the pane following the query editor to build your questions for the database. Each query field in this table has a particular purpose for determining the results of your query. The following table describes what each query field can do in building your query.

Query field	Options	Effect
Field	The fields for the currently selected table	Selects a field to use for the current query field
Table	The tables in the database	Selects a table to use as a source for the current query field
Sort	**Ascending** and **Descending**	Sorts the query results by using the current query field

Query field	Options	Effect
Show	**True** and **False**	Switches the current query field in the query results
Criteria	Your own filter that you build by using plain text	Adds filters to limit the data that the query results return

Table 2: The query field components

For example, you might create a query field that selects the **CustomerID** field from the **tblCustomers** table and sorts the IDs in descending order. The following screenshot depicts this query field.

Figure 6: A query field

Sort and display query fields

You can add as many query fields as you need to build a comprehensive query. You can choose whether to sort each query field and whether to display it in the query results. By using a combination of these techniques, you can build sophisticated queries relatively quickly.

Observe some table data

The following table displays some of the data in the **tblCustomers** table in the database.

CustomerID	FirstName	LastName	City	State	PostalCode	Allergies
1	Akia	Kassis	Edison	WA	11215	Strawberries
2	Alain	Margand	Bow	WA	98107	

*Table 3: Part of the **tblCustomers** table*

Observe some queries

Review the following sections for examples of queries you can build by using the **tblCustomers** table in the database and the query editor.

To list all the customer names in the database

Run the query that the following table depicts.

Query field	LastName	FirstName
Table	**tblCustomers**	**tblCustomers**
Sort	**Ascending**	**Ascending**
Show	✔	✔

Table 4: A query that will return the full names of all the customers sorted by last name and then by first name

The following table depicts the results.

LastName	FirstName
Kassis	Akia
Margand	Alain

Table 5: The query results

Note: Recall that the customer numbers were assigned chronologically as they signed up for the CSA program.

To find the last names of all the customers in the database in the order they were created

Run the query that the following table depicts.

Query field	CustomerID	LastName
Table	**tblCustomers**	**tblCustomers**
Sort	**Descending**	
Show		✔

*Table 6: A query that will sort customers in descending order by **CustomerID** and display only their last names*

The following table depicts the results.

FirstName	LastName
2	Margand
1	Kassis

Table 7: The query results

To list everything stored in the database

Run the query that the following table depicts.

Query field	tblCustomers.*
Table	**tblCustomers**
Sort	
Show	✔

*Table 8: A query that returns all fields and all data from the **tblCustomers** table*

The following table depicts the results.

CustomerID	FirstName	LastName	City	State	PostalCode	Allergies
1	Akia	Kassis	Edison	WA	11215	Strawberries
2	Alain	Margand	Bow	WA	98107	

Table 9: The query results

To find the city and state for every customer in the database

Run the query that the following table depicts.

Query field	City	State	PostalCode
Table	**tblCustomers**	**tblCustomers**	**tblCustomers**
Sort			**Ascending**
Show	✔	✔	

Table 10: A query that lists the city and state for each customer and sorts the list by postal code

The following table depicts the results.

City	State
Edison	WA
Bow	WA

Table 11: The query results

To list the allergies of every customer in the database

Run the query that the following table depicts.

Query field	Allergies	CustomerID
Table	tblCustomers	**tblCustomers**
Sort		**Ascending**
Show	✔	✔

Table 12: The query results

The following table depicts the results.

Allergies	CustomerID
Strawberries	1
	2

Table 13: The query results

Review your query results

When your query is ready, you can review the results by running your query. To run your query, go to the **Design** tab, and then in the **Results** group, select **Run**, as the following screenshot depicts.
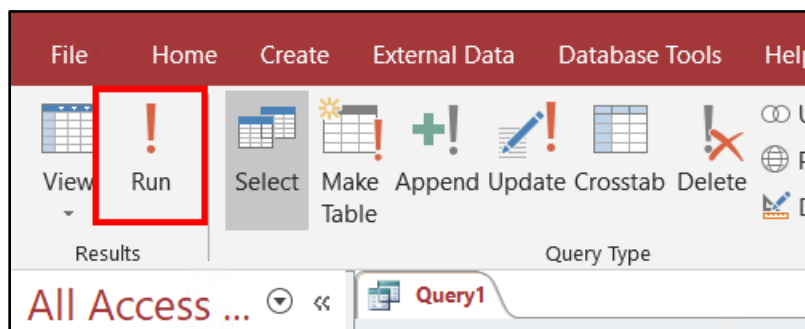
*Figure 7: The **Run** button on the **Design** tab*

When you run the query, Access switches from the **Design** view to the **Datasheet** view. The **Datasheet** view displays the results of the query.

Assume that you want to anonymously list the postal code and state for each customer to find out where your customers live and plan for an expansion of the produce box program. You can build this query in the **Design** view by specifying two query fields, as the following table depicts.

Field	State	PostalCode
Table	**tblCustomers**	**tblCustomers**
Sort		**Ascending**
Show	✔	✔

Table 14: A query that lists the state and postal code for each customer

After you finish building this query in the **Design** view, it resembles the following screenshot.

*Figure 8: A query that returns the **State** and **PostalCode** fields from the **tblCustomers** table*

After you run the query, the **Datasheet** view displays the query results, as the following screenshot depicts.

*Figure 9: The **Datasheet** view*

Caution

This course uses database files that follow a general storyline for the Community Supported Agriculture (CSA) program at Munson's Pickles and Preserves Farm. These database files are the Learning Activity Resource files that you'll use to work on each module's activities and try-its. Each Learning Activity Resource file contains the data and objects, such as tables, queries, forms, and reports, that you need to complete a corresponding activity.

Due to this course's modular nature, the objects and data in these files might vary across activities or try-its. Therefore, it's important that you start your activities or try-its only with the designated files, as per applicable instructions. You also should note that screenshots in the topic content are for illustration purposes only and might appear different than those that are in the Learning Activity Resource files.

Activity: Show me how

The teacher will demonstrate the various ways to create a query in an Access database.

Resources required

- **L1_T1_act_csa.accdb** from this lesson's **Learning Activity Resources** folder

Activity instructions

Pay close attention and follow along as your teacher demonstrates how to create and run queries in Access. For each question that you answer from a query, fill in the results in the following tables.

Question 1: How can you find the first and last names of all customers in the database?

Field	FirstName	LastName
Table	**tblCustomers**	**tblCustomers**
Sort	**Ascending**	**Ascending**
Show	✔	✔

Table 15: A query that lists the first and last names of all customers

Question 1 results: Enter your results in the following table.

FirstName	LastName

Table 16: The results of the query that lists the first and last names of all customers

Question 2: How can you find the city and state of every customer in the database?

Field	City	State
Table	**tblCustomers**	**tblCustomers**
Sort		
Show	✔	✔

Table 17: A query that lists the city and state of every customer

Question 2 results: Enter your answers in the following table.

City	State

Table 18: The results of the query that lists the city and state of every customer

Try-it: Overview of queries

In this leveled try-it activity, you'll open an existing database and create a basic query.

Try-it 1

Resources

You'll need the following resource for this try-it:

- **L1_T1_try1_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Create a new query by using the **Design** view.

2. Add the **tblCustomers** table to the new query.

3. Create a single query field that uses the settings in the following table.

Field	tblCustomers.*
Table	**tblCustomers**
Sort	
Show	✔

Table 19: Select all fields

4. Run the query.

5. Observe the query results. The query should return all fields for all records in the database.

Try-it 2

Resources

You'll need the following resource for this try-it:

- **L1_T1_try2_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Create a new query by using the **Design** view.

2. Add the **tblCustomers** table to the new query.

3. Create two query fields that use the settings in the following table.

Field	State	City
Table	**tblCustomers**	**tblCustomers**
Sort	**Ascending**	**Ascending**
Show	✔	✔

*Table 20: Select only the **City** and **State** fields*

4. Run the query.

5. Observe the results of the query. The query should return an alphabetical list of cities that are listed by state (also alphabetically) in which your customers reside.

Try-it 3

Resources

You'll need the following resource for this try-it:

- **L1_T1_try3_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Create a new query by using the **Design** view.

2. Add the **tblCustomers** table to the new query.

3. Create three query fields that use the settings in the following table.

Field	State	City	PostalCode
Table	**tblCustomers**	**tblCustomers**	**tblCustomers**
Sort			**Ascending**
Show	✔	✔	

*Table 21: Sort by postal code and then select the **City** and **State** fields*

4. Run the query.

5. Observe the results of the query. The query should return a list of the cities and states in the database.

6. Create another new query by using the **Design** view.

7. Add the **tblCustomers** table to the new query.

8. Create two query fields that use the settings in the following table.

Field	LastName	FirstName
Table	**tblCustomers**	**tblCustomers**
Sort	**Descending**	**Ascending**
Show	✔	✔

*Table 22: Select only the **FirstName** and **LastName** fields*

9. Run the query.

10. Observe the results of the query. The query should return a list of full names for all the customers in the database.

11. Create another new query by using the **Design** view.

12. Add the **tblCustomers** table to the new query.

Microsoft

13. Create a single query field that uses the settings in the following table.

Field	Allergies
Table	**tblCustomers**
Sort	**Ascending**
Show	✔

*Table 23: Select only the **Allergies** field*

14. Run the query.

15. Observe the results of the query. The query should return a list of all allergies in the database.

Try-it review

Answer the following questions by using the information you learned during the try-it exercise:

1. Where are your customers located? In the following table, enter the cities and states that the query results displayed.

State	City

Table 24: Customer locations

2. For each state in the following table, indicate whether Munson's does business there by entering **Yes** or **No**.

State	Does Munson's do business here?
Montana	
Wyoming	
Idaho	
Oregon	
Washington	

Table 25: States

3. Munson's is planning a new distribution warehouse. Which city in the state of Washington would you recommend, and why?

Topic 2: Create a simple query with Query Wizard

You can use the **Query Wizard** to automatically create a query. When you use the **Query Wizard**, you have less control over the details of the query design at first, but the process is faster than manually creating a query. The **Query Wizard** might also help you avoid some common mistakes you might make when manually building queries.

Use the Query Wizard

To open the **Query Wizard**, go to the **Create** tab, and then in the **Queries** group, select **Query Wizard**, as the following screenshot depicts.
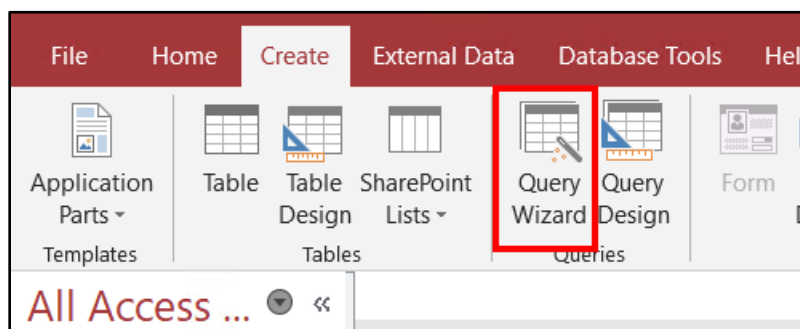
*Figure 10: The **Query Wizard** button on the **Create** tab*

Microsoft

The **New Query** dialog box displays, offering four choices for you to start building your query, as the following screenshot depicts.
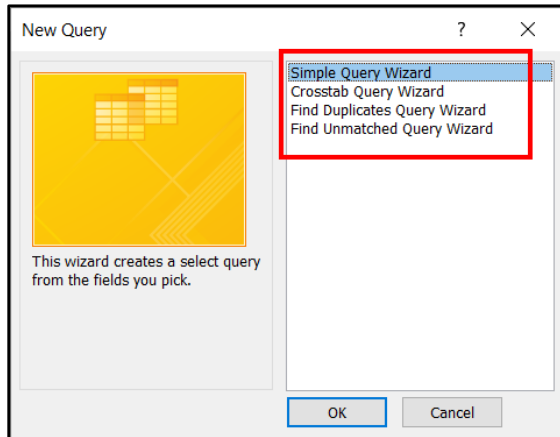
*Figure 11: The **New Query** dialog box*

Use the Simple Query Wizard

The **Simple Query Wizard** offers the easiest way to create a query that includes one or more fields from a single database table. To use this wizard, select **Simple Query Wizard** in the **New Query** dialog box.

The **Simple Query Wizard** page displays and includes a list of the tables in the database. On this page, you select the table you want to include in your query. The following screenshot depicts selecting the **tblCustomers** table.
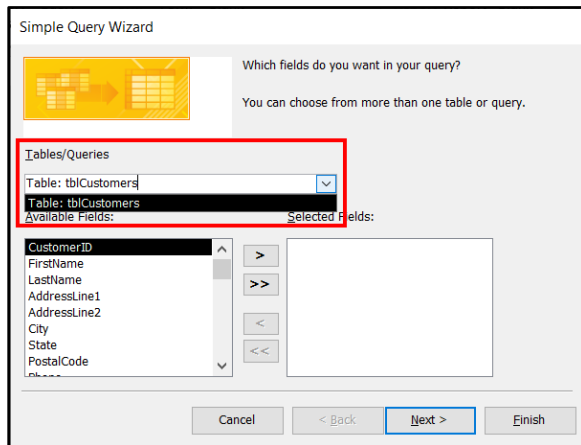
Figure 12: Selecting a table for your query

After you select a table, you can select one or more fields in the table to include in your query. The following screenshot depicts selecting the **CustomerID**, **FirstName**, and **LastName** fields.
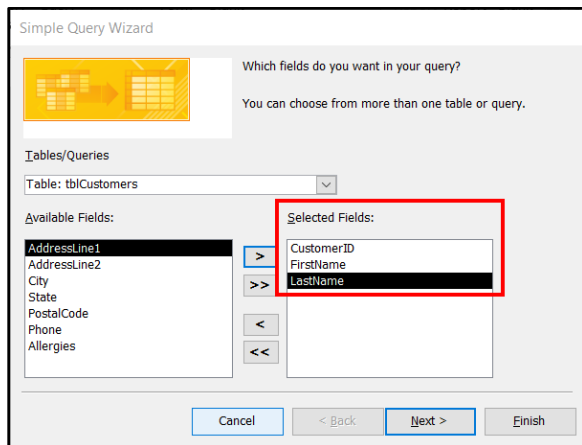
*Figure 13: Selecting the **CustomerID**, **FirstName**, and **LastName** fields*

In the final step of the wizard, you can change the title of your query and then select one of two choices: to open the query so you can review the results or to modify the query design. The following screenshot depicts this final step.
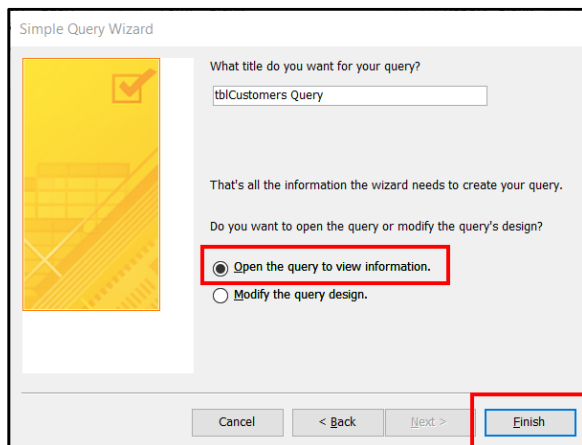
*Figure 14: The final step of the **Simple Query Wizard***

Use the Find Duplicates Query Wizard

You can use the **Find Duplicates Query Wizard** to find data that was incorrectly entered more than once in your database. To use this wizard, select **Find Duplicates Query Wizard** in the **New Query** dialog box.

The **Find Duplicates Query Wizard** displays a list of the tables in the database. Select the table you want to include in your query. The following screenshot depicts selecting the **tblCustomers** table.
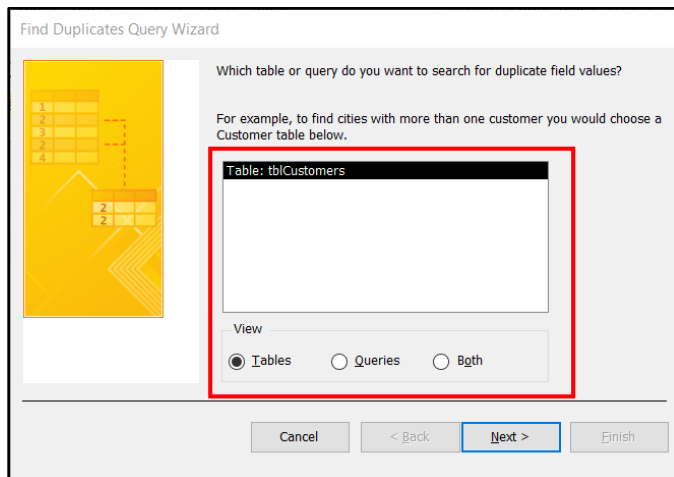
Figure 15: Selecting a table for your query

The next step in the **Find Duplicates Query Wizard** is to select the fields that you suspect contain duplicate information. The following screenshot depicts selecting the **FirstName** and **LastName** fields.
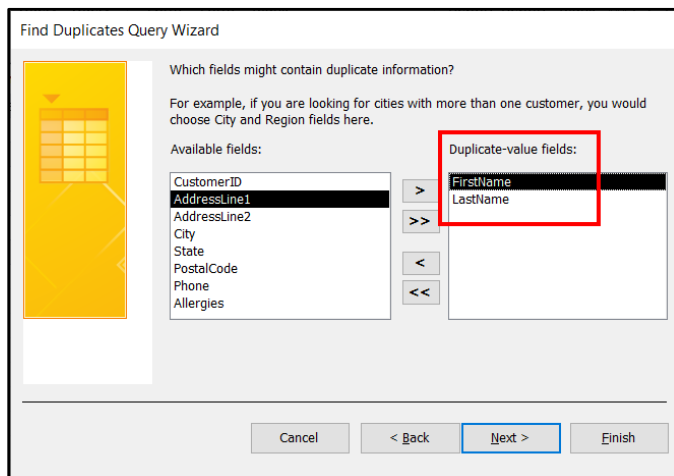
*Figure 16: Selecting the **FirstName** and **LastName** fields*

Microsoft

The next step in the wizard asks if you want to display additional data in the query results. The fields you selected in the previous step will already automatically display in the query results. The following screenshot depicts selecting the **CustomerID** field.
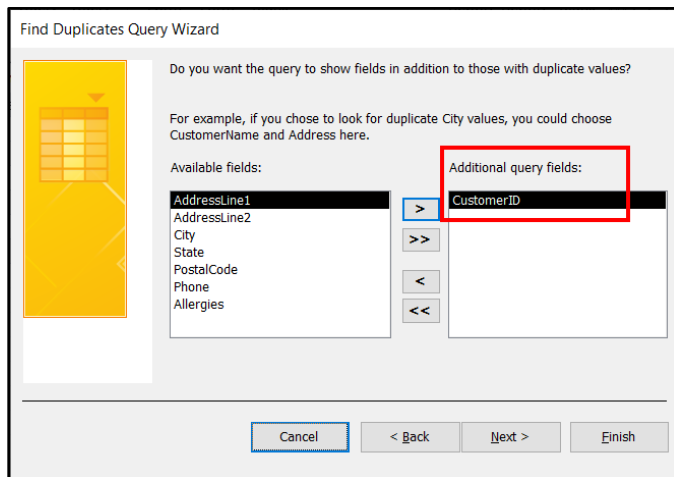
Figure 17: Adding the **CustomerID** *field to the query*

As in the **Simple Query Wizard**, the final step of the **Find Duplicates Query Wizard** is to change the title of your query if you want and then select one of two choices: to open the query so you can review the results or to modify the query design, as the following screenshot depicts.
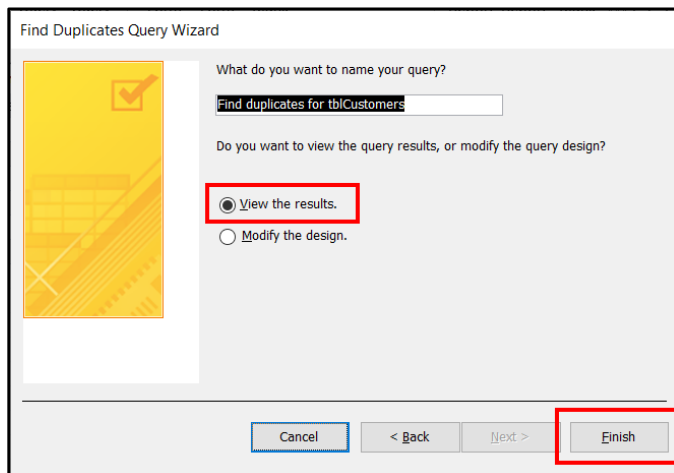
Figure 18: The final step of the **Find Duplicates Query Wizard**

Activity: Show me how

The teacher will demonstrate the various ways to create a query by using the **Query Wizard** for an Access database.

Microsoft

Resources required

- **L1_T2_act_csa.accdb** from this lesson's **Learning Activity Resources** folder

Activity instructions

Pay close attention and follow along as your teacher demonstrates how to create a query by using the **Query Wizard** in Access. For the single question that you answer from a query, fill in the results in the following table.

Question 1: Does the database have any duplicated customers?

Question 1 results: Enter your results in the following table.

CustomerName	First CustomerID value	Second CustomerID value

Table 26: Duplicated customers

Try-it: Create a simple query with Query Wizard

In this leveled try-it activity, you'll open an existing database and create a query.

Try-it 1

Resources

You'll need the following resource for this try-it:

- **L1_T2_try1_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Create a new query by selecting **Query Wizard**.

2. Select **Find Duplicates Query Wizard**.

3. Choose the **tblCustomers** table.

4. Choose the **FirstName** and **LastName** fields to check for duplicates.

5. Don't include additional fields.

6. Select the **View the results** option.

7. Finish the wizard to review the query results.

Try-it 2

Resources
You'll need the following resource for this try-it:

- **L1_T2_try2_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions
The following are the general tasks that you need to perform during this try-it:

1. Create a new query by selecting **Query Wizard**.

2. Select **Find Duplicates Query Wizard**.

3. Choose the **tblCustomers** table to use in the query.

4. Choose the **FirstName** and **LastName** fields to check for duplicates.

5. Choose the **CustomerID** field as an additional field in the query.

6. Select the **View the results** option.

7. Finish the wizard to review the query results.

Try-it 3

Resources
You'll need the following resource for this try-it:

- **L1_T2_try3_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions
The following are the general tasks that you need to perform during this try-it:

1. Create a new query by selecting **Query Wizard**.

2. Select **Find Duplicates Query Wizard**.

3. Choose the **tblCustomers** table to use in the query.

4. Choose the **FirstName** and **LastName** fields to check for duplicates.

5. Choose the **CustomerID** field as an additional field in the query.

6. Select the **Modify the design** option.

7. Select **Finish** to open the query designer so you can modify the query design.

8. Add an additional query field to the existing query that uses the settings in the following table.

Field	PostalCode
Table	**tblCustomers**
Sort	
Show	✔

*Table 27: Select the **PostalCode** field*

9. Run the query to review the query results.

Try-it review

Answer the following questions by using the information you learned from the try-it exercise:

1. Which customers does the database duplicate? List each customer along with both of that customer's **CustomerID** values in the following table.

CustomerName	First CustomerID value	Second CustomerID value

Table 28: Duplicated customers

2. What other data in the database do you need to review to be sure that any particular name is truly a duplicate? What do you recommend as considerations, and why?

Topic 3: Use Save Object As

As the number of queries you build grows, it will become important for you to manage them in a way that makes sense to you. For example, suppose you have two similar queries that differ only slightly. If you then need to quickly query your database, how will you tell these two queries apart?

After you author a query, you can name it when you save it and then later come back to it. To answer the preceding question, you name the two queries differently to help you quickly tell them apart.

Save a query from the Design view

Each query that you create in Access has its own tab. By default, Access names the query **Query** followed by a number. Access thus names the first query **Query1** and the second query **Query2**, and the rest of the queries continue this pattern. The following screenshot depicts the tab for the first query that's open in the editor.
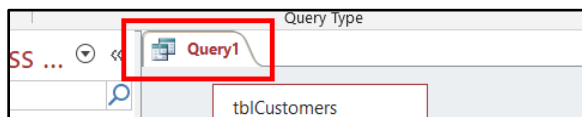
Figure 19: The tab for the first unnamed query

To save this query, right-click or access the context menu of the **Query1** tab, and then select **Save**, as the following screenshot depicts.
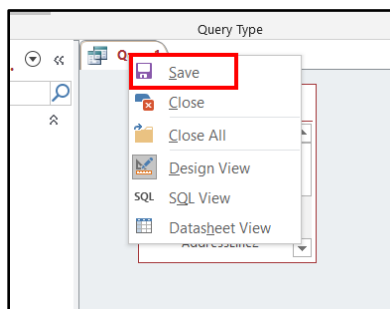
Figure 20: The context menu of a query tab

The final step is to enter a unique name in the **Query Name** box of the **Save As** dialog box. Select **OK** to then save the query with the unique name. The following screenshot depicts the **Save As** dialog box.
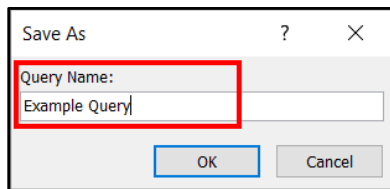
*Figure 21: The **Save As** dialog box*

After you save your query, it will appear in the **Queries** list for this database. The following screenshot depicts **Example Query** in this list.
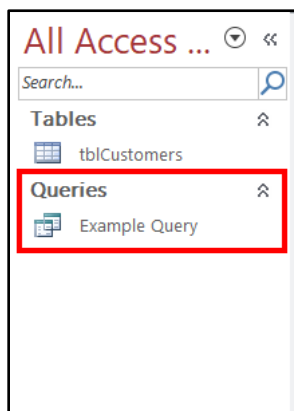
Figure 22: The list of queries in the database

Save a query from a design wizard

Both wizards that you learned about—**Simple Query Wizard** and **Find Duplicates Query Wizard**—have a final step during which you can save your query with a unique name.

The **Simple Query Wizard** has a **What title do you want for your query?** box, where you can enter a query name. The following screenshot depicts a query that Access will save with the name **tblCustomers Query**.
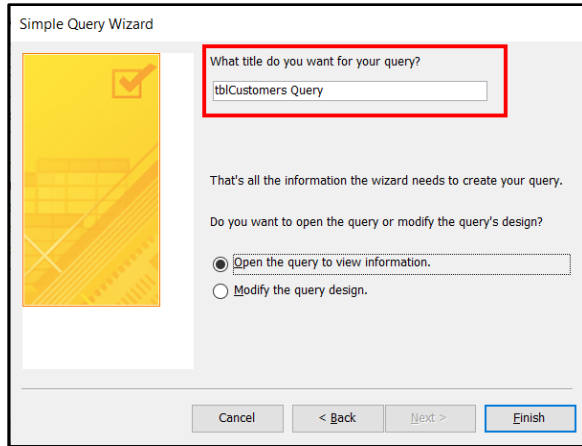
*Figure 23: The final page of the **Simple Query Wizard***

The **Find Duplicates Query Wizard** has a **What do you want to name your query?** box, where you can also enter a query name. The following screenshot depicts a query that Access will save with the name **Find duplicates for tblCustomers**.
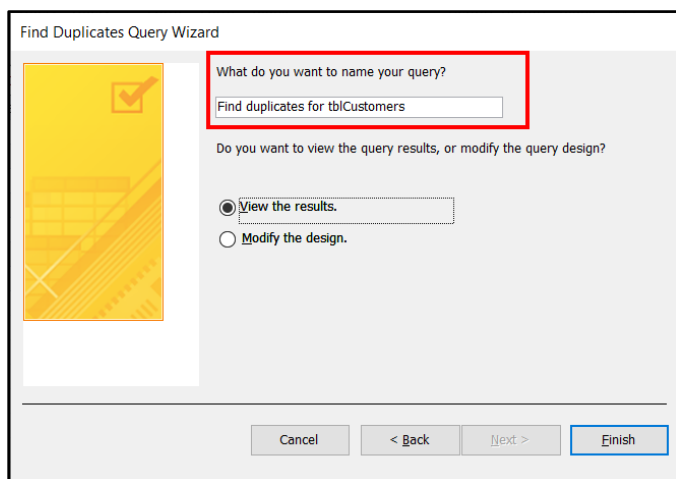
*Figure 24: The final page of the **Find Duplicates Query Wizard***

Just like with the **Design** view, any query you save from a wizard will appear in the **Queries** list for this database. The following screenshot depicts the new queries in this list.
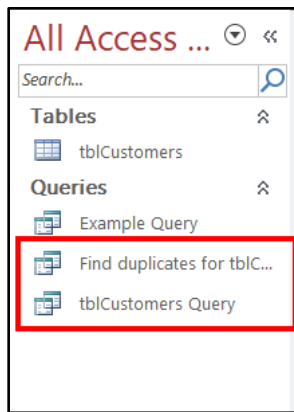
Figure 25: The updated list of queries in the database

Resave a query with a new name

You might want to create a new copy of an existing query and save it with a new name. You can do this in Access by using **Save Object As**, which saves a copy of an existing database object with a new name.

For example, you might want to save **Example Query**, which you created earlier, as a new query named **Sample Query**.

To do this, select the existing query, and then on the **File** tab, select **Save As**. The following two screenshots depict the selection of the existing query and the location of the **File** tab.
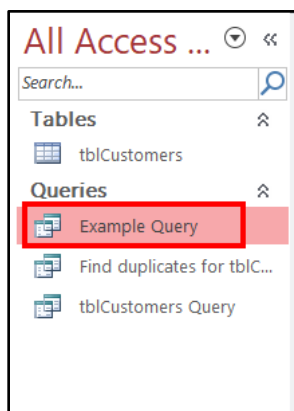
*Figure 26: Selecting a query in the **Queries** list*

Microsoft
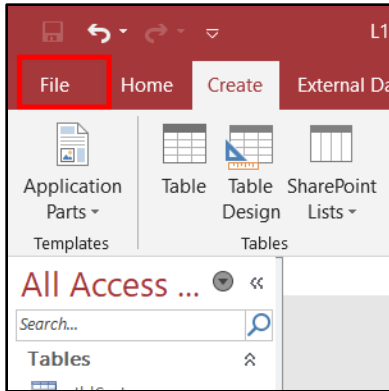
*Figure 27: The **File** tab*

When you select **Save As**, the **Save As** pane appears. In this pane, select **Save Object As**, and then select the **Save As** button to indicate that you want to save the currently selected database object (**Example Query**) as a new database object. The following screenshot depicts this process.
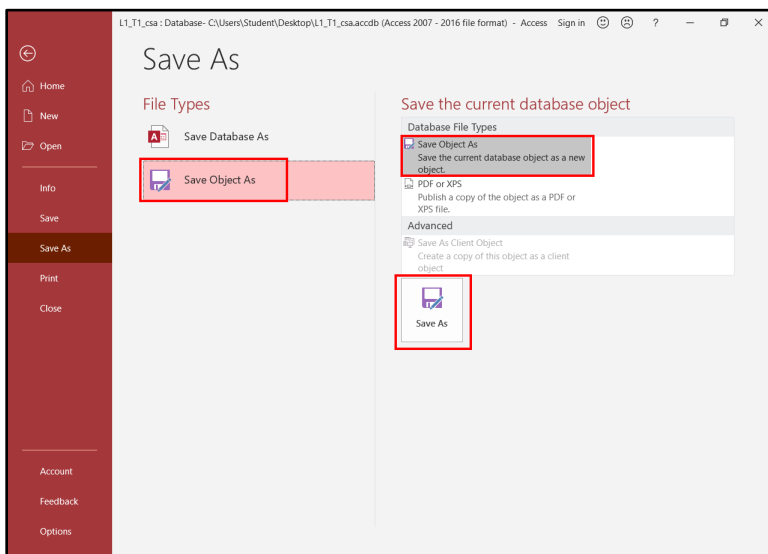
*Figure 28: The **Save As** pane*

The final step in this process is to give the new query a name. The following screenshot depicts the **Save As** dialog box, where you enter **Sample Query** for the name of the new query.
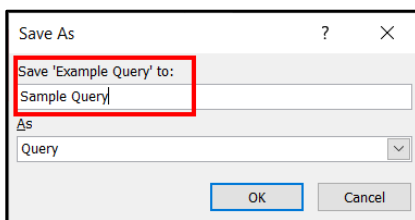
*Figure 29: The **Save As** dialog box*

Activity: Show me how

The teacher will demonstrate the various ways to create a query by using the **Query Wizard** in an Access database.

Resources required

- **L1_T3_act_csa.accdb** from this lesson's **Learning Activity Resources** folder

Activity instructions

Pay close attention and follow along as your teacher demonstrates how to save a query in Access with a new name. While your teacher is demonstrating, answer the following questions:

1. What's the original name of the query that already existed in the Access database?

2. What's the new name that your teacher gave to the new query in the Access database?

Try-it: Use Save Object As

In this standalone try-it activity, you'll save the queries that you created.

Scenario

Another member of the CSA team needs to run the same queries that you built. Instead of asking that person to re-create the queries, you decide to save your queries so others can run them later.

Resources

You'll need the following resource for this try-it:

- **L1_T3_try_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the existing **qselCustomerAllergies** query.

2. Use **Save Object As** to create a copy of the query named **qselCustomerAllergiesFiltered**.

Wrap-up

Use these questions to check what you learned in this lesson:

1. What's a query in Access?

    Select the correct option.

    a. A wizard that displays your data in a printable manner

    b. A way to ask a question of the database

    c. A connection between database tables

    d. A tool for adding new records to the database

2. Which two methods can you use to create a new query?

    Select all that apply.

    a. The **Query Wizard**

    b. SQL instructions

    c. **Query Design**

    d. **Table Design**

    e. **Form Design**

3. After you run a query, which of the following actions can't you do in the **Datasheet** view?

    Select the correct option.

    a. Sort the query results

    b. Review the SQL instructions that the query ran

    c. Apply filters to the query results

    d. Change the fields that the query displays

4. You can save a query any time after you change it.

    Select the correct option.

    a. True

    b. False

Lesson 2: Modifying queries

Overview

A query is a powerful and versatile way to communicate with a database. Running a query performs a set of instructions that you previously defined to ask a question of the database and supply an answer. You can sort, group, or filter the results that a query returns. Queries differ from basic sort or filter conditions, because you can save them for future use.

In this lesson, you'll learn how to manage and modify existing queries in your database. You'll change an existing query to add new tables, define query criteria, or sort query results. You'll also learn how to delete an existing query.

Warm-up

Discussion

Your teacher will lead the class through a discussion on how to modify the queries you use to ask questions of a database. Be prepared to answer the following question during the classroom discussion:

- Imagine that you already asked each customer for their city and state. You need more information to figure out where each customer is located. What are examples of other information you might ask a customer to supply so you can get a more precise location for them?

  Fill in the blank space.

  _____

Topic 1: Modify fields in a query

You can modify a query in the **Design** view regardless of how it was created. You can add or remove a table, add or remove fields, and add criteria to refine the query results.

Add a table to a query

To add a table to a query, you need to display the **Design** view: run the query, and then on the **View** menu, select **Design View**, as the following screenshot depicts.
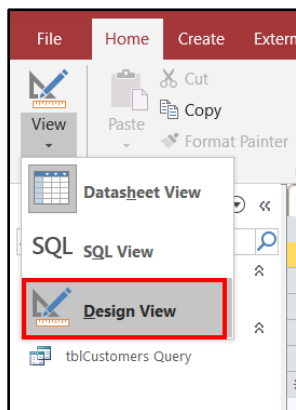
*Figure 30: **Design View** on the **View** menu*

On the **Design** tab, in the **Query Tools** group, select **Add Tables**. The **Show Table** dialog box appears with the following three tabs:

- **Tables**. Displays the tables in the database.
- **Queries**. Displays the queries.
- **Both**. Displays the tables and the queries.

Select the object you want to add to the query, and then select **Add**. The following screenshot depicts the **Show Table** dialog box.
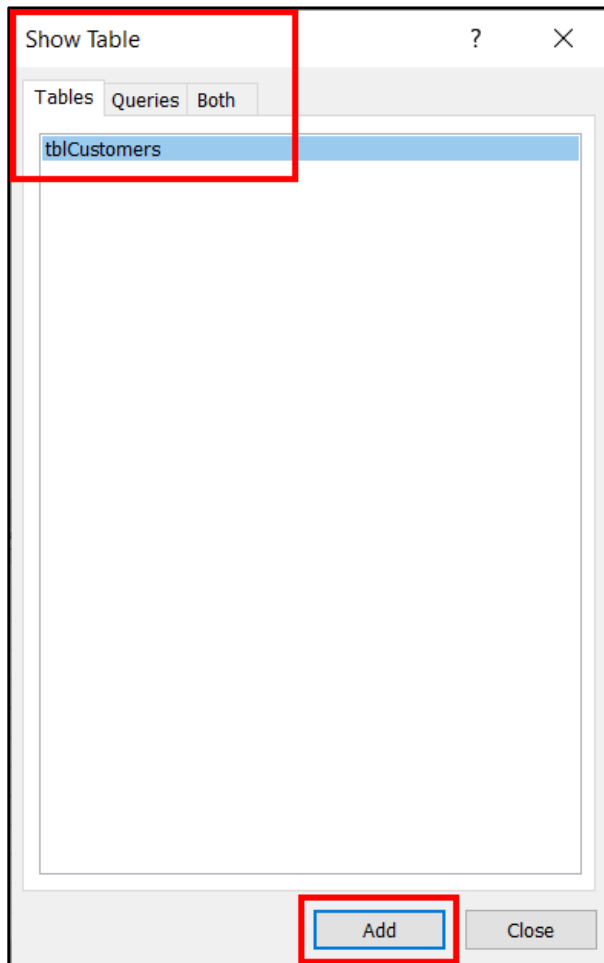
*Figure 31: The **Show Table** dialog box*

If you add a second copy of a table to the query, Access indicates that by adding an underscore and the number 1 (_1) to the title of the field list. A *field list* is a pane that lists all the fields in the underlying record source or database object. The following screenshot depicts the changed name that displays if you add the **tblCustomers** table to a query twice.
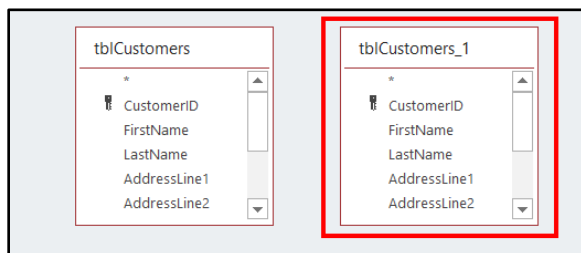
Figure 32: A duplicate table

Add criteria to a query

A query doesn't have to include criteria, but if you don't want to display all the records stored in the underlying record source, you can add criteria to a query when designing it. *Criteria* are rules that identify the records you want to include in the query results.

A criterion is like a formula. Some criteria are simple and use basic operators and constants. Others are complex and use functions, special operators, and field references.

To specify one or more criteria to restrict the records that the query will return, open the query in the **Design** view. Select the field, and then in the **Criteria** row, enter the condition you want to specify. The following screenshot depicts an example criterion specifying that the query will return only the records where the **LastName** field equals "Kassis".

Figure 33: An example of a criterion

To display the results, change to the **Datasheet** view. The results display each field, including the one where you specified the criterion.

Hide a query field

Sometimes, you might want to get a more concise overview of the resulting data by displaying only certain fields (while hiding others) from the records that match a criterion. In this case, for each field that you don't want to display in the results, clear the **Show** check box that appears in that field's column. The following screenshot depicts how to hide the **FirstName** field in a query.

Figure 34: Hiding a query field

The results will hide the fields that you choose not to display, except the field with the criterion, after you change to the **Datasheet** view.

Activity: Show me how

For this activity, observe your teacher briefly demonstrate the skills you'll need in the upcoming try-its. You can open the database file and follow along with the demonstration if you want.

Resources required

- **L2_T1_act_csa.accdb** from this lesson's **Learning Activity Resources** folder

Activity instructions

To participate in this activity:

- Pay attention to the methods your teacher uses to modify existing query fields.
- Be prepared to repeat these actions in the upcoming try-its.
- Ask questions to clarify anything that doesn't seem clear to you.

Try-it: Modify fields in a query

In this leveled try-it activity, you'll make minor modifications to an existing query.

Try-it 1

Resources

You'll need the following resource for this try-it:

- **L2_T1_try1_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the existing **qselCustomersOverview** query.

2. Switch to the **Design View**.

3. Find the existing **State** query field.

4. In the **State** query field, change the field that the **tblCustomers** table uses from **State** to **PostalCode**.

5. Save the changes to the query.

6. Run the query.

7. Observe the results of the query. The query should return a list of customer names, cities, and postal codes for all customers.

Try-it 2

Resources

You'll need the following resource for this try-it:

- **L2_T1_try2_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the existing **qselCustomersOverview** query.

2. Switch to the **Design View**.

3. Add a new query field for the **Allergies** field in the **tblCustomers** table.

4. Find the existing **State** query field.

5. In the **State** query field, change the field that the **tblCustomers** table uses from **State** to **PostalCode**.

6. Save the changes to the query.

7. Run the query.

8. Observe the results of the query. The query should return a list of customer names, cities, allergies, and postal codes for all customers.

Try-it 3

Resources

You'll need the following resource for this try-it:

- **L2_T1_try3_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the existing **qselCustomersOverview** query.

2. Switch to the **Design View**.

3. Add a new query field for the **Allergies** field in the **tblCustomers** table.

Microsoft

4. Find the existing **State** query field.

5. In the **State** query field, change the field that the **tblCustomers** table uses from **State** to **PostalCode**.

6. Find the existing **City** query field.

7. In the **City** query field, clear the **Show** check box.

8. In the **City** query field, in the **Criteria** box, enter **= 'Edison'**.

9. Save the changes to the query.

10. Run the query.

11. Observe the results of the query. The query should return a list of customer names, allergies, and postal codes for customers living in Edison, WA.

Topic 2: Sort and filter data in a query

By sorting and filtering data in a query, you can display only the records you want, display records in a particular order, or both.

Sort data in a query

By sorting data in a query, you can help efficiently organize data and make it easier for users to review and find the records they want without having to browse the data. You can sort data in the **Datasheet** view of a query.

Right-click or access the context menu of the field you want to sort, and then select the sort order you want (ascending or descending). The following screenshot depicts the sort choices for a field.
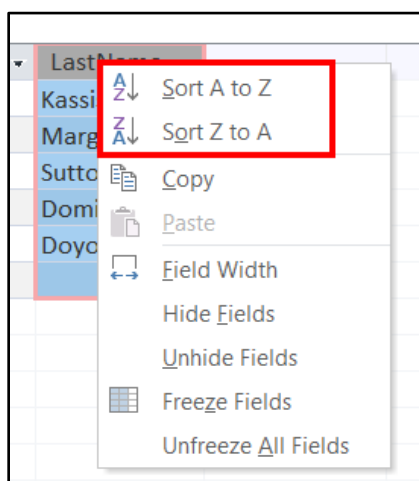
Figure 35: The sort choices for a field

After you select the sort order, Access rearranges the records to match that sort order. To sort by more than one field, on the **Home** tab, in the **Sort & Filter** group, select **Advanced**, and then select **Advanced Filter/Sort**. A new tab displays where you can specify more than one field by which to sort and specify the sort order. The following screenshot depicts this process.
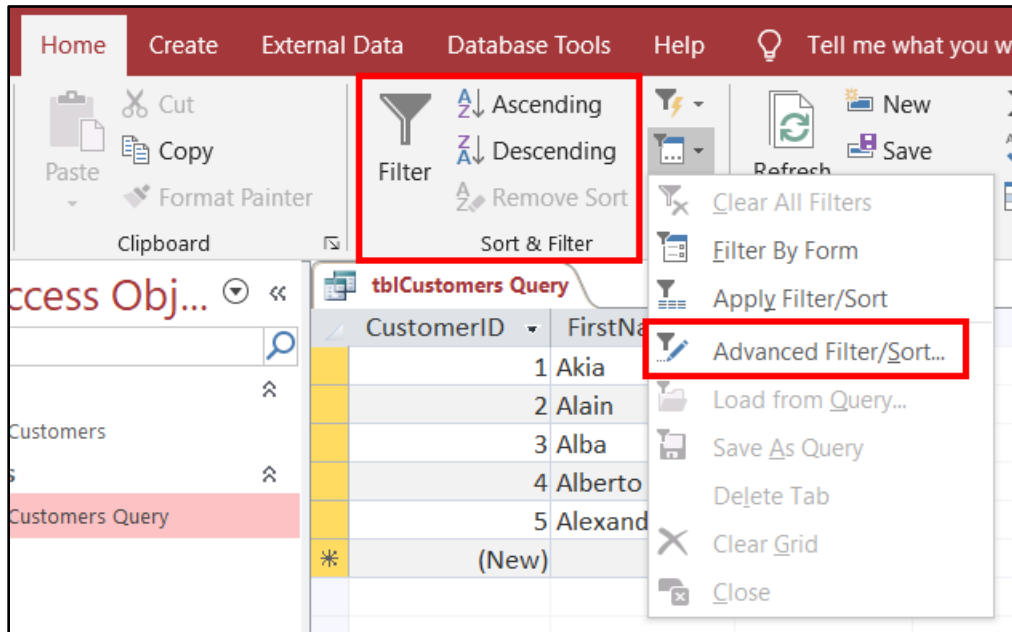
*Figure 36: Selecting **Advanced Filter/Sort***

Filter data in a query

A filter limits the display of data to specific records—without requiring you to alter the design of the underlying query. If the criteria are temporary or change often, you can filter the query results instead of frequently modifying the query criteria.

You can think of a filter as a temporary criterion that changes the query results without altering the query design. To filter data in a query, select the field you want to filter, and then on the **Home** tab, in the **Sort & Filter** group, select **Filter**, as the following screenshot depicts.
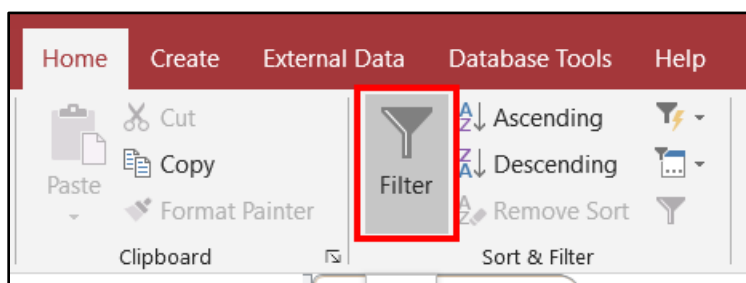
*Figure 37: **Filter** in the **Sort & Filter** group on the **Home** tab*

Microsoft

The available filters depend on the type and values of the field. The following screenshot depicts an example.
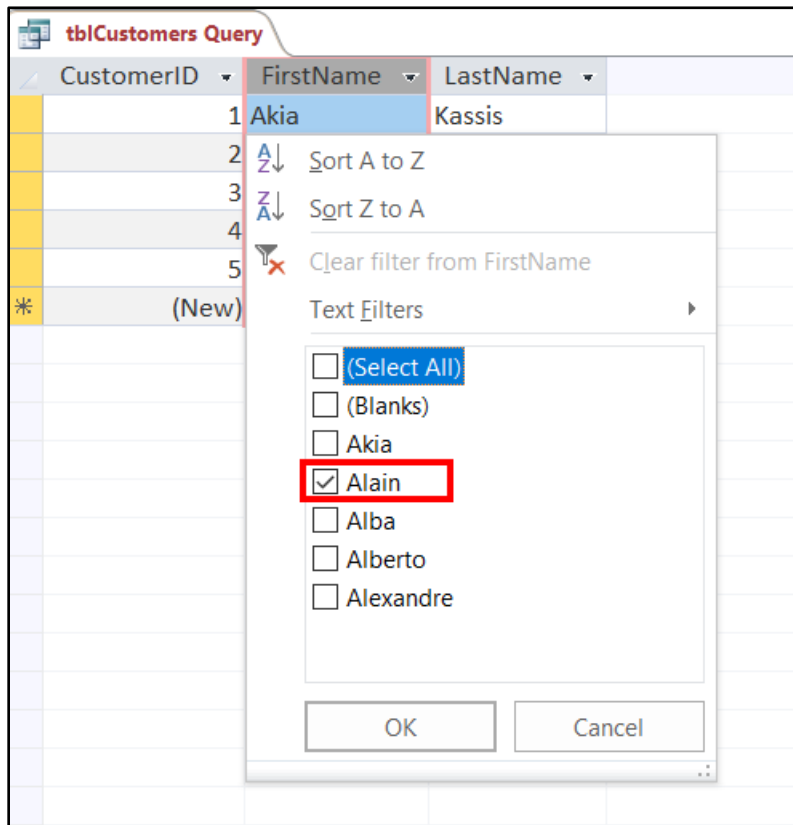
Figure 38: The menu for filtering a field

When you apply the filter, only those records that contain the values you want appear in the results. The rest are hidden until you remove the filter by selecting **Remove Filter**, as the following screenshot depicts.

*Figure 39: The **Remove Filter** button*

Activity: Show me how

For this activity, observe your teacher briefly demonstrate the skills you'll need in the upcoming try-its. You can open the database file and follow along with the demonstration if you want.

Microsoft

Resources required

- **L2_T2_act_csa.accdb** from this lesson's **Learning Activity Resources** folder

Activity instructions

To participate in this activity:

- Pay attention to the methods your teacher uses to sort and filter fields in the results of a query.
- Be prepared to repeat these actions in the upcoming try-its.
- Ask questions to clarify anything that doesn't seem clear to you.

Try-it: Sort and filter data in a query

In this leveled try-it activity, you'll sort and filter the results of a query.

Try-it 1

Resources

You'll need the following resource for this try-it:

- **L2_T2_try1_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the existing **qselCustomersOverview** query.

2. Switch to the **Datasheet** view, if it's not already displayed.

3. Right-click or access the context menu of the **LastName** field, and then sort this field from A to Z.

4. Right-click or access the context menu of the **State** field, and then filter the field to return only those records that have a value of **WA**.

5. Right-click or access the context menu of the **City** field, and then filter the field to return only those records that have a value of **Edison**.

6. Observe the updated results of the query. The query should return the customers who live in the city of Edison, WA sorted by their last names.

Microsoft

Try-it 2

Resources

You'll need the following resource for this try-it:

- **L2_T2_try2_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the existing **qselCustomersOverview** query.

2. Switch to the **Datasheet** view, if it's not already displayed.

3. Right-click or access the context menu of the **CustomerID** field, and then sort this field from Largest to Smallest.

4. Right-click or access the context menu of the **LastName** field, and then sort this field from A to Z.

5. Right-click or access the context menu of the **State** field, and then filter this field to return only those records that have a value of **WA**.

6. Right-click or access the context menu of the **City** field, and then filter this field to return only those records that have a value of **Edison**.

7. Observe the updated results of the query. The query should return the customers who live in the city of Edison, WA sorted by their customer IDs and then by their last names.

Try-it 3

Resources

You'll need the following resource for this try-it:

- **L2_T2_try3_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the existing **qselCustomersOverview** query.

2. Switch to the **Datasheet** view, if it's not already displayed.

3. Right-click or access the context menu of the **CustomerID** field, and then sort this field from largest to smallest.

4. Right-click or access the context menu of the **FirstName** field, and then sort this field from A to Z.

5. Right-click or access the context menu of the **LastName** field, and then sort this field from A to Z.

6. Right-click or access the context menu of the **State** field, and then filter this field to return only those records that have a value of **WA**.

7. Right-click or access the context menu of the **City** field, and then filter this field to return only those records that have a value of **Edison**.

8. Select **Toggle Filter** to remove the **City** and **State** filters.

9. Observe the updated results of the query. The query should return the customers who live in the state of WA sorted by their customer IDs and then by their first and last names.

Topic 3: Delete a query

Deleting a query is like deleting any other database object in Access.

Delete a query object

To delete a database object in Access, you first need to find that object in the **Navigation Pane**. For queries, you can find your specific query in the **Queries** list in this pane. To delete a query, right-click or access the context menu of the query, and then select **Delete**, as the following screenshot depicts.
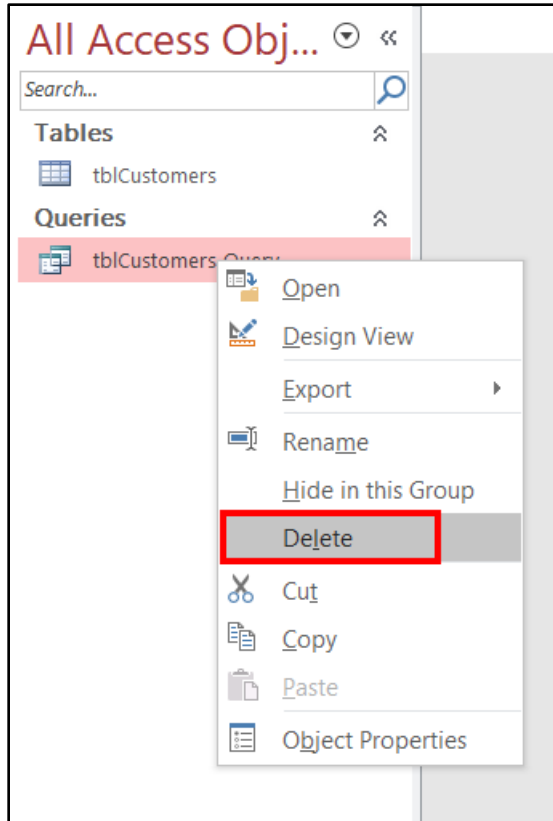
*Figure 40: Selecting **Delete** for a query*

After you select **Delete**, you need to confirm that you want to delete the query. A dialog box simply warns you that the object will permanently disappear after your confirmation. Select **Yes** to permanently delete the query from the database. The following screenshot depicts the warning dialog box.
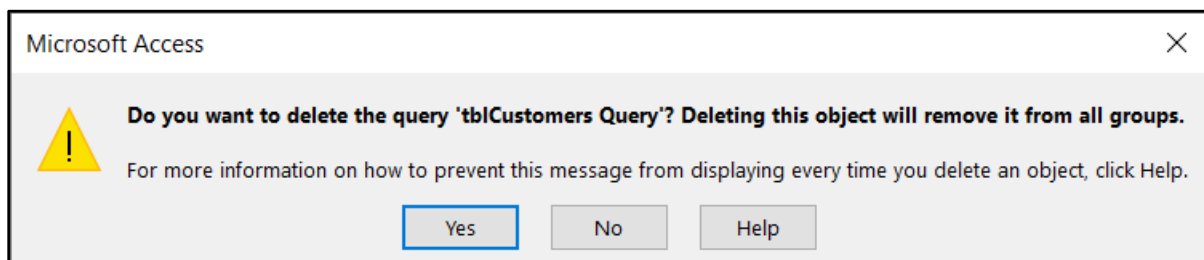
Figure 41: The delete confirmation dialog box
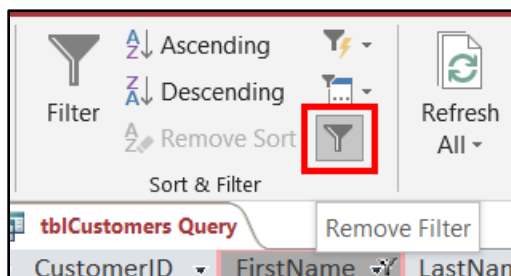
Activity: Show me how

For this activity, observe your teacher briefly demonstrate the skills you'll need in the upcoming try-it. You can open the database file and follow along with the demonstration if you want.

Microsoft

Resources required

- **L2_T3_act_csa.accdb** from this lesson's **Learning Activity Resources** folder

Activity instructions

To participate in this activity:

- Pay attention to the methods your teacher uses to delete a query.
- Be prepared to repeat these actions in the upcoming try-it.
- Ask questions to clarify anything that doesn't seem clear to you.

Try-it: Delete a query

In this standalone try-it activity, you'll delete a saved query.

Scenario

Now that the marketing project has wrapped up, you want to return your database to its original condition and remove the additional queries you created.

Resources

You'll need the following resource for this try-it:

- **L2_T3_try_csa_starter.accdb** from this lesson's **Learning Activity Resources** folder

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Find the existing **qselCustomersOverview** query in the **Navigation Pane**.

2. Right-click or access the context menu of the **qselCustomersOverview** query, and then select **Delete**.

3. In the confirmation dialog box, select **Yes**.

Wrap-up

Use these questions to check what you learned in this lesson:

1. Which of the following statements best describes why queries differ from sort or filter conditions?

   Select the correct option.

   a. You can apply them to multiple fields.

   b. You can save them.

   c. You can modify them.

   d. You can use them on forms.

2. You can add the same table to a query multiple times and use the same name for each table.

   Select the correct option.

   a. True

   b. False

3. Which of the following should you use to create a sort order that uses multiple fields at the same time in a query?

   Select the correct option.

   a. **Advanced Filter/Sort**

   b. **Multiple-sort**

   c. **Filter**

   d. **Sort A to Z**

Glossary

Datasheet view	A view that displays the results of a query you ran.
Design view	A view you can use to either add components to a query or modify them.
Query	A formalized instruction to a database that gives you an answer to a specific question.
Query criterion	A rule that identifies the records you want to include in the query results.
Query field	A specific field that a query contains and that you can optionally display in the query results. The query fields typically correspond to fields from the source table.
Query filter	A condition you can specify to limit the query results to specific records.
Query wizard	A step-by-step tool that helps you build queries.

Table 29: Glossary terms and definitions

Microsoft

Cornerstone

Overview

This Cornerstone project requires you to demonstrate your understanding of the concepts covered in this module by using queries to ask different questions about a sample database. The project expects you to use what you learned to create simple queries and build complex queries. In addition, you need to demonstrate your skills with managing and modifying existing queries in the database.

Objectives

The following table outlines the Cornerstone objectives and their corresponding MOS exam objectives.

Use the **Query Wizard** to create, save, and run queries	• 3.1.1 Create simple queries • 3.1.6 Save queries • 3.1.7 Run queries
Modify fields in a query and sort query results	• 3.2.1 Add, hide, and remove fields in queries • 3.2.2 Sort data within queries

Table 30: Cornerstone objectives mapped to MOS exam objectives

Duration

50 minutes

Instructions

1. Complete the tasks for the file.

2. After completing the Cornerstone, assess your completion, and then enter the points you think you earned in the task lists in the following sections. You can get help from your teacher if necessary.

Microsoft

Tasks

You'll work with one file in this Cornerstone. The following section includes the tasks you need to do in the file.

File 1: Cornerstone_csa_starter.accdb

Task: Create a query that lists the customer's cities and states (25 points)

1. Create a new query by using the **Design View**. (5 points) (Exam objective 3.1.1 Create simple queries)

2. Add the **State** and **City** fields to the new query. (10 points) (Exam objective 3.1.1 Create simple queries)

3. Run the query. (5 points) (Exam objective 3.1.7 Run queries)

4. Save the new query as **qselCustomerLocations**. (5 points) (Exam objective 3.1.6 Save queries)

Points scored: _____ / 25

Task: Create a query that finds customer records with duplicate first and last names (25 points)

1. Create a new query by using the **Find Duplicates Query Wizard**. (5 points) (Exam objective 3.1.1 Create simple queries)

2. Configure the query to search for duplicates in the **FirstName** and **LastName** fields. (5 points) (Exam objective 3.1.1 Create simple queries)

3. Include the **CustomerID** field in the query. (5 points) (Exam objective 3.1.1 Create simple queries)

4. Run the query. (5 points) (Exam objective 3.1.7 Run queries)

5. Save the new query as **qselCustomerDuplicates**. (5 points) (Exam objective 3.1.6 Save queries)

Points scored: _____ / 25

Microsoft

Task: Update the customer's cities and states query to include their postal codes (25 points)

1. Open the **qselCustomerLocations** query in the **Design View**. (5 points) (Exam objective 3.2.1 Add, hide, and remove fields in queries)

2. Add the **PostalCode** field to the query. (10 points) (Exam objective 3.2.1 Add, hide, and remove fields in queries)

3. Run the query. (5 points) (Exam objective 3.1.7 Run queries)

4. Save the updated query. (5 points) (Exam objective 3.1.6 Save queries)

Points scored: _____ / 25

Task: Sort the duplicate customers query by last name (25 points)

1. Open the **qselCustomerDuplicates** query in the **Datasheet View**. (5 points) (Exam objective 3.2.2 Sort data within queries)

2. Sort the query results from A to Z by the **LastName** field. (10 points) (Exam objective 3.2.2 Sort data within queries)

3. Run the query. (5 points) (Exam objective 3.1.7 Run queries)

4. Save the updated query. (5 points) (Exam objective 3.1.6 Save queries)

Points scored: _____ / 25

File 1 total points: _____ / 100

Student Guide

40572A
Microsoft Access expert 2019

Module 5: Understanding reporting basics

Contents

Microsoft

Module overview

You can use reports to review, format, summarize, and present information from your Microsoft Access 2019 databases. In this module, you'll learn the basics about reports. You'll also learn to prepare reports for displaying or printing.

Description

The following table outlines the lesson objectives and their corresponding Microsoft Office Specialist (MOS) exam objectives.

Lesson	Learning objective	MOS exam objective(s)
Understanding report basics	Create and customize reports	• 5.1.1 • 5.1.2 • 5.2.5 • 5.2.6
Preparing reports for viewing and printing	Configure settings for displaying and printing reports and insert information in report headers and footers	• 5.1.3 • 5.2.1 • 5.2.3 • 5.2.4
Cornerstone: Produce a basic report	Create, modify, and use database reports to present information	• 5.1.1 • 5.1.2 • 5.1.3 • 5.2.4 • 5.2.5

Table 1: MOS objectives by lesson

Scenario

The Community Supported Agriculture (CSA) program team at Munson's Pickles and Preserves Farm has been hard at work organizing the harvest area. This is where they fill the farm boxes with produce for members while the latest harvest is abundant with a variety of healthy choices. As word spreads in the community about the CSA program, the list of members is poised to grow rapidly. This also means that Munson's will need to tailor the types of farm boxes to the needs and requests of the incoming members.

Microsoft

It's now time to find out if the carefully constructed database will perform as everyone hopes. Everyone on the team has been assigned a task that will depend upon the database providing usable data outputs. Someone is in charge of verifying and updating member contact information and preferences, another team member is assigned to determine how to distribute the available produce among the ordered boxes, and yet another will coordinate the box-filling process according to the orders placed.

Cornerstone

This module concludes with a Cornerstone in which you'll create and customize a report that lists Munson's customers and the cities they live in. You'll use the concepts you learned in this module to start with a simple report and then modify that report to address changed needs.

Lesson 1: Understanding reporting basics

Overview

A report is a database object that is used to organize and display data from tables and queries. After creating a report, you can apply a theme to create a professional appearance. You can also sort and filter data in a report to display the records that suit your needs.

Warm-up

Activity: Think-pair-share

Your teacher will lead the class through this group activity. You'll be asked to think of an answer to a question. Your teacher will then pair you with another student to discuss your responses.

After you and your partner have discussed your responses, the teacher might call on you to present your partner's answer, rather than your own.

Be prepared to answer the following questions during the classroom discussion:

1. If you were asked to share information from your database with a person who doesn't have a computer, how would you share that information?

2. If you could print data from your database, which data or fields would you include from each database table? Is there any reason you wouldn't include all the data or fields?

Topic 1: Create a basic report

You can use Access to create simple or complex reports. If you all you need is a simple display of all the fields in a table or query, you can use the **Report** option. For complex reports, you might need to choose which fields you want to include from various tables or queries, which can be a time-consuming task.
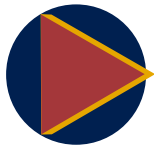
Video

For a basic introduction to reports, review the video at: [Create basic reports](#)

To create reports, use the **Reports** group of commands on the **Create** tab. You can use the **Report**, **Report Wizard**, **Report Design**, or **Blank Report** option, depending on the amount of customization you want. You can also create labels by using the **Labels** option. The following screenshot depicts the **Reports** group.
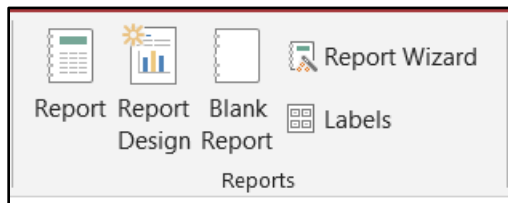
*Figure 1: **Reports** group*

Reports are commonly used as formatted hard copies of table or query data. You can modify a report's design, but you cannot add or edit data in a report. That's because the purpose of a report is only to allow users to review data. For example, a supervisor might ask you to create a sales report that is filtered to reveal only one region's sales. The supervisor does not want to change the data, just review it. The table or query that provides the data used to generate a report is its record source, which you first must define. To do so, in the **Navigation Pane**, select the table or query on which you want to base the report. The following screenshot highlights a table that a user has selected in the **Navigation Pane**.
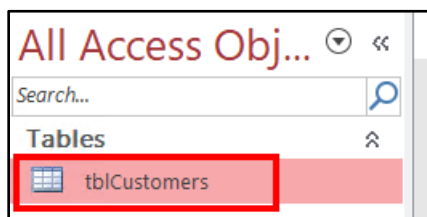
Figure 2: Selecting a database object

Microsoft

Next, select the **Report** option in the **Reports** group of the **Create** tab. Access automatically generates a report based on the table or query you selected. The following screenshot highlights the **Report** option and the tooltip that displays when you select it.
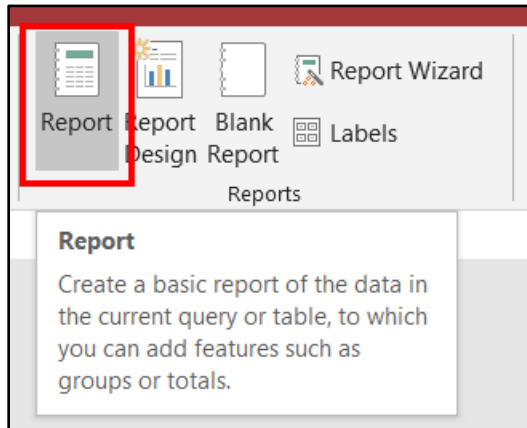
Figure 3: Selecting the report option

You can modify a report's design and choose to print a report, or you can save and close it. You should save a report's design if you're likely to use it again. To save a report, select the **Save** option on the context menu of the report's tab, as the following screenshot highlights.
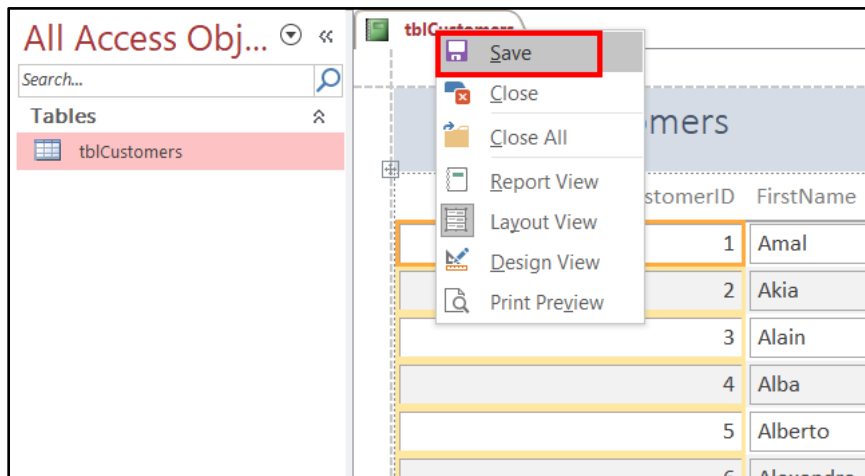
Figure 4: Saving a new report

Caution

This course uses database files that follow a general storyline for the CSA program at Munson's Pickles and Preserves Farm. These database files are the Learning Activity Resource files that you'll use to work on each module's activities and try-its. Each Learning Activity Resource file contains the data and objects, such as tables, queries, forms, and reports, that you need to complete a corresponding activity.

Due to this course's modular nature, the objects and data in these files might vary across activities or try-its. Therefore, it's important that you start your activities or try-its only with the designated files, as per applicable instructions. You also should note that screenshots in the topic content are for illustration purposes only and might appear different than those that are in the Learning Activity Resource files.

Activity: Show me how

In this activity, your teacher will demonstrate how to create a basic report.

Resources required
- Open **L1_T1_act_csa.accdb** in this lesson's **Learning Activity Resources** folder.

Activity instructions

To participate in this activity:

- Pay attention to the methods that your teacher uses to create a new basic report.
- Be prepared to repeat these actions in the upcoming try-it.
- Ask questions to clarify anything that isn't clear to you.

Try-it: Create a basic report

In this standalone try-it activity, you'll create a new basic report.

Try-it

Resources

You'll need the following resources for this try-it:

- Open **L1_T1_try_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Select the existing **tblCustomers** table.

2. Create a new report from the database object.

3. Save the new report using the name **rptCustomers**.

Topic 2: Customize report structure

You may already be familiar with the way Access wizards work. The **Report Wizard** displays a series of questions about the report you want and then creates the report for you, based on your answers. The **Report Wizard** knows what makes a good report, so the questions are designed to help you create a professional report with little effort. The **Report Wizard** is usually the easiest way to create a report when you want to choose which fields to include. It guides you through a series of questions and then generates a report based on your answers.

Customize a report using the Report Wizard

To get started with the **Report Wizard**, select the table or query on which you want to base the report, and then in the **Reports** group of the **Create** tab, select the **Report Wizard** option, which the following screenshot highlights.

Microsoft
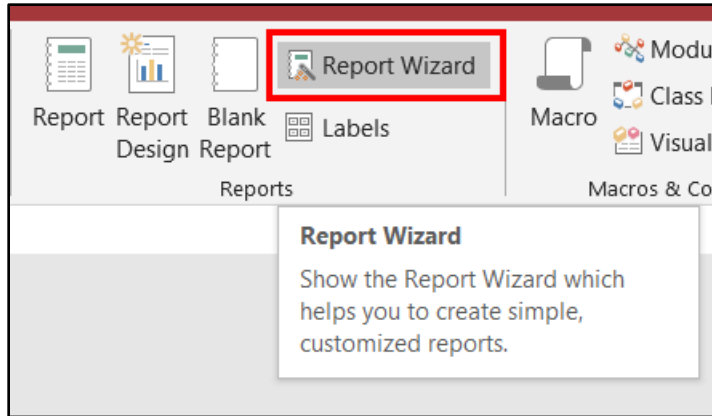
*Figure 5: Selecting the **Report Wizard** option*

In the **Report Wizard**, you can choose to include fields from more than one table or query. You can include all the fields in the report or include them one at a time. The following screenshot depicts the **Report Wizard**.
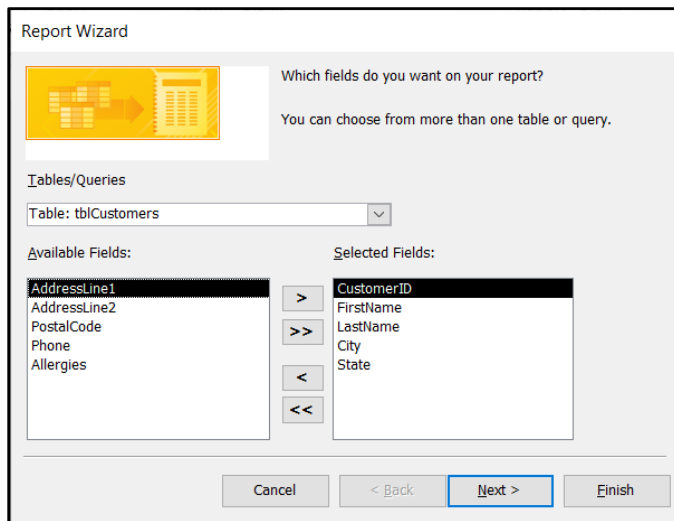
Figure 6: Select fields to include in the report

If you want to skip steps such as sorting or grouping in the **Report Wizard**, select **Next** to go to the next step. You can select **Finish** anytime it is available to create the report with the choices you've specified. The **Report Wizard** allows you to include fields from more than one table or query. You can also specify group levels; for example, grouping all the customers by city or state. The following screenshot depicts the grouping options on the **Report Wizard**.
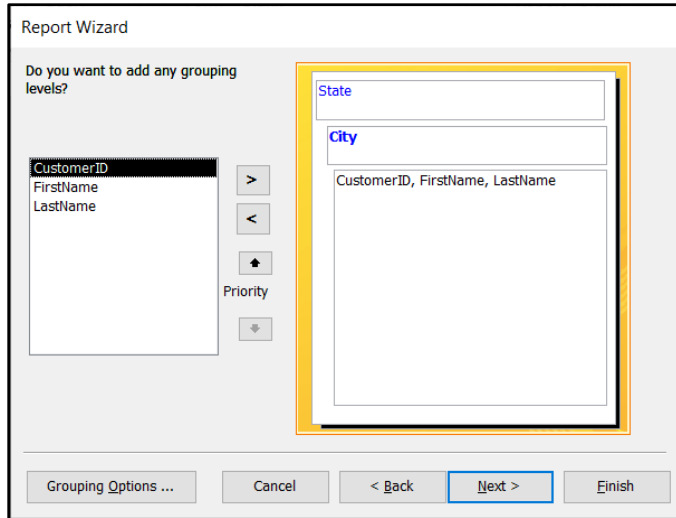
Figure 7: Select fields to use as grouping levels

You can also choose up to four fields on which to sort data in ascending or descending order, as the following screenshot depicts.
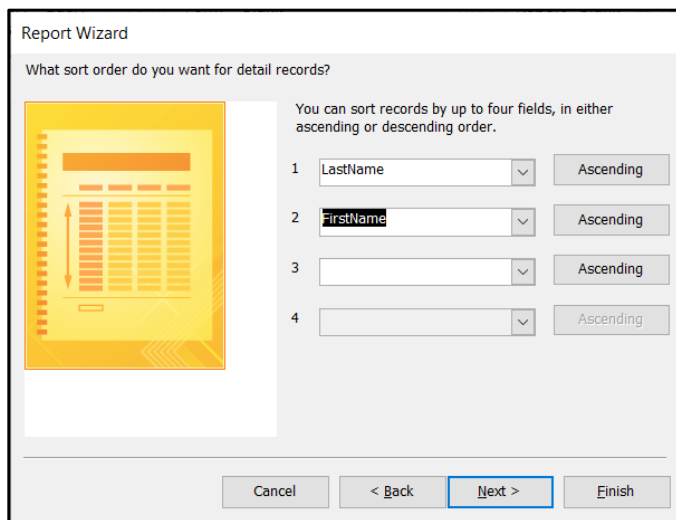
Figure 8: Select fields to sort reports results

Access provides a wide variety of design styles for you to choose from. On the layout screen, you can choose from various layouts, such as **Stepped**, **Block**, or **Outline**. All these options indent fields and records in different ways to make the report easier to review. You can also choose to display the report in **Portrait** or **Landscape** orientation. The following screenshot depicts these options.
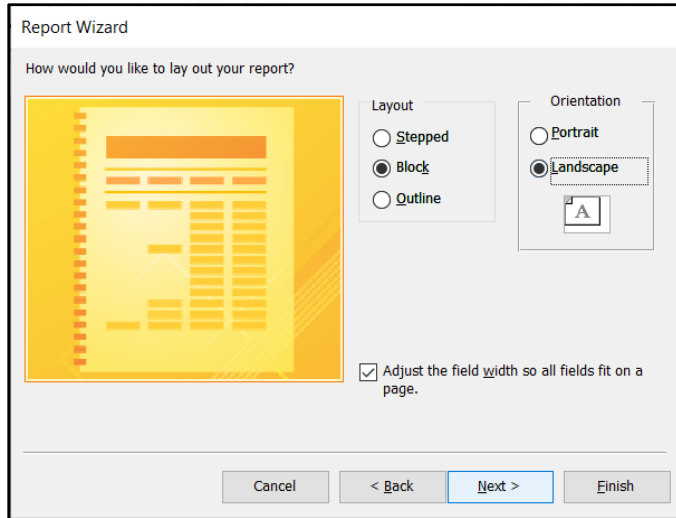
Figure 9: Customize design and layout of report

On the last screen of the **Report Wizard**, you can enter a name for the report and also choose to preview the report or modify its design, as the following screenshot depicts.
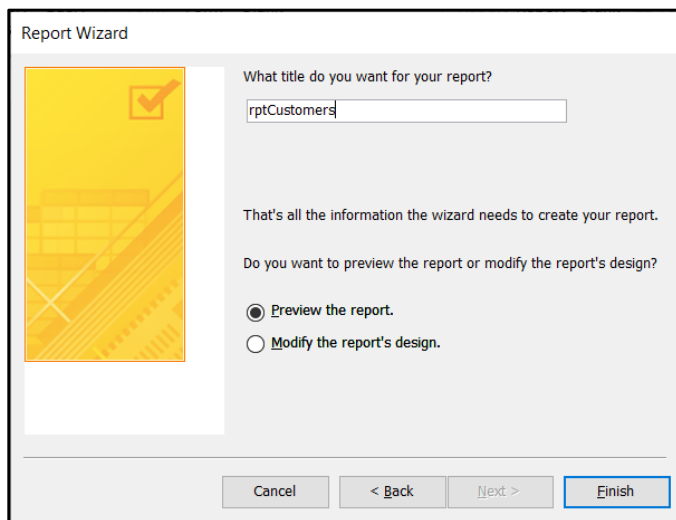
Figure 10: Name final generated report

The wizard will create a new report that you can then review, modify, or print.

Add images to a report

After reviewing your customized report, you might decide to improve its appearance, such as by adding an image. For example, you might decide to add the Munson's logo at the beginning of every report. To do this, you can add a **Logo** element to the header or footer of your report. To do so:

Microsoft

Select the **Logo** option in the **Header/Footer** group of the **Design** tab. The following screenshot highlights this option.
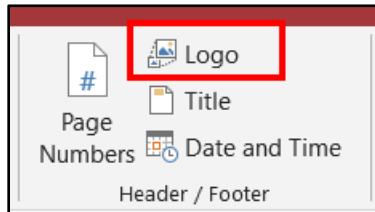
*Figure 11: Logo option in **Header/Footer** group*

In the **Insert Picture** dialog box, select the image you want to use for the logo in your report. The image will then be part of the report, and you can rearrange it to be in the header or footer however you choose. The following screenshot depicts an example, with the Munson's logo on the header of a report.
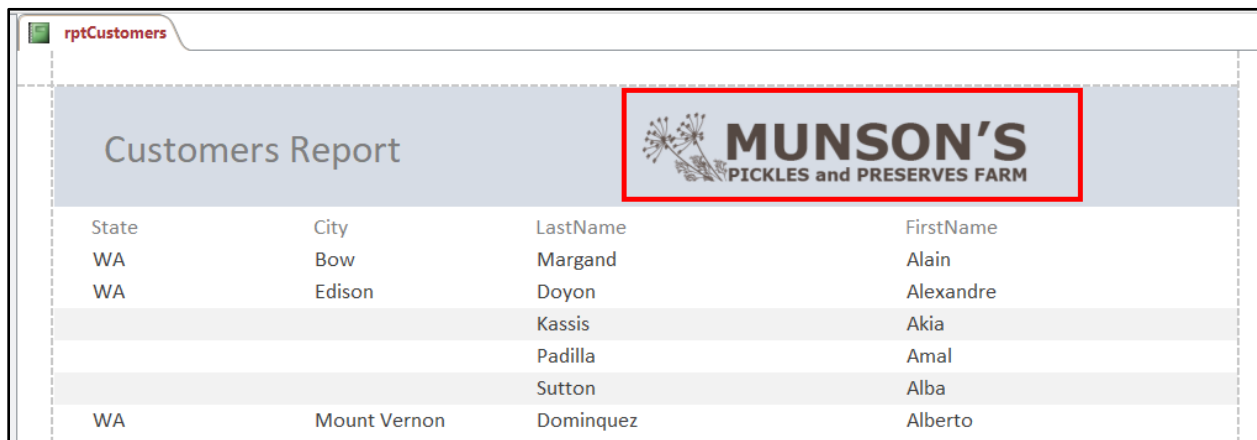
Figure 12: Report with the Munson's logo in the header

Activity: Show me how

This is a teacher-led demonstration on how to customize the structure of a report.

Resources required
- Open **L1_T2_act_csa.accdb** in this lesson's **Learning Activity Resources** folder.

Activity instructions

To participate in this activity:

- Pay attention to the methods that your teacher uses to customize the structure of a new report.
- Be prepared to repeat these actions in the upcoming try-it.
- Ask questions to clarify anything that isn't clear to you.

Microsoft

Try-it: Customize report structure

In this leveled try-it activity, you'll customize the structure of a new report.

Try-it 1

Resources

You'll need the following resources for this try-it:

- Open **L1_T2_try1_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Select the existing **tblCustomers** table.

2. Create a new report using the **Report Wizard**.

3. Include the **CustomerID**, **FirstName**, and **LastName** fields in the report.

Try-it 2

Resources

You'll need the following resources for this try-it:

- Open **L1_T2_try2_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Select the existing **tblCustomers** table.

2. Create a new report using the **Report Wizard**.

3. Include the **CustomerID**, **FirstName**, **LastName**, **City**, and **State** fields in the report.

4. Group the report, first by using the **State** field, and then by using the **City** field.

Try-it 3

Resources

You'll need the following resources for this try-it:

- Open **L1_T2_try3_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Select the existing **tblCustomers** table.

2. Create a new report using the **Report Wizard**.

3. Include the **CustomerID**, **FirstName**, **LastName**, **City**, and **State** fields in the report.

4. Group the report, first by using the **State** field, and then by using the **City** field.

5. Sort the customers in the report, first by their **LastName** in ascending order and then by their **FirstName** in ascending order.

Wrap-up

Use these questions to check what you learned in this lesson:

1. What is a report in Access?

   Select the correct option.

   a. A list of available fields to add to the design of a database object

   b. A database object that is used to organize and display data from tables or queries

   c. A predefined set of colors and format that is applied to a database object

   d. A database object that asks questions of your data

2. In the **Reports** group, which option would give you a step-by-step wizard that helps you create a report?

   Select the correct option.

   a. **Report**

   b. **Report Design**

   c. **Report Wizard**

   d. **Blank Report**

Microsoft

3. In the **Reports** group, which option would give you a new report with the least amount of work?

Select the correct option.

a. **Report**

b. **Report Design**

c. **Report Wizard**

d. **Blank Report**

Lesson 2: Preparing reports for viewing and printing

Overview

Reports help you group and summarize data in different ways. However, after you create a report, you can use **Layout View** or **Report View** to help locate data. For example, you can use **Layout View** to easily sort field data one at a time, or you can perform more complex sorts by using the **Group, Sort, and Total** pane. You can also use **Layout View** to filter data and review only those records that meet the criteria you specify.

Warm-up

Discussion

Your teacher will lead the class through a discussion on how to update existing queries. Be prepared to answer the following question during the classroom discussion:

- If you were asked by your team leader to make a report "more exciting", what do you think you could add to the report or change about the report?

Topic 1: Configure view and print settings

You can use the **View** drop-down list in the **View** group to review your reports in different ways. The **View** drop-down list makes it easy to switch back and forth between:

- Outputting your report's data.
- Rendering a print preview of the report.
- Changing the design of the report.
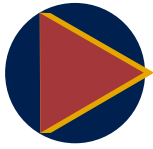
Video

For basic steps on how to modify or print a report, review the video at:
[Modify and print reports](#)

To change the current view of a report, open the report object in the **Navigation Pane**, and then select the **View** drop-down list in the **Views** group to find the following options:

- **Report View**
- **Print Preview**
- **Layout View**
- **Design View**

The following screenshot depicts the **View** drop-down list options.
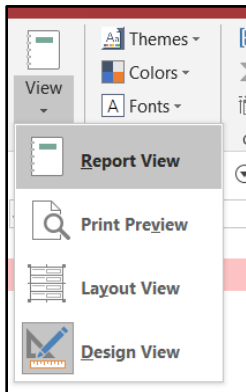
*Figure 13: **View** menu for a report*

Change print options

After you create your report, you can set options for the print layout in the **Page Setup** dialog box. These options help you customize the format with options for margin settings, use of gridlines and columns, or printing only the data from the report without the formatting. To set the print page options, select the **View** drop-down list in the **Views** group and then select the **Print Preview** option. You can then select the **Page Setup** option in the **Page Layout** group, which the following screenshot highlights.
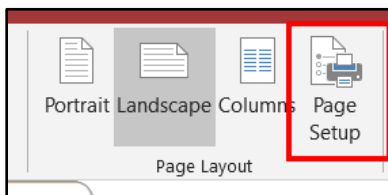
*Figure 14: **Page Setup** option*

In the **Page Setup** dialog box, you can change the margins of the printed report, decide if you want to print data, or modify data and layout features. The following screenshot depicts the **Page Setup** dialog box.
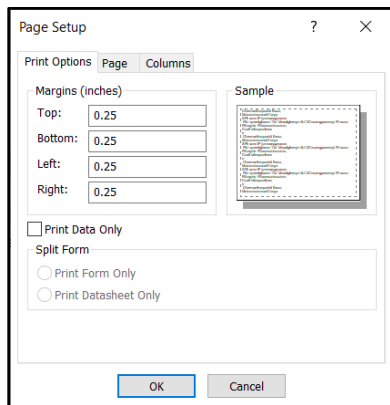
*Figure 15: **Page Setup** dialog*

Change the report layout

The **Layout View** option makes it easier to note how your design changes affect the way data is rendered on your report. To switch to the **Layout View**, select the **View** drop-down list in the **Views** group, and then select **Layout View**.

To change the design of your report, you can select a new theme from the **Themes** group on the **Design** tab, as the following screenshot depicts.
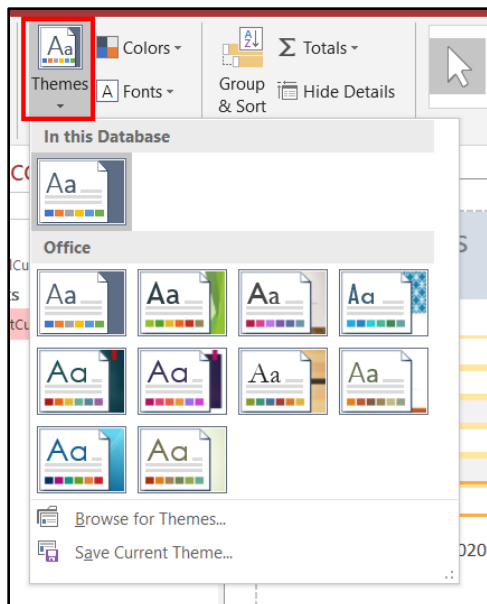
*Figure 16: **Theme** options*

To change the layout of your report, go to the **Page Layout** group on the **Page Setup** tab and then select either **Portrait** (vertical) or **Landscape** (horizontal). The following screenshot highlights these options.
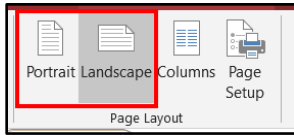
Figure 17: Portrait or landscape layout

Activity: Show me how

This is a teacher-led demonstration on how to configure view, layout, and print settings.

Resources required

- Open **L2_T1_act_csa.accdb** in this lesson's **Learning Activity Resources** folder.

Activity instructions

To participate in this activity:

- Pay attention to the methods that your teacher uses to configure view, layout, and print settings for an existing report.
- Be prepared to repeat these actions in the upcoming try-it.
- Ask questions to clarify anything that isn't clear to you.

Try-it: Configure view and print settings

In this leveled try-it activity, you'll configure view, layout, and print settings for an existing report.

Try-it 1

Resources

You'll need the following resources for this try-it:

- Open **L2_T1_try1_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the existing **rptCustomers** report.

2. Switch to the **Layout View**.

3. Change the orientation from **Portrait** to **Landscape**.

4. Save the updated report.

Try-it 2

Resources

You'll need the following resources for this try-it:

- Open **L2_T1_try2_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the existing **rptCustomers** report.

2. Switch to the **Layout View**.

3. Change the orientation from **Portrait** to **Landscape**.

4. Change the theme to **Ion Boardroom**.

5. Switch to the **Print Preview**.

6. Change the print options to **Print Data Only** and not print the other report elements.

7. Save the updated report.

Try-it 3

Resources

You'll need the following resources for this try-it:

- Open **L2_T1_try3_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the existing **rptCustomers** report.

2. Switch to the **Layout View**.

3. Change the orientation from **Portrait** to **Landscape**.

4. Change the theme to **Ion Boardroom**.

5. Switch to the **Print Preview**.

6. Change the print options to **Print Data Only** and not print the other report elements.

7. Change the report margins, for the **Top** and **Bottom** enter **1 inch** or **25.4 millimeters**, and for the **Left** and **Right** enter **0.25 inches** or **6.35 millimeters**.

8. Save the updated report.

Topic 2: Add and format report elements

When you want to create a customized report, you can use **Design View**. **Design View** gives you the most options for creating a report exactly the way you want it, because it displays the underlying structure of the report. It also provides you with more design tools and capabilities.

In **Design View**, a report displays on a design grid with sections. The following table lists and describes these sections.

Report header	This section is printed once at the beginning of every report. This is a good place to include a logo, a date, or information that might normally appear on a cover page.
Page header	This section is printed at the beginning of every page of a report, so it is a good place to include the report title.
<Group> header	This section is printed at the beginning of a group. (The name of the grouping field replaces <Group>.) It is a good place to include the group name.

Detail	This section includes the body of the report. It is printed once for every row in a record source.
<Group> footer	This section is only printed at the end of a group that contains summary information for the group. (The name of the grouping field replaces <Group>.)
Page footer	This section is printed at the end of every page of a report, so it is a good place to include information such as a page number.
Report footer	This section is printed once at the end of every report. It is a good place for report totals.

Table 2: Report sections

You can observe the breakdown of each section for your report by reviewing the report's design, as the following screenshot depicts.
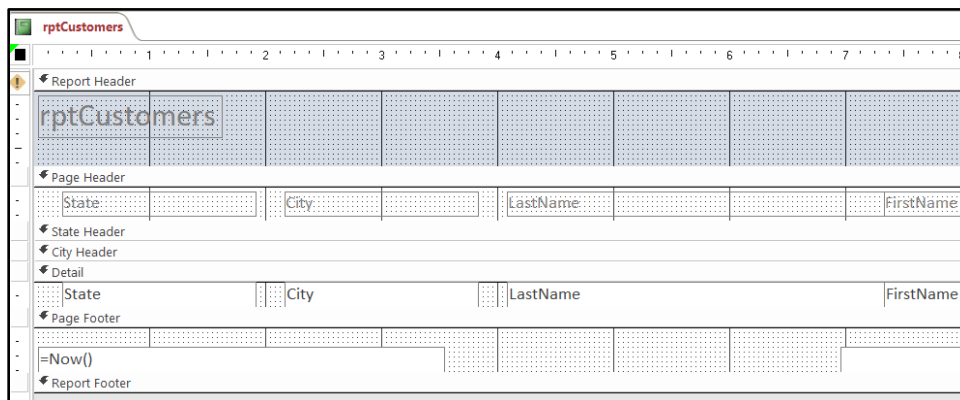
Figure 18: Report designer

To add fields to the report design, you can display the **Field List** pane (if it is not already displayed) by selecting **Add Existing Fields** on the **Tools** group.
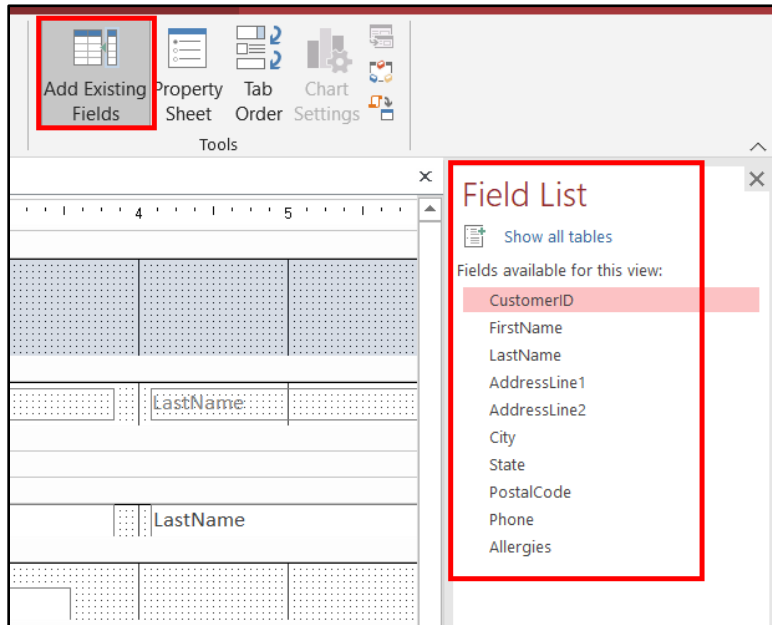
Figure 19: Field list for a report

To review your modified report, select the **View** drop-down list in the **Views** group and then select **Report View**, as the following screenshot highlights.
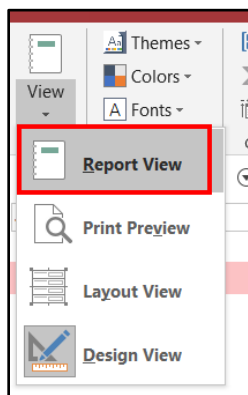
*Figure 20: **View** menu for a report*

Activity: Show me how

This is a teacher-led demonstration on how to change the elements in a report.

Resources required

- Open **L2_T2_act_csa.accdb** in this lesson's **Learning Activity Resources** folder.

Activity instructions

To participate in this activity:

- Pay attention to the methods that your teacher uses to change the elements of an existing report.
- Be prepared to repeat these actions in the upcoming try-its.
- Ask questions to clarify anything that isn't clear to you.

Try-it: Add and format report elements

In this standalone try-it activity, you'll change the elements of an existing report.

Try-it

Resources

You'll need the following resources for this try-it:

- Open **L2_T2_try_csa_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the existing **rptCustomers** report.

2. Switch to the **Design View**.

3. Change the **rptCustomers** label to **Customers Report**.

4. Change the **FirstName** label to **First Name**.

5. Change the **LastName** label to **Last Name**.

6. Add a new **CSA** label to the footer of the report.

7. Save the updated report.

Wrap-up

Use these questions to check what you learned in this lesson:

1. Which report view should you use to add or remove fields from a report?

   Select the correct option.

   a. **Design View**

   b. **Print Preview**

   c. **Layout View**

   d. **Report View**

2. Which report view should you use to change the theme of a report?

   Select the correct option.

   a. **Design View**

   b. **Print Preview**

   c. **Layout View**

   d. **Report View**

Glossary

Design View	A view where you can edit the components or controls in a report.
Layout View	A view where you can edit the layout of a report.
Print Preview	A view where the report is rendered exactly as it would be on paper.
Report	A database object that is used to organize and display data from tables or queries.
Report View	A view where report data is calculated and displayed on the current layout.
Report Wizard	A step-by-step wizard that assists you in creating a report.

Table 3: Glossary terms and definitions

Cornerstone

Overview

This Cornerstone project requires you to demonstrate your understanding of the concepts covered in this module by creating and using reports. You'll further demonstrate what you learned by creating simple reports and then modifying those reports to address changed needs.

Objectives

The following table outlines the Cornerstone objectives and their corresponding MOS exam objectives.

- Create a report
- Group fields on reports

- 5.1.1: Group and sort fields on reports

- Change report orientation
- Add report controls
- Insert information in report headers and footers

- 5.1.2: Add report controls
- 5.1.3: Add and modify labels on reports
- 5.2.4: Change report orientation
- 5.2.5: Insert information in report headers and footers

Table 4: Cornerstone objectives

Duration

50 minutes

Instructions

1. Complete the tasks for each file.

2. After completing the Cornerstone, assess your completion, and then enter the points you think you earned within the task lists in the following sections. You can get help from your teacher, if necessary.

Tasks

You'll work with one file in this Cornerstone. The following are the tasks you need to do within that file:

File 1: Cornerstone_csa_starter.accdb

Task: Create a report that lists customers and their cities (40 points)

1. Create a report using the **Report Wizard**. (5 points) (Exam objective 5.1.1: Group and sort fields on reports)

2. Include the **FirstName**, **LastName**, and **City** fields in the report. (10 points) (Exam objective 5.1.2: Add report controls)

3. **Group** the report using the **City** field. (20 points) (Exam objective 5.1.1: Group and sort fields on reports)

4. Save the report as **tblCustomers**. (5 points) (Exam objective 5.1.1: Group and sort fields on reports)

Points scored: _____ / 40

Task: Change the report's orientation (30 points)

1. Open the **tblCustomers** report. (5 points) (Exam objective 5.2.4: Change report orientation)

2. Change the orientation of the report to **Landscape.** (20 points) (Exam objective 5.2.4: Change report orientation)

3. Save the report. (5 points)

Points scored: _____ / 30
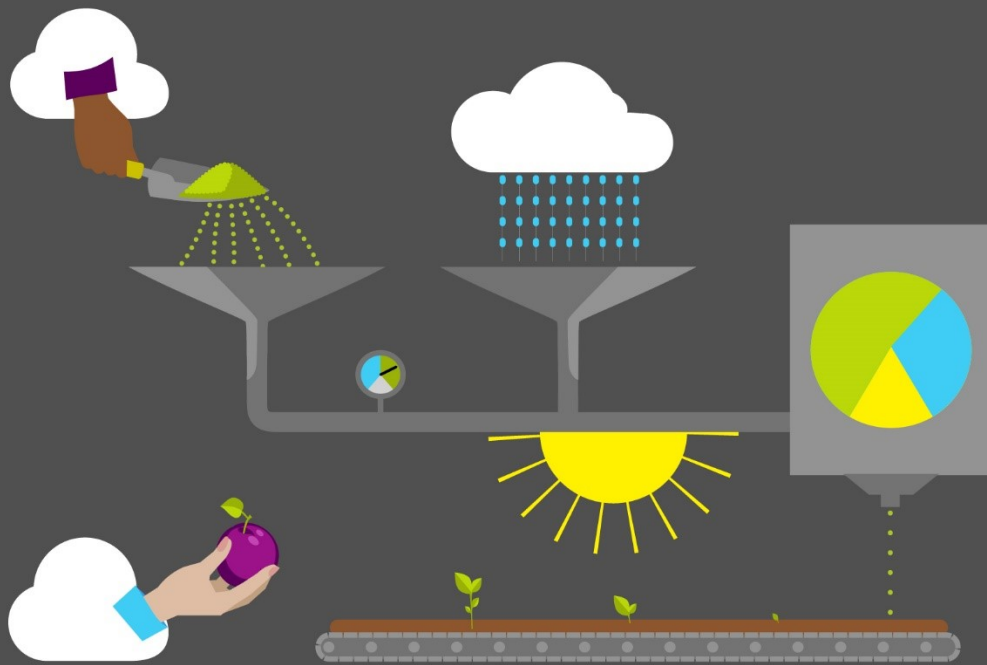
Task: Change the report's header (30 points)

1. Open the **tblCustomers** report. (5 points)

2. Update the content of the existing label in the **Report Header** to **Customers by Location**. (20 points) (Exam objective 5.1.3: Add and modify labels on reports, Exam objective 5.2.5: Insert information in report headers and footers)

3. Save the report. (5 points)

Points scored: _____ / 30

FILE 1 TOTAL POINTS: _____ / 100

Student Guide

40572A
Microsoft Access expert 2019

Module 6: Defining database relationships

Contents

Microsoft

Microsoft

Module overview

Description

As you start using databases to manage a lot of information, you must make sure that you've organized your data. You must also be able to retrieve exactly what you want. You can use table relationships to link related information while keeping everything separate and organized. Table relationships make it possible to store data efficiently and without redundancy.

In this module, you'll learn about the benefits of relationships and the different relationships Microsoft Access 2019 supports. You'll understand how foreign keys are important to relationships. You'll also learn how to use Access to make sure those keys always match between tables. Finally, you'll learn to create, edit, and delete relationships by using the **Relationships** window.

The following table outlines the lesson objectives and their corresponding Microsoft Office Specialist (MOS) exam objectives.

Lesson	Learning objective	MOS exam objective(s)
Understanding relationship basics	Explain the role of relationships, different relationship types, and the use of foreign keys.	• 1.2.1 • 1.2.4 • 1.2.5
Creating and modifying relationships	Define, test, and manage various table relationships.	• 1.2.1 • 1.2.2 • 1.2.4
Cornerstone: Make the connections	Create and manage relationships between tables used by the Customer Supported Agriculture (CSA) program at Munson's.	• 1.2.1 • 1.2.2 • 1.2.4 • 1.2.5

Table 1: MOS objectives by lesson

Scenario

The Community Supported Agriculture (CSA) program at Munson's Pickles and Preserves Farm is now larger than when you first designed the database. The CSA program team has received much positive feedback from other employees, members, and the community. There are requests from the team to track more information about members and their orders. There is also growing demand for more variety in the farm boxes and there are opportunities to create special offers.

You are now managing an increasing number of datasets regarding members, farm box offerings, available produce, and supplies inventory. To manage all this data in a practical and efficient manner, you need to create relationships between the tables. This will allow you to create more complex queries that include data from multiple tables.

Other teams at Munson's are also increasing their use of Access databases. They have created databases for beekeeping, irrigation, greenhouse yield, and water management. You would eventually like to connect CSA program data with other databases, where applicable.

Cornerstone

This module concludes with a Cornerstone in which you'll create and maintain table relationships in the CSA database at Munson's. In the Cornerstone, you'll:

- Use the **Relationships** window.
- Add a foreign key and define a relationship.
- Delete a relationship.
- Modify a relationship.
- Identify a "many to many" relationship.

Lesson 1: Understanding relationship basics

Overview

In this lesson, you'll learn how relationships can make databases more efficient and reliable dividing data into multiple, related tables. You'll also identify the different types of table relationships supported by Access. You'll learn how to add a foreign key field to a table so that you can then add that table to a relationship. Finally, you'll understand the role of referential integrity in relationships.

Warm-up

Use these questions to find out what you already know about this lesson's topics:

1. Which of the following terms describes a record that cannot be correctly connected to another record in a relationship?

    Select the correct option.

    a. Foreign key

    b. Orphan

    c. Primary key

    d. Referential integrity

2. Which of the following terms describes a primary key from one table that is used in another table?

    Select the correct option.

    a. Foreign key

    b. Orphan

    c. Primary key

    d. Query

    e. Referential integrity

3. Which of the following are benefits of table relationships?

   Select all that apply.

   a. Minimizing duplication of data.

   b. Consolidating data into one large table.

   c. Preventing data from one table from being connected to another table.

   d. Ensuring that data is consistent.

4. A relationship connects two _____ in a database.

   Fill in the blank space.

Topic 1: Explore the role of relationships

As you start to get more data in a storage system, whether it's a spreadsheet, paper index cards, or a database, you need to have a plan to address data redundancy. Data redundancy refers to the duplication of data. In your own life, you might have several lists of people you know, including a contact list in your phone, another in your school or work email, a third in your personal email, and others.

Some people, like your best friend from school, might be in multiple lists, or even all of them. If that friend changes their phone number, you'll need to change it in every list. Each time you change it, there's a chance you might make a mistake. Also, if you forget to update one list, you could easily end up with different information in different locations. Not only that, but all that duplication wastes storage space.

Understand table relationships

It's best to spread information out and store each piece of data in as few places as possible. You can then link those locations together to connect related information.

This is the nature of a relational database management system, such as Access. You can create a table for each subject or category that you need to store and use table relationships to bring together information from the different tables.

The CSA team at Munson's Pickles and Preserves Farm faces these same issues. When a member orders a farm box, that order includes customer information, such as name, address, and phone number. It also includes information about the farm box ordered by the member. As the team receives more orders, there will be a lot of data redundancy, because the same members order multiple farm boxes. Also, many different members order the same farm boxes.

As you've learned, the team can organize the data using tables. They can store all the member information in one table and all the farm box information in another. When a member places an order, a relationship can connect information from members table to information in the farm boxes table.

The benefits of related tables include:

- Consistency. Each piece of information is stored only once, and in one table. This means there is a lower risk of data that doesn't match. If a member's name has a spelling mistake, for example, you only need to go to one place to correct it.
- Efficiency. Keeping a piece of data in only one place uses less storage space. This might not seem important if you're just thinking about a list of your friends' names. However, storage is a big consideration if you think about all the large items you can store in databases. What if a database includes photographs or video clips? Even if you have plenty of storage, databases can retrieve data more quickly from a smaller table.
- Ease of use. It's easier to understand database organization if it's divided into multiple, related tables. For example, if you want to edit member information, you know it will be in the table for member data.

Additional information

For more information on the role of relationships, go to: [Guide to table relationships - Introduction](#)

Microsoft

Additional information

For more information on the reasons to use relationships, go to: [Guide to table relationships - Why create table relationships?](#)

Caution

This course uses database files that follow a general storyline for the CSA program at Munson's Pickles and Preserves Farm. These database files are the Learning Activity Resource files that you'll use to work on each module's activities and try-its. Each Learning Activity Resource file contains the data and objects, such as tables, queries, forms, and reports, that you need to complete a corresponding activity.

Due to this course's modular nature, the objects and data in these files might vary across activities or try-its. Therefore, it's important that you start your activities or try-its only with the designated files, as per applicable instructions. You also should note that screenshots in the topic content are for illustration purposes only and might appear different than those that are in the Learning Activity Resource files.

Activity: Discuss and learn

In this activity, you'll participate in a group discussion about the role of table relationships in a database.

Resources required

You'll need the following resources for this activity:

- None

Activity instructions

Participate in the activity by following these instructions:

1. Think carefully about the questions posed by the teacher.

2. Join in the discussion.

3. Study the document the teacher is presenting.

4. Ask the teacher any clarifying questions you might have.

Try-it: Explore the role of relationships

In this standalone try-it activity, you'll explain the purpose and advantages of table relationships.

Resources

You'll need the following resources for this try-it:

* None

Instructions

The following are the general tasks to perform during this try-it:

1. On a sheet of paper or in a document, respond to the following prompts in 1-2 sentences each:

   a. Explain the role of a relationship between two tables.

   b. Is it good to have data redundancy in a database? Why or why not?

   c. What are some benefits of using table relationships?

2. Submit or share your response as directed by the teacher.

Topic 2: Identify relationship types

After you've organized your information into tables, you can connect them with relationships. In Access, there are three types of table relationships: a "one to many" relationship, a "many to many" relationship, and a "one to one" relationship.

Understand "one to many" relationships

A "one to many" relationship is when a single record in Table A is related to one or more records in Table B. Your local library might have a database that keeps track of all library borrowers and books. One table stores your information as a borrower, including your name, address, and phone number. A separate table stores information about each book, such as the title and author.

An individual borrower can check out many books, but only one borrower can check out a specific book. This is an example of a "one to many" relationship, and they are very common in databases. In the same way, a salesperson can make many sales, but only one salesperson can be responsible for a specific sale. And a warehouse can have many different boxes, but each box can only be in one warehouse.

Understand "many to many" relationships

A "many to many" relationship is one in which a single record in Table A can be related to one or more records in Table B, and a single record in Table B can also be related to one or more records in Table A.

Your school could have a database with one table to keep track of you and all the other students, with your name, grade level or major, and contact information. A second table could keep track of the information for each class, such as the class name, teacher's name, room number, and the schedule of class meetings. As an individual student, you can take many classes and each class can have many different students.

Another example of a "many to many" relationship is order tracking. A single order can have many products, and a product could be part of many different orders.

Understand "one to one" relationships

A "one to one" relationship is far less common, and refers to a relationship in which one record in Table A is connected to one record in Table B, and in turn that one record in Table B is only connected to that one record in Table A.

An example of this would be if the library separated the borrower's contact information into a different table with that person's address, phone number, and email. This is unusual because that information could be stored in the borrower information table. The library might separate it for privacy or security purposes. It could also be information that is only stored for some of the records in Table A, and you want to avoid having a lot of empty fields.

Additional information

For more information on relationship types, go to: Guide to table relationships - Types of table relationships

Additional information

For more information on relationship types, go to: Database design basics - Creating the table relationships
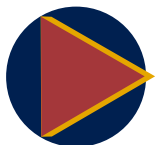
Video

To review the video on relationship types, go to: Get started with table relationships

Activity: Each one, teach one

In this activity, you'll learn about one of the three relationship types. Then you'll share what you've learned with two classmates.

Resources required

You'll need the following resources for this activity:

- None

Activity instructions

Participate in the activity by following these instructions:

1. Learn about the table relationship type your teacher assigns you. Use the **Additional Information** links as a starting point. You can also search on Office Help and Training for additional resources.

2. When directed by the teacher, group together with two students who learned about the other relationship types.

3. When it's your turn, explain what you learned about your assigned topic.

4. When other students are explaining, pay attention and actively ask any questions you might have.

Try-it: Identify relationship types

In this standalone try-it, you'll identify the best relationship type for different database designs.

Resources

You'll need the following resources for this try-it:

- None.

Instructions

The following are the general tasks to perform during this try-it:
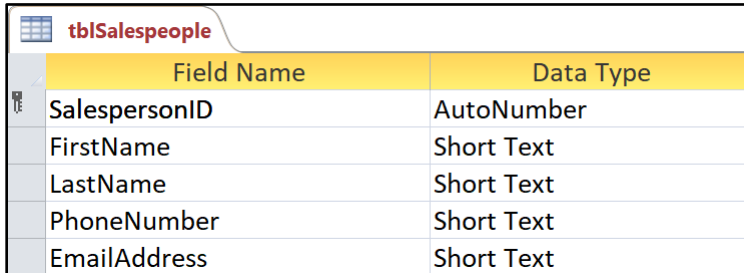
1. Create a blank Microsoft Word document with the file name **L1_T2_try_types.docx**.

2. For each of the following descriptions, select which table relationship type is the best fit. Choose from a "one to many", "many to many", or "one to one" relationship. Record your answers in your Word document.

    o   An online game has a table of players and a table of game servers that host 16 players at a time. When the game begins, it automatically assigns each player to one of the servers.

    o   A relationship in which a record is connected to an individual record in another table, and the record in that table is connected back to the first record.

    o   A database system for tracking great works of literature has one table with information about books and another table with information about authors.

    o   A database system for the Munson's farm-to-table recipe book, with a table that stores recipes and a table with ingredients used in those recipes.

    o   A database with a table for recipient addresses and a separate table for packages that need to be delivered.

    o   A table relationship in which a single record in Table A is related to one or more records in Table B.

    o   A table that acts as a phone's contact list and a separate table that maintains a call history.

    o   A table relationship in which a single record in Table A can be related to one or more records in Table B, and a single record in Table B can also be related to one or more records in Table A.

Topic 3: Add foreign keys and understand referential integrity

A table relationship in Access works by matching data from a field in one table with data from a field in another table. These matching values provide a link to pull together data from each table for use in queries, forms, reports, and other database objects.
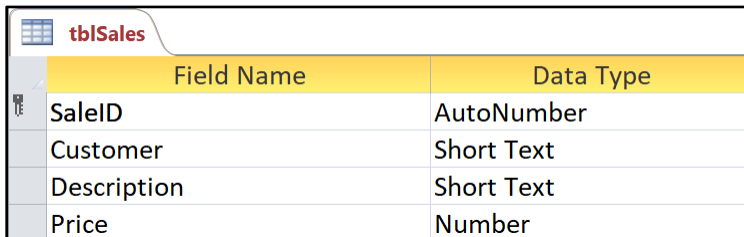
Consider a database that keeps track of an employee's sales so you can run reports about how much they sell and calculate a commission to pay them. You can create a table with information about the salespeople only, with **SalespersonID** as the primary key. The following screenshot depicts the **Design View** of the **tblSalespeople** table with **SalespersonID** as the primary key:

tblSalespeople	
Field Name	**Data Type**
SalespersonID	AutoNumber
FirstName	Short Text
LastName	Short Text
PhoneNumber	Short Text
EmailAddress	Short Text

*Figure 1: The **Design View** of the **tblSalespeople** table with **SalespersonID** as the primary key*

A separate table can maintain information about each sale, with **SaleID** as the primary key. The following screenshot depicts the **Design View** of the **tblSales** table with **SaleID** as the primary key:

tblSales	
Field Name	**Data Type**
SaleID	AutoNumber
Customer	Short Text
Description	Short Text
Price	Number
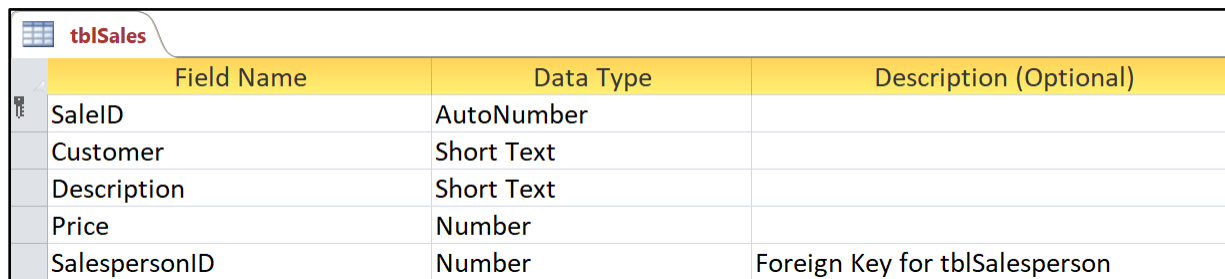
*Figure 2: The **Design View** of the **tblSales** table with **SaleID** as the primary key*

To bring these databases together, you'll need to have common fields in the related tables that you can use to connect them. Imagine keeping these sales records on paper. You could pull the paperwork for a sale and find the salesperson's name written somewhere on the document. In that case, the name provides a link back to the salesperson.

In our sales example, there's no obvious connection between **tblSales** and **tblSalesPerson**. You can solve this issue by adding a field to **tblSales** that links back to the salesperson who made the sale.

As you've learned in previous modules, in good database design, each table will have a field with unique values called a **primary key**. If you want a sale to link to a specific salesperson, you simply need to store the corresponding **SalespersonID** with the sales record. Remember that the table on the "many" side of the relationship has a foreign key field linking to the primary key field of the table on the "one" side of the relationship.

To do this, you'll create a new field in **tblSales** that stores a **Number**. Although there is nothing special about the field at this point (it's just a number), you know that you'll be using it to connect records to a primary key in another table. This is called a *foreign key*, and to keep everything clear, you'll use the same name: **SalespersonID**. The following screenshot depicts the **Design View** of the **tblSales** table with **SalespersonID** added to serve as a foreign key:

Field Name	Data Type	Description (Optional)
SaleID	AutoNumber	
Customer	Short Text	
Description	Short Text	
Price	Number	
SalespersonID	Number	Foreign Key for tblSalesperson

*Figure 3: The **Design View** of the **tblSales** table with **SalespersonID** added to serve as a foreign key*

Note: It is a good idea to indicate in **Description** that the field is a foreign key.

Use foreign keys in a "one to one" relationship

In a "one to many" relationship, the foreign key field might have many duplicated values. One salesperson might have many sales, so that individual's **SalespersonID** will appear many times in **tblSales**.

Microsoft

However, a "one to one" relationship can't have this duplication. When you create the foreign key field in the **Design View**, you'll need to use the **Properties** pane to configure the **Indexed** property to **Yes (No Duplicates)**. The following screenshot depicts the **Properties** pane in the **Design View** with the **Indexed** property highlighted:

General	Lookup	
Field Size	Long Integer	
New Values	Increment	
Format		
Caption		
Indexed	Yes (No Duplicates)	
Text Align	General	
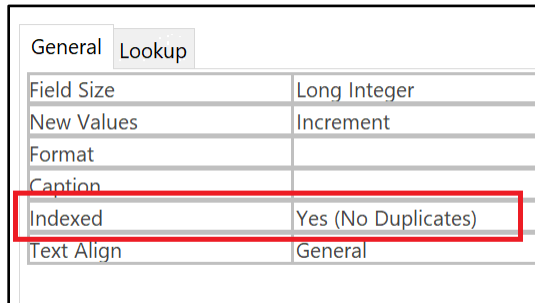
*Figure 4: The **Properties** pane in the **Design View** with the **Indexed** property highlighted*

Note: Remember to only use this setting for **Indexed** when you're creating a "one to one" relationship.

Additional information

For more information on foreign keys, go to: <u>Guide to table relationships - Introduction</u>

Referential integrity

A relationship depends on the value in the foreign key field of one table matching a value in the primary key field in another table. If there's no match, Access is not able to link the tables.

As an example, think about a record in **tblSalespeople** for a salesperson named Demi Holloway. Demi has made 36 sales, so there are 36 records in **tblSales** with her **SalespersonID**. However, Demi takes a job in a different department, so you delete that record in **tblSalespeople**. There are now 36 records in **tblSales** that refer to a **SalespersonID** that is not valid. Those disconnected records are known as *orphans*.

Orphans would also occur if you entered a new record in **tblSales** with a **SalespersonID** that doesn't exist or if you changed the **SalespersonID** of a record in **tblSalespeople**.

Microsoft

A feature called referential integrity prevents orphans. Referential integrity:

- Prevents any deletion that would result in orphans.
- Will not accept a new record that does not have a valid foreign key value.
- Does not allow a change in a primary key value if it would result in one or more orphans.

What happens if you need to delete a salesperson? Access supports cascade deletion, which deletes the salesperson and any related records in the sales table. Similarly, cascade updates will update matching foreign key values if the value of a primary key changes.

When you create relationships in Access, you have the option to enable referential integrity. In most cases, you should enable it.

Additional information

For more information on referential integrity, go to: Guide to table relationships - Understanding referential integrity

Caution

This course uses database files that follow a general storyline for the CSA program at Munson's Pickles and Preserves Farm. These database files are the Learning Activity Resource files that you'll use to work on each module's activities and try-its. Each Learning Activity Resource file contains the data and objects, such as tables, queries, forms, and reports, that you need to complete a corresponding activity.

Due to this course's modular nature, the objects and data in these files might vary across activities or try-its. Therefore, it's important that you start your activities or try-its only with the designated files, as per applicable instructions. You also should note that screenshots in the topic content are for illustration purposes only and might appear different than those that are in the Learning Activity Resource files.

Microsoft

Activity: Show and tell

In this activity, the teacher will demonstrate adding a foreign key field to a table.

Resources required

You'll need the following resources for this activity:

- Open **L1_T3_act_farm_boxes_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Activity instructions

Join in the activity by observing and participating in the teacher's demonstration. Ask any clarifying questions you have as the teacher is presenting.

Try-it: Add foreign keys and understand referential integrity

In this try-it activity, you'll add a foreign key field to a table so that it is ready to be connected to a related table in the future. Then you'll enter valid foreign key values.

Try-it 1

Add a foreign key field in **tblOrders** that will match the primary key field in **tblMembers**. Then, add a valid foreign key value for each record in **tblOrders**.

Resources

You'll need the following resources for this try-it:

- Open **L1_T3_try1_members_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. Open the **Design View** for **tblMembers** to find the name of the primary key field.

2. Open the **Design View** for **tblOrders** and add a field with that same name.

3. View data in **tblMembers** and identify the values in its primary key field.

4. In **tblOrders**, add a valid value to the foreign key field for each record.

Try-it 2

Add a foreign key field in **tblOrders** that will match the primary key field in **tblMembers**. Include a description for the new field. Then, add a valid foreign key value for each record in **tblOrders**.

Resources

You'll need the following resources for this try-it:

- Open **L1_T3_try2_members_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. Open the **Design View** for **tblMembers** to find the name of the primary key field.

2. Open the **Design View** for **tblOrders** and add a field with that same name. In **Description**, enter text explaining that it is a foreign key for **tblOrders**.

3. View data in **tblMembers** and identify the values in its primary key field.

4. In **tblOrders**, add a valid value to the foreign key field for each record.

Wrap-up

Use these questions to check what you learned in this lesson:

1. Which of the following relationship types is the least common?

   Select the correct option.

   a. "One to one" relationship

   b. "One to many" relationship

   c. "Many to many" relationship

2. Which of the following issues does referential integrity prevent?

   Select the correct option.

   a. Data inconsistency

   b. Data redundancy

   c. Orphaned records

Microsoft

3. A _____ field connects to a primary key field in another table.

   Fill in the blank space.

4. Match each definition with one of the following table relationship types:

   o "One to one" relationship
   o "One to many" relationship
   o "Many to many" relationship

   Categorize the following items by adding the appropriate group name next to each item.

   a. A table relationship in which a single record in Table A can be related to one or more records in Table B. A single record in Table B can also be related to one or more records in Table A. _____

   b. A table relationship in which one record in Table A is connected to one record in Table B. In turn, that one record in Table B is only connected to that one record in Table A.

   c. A table relationship in which a single record in Table A is related to one or more records in Table B. _____

Lesson 2: Creating and modifying relationships

Overview

In this lesson, you'll learn how to review and create table relationships in the **Relationships** window. You'll also learn how to delete and modify table relationships.

Warm-up

Use these questions to find out what you already know about this lesson's topics:

1. Which relationship type requires an intermediate table?

   Select the correct option.

   a. "One to many"

   b. "Many to many"

   c. "One to one"

   d. No relationships require an intermediate table

2. Which is the least common relationship type?

   Select the correct option.

   a. "One to many"

   b. "Many to many"

   c. "One to one"

3. Which tab contains the **Relationships** command?

   Select the correct option.

   a. **Home**

   b. **Create**

   c. **External Data**

   d. **Relationship Tools Design**

Microsoft

4. The _____ can depict the tables and relationships in a database.

    Fill in the blank space.

Topic 1: Use the Relationships window

Keeping track of relationships can be difficult. To help, Access includes a feature called the **Relationships** window. You can use this window to display relationships, and to create and modify table relationships.

You can access the **Relationships** window from the ribbon:

1. Select the **Relationship Tools Design** tab.

2. In the **Relationships** group, select **Relationships**.

The following screenshot depicts the **Relationships** group of the **Relationship Tools Design** tab with **Relationships** highlighted:
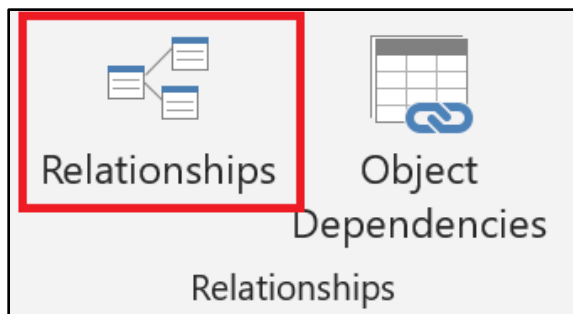
*Figure 5: The **Relationships** group with **Relationships** highlighted*

The following screenshot depicts the **Relationships** window displaying the relationships between three tables:
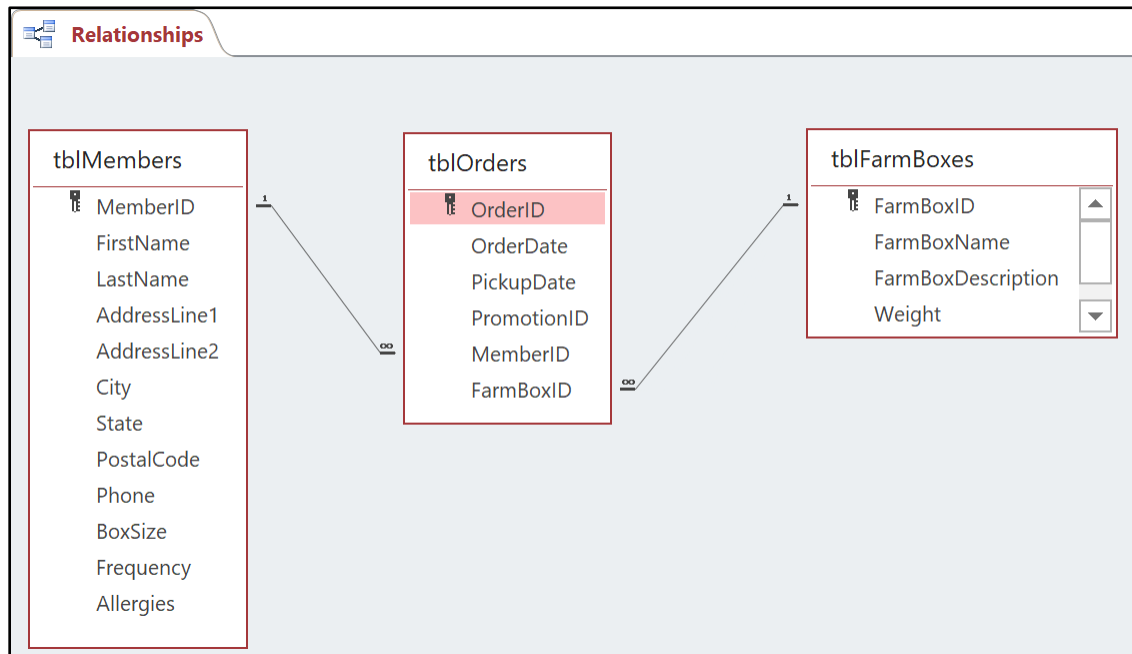
*Figure 6: The **Relationships** window displaying the relationships between three tables*

- A line between two tables depicts a table representation.
- The presence of two symbols indicates a "one to many" relationship.
- A **1** is depicted on the line on the "one" side of the relationship and an **infinity symbol** is depicted on the "many" side of the relationship.
- A line with no symbols depicts a "one to one" relationship.

As you'll learn in the next topic, a "many to many" relationship requires an additional table. There are no unique symbols to indicate that type of connection.

You can add and remove tables in the **Relationships** window without affecting the tables themselves or any of their relationships. You can add only the tables you're working on and remove all others.

To add tables to the **Relationships** window:

1. Select the **Design** tab.

2. In the **Relationships** group, select **Add Tables**. The following screenshot depicts the **Relationships** group of the **Design** tab with **Add Tables** highlighted:

*Figure 7: The **Relationships** group of the **Design** tab with **Add Tables** highlighted*

3. The **Add Tables** command opens the **Show Table** dialog box.

4. Select a table name and select **Add** to add the table to the **Relationships** window.

5. Repeat to add more tables.

6. Then select **Close** to close the **Show Table** dialog box. The following screenshot depicts the **Show Table** dialog box:
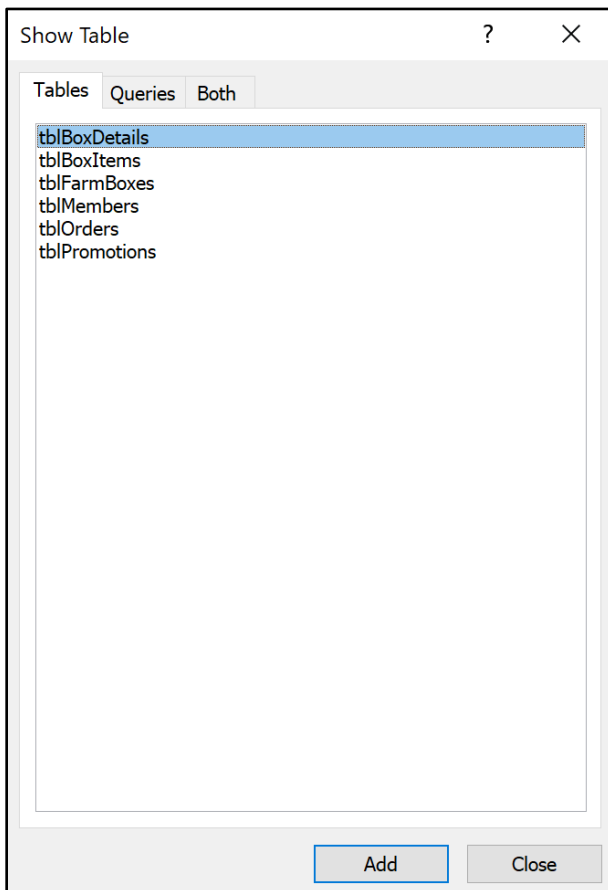
*Figure 8: The **Show Table** dialog box*
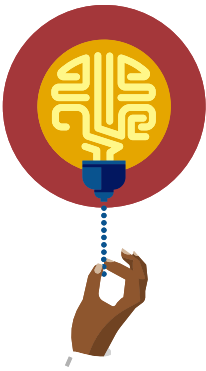
Did you know?

You can also add a table to the **Relationships** window by selecting it in the **navigation** pane and dragging it onto the **Relationships** window.

To hide a table from the **Relationships** window:

1. Select the table in either the **navigation** pane or in the **Relationships** window.

2. Then, select the **Design** tab on the ribbon.

3. In the **Relationships** group, select **Hide Table**. The following screenshot depicts the **Relationships** group of the **Design** tab with **Hide Table** selected:
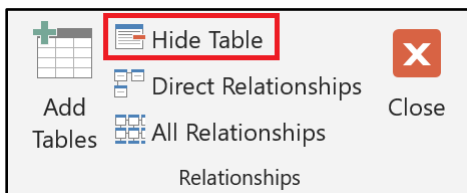
*Figure 9: The **Relationships** group of the **Design** tab with **Hide Table** selected*

You can also hide a table from the **Relationships** view with the context menu:

1. Right-click or access the context menu for the table in the **Relationships** window.

2. Then, select **Hide Table**. The following screenshot depicts the context menu with **Hide Table** highlighted:
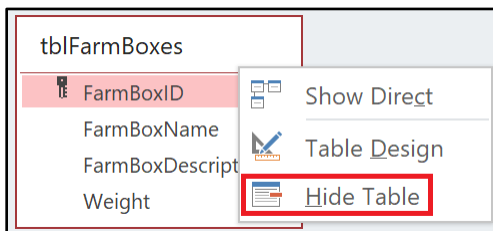
*Figure 10: The context menu with **Hide Table** highlighted*

Microsoft

To close the **Relationships** window:

1. Select the **Design** tab on the ribbon.

2. In the **Relationships** group, select **Close**. The following screenshot depicts the **Relationships** group of the **Design** tab with **Close** highlighted:
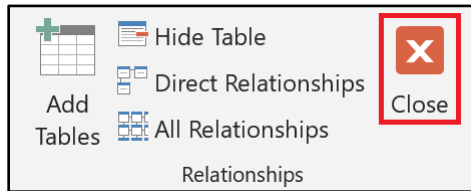
*Figure 11: The **Relationships** group of the **Design** tab with **Close** highlighted*

Additional information

For more information on the **Relationships** window, go to: What is the Relationships window?

Activity: Pose a challenge

In this activity, the teacher will challenge you to find information about tables in a database system.

Resources required

You'll need the following resources for this activity:

- Open **L2_T1_act_sales_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Activity instructions

Join in the activity by following these instructions:

1. Join in the discussion by guessing at a solution to the challenge.

2. Take part in the demonstration and follow along on your computer.

3. Ask questions about any part of the activity you don't fully understand.

Try-it: Use the Relationships window

In this leveled try-it, you'll examine the organization of a database and identify all the tables.

Try-it 1

In this try-it, you'll hide the **tblEvents** table and add all other tables to the **Relationships** view. Then, you'll examine the **Relationships** window to create a list of tables in the database.

Resources

You'll need the following resources for this try-it:

- Open **L2_T1_try1_Munsons_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. Open the **Relationships** window.

2. It includes a table for events on the Farm called **tblEvents**. As it is not related to your work with the CSA team, hide it from the **Relationships** view.

3. Add all other tables that don't currently display in the **Relationships** window.

4. Open a new Word document and save it with the name **L2_T1_try1_tables.docx**. In it, list all the tables in the database other than **tblEvents**.

Try-it 2

In this try-it, you'll hide the **tblEvents** table and add all other tables to the **Relationships** view. Then, you'll examine the **Relationships** window to create a list of tables and foreign key fields in the database.

Resources

You'll need the following resources for this try-it:

- Open **L2_T1_try2_Munsons_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. Open the **Relationships** window.

2. It includes a table for events on the Farm called **tblEvents**. As it is not related your work with the CSA team, hide it from the **Relationships** view.

3. Add all other tables that don't currently display in the **Relationships** window.

Microsoft

4. Create a new Word document and save it with the name **L2_T1_try2_tables.docx**. In it, list all the tables in the database other than **tblEvents**.

5. For each table you find, list any foreign key fields it contains.

Topic 2: Define table relationships

The **Relationships** window also includes commands for creating new table relationships.

Define a "one to many" relationship

Before you create a "one to many" relationship, make sure that the table on the "many" side of the relationship has a foreign key field. It should match the primary key field on the "one" side of the relationship. The following screenshot depicts the **Relationships** window displaying tables with a primary key field highlighted and a corresponding foreign key field highlighted:
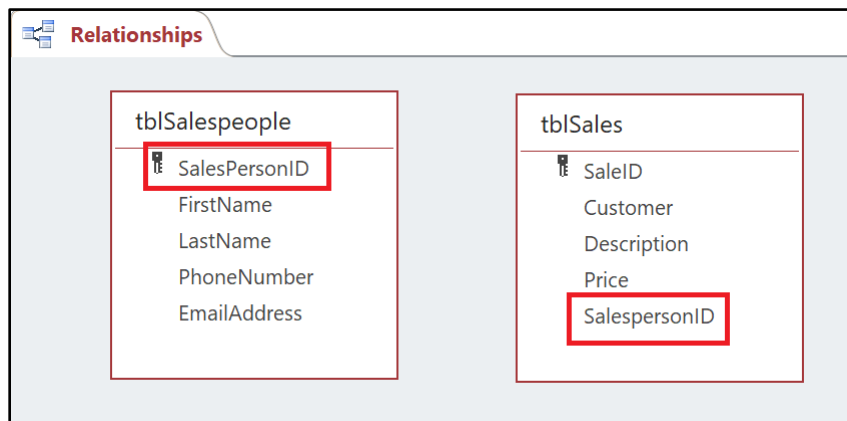
*Figure 12: The **Relationships** window displaying tables ready for a relationship with a primary key field highlighted and a corresponding foreign key field highlighted*

Next:

1. Select the **Relationship Tools Design** tab on the ribbon.

2. In the **Tools** group, select **Edit Relationships**. The following screenshot depicts the **Tools** group with **Edit Relationships** highlighted:
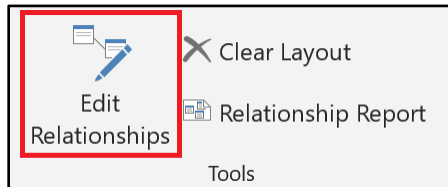
*Figure 13: The **Tools** group with **Edit Relationships** highlighted*

3. The **Edit Relationships** command opens **the Edit Relationships** dialog box.

4. Select **Create New**. The following screenshot depicts the **Edit Relationships** dialog box with **Create New** highlighted:
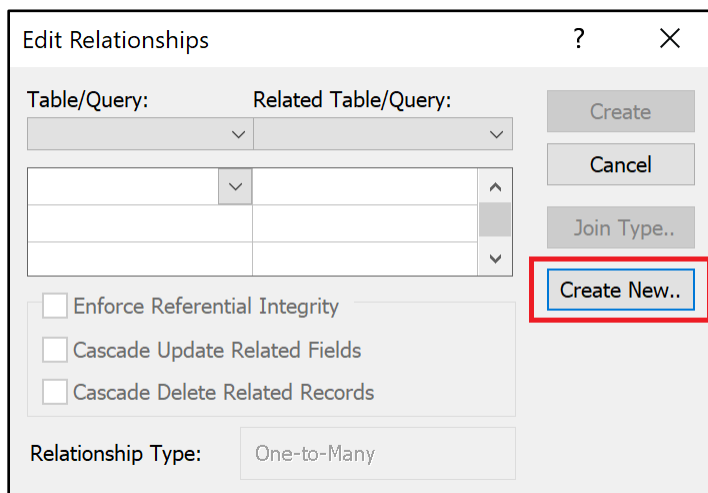
*Figure 14: The **Edit Relationships** dialog box with **Create New** highlighted*

5. The **Create New** command will access the **Create New** dialog box. This is where you'll the fields used to create the relationship.

6. In **Left Table Name**, select the table on the "one" side of the relationship.

7. In **Right Table Name**, select the table on the "many" side of the relationship.

8. Use the **Left Column Name** drop-down list to select the primary key field.

9. Use the **Right Column Name** drop-down list to select the foreign key field. It usually has the same name. The following screenshot depicts a portion of the **Relationships** window with the **Create New** dialog box active and the table and field names selected:
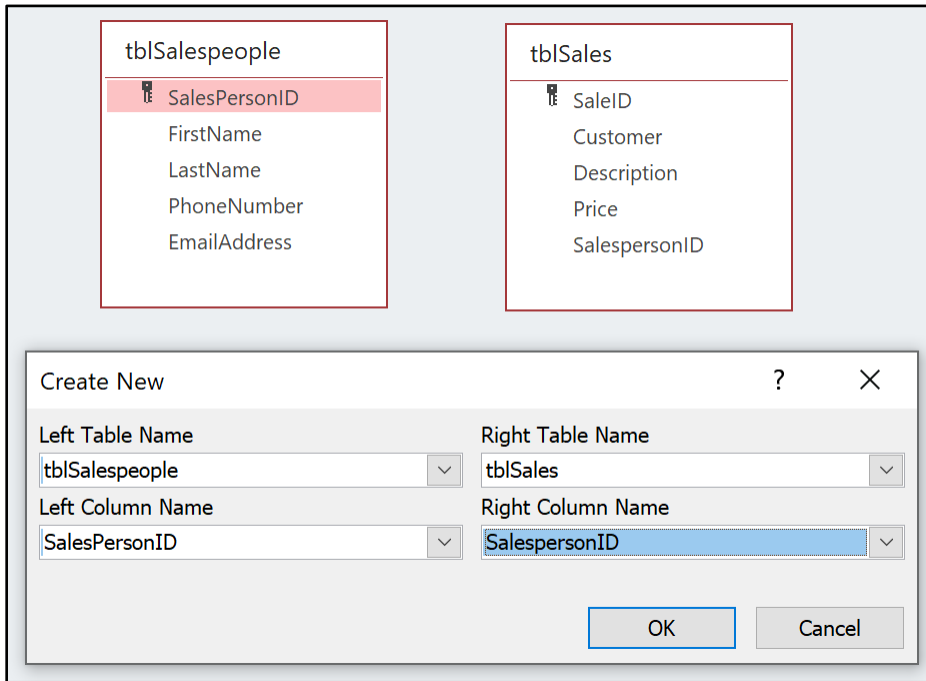
*Figure 15: A portion of the **Relationships** window with the **Create New** dialog box active and the table and field names selected*

Note*: You can define the relationship in either direction. It's a good idea to match the way they're displayed in the **Relationships** window to avoid confusion.*

10. Select **OK** to close the **Create New** dialog box and return to the **Edit Relationships** dialog box. The table and field names are now selected.

11. Select the **Enforce Referential Integrity** check box.

12. Select **Create** to close the dialog box and create the relationship. The following screenshot depicts the **Edit Relationships** dialog box with table and field names selected and **Enforce Referential Integrity** and **Create** highlighted:
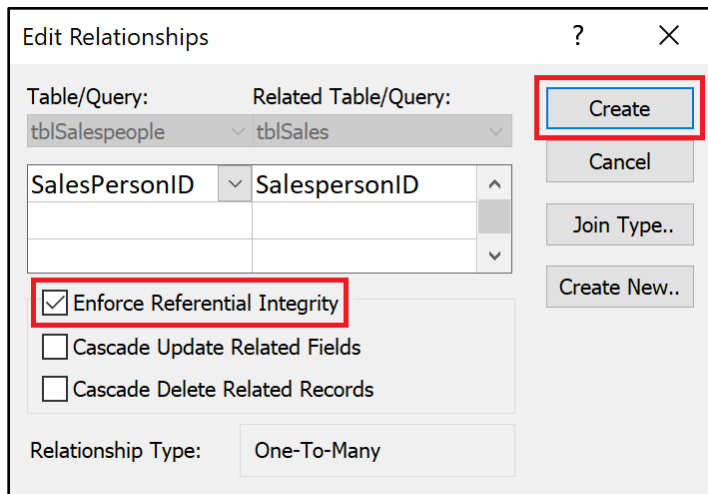
*Figure 16: The **Edit Relationships** dialog box with table and field names selected and **Enforce Referential Integrity** highlighted*
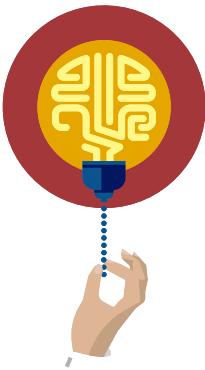
Did you know?

You can also access the **Edit Relationship** dialog box to define a new relationship by selecting the primary key and dragging it to the foreign key. This action will automatically populate the field names in the dialog, saving you a couple of steps.

Define a "one to one" relationship

Creating a "one to one" relationship is very similar to creating a "one to many" relationship. Before you begin, remember that your foreign key field must have the **Indexed** property set to **Yes (No Duplicates)**. Then:

1. Select the **Relationship Tools Design** tab on the ribbon.

2. In the **Tools** group, select **Edit Relationships** to open **the Edit Relationships** dialog box.

3. Select **Create New** to open the **Create New** dialog box.

4. Use the **Left Column Name** and **Right Table Name** drop-down lists to select the two tables.

Microsoft

5. Use the **Left Column Name** and **Right Column Name** drop-down lists to select the common fields. The following screenshot depicts a portion of the **Relationships** window with the **Create New** dialog box active and the table and field names selected for a "one to one" relationship:
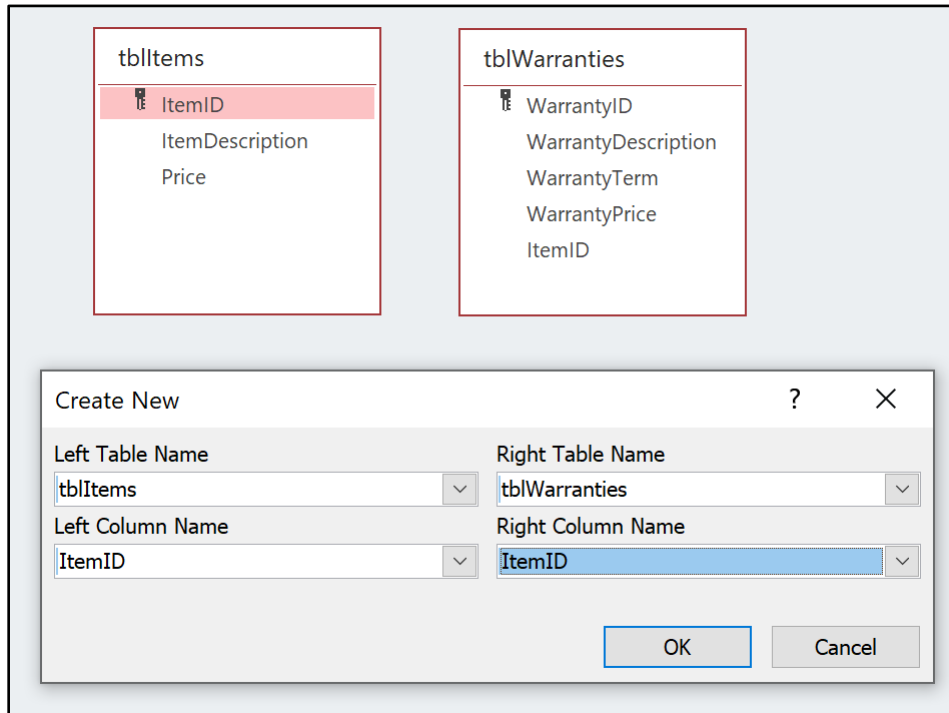
*Figure 17: A portion of the **Relationships** window with the **Create New** dialog box active and the table and field names selected for a "one to one" relationship*
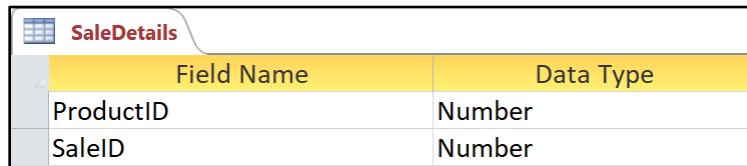
6. Select **OK** to close the **Create New** dialog box and return to the **Edit Relationships** dialog box. The table and field names are automatically selected.

7. Don't select the **Enforce Referential Integrity** check box for a "one to one" relationship. This is one of the few situations in which you'll leave that option unchecked.

8. Select **Create** to close the dialog box and create the relationship.

Define a "many to many" relationship

A "many to many" relationship between two tables requires a third table to act as a go-between for the tables. This third table is known as an intermediate table or junction table. You'll add the primary key of each of the two tables into the intermediate table. This enables a "one to many" relationship with each of the two original tables.

Microsoft

Consider the database for tracking sales from previous examples. Each individual sale can include many products, and in turn, each product might be part of many orders. To establish a "many to many" relationship between **tblSales** and **tblProducts**, you'll need an intermediate table that we'll call **tblSaleDetails**. The table will consist of two fields: the primary key fields in the two tables you're linking. The following screenshot depicts the **Design View** for the intermediate table **tblSaleDetails**:

Field Name	Data Type
ProductID	Number
SaleID	Number

*Figure 18: The **Design View** for the intermediate table **tblSaleDetails***

In an intermediate table, both fields work together to act as the primary key. This arrangement is known as a composite key. To create a composite key:

1. Select both fields at the same time.

2. Select the **ProductID** row first.

3. Select **Shift** while you simultaneously select the **SaleID** row using the down arrow key.

4. After selecting both fields, select the **Design** tab on the ribbon.

5. In the **Tools** group, select **Primary Key**. The following screenshot depicts the **Tools** group with **Primary Key** selected:
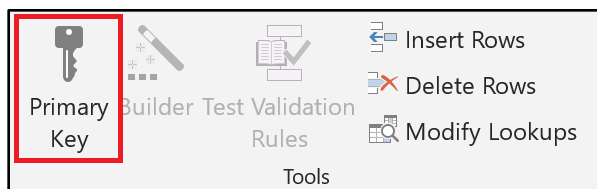
*Figure 19: The **Tools** group with **Primary Key** selected*

6. After creating the intermediate table, connect it to both original tables in "one to many" relationships. The following screenshot depicts two tables connected in a "many to many" relationship via an intermediate table:
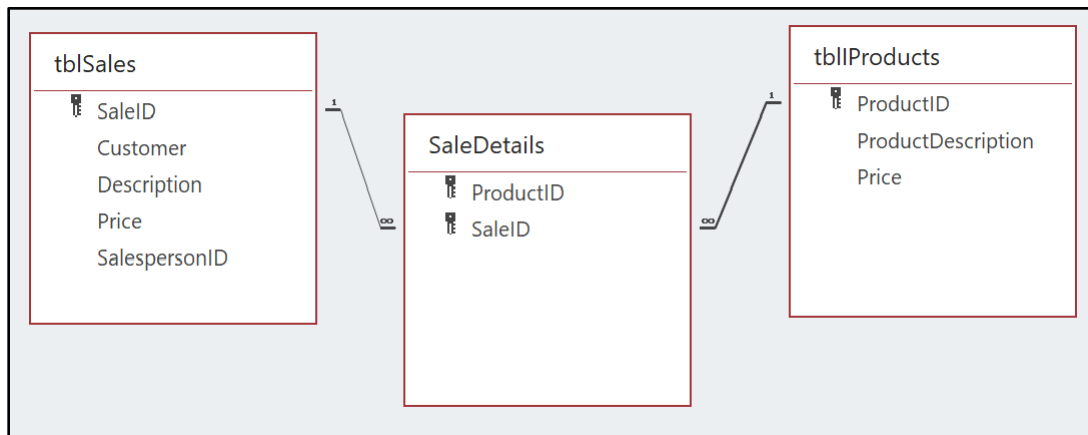
Figure 20: The two tables connected in a "many to many" relationship via an intermediate table

Correct referential integrity issues when defining a relationship

When you select **Enforce Referential Integrity** while creating a relationship between tables that already contain data, Access verifies each value in the foreign key field. It checks that each value is present in the other table's primary key field. If not, Access will create an alert notifying you that it can't create the relationship.

To fix this, you must correct any invalid foreign values or create the relationship without enforcing referential integrity. We don't recommend disabling referential integrity checking. The following screenshot depicts the alert activated when you have a referential integrity problem:
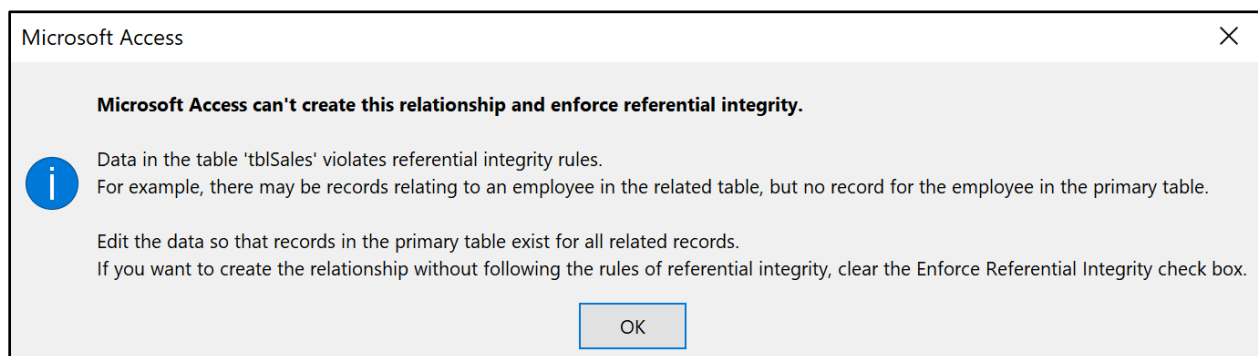
Figure 21: The alert activated when you have a referential integrity problem

Additional information

For more information on defining table relationships, go to: [Create, edit or delete a relationship](#))

Video

To review the videos on defining "one to many" relationships, go to: [Create relationships with the Relationships Pane](#)
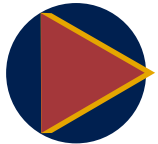
Video

To review the videos on defining "many to many" relationships, go to: [Create many-to-many relationships](#)
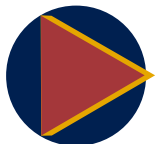
Video

To review the videos on defining "one to one" relationships, go to: [Create one-to-one relationships](#)

Activity: Show and tell

In this activity, the teacher will demonstrate how to define a "one to many" relationship between two tables.

Resources required

You'll need the following resources for this activity:

- Open **L2_T2_act_farm_boxes_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Activity instructions

Join in the activity by engaging in the demonstration. Follow along on your computer. Ask questions about any part of the activity you don't fully understand.

Try-it: Define table relationships

In this standalone try-it, you'll define a relationship between a table that stores members of the Farm's CSA program and a table that stores information about orders.

Resources

You'll need the following resources for this try-it:

- Open **L2_T2_try_members_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. Use the **Edit Relationships** command on the ribbon to create a "one to many" relationship between **tblMembers** and **tblOrders**.

2. Be sure that referential integrity is enforced.

Topic 3: Delete and modify relationships

Deleting a table relationship does not affect the tables and data that are associated with that relationship, but referential integrity is disabled. This means that you might have problems establishing the relationship again if you add or change records.

Delete a relationship

There are multiple ways to delete a relationship. Here's how to delete a relationship using the context menu:

1. Select the relationship line between **tblMembers** and **tblEvents**.

2. Right-click or access the context menu for the relationship line. Select **Delete**. In the dialog box that appears, select **Yes** to confirm the deletion.

3. In the **Relationships** window, select **tblEvents**.

4. Select the **Design** tab. In the **Relationships** group, select **Hide table**.
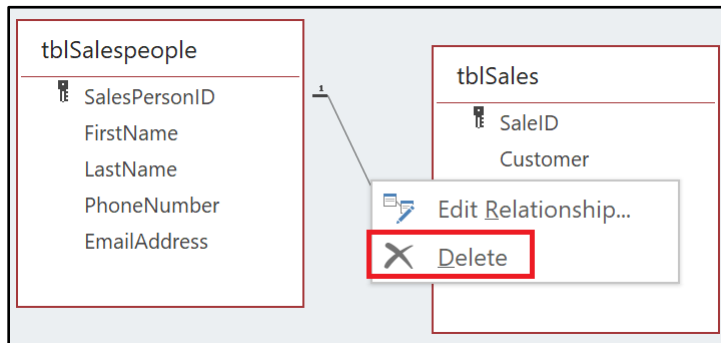
*Figure 22: The context menu for the relationship line with **Delete** highlighted*

Here's how to delete a relationship using **Edit Relationships** to select the relationship:

1. Select the **Relationship Tools Design** tab. In the **Tools** group, select **Edit Relationships** to open the Edit **Relationships** dialog box.

2. Select **tblMembers** from the **Table/Query** drop-down list.

3. Select **tblEvents** from the **Related Table/Query** drop-down list.

4. Select **OK**.

5. Select the **Delete** key. In the dialog box that appears, select **Yes** to confirm the deletion.

6. In the **Relationships** window, select **tblEvents**.

7. Select the **Design** tab. In the **Relationships** group, select **Hide table**.

Modify a relationship

You can edit a table relationship with the **Edit Relationships** dialog box. This enables you to change the key fields used in the connection and edit referential integrity settings. To do this, use the following steps:

1. Select the **Relationship Tools Design** tab on the ribbon.

2. In the **Tools** group, select **Edit Relationships**. The following screenshot depicts the **Tools** group with **Edit Relationships** highlighted:
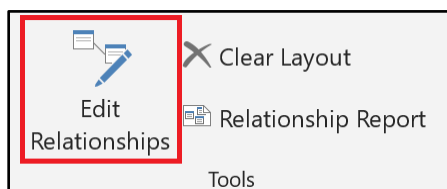
*Figure 23: The **Tools** group with **Edit Relationships** highlighted*

3. In the **Edit Relationships** dialog box, use the **Table/Query** and **Related Table/Query** drop-down lists to select the two related tables.

4. The **Edit Relationships** dialog box will update to display the keys used in the relationship and the referential integrity settings. The following screenshot depicts the **Edit Relationships** dialog box with **Table/Query** and **Related Table/Query** highlighted:
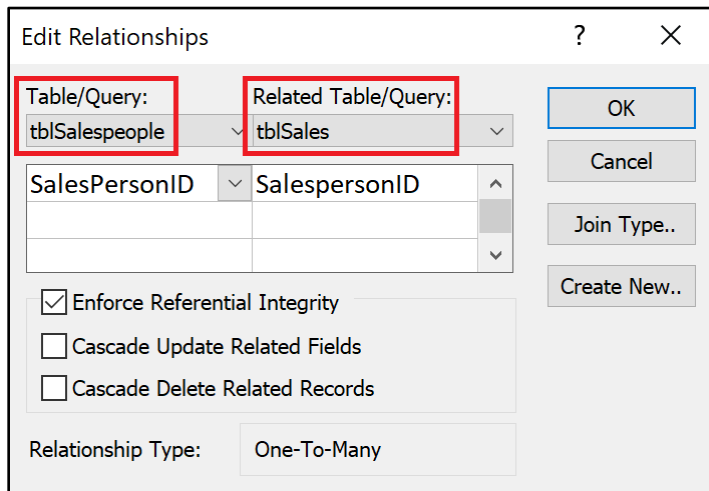
Figure 24: The **Edit Relationships** *dialog box*

5. Edit the settings you want to change and then select **OK**.

Additional information

For more information on deleting relationships, go to: Delete a table relationship

Additional information

For more information on modifying a relationship, go to: Edit a relationship

Activity: Discuss and learn

In this activity, you'll participate in a group discussion about deleting and modifying relationships.

Resources required

You'll need the following resources for this activity:

- Open **L2_T3_act_farm_boxes_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Activity instructions

Participate in the activity by following these instructions:

1. Think about the questions posed by the teacher.

2. Join in the discussion.

3. Study the document the teacher is presenting and follow along as they demonstrate deleting and editing relationships.

4. Ask the teacher any clarifying questions you might have.

Try-it: Delete and modify relationships

In this leveled try-it you'll fix a flawed table relationship and delete a relationship that you don't need.

Try-it 1

In this try-it, you'll edit the relationship between the members table and the orders table so that it uses the correct foreign key field. You will also enforce referential integrity.

Resources

You'll need the following resources for this try-it:

- Open **L2_T3_try1_Munsons_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. Study the relationships in the database.

2. The relationship between the members table and the orders table is not configured correctly. Fix the foreign key fields.

3. Make sure that the relationship enforces referential integrity.

Try-it 2

In this try-it, you'll edit the relationship between the members table and the orders table so that it uses the correct foreign key field. You will ensure that the relationship enforces referential integrity. You'll also delete the relationship between the box details table and the box items table.

Resources

You'll need the following resources for this try-it:

- Open **L2_T3_try2_Munsons_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks to perform during this try-it:

1. Study the relationships in the database.

2. The relationship between the farm boxes and the orders is correct. However, you need to delete the relationship between **tblBoxItems** and **tblBoxDetails**.

3. The relationship between the members table and the orders table is not configured correctly. Fix the foreign key fields.

4. Make sure that the relationship enforces referential integrity.

Wrap-up

Use these questions to check what you learned in this lesson:

1. Which of the following prevents orphan records?

   Select the correct option.

   a. Maintaining a composite key

   b. Creating an intermediate table

   c. Enforcing referential integrity

   d. Adding a uniquely indexed key

Microsoft

2. Which command removes a table from the **Relationships** window?

   Select the correct option.

   a. **Delete Table**

   b. **Disable Table**

   c. **Hide Table**

   d. **Remove Table**

3. An intermediate table has a/an _____ key consisting of two fields.

   Fill in the blank space.

4. To create a "many to many" relationship, first create a/an _____ table.

   Fill in the blank space.

Glossary

Composite key	A key that has more than one field.
Foreign key	A primary key from one table that is in use in another table.
Intermediate table	A table that facilitates a "many to many" relationship between two other tables. Also known as a junction table.
"many to many" relationship	A table relationship in which a single record in Table A can be related to one or more records in Table B, and a single record in Table B can also be related to one or more records in Table A.
"one to many" relationship	A table relationship in which a single record in Table A is related to one or more records in Table B.
"one to one" relationship	A table relationship in which one record in Table A is connected to one record in Table B, and in turn that one record in Table B is only connected to that one record in Table A.
Orphan	A record with a foreign key value that does not exist in the primary key field of a related table.
Primary key	A field or set of fields with values that are unique throughout a table.
Table relationship	A feature that allows Access to combine data from two different tables.

Table 2: Glossary terms and definitions

Microsoft

Cornerstone

Overview

In this Cornerstone, you'll help the CSA team at Munson's by managing relationships between the tables in their database. You'll use the **Relationships** window, create a new relationship, delete a relationship, and modify a relationship.

Objectives

The following table outlines the Cornerstone objectives and their corresponding MOS exam objectives.

Use the **Relationships** window	• 1.2.2: Display relationships
Add a foreign key and define a relationship	• 1.2.5: Set foreign keys
Delete a relationship	• 1.2.2: Display relationships
Modify a relationship	• 1.2.4: Enforce referential integrity
Identify a "many to many" relationship	• 1.2.1: Understand relationships

Table 2: Cornerstone objectives

Duration

50 minutes

Instructions

1. Complete the following tasks for each file.

2. When saving your file, add your name to the end of the filename, for example: "Cornerstone_Munsons_Dwayne_Espino.accdb." Follow your teacher's directions for where to save your files.

3. When you're done with the Cornerstone, assess your completion and enter the points you think you earned within the following task lists. You can ask for help from your teacher if needed.

Tasks

You'll work with one file in this Cornerstone. The following are the tasks you need to do within that file:

File 1: Cornerstone_Munsons_starter.accdb

Task: Use the Relationships window (2 points)

1. Marcos Serna, the Farm's General Manager, eventually wants a table for employee information. The team started to create a table for that data, but now it's no longer needed. Access the **Relationships** window and hide the **tblEmployees** table. (1 point) (Exam objective 1.2.2)

2. The CSA team has decided to move forward with offering one promotional discount per order. There's a table ready to go, but it's hidden. Add the **tblPromotions** table to the **Relationships** window. (1 point)

Points scored: _____ / 2

Task: Add a foreign key and define a relationship (4 points)

1. The promotions table needs to connect to the orders table. An order can only have one promotion, but many different orders can use one promotion. Add a foreign key to enable a relationship between **tblPromotions** and **tblOrders**. (1 point) (Exam objective 1.2.5)

2. Create the relationship between **tblPromotions** and **tblOrders**, taking care to prevent orphan records. (3 points) (Exam objective 1.2.5)

Points scored: _____ / 4

Task: Delete a relationship (2 points)

1. The CSA team is not able to maintain data related to events at the farm but they might wish to add this feature later. Remove the relationship between **tblEvents** and **tblMembers**. (1 point)

2. Hide **tblEvents**. (1 point) (Exam objective 1.2.2)

Points scored: _____ / 2

Task: Modify a relationship (3 points)

- A colleague that was making some changes to the database has changed the configuration of one of the relationships. The relationship between **tblMembers** and **tblOrders** is not configured correctly. Modify it to be a "one to many" relationship based on common fields with referential integrity. (3 points) (Exam objective 1.2.4)

Points scored: _____ / 3

Task: Identify a "many to many" relationship (1 point)

- Use the **Relationships** window to find the "many to many" relationship in the database. Change the name of the intermediate or junction table by appending **Int** to the end of the name. For example, if the table had the name **tblSales**, change the name to **tblSalesInt**. (1 point) (Exam objective 1.2.1)

Points scored: _____ / 1

FILE 1 TOTAL POINTS: _____ /12
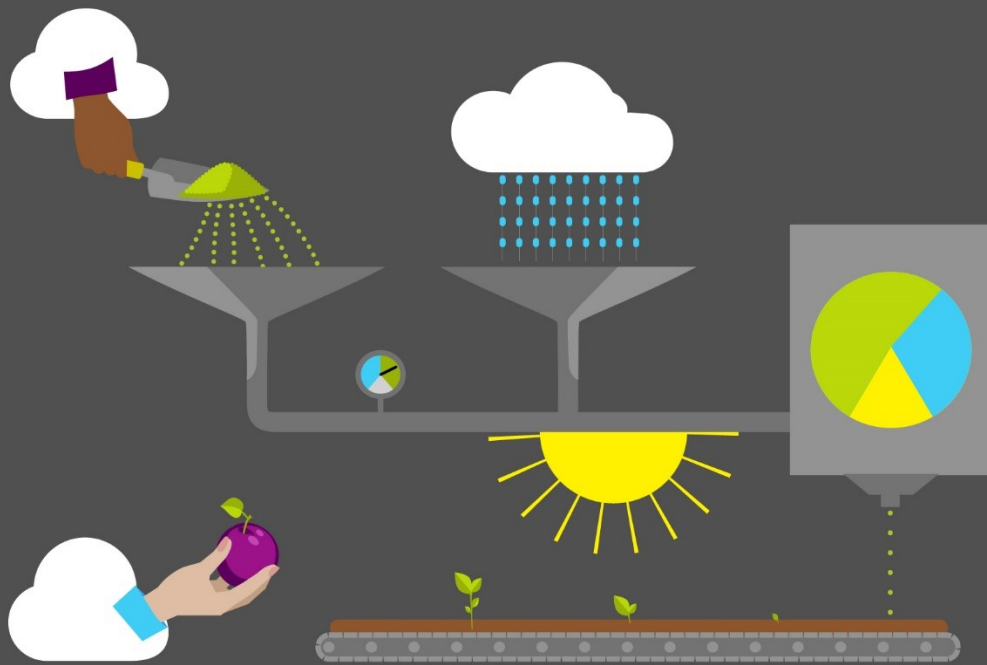
Student Guide

40572A
Microsoft Access expert 2019

Module 7: Asking deeper questions of data

Contents

Microsoft

Module overview

Description

Now that you've learned about database design, creating tables, queries, and data relationships, you can use those skills to ask deeper questions of data by using advanced queries. This module consists of two lessons that help you learn how to use some of the advanced queries in Microsoft Access 2019. By the end of this module, you'll be able to create a multiple-table query by using the **Query Wizard**, modify a multiple-table query, and create parameter queries, crosstab queries, append queries, and delete queries.

The following table outlines the lessons in this module and their corresponding Microsoft Office Specialist (MOS) exam objectives.

Lesson	Learning objective	MOS exam objective(s)
Creating and modifying advanced queries	Create a multiple-table query with **Query Wizard**, modify a multiple-table query, and create a parameter query.	• 3.1.3 • 3.1.5
Creating special queries	Create a crosstab query, an append query, and a delete query.	• 3.1.2 • 3.1.4
Cornerstone: Create multiple-table queries	Create a multiple-table query with **Query Wizard**, and then modify an existing database to create a parameter query, a crosstab query, an append query, and a delete query.	• 3.1.2 • 3.1.3 • 3.1.4 • 3.1.5

Table 1: Objectives by lesson

Microsoft

Scenario

Munson's Pickles and Preserves Farm is having a very busy summer, and senior management is pleased with the Community Supported Agriculture (CSA) program team and the team's transformative work with databases. Munson's has asked your manager for assistance with data analysis, and you've been asked to help. The company intends to use the information from its existing database to improve their strategies for produce planning, produce management, and data management.

You think that some of the advanced query features such as multiple-table queries, parameter queries, and crosstab queries can help display information more easily. This will help answer questions such as:

- Which produce items do large families order most frequently?
- How many orders are placed each day?

Munson's has also asked you to help with the regular cleanup of frequently accessed data. You plan to do this more efficiently by using action queries such as append and delete, instead of manually changing or deleting data on a regular basis.

Cornerstone

This module concludes with a Cornerstone project, in which you'll create advanced and special queries to help Munson's with data-analysis tasks that ask deeper questions of their CSA program database. During the Cornerstone, you'll:

- Create and modify a multiple-table query.
- Create a parameter query and specify parameter data types.
- Create a crosstab query.
- Create an append query.
- Create a delete query.

Lesson 1: Creating and modifying advanced queries

Overview

In this lesson, you'll learn how to create a multiple-table query with the **Query Wizard**, create a parameter query, and modify an advanced query. You'll participate in discussions and step-by-step demonstrations, and have opportunities to put into practice what you learn along the way.

Warm-up

Use these questions to find out what you already know about this lesson's topics:

1. Which of the following statements are correct?

   Select all that apply.

   a. Queries are essential for storing data.

   b. Queries can automatically apply changes.

   c. Queries automatically combine related tables.

   d. Queries summarize table data.

2. A _____ is a major query type that you can use to retrieve data from a table or make calculations.

   Fill in the blank space.

3. How do queries help you define how to create and review your database information options?

   Select all that apply.

   a. By storing parameters

   b. By storing images

   c. By saving the data

   d. By storing settings

4. Before you create a multiple-table query, the tables must have a defined
   _____ in the **Relationships** window.

   Fill in the blank space.

5. What are the basic steps to create a select query?

   Indicate the correct sequence by adding numbers 1-4 next to the following items.

   a. Choose your source of data. - _____

   b. Run the query. - _____

   c. Specify the fields to include. - _____

   d. Optionally specify criteria. - _____

Topic 1: Create and modify a multiple-table query with the Query Wizard

Think about some of the data-related questions to help Munson's plan for another successful year. Perhaps the team is analyzing information about members, produce, and orders. You might have cases in which basic member information such as names, addresses, and phone numbers appear in your query results. You realize that it would be more useful to also include other optional details that the members have shared with Munson's. This includes information such as the total number of people in members' families, but this detail is in a different table. Wouldn't it be helpful if you could combine this information from different tables and retrieve it easily when the team needs it?

Create a multiple-table query to combine information from multiple table sources

In Access, you can analyze data by building a query that combines information from multiple sources. A table usually only displays data that it stores, but a multiple-table query lets you pick and choose fields from various sources, and then specify how to combine that information. For example, if you want your query results to include basic member information from a primary table and more detailed member information such as order ID from a related secondary table, you must include both tables in your query.

Microsoft

You also must ensure that you define a relationship for both tables by using the **Relationships** window, as the following screenshot depicts:
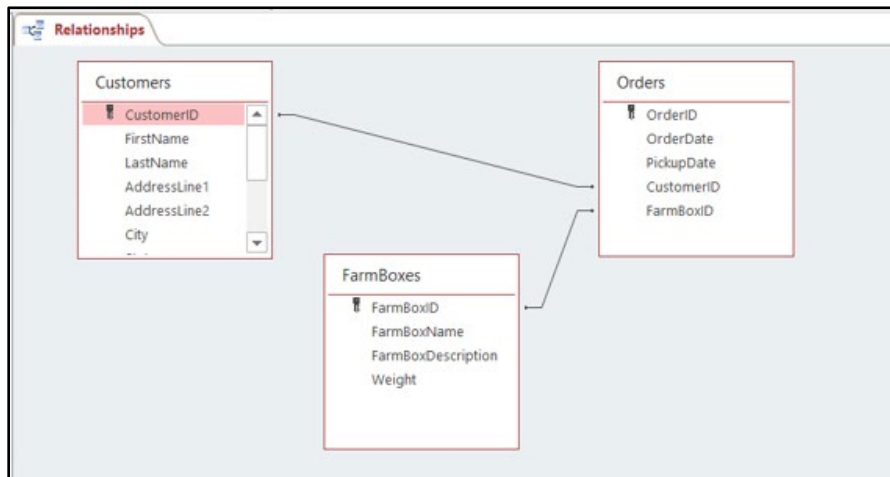
*Figure 1: Multiple-table relationships view in the **Relationships** window*
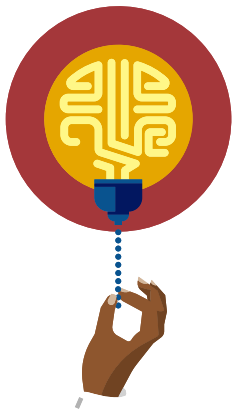
Did you know?

If you don't have defined table relationships before creating a multiple-table query, you can create one in the **Relationships** window. To open the **Relationships** window, go to the **Database Tools** tab, and then select **Relationships**.

Additional information

For more information on creating relationships between tables, refer to: Guide to table relationships

Use the Query Wizard to build a multiple-table query

You can save time by using the **Query Wizard** to create multiple-table queries in Access. Before using the **Query Wizard** to build an advanced query, you must pick the data source to use from a primary table, and also identify the data source from a related table in the same database. If edits are required for defined table relationships, be sure

to make them before you create your query. To build a multiple-table query by using the **Query Wizard**:

1. Open an existing Access database with existing table relationships.

2. From the **Create** tab, in the **Queries** group, select **Query Wizard**. The following screenshot depicts the **Queries** group:
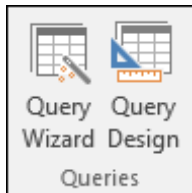
*Figure 2: **Queries** group*

3. In the **New Query** dialog box, select **Simple Query Wizard**, and then select **OK**.

4. In the **Simple Query Wizard** dialog box, you can select the fields from the primary table that you want in your query. In the **Available Fields** list, select the fields that you want to include, and then select the single right arrow (**>**) to move that field to the **Selected Fields** list, moving one field at a time. You can also select the double arrows (**>>**) to move all fields at once. The following screenshot depicts the **Available Fields** and **Selected Fields** lists in the **Simple Query Wizard** dialog box:
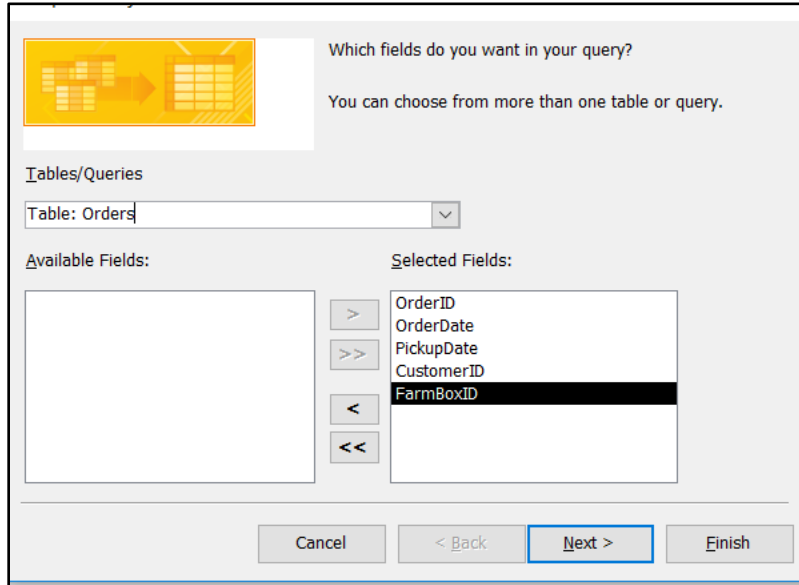
*Figure 3: **Simple Query Wizard** dialog box*

5. Repeat steps 2 to 4 for your second related table, by selecting the table in the **Tables/Queries** drop-down list. Use the same procedure to select the fields that you want in your query from your secondary table, as depicted in the following

screenshot. To avoid duplicate data columns, you must only select the fields that aren't already in the primary table.
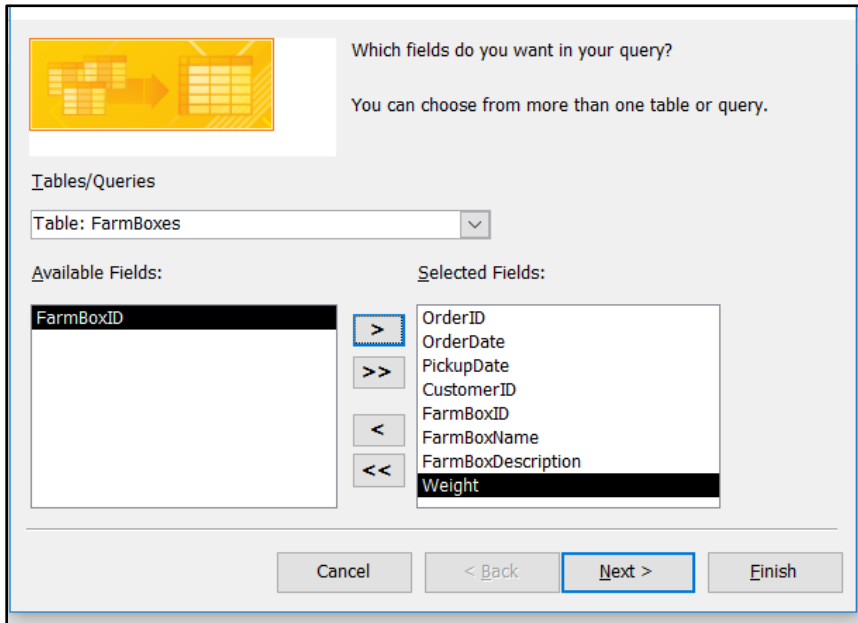
Figure 4: Secondary related table

6. Select **Next**, and then select **Detail** to review your query records.

7. Select **Next**, and then name the query.

8. Select **Modify the query design** to review data in query design mode.

9. Select **Finish**.

10. The multiple-table query now contains a combination of your selected fields from related multiple tables, as depicted in the following screenshot:

Figure 5: A multiple-table query

11. Save the query and the database.

Did you know?

You can also create multiple-table queries in **Design** view by going to the **Create** tab, and then selecting **Query Design** in the **Queries** group.

Additional information

For more information on creating a multiple-table query in **Design** view, refer to: Create a query based on multiple tables

Modify a multiple-table query

To modify a multiple-table query:

1. Open the multiple-table query in query design mode.

2. On the **Home** tab, in the **Views** group, select **View**, and then select **Design View**.

3. In **Design View**, to add a field to the query design grid, select from the following two options to add field names to the query window:

   o Select and drag a field.
   o Double-click a field name, or select it, and then select Enter. The following screenshot depicts fields in the query design grid.
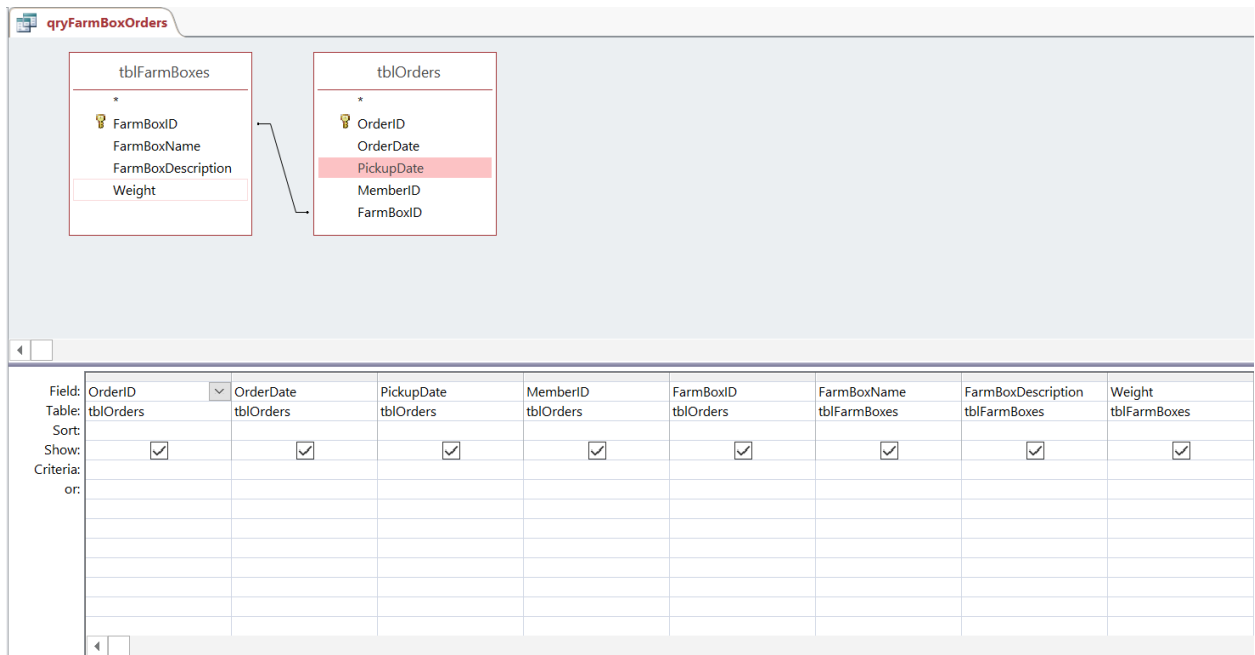
Figure 6: Add a field to a multiple-table query

4. To remove a field from the query, clear the **Show** check box in the query window.

5. From the **Home** tab, in the **Views** group, select from the following two options to review your modified query:

   a. Select **View**, and then select **Datasheet View**.

   b. From the **Design** tab, in the **Results** group, select **Run**.

6. Save your query, and then save the database.
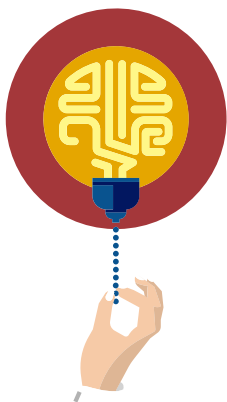
Did you know?

You can also connect data from two tables by using their relationships with a third table.

Additional information

For more information on building a query based on data sources from many tables, refer to: [Create a query based on multiple tables](#)

Caution

This course uses database files that follow a general storyline for the CSA program at Munson's Pickles and Preserves Farm. These database files are the Learning Activity Resource files that you'll use to work on each module's activities and try-its. Each Learning Activity Resource file contains the data and objects, such as tables, queries, forms, and reports, that you need to complete a corresponding activity.

Due to this course's modular nature, the objects and data in these files might vary across activities or try-its. Therefore, it's important that you start your activities or try-its only with the designated files, as per applicable instructions. You also should note that screenshots in the topic content are for illustration purposes only and might appear different than those that are in the Learning Activity Resource files.

Activity: Discuss and learn

In this activity, you'll follow the teacher-led group discussion on real-world scenarios for creating and modifying a multiple-table query. After the discussion, the teacher will demonstrate how to create and modify an existing multiple-table query with the **Query Wizard**.

Resources required

None.

Activity instructions

Participate in the activity by following these instructions:

1. Observe the teacher demonstrating how to use **Query Wizard** to create a multiple-table query.

2. Ask the teacher clarifying questions.

3. Participate in the discussion.

Microsoft

Try-it: Create and modify a multiple-table query with the Query Wizard

In this leveled try-it activity, you'll create and modify a multiple-table query.

Try-it 1

In this try-it, you'll create a multiple-table query by using the **Query Wizard**.

Resources

You'll need the following resources for this try-it:

- Open **L1_T1_try1_background_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you perform during this try-it:

1. Run the **Query Wizard**, and select the primary and secondary related tables and their corresponding fields that you want to include in your multiple-table query.

2. Give your new query a title.

3. Select **Modify** to review data in query design mode.

4. Select **Finish**.

5. Save your query, then save your database.

Try-it 2

In this try-it, you'll modify an existing multiple-table query.

Resources

You'll need the following resources for this try-it:

- Open the saved multiple-table query from the previous try-it, or open **L1_T1_try2_background_starter.accdb** in this lesson's **Learning Activity Resources** folder and create a multiple-table query before continuing with this try-it.

Instructions

The following are the general tasks that you perform during this try-it:

1. In **Design** view, modify the query by adding a field to it.

2. Modify the query by removing a field from the query.

3. View your changes in **Datasheet** view.

4. Save your query.

5. Save your database.

Topic 2: Create a parameter query

Suppose your coworkers at Munson's want to further analyze the data. They want answers to questions such as: Which farm boxes do customers most frequently order by using specific information such as a produce order date? You think that it's helpful for users to quickly review data based on any order dates, and that an advanced query can help with this task. You also want to use query criteria to focus on specific order dates in the database. To accomplish this data-analysis task in Access, you can build a parameter query that asks for specific criteria, such as order dates.

Create a parameter query

Parameter queries are especially useful for instances in which you need to ask for input, such as a produce order date, when you're running a query in Access. The parameter is the piece of information that you supply to a query as you're running it. Creating a parameter in a parameter query is like adding a normal criterion to various other query types, such as select query, crosstab query, and append query. You'll learn about these query types in this module.

You can run parameter queries to find data that satisfy a particular condition based on the criteria or filters that you set. Parameter queries only select and return specific data. You can save parameter queries the same way that you save select, crosstab, or append queries. When you save a parameter query, you can use it multiple times, without having to constantly open it in **Design** view to edit its criteria.

To create a parameter query:

1. Open a multiple-table query in **Design** view from a previous activity in this module.

2. Select a cell on the **Criteria** row of the field that you want to apply a parameter to.

3. Enter the criteria or filter that you want the parameter query to satisfy. Consider the following example:

   a. To find data on all farm-box produce orders based on a produce order date, enter **[Order date?]** in the **Criteria** row of the **Orders** table column for the **OrderDate** field, as the following screenshot depicts:
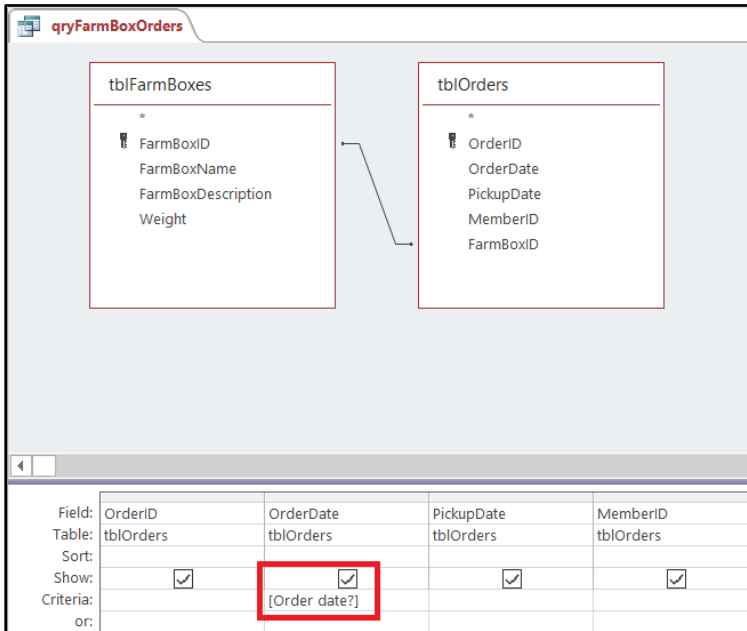
*Figure 7: Parameter **Criteria** row in a parameter query*

   Note: The text that you want to display in the **Parameter** dialog box are the words enclosed in square brackets.

   b. The dialog box appears without the square brackets when you run the parameter query, as depicted in the following screenshot:
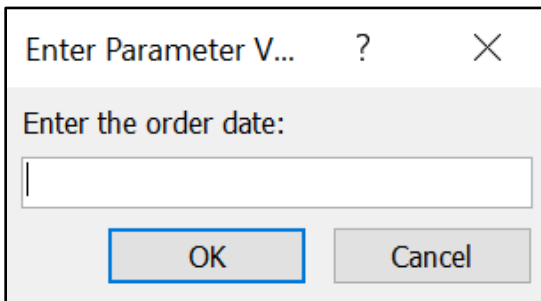
Figure 8: Example dialog box when a parameter query is run

4. From the **Design** tab, in the **Results** group, select **Run** to run the parameter query and review the results. The following screenshot depicts this:

OrderID	OrderDate	PickupDate	MemberID	FarmBoxID	FarmBoxNan	FarmBoxDes	Weight
1	12/23/2019	12/24/2019	2	3	Large	6 fruits, 6 veget	10
2	12/23/2019	12/24/2019	3	1	Small	3 fruits, 2 veget	3
3	12/23/2019	12/24/2019	1	4	Individual	3 fruits, 2 veget	2
4	12/23/2019	12/24/2019	4	1	Small	3 fruits, 2 veget	3

*Figure 9: Example results when a parameter query is run in **Datasheet** view*

Caution

Be sure to save this parameter query if you plan to use it multiple times. By saving it, you can avoid having to constantly open it in **Design** view to edit its criteria.

5. To set a parameter query data type:

a. Open the saved query in **Design** view.

b. With the query open in **Design** view, on the **Design** tab, in the **Show/Hide** group, select **Parameters**, as the following screenshot depicts:
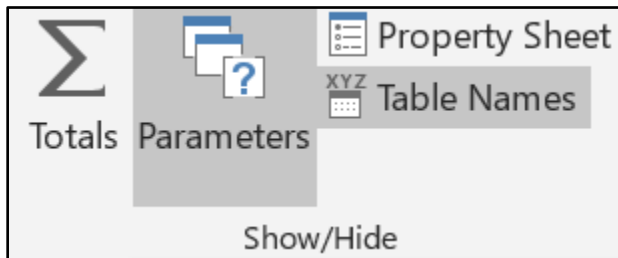
*Figure 10: **Parameters** option in **Show/Hide** group*

6. In the **Query Parameters** box, in the **Parameter** column, enter the prompt for each parameter that you want to specify a data type for.

7. In the **Data Type** column, make sure that each parameter matches the prompt that you used in the **Criteria** row of the query design grid. For example, enter **[Order Date?]** in the **Parameter** column. In the **Data Type** column, select **Date With Time** in the drop-down list, and then select **OK**, as the following screenshot depicts:

*Figure 11: **Query Parameters** box*

8. Save your query, and then save the database.

Did you know?

You can specify the type of data that a parameter should accept. This approach helps ensure that users can receive a more helpful message if they enter the wrong type of data, such as text in place of numbers. To specify data type for a parameter, in the **Criteria** row, in the **Data Type** column, select **type** for that parameter.

Sometimes you need to use a query as a starting point for another query rather than creating a query from scratch. You can copy an existing query by selecting the query from the **Navigation Pane**, and then using the shortcut keys Ctrl+C and Ctrl+V. Alternatively, select the query from the **Navigation Pane**, go to the **Home** tab, select **Copy** from the **Clipboard** group, and then select **Paste**.

Additional information

To learn more about how to use parameters to ask for input when running a query, refer to: <u>Use parameters to ask for input when running a query</u>.

To learn more about how to copy a query, refer to: <u>Copy a query in a database</u>

Activity: Think-pair-share

In this activity, you'll follow along as the teacher leads a discussion about why and how to set parameter criteria.

Resources required

None

Activity instructions

Think about the new tools that you've learned to use in previous lessons to create advanced queries to enhance information summaries. Participate in the activity by following these instructions:

1. Partner with a classmate.

2. With your partner, collaborate by thinking of at least two parameter criteria that can be useful in planning for produce inventories.

3. Participate in the discussion. Remember that there is usually more than one way to do something. Share and discuss your ideas.

Try-it: Create a parameter query

In this leveled try-it activity, you'll create a parameter query.

Try-it 1

In this try-it, you'll set a parameter criterion to create a parameter query.

Resources

You'll need the following resources for this try-it:

- Open the saved multiple-table query from a previous try-it in this module, or open **L1_T2_try1_background_starter.accdb** in this lesson's **Learning Activity Resources** folder and create a multiple-table query before continuing with this try-it. Alternatively, copy the previously saved multiple-table query from a previous try-it.

Instructions

The following are the general tasks that you perform during this try-it:

1. Open a multiple-table query in **Design** view.

2. Add a parameter criterion to a field. For example, add a criterion for the produce pickup date field using a criteria.

3. Run the query to review results.

4. Save the query, and then save the database.

Try-it 2

In this try-it, you'll modify a data type in a parameter query.

Resources

You'll need the following resources for this try-it:

- Open the previously saved multiple-table query from the previous try-it in this lesson, or open **L1_T2_try2_background_starter.accdb** in this lesson's **Learning Activity Resources** folder and practice creating a multiple-table query using Try-it 1 steps before continuing with this try-it.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open a multiple-table query in **Design** view.

2. In the query **Parameters** box, in the **Parameter** column, enter the criterion that you set for produce pickup order date field that you created.

3. In the **Data Type** column, select a data type for your parameter. Make sure that the parameter matches the prompt that you used in the **Criteria** row of the query design grid.

4. Select **OK**.

5. Save the query, and then save the database.

Wrap-up

Use these questions to check what you learned in this lesson:

1. Which of the following can you specify for a parameter to accept?

   Select the correct option.

   a. Square brackets

   b. Data type

   c. Criteria row

   d. Display text

2. In the _____ drop-down list, you can select the table that contains the related data that you want to use to enhance your query results.

   Fill in the blank space.

3. Where can you enter the text you want to display in a parameter box?

   Select the correct option.

   a. Field row

   b. Sort row

   c. Criteria row

   d. Show row

4. You can also connect data from two _____ by using their relationships with a third table.

   Fill in the blank space.

5. What are the basic steps to build a multiple-table query by using the **Query Wizard**?

   Indicate the correct sequence by adding numbers 1-4 next to the following items.

   a. Select the fields you want in your query. - _____

   b. Run the query. - _____

   c. Select **Simple Query Wizard**. - _____

   d. Add the query title. - _____

Microsoft

Lesson 2: Creating special queries

Overview

In this lesson, you'll learn to create special queries. Special queries such as crosstab, append, and delete queries help you review information in various ways. You'll participate in discussions, follow step-by-step demonstrations, and explore where to find additional options and tools.

Warm-up

Use these questions to find out what you already know about this lesson's topics:

1. Which of the following are major query types?

   Select all that apply.

   a. Select

   b. Totals

   c. Action

   d. Calculations

2. Which of the following are action queries?

   Select all that apply.

   a. Append

   b. Parameter

   c. Delete

   d. Totals

3. A _____ query helps you save time by summarizing data that is frequently displayed by using two sets of grouped values set in **Row Heading** and **Column Heading**.

   Fill in the blank space.

4. Which of the following can you calculate by using a crosstab query?

   Select all that apply.

   a. Sum

   b. Average

   c. Aggregate functions

   d. Count null values

5. The **Crosstab Query Wizard** is usually the fastest and easiest way to create a _____ query, but there are a few options that the wizard does not offer.

   Fill in the blank space.

Topic 1: Create a crosstab query

As part of Munson's data analysis, your manager has asked for your help to create a summary report of member orders by month. Munson's will use the report for produce inventory planning, and also to review any trends in member orders by date. You've learned about advanced queries in Access and think that you can use a crosstab query to save time by summarizing data using a set of values. A *crosstab query* groups query results by using two crosstab values—one vertically located in the first column of the datasheet and the other horizontally located across the first row of the datasheet, as depicted in the following screenshot:

OrderID	2/1/2019	4/1/2019	6/1/2019	12/1/2019	12/23/2019
1					1
2					1
3					1
4					1
5					
6					
7					
8					
9					
10					
11				1	
12				1	
13				1	
14	1				
15		1			
16			1		

Figure 12: Crosstab horizontal and vertical values

Microsoft

To create a crosstab query:

1. On the **Home** tab, in the **Views** group, select **Design View**.

2. On the **Design** tab, in the **Query Type** group, select **Crosstab**.

3. In the **Query Design** window, identify the field names for your crosstab criteria. Consider the following example:

   a. If you want a crosstab query to review possible trends in member order dates, set **OrderID** as your **Row Heading**, set **OrderDate** as your **Column Heading**, and then set **FarmBoxName** as your value heading.

   b. To set these criteria, on the **Crosstab** row, select the cell that is after the **Group By** cell, and then set the **Row Heading**, **Column Heading**, and **Value** source, as depicted in the following screenshot:

Field:	OrderID	OrderDate	PickupDate	MemberID	FarmBoxName	FarmBoxDescription	Weight	FarmBoxID
Table:	tblOrders	tblOrders	tblOrders	tblOrders	tblFarmBoxes	tblFarmBoxes	tblFarmBoxes	tblOrders
Total:	Group By	Group By	Group By	Group By	Group By	Group By	Group By	Count
Crosstab:	Row Heading	Column Heading						Value
Sort:								
Criteria:								
or:								

*Figure 13: **Total** row, **Group By** with **Row**, **Column**, and **Value** set for crosstab criteria*

   c. For your designated field with a **Value** source, be sure to set the **Total** row to **Count** to display a total count of all orders by date in the query, and then select **Run**.

4. Save the query, and then save the database.

Additional information

Keep crosstab queries simple by using only the row headings that you need. For more information, refer to: Make summary data easier to read by using a crosstab query

Activity: Show and tell

In this activity, you'll follow along as your teacher demonstrates how to create a crosstab query in **Design** view.

Resources required

None

Activity instructions

Participate in the activity by following these instructions:

1. Observe the teacher demonstrating an example of the following key areas of a crosstab query:

    o Horizontal row heading

    o Vertical column heading

    o Summary value

2. Ask the teacher clarifying questions.

3. Participate in the discussion. Remember that there is usually more than one way to do something. If you think of a different way to do a task, share and explore your ideas with the class!

Try-it: Create a crosstab query

In this standalone try-it activity, you'll create a crosstab query in **Design** view. Suppose you need to help summarize Munson's monthly information with a produce data report. Using a crosstab query, you'll calculate the sum of orders by month by using the aggregate criterion.

Resources

You'll need the following resources for this try-it:

- Open a saved multiple-table query from a previous try-it in this module, or open **L2_T1_try_background_starter.accdb** in this lesson's **Learning Activity Resources** folder and create a multiple-table query before starting the next try-it.

Instructions

The following are the general tasks that you perform during this try-it:

1. Open a multiple-table query in **Design** view.

2. On the **Design** tab, in the **Query Type** group, select **Crosstab**.

3. In the query design window, select designated fields, and then set your **Row Heading**, **Column Heading**, and **Value** sources.

4. For **Value** source, select an appropriate aggregate criterion such as **Count**.

5. Select **Run**.

6. Save the query, and then save the database.

Microsoft

Topic 2: Create an append query

Munson's has also asked for your help with the regular cleanup of frequently accessed data. The CSA program team has acquired a database that contains a table of potential new members, and they want to copy it to the existing members table. You're excited, because based on what you've learned about Access so far, you've discovered the versatility of Access queries, and you think that an action query can accomplish this task.

To avoid entering the new data manually, you consider using an append query. An append query selects records from one or more data sources and copies or appends the selected records to an existing table. Also, because the CSA team regularly acquires a table of potential new members' orders from various events during the year, an append query can save the team time, because they won't have to manually append data on a regular basis.

To create an append query:

1. Save a backup of the affected tables.

> **Caution**
>
> Before you run action queries, you must create backup copies of the affected tables. An append query is permanent, and after you run it, you cannot use the **Undo** command to reverse the changes.

2. Create a select query to select the records to copy, and then open in **Design** view. Review your data before you copy it, by considering the following:

   a. Review the data in **Datasheet** view and make sure that the query is selecting the data that you want to copy.

   b. Consider criteria to refine the query selection and filter the data needed. For example, you might want to append member records from a certain city.

   c. At this stage, consider adjusting your select query as needed, and run it as many times as you want to make sure that you're selecting the data that you want to copy.

3. Next, convert the select query to an append query. From the **Design** tab, in the **Query Type** group, select **Append**, as depicted in the following screenshot:
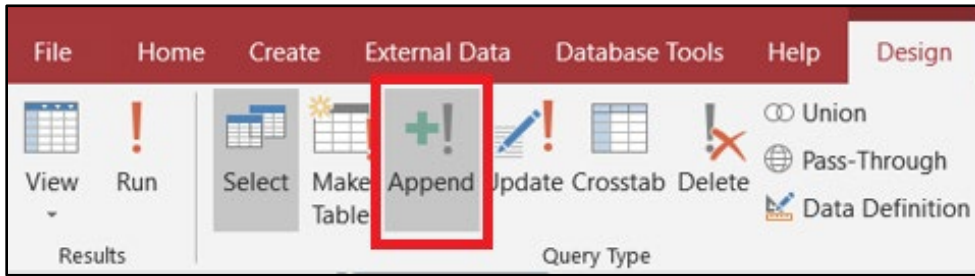
*Figure 14: **Append** option from the **Query Type** group*

4. Choose the destination fields in the **Append** dialog box that the following screenshot depicts:
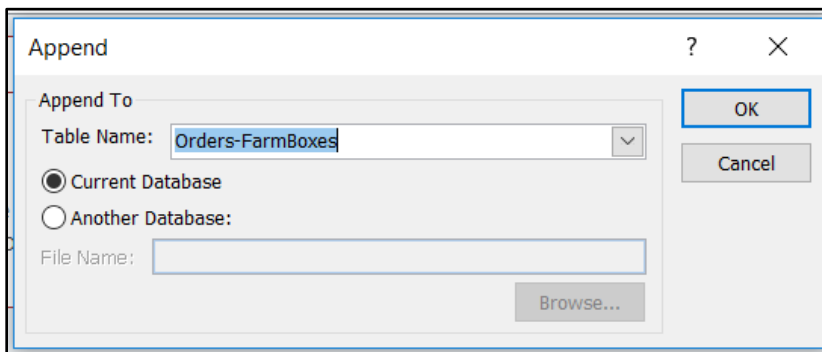
*Figure 15: **Append** dialog box*

5. Choose a table to append the data to.

6. Review the data types of the fields in the source table and make sure that they're compatible with the data types of the fields in the destination table. Also, if you leave the destination field blank, the query won't append data to that field. The following screenshot depicts the append field designation:

*Figure 16: **Append** field designation*

7. Select **OK**.

8. Preview, and then run the append query by selecting **Run** to append records, and when prompted to append, select **Yes**. You cannot undo this process, as the following screenshot depicts:
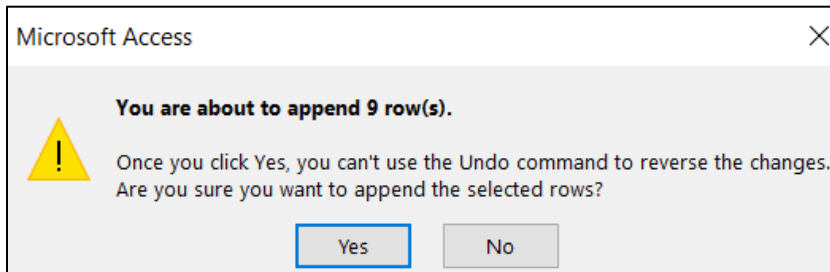
Figure 17: Append query prompt

9. Save the query, and then save the database.
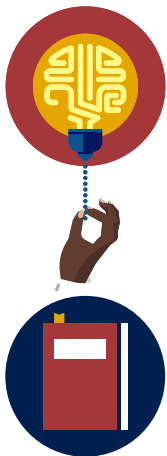
Did you know?

It's a best practice to protect your data when you can't use the **Undo** command to fix a mistake or in case of a system failure. For more information, refer to: Protect your data with backup and restore processes

Additional information

For more information on append queries, refer to: Add records to a table by using an append query

Activity: Show me how

In this activity, follow along as your teacher demonstrates how to add new records to an existing table by copying data from another existing Access database.

Resources required

None

Activity instructions

Participate in the activity by following these instructions:

1. Observe the teacher demonstrating an append query feature.

2. Ask the teacher clarifying questions.

3. Participate in the discussion. Remember that there is usually more than one way to do something. If you think of a different way to do a task, share and explore your ideas with your teacher and class!

Try-it: Create an append query

In this standalone try-it activity, you'll create an append query.

Resources

You'll need the following resources for this try-it:

- Open **L2_T2_try_background_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you perform during this try-it:

1. First, back up the affected tables.

2. Open a query.

3. Select a table to append records to.

4. Run the append query to append the records.

5. Save the query, and then save the database.

Topic 3: Create a delete query

During the CSA team's data analysis, they noticed that the database contains records of orders for inventory that Munson's no longer sells. Your manager has asked for your assistance to clean up this data. In this module, you were introduced to action queries, such as append queries. Another type of action query is a *delete query*, which you think is especially useful for this task, because the team wants to be able to quickly remove records from a table. The inventory will change regularly, and automating this task can save the team time by enabling them to reuse a saved delete query.

Microsoft

You can also set a criterion to specify which rows should be deleted. For example, imagine the data cleanup task is to delete Kolomikta—a type of kiwi fruit with high vitamin C content— from the orders database, because Munson's will be offering another type. You'll use the **Like** operator to set your criteria, **Like "Kolomikta"**, as depicted in the following screenshot:

*Figure 18: Delete query **Criteria** row*

Like an append query, a delete query can't be undone. You should create a reminder to help ensure that the database is backed up before running the query.

To create a delete query:

1. Save a backup of the affected tables.

2. On the **Design** tab, select **Delete** in the **Query Type** group.

3. In the **Criteria** row, enter your criteria in the query edit field for the data to be deleted. Ensure that the criteria you set are appropriate for the data type. For example, to only append delete records from a certain city, set the **Criteria** row for the **City** field by using a parameter criterion.

4. On the **Home** tab, in the **Views** group, select **View**, and examine the query before running it. This step helps you to review and make changes as needed. You can't use the **Undo** command to undo this process and reverse the changes. Deletion is permanent and can't be reversed. On the **Design** tab, in the **Results** group, select **Run**.

5. After you're certain that you can delete the data, select **Yes** to run the delete query, as depicted in the following screenshot:
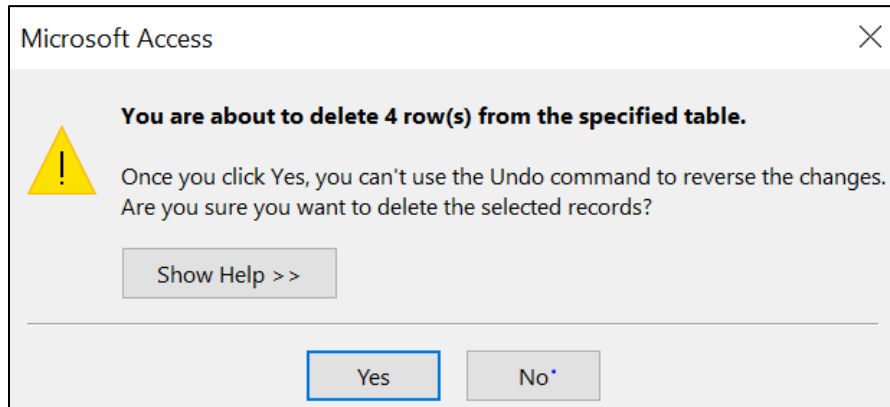
Figure 19: Delete query prompt

6. Save the query, and then save the database.
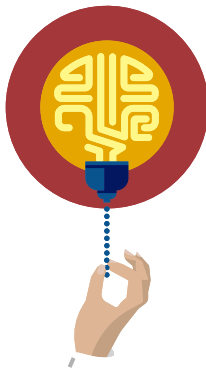
Did you know?

To create and run a delete query, you must have the necessary permissions to delete records from the database. For the lessons in this module, you can open files with the necessary permissions. In the Munson's scenario, for instance, you would have to contact your system administrator or the database designer to make sure that you have the necessary permissions. To do so, in **File Explorer**, select or activate the context menu for the database file, select **Properties**, and make sure that the read-only attribute isn't selected.

Additional information

For more information, refer to [Create and run a delete query](#).

Activity: Pose a challenge

In this activity, you'll follow along as your teacher demonstrates how to create and run a delete query.

Resources required

None

Activity instructions

Participate in the activity by following these instructions:

1. Observe the teacher demonstrating how to delete a query.

2. Ask the teacher clarifying questions.

3. Participate in the discussion. Remember that there is usually more than one way to do something. If you think of a different way to do a task, share and explore your ideas with your teacher and classmates.

Try-it: Create a delete query

In this standalone try-it, you'll practice creating and running a delete query.

Resources

You'll need the following resources for this try-it:

- Open **L2_T3_try_background_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you perform during this try-it:

1. Back up your database.

2. On the **Design** tab, select **Delete** in the **Query Type** group.

3. Set criteria for the data that you need to delete. Ensure that the criteria are specific to the data specifications within the table. For example, to only append delete records from a certain city, set the **Criteria** row for the **City** field by using a parameter criterion.

4. On the **Design** tab, in the **Results** group, select **Run**.

5. Select **View** to review the results before running the delete query.

6. If you're satisfied with the results, select **View** to go back to **Query Editing**.

7. Select **Run** to run the delete query.

8. Save the query, and then save the database.

Microsoft

Wrap-up

Use these questions to check what you learned in this lesson:

1. When you're modifying a multiple-table query, you can:

   Select all that apply.

   a. Rename the query

   b. Hide fields

   c. Add fields

   d. Remove fields

2. When you're creating an append query, you must specify a _____ in which to append the records.

   Fill in the blank space.

3. When you're creating an append query, which of the following is considered the best option in case the **Undo** command isn't enough to fix a mistake?

   Select the correct option.

   a. Restart the database.

   b. Back up your data.

   c. Restore the process.

   d. First preview the query and then run the query.

4. A _____ query is useful when you want to quickly remove a large amount of data on a frequent basis in Access.

   Fill in the blank space.

5. What are the basic steps for creating a delete query?

   Indicate the correct sequence by adding numbers 1-4 next to the following items.

   a. Select database properties to ensure that the read-only attribute isn't selected. - _____

   b. Review the results, and then run the query. - _____

   c. Ensure that criteria are specific to data specifications within the table. - _____

   d. Ensure that you have the necessary delete permissions. - _____

Glossary

Action query	A major query type that you can use to add, change, or delete data. Each task has a special type of action query.
Aggregate function	A function that performs a calculation on a column of data and returns a single value.
Collaborative	Produced or conducted by two or more parties working together.
Criteria	The filters you add to a query to specify which items the query will return when you run it.
Data type	The most important property of a field, because it determines what kind of data the field can store.
Default	A preexisting value that a software application, computer program, or device has assigned to a user-configurable setting.
Parameter	A piece of information that you supply to a query as you run it. You can use a parameter by itself or as part of a larger expression to form a criterion in the query.
Proficiency	A high degree of competence or skill; expertise.
Query criteria	Query criteria help Access zero in on specific items in an Access database. If an item matches all the criteria you enter, it will appear in the query results.
Relationships window	The window in which you define relationships between items stored in multiple Access tables.
Table relationship	A relationship that Access uses to decide how to join tables when you need to use them in a database object.

Table 2: Glossary terms and definitions

Cornerstone

Overview

In this Cornerstone, you'll create multiple-table queries. You'll create and modify a multiple-table query with **Query Wizard** and create a parameter query. You'll also create special queries, such as a crosstab query, an append query, and a delete query.

Objectives

The following table outlines the Cornerstone objectives and their corresponding MOS exam objectives.

Create and modify a multiple-table query with **Query Wizard**	• 3.1.5: Create basic multi-table queries
Create a parameter query	• 3.1.3: Create basic parameter queries
Create a crosstab query	• 3.1.2: Create basic crosstab queries
Create an append query	• 3.1.4: Create basic action queries
Create a delete query	• 3.1.4: Create basic action queries

Table 3: Cornerstone objectives

Duration

50 minutes

Instructions

1. Complete the tasks below for each file.

2. When saving your file, add your name to the end of the filename, for example: **Cornerstone_background_starter_YourName**. Follow your teacher's directions for where to save your files.

3. When you're done with the Cornerstone, assess your completion and enter the points that you think you earned within the task lists below. You ask your teacher for help, if required.

Tasks

In this Cornerstone, you'll work with two files. Save each file separately, and then move on to the next one.

File 1: Cornerstone_background_starter.accdb

Task: Create a multiple-table query (5 points)

1. Create a query using t**blFarmBoxes** as the primary table, and move all available fields from the **Available Fields** list to the **Selected Fields** list.

2. For the related table, use **tblOrders** and move **OrderID**, **OrderDate**, **PickupDate**, and **MemberID** to the **Selected Fields** list.

3. Name the query **qryFarmBoxOrders**. (5 points). (Exam objective 3.1.5)

Points scored: _____ / 5

Task: Modify a multiple-table query (4 points)

1. In the **Design** view, add the **FarmBoxDescription** field to the query design grid.

2. Review the results of the modified query in **Datasheet** view.

3. Save the query and the database. (4 points). (Exam objective 3.1.5)

Points scored: _____ / 4

Microsoft

Task: Create a parameter query (3 points)

1. In **Design** view, add the criteria **[What's the pickup date?]** for the **PickupDate** field.

2. Run the parameter query.

3. Save the query and the database. (3 points) (Exam objective 3.1.3)

Points scored: _____ / 3

Task: Specify a parameter data type (3 points)

1. In the **Query Parameters** dialog box, specify the parameter **[What's the pickup date?]**, and specify the data type **Date With Time**.

2. Run the parameter query.

3. Save the query and the database. (3 points) (Exam objective 3.1.3)

Points scored: _____ / 3

FILE 1 TOTAL POINTS: _____ / 15

File 2: Cornerstone_munsons_starter.accdb

Task: Create a crosstab query (5 points)

1. Change **qryFarmBoxOrders** to a **Crosstab** query.

2. In the query design grid table, set the **Row Heading** source, **Column Heading** source, and **Value** source as **FarmBoxName**, **OrderDate**, and **OrderID** respectively.

3. In the **Total** row, change the **Group By** cell to **Count**.

4. Run and save the query.

5. Create an alternate crosstab query by first copying the **qryFarmBoxesOrders_crosstab** query and then pasting it as **qryFarmBoxOrders_crosstab2**.

6. Add the **OrderDate** field to the query design grid, in the **Total** row, select **Count**, and then in the **Crosstab** row, select **Row Heading**.

7. Run the query and review the results.

8. Save the query and the database. (5 points). (Exam objective 3.1.2)

Points scored: _____ / 5

Task: Create an append query (5 points)

1. Make a copy of **tblMembers**, name it **tblMembers_backup**, and specify the paste option **Structure and Data**.

2. Create a second copy of **tblMembers**, name it **tblMembers_blank**, and specify the paste option **Structure Only**.

3. Create a select query using **tblMembers_backup** table and all the available fields.

4. Review individual records of your query, and name it **tblMembers_backup_query**.

5. Convert the select query to an append query.

6. Append records only from **Mount Vernon**.

7. Append the data to **tblMembers_blank** and use **Current Database**.

8. Save the query. (5 points). (Exam objective 3.1.4)

Points scored: _____ / 5

Task: Create a delete query (3 points)

1. Make a copy of **tblMembers**, name it **tblMembers_backup_del**, and specify the paste option **Structure and Data**.

2. Create a second copy of **tblMembers**, name it **tblMembers_blank_del**, and specify the paste option **Structure Only**.

3. Create a select query using the **tblMembers_backup_del** table and all the available fields.

4. Review individual records of your query, and name it **tblMembers_backup_query_del**.

5. Convert **tblMembers_backup_query_del** to a delete query, and refine the query selection and filter to delete records only from **Mount Vernon**.

6. Run and save the query. (3 points) (Exam objective 3.1.4)

Points scored: _____ / 3

Microsoft

Task: Create a delete query with a specific criterion (2 points)

1. Make a copy of **tblMembers_backup_query_del**, name it **tblMembers_backup_del_query2**, and make it a delete query.

2. Modify the filter you used in the previous task to delete records only from the city of **Edison**.

3. Add a second filter to delete records only from the city of Edison that have members with the last name **Doyon**.

4. Save the query and the database. (2 points). (Exam objective 3.1.4)

Points scored: _____ / 2

FILE 2 TOTAL POINTS: _____ / 15
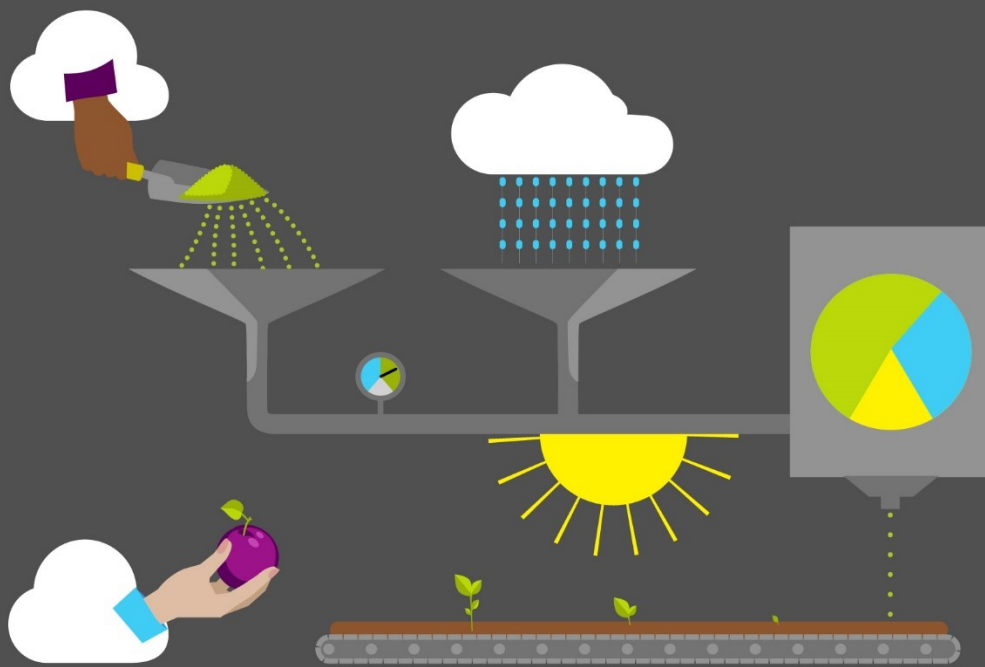
Student Guide

40572A
Microsoft Access expert 2019

Module 8: Enhancing data interaction

Contents

Microsoft

Module overview

Description

A form is an object that you use to enter, edit, find, and work with the data in a Microsoft Access 2019 database. Forms do not store data, but you can use them to make it easier to work with database tables. You can use forms to work with the data in one table or in multiple tables at the same time. You can also use forms to make data easier to understand by using graphics and modifying field placements.

When you get to the end of this module, you'll be able to create forms based on one or several tables. You'll use the Form tool and the **Form Wizard** to create simple forms, split forms, datasheet forms, and forms with subforms. You'll customize forms for ease of use by applying and anchoring form layouts, and adjusting control properties and tab order. You'll also add text and images to form headers and footers.

The following table outlines the lesson objectives and their corresponding Microsoft Office Specialist (MOS) exam objectives.

Lesson	Learning objectives	MOS exam objective(s)
Creating and modifying forms	Create single-table forms, including datasheet forms and split forms; create multiple-table forms that contain a subform; and use form layouts to position controls on a form. Modify forms by adding labels and controls.	4.1.1: Add, move, and remove form controls 4.1.3: Add and modify form labels 4.1.2: Set form control properties 4.2.3: Modify form positioning

Lesson	Learning objectives	MOS exam objective(s)
Customizing forms	Customize and improve the appearance of forms by adding text and images, working with controls, adjusting the tab order, and using and anchoring form layouts.	• 4.1.1: Add, move, and remove form controls • 4.1.2: Set form control properties • 4.1.3: Add and modify form labels • 4.2.1: Modify tab order on forms • 4.2.3: Modify form positioning • 4.2.4: Insert information in form headers and footers • 4.2.5: Insert images on forms
Cornerstone: Customize forms	Create single-table and multiple-table forms and then customize them by adjusting and anchoring layouts, modifying control properties, changing the tab order, adding form headers and footers, and adding text and images to the forms.	• All the preceding exam objectives

Table 1: MOS objectives by lesson

Scenario

It is now almost fall, and the Community Supported Agriculture (CSA) program is flourishing. The number of members has surpassed Munson's expectations; even better, the members continue to increase their participation in the program. The database is serving well, but all data entry for member data, farm box details, and orders placed is being done separately. Some of your co-workers have suggested that being able to review a member's contact information, preferences, and order history would help them provide better service.

You decide that changing the method of data entry will make this possible. You'll now enter all related information in a single form, so that a complete overview of a member customer's information and history with the CSA program is readily available. You'll also create several auxiliary forms for entering information about the new lines of products, such as preserves and honey, that Munson's soon will be carrying in the Farm boxes.

Cornerstone

In this Cornerstone, you'll use the skills you learned in this module to create and customize single-table and multiple-table forms so that you can work with data from multiple tables at once.

Microsoft

Lesson 1: Creating and modifying forms

Overview

Forms make it easier to enter and retrieve data in Access. In this lesson, you'll use various methods, including the Form tool and the **Form Wizard**, to create and configure forms. You'll create forms that are based on a single table, as well as forms with subforms that are based on several related tables. You'll also customize forms by modifying form layouts and by adding and removing controls.

Warm-up

Use these questions to find out what you already know about this lesson's topics:

1. Forms store data.

   Select the correct option.

   a. True

   b. False

2. When you edit information in a form, where does Access store the data you're editing?

   Select the correct option.

   a. In a query

   b. In the form

   c. In a table

   d. In a report

3. You use forms to:

   Select all that apply.

   a. Find records

   b. Edit records

   c. Delete records

   d. Filter records

4. Briefly describe a margin.

   Fill in the blank space.

5. Note down at least two non-Access forms you have used.

   Fill in the blank space.

6. The steps to create a new form using the Form tool are:

   Indicate the correct sequence by adding numbers 1–3 next to the following items.

   a. Select **Form**. - _____

   b. Select or open the table on which you're basing the form. - _____

   c. Select the **Create** tab in the ribbon. - _____

Topic 1: Create and modify single-table forms

You use forms to work with data that is stored in tables. When you create a form, the data can be from one table, several tables, or from a query that is from one or several tables. This topic introduces you to several ways to create forms from a single table.

Use the Form tool

The Form tool creates a simple form for tables that are on the "many" side of one-to-many relationships. The following screenshot highlights the **Form** command on the **Forms** group of the **Create** tab.
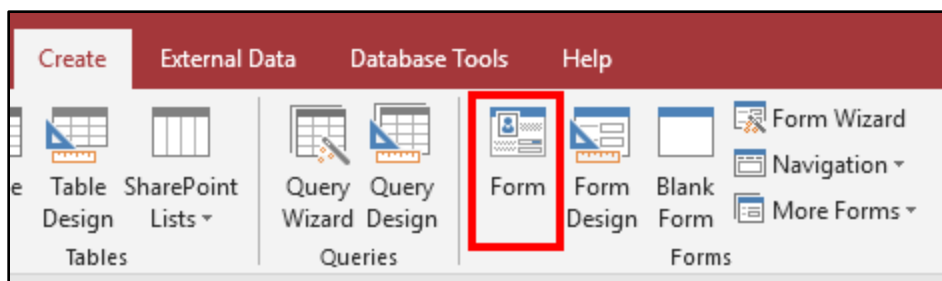

*Figure 1: The **Form** command*

Create a single-table form with the Form tool

1. In the **Navigation Pane**, select or open a table that is on the "many" side of any one-to-many relationships with other tables.

2. On the **Create** tab, in the **Forms** group, select **Form**.

3. Save the form.

Use the Form Wizard

The Form tool is convenient for making simple forms, but if the table on which you are basing the form is a parent table, it will automatically give you a primary form with a nested subform. A parent table is one that is on the "one" side of a one-to-many relationship with another table. If you need to create a single-table form (without a subform) from a parent table, you can use the **Form Wizard**.

To create a single-table form with the **Form Wizard**:

1. On the **Create** tab, in the **Forms** group, select **Form Wizard**, as the following screenshot highlights.
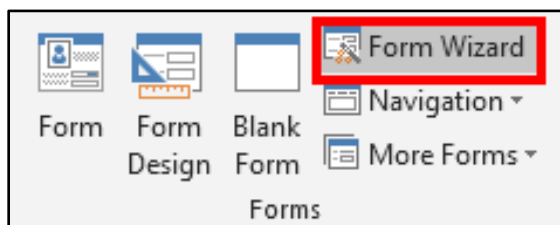
Figure 2: Form Wizard

2. On the **What fields do you want on your form?** page, choose the table from the **Tables/Queries** drop-down list.

3. On the same page of the wizard, in the **Available Fields** list, double-click each field you want to include on the form and then move the field(s) to the **Selected Fields** list. Alternatively, select the single-arrow (**>**) button to move one field at a time, or select the double-arrow button (**>>**) to move all the fields at the same time. The following screenshot highlights the **Tables/Queries** drop-down list and the arrow buttons on the **What fields do you want on your form?** page.

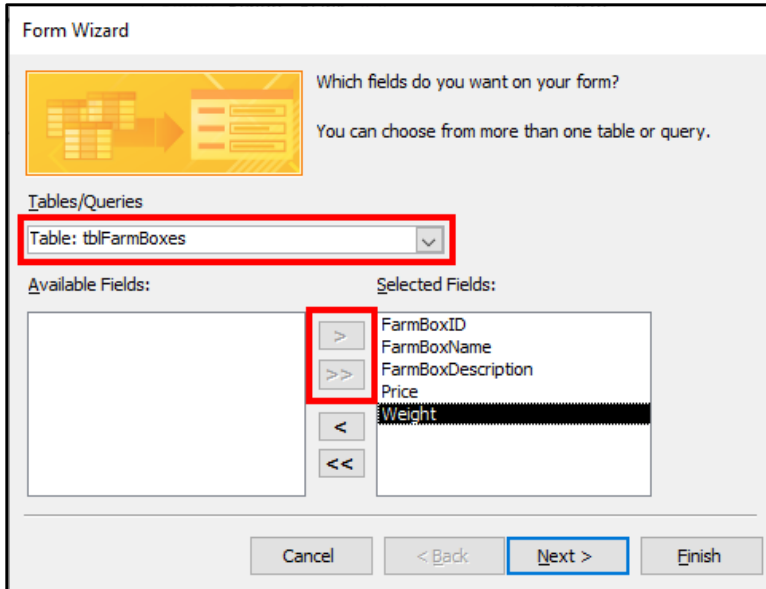*Figure 3: The **What fields do you want on your form?** page: choose the table or query and fields*

4. On the **What layout would you like for your form?** page of the wizard, which the following screenshot depicts, choose the form layout.
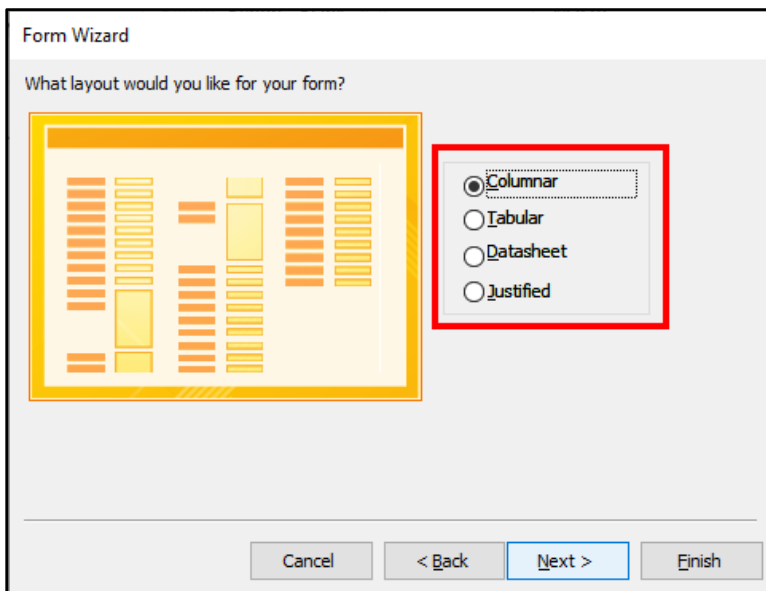

*Figure 4: The **What layout would you like for your form?** page of the wizard: choose the form layout*

Microsoft

10

5. On the **What title do you want for your form?** page of the wizard, add your title. This will become the name of the form and the title in the form header. Then select one of the options to decide which view you want to open after the form is created. If you want to open the form in **Form** view, select **Open the form to view or enter information** and then review or enter data. If you want to open the form in **Design** view, select **Modify the form's design** and then modify the form.

*Figure 5: The **What title do you want for your form?** page of the Form Wizard: add a title and choose how it will open*

Change titles and form names

The **Form Wizard** will save the form as you finish the steps and will use the title you enter on the last page as the form name. The name of the form might use a naming convention; for example, an appropriate title for the object name, such as **frmMemberForm**. However, if this title appears unattractive in the form header, you can then change the title on the form to something more appealing, such as **Member Form**. You can also do the reverse: enter the title you want to appear on the form in the wizard, and then rename the form with the **frmMemberForm** name. To rename a form, right-click the form in the **Navigation Pane** or access its context menu, and then select **Rename**. Enter the new name, and then select Enter. The following screenshot depicts the context menu option for renaming a form.
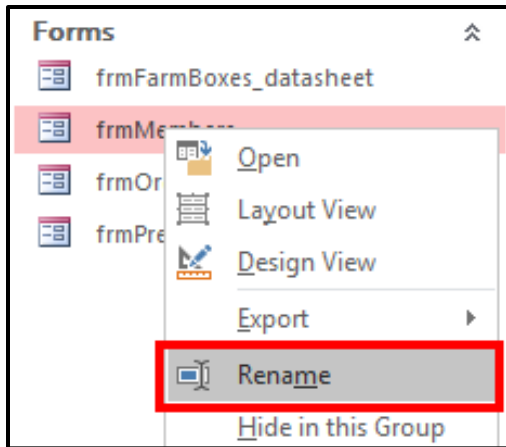
Figure 6: Renaming a form

The title in a form created by the **Form Wizard** is a **Label** control in the form header. To change the text in the **Label** control, do one of the following:

- In **Layout** or **Design** view, double-click or select the label text, edit the text, and then either select **Esc** or select outside the control.
- In **Layout** or **Design** view, select F4 to open the **Property Sheet** pane. Select the label and then change its **Caption** property in the **Format** tab of the **Property Sheet** pane, as the following screenshot depicts.
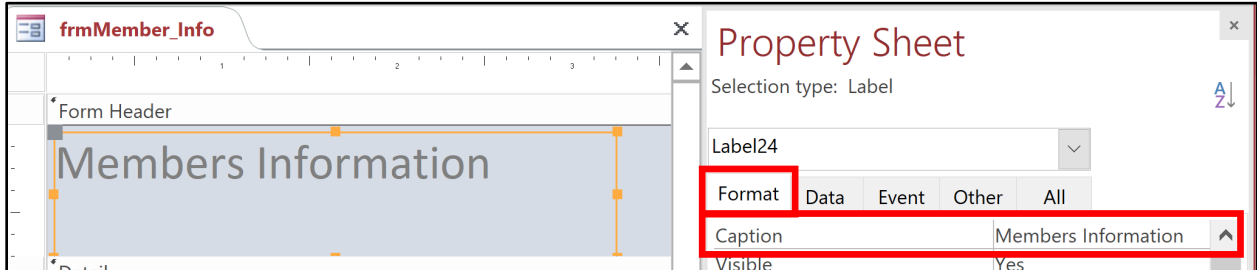
*Figure 7: Changing the **Caption** property of the **Label** in the **Form Header***

Additional information

For more information on naming forms and controls, go to:
Guidelines for naming fields, controls, and objects

Microsoft
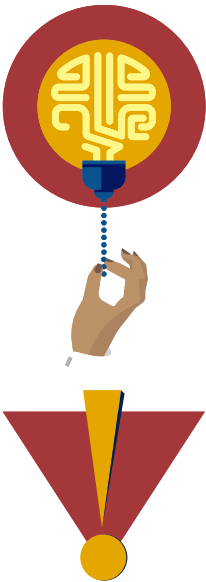
Did you know?

When entering text in a label, if you want to break the line, selecting Enter will not work. To add a line break, select Ctrl+Enter.

Caution

When you're working in **Design** view, don't change the text in a field control. Only change text in label or unbound text box controls.

The text in a field control is the name of the field in the underlying table; if you change it, your field control can't connect to the field in the table, as the following screenshot depicts.
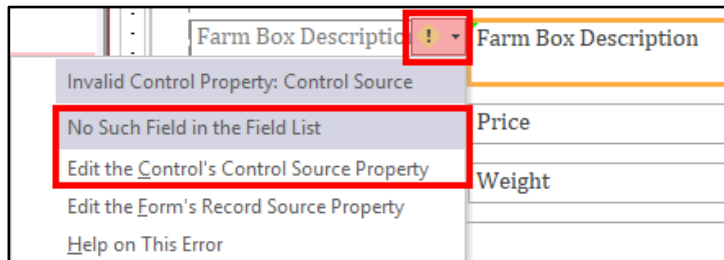
Figure 8: Changing the text in a field control will break the connection between the control and the table

To repair this error, go to the field control's **Control Source** property in the **Property Sheet** pane, open the list of available fields, and then select the field that the control should use, as the following screenshot depicts.
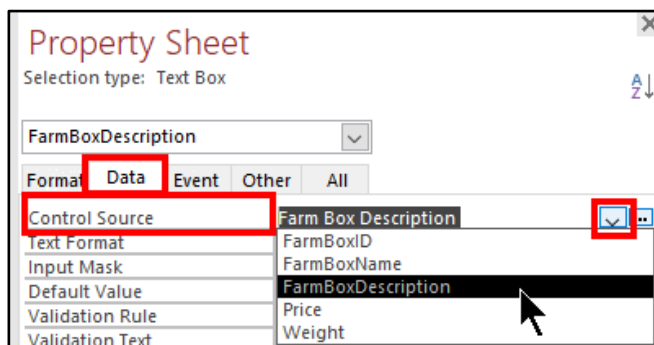
*Figure 9: The **Control Source** property for the control*

Microsoft

13

Create datasheet forms

A datasheet form is one that is arranged into rows and columns, like a table datasheet. Datasheet forms are useful when you want to work with a datasheet to review or edit your data, but you also want to add elements such as a value list or a default value to the form that you don't want to add directly to the table.

To create a datasheet form:

1. Select or open the table or query in the **Navigation Pane** from which you want to make a form.

2. On the **Create** tab in the ribbon, select **More Forms**, and then select **Datasheet**.

3. Save the form.
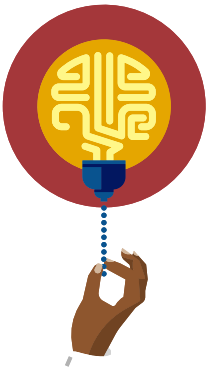
Did you know?

Datasheet forms are often used as subforms. You can create a datasheet form and then later add it to another form as a subform, but only if the underlying tables of the two forms had a one-to-many relationship.

Create split forms

A split form is one that has both a **Datasheet** view and a **Form** view for the same data. Using a split form gives you the benefit of using both these views to work with the same data in a synchronized manner. For example, you can use the **Datasheet** view to review the list of records and find the specific record you want to work with and then use the **Form** view to work with one record at a time. The changes you make to one view will replicate in the underlying table and, therefore, will appear in the other view.

To create a split form:

1. In the **Navigation Pane**, select or open the table or query that contains the data that you want on your form.

2. In the ribbon, on the **Create** tab, in the **Forms** group, select **More Forms** and then select **Split Form**, as the following screenshot depicts.
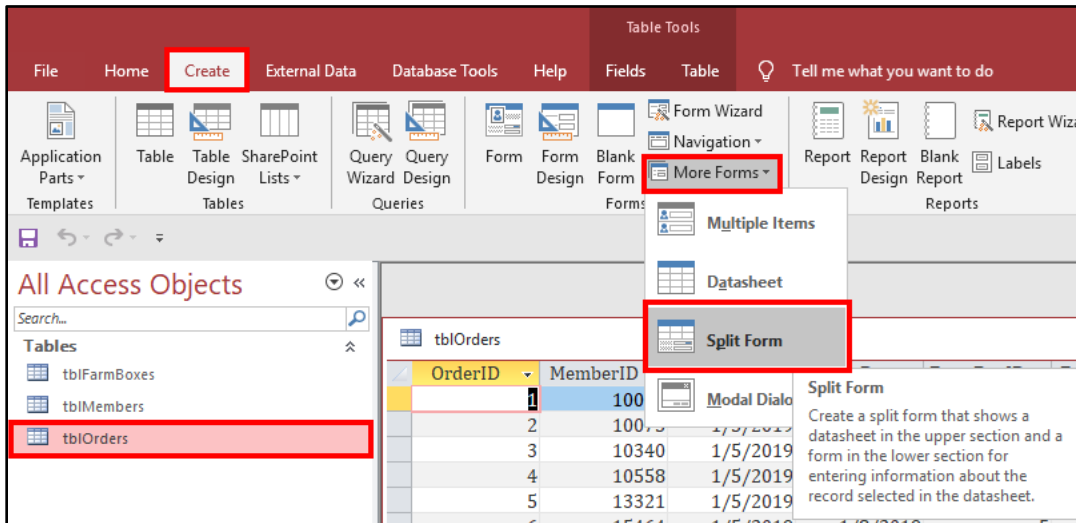
*Figure 10: Creating a **Split Form***

3. Select **Save** and give your form a name in the **Save As** box. Tip: A common naming convention is to add **frm** to the beginning of the form name.
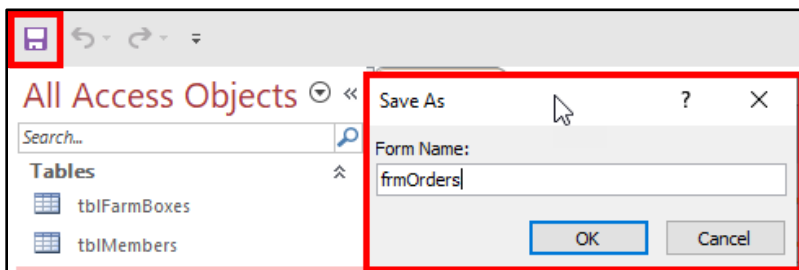
Figure 11: Saving the form

4. Access creates the form and opens it in **Layout** view, where you can resize it and format it in other ways. To use the form, select **View** and then select **Form View**.

When you're working with split forms, keep in mind the following useful tips:

- When you edit data in a form, you are actually editing the data in the underlying table. Therefore, when you make edits to a record in one section of the form, you'll notice those changes in the other section as well. The following screenshot depicts a split form.

Figure 12: A split form allows you to work in either view on the same data

- You can drag the divider up and down between the two form sections to change how much of each section is available. Alternatively, switch to **Design** view, select the form in the **Property Sheet** pane, and then on the **Format** tab, set the **Split Form Size** property. This property affects the height of the upper portion (by default, the form layout) of the form.

Figure 13: Drag the divider between form sections

- When you sort data while using a split form, you can select the field to sort by in either the **Form View** section or the **Datasheet View** section, and the data is then sorted in both sections of the form. The following screenshot depicts the same field selected in both the form sections.
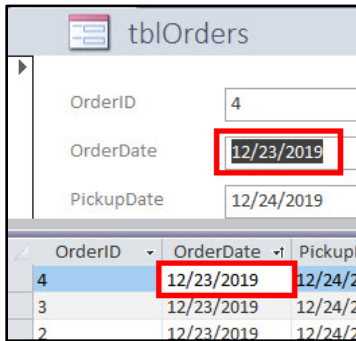
Figure 14: Select the field in either form section

- When you apply an input mask to a split form, it doesn't matter if you apply it to the field control on the **Form** view or on the **Datasheet** view. The input mask will apply to both field controls after you apply it to one.

Add text to a form with a Label control

You can add text to a form in **Design** view by using a **Label** control, which you can find on the **Controls** group of the **Design** tab, as the following screenshot depicts.
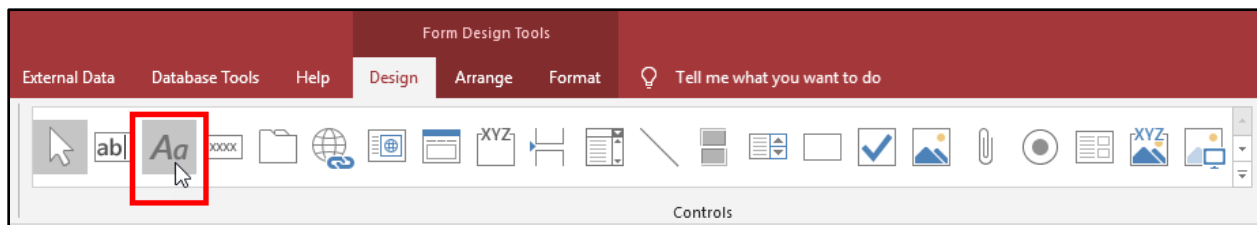
*Figure 15: The **Label** control button in the **Controls** gallery*

Add and edit the **Label** control's text by entering text directly in the control or by editing the control's **Caption** property in the **Property Sheet** pane, as the following screenshot depicts.
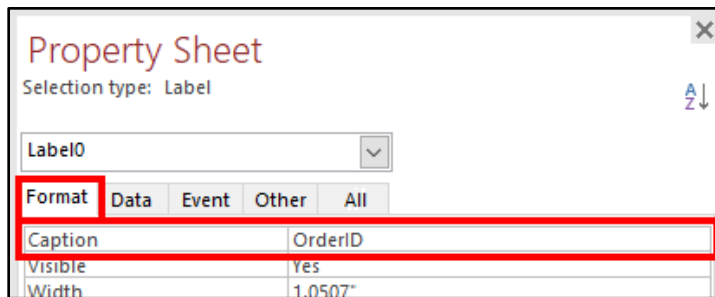
*Figure 16: A label's **Caption** property in the **Property Sheet** pane*

To add a label control to a form:

1. Open the form in **Design** view.

2. On the **Design** tab, select the **Label** control.

3. Select the spot on the form where you want the control.

4. Enter text in the label directly, or modify the **Caption** property in the **Property Sheet** pane. The following screenshot depicts a label control in a form footer.
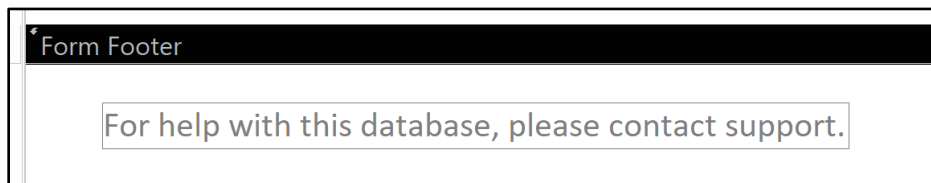
Figure 17: A label control in a form footer

Correct unassociated label errors

By default, every field control has an associated label control. If you add a label control in the **Detail** section of a form, a green error symbol, as well as an **Error Checking Options** menu, will appear in the label. Select the **Error Checking Options** menu to associate the label with a control. However, if the label is not functioning as a label to a control (in other words, if it is just additional text on your form, similar to information in the footer), you can ignore the error.
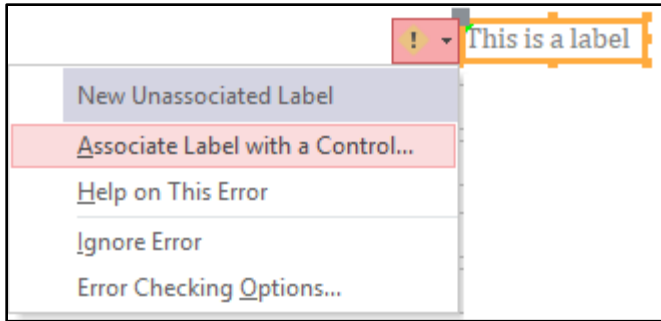
*Figure 18: **Unassociated Label** options*

Caution

This course uses database files that follow a general storyline for the CSA program at Munson's Pickles and Preserves Farm. These database files are the Learning Activity Resource files that you'll use to work on each module's activities and try-its. Each Learning Activity Resource file contains the data and objects, such as tables, queries, forms, and reports, that you need to complete a corresponding activity.

Due to this course's modular nature, the objects and data in these files might vary across activities or try-its. Therefore, it's important that you start your activities or try-its only with the designated files, as per applicable instructions. You also should note that screenshots in the topic content are for illustration purposes only and might appear different than those that are in the Learning Activity Resource files.

Activity: Show me how

In this activity, observe your teacher briefly demonstrate the skills you'll need in the upcoming try-it activity.

Resources

You'll need the following resources for this activity:

- None

Microsoft

Instructions

To participate in this activity:

- Pay attention to the methods that your teacher uses to create single-table forms, edit form titles, and add text to forms with **Label** controls.
- Be prepared to repeat these actions in the upcoming try-it.
- Ask questions to clarify anything that isn't clear to you.

Try-it: Create and modify single-table forms

In this try-it, you'll create:

- A datasheet form.
- A single-table form by using the Form tool.
- A single-table form by using the **Form Wizard**.
- A split form.

Resources

You'll need the following resources for this try-it:

- Open **L1_T1_try_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Create a datasheet form for the **tblFarmBoxes** table, save it as **frmFarmBoxes_datasheet**, examine it in **Form** view, and then close it.

2. Use the **Form** tool to create a single-table form for the **tblPreserves** table, save the form as **frmPreserves**, examine it in **Form** view, and then close it.

3. Use the **Form Wizard** to create a single-table form for the **tblMembers** table with these choices:

   a. On the **Which fields do you want on your form?** page of the wizard, use all the fields from the **tblMembers** table.

   b. On the **What layout would you like for your form?** page of the wizard, select the default **Columnar** layout.

   c. On the **What title do you want for your form?** page of the wizard, add the title **frmMemberInformation** and choose **Open the form to view or enter information**.

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4. Examine the form and notice that the title on the form and the name of the form are both **frmMemberInformation**. The form is saved and is open in **Form** view.

5. Change the text in the **Text** label in the **Form Header** to **Member Information**.

6. Add a **Label** control to the header at the **4.5 inch** mark (or set the **Left** property at **4.5"**).

7. Add the text **For help with this form, call Helpdesk at ext. 123** to the label, and then save and close the form.

8. Create a split form for the **tblOrders** table and then save it as **frmOrders_split**.

9. Change the title text to **Orders Data**, examine the form in **Form** view, and then save and close the form.

10. Close the database.
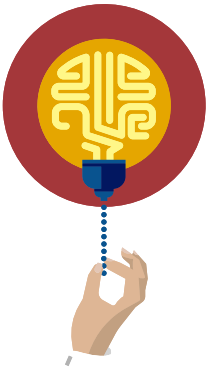
Did you know?

Data is only stored in one place in Access: the tables. Every other object in Access is there to help you work with the all-important data in the tables. That means that, in theory, you could delete all the forms, queries, and reports, but if you left the tables alone, your data would be just fine. (The person who made the database would be upset, though, so probably not a fabulous idea to do this.)

It also means that the integrity of the tables is of critical importance. In other words, the most essential task in keeping your database healthy is to keep your data healthy. This is one reason why many database designers make datasheet forms. They can give their users something that displays and feels like a table datasheet, but the table is protected because it is closed. Sometimes, access to tables is restricted so only a few people can edit them; as a result, everyone works exclusively through forms. This is another reason why forms are so important.

Remember: Tables store data; forms allow you to review and edit the data.

Additional information

For more information on forms, go to: [Introduction to forms](#)

For more information on creating forms, go to: [Create a form in Access](#)

For more information on creating split forms, go to: [Create a split form](#)

For more information on adding titles to forms, go to: [Insert a title into a form or report](#)

Topic 2: Create multiple-table forms

This topic introduces you to creating forms that contain a subform. A subform is a form that is inserted in another form. A form that contains a subform is sometimes referred to as a parent/child form. You can use forms that contain one or more subforms to work with records from two or more related tables at the same time. Doing so simplifies the process of working with data from several related tables.

You can create forms with subforms by:

- Using the Form tool.
- Creating a new form from multiple tables by using the **Form Wizard**.
- Adding a subform to an existing form by using the **SubForm Wizard**.
- Adding an existing subform to an existing form by dragging the subform onto the form.

Before you can use any of these methods to create a multiple-table form, you need to establish one-to-many relationships between the tables. When you create a form based on two or more tables, the form will consist of a primary form on which you observe one record at a time and a subform on which you observe multiple related records.

The main form is based on the table on the "one" side of a one-to-many relationship, which is called the *parent* table. The subform is the table that is on the "many" side of the one-to-many relationship, which is called the *child* table. The following screenshot depicts the **Relationships** window, in which **tblMembers** and **tblFarmBoxes** are parent tables, and the **tblOrders** table is a child table.
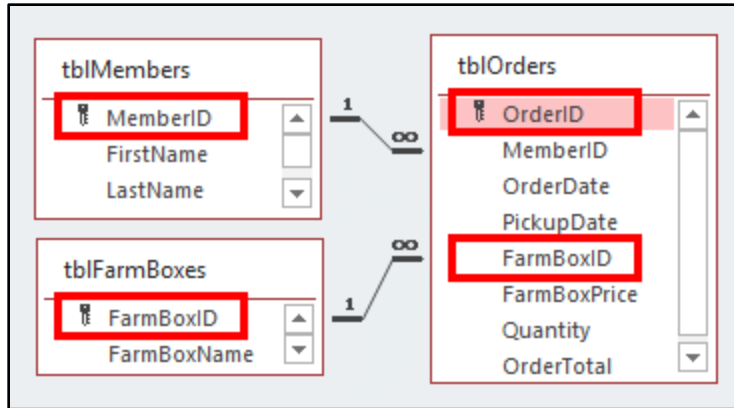
*Figure 19: The **Relationships** window where **tblMembers** and **tblFarmBoxes** are parent tables, and the **tblOrders** table is a child table*

For example, imagine Member #5 placed four orders. In a form with a subform based on these two tables (the main form based on the **tblMembers** table, and the subform based on the **tblOrders** table), Member #5 would have one record in the **tblMembers** table and four records in the **tblOrders** table, as the following two screenshots depict.
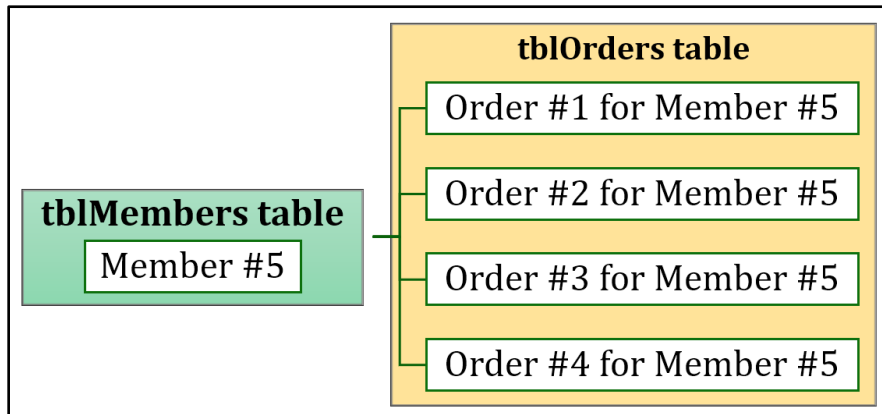
Figure 20: Diagram of a one-to-many database relationship

Figure 21: Form and subform

Create a form that contains a subform by using the Form tool

In Module 3, you learned that the Form tool (the **Form** button in the **Forms** group on the **Create** tab) will create a simple form based on a single table. However, when multiple tables in your database are related, the Form tool will make a form based on one table or several tables, depending on whether the primary table is the parent table or child table. Consider the following factors:

- If the table you use to make a form is a child table (the table on the "many" side of a one-to-many relationship), the Form tool will create a simple form based only on that table.
- If the table you use to make a form is a parent table (the table on the "one" side of a one-to-many relationship), the resulting form is a primary form that is based on the parent table, and the subform is based on the child table.

To create a form that contains a subform by using the Form tool:

1. If necessary, go to the **Database Tools** tab, and in the **Relationships** group, select **Relationships**. In the **Relationships** window, examine the relationship between the two (or more) tables upon which you want to make the form.

2. Select or open the table which is on the "one" side of the relationship.

3. On the **Create** tab, in the **Forms** group, select **Form**. Access creates the form in **Layout** view.

4. Save the form.

The following screenshot depicts the **Relationships** window with the **tblMembers** table and the **tblOrders** table, which have a one-to-many relationship. The **tblMembers** table is the table that should be open or selected because it is the parent table on the "one" side of the relationship.
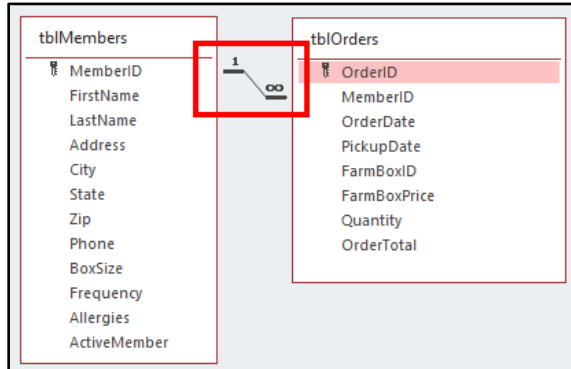
*Figure 22: The **tblMembers** table is the table that should be open or selected because it is the parent table on the "one" side of the relationship*

Video

To review the video on table relationships, go to: Get started with table relationships

Create a form that contains a subform by using the Form Wizard

If you've created the relationships between your tables, you can use the **Form Wizard** to create a form that contains a subform. To do so:

1. Before you begin, open the **Relationships** window and ensure that you have correctly created the one-to-many relationship(s) between the tables you want to use for your form and subform.

2. On the **Create** tab, in the **Forms** group, select **Form Wizard**.

3. On the **What fields do you want on your form?** page of the wizard, in the **Tables/Queries** drop-down list, select one of the tables. It doesn't matter which one you add first.

4. Double-click the fields that you want to include from the table, or select the double-arrow (**>>**) button to move all the fields.

5. In the **Tables/Queries** drop-down list, select the other table.

6. Double-click the fields that you want to include from the table, or select the double-arrow (**>>**) button to move all the fields.

Microsoft

7. On the **How do you want to view your data?** page, select a table on the "one" side of the one-to-many relationship(s), select **Form with subform(s)**, and then select **Next**.
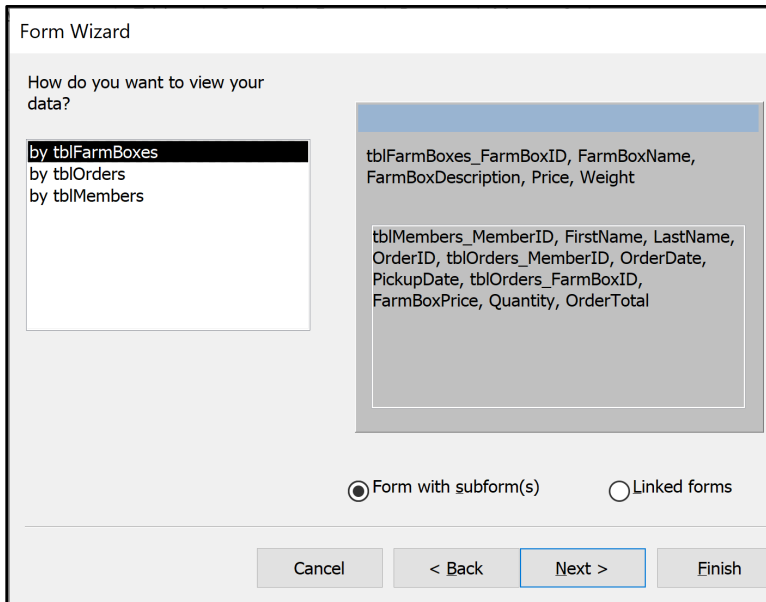
*Figure 23: The **How do you want to view your data?** wizard page*

8. On the **What layout would you like for your subform?** page, select a layout option, and then select **Next**.

9. On the **What titles do you want for your forms?** page of the wizard, enter the titles that you want for the forms. Specify whether you want to open the form in **Form** view or in **Design** view, and then select **Finish**. Access creates two forms: one form for the main form and one form for the subform.

*Figure 24: The **What titles do you want for your forms?** wizard page*

Adding a subform to an existing form

If you already have a form for your primary form and you want to add a subform, you can:

- Use the **Subform Wizard** in **Design** view to create a subform on the main form.
- Create the main form and the subform independently, and then with the main form open in **Design** view, drag the subform from the **Navigation Pane** onto the **Detail** section of the main form.

To add a form as a subform to another form by dragging:

1. Establish a one-to-many relationship between the tables you are using and create single-table forms for both. The main form is based on the "one" side of the relationship, and the subform is based on the "many" side of the relationship. Tip: A Datasheet is a good choice for the type of subform.

2. Open the main form in **Design** view.

3. From the **Navigation Pane**, drag the subform to the location on the open main form. If there is not enough room, the form will expand. The following two screenshots depict this process.
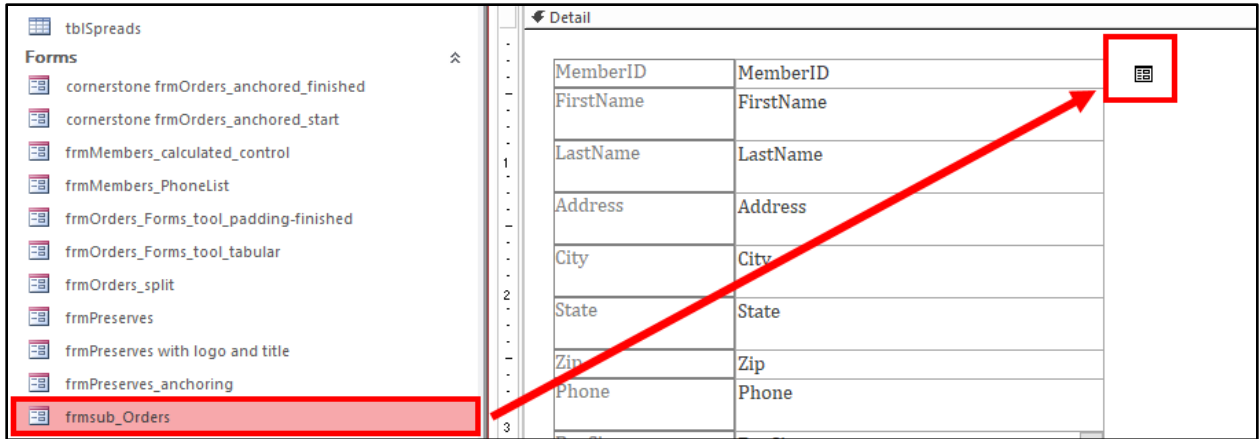
*Figure 25: Drag the subform to the main form while in **Design** view*
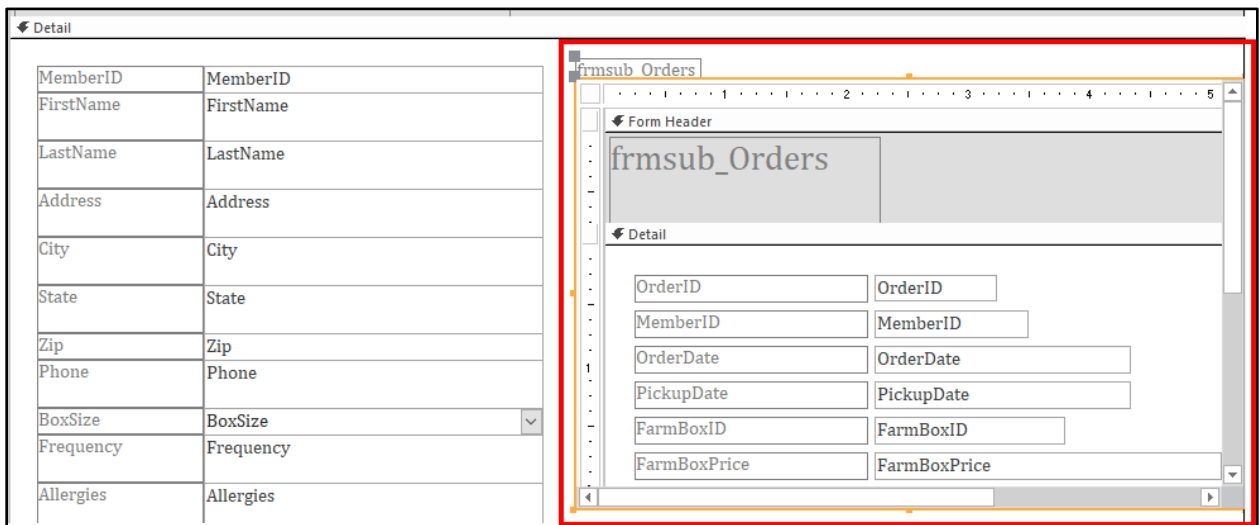
Figure 26: The subform, added to the main form

Additional information

For more information on creating forms with subforms, go to: Create a form that contains a subform (a one-to-many form)
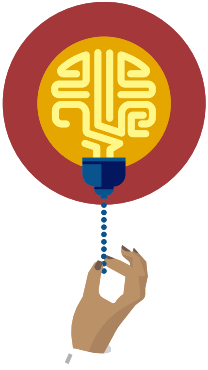
Did you know?

Multiple-table forms and forms with subforms can include more than two tables if the tables are all related. For example, a form can have two subforms for two tables related to the table that the primary form is built on.

Database designers sometimes create queries with multiple tables and then create forms based on the queries, rather than directly on the tables.

Activity: Show me how

In this activity, observe your teacher briefly demonstrate the skills you'll need in the upcoming try-it.

Resources

You'll need the following resources for this activity:

- None

Instructions

To participate in this activity:

- Pay attention to the methods that your teacher uses to create multiple-table forms and change and add text to forms.
- Be prepared to repeat these actions in the upcoming try-it.
- Ask questions to clarify anything that isn't clear to you.

Try-it: Create multiple-table forms

In this leveled try-it activity, you'll create forms that have subforms and are based on two related tables.

Try-it 1

In this try-it, you'll create forms that depict the data from the **tblMembers** table and the **tblOrders** table, so you can manage Munson's member data and order data at the same time.

Resources

You'll need the following resources for this try-it:

- Open **L1_T2_try1_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Use the Form tool to create a multiple-table form with a subform that is based on the **tblMembers** and **tblOrders** tables.

2. Save the form as **frmMembers_and_Orders**.

3. Use the **Form Wizard** to create a multiple-table form with a datasheet subform that is based on the **tblFarmboxes** and **tblOrders** tables.

4. Enter **frmFarmBoxes** and **frmsubOrders** as the form titles.

5. Add a subform to the **frmMembers_and_Orders2** form by dragging **frmsubOrders2** onto the available space at the bottom of the **Detail** section of the **frmMembers_and_Orders2** form. Delete the subform's label.

Try-it 2

In this try-it, you'll create a form that you can use to manage the member data, order data, and farm box data simultaneously.

Resources

You'll need the following resources for this activity:

- Open **L1_T2_try2_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

1. Use the **Form Wizard** to create a multiple-table form by using the specified fields from each of the following tables:

   o **tblMembers**: all fields
   o **tblFarmboxes**: **FarmBoxName**, **FarmBoxDescription**
   o **tblOrders**: **OrderID**, **OrderDate**, **PickupDate**, **FarmBoxPrice**, **Quantity**, and **OrderTotal**

2. Create the form so that the **tblMembers** table is the basis for the primary form and the other two tables are the basis for the subform.

Microsoft

3. Use a **Datasheet** layout for the subform.

4. Enter **frmmainMembers** and **frmsubOrders_FarmBoxes** as the form's titles.

5. Delete the **Label** control for the subform and widen the subform to approximately **6"**.

Topic 3: Modify positioning of controls in a layout

In this topic, you'll examine different ways in which you can arrange and rearrange form controls and other elements. The end goal is to make attractive forms that are easy to comprehend and use.
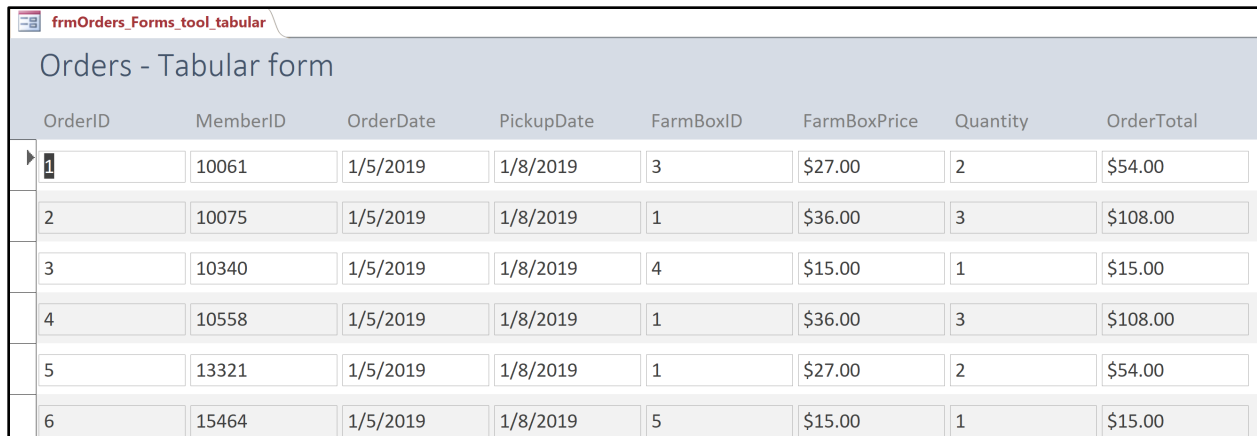
Understand form layouts

By default, when you use one of the form tools on the **Create** tab to create a form, or when you open a form in **Layout** view and then add fields, the controls on the form are placed into a *layout*. A layout is a grid-like container, like a table, that you can use to align and arrange form elements quickly and consistently. Layouts are either tabular or stacked.

Tabular layouts:

- Resemble a spreadsheet, with labels across the top in the section before the rows of controls that will display the data.
- Always span two sections of a form. Usually, the labels are in the **Form Header**, and the controls are in the **Detail** section.

In a form using a tabular layout, you should change the form's **Default View** property to **Continuous Forms** to display more than one record at a time. The following screenshot depicts a tabular layout.

Figure 27: A form with a tabular layout

Stacked layouts arrange controls vertically, with the labels in the first column and controls in the next column. In a stacked layout, all the controls and labels are in one section together, typically the **Detail** section. In a form using a stacked layout, you should change the form's **Default View** property to **Single Form** to display more than one record at a time. The following screenshot depicts a stacked layout.
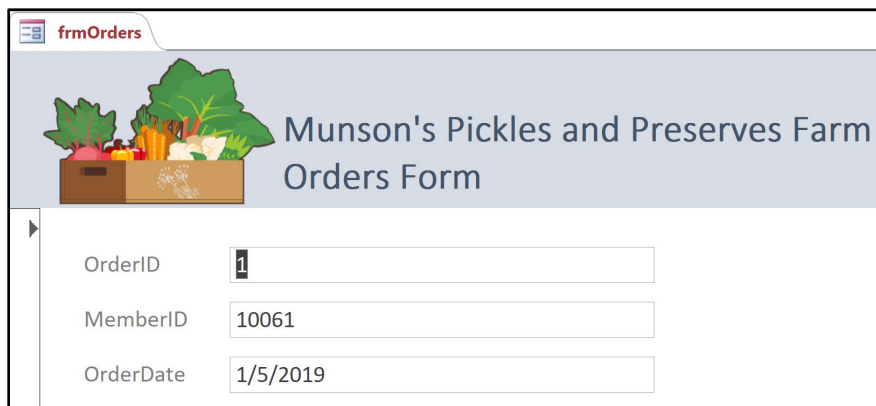
Figure 28: A form with a stacked layout

To change a form from one type of layout to another:

1. Select one cell in the layout.

2. On the **Arrange** tab, in the **Rows & Columns** group, choose **Select Layout**.

3. On the **Arrange** tab, in the **Table** group, select **Tabular** or **Stacked**.

If the layout type you are changing to is **Tabular**:

- Before you begin, change your control widths to roughly the width of the columns you want in the tabular layout (about one inch).

- If necessary, increase the **Form Header** and move the **Title** to make space for the label controls.

- Select F4 to open the **Property Sheet** pane, select **Form** from the list, select the **Format** tab, and then ensure that the form's **Default View** property is **Continuous Forms**.

Add controls to a layout

If you created a form by using a method that does not add a layout to your form, you might want to add controls to a layout to make aligning them fast and easy. The following screenshot depicts field and label controls that are not in a layout.
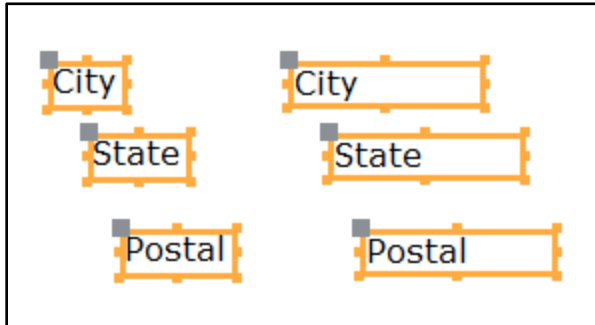
Figure 29: Field and Label controls selected

To add controls to a layout:

1. Open the form in **Layout** or **Design** view.

2. Select the controls and labels that you want to add to a layout.

3. On the **Arrange** tab, in the **Table** group, select one of the following:

   o Select **Stacked** to arrange the layout with the label controls in the first column and the field controls in the second column.

   o Select **Tabular** to arrange the layout with the label controls in the **Form Header** and the field controls in the **Detail** section.

The following two screenshots depict controls in a stacked layout and a tabular layout.
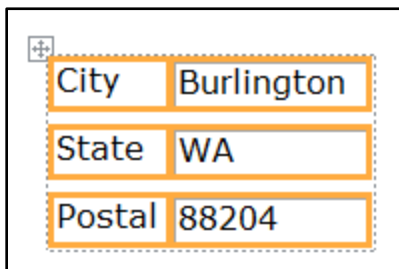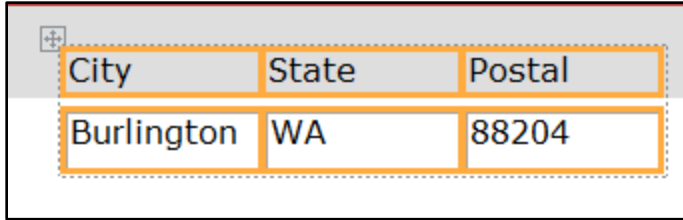
*Figure 30: Controls in a **Stacked** layout*

*Figure 31: Controls in a **Tabular** layout*

Remove controls from a layout

If you want to place controls outside the layout on the form, you can remove a control from the layout or completely remove the layout. You must open the form in **Design** view to do this. To remove controls from a layout:

1. In the **Navigation Pane**, right-click the form or access its context menu, and then select **Design View**. Alternatively, open the form, select the **View** drop-down list on the **Home** tab, and then select **Design View**. The following screenshot depicts the **Design View** option on the context menu.
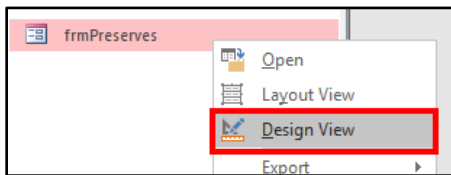
*Figure 32: Choose the **Design View** from the context menu of the form*

2. Select the control(s) that you want to remove from the layout by using one of the following steps:

   o Select Shift while selecting multiple controls.
   o To select all the controls, select the layout selector in the corner of the layout, or select one control and then on the **Arrange** tab, in the **Rows & Columns** group, choose **Select Layout**. The following screenshot highlights the layout selector in the corner of the layout.
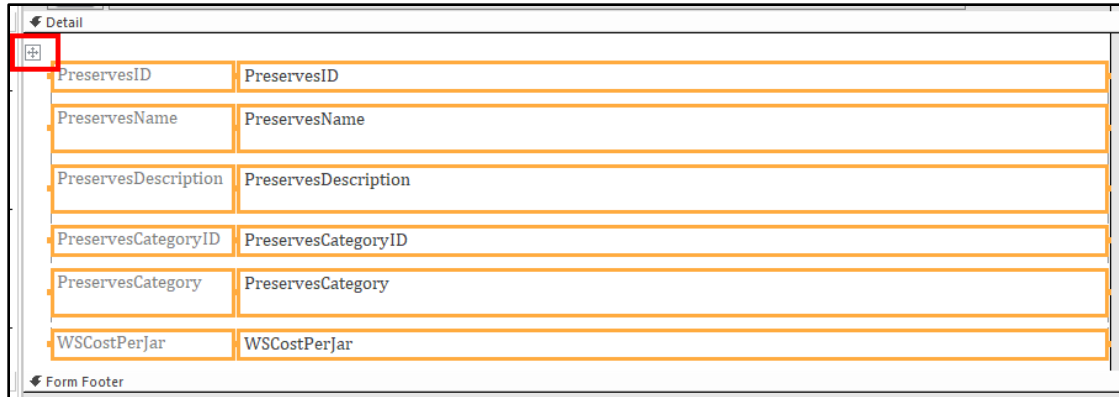
Figure 33: The layout selector box and a selected layout

3. On the **Arrange** tab, in the **Table** group, select **Remove Layout**. Alternatively, right-click or access the context menu for any of the selected controls, select **Layout**, and then select **Remove Layout**.

Additional information

For more information on Layout and Design View, go to: Understand Layout view and Design view

For more information on removing controls from a layout, go to: Move and resize controls independently

For more information on removing controls from a layout, go to: Make quick design changes by using Layout View

For more information on removing controls from a layout, go to: Fine-tune your form in Layout View
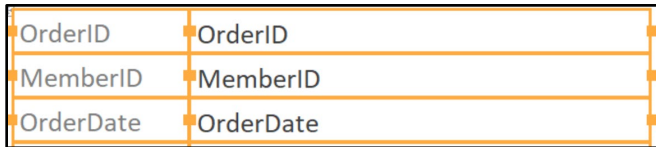
For more information on removing controls from a layout, go to: Know when to use Layout View in Access 2010

Change padding and margins in a layout

Both padding and margin affect space between controls or the contents of controls in a layout. Padding is the distance between cells in a layout. Margins are the internal distance between the inside edges of the control and the contents of the control, much like a page margin in Microsoft Word. Text alignment in a control might affect how the margin will appear.

Microsoft

Examples of padding options
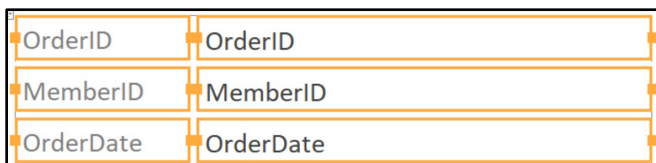
Padding set at **None** will have no space between each cell in the layout, as the following screenshot depicts.

*Figure 34: Padding set at **None***
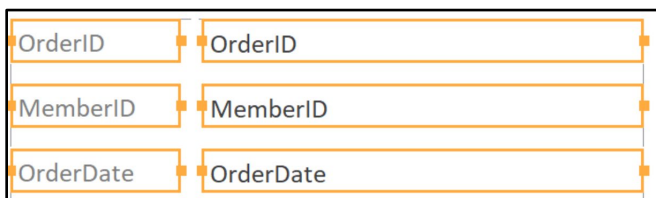
Padding set at **Narrow** has a small amount of space between each cell in the layout, as the following screenshot depicts.

*Figure 35: Padding set at **Narrow***
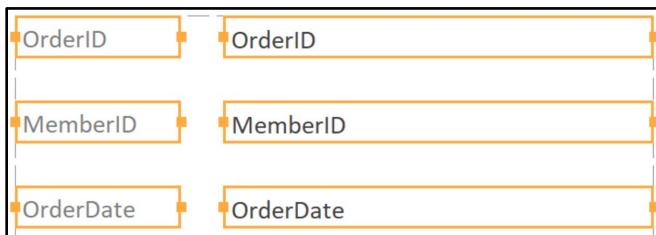
Padding set at **Medium** has a moderate amount of space between each cell in the layout, as the following screenshot depicts.

*Figure 36: Padding set at **Medium***

Padding set at **Wide** has an amount of space between each cell in the layout roughly the same size as the default height of a cell, as the following screenshot depicts.

*Figure 37: Padding set at **Wide***

Microsoft

To change the padding of a layout:

1. In the **Design** or **Layout** view, select one cell in the layout, and then on the **Arrange** tab, choose **Select Layout**.

2. On the **Arrange** tab, in the **Position** group, select **Control Padding** and then choose **None**, **Narrow**, **Medium**, or **Wide**, which the following screenshot depicts.
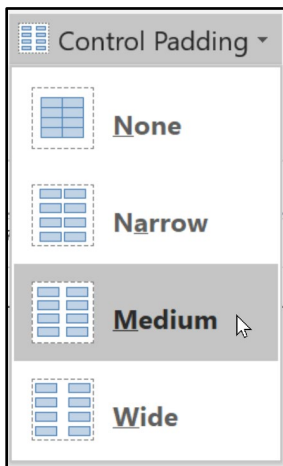
*Figure 38: The **Control Padding** options*

Examples of margins

A margin set at **None** has almost no internal distance between the inside edge of the control and the contents of the control, as the following screenshot depicts.
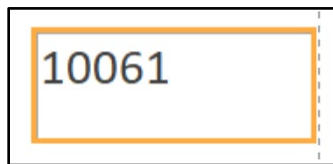
*Figure 39: Margin set at **None***

A margin set at Narrow has a small internal distance between the inside edge of the control and the contents of the control, as the following screenshot depicts.

*Figure 40: Margin set at **Narrow***

A margin set at Medium has a moderate internal distance between the inside edge of the control and the contents of the control, as the following screenshot depicts.

*Figure 41: Margin set at **Medium***

A margin set at Wide has the maximum amount of internal distance between the inside edge of the control and the contents of the control, as the following screenshot depicts.

*Figure 42: Margin set at **Wide***

To change the margins in a layout:

1. In the **Design** or **Layout** view, select one cell in the layout, and then on the **Arrange** tab, select **Select Layout**.

2. On the **Arrange** tab, in the **Position** group, select **Control Margins** and then choose **None**, **Narrow**, **Medium**, or **Wide**.
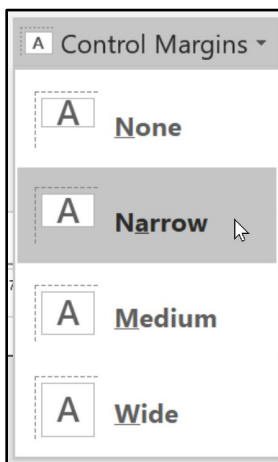
*Figure 43: The **Control Margins** options*

Resize a layout

 Changing the width or height of one form control will change all the controls in the layout column or row. To change the width, position the cursor over an edge until it becomes a double-headed arrow and then drag, as the following two screenshots depict. Alternatively, select the controls and then adjust the **Width** or **Height** property in the **Property Sheet** pane.
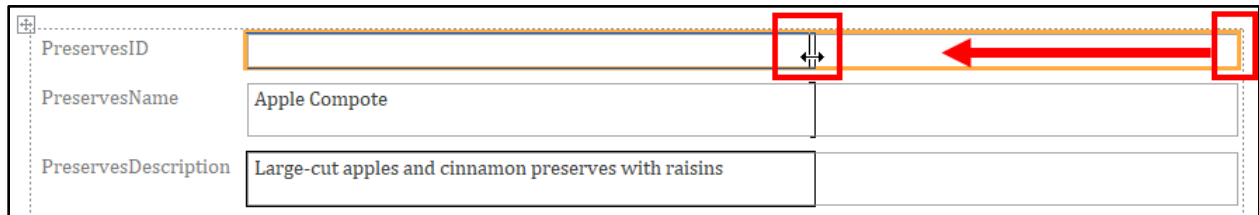
Figure 44: Changing the width of one control in a layout changes all controls in the column

Figure 45: Resizing a layout that contains a picture

Resize multiple controls with Size/Space

To resize several controls at the same time and apply the width/height setting of one of the selected controls for all the selected controls:

1. Select the controls, as the following screenshot depicts.
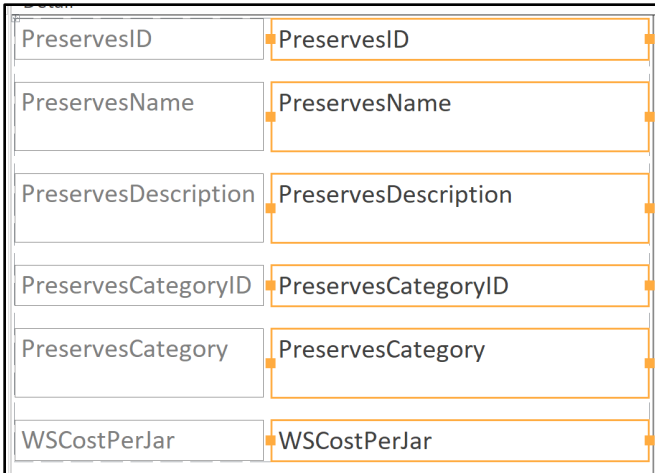
Figure 46: All the controls are selected

2. On the **Form Design Tools** contextual tab, in the **Arrange** tab, select **Size/Space**, and then select the option you want, as the following screenshot depicts.
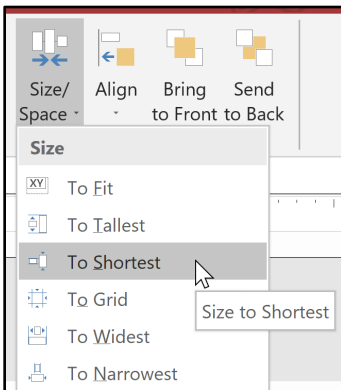
*Figure 47: Choosing the **To Shortest** option to resize all controls to the shortest one that is selected*

3. In the following screenshot, the height property of all the selected controls was changed to the height of the shortest control in the selection.
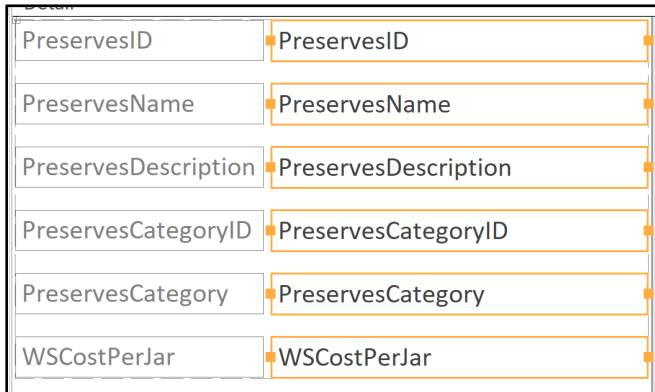
*Figure 48: The form after applying the **To Shortest** option; all the fields are the same height*

Move controls within a layout

You can move controls within a layout by dragging them or by using ribbon commands. If necessary, add columns and rows to create space for the controls before you move them. To move controls within a layout:

1. Open the form in **Layout** view.

2. If you need to create columns or rows for the moved controls, select a cell in the layout, and then use the options in the **Rows & Columns** group on the **Arrange** tab in the **Form Design Tools** contextual tab. For example:

   o To insert a column to the right of the layout, select a cell in the last column and then select **Insert Right**.

   o To insert a row at the bottom of the layout, select a cell in the last row and then select **Insert Below**. The following screenshot highlights the options in the **Rows & Columns** group.
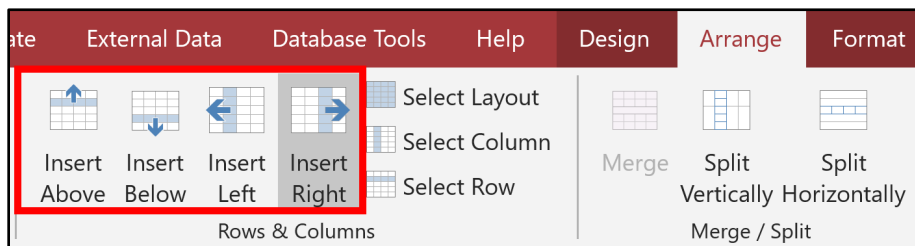
*Figure 49: Options in the **Rows & Columns** group*

3. Drag the controls to the empty cells where you want them to be, as the following screenshot depicts.
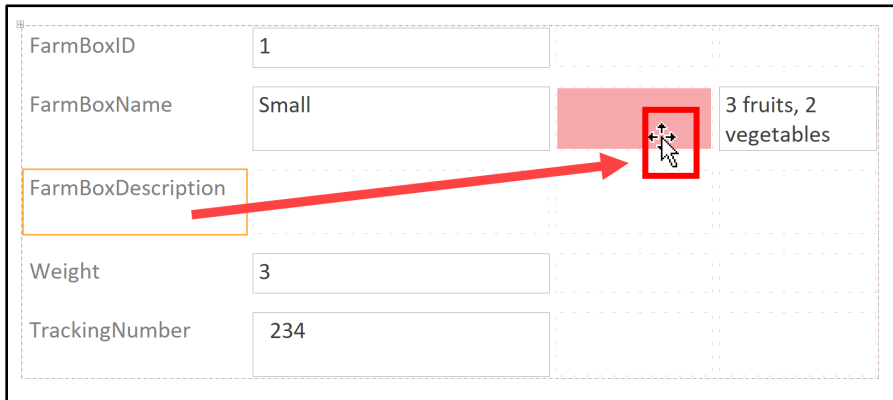
Figure 50: Drag the controls to empty cells to move them

4. Select rows to move by pointing to the left of the rows until the cursor changes to a small black arrow and then drag to select the rows. Alternatively, select a cell in the row, and then on the **Arrange** tab, in the **Rows & Columns** group, choose **Select Row**.

   o   To move a row, on the **Arrange** tab, select **Move Up** to move the selected row up, and select **Move Down** to move the selected row down.

   o   To delete a row, select the Delete key.

Figure 51: Dragging to select a row

Activity: Show me how

In this activity, observe your teacher briefly demonstrate the skills you'll need in the upcoming try-it.

Resources

You'll need the following resources for this activity:

• None

Instructions

To participate in this activity:

- Pay attention to the methods that your teacher uses to modify positioning of controls in a layout, change margins and padding in a layout, and remove a control from a layout.
- Be prepared to repeat these actions in the upcoming try-it.
- Ask questions to clarify anything that isn't clear to you.

Try-it: Modify positioning of controls in a layout

In this try-it activity, you'll modify form layouts using tabular and stacked layouts.

Resources

You'll need the following resources for this try-it:

- Open **L1_T3_try_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the **frmOrders_Tabular** form.

2. Change the **Default View** form property to **Continuous Forms**.

3. Examine the form in **Form** view, save the form, and then close it.

4. Open the **frmFarmBoxes** form.

5. Change the layout in the **frmFarmBoxes** form so it is four columns and three rows.

6. Arrange the controls in row 1 as follows:

   - Column 1: **FarmBoxID** label
   - Column 2: **FarmBoxID** field control
   - Column 3: *no control*
   - Column 4: *no control*

7. Arrange the controls in row 2 as follows:

   - Column 1: **FarmBoxName** label
   - Column 2: **FarmBoxName** field control
   - Column 3: **FarmBoxDescription** label
   - Column 4: **FarmBoxDescription** field control

Microsoft

8. Arrange the controls in row 2 as follows:

   o Column 1: **Weight** label
   o Column 2: **Weight** field control
   o Column 3: **TrackingNumber** label
   o Column 4: **TrackingNumber** field control

9. Change the layout margins to **Medium**, the layout padding to **Narrow**, adjust the row heights to **.25"**, and adjust the column widths as follows:

   o Column 1: **1.25"**
   o Column 2: **1.3"**
   o Column 3: **1.3"**
   o Column 4: **1.3"**

   When you apply these dimensions to the form, your output will appear similar to the screenshot below. **FarmBoxID**, **FarmBoxName**, and **Weight** are in the first column, and **FarmBoxDescription** and **TrackingNumber** are in the second column.

*Figure 52: The changed **frmFarmBoxes** form*

10. In the **frmOrders** form, remove all the controls from the form layout.

Wrap-up

Use these questions to check what you learned in this lesson:

1. From what kinds of objects can you make forms in Access?

   Select all that apply.

   a. A single table

   b. Multiple tables

   c. Queries

   d. Reports

2. Forms do not store data.

   Select the correct option.

   a. True

   b. False

3. If you delete your form, all the data that you were working on in the form is also deleted.

   Select the correct option.

   a. True

   b. False

4. What are the three default views in a form?

   Select the correct option.

   a. **Design**, **Layout**, and **Vista**

   b. **Vista**, **Design**, and **Edit**

   c. **Form**, **Design**, and **Layout**

   d. **Edit**, **Form**, and **Layout**

5. The form view that you can use to review the data in the underlying table while you edit the form is the:

   Select the correct option.

   a. **Form** view

   b. **Property Sheet**

   c. **Layout** view

   d. **Datasheet** view

6. A form that is added to another form so you can work with the data in both tables at once is called a:

   Select the correct option.

   a. Connected form

   b. Subform

   c. Child record

   d. Form Wizard

7. Before you can create a form with a subform, the tables involved need to have a relationship created in the **Relationships** window. What kind of relationship does it need to be?

   Select all that apply.

   a. One-to-many

   b. One-to-one

   c. Form-subform

   d. Many-to-many

Lesson 2: Customizing forms

Overview

In this lesson, you'll customize and improve the appearance of forms by changing control properties, adding and arranging field controls, using layouts, and adding text and images. To strengthen Munson's branding and make it easier to understand and use forms, you'll adjust the tab order in a form, add logos and titles to forms, and add text and images in the form header and form footer.

Warm-up

In this warm-up activity, you'll examine and use three forms and, with the help of a classmate, give feedback about each one.

Resources

You'll need the following resources for this activity:

- Open **warmup_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Activity instructions

Participate in the activity by following these instructions:

1. One by one, open and examine the three forms in the **warmup_csa_program_starter.accdb** database.

2. Select the Tab key to tab through the fields in each form and notice how easy or hard, it is to use. Use your keyboard, not your mouse, to move between fields.

3. Briefly discuss the following questions with a classmate and then note your answer. Be prepared to share your answer with the class.

   o Which form was easiest to understand immediately and why?

   o Which form was most pleasant or easiest to use and why?

   o Which form was most confusing or hardest to use and why?

Topic 1: Add, modify, and position controls

After you create a form for a database, you might discover that it needs some fixing. For example, you might get some feedback that understanding or using the form is difficult. You might also want to make fixes because:

- The fields seem scattered on the form.
- The order of fields is illogical when users tab through the form.
- You might have deleted a field on the form that you now need.
- The form might not have a control for a new field that you added to the underlying table.
- You might want to add text, such as instructions, or images to the form.

In this topic, you'll learn how to add, modify, and position form controls by using the mouse or control properties (or both) to fix and enhance forms. You'll also learn how to maximize the usability of forms by using form design principles and by modifying the tab order of a form.

Use controls

Controls are the parts of a form that you use to enter, edit, or display data. Some controls allow you to review and edit the data stored in tables, with each control being connected to a field in the underlying table. These are called *bound* controls.

Some controls display on the form and are not connected to the underlying table. These are called *unbound* controls.

There are many kinds of controls. In this lesson, you'll learn about:

- **Text Box** controls, which display text, numbers, dates, times, and memo fields. When you're using the form, entering a value in a text box changes the value in the underlying table. Text boxes can also display calculated values.
- **Label** controls, which contain fixed data that is not connected, or bound, to the underlying table. Use labels for headings, instructions, and other text.
- **List Box** controls, which display a list of values from which to choose. **List Box** controls are typically bound to the underlying table, but not always.
- **Combo Box** controls display a list of values from which to choose, or you can enter data in the control. **Combo Box** controls are typically bound to the underlying table, but not always.

- **Line** and **Rectangle** controls are used to add lines and rectangles to a form.
- **Image** controls add a static image to the form.
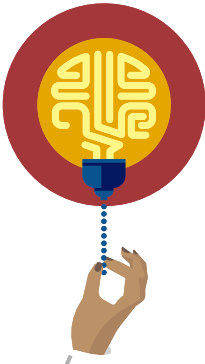
Did you know?

You can enter text in an unbound **Text Box** control and add calculations that will perform text, numerical, date, or other functions. This is called a *calculated control*.

For example, you can add an unbound **Text Box** control to a **Form Header** and enter **=[FirstName]&" "&[LastName]**, as the following screenshot depicts.

Form Header

Members   =[FirstName] & " " & [LastName]

*Figure 53: A calculated control in **Design** view*

In **Form** view, the calculated control will display the value in the current record's **FirstName** field, a space, and then the value in the **LastName** field, as the following screenshot depicts.

Members   Jacob Schreiner

FirstName   Jacob

LastName   Schreiner
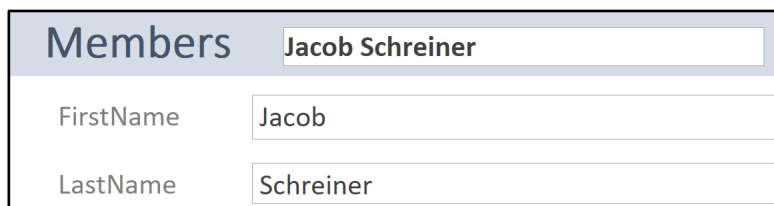
*Figure 54: The calculated control in **Form** view, now displaying both field values separated by a space*

The calculation is entered directly in the control, but you can also enter it and review it in the **Property Sheet** pane, in the **Control Source** property, as the following screenshot depicts.

Format	Data	Event	Other	All

Control Source   =[FirstName] & " " & [LastName]

*Figure 55: The calculation in the **Control Source** property*

■■ Microsoft

Additional information

For more information on controls, go to: [Introduction to controls](#)

For more information on adding text box controls to forms, go to: [Add a text box control to a form or report](#)

For more information on calculated controls, go to: [Learn to build an expression](#)

For more information on using the Control Source property, go to: [ControlSource Property](#)

Modify form control properties in the Property Sheet pane

You can modify properties of a form and its controls, such as height, width, color, and/or location on the form in either **Layout** view or **Design** view. You can also caption text by changing properties in the **Property Sheet** pane.

You can make many modifications by using several other methods, such as using the ribbon or your mouse. Although these methods seem familiar, using the **Property Sheet** pane is fast and consistent, especially when you have multiple controls to edit or if you do not use a mouse or other pointing device. In addition, there are properties that you can only change by using the **Property Sheet** pane, because they have no ribbon or context menu equivalent. The following screenshot depicts the **Property Sheet** pane and the properties for a form.
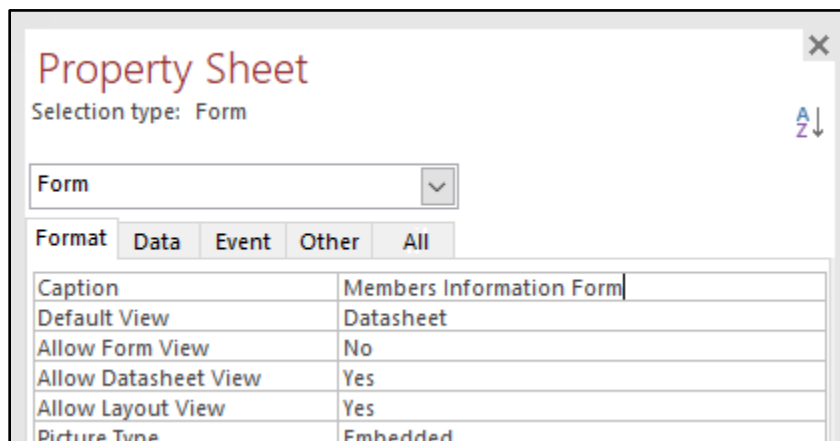
*Figure 56: The **Property Sheet** and the properties for a form*

Microsoft

To open the **Property Sheet** pane:

1. Select the control or part of the form you want to change.

2. Open the **Property Sheet** by selecting the **Property Sheet** button on the **Form Layout Tools/Form Design Tools**, **Design** tab, or select F4.

The currently-selected object is displayed in the list box at the beginning of the **Property Sheet** pane. You can also edit the properties of another object by selecting a different object from this list. Another option is to select the object on the form; you do not need to close the **Property Sheet** pane.

The properties available on the **Property Sheet** pane are organized into tabs by category. If you can't find what you're searching for, go to the **All** tab, which contains all the properties.

Format controls

You can format a control by changing its properties in the **Property Sheet** pane or by using the ribbon. To format a control:

1. Select the control.

2. Select F4 to open the **Property Sheet** pane and adjust the properties on the **Format** tab.

Alternatively:

1. Select the control.

2. To format a label or text control, on the **Home** tab, in the **Text Formatting** group, select the font and alignment formatting options that you want to use, such as **Font**, **Font Size**, **Bold**, **Italic**, **Font Color**, or **Background Color**.

3. To format a section or shape, on the **Format** tab, in the **Control Formatting** group, select **Shape Fill**, and then select a color. Be sure to use a font color and background color that have a high contrast so the text is legible. For example, if you use a light background, choose a dark color for text. Some buttons have list arrows, such as **Font**, **Font Size**, and **Font Color**, which give you a menu from which you can choose the option you want. The following screenshots depict the **Font Color** menu and the **Shape Fill** menu.
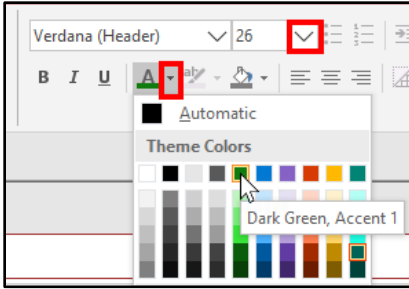
*Figure 57: The **Font Color** menu*
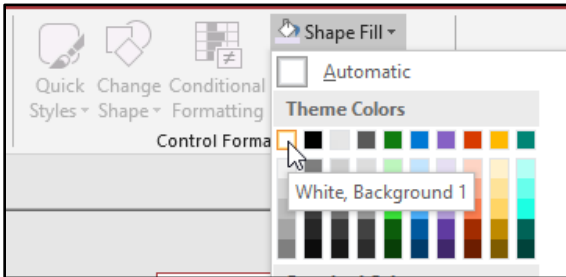
*Figure 58: The **Shape Fill** menu*

Position and resize controls

You can position (move) and resize controls by dragging or by adjusting the control properties on the **Property Sheet** pane. In **Design** view, if controls are not in a layout, you can resize and move them independently from any associated labels.

Select multiple controls

You can select multiple controls or labels using different methods before aligning them to one another or resizing them. These methods are:

- Select the Shift or Ctrl key while selecting the controls. To deselect a control, select the Shift or Ctrl key while selecting that control again.
- Drag a selection box around the controls. Note that by default, the selection box does not have to totally enclose the controls; it just needs to partially enclose them. You can change this setting in **Access Options**. Note that you can drag in any direction, as the following two screenshots depict.
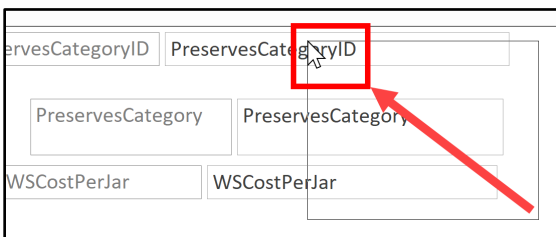
Figure 59: Drag the cursor so the square "box" touches the controls you want to select
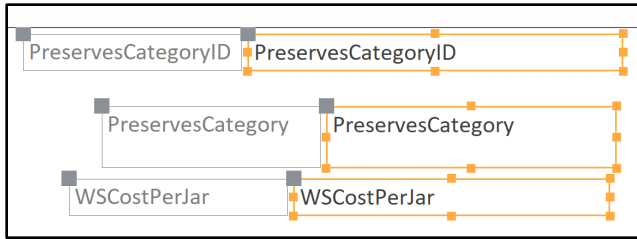
Figure 60: Controls selected by dragging a box with the cursor

- Click or drag in either ruler; whatever the "line" touches will become selected, as the following screenshot depicts. If you want to deselect a control, select the **Ctrl** key and then select that control.
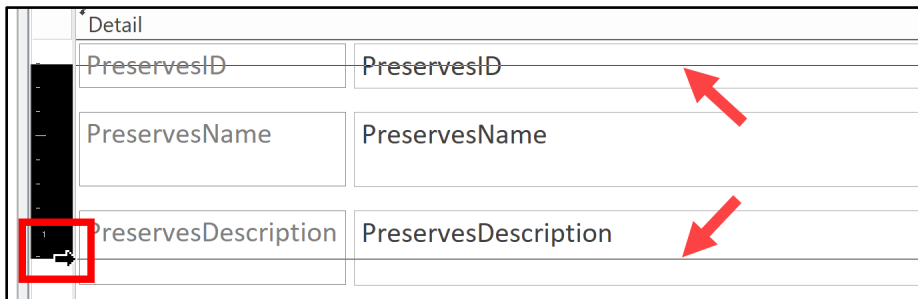
Figure 61: Selecting multiple controls by dragging in the ruler

Move controls by dragging

To move a control by dragging:

1. Select the control. To move multiple controls, select **Ctrl** or **Shift** to select the controls or use the cursor to drag a box that partially encloses the controls.

2. Drag the control from the middle of the control, or from an edge of the control that does not have a square handle, to a different location on the form.

Tips:

- Be sure the cursor is a white arrow with a four-headed arrow under it before you begin to drag.
- By default, controls and their labels move together.
- If you accidentally insert the cursor inside a control, select Esc to reselect the control. The following screenshot depicts this process.

Figure 62: Drag an edge to move a control.

![Microsoft]

You can move a label independently of its control, which is useful if you want the label to be in a different position than the default "on the left" position of the control. You can do this by dragging or by setting the label and/or control **Top** and **Left** properties.

To move a label independently of its control:

1. Select the label or the control.

2. Point your cursor over the solid square in the top-left corner of the object you want to move, and then drag it to reposition the label. The following two screenshots depict this process.
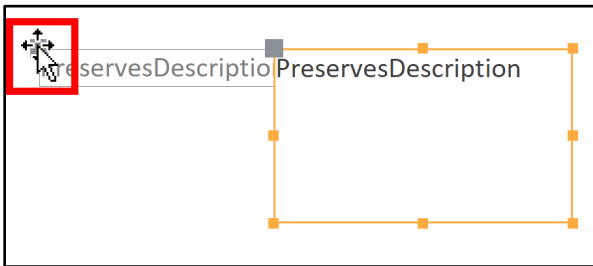
Figure 63: The top-left corner handle to move labels and controls independently

Figure 64: Drag to move the label

Move controls by modifying the Top and Left properties

You can move controls without a mouse or other pointing device by changing the properties of the control in the **Property Sheet** pane. Setting the **Top** and **Left** properties of a control moves the control and its label independent from one another and can be used as an alternate method to dragging the top-left corner handle.

To move a control by setting its properties:

1. Select the control or label control.

2. Select F4 to open the **Property Sheet** pane.

3. On the **Format** tab, position the cursor in the **Top** property box and enter a value, which is the distance between the top of the section that the control is in and the top of the control.

4. On the **Format** tab, position the cursor in the **Left** property box and enter a value, which is the distance between the left edge of the section that the control is in and the top of the control.

Resize controls by dragging

Each selected control has resize handles on each edge (1) and corner (2), which the following screenshot depicts.

Figure 65: Resize handles

When your cursor is over a resize handle, drag to resize the control, as the following screenshots depict.

Figure 66: Dragging with a side handle to resize a control

Figure 67: Selecting a corner resize handle

Figure 68: Dragging with a corner handle to resize a control

Resize controls by modifying the Width and Height properties

You can resize controls without a mouse or other pointing device by changing the properties of the control in the **Property Sheet** pane. Setting the Width and Height properties of a control resizes the control and can be used as an alternate method to dragging the resize handles. To change the dimensions of a control by modifying its properties:

1. Select the control or label control.

2. Select F4 to open the **Property Sheet** pane.

3. On the **Format** tab, position the cursor in the **Width** property box and enter a value, which is the width of the control.

4. On the **Format** tab, position the cursor in the **Height** property box and enter a value, which is the height of the control.

Add controls to a form with the Field List pane

There are many reasons to add a field to a form. For example, you might need to add a control that has been deleted from the form, or you might need a control for a new field that was added to the underlying table after the form was built.

You can add controls in **Layout** view or **Design** view. To add a control to a form:

1. Open the **Field List** pane by selecting the **Design** tab, and then in the **Tools** group, selecting **Add Existing Fields**. Alternatively, select Alt+F8.

2. Drag a field from the **Field List** pane to the form. If you drag into a layout, let go of the mouse pointer after the cell becomes highlighted.
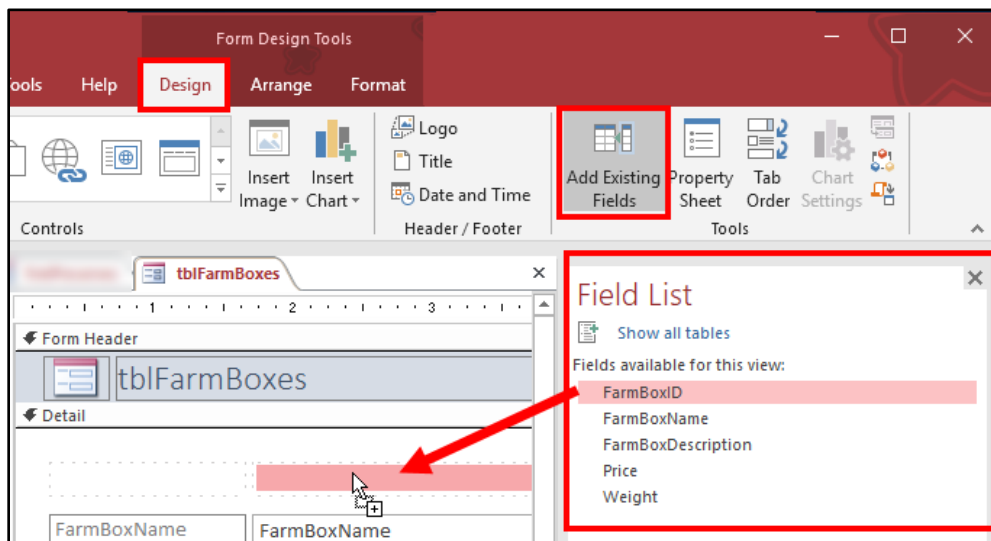
*Figure 69: Dragging a field from the **Field List** pane to a form layout*

Note that some field types will create controls when you drag them to a form. For example, dragging a **Yes/No** field into a form will create a check box or other choice control, depending on the field's settings in the underlying table.

Additional information

For more information about the Field List pane, go to: [Learn more about the Field List pane](#)

For more information about adding fields to forms, go to: [Add a field to a form or report](#)

For more information about inserting checkboxes, go to: [Add a check box control to show Yes/No values](#)

For more information about adding list or combo boxes to forms, go to: [Add a list box or combo box](#)

For more information about modifying your form using the Design View, go to: [Fine-tune your form in Design view](#)

Add images

You can add images to a form in **Design** view or **Layout** view. To insert an image:

1. Open the form in **Design** view.

   o You can insert an image in **Layout** view, but it will either become an object in an existing layout or create a new layout. To add an image to a form without a layout, work in **Design** view.

2. If you are inserting the image on a **Form Header** or **Form Footer**, be sure these are displaying on the form.

3. On the **Design** tab, select **Insert Image**, select **Browse**, navigate to the image you want to use, select it, and then select **OK**.

4. Drag the area on the form where you want the image, which creates an image control that is the size of the box you create by dragging. Alternatively, you can click or tap on the form, or select Enter, which inserts the image at its actual size. You can then resize the image by adjusting the **Height** and **Width** properties in the **Property Sheet** pane.
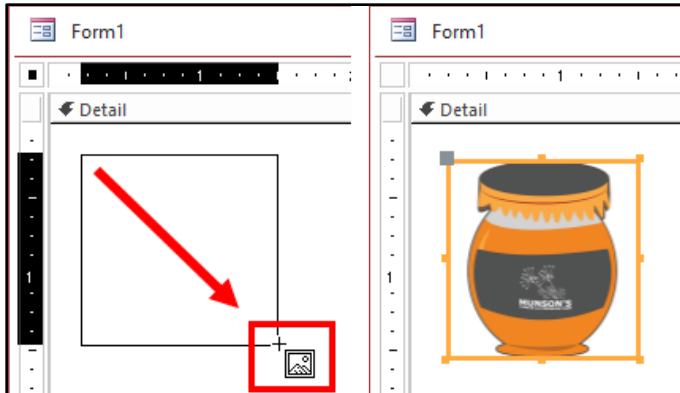
Figure 70: To control the size of the image on the form, insert an image by dragging

5. If necessary, resize the image by dragging a corner handle toward the middle of the picture. Alternatively, select the image and then adjust the **Size Mode**, **Height**, and **Width** properties in the **Property Sheet** pane.

An alternative method to insert an image is:

1. With the form open in **Design** view, on the **Design** tab, select **Insert Image**. This inserts an image.

2. Select F4 to open the **Properties Sheet** pane.

3. With the **Image** control still selected, on the **Property Sheet** pane, on the **Format** tab, position the cursor in the **Picture** property box and then select **Build**.

4. Browse to the picture you want to use, select it, and then select **OK**.
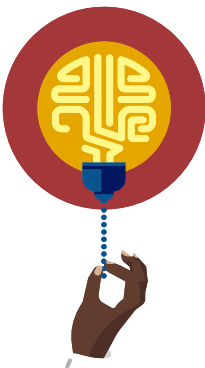
Did you know?

If the image is much larger than the section of the form where you place it, the size of the form section where you placed it will increase. This might mean you'll need to resize that section of the form after resizing the image.

A best practice is to use an app that resizes images to size the picture to approximately the correct size before you insert it on your form.

Microsoft

Use the Size Mode property

You can find the **Size Mode** property on the **Format** and **All** tabs in the **Property Sheet** pane. The following screenshot highlights this property on the **Format** pane.
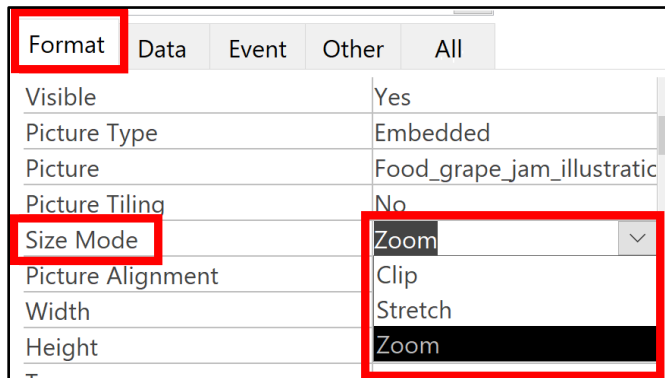
*Figure 71: The **Format** tab in the **Property Sheet** for an image and the **Size Mode** choices*

Images have the following three possible **Size Mode** property settings:

- **Clip** will "cut off" part of the picture if its container, such as a layout, is smaller than the image. The following screenshot depicts an image with this setting.

*Figure 72: Image in a layout with the **Size Mode** property of **Clip***

- **Stretch** will stretch and probably distort the picture if the container is a different size or dimension than the image. The following screenshot depicts an image with this setting.

*Figure 73: Image in a layout with the **Size Mode** property of **Stretch***

- **Zoom** will resize the image to fit within the container without distorting it, which often makes it your best choice. The following screenshot depicts an image with this setting.
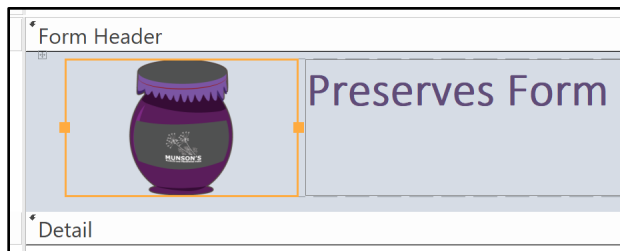
*Figure 74: Image in a layout with the **Size Mode** property of **Zoom***

Delete controls and labels

When you delete a control from a form, if it has an associated label, the label will also be deleted. However, when you delete a label, the control is not deleted. If you want to delete both the control and the label, delete the control.

Use resizing and aligning techniques and tools

In layouts, controls are already aligned, and you can resize multiple controls at the same time by resizing the layout. In **Design** view, however, aligning or resizing controls on a form can be tedious. The following list includes a few of the techniques and tools in Access that can save you time and frustration when you are formatting your form.

Before you begin, if the ruler is not visible, on the **Arrange** tab, under **Size/Space**, under **Grid**, select **Ruler**.

Snap to Grid

Snap to Grid is a setting that when on, will cause your objects to line up to a visible or invisible grid. To turn **Snap to Grid** on or off, on the **Form Design Tools** contextual tab, in the **Arrange** tab, go to the **Sizing & Ordering** group, select **Size/Space**, and then select **Snap to Grid**. To display (or hide) the grid, on the **Form Design Tools** contextual tab, in the **Arrange** tab, go to the **Sizing & Ordering** group, select **Size/Space**, and then select **Grid**. The following screenshot highlights the **Snap to Grid** option in the **Size/Space** drop-down list.
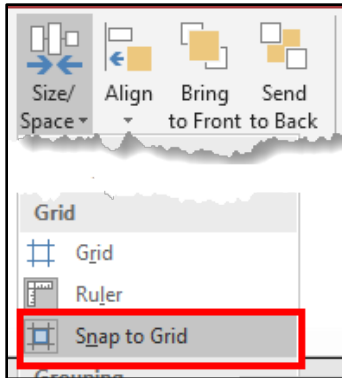
*Figure 75: **Snap to Grid***

Align multiple controls

Select multiple controls and then in the **Arrange** tab, in the **Sizing & Ordering** group, select the **Align** drop-down list, and then select the alignment option you want. The selected controls will move to align to the control that is farthest in that direction.
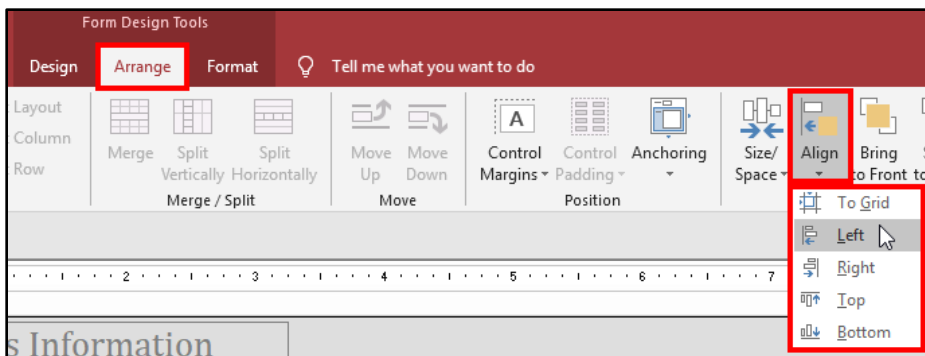
*Figure 76: The **Align** drop-down list*

In the following screenshot, three controls are selected.
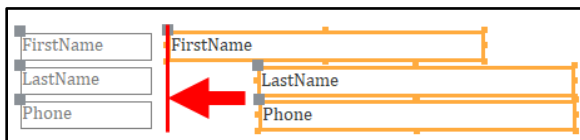
Figure 77: Controls selected

When you apply left-align, all the controls move to align their left edges to the edge of the control that is farthest left, as the following screenshot depicts.
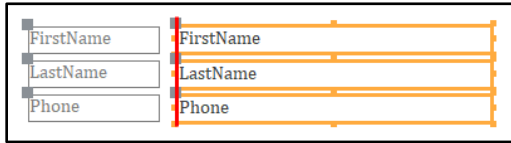
Figure 78: Left-align applied, all controls move to align with the left-most control's left edge

Additional information

For more information on form controls, go to: [Introduction to controls](#)

Use anchoring to make controls resize or move with your form

The **Anchoring** command changes the default behavior of form controls when a form is resized. Controls will, by default, stay anchored to the upper-left corner of the form and do not resize when you resize the form. When you apply anchoring options, you can configure controls to anchor to different corners of the form and stretch vertically, horizontally, or both to fill the available space.

The following table lists the anchoring options available for controls that are not in a layout.

Anchoring option	Control is anchored to this corner of the form	Resize / stretch behavior when the form is resized
Top Left (default)	Upper-left corner	Does not change size
Stretch Down	Upper-left corner	Stretches vertically and fills the available space
Bottom Left	Lower-left corner	Does not change size
Stretch Across Top	Upper-left corner	Stretches horizontally and fills the available space
Stretch Down and Across	Upper-left corner	Stretches vertically and horizontally to fill the available space

Microsoft

Anchoring option	Control is anchored to this corner of the form	Resize / stretch behavior when the form is resized
Stretch Across Bottom	Lower-left corner	Stretches horizontally and fills the available space
Top Right	Upper-right corner	Does not change size
Stretch Down and Right	Upper-right corner	Stretches vertically and fills the available space
Bottom Right	Lower-right corner	Does not change size

Table 2: Anchoring options for controls that are not in a layout

Use anchoring controls in a layout

When you're using a layout to organize your controls, if you specify the anchoring for one control in each layout, the anchoring of the other controls in the layout is set automatically, depending on whether the layout is **Stacked** or **Tabular**. The following table lists the anchoring options available for controls in a layout.

Anchoring option	Other controls in a Stacked layout	Other controls in a Tabular layout
Top Left (default)	**Top Left**	**Top Left**
Stretch Down	Controls above: **Top Left** Controls below: **Bottom Left**	**Stretch Down**
Bottom Left	**Bottom Left**	**Bottom Left**
Stretch Across Top	**Stretch Across Top**	Controls to the left: **Top Left** Controls to the right: **Top Right**
Stretch Down and Across	Controls above: **Stretch Across Top** Controls below: **Stretch Across Bottom**	Controls to the left: **Stretch Down** Controls to the right: **Stretch Down and Right**
Stretch Across Bottom	**Stretch Across Bottom**	Controls to the left: **Bottom Left** Controls to the right: **Bottom Right**
Top Right	**Top Right**	**Top Right**

Anchoring option	Other controls in a Stacked layout	Other controls in a Tabular layout
Stretch Down and Right	Controls above: **Top Right** Controls below: **Bottom Right**	**Stretch Down and Right**
Bottom Right	**Bottom Right**	**Bottom Right**

Table 3: Anchoring options for controls that are in a layout

Anchor a control

The procedure to anchor a control is the same for controls that are in a layout as well as not in a layout. Perform the following steps:

1. In the **Navigation Pane**, right-click or access the context menu for the form that you want to change, and then select **Layout View**.

2. Open the form you want to change in **Layout View**.

3. Select the control to which you want to apply anchoring.

4. On the **Arrange** tab, in the **Position** group, select **Anchoring**.

5. Select the option that you want.

Additional information

For more information on anchoring controls, go to: [Make controls stretch, shrink, or move as you resize a form](#)

For more information on using anchoring with controls in a layout, go to: [Special considerations when you use layouts](#)

Set document window options

You can review the results of control anchoring when you resize:

- The Access window, if the database is set to display objects as document tabs, which is the default setting.
- The form window, if the database is set to display objects as overlapping windows.

To change the document window options for the current database:

1. On the **File** tab, select **Options** and then select **Current Database**.

2. In the **Application Options** section, for **Document Window Options**, select **Overlapping Windows** or **Tabbed Documents**.

3. Close and reopen the database to review the change.

When in **Form** view, drag the right or bottom edge of the window to resize it.
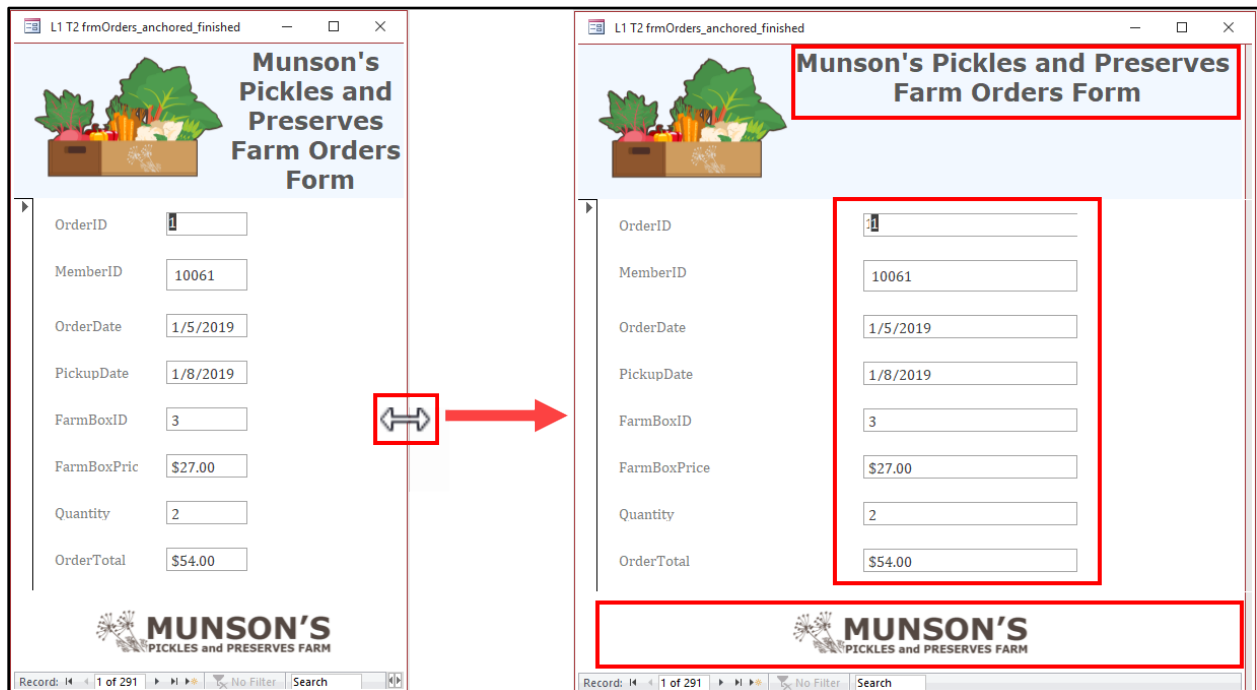
Figure 79: Resizing a window by dragging the edge of a form

Resize a form and controls when anchored

You should resize the form and controls in **Design** view to the smallest possible size, while still ensuring that the label text or information in the underlying table are legible. There should be a minimum of empty design grid space below and to the right of the controls. Periodically switch to **Layout** view and check to ensure that the data is still legible. To resize a form:

1. Switch to **Design** view.

2. Resize controls in the form, especially those in the header and footer. The form cannot be narrower than the width of the controls. In other words, if one control is 6 inches wide, you won't be able to resize the form any narrower than 6 inches.

3. To resize the form itself, select and drag the right and bottom edge of the form. If you have a footer, drag the bottom edge of the **Detail** section of the form (just above the **Form Footer** band), as the following screenshot depicts.

*Figure 80: Resize the height of a form by dragging the bottom of the **Detail** section*

Alternatively, you can change the form's size in the **Property Sheet** pane. In **Design** view, select the small box between the horizontal and vertical ruler, as the following screenshot depicts. Double-click this box to open the **Property Sheet** pane to edit **Form** properties. You can also select F4 to open the **Property Sheet** pane, and then select **Form** from the list.
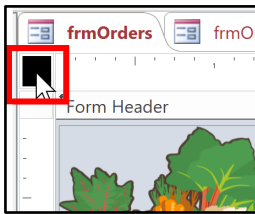
*Figure 81: Selecting the box to open the **Property Sheet** pane*

Change the tab order on a form

In **Form** view, you can select each field or use the Tab or Enter key to move from field to field. To make a form easier to use with a keyboard, you should make sure the order of fields, called the *tab order*, is intuitive. Usually, this is top-to-bottom, left-to-right.

If the form controls are in a layout, this is the default tab order. When you manually create forms from a blank form or move controls on a form without a layout, you might create a tab order that is no longer logical and makes the form harder to use.

You can change the tab order in the **Tab Order** dialog box by selecting **Auto Order**, which creates an order based on the physical location of the controls (top-to-bottom, left-to-right). You can also select and then drag fields to create a custom order or change the **Tab Index** property for each control on the form. To change the tab order on a form:

1. In the **Navigation Pane**, right-click the form or access its context menu and select **Design View**, or open the form and switch to **Design View** by using the **View** drop-down list on the **Home** tab.

2. On the **Design** tab, in the **Tools** group, select **Tab Order**.

3. In the **Tab Order** dialog box, in the **Section** box, select the section you want to change: **Form Header**, **Detail**, or **Form Footer**.

4. Do one of the following:

    o To create an automatic tab order that creates an order based on the physical location of the controls (top-to-bottom, left-to-right), select **Auto Order**.

    o To create a custom tab order, in the **Custom Order** box, select the control box for the control you want to move and then drag it to the desired location on the list. You can also select and drag the cursor to select multiple controls and then drag them to the desired location on the list.

5. Select **OK** to apply the tab order change. The following screenshot depicts this procedure.
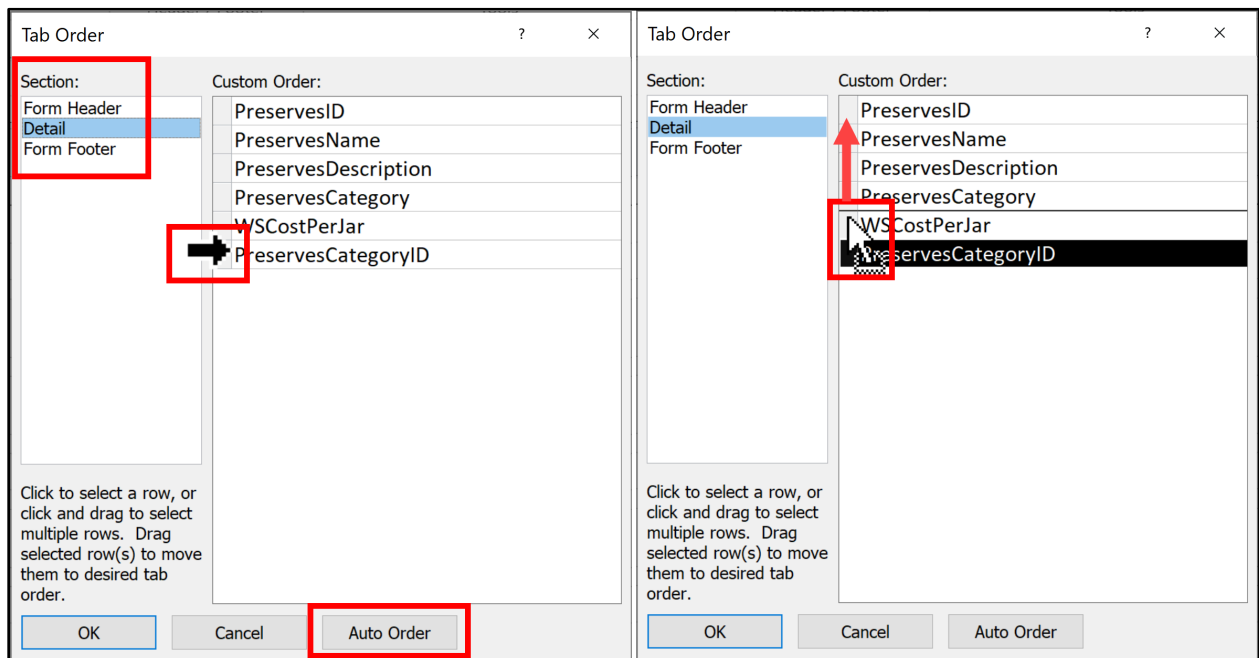
*Figure 82: Reordering controls in the **Tab Order** dialog box*

An alternative way to change the tab order on a form is:

1. Open the form in **Design** view and then select F4 to open the **Property Sheet** pane.

2. On the form, select the control or, in the **Property Sheet** pane, choose the control from the list.

3. On the **Other** tab, change the **Tab Index** property number to a value of **0** or more. Note that the **Tab Index** property numbering starts at zero, so the first control in the tab sequence is 0, the second is 1, the third is 2, and so on. The following screenshot depicts the **Tab Index** property number on the **Other** tab of the **Property Sheet** pane.
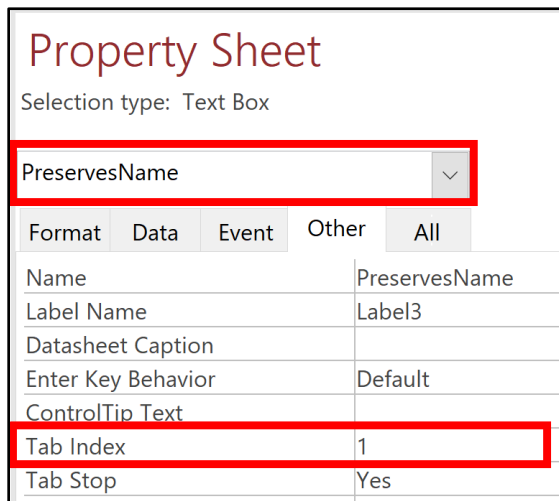
*Figure 83: The **Tab Index** property on the **Other** tab on the **Property Sheet** pane*

Additional information

For more information on setting the tab order in forms, go to: Set the tab order for controls

Activity: Show me how

In this activity, observe your teacher briefly demonstrate the skills you'll need in the upcoming try-it.

Resources

You'll need the following resources for this activity:

- None

Instructions

To participate in this activity:

- Pay attention to the methods that your teacher uses to work with controls on forms and anchor controls.
- Be prepared to repeat these actions in the upcoming try-it.
- Ask questions to clarify anything that isn't clear to you.

Try-it: Add, modify, and position controls

In this leveled try-it, you'll add, delete, and modify form controls, including adding and deleting controls, resizing and aligning controls, changing control properties, and anchoring controls.

Try-it 1

In this try-it, you'll customize forms by adding text and images. You'll then modify the components of the form by formatting, aligning, moving, and resizing controls. Finally, you'll anchor the form elements so they remain anchored to various parts of the form when it is resized.

Resources

You'll need the following resources for this try-it:

- Open **L2_T1_try1_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.
- The following image from **Media** folder under **Student Materials**:
  - **Farm_no_people_aerial_illustration.png**

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open **L2_T1_try1_csa_program_starter.accdb**.

2. Open the **frmMembers_PhoneList** form in **Design** view.

3. Resize the form to **8 inches** wide, and resize the **Detail** section to be **1.5 inches** in height.

4. Add the **Memo** field at the **5.625 inch** mark on the horizontal ruler. Move the label control so it is above the field control (**Top** property at **.125"**).

5. Align the left edge of the label with the field control at **5.625"**.

6. Select the label control and the field control, and then change the font formatting to **Verdana (Header)**, **Black**, and **11 points**.

7. If necessary, widen the label so all the text is legible. If necessary, adjust the height of the **Memo** field control to **.75 inches**.

8. Change the following Form properties:

   o Caption: **Members Phone List**
   o Default View: **Continuous Forms**

9. Resize all the labels so they are all the same width as the **First Name** label, and then resize all the field controls so they are all the same width as the **FirstName** field.

10. Align all the field controls on their left edges.

11. Vertically align the labels with their associated controls and adjust them so they are equally spaced vertically.

12. Add an image on the left side of the form and then size it so it is between **1** and **1.7** inches wide. Set **Top** and **Left** properties to **0 (zero)**. Choose an image from the following:

    o **Farm_no_people_aerial_illustration.png**
    o **Farm_girl_basket_of_produce_illustration.png**
    o **Munsons_Pickles_and_Preserves_Farm_sign_illustration.png**
    o **Food_farm_box_summer_illustration.png**
    o **Munsons_logo_square_illustration.png**

13. Anchor the **Memo** field control **Stretch Across Top**, anchor the **Memo** label control at **Top Left**, and leave all other controls anchored with the default of **Top Left**. Refer to the following screenshot to review how your form should appear. Note that there are multiple records, the picture and data controls repeat for each record, and the memo field appears slightly enlarged due to the anchoring property.

Figure 84: An example of the finished form

14. Save the form.

15. Examine the form in **Form** view and resize the form window to review how the anchoring works.

16. Close the form and the database.

Try-it 2

In this try-it, you'll format a form by adjusting a form layout, adding text and images, changing the size and properties of the form, and anchoring controls.

Resources

You'll need the following resources for this try-it:

- Open **L2_T1_try2_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.
- The following images from **Media** folder under **Student Materials**:
  - **Food_strawberry_jam_illustration.png**
  - **Food_strawberry_whole_illustration.png**

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open **frmPreserves** in **Layout** view.

2. Change the font for all controls to **Verdana**, **11pt**, **Black**.

3. Change the labels to the following:

   o **Preserves ID**
   o **Preserves Name**
   o **Preserves Description**
   o **Wholesale Cost/Jar**

4. Increase the width of column 1 so all the label text is legible.

5. Decrease the width of column 2 to **3.5"**.

6. Remove blank rows in the layout and then change the height of rows 1, 2, and 4 so they are the same height as row 1, which is approximately **.25"**.

7. In **Design** view, move the layout so the left top edge is at **.5"** on the vertical ruler and **2"** on the horizontal ruler.

8. Add an image to the left of the layout (at **.2 inches** vertically and **0** to **.2** inches horizontally). Size it so the width fits in the space provided, with a width between **1.5 inches** and **2 inches**). Choose from the following images:

   o **Food_apricot_jam_illustration.png**
   o **Food_grape_jam_illustration.png**
   o **Food_strawberry_jam_illustration.png**
   o **Food_honey_jar_illustration.png**
   o **Munsons_Pickles_and_Preserves_Farm_sign_illustration.png**

9. Add a **Label** control at **2 inches** on the horizontal ruler and then add the text **Preserves Form**.

10. Format the text as **Verdana**, between **20** and **30** points, and a dark color from the **Themes** colors that complements the image you chose. Optionally, bold the text.

11. Resize the label control so the text is legible.

12. Change the **Caption** property of the form to **Munson's Preserves**.

13. Add a smaller image on the bottom-right corner of the form, approximately **0.25 inches** square. The right edge of the image should align with the right edge of the layout, and it should not be behind or in front of any of the fields.

14. Resize the form to remove excess white space, view the form in **Form** view, save the form, and then close it. Refer to the following screenshot to review how your form should appear. Note the two images of different sizes on opposite corners of the form; the **Preserves ID**, **Preserves Name**, **Preserves Description**; and **Wholesale Cost/Jar** labels.

*Figure 85: An example of the finished **Preserves** form*

15. Add **Anchoring** to the four elements of your form as follows:

    a. The image in the top-left corner: **Top Left**

    b. The "Preserves Form" label: **Top Right**

    c. The layout: **Stretch Across Top**

    d. The image in the bottom-right corner: **Bottom Right**

Topic 2: Add information to form headers and footers

In this topic, you'll learn different ways to add form headers and footers. You'll also learn how to format form headers and footers, including changing their height and properties, and adding titles and logos.

Add form headers and footers

If you have used Microsoft Word or Microsoft Excel, you might be familiar with headers and footers as the content at the beginning and end of the page. However, unlike other programs, Access forms have two sets of headers and footers:

- The page header and footer, which contain information such as page numbers, are used primarily for printing the form.
- The form header and footer are used primarily when you're using the form, on the screen.

Information on a form header or footer might include:

- Pictures, such as logos.
- Buttons to navigate records.
- Text, such as instructions or the phone number or email address for the person or department to contact for help with the data or form.
- The title of the form.
- Copyright information.
- Controls that depict information about the record or set of records, such as a total.

Forms that you review in **Datasheet** view will not have a header or footer. When you add a header to a form, the form footer is added at the same time. Access adds form headers and footers when you:

- Create the form with the **Form Wizard** or the Form tool.
- Add a title to the form by using the **Title** option.
- Add a logo to the form by using the **Logo** option.
- Add a form header or footer in the **Design** view.

To add a form header and footer:

1. Open the form in **Design** view.

2. Right-click or access the context menu for the **Detail** section of the form and then select **Form Header/Footer**, as the following screenshot depicts.
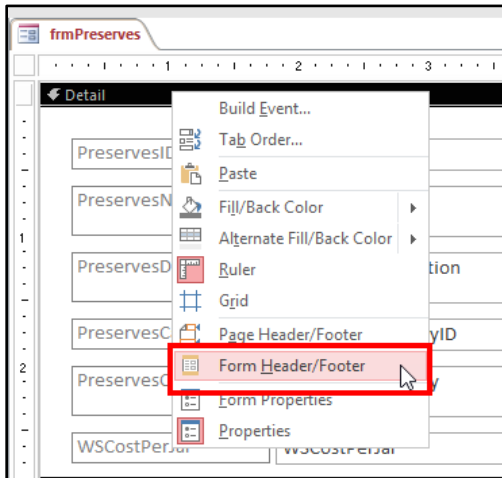
*Figure 86: **Form Header/Footer** option in the context menu*

Change dimensions of form headers and footers

To change the height of a form header:

1. Open the form in **Design** view.

2. Position the cursor just above the **Detail** band until it becomes a double-headed arrow, and then select and drag up or down until the desired height is reached, as the following screenshot depicts.
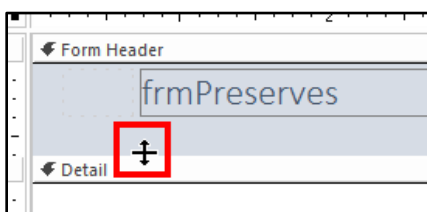
Figure 87: Adjusting the height of the Form Header with the mouse

![Microsoft] Microsoft

Alternatively:

1. Select F4 to open the **Property Sheet** pane, and then select **FormHeader** in the **Property Sheet** drop-down list.

2. On the **Format** tab, enter a value in the **Height** property, and then select Enter. The following screenshot depicts **FormHeader** in the **Property Sheet** drop-down list and the **Height** property on the **Format** tab.
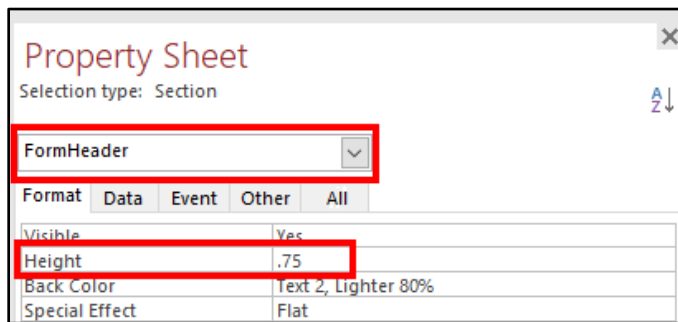
*Figure 88: **FormHeader** selected on the **Property Sheet** pane, and the **Height** property*

If a form has a form header, it will also have a form footer, although if its height property is set to zero, you won't be able to review it or use it until you change the height. To change the height of a form footer:

1. Open the form in **Design** view.

2. Position the cursor just below the **Form Footer** band until it becomes a double-headed arrow, and then select and drag down until the desired height is reached, as the following screenshot depicts.
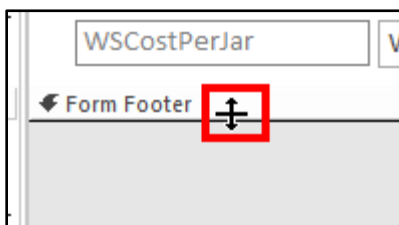
*Figure 89: Adjusting the height of the **Form Footer** with the mouse*

3. Alternatively:

   a. Select F4 to open the **Property Sheet** pane, and then select **FormFooter** in the **Property Sheet** drop-down list.

   b. On the **Format** tab, enter a value in the **Height** property, and then select Enter. The following screenshot depicts **FormFooter** in the **Property Sheet** drop-down list and the **Height** property on the **Format** tab.
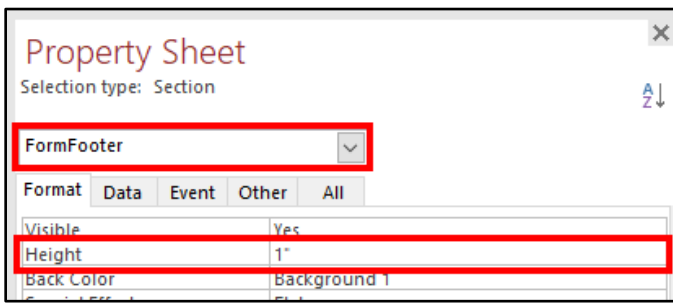
*Figure 90: **FormFooter** selected on the **Property Sheet** pane, and its **Height** property*

Select form sections

To change the properties for a form section (for example, to change the background color of the **Form Header**), select the band above the section you want to format, as the following screenshot depicts.
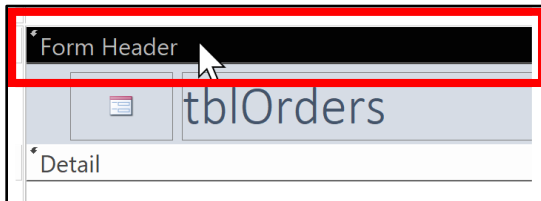
*Figure 91: Select the band labelled **Form Header** to select the **Form Header** section of the form*

Format a form section with properties

You can format properties for sections on your form. As an example, you can format the background color of a section on a form by performing the following steps:

1. Open the form in **Design** view and then select F4 to open the **Property Sheet** pane.

2. In the **Property Sheet** pane, select the **Format** tab.

3. In the **Back Color** property box, do one of the following:

   o Select **Build** and then select a color from **Theme Colors**, **Standard Colors**, **Recent Colors**, or **More Colors**.

   o Open the list and select a defined element color.

o Enter a number sign and then a six-digit hexadecimal color number; for example, **#FFFFFF** for white. The following screenshot depicts the process of selecting **Build** and then selecting a theme color for the **Back Color** property.
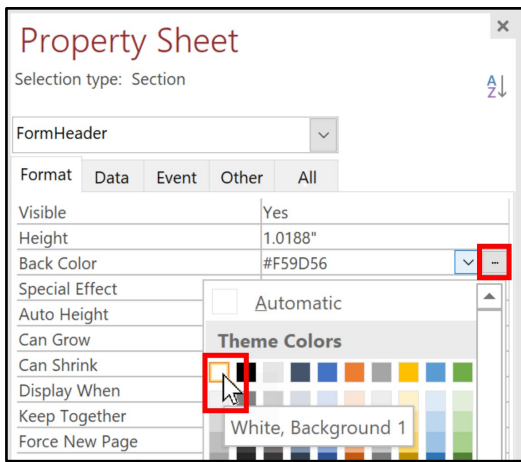
*Figure 92: Select **Build** to choose a color for the **Back Color** property*

Add a title to a form

You can add a title to a form in **Layout** view or **Design** view by using the **Title** option on the **Design** tab within the **Form Design Tools** or **Form Layout Tools** tab. Adding a title will add a **Form Header** if the form doesn't have one already. If there is a title already, the **Title** option will select the text in the title and allow you to edit it.

The title is really a label control that is added to the form header in a layout. The layout has two columns: the first column contains an empty cell for an image or logo, and the second column contains the title label.

Note that you can add a title to any form, including a datasheet form. However, form headers and footers are not available when the form is in **Datasheet** view.

To add a title:

1. In the **Layout** view of the form, go to the **Design** tab within the **Form Layout Tools** tab, and then in the **Header/Footer** group, select **Title**. Alternatively, in the **Design** view of the form, go to the **Design** tab within the **Form Design Tools** tab, and then in the **Header/Footer** group, select **Title**. The following screenshot highlights the **Design** tab within the **Form Layout Tools** tab and the **Title** option in the **Header/Footer** group.
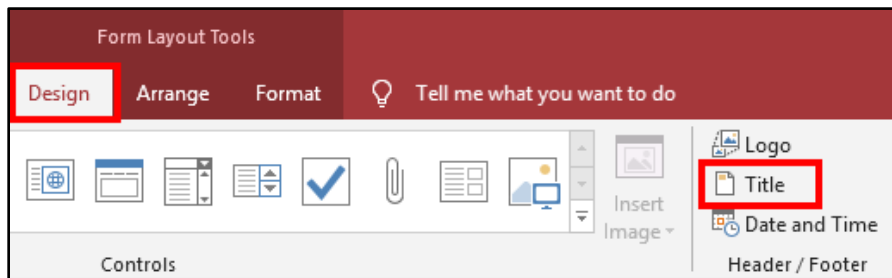
*Figure 93: The **Title** option on the **Design** tab in the ribbon*

2. Enter the title text and then select Enter.

Add a logo to a form header

You can add a logo to a form in **Layout** view or **Design** view by using the **Logo** option on the **Design** tab within the **Form Design Tools** or **Form Layout Tools** tab. Adding a logo in this way will add a **Form Header** to the form if the form doesn't have one already.

The logo is added to the form header in a layout. The layout has two columns: the first column contains the logo, and the second column contains a label in which you can add a title.
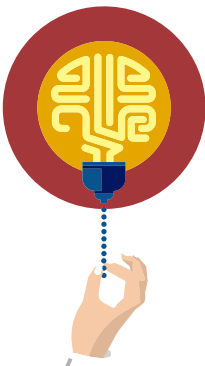
Did you know?

Some methods of creating forms automatically add a title and logo in a layout. The logo in this case is a default image that is like a form icon. Use the **Logo** option to replace that image with a picture of your own.

Note that you can add a logo to any form, including a datasheet form. However, form headers and footers are not available when the form is in **Datasheet** view.

To add a logo:

1. Open a form in **Design** view.

2. In the **Layout** view of the form, go to the **Design** tab within the **Form Layout Tools** tab, and then in the **Header/Footer** group, select **Logo**. Alternatively, in the **Design** view of the form, go to the **Design** tab within the **Form Design Tools** tab, and then in the **Header/Footer** group, select **Logo**. The following screenshot highlights the **Design** tab within the **Form Layout Tools** tab and the **Logo** option in the **Header/Footer** group.
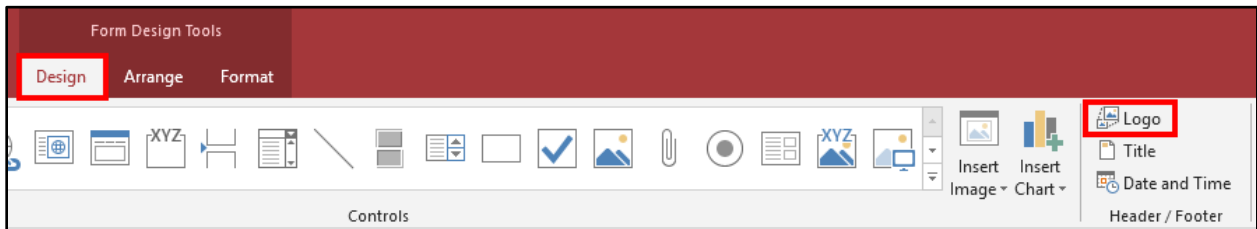
*Figure 94: The **Logo** option on the **Design** tab*

3. Browse to the picture you want to use, select it, and then select **Open**.

4. Optionally, resize the picture by changing the **Width** and **Height** values in the **Property Sheet** pane or by resizing the layout with your cursor.

Figure 95: Resizing the layout for a logo image and title

5. Optionally, select **Title** to add a title to the same layout.
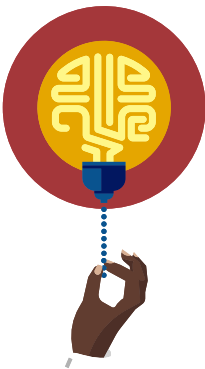
Did you know?

Access adds titles and logos to a **Form Header** in a form layout. If your **Form Header** does not have a layout, adding a title or logo will add one. This might interfere with any text or controls you already have in the Form Header.

If you want to use the **Title** or **Logo** options, a good practice is to remove any labels or content in your header first. Alternatively, you can plan on removing the content (the title text or logo picture) from the layout after you add it.

Microsoft

Activity: Think-pair-share

In this activity, you'll brainstorm with a classmate about what information is appropriate for a form header or footer.

Resources

You'll need the following resources for this activity:

- Open **L2_T2_act_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Activity instructions

1. Think about what kind of information you might include in the form header or footer for the **tblPreserves** table, which contains the data about the new line of preserves that Munson's is going to sell.

2. What information do you want to include in the header?

3. What information do you want to include in the footer?

4. Be prepared to share your ideas with the class.

5. Follow along as your teacher demonstrates how to add information to a form header and footer.

Try-it: Add information to form headers and footers

In this leveled try-it, you'll add headers and footers, add titles and logos to headers, and add text to footers.

Try-it 1

In this try-it, add a title and a logo to the **frmFarmBoxes** form, format the form sections, and add an image to the footer.

Resources

You'll need the following resources for this try-it:

- **L2_T2_try1_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.
- **Munsons_Pickles_and_Preserves_Farm_sign_illustration.png** and **Munsons_logo_banner_illustration.png** from the **Media** folder under **Student Materials**.

Instructions

1. Open **L2_T2_try1_csa_program_starter.accdb**.

2. Add a logo to the **frmOrders** form. Use the **Munsons_Pickles_and_Preserves_Farm_sign_illustration.png** file.

3. Resize the logo to **1 inch** square and set its **Size Mode** property to **Zoom**.

4. Add a title to the **frmFarmBoxes** form with this text:
   Munson's Pickles and Preserves
   Farm Boxes Orders

   o Hint: Select Shift+Enter to add an extra line before the text starts and after the word **Preserves**.

5. Change the form header **Back Color** to **White** or, from the **Theme Colors**, select **Background 1**.

6. Change the title font to **Verdana 18**, **Bold**, **Dark Green Accent 1**, **Darker 25%**.

7. Change the height of the **Form Footer** to **1 inch**.

8. Add the **Munsons_logo_banner_illustration.png** image to the **Form Footer**. Change the size of the image control to the width of the footer, and then change its height to **1 inch**.

9. Resize the **Height** of the **Form Footer** to **1 inch**.

10. Examine the form in **Form** view, and then save and close the form.

Try-it 2

In this try-it, add a title and a logo to the **frmPreserves** form, format the form sections, and add contact information to the footer.

Microsoft

Resources

You'll need the following resources for this try-it:

- **L2_T2_try2_csa_program_starter.accdb** in this lesson's **Learning Activity Resources** folder.
- **Food_apricot_jam_illustration.png** from the **Media** folder under **Student Materials**.

Instructions

1. Open **L2_T2_try2_csa_program_starter.accdb**.

2. In the **frmPreserves** form, right-click or access the context menu for the **Detail** selection band, and then select **Form Header/Footer**.

3. Resize the footer to **.5 inch** tall.

4. Format the label text so it is a dark theme color such as **Dark Green** (**Fore Color** property: **Accent 1**).

5. Change the form header and form footer **Shape Fill** (**Back Color**) to any **Theme Color** at **80% lighter**.

6. Alternatively, enter any of the following colors exactly as follows in the **Back Color** property box:

   - **Accent 1, Lighter 80%**
   - **Accent 2, Lighter 80%**
   - **Accent 3, Lighter 80%**
   - **Accent 4, Lighter 80%**
   - **Accent 5, Lighter 80%**
   - **Accent 6, Lighter 80%**

7. Add this text to the footer in a Label control: **For more information about Munson's Preserves, please contact Hilary@Munsonspicklesandpreservesfarm.com.**

8. Format the footer text by changing its color to the darkest version of the theme color you chose for the background color of the form footer.

9. Add the title **Preserves Form**, and then format the text so it is centered, 26 points, bold, and uses a theme color that complements the image you chose.

Microsoft

10. Add a logo by using one of the following images:

   o **Food_strawberry_jam_illustration.png**
   o **Food_apple_illustration.png**
   o **Food_pear_cut_illustration.png**
   o **Food_grape_jam_illustration.png**
   o **Food_apricot_jam_illustration.png**
   o **Food_strawberry_jam_illustration.png**

11. Resize the layout in the form header so the image is approximately **1 inch** square. The following screenshot depicts how your solution file should appear. Note that the form footer is about .5 inch tall. The label text is a dark green color. The form footer contains the text **For more information about Munson's Preserves, please contact Hilary@Munsonspicklesandpreservesfarm.com**; this text uses the darkest version of the form footer's background color.

Figure 96: Completed form

12. Examine the form in **Form** view, and then save and close it.

Wrap-up

Use these questions to check what you learned in this lesson:

1. To change attributes of a form control, you can use the:

   Select all that apply.

   a. **Format Pane**

   b. **Property Sheet** pane

   c. **Property Pane**

   d. **Form Design Tools** or **Form Layout Tools** tabs

2. If you have a field control selected and then select the Delete key, what happens to the field control's label?

   Select the correct option.

   a. Nothing, the label remains unchanged.

   b. The label is also deleted.

   c. The label moves on the form.

3. If you have a label selected and then select the Delete key, what happens to the associated control?

   Select the correct option.

   a. Nothing, the control remains unchanged.

   b. The control is also deleted.

   c. The control moves on the form.

4. Describe two ways in which you can resize multiple fields at once.

   Fill in the blank spaces.

   o _____

   o _____

5. Match the four options with what they add to a form:

    o This will add or edit a label control to the form header.

    o This will add or edit a graphic to the form header.

    Categorize the following items by adding the appropriate group name next to each item.

    a. The Title tool _____

    b. The Logo tool _____

    c. Creating a form with the **Form Wizard** _____

    d. Selecting **Insert Image** and selecting the form header _____

Glossary

Anchoring fields	To anchor a field is to specify how the control will move or stretch if the form is resized.
Associated labels	Field controls by default have a label control that is associated with or connected to it. Therefore, when you move or delete a field control, its label also moves or is deleted. When you add a **Label** control to the **Detail** section of a form, the label will display an error and **Error Checking Options** menu that you can use to fix the error by associating the label to a field control. You can also ignore the error.
Band	The horizontal bar just before a section that you select to make formatting changes and that separates one section from another.
Child table	The table on the "many" side of a one-to-many relationship. The subform in a form and/or subform is based on the child table.
Grid	Invisible (optionally visible) equally-spaced vertical and horizontal lines to which you drag objects to help align them.
Index	A method of putting things in order. In the **Property Sheet** pane, you use the **Tab Index** property to change the position of the field controls in the tab order. The first field control in the **Tab Index** is zero (0).
Layout	A table-like structure you can use on forms and reports to help align controls. This works well in the **Layout** view.

Microsoft

Parent table   The table on the "one" side of a one-to-many relationship. The main, or primary, form in a form and/or subform is based on the parent table.

Subform   A form within another primary form. A subform is based on a table that is related to the table of the primary form.

Table 4: Glossary terms and definitions

Cornerstone

Overview

In this Cornerstone, you'll enhance forms in an Access database to support a new line of Munson's pickles and preserves. You'll create a variety of forms to make working with the new data easier and faster. You'll also create forms that use several tables so you can simultaneously work with data that is stored in more than one table.

Objectives

The following table outlines the Cornerstone objectives and their corresponding MOS exam objectives.

Create datasheet forms, split forms, and single-table forms	• Not mapped
Create multiple-table forms	• Not mapped
Change image's **Size Mode** property to **Zoom**	• OD 4.1.2.: Set form control properties
Add titles to form headers	• 4.2.4: Insert information in form headers and footers
Add logos to form headers	• 4.2.4: Insert information in form headers and footers • 4.2.5: Insert images on forms
Change caption property	• OD 4.1.2.: Set form control properties
Insert a form as a subform	• 4.1.1. Add, move, and remove form controls • 4.2.3. Modify form positioning
Modify label text	• 4.1.3: Add and modify form labels

Move and align controls not in a layout	• OD 4.1.1.: Add, move, and remove form controls • 4.2.3. Modify form positioning
Anchor controls in layouts and not in layouts	• OD 4.2.3.: Modify form positioning
Delete controls and labels	• OD 4.1.3.: Add and modify form labels
Set control properties (size, position, color, and other attributes)	• OD 4.1.2.: Set form control properties
Modify tab order	• OD 4.2.1.: Modify tab order on forms
Add images to headers and footers	• OD 4.2.5.: Insert images on forms • OD 4.2.4.: Insert information in form headers and footers
Add controls to a layout	• OD 4.2.3.: Modify form positioning

Table 5: Cornerstone objectives

Duration

50 minutes

Instructions

1. Complete the tasks below for each file.

2. When saving your file, add your name to the end of the filename; for example, **cornerstone_csa_program_Dwayne_Espino**. Follow your teacher's directions for where to save your files.

3. When you're done with the Cornerstone, assess your completion and then enter the points you think you earned within the task lists below. You can use the help of your teacher if you need it.

Tasks

You'll work with one file in this Cornerstone. The following are the tasks you need to do in the file.

File: Cornerstone_csa_program_starter.accdb

Task: Create and modify a single-table form (10 points)

1. Use the Form tool or the **Form Wizard** to create a single-table form based on the **tblHoney** table. Save it as **frmHoney**. (2 points) (Exam objective: n/a)

2. Add a **Logo** to the form that is appropriate to the subject matter of the table and resize the logo to **1 inch**. (2 points) (Exam objective 4.2.5: Insert images on forms)

3. Change the **Size Mode** property to **Zoom**. (1 point) (Exam objective 4.1.2: Set form control properties)

4. Add a **Title** to the form with this text: **Munson's Honey**. Format the text with font size of **18pt** or larger, bold, and a dark blue theme color. (4 points) (Exam objective 4.2.4: Insert information in form headers and footers)

5. Change the **Form Caption** to **Honey Form**. (1 point) (Exam objective 4.1.2: Set form control properties)

Points scored: _____ / 10

Task: Create and modify a multiple-table form (11 points)

1. Use the **Form Wizard** to create a form based on the **tblPreservesCategories** and the **tblPreserves** tables.

    a. The main form should be the **tblPreservesCategories** table.

    b. The subform should be based on the **tblPreserves** table and have a datasheet layout.

    c. The form title should be **frmPreservesCategories**.

    d. The subform title should be **frmsubPreserves**. (8 points) (Exam objective: n/a)

2. Move the subform so the left edge begins at **0.25"**, and resize it so that it is **7.5" wide**. (2 points) (Exam objective 4.1.1: Add, move, and remove form controls)

3. Modify the label text in the label control in the header to **Preserves by Category**. (1 point) (Exam objective 4.1.3: Add and modify form labels)

Points scored: _____ / 11

Task: Anchor controls and layouts (5 points)

1. Open **frmOrders_anchored** in **Design** view. Anchor the objects on the form as follows: (4 points) (Exam objective 4.2.3: Modify form positioning)

    a. **Food_farm_box_spring_illustration.png** image control: **Top Left**

    b. **Munson's Pickles and Preserves Farm Orders Form Label** control: **Stretch Across Top**

    c. Any cell in layout: **Stretch Across Top**

    d. Image in Form Footer: **Stretch Across Bottom**

2. Switch to **Form** view and resize the form window to review the positioning work. (1 point) (Exam objective: n/a)

Points scored: _____ / 5

Task: Modify the position of controls on a form (31 points)

1. Open the form **frmsubOrders_and_Farmboxes** in **Design** view.

2. Change the font color for all the controls on the form to **Automatic**, or **Black**. (1 point) (Exam objective 4.1.3: Add and modify form labels)

3. Delete the following field controls and their associated labels: (4 points) (Exam objective 4.1.1: Add, move, and remove form controls)

   a. **MemberID**

   b. **tblOrders_FarmBoxID**

   c. **Price**

   d. **Weight**

4. Change the label text for all the labels as follows: (8 points) (Exam objective 4.1.3: Add and modify form labels)

   a. **tblFarmBoxes_FarmBoxID** to **Farm Box ID**

   b. **OrderID to Order ID**

   c. **OrderDate to Order Date**

   d. **PickupDate to Pickup Date**

   e. **FarmBoxName to Farm Box Name**

   f. **FarmBoxDescription to Farm Box Description**

   g. **FarmBoxPrice to Farm Box Price**

   h. **OrderTotal to Order Total**

5. Arrange the controls on the form so they are in the order as in this table, moving the **Farm Box ID** label and control beside the **Order ID** control. (8 points) (Exam objectives 4.1.1: Add, move, and remove form controls; 4.1.2: Set form control properties)

Labels	Field controls	Labels	Field controls
OrderID	OrderID	Farm Box ID	Farm Box ID
OrderDate	OrderDate		
PickupDate	PickupDate		
FarmBoxName	FarmBoxName		
FarmBoxDescription	FarmBoxDescription		
FarmBoxPrice	FarmBoxPrice		
Quantity	Quantity		
OrderTotal	OrderTotal		

Table 6: Order of form controls

6. Select the **OrderID** label and control and the **Farm Box ID** label and control, and move them to the top of the **Detail** section. Resize and adjust spacing between the four controls so no control obscures any other control. (4 points) (Exam objective 4.2.3: Modify form positioning)

7. Add all the remaining controls and labels to a **Stacked** layout and set the layout **Control Margins** to **Narrow** and **Control Padding** to **Narrow**. Move the layout so it is at the left edge of the **Detail** section and the top is approximately **0.3"** from the top of the **Detail** section, just below the **OrderID** and **Farm Box ID** controls. (4 points) (Exam objective 4.2.3: Modify form positioning)

8. Resize the **Detail** section to **6"** wide by **2"** in height. (2 points) (Exam objective 4.2.3: Modify form positioning).

9. Save and close the form.

Points scored: _____ / 31

Microsoft

Task: Adjust the tab order on a form (9 points)

1. Open **frmsubOrders_and_FarmBoxes-2**.

2. Change the tab order to match the following table. (9 points) (Exam objective 4.2.1: Modify tab order on forms)

Tab Index	Control
0	**OrderID**
1	**FarmBoxID**
2	**OrderDate**
3	**PickupDate**
4	**FarmBoxName**
5	**FarmBoxDescription**
6	**FarmBoxPrice**
7	**Quantity**
8	**OrderTotal**

Table 7: Tab order

Points scored: _____ / 9

Task: Add a form as a subform to another form (16 points)

1. Open **frmMember_Orders_main** in **Design** view and add the **frmsubOrders_and_FarmBoxes-3** form as a subform in the **Detail** section of the form so that the top of the subform is at **2.25"** on the vertical ruler, and the left edge is at **0.25"** on the horizontal ruler. Delete its **Label** control. (2 points) (Exam objective 4.1.1: Add, move, and remove form controls)

2. Add the **Comments** field from the **Field List** pane to the form after the subform. Move the label above the control and widen the control to approximately **6.5 inches**. (2 points) (Exam objective 4.1.1: Add, move, and remove form controls)

3. Add a title to the form, using **Member Information and Order Form** as the **Title** text. Format the text to **Green**, **Verdana**, and **22 points**. (2 points) (Exam objective 4.1.1: Add, move, and remove form controls)

4. Add a logo to the form and resize it to **1" by 1"**. Image suggestion: **Farm_girl_basket_of_produce_illustration.png** or any of the farm box images from the **Media** folder. (3 points) (Exam objectives 4.2.4: Insert information in form headers and footers; 4.2.5: Insert images on forms)

5. Resize the **Form Footer** to **1.2" in height**. (1 point) (Exam objective 4.1.2: Set form control properties)

6. Add **Munsons_logo_square_illustration.png** to the left side of the **Form Footer**, sized at **1" by 1"**. (2 points) (Exam objectives 4.2.4: Insert information in form headers and footers; 4.2.5: Insert images on forms)

7. Add this text to the **Form Footer** at the **2"** mark on the horizontal ruler: **At Munson's, we believe in quality: Quality people and quality products.** Format the font so it is **Verdana**, **11 points**, and a dark grey color or color of your choice. (4 points) (Exam objectives 4.1.3: Add and modify form labels; 4.2.4: Insert information in form headers and footers)

Points scored: _____ / 16

FILE 1 TOTAL POINTS: _____ / 82
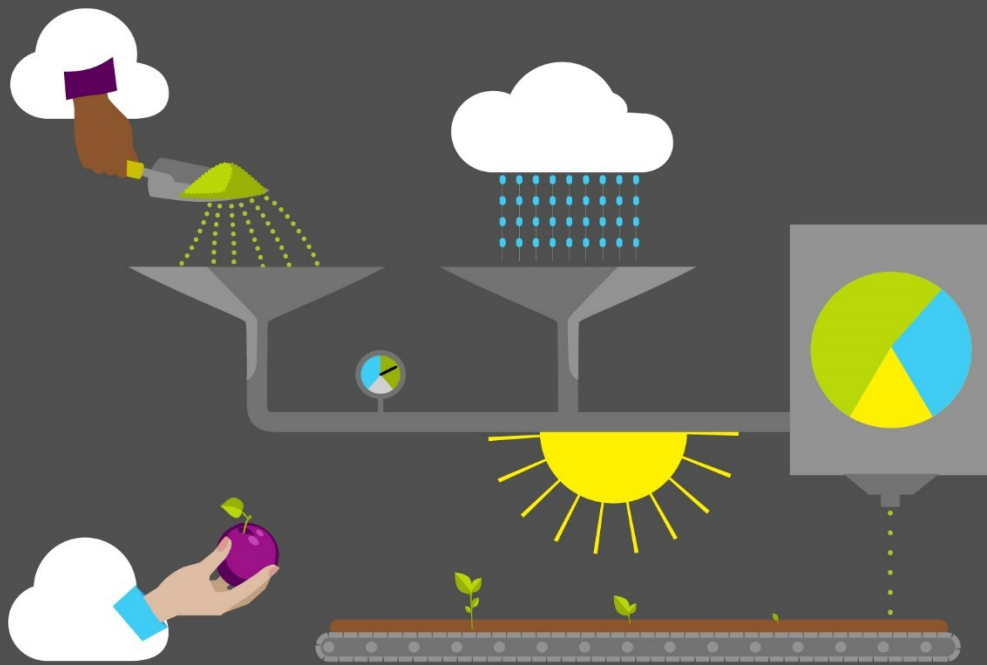
Student Guide

40572A
Microsoft Access expert 2019

Module 9: Presenting complex data

Contents

Microsoft

Module overview

Description

You now know how to design and set up the data structure, and add and edit data in a Microsoft Access 2019 database. You also know how to ask questions of data, present data, define data relationships, and streamline data entry. In this module, you'll use and reinforce these skills while learning to present complex data.

This module consists of three lessons in which you'll learn how to use some of the reporting features of Access. When you get to the end of this module, you'll be able to create and modify a report for multiple tables, customize reports, and use alternative outputs for data. The following table outlines the lesson objectives and their corresponding Microsoft Office Specialist (MOS) exam objectives.

Lesson	Learning objective	MOS exam objective(s)
Creating and modifying a report for multiple tables	Create a multiple-table report with the **Report Wizard** and modify a report with a subreport.	• 5.1.1 • 5.1.3 • 5.2.2 • 5.2.3
Customizing reports	Add report controls and work with page and report headers and footers.	• 5.1.2 • 5.2.5 • 5.2.6
Using alternative outputs for data	Configure print options for records, forms, and reports. Export a report to Excel, text, XML, and Portable Document Format (PDF).	• 1.3.1 • 1.3.2
Cornerstone: Create a multiple-table report	Create a multiple-table report and edit it, configure report print options, and then export data to alternative formats.	All the preceding exam objectives in this module.

Table 1: MOS objectives by lesson

Scenario

As winter approaches, it's turning out to be the busiest time of year for your team. You need to present information on all the CSA program activities during the past year. The intent is to use this information to find out where some shortcomings occurred, and figure out how to avoid those situations the next year by identifying patterns and trends. You'll present this data to Munson's management in a clear format that is easy for them to understand and make comparisons in the future.

Cornerstone

This module concludes with a Cornerstone project in which you'll:

- Create a multiple-table report with a subreport.
- Modify the report.
- Add report controls.
- Add information in page and report headers and footers.
- Configure report print options.
- Export objects to alternative formats.

Lesson 1: Creating and modifying a report for multiple tables

Overview

In this lesson, you'll learn how to create a multiple-table report with the **Report Wizard** and then modify that report with a subreport. You'll also learn how to add grouping and sorting, add display text with labels, and format report elements and layout. You'll participate in discussions, follow step-by-step demonstrations, and explore where to find additional options and tools to put into practice what you learn along the way.

Warm-up

Use these questions to find out what you already know about this lesson's topics:

1. For a multiple-table report, which of the following statements are true?

    Select all that apply.

    a. You can join the tables logically on a common value.

    b. The **Report Wizard** uses the relationships between the tables you selected.

    c. Depending on the view you choose, the **Report Wizard** uses the relationships between the tables and groups records in reports, based on these relationships.

    d. All of the above.

2. A subreport is a _____ that you insert in another report.

    Fill in the blank space.

3. The **Report Wizard** is best used for:

    Select the correct option.

    a. Generating a report.

    b. Creating a select query.

    c. Opening the **Relationships** window.

    d. Building tables.

4. You use _____ controls to display values that come from fields in your database. The values can be text, dates, numbers, **Yes/No** values, pictures, or graphs.

    Fill in the blank space.

5. What are the initial steps to modify a multiple-table report by adding a subreport?

    Indicate the correct sequence by adding numbers 1–4 next to the following items.

    a. Select the report to which you want to add a subreport. _____

    b. Determine how to link the subreport to the main report. _____

    c. On the report, select where you want to place the subreport. _____

    d. In the menu that appears, ensure that **Use Control Wizard** is selected, and then select the **Subreport** option from the controls gallery. - _____

Topic 1: Create a multiple-table report with the Report Wizard

In Access, you can create a multiple-table report by using the **Report Wizard**. The **Report Wizard** helps you save time by using a series of guiding questions and then generating a report based on your answers. One of your first steps is to select your report's record source such as a multiple-table query. To create a multiple-table report by using the **Report Wizard**:

1. On the **Create** tab, in the **Reports** group, select **Report Wizard**, which the following screenshot highlights.
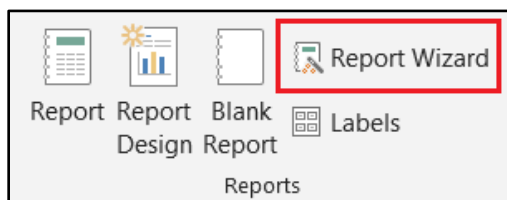
*Figure 1: **Report Wizard** option*

2. In the **Report Wizard**, on the **Which fields do you want on your report?** page, make the following selections:

    a. In the **Tables/Queries** drop-down list, select a multiple-table query as your first table record source.

    b. In the **Available Fields** list, select the field you want to include in your report, and then select the single arrow (**>**) button to move the field to the **Selected Fields** list. Alternatively, you can also select the double arrow buttons (**>>**) to select all fields to be displayed in the query results. The following screenshot depicts that the user has selected all the available fields to include in the report. After making your selections, select **Next**.
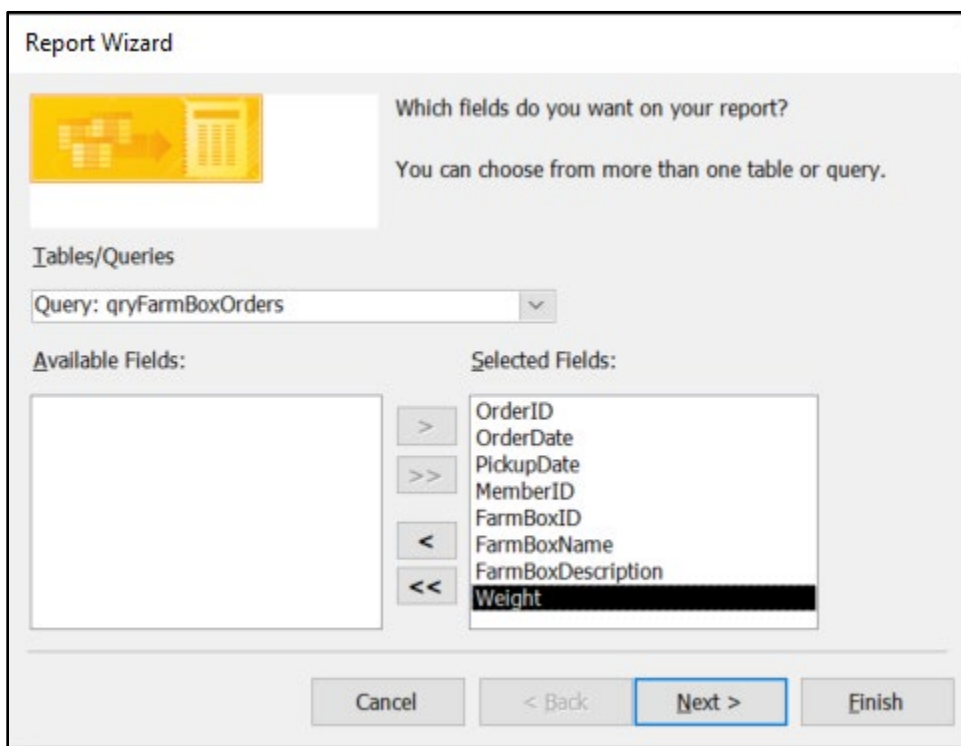
Figure 2: Selecting record source

3. On the **How do you want to view your data?** page, select to review by orders, and then select **Next**.

4. On the **Do you want to add any grouping levels?** page, select **PickupDate**, as depicted in the following screenshot. Select **Next**.
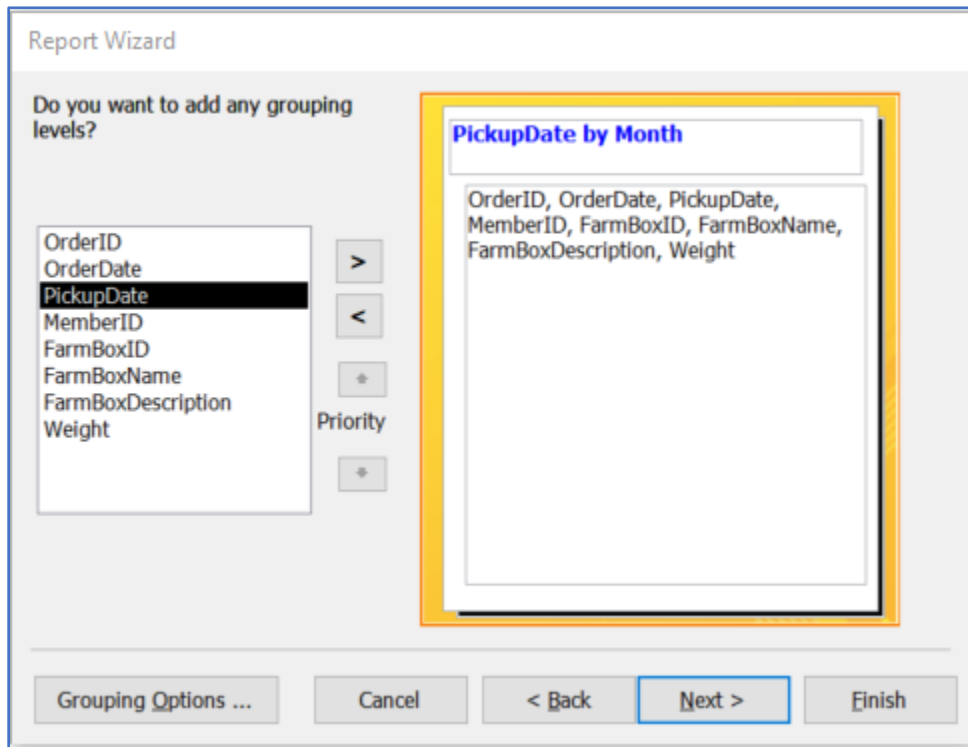
*Figure 3: **Report Wizard** grouping level option*

5. On the **What sort order and summary information do you want for detail records?** page, select to sort by **PickupDate** in ascending order. Select **Next**.
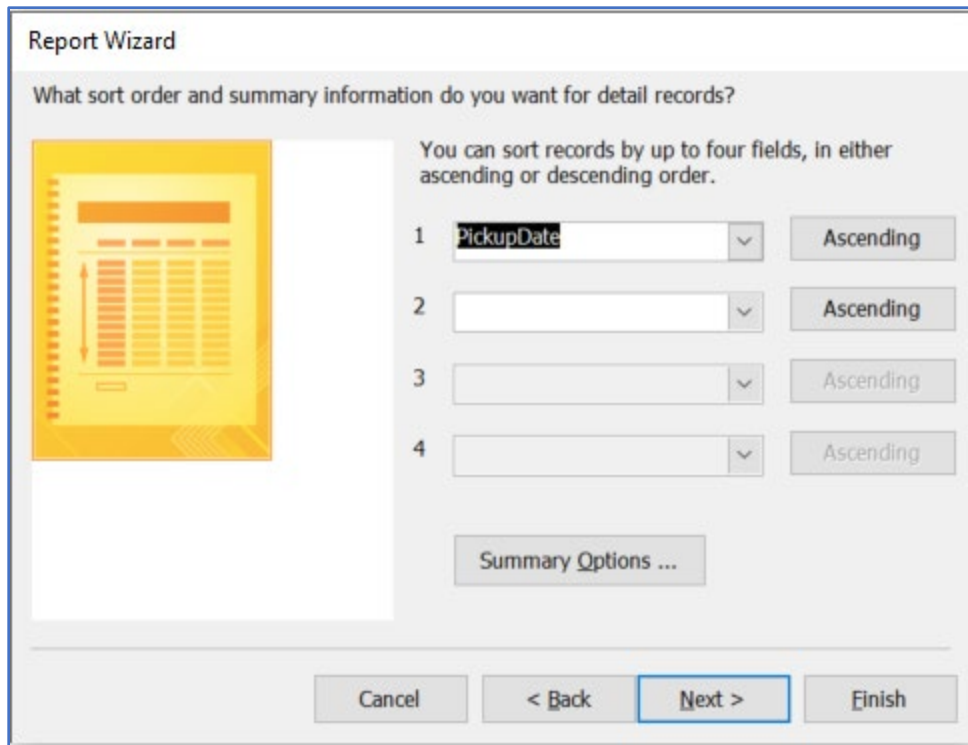
*Figure 4: **Report Wizard** sorting option*

6. On the **How would you like to lay out your report?** page, select **Layout** and **Orientation** options, and then adjust to the field width so that all fields fit on a page. Select **Next**.

7. Add a report title, select to preview the report, and then select **Finish**.

8. Save the database.

Did you know?

The **Report Wizard** reviews the relationships between the tables you selected and, depending on the view you choose, groups records in your reports based on these relationships.

Additional information

Microsoft

To review more information on creating Access reports, go to: [Create a report by using the **Report Wizard**](#)

Caution

This course uses database files that follow a general storyline for the CSA program at Munson's Pickles and Preserves Farm. These database files are the Learning Activity Resource files that you'll use to work on each module's activities and try-its. Each Learning Activity Resource file contains the data and objects, such as tables, queries, forms, and reports, that you need to complete a corresponding activity.

Due to this course's modular nature, the objects and data in these files might vary across activities or try-its. Therefore, it's important that you start your activities or try-its only with the designated files, as per applicable instructions. You also should note that screenshots in the topic content are for illustration purposes only and might appear different than those that are in the Learning Activity Resource files.

Activity: Discuss and learn

In this activity, you'll follow the teacher-led group discussion on real-world scenarios for creating a multiple-table report. After the discussion, your teacher will demonstrate how to create a multiple-table report with the **Report Wizard**.

Resources required

The following optional resource is available for this activity:

- None

Activity instructions

Participate in the activity by following these instructions:

1. Observe the teacher demonstrate how to create a multiple-table report with the **Report Wizard**.

2. Ask the teacher clarifying questions.

3. Participate in the discussion. Remember that there is usually more than one way to do something. Share and discuss your ideas.

Microsoft

Try-it: Create a multiple-table report with the Report Wizard

In this standalone try-it activity, you'll create a multiple-table report.

Resources

You'll need the following resources for this try-it:

- Open **L1_T1_try_background_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the **Report Wizard**.

2. Select a multiple-table query.

3. Select from the following corresponding fields to include in the report:

   o Optional: View the report by orders.
   o Optional: Group the date by pickup date.
   o Optional: Sort the pickup date in ascending order.
   o Optional: Generate a **Stepped Layout** and **Landscape Orientation**.

4. Give your report a title, review your report, and then select **Finish**.

5. Save the database.

Topic 2: Modify a report with a subreport

Munson's management team wants to review a report of produce orders and pickup dates, as well as review information about the members who placed the order. You think a subreport is a useful tool to accomplish this task because it helps display in a logical way both the produce order information and member information.

Microsoft

A subreport is a report that you insert in another report. When you combine reports, one of them must serve as the main report that contains the other report. Typically, a main report is either bound or unbound. When you modify a report by creating a bound subreport, the reports will contain information with related data. This linking of related data helps ensure that the records displayed in the subreport correspond correctly to the records printed in the main report, as depicted in the following screenshot.

Figure 5: Example of a (1) main report and a (2) subreport that are bound to related record sources

To modify a report with a subreport:

1. Select an existing multiple-table report to modify, such as **rprtOrderPickupbyDate**, and then from the **Home** tab, in the **Views** group, select the **View** drop-down list, and then select **Design View**.

    a. Decide the placement of your subreport. The report grid depicts the placement of each grid in the report. On the main report, select the spot in which you want to place the subreport.

    b. After you create additional space in the detail section, on the Design tab, in the Controls group, select **Subform/Subreport**.

    c. Select the spot in the detail grid in which you want to place the report. The **SubReport Wizard** appears.

2. On the **What data would you like to use for your subform or subreport?** page, select the subreport record source you'd like to include in the report as depicted in the following screenshot, and then select **Next**.
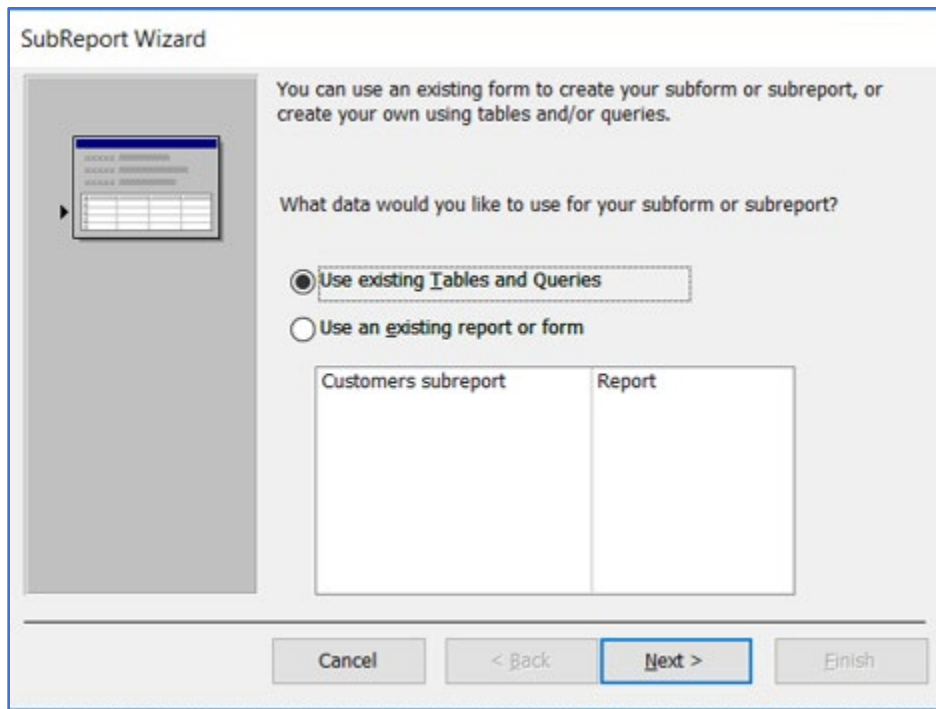
*Figure 6: **SubReport Wizard** depicting the selection of record data source options*

3. On the **Would you like to define which fields link your main form to this subform yourself, or choose from the list below?** page, select **Define my own**. This gives you the option of selecting the fields that are common to the primary report's **Form/report fields** and **Subform/subreport fields**, as depicted in the following screenshot. **Note**: If the wizard cannot find suitable fields for linking, it does not provide a list of linking suggestions and automatically selects the **Define my own** option. Select **Next**.
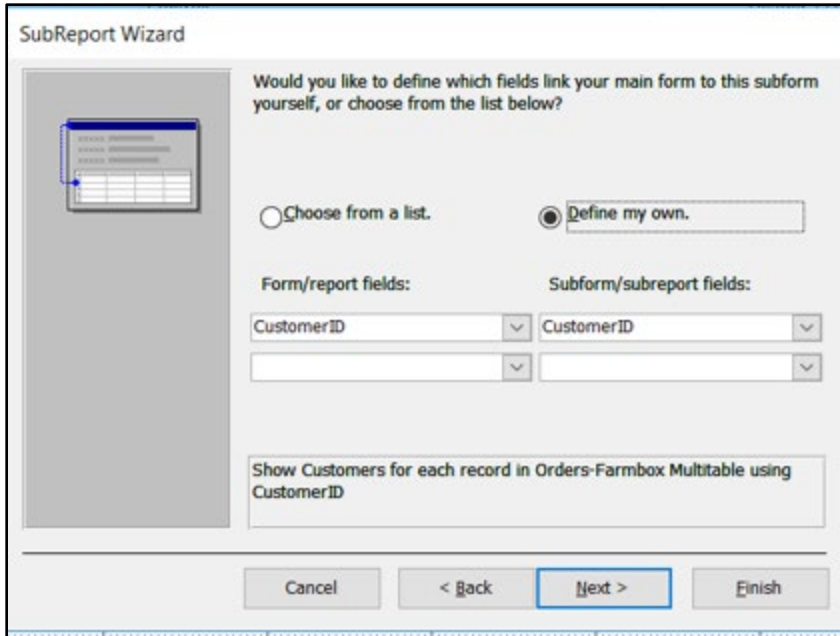
*Figure 7: **SubReport Wizard** depicting how to define which fields to link*

4. On the **What name would you like for your subform or subreport?** page, enter a name for your subreport as depicted in the following screenshot, and then select **Finish**.
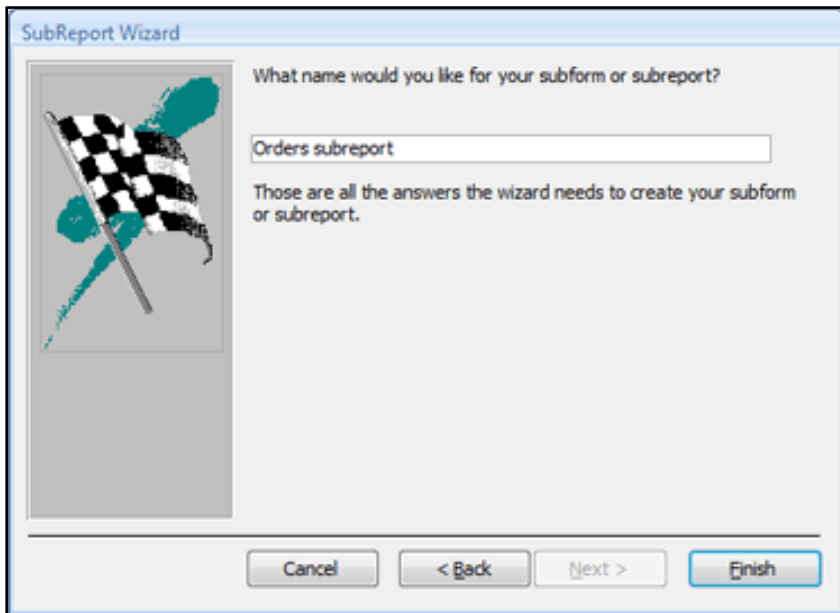
*Figure 8: **SubReport Wizard** - Subreport name*

5. On the last page of the wizard, enter a name for the subform or subreport, or just select **Finish** to accept the default.
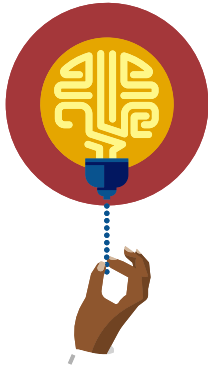
Did you know?

After you add a subreport to an existing report, you can practice more of your report formatting skills by modifying your report in **Layout** view.

Additional information

To learn more about creating and using subreports, go to: Create and use subreports. To learn more about modifying your report in **Layout** view, go to: Modify, edit, or change a report.

Microsoft

Add grouping and sorting in reports

When creating reports, you'll need to consider how you want to display the information; for example, by grouping and sorting the data. In this activity, you'll continue to practice adding data grouping and sorting options to an existing multiple-table report. To do so:

1. While in **Design** view, from the **Design** tab, select **Group & Sort**. The **Group, Sort, and Total** section displays, as depicted in the following screenshot.
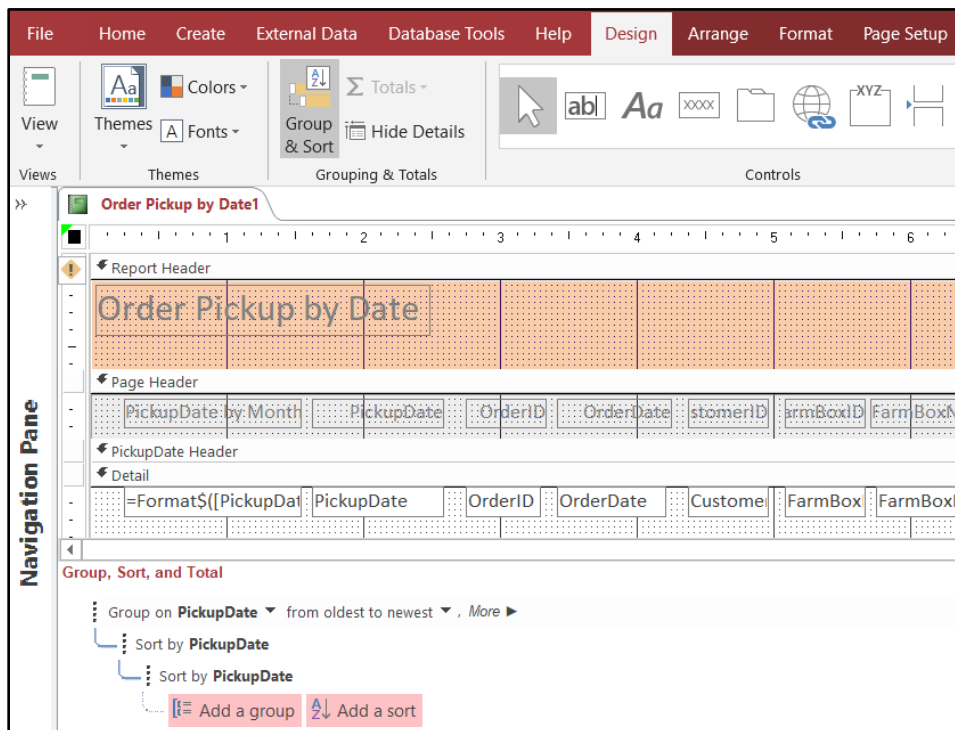
*Figure 9: **Group & Sort** option in report*

2. In the **Group, Sort, and Total** section:

    a. Select a **Group on** option, such as **PickupDate**.

    b. Select a **Sort by** option, such as **PickupDate**.

3. Save the database.
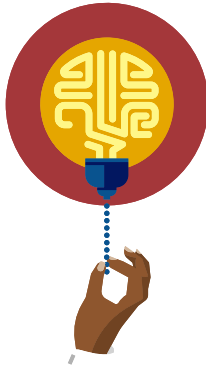
Did you know?

Information is often easier to understand when you divide it into groups. For example, a report that groups produce sales by region can highlight trends that otherwise might go unnoticed. In addition, placing totals such as sums or averages at the end of each group in your report can replace tedious manual calculations. This is especially helpful if your reports are designed for highlighting end-of-year sales performance and comparisons to the following year's projects. Access makes it easier for you to work with grouped reports.

Additional information

To learn more about grouping or sorting in reports, go to: [Create a grouped or summary report](#)

Modify report display text with labels

When creating reports, you'll need to consider the report's design and how you want to display characteristics such as display text with labels. To make changes, perform the following general steps:

1. In **Design** view, from the **Design** tab, open an existing multiple-table report.

2. Add additional grouping and sorting, if you prefer.

3. Modify the existing **Report Header** display text title; for example, you can change it to **Order Pickup by Date**.

4. Modify existing display text with label headers as you prefer.

5. To add a new field to the report with display text, on the **Design** tab, select **Add Existing Fields** in the **Tools** group.

6. Review the information contained in the table. To do this, double-click the fields to be included in the report or select those fields, and then select Enter.

7. Go to **Reports** view to generate the report with the data.

8. Save the database.

Microsoft
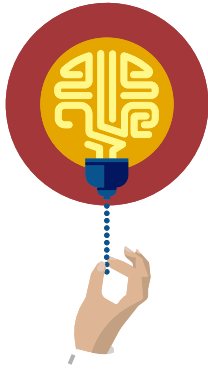
Did you know?

When you view a report in **Design** view, the report is not actually running in **Design** view, so you cannot review the underlying data while working.

Additional information

To review more information about adding display text to reports, go to: Add a text box control to a form or report

Modify report elements and positioning

When creating reports, you also need to consider the report's design layout and common report modifications that you can perform in **Layout** view. You can use the following steps to modify some report design elements for an existing report.

1. On the **Home** tab, in the **Views** group, select **View**, and then select **Design View**.

2. When the edit grids appear, to modify a column or field in **Layout** view:

    a. Select an item in a column that you want to adjust. A border appears around the item to indicate that the field is selected.

    b. Drag the right or left edge of the border until the column is the width you want.

Alternatively, you can adjust report property values in the **Property Sheet** pane. To open the **Property Sheet** pane, on the **Design** tab, in the **Tools** group, select **Property Sheet**. You can also open the **Property Sheet** pane by selecting **Fn**+**F4**. Make edits to the report properties by adjusting the property values for the selected item, as depicted in the following screenshot:
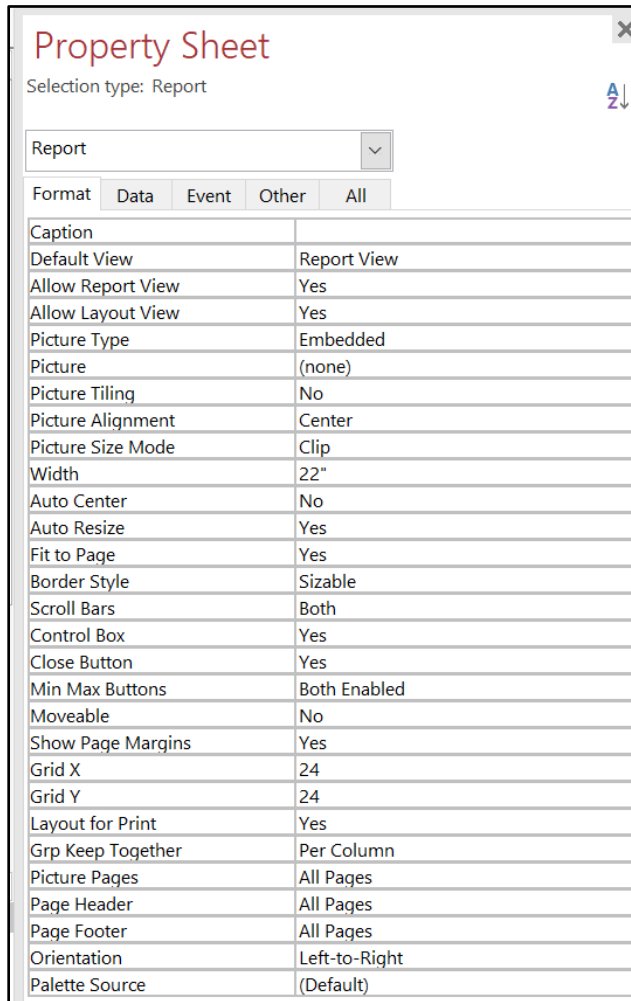
*Figure 10: **Property Sheet** pane for a report*

You can also select the **Report** drop-down list in the **Property Sheet** pane and then choose the option you want to modify, as depicted in the following screenshot.
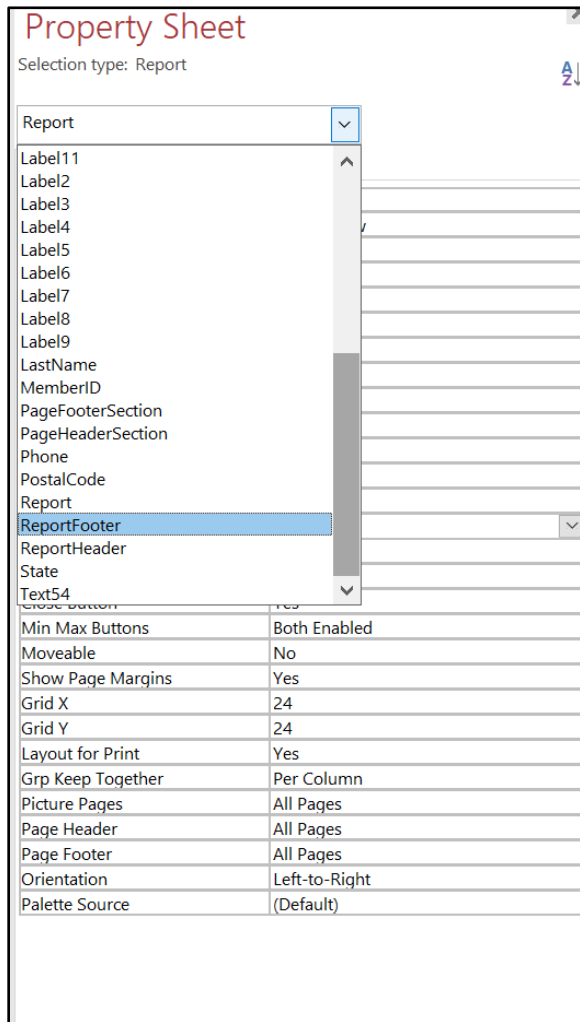
*Figure 11: Modifying a report option in the **Property Sheet** pane*

3. Make the required modifications, and then save your report.

Additional information

To learn more about modifying, editing, or changing a report, go to:
Modify your report in Layout view

Activity: Think-pair-share

In this activity, you'll follow along as the teacher leads a discussion about why and how to add a subreport in a report.

Resources required

The following optional resource is available for this activity:

- None

Activity instructions

Participate in the activity by following these instructions:

1. Partner with a classmate.

2. Working with your partner, think of at least two report format element features that can be useful in customizing your reports.

3. Participate in the discussion. Remember there is usually more than one way to do something. Share and discuss your ideas.

Try-it: Modify a report with a subreport

In this leveled try-it activity, you'll modify a report by adding a bound subreport and adding formatting elements to the report. The existing report doesn't provide information about the member who placed the order. You'll add a subreport to display that information.

Try-it 1

In this try-it activity, you'll modify a report by adding a bound subreport and editing labels.

Resources

You'll need the following resources for this try-it:

- Open **L1_T2_try1_background_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open **rptOrderPickupInfo** in **Design** view.

2. Select the **Detail** section selector, and in the **Property Sheet** pane, change the **Height** to **1"**.

3. On the **Design** tab, select **Subform/Subreport**.

4. Select a location in the **Details** section to open the **SubReport Wizard**.

5. In the wizard, select **Use an existing report or form** and ensure that **rptMembers** is selected. Use the following information to complete the process:

    a. On the **Would you like to define which fields link your main form to this subform yourself, or choose from the list below?** page, select **Define my own**.

    b. In the first drop-down in **Form/report fields**, select **MemberID**.

    c. In the first drop-down in **Subform/subreport fields**, select **MemberID**.

    d. On the **What name would you like for your subform or subreport?** page, edit the text to **Member**.

    e. Save and close **rptOrderPickupInfo**.

6. Open **rptMembers** in **Design** view.

7. Delete the header, and then save and close **rptMembers**.

8. Open **rptOrderPickupInfo** in **Design** view, and then select and delete the **Member Label** label.

9. Select the **Member Subform/Subreport** control, in the **Property Sheet** pane, change the **Border Style** property to **Transparent**.

10. In the **Property Sheet** pane:

    a. Change the **Height** property to **.25"**.

    b. Change the **Top** property to **.25"**.

    c. Change the **Left** property to **1.25"**.

11. Select the **Detail** section selector, and in the **Property Sheet** pane, set the **Height** property to **.75"**.

12. Save the report and open it in **Report** view.

Try-it 2

In this try-it activity, you'll modify a report by adding a bound subreport with grouping and sorting. You'll also modify labels.

Resources

You'll need the following resources for this try-it:

- Open **L1_T2_try2_background_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open **rptOrderPickupInfo** in **Design** view, and on the **Design** tab, ensure that **Group & Sort** is enabled.

2. In the **Group, Sort, and Total** pane, select **Add a group** and select **MemberID**.

3. Select **Add a sort** and select **MemberID**.

4. Select the **Detail** section selector, and in the **Property Sheet** pane, change the **Height** to **1"**.

5. On the **Design** tab, select **Subform/Subreport**.

6. Select a location in the **Details** section to open the **SubReport Wizard**.

7. In the wizard, use the following information to complete the process:

   a. On the **What data would you like to use for your subform or subreport?** page, select **Use an existing report or form** and ensure **rptMembers** is selected.

   b. On the **Would you like to define which fields link your main form to this subform yourself, or choose from the list below?** page, select **Define my own**.

   c. In **Form/report** fields, select **MemberID**.

   d. In **Subform/subreport** fields, select **MemberID**.

   e. On the **What name would you like for your subform or subreport?** page, edit the text to **Member**.

   f. Select **Save**, and then close **rptOrderPickupInfo**.

8. Open **rptMembers** in **Design** view.

9. Right-click or access the **Report Header** context menu, and delete the header.

10. Save and close **rptMembers**.

11. Open **rptOrderPickupInfo** in **Design** view. Note that the member information is displayed, but it includes an unnecessary border, **Member** displayed before each record, and excess space.

12. Delete the **Member Label** label.

13. Select the **Member Subform/Subreport** control and in the **Property Sheet** pane, change the **Border Style** property to **Transparent**.

14. In the **Property Sheet** pane:

    a. Change the **Height** property to **.25"**.

    b. Change the **Top** property to **.25"**.

    c. Change the **Left** property to **1.25"**.

15. Select the **Detail** section selector, and in the **Property Sheet** pane, set the **Height** property to **.75"**.

16. Save the report and open it in **Report** view.

Wrap-up

Use these questions to check what you learned in this lesson:

1. Controls can be:

   Select all that apply.

   a. Bound

   b. Unbound

   c. Rebounded

   d. Calculated

2. What are some of the display options you should consider when creating a report?

   Select all that apply.

   a. The report's design

   b. The display of the report

   c. Use of text and labels

   d. All the above

3. Which of the following are general tasks for formatting reports?

   Select all that apply.

   a. Grouping and sorting data

   b. Adding display text with labels

   c. Formatting report elements

   d. Modifying report positioning

4. A subreport must contain a _____ that you can use to link it to the main report.

   Fill in the blank space.

5. The following are the general steps to modify a report by adding a subreport:

   Indicate the correct sequence by adding numbers 1–4 next to the following items.

   a. Use the **Subreport Wizard** to create the subreport. _____

   b. Define your own report fields and subreport fields. _____

   c. Select where you want to place the report. _____

   d. Open the main report in **Design** view. _____

Lesson 2: Customizing reports

Overview

In this lesson, you'll learn to customize reports by adding report controls to an Access report and working with page and report headers and footers. You'll participate in discussions, follow step-by-step demonstrations, and have opportunities to put into practice what you learn along the way.

Warm-up

Use these questions to find out what you already know about this lesson's topics:

1. Which of the following options are examples of page and report customizations?

    Select all that apply.

    a. Edit the report header

    b. Edit the report footer

    c. Edit the page header

    d. Edit the page footer

2. What type of report control should you create to make a calculated control?

    Select the correct option.

    a. Bound

    b. Unbound

    c. Calculated

    d. Expression

3. When you select **More** in the **Grouping** dialog box, which of the following settings can you use to customize the sorting and grouping of fields in reports?

    Select all that apply.

    a. Date and Time formatting

    b. Font formatting

    c. Headers and footers

    d. Sorting and grouping intervals

Microsoft

4. A control whose source of data is an expression, rather than a field, is called a
   _____ control.

   Fill in the blank space.

5. What is the procedure to add calculated fields to enhance reports?

   Indicate the correct sequence by adding numbers 1–4 next to the following items.

   a. Select the **Build** command to use the **Expression Builder**. _____

   b. Add a text box control. _____

   c. Enter an expression in the **Expression Builder**. _____

   d. Enter an **Expression Builder** in its control source property in the property sheet.
      _____

Topic 1: Add report controls

Your manager at Munson's asked for a summary of produce orders categorized by month. Munson's management also want to include in the report summary the total weight of produce that was ordered. You think building an Access report with the help of report controls can help with this task.

Add calculated fields

By adding a calculated field to a report, you can display many different types of data and use them to perform calculations. To do this:

1. Right-click or access the context menu for the report in the **Navigation Pane**, and then select **Design View**.

2. On the **Design** tab, in the **Controls** group, select the type of control you want to create.

3. Position the cursor at the point on which you want to place the control on the form or report, and then select the report into which to insert the control.

4. If a control wizard starts, select **Cancel** to close it.

5. Select the control, select F4 on your keyboard to display the property sheet, and then enter an expression in the **ControlSource** property box.

   a. To use the **Expression Builder** to create the expression, select **Builder** next to the **ControlSource** property box.

   b. Switch to **Report View** and verify that the calculated control works as you expect.

6. Save your modified report.
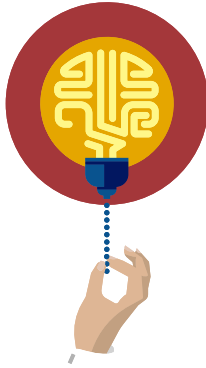
Did you know?

A good way to create a calculated control is by first creating a bound control. To do so, you can first drag a field from the **Field List** pane to your report, or right-click or access the context menu for the field, and then select **Add Field to View**. You can then edit the bound control's **ControlSource** property to create an expression. This works well if you make sure that the name of the control does not conflict with any of the field names contained in the expression. If you want to adjust the control to suit your needs by changing its property values on the Property Sheet, select the **F4** key (or **Fn**+**F4**).

Additional information

To learn more about calculated controls, go to: [Create a calculated control](#)

Insert images

1. In the **Navigation Pane**, right-click or access the context menu for the report, and then select **Layout View**.

2. On the **Design** tab, in the **Header/Footer** group, select **Logo**.

3. Browse to the folder that contains your logo file and then double-click the file or select it, and then select Enter on your keyboard. The logo is then added to the report header.

Additional information

To learn more about how to insert a logo into a report, go to: [Insert a logo into a form or report](#)

Insert information in page and report headers and footers

1. On the **Home** tab, select **View**, and then select **Design View**.

2. When the edit grid appears, review the information in the page and report headers and footers as you consider appropriate content to include in the design of the report, using the following list as reference and as depicted in the screenshot:

    o   The report header typically includes the report title, logo, and current date.

    o   The report footer typically includes report totals.

    o   The page header typically includes a report title.

    o   The page footer typically includes a page number.

Figure 12: Sample header and footer in a report
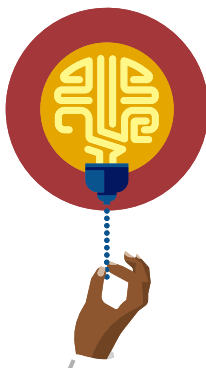
Did you know?

It is helpful to first make a sketch of a report. You can use this process to first consider how to arrange the data, especially if you are designing a report for someone else.

Additional information

For more information on designing reports, go to: [Guide to designing reports](#)

Activity: Show and tell

In this activity, your teacher will demonstrate how to add report controls.

Resources required

The following optional resource is available for this activity:

- None

Activity instructions

Participate in the activity by following these instructions:

1. Observe the teacher demonstrate report controls and how to add calculated fields and images in the report.

2. Ask the teacher clarifying questions.

3. Participate in the discussion. Remember there is usually more than one way to do something. If you think of a different way to try doing a task, share and explore your ideas with the class.

Try-it: Add report controls

In this leveled try-it activity, you'll add report controls and modify header and footer information.

Try-it 1

In this try-it, you'll practice adding report controls and will add a calculated field.

Resources

You'll need the following resources for this try-it:

- **L2_T1_try1_members_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open **rptMemberSummary** in **Design** view.

2. Select an empty location in the **Details** section to add a **Text Box** control. Note that Access will add a **Text Box** named **Text15** and a corresponding **Label** named **Label16**. On upcoming steps, take care to select the correct control.

3. Delete **Label16**.

4. Select the new **Text Box**, which is named Text15 and displays the text **Unbound**, and make the following changes in its **Property Sheet** pane:

   a. Change the **Top** property to **0"**.

   b. Change the **Left** property to **5.15"**.

   c. Change the **Border Style** property to select **Transparent**.

   d. Change the **Text Align** property to select **Center**.

5. Select the **Text15** text box again, and enter the following text: **=[Weight]*[Quantity]**. This formula multiplies the weight by the quantity.

6. To test the formula, on the **Design** tab, select the **View** command. Confirm that the report displays the days between the two dates for each record.

7. On the **Design** tab, select **Design View**.

8. On the **Design** tab, use the **Controls** gallery to select **Label**.

9. Select an empty location in the **Details** section to place the **Label** control. Enter the text **Order Details:**, and then, in the **Property Sheet** pane:

   a. Change the **Top** property to **0"**.

   b. Change the **Left** property to **1.6"**.

   c. Change the **Fore Color** property to select **Text Black**.

10. Select the **Design** section selector and in the **Property Sheet** pane, change the **Height** to **.25"**.

11. Select **Save**.

Microsoft

Try-it 2

In this try-it, you'll review and modify your page and report header and footer information.

Resources

You'll need the following resources for this try-it:

- Open **L2_T1_try2_members_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open **rptMemberSummary** in **Design** view.

2. On the **Design** tab, in the **Controls** group, select **Text Box**.

3. Select an empty location in the **Details** section to place the **Text Box**.

Note that Access will add a **Text Box** named **Text12** and a corresponding **Label** named **Label13**. On upcoming steps, take care to select the correct control.

4. Delete the new **Label** that contains the text **Text12**.

5. Select the new **Text Box**, which is named **Text12** and displays the text **Unbound**, and make the following changes in its **Property Sheet** pane:

   a. Change the **Top** property to **0"**.

   b. Change the **Left** property to **5.15"**.

   c. Change the **Border Style** property to **Transparent**.

   d. Select the **Text Align** property and select **Center**.

6. Select the **Text12** text box again, which will position the cursor in the **Text Box** to input a formula, and input the following text: **=[Weight]*[Quantity]**. This formula multiplies the weight by the quantity.

7. To test the formula, on the **Design** tab, select the **View** command. Confirm that the report displays the days between the two dates for each record.

8. On the **Design** tab, select **Design View**.

9. On the **Design** tab, in the **Controls** group, use the **Controls** gallery to select **Link**.

10. In the **Insert Hyperlink** dialog box, enter **http://www.munsonspicklesandpreservesfarm.com** in the **Address** box.

Microsoft

11. Enter **Pickup date subject to change** as the **Text to display** box. Note that Access will add the link as a **Label** in the **Page Footer** section.

12. Select the new **Label** with the link and drag it to an empty location in the **Details** section. In the **Property Sheet** pane:

    a. Change the **Top** property to **0.25"**.

    b. Change the **Left** property to **2.6"**.

13. Select the **Design** section selector, and change the **Height** property to **.5"**.

14. Select **Save**.

Topic 2: Work with page and report headers and footers

Now, suppose you want to add some customizations to ensure the report appears professional and in a clear format that is easy for Munson's management to review. You think adding information to the report page and report headers and footers of the Access report can help. The following table depicts a list of the typical information you'd include in page and report headers and footers.

Section	Location	Typical contents
Report header	Appears once, at the beginning of the first page of the report	• Report title • Logo • Current date
Report footer	Appears after first line of data, before the page footer that is on the last page of the report	Report totals, such as sums, counts, and averages
Page header	Appears at the beginning of each page of the report	• Report title • Page number
Page footer	Appears at the end of each page of the report	• Current date • Page number

Section	Location	Typical contents
Group header	Appears just before a group of records	Field that you are grouping on
Group footer	Appears just after a group of records	Group totals, such as sums, counts, and averages

Table 2: Typical information to include in page and report headers and footers

Insert information in report headers and footers

1. On the **Home** tab, select **View**, and then select **Design View**.

2. When the edit grid appears, review the information in the page and report headers and footers as you consider appropriate content to include in the design of the report, using the following list as reference and as depicted in the example screenshot:

   a. Insert information in page header and footer.

   b. Delete the report date from the page header

   c. Add a report date to the page footer.

   d. Insert information in report header and footer.

   e. Modify the Report Header, for example, "**Farm Box Orders Summary**".

   f. Add a display label for any calculated fields in the report.

OrderID	12/1/2019	12/23/2019	12/30/2019	1/3/2020	1/4/2020	1/5/2020
1		1				
2		1				
3		1				
4		1				
5			1			
6			1			
7				1		
8					1	
9						1
10					1	
11	1					
12	1					
13	1					
14						
15						
16						
16						

Page 1 of 1

*Figure 13: **Report** view*

Additional information

To learn more about adding information in report and page headers and footers, go to: Insert the date and time into a report or form, PageHeader Property, or: Add or remove report or page header and footer sections.

Activity: Think-pair-share

In this activity, follow along as your teacher demonstrates how to enhance a report by adding information in the page and report headers and footers.

Resources required

The following optional resource is available for this activity:

- None

Activity instructions

Participate in the activity by following these instructions:

1. Observe the teacher demonstrate how to work with page and report headers and footers to customize an existing report.

2. Ask the teacher clarifying questions.

3. Participate in the discussion. Remember there is usually more than one way to do something. If you think of a different way to try doing a task, share and explore your ideas with your teacher and class.

Try-it: Work with page and report headers and footers

In this standalone try-it, you'll insert information in page and report headers and footers.

Resources

You'll need the following resources for this try-it:

- **L2_T2_try_members_starter.accdb** in this lesson's **Learning Activity Resources** folder.
- **Munsons_logo_banner_illustration.png** in the **Media** folder under **Student Materials**.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open **rptMemberSummary** in **Design** view.

2. On **Design** tab, in the **Header / Footer** group, select **Logo**, and then insert **Munsons_logo_banner_illustration.png**.

3. In the **Property Sheet** pane:

   a. Change the **Height** property to **0.5"**.

   b. Change the **Width** property to **1.75"**.

   c. Change the **Top** property to **0"**.

   d. Change the **Left** property to **2.5"**.

4. Select the **Report Header** section selector, and in the **Property Sheet** pane, change the **Height** property to **0.5"**.

5. On the **Design** tab, select **Label** from the **Controls** gallery.

6. Select an empty location near the **Quantity** heading in the **Page Header** section to place the **Label** control. Enter the text **Total Weight**.

7. In the **Property Sheet** pane:

    a. Change the **Top** property to **0.05"**.

    b. Change the **Left** property to **5.15"**.

    c. Change the **Fore Color** property to select **Text Black**.

8. On the **Design** tab, in the **Header / Footer** group, select **Date and Time**.

9. In the **Date and Time** dialog box, in **Format**, disable the **Include Time** check box, and then select **OK**.

Wrap-up

Use these questions to check what you learned in this lesson:

1. You can add a calculated field to a report by first adding a _____ box control and then entering an expression in its **ControlSource** property in the property sheet.

    Fill in the blank space.

2. Which operators can you enter by using the **Expression Builder**?

    Select all that apply.

    a. -

    b. +

    c. Almost

    d. Between

3. Which of the following settings for customizing fields that are grouped in reports is not available when you select **More** in the **Grouping** dialog box?

    Select the correct option.

    a. Footers and headers

    b. Time and date formatting

    c. Grouping and sorting intervals

    d. Formatting fonts

4. _____ that you insert by using the **Image** command become part of the data and you can reuse them on other Access objects or update them from the image gallery.

    Fill in the blank space.

Microsoft

5. A good way to change a bound control to a calculated control is to:

    Indicate the correct sequence by adding numbers 1–4 next to the following items.

    a. Drag a field from the **Field List** pane to your report. _____

    b. Create a calculated control by first creating a bound control. _____

    c. Edit the bound control's **ControlSource** property to create an expression. _____

    d. Switch to **Layout** view and verify that the calculated control works as you expect. _____

Lesson 3: Using alternative outputs for data

Overview

In this lesson, you'll learn how to configure print options for records, forms, and reports. You'll also learn how to use alternative outputs for data and practice how to export a query to Microsoft Excel, text, and XML. You'll also learn how to export a report to PDF. You'll participate in discussions, follow step-by-step demonstrations, and explore where to find additional options and tools.

Warm-up

Use these questions to find out what you already know about this lesson's topics:

1. The XML acronym stands for:

   Select the correct option.

   a. Extreme Markup Language

   b. Extended Markings Language

   c. Extensible Markup Language

   d. None of the above

2. Which of the following statements about reports are true?

   Select all that apply.

   a. **Print Preview** is a static view that depicts how the printed pages will appear on the report.

   b. **Report** view is more interactive, and hyperlinks are enabled in it.

   c. The **Report Wizard** command is part of the **Queries** group.

   d. You can apply filters in **Report** view.

3. When configuring report page setup options, which of the following print options can you select?

   Select all that apply.

   a. Margins

   b. Print data only

   c. Split form

   d. All of the above

4. When exporting text files from Access, at the end of the operation, Access creates a _____ file.

   Fill in the blank space.

5. What is the procedure to export a report to PDF?

   Indicate the correct sequence by adding numbers 1–4 next to the following items.

   a. Open the table or report you want to publish as a PDF. _____

   b. In the **File name** box, enter a name for the document. _____

   c. In the **Save as type** list, select **PDF (*.pdf)**. _____

   d. On the **External Data** tab, in the **Export** group, select **PDF** or **XPS**. _____

Topic 1: Configure view and print options for records, forms, and reports

After you create your report, you can set options for the print layout in the **Page Setup** dialog box. These options help you customize the format with options for margin settings, using gridlines and columns, or printing only the data from the report without the formatting.

Configure print options

To set the print page options:

1. In the **Navigation Pane**, right-click or access the context menu for the report, and then select **Print Preview**. The print preview for the report appears.

2. On the **Print Preview** tab, in the **Page Layout** group, select **Page Setup**.

Microsoft

3. In the **Page Setup** dialog box, on the **Print Options** tab, you can configure the settings for the following, as depicted in the screenshot:

   a. **Margins** by decreasing or increasing the default margins as required. You'll be able to preview the changes displayed in a **Sample** page.

   b. The **Print Data Only** option, when you don't want to print the layout features in the report such as grids.
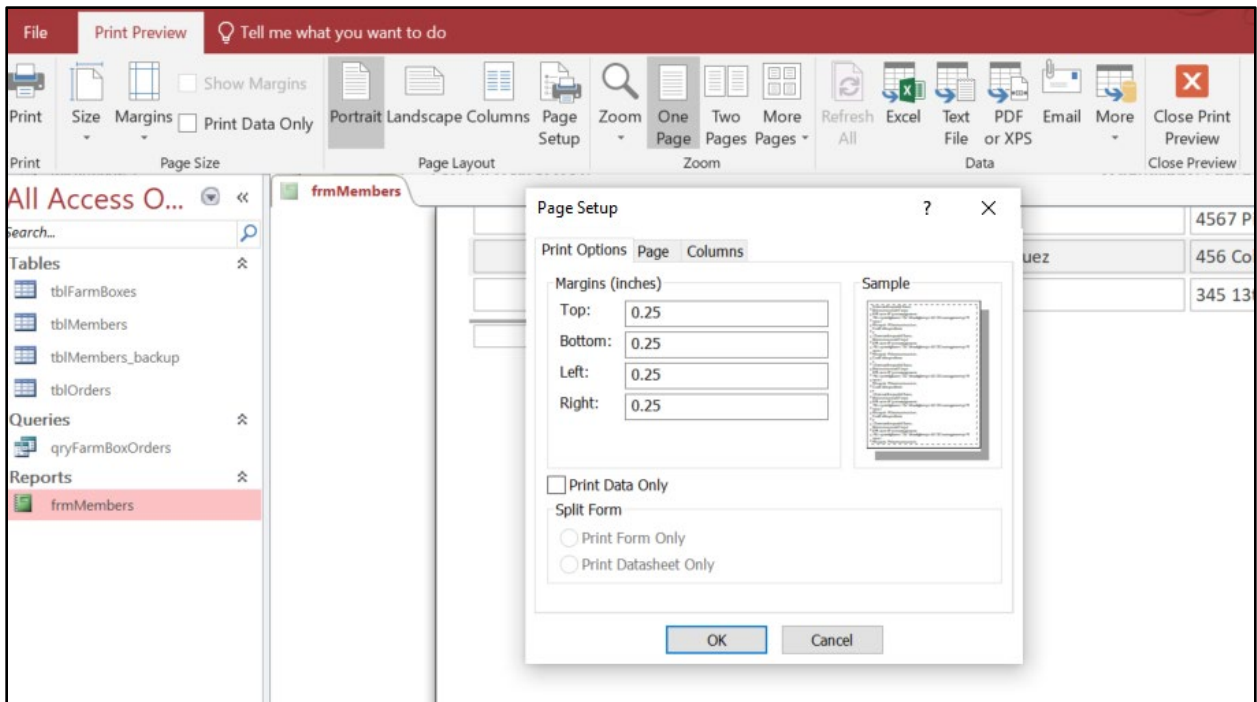
   c. Select **OK**.

Figure 14: **Print Page Setup** option

4. In the **Page Setup** dialog box, on the **Page** tab, you can configure settings for the following, as depicted in the screenshot.
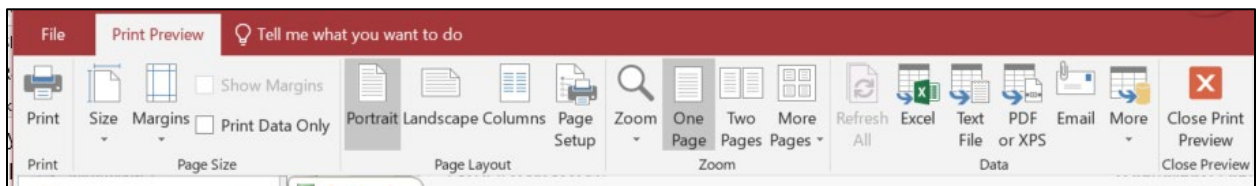

Figure 15: **Print Page Setup** option for layout

   a. Orientation, by selecting Portrait or Landscape.

   b. Paper Size and Source.

Microsoft

c. Printer for customer address. You can select Default Printer for default options. You can select Use Specific Printer if you want to set several other printers and document format options, as depicted in the following screenshot. Select OK after your selection.
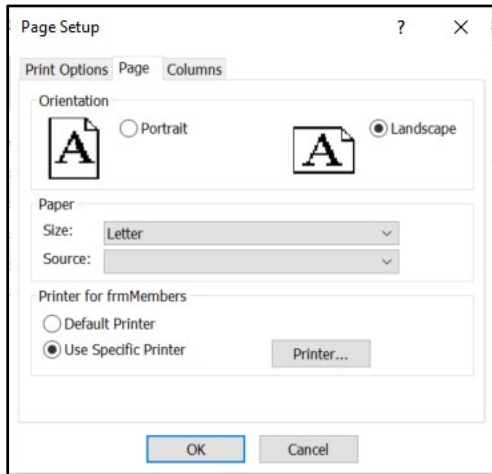

Figure 16: **Print Page Setup** option for printer selection

5. In the **Page Setup** dialog box, on the **Columns** tab, you can configure settings for the following.

   a. **Grid Settings** to select the **Number of Columns**, **Row Spacing**, and **Column Spacing**.

   b. **Column Size** to select the width and height of the columns. Select the **Same as Detail** check box if you want to print the column in the same size as you set in the report. To adjust the column width and height, clear the **Same as Detail** check box and enter new values.

   c. **Column Layout** to select the direction in which you want the columns printed. This option is available only when you have more than one column.

6. Select **OK** after your selection. The following screenshot depicts the display you use to configure these settings.
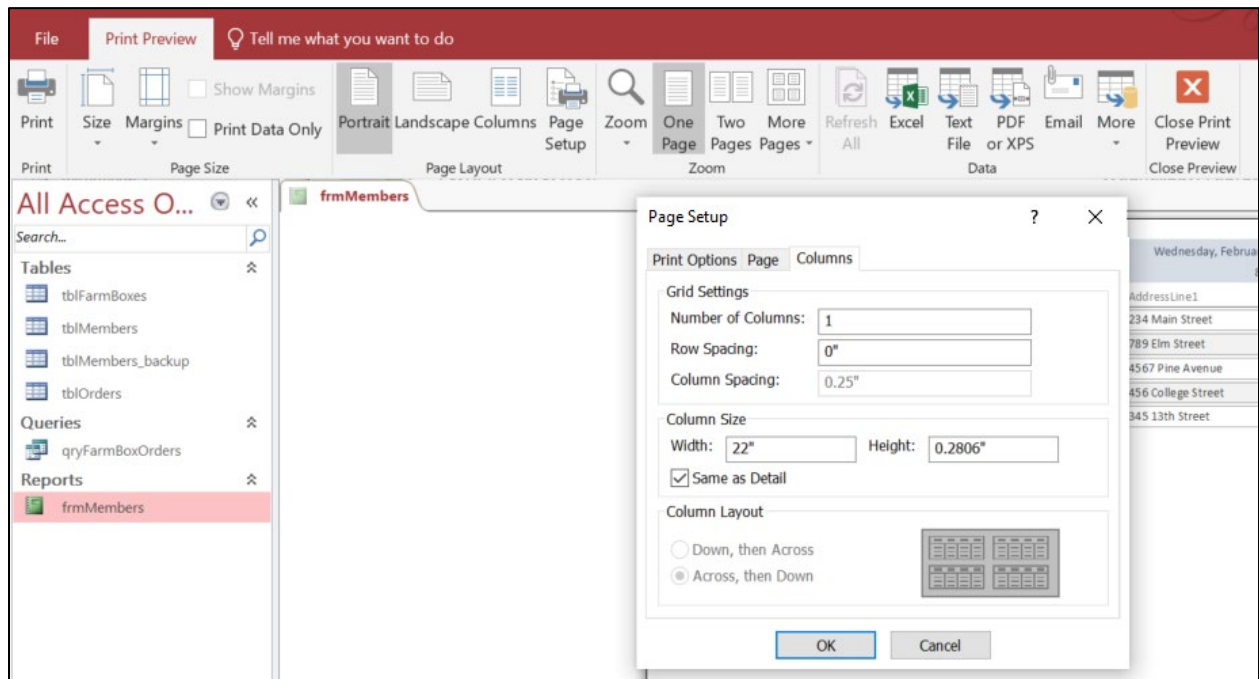

Figure 17: Configure **Page Setup Option** *for grid settings*

Note: If the setting is for a single column, the **Column Spacing** and **Column Layout** options won't be available.

7. To customize the margins on your report, on the **Print Preview** tab, in the **Page Size** group, select the **Margins** drop-down box, and then select a suitable option. A preview of the report with the changed margin settings displays.

> **Additional information**
>
> To learn more about set print options in Access, go to: Set print options in Access

Activity: Think-pair-share

In this activity, follow along as your teacher demonstrates how to configure view and print options for records, forms, and reports.

Resources required

You'll need the following resources for this activity:

- None

Activity instructions

Participate in the activity by following these instructions:

1. Observe the teacher demonstrate how to configure view and print options.

2. Ask the teacher clarifying questions.

3. Participate in the discussion. Remember there is usually more than one way to do something. If you think of a different way to try doing a task, share and explore your ideas with your teacher and classmates.

Try-it: Configure view and print options for records, forms, and reports

In this standalone try-it activity, you'll configure view and print options.

Resources

You'll need the following resources for this try-it:

- Open **L3_T1_try_members_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it:

1. Open the **Print Preview** for **rptMemberSummary**.

2. On the **Print Preview** tab, select **Portrait** for page layout and **Letter** for size.

3. On the **Print Preview** tab, select **Page Setup**, and in the **Page Setup** dialog box:

    a. Change **Top** to **1**.

    b. Change **Bottom** to **1**.

    c. Change **Left** to **.25**.

    d. Change **Right** to **.25**.

4. Select **Close Print Preview**.

Topic 2: Export a query to Excel, text, and XML

At times, you might have to share your Access reports with other people in different file formats. This could be because of personal preference or because some people cannot use Access to review your reports. You can export your Access reports to different formats such as Excel files, text files, XML files, and PDF files.

Export a query to an Excel file

When you export data to Excel, Access creates a copy of the selected data and then stores the copied data in a file that you can open in Excel.

1. If Excel is open, close it before you continue.

2. In Access, in the **Navigation Pane** of the source database, select the object that you want to export.

3. On the **External Data** tab, in the **Export** group, select **Excel**, as depicted in the following screenshot.
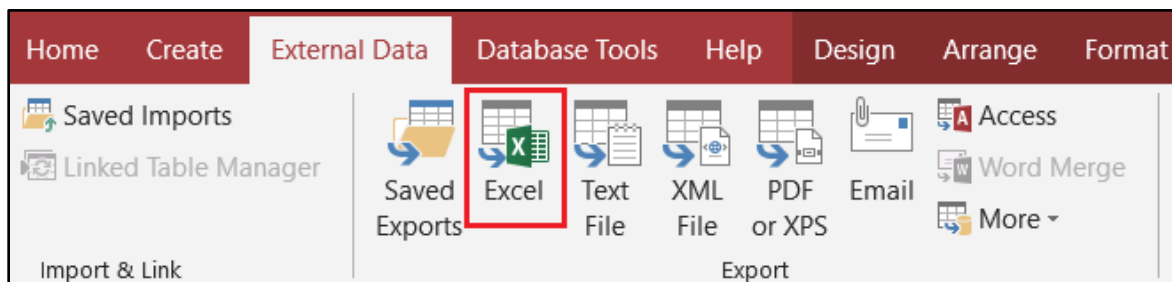

Figure 18: Export data to Excel file option

4. In the **Export - Excel Spreadsheet** dialog box, review the suggested **File name**, the Excel **File format**, and the **Specify export options** section. To review the file after the export operation is complete, be sure to select the **Open the destination file after the export operation is complete** check box. Select **OK**. The following screenshot depicts the **Export - Excel Spreadsheet** dialog box.
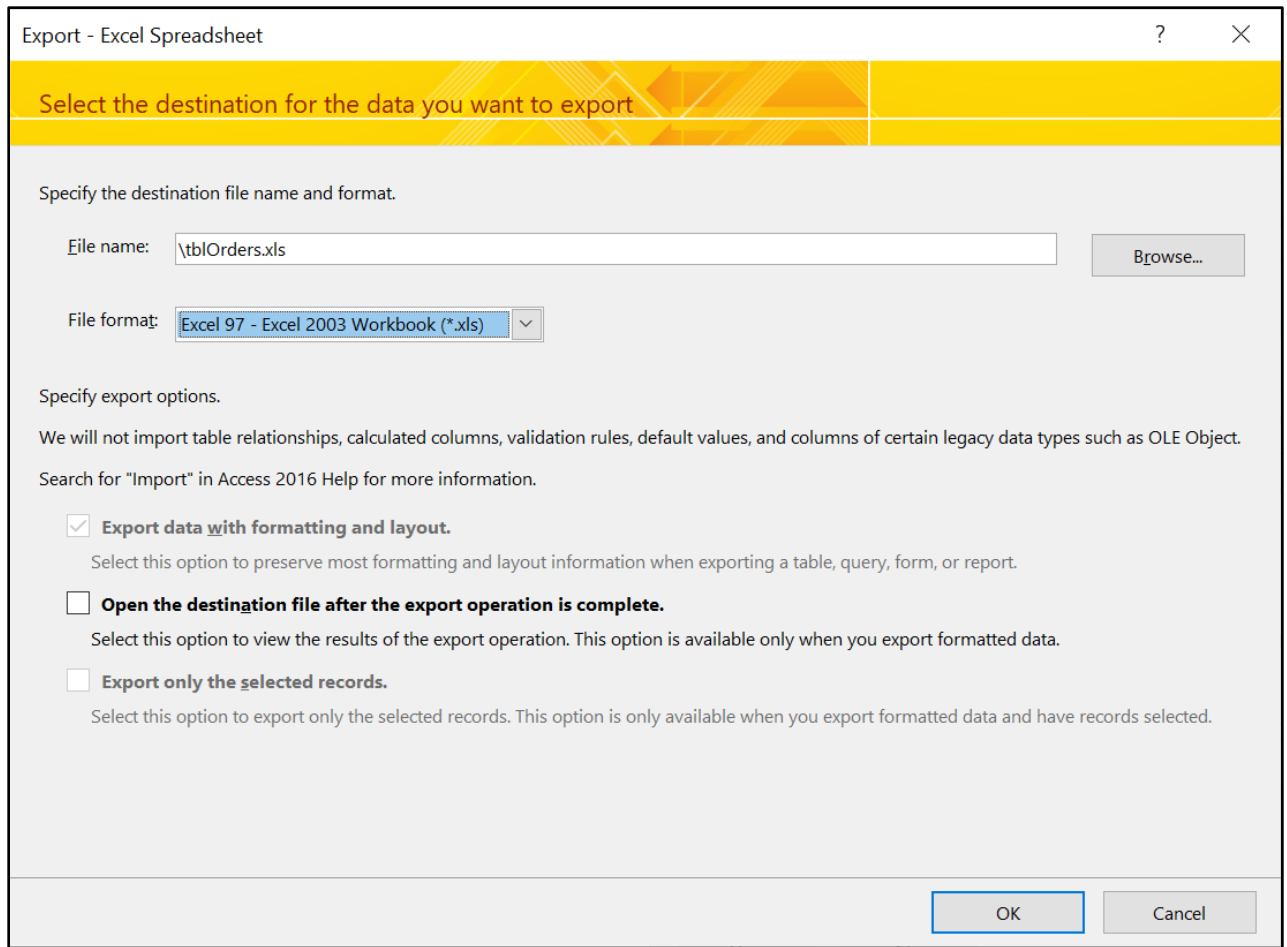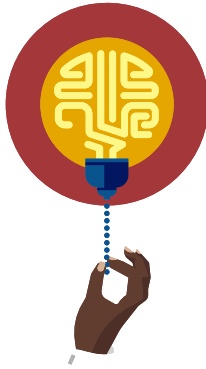
Figure 19: Export - Excel File example, select the destination field

5. When the **Export - Excel Spreadsheet** dialog box appears, you can choose to save the export steps so that you can quickly repeat the operation again in the future. To do so, select the **Save export steps** check box, and then select **Close**.

Did you know?

When exporting a query to Excel, if you find that just a few values are missing, you can fix them in the Excel workbook. Otherwise, you can fix the source object in the Access database and then repeat the export operation.

Additional information

To learn more about exporting data to Excel, go to: [Export data to Excel](#)

Export a query to a text file

When you export data to text, Access creates a copy of the selected data and then stores the copied data in a file that you can export as a text file that a destination program can use. To export data to a text file:

1. Close the destination program if it is open.

2. In Access, in the **Navigation Pane** of the source database, select the object that you want to export.

3. On the **External Data** tab, in the **Export** group, select **Text File**, as depicted in the following screenshot.
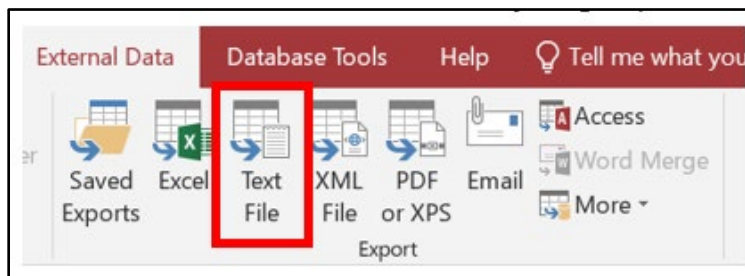

Figure 20: Export data to text file option

4. In the **Export – Text File** dialog box, specify the destination file name and format. In the **Specify export options** section, specify the export options. The following screenshot depicts the **Export – Text File** dialog box.
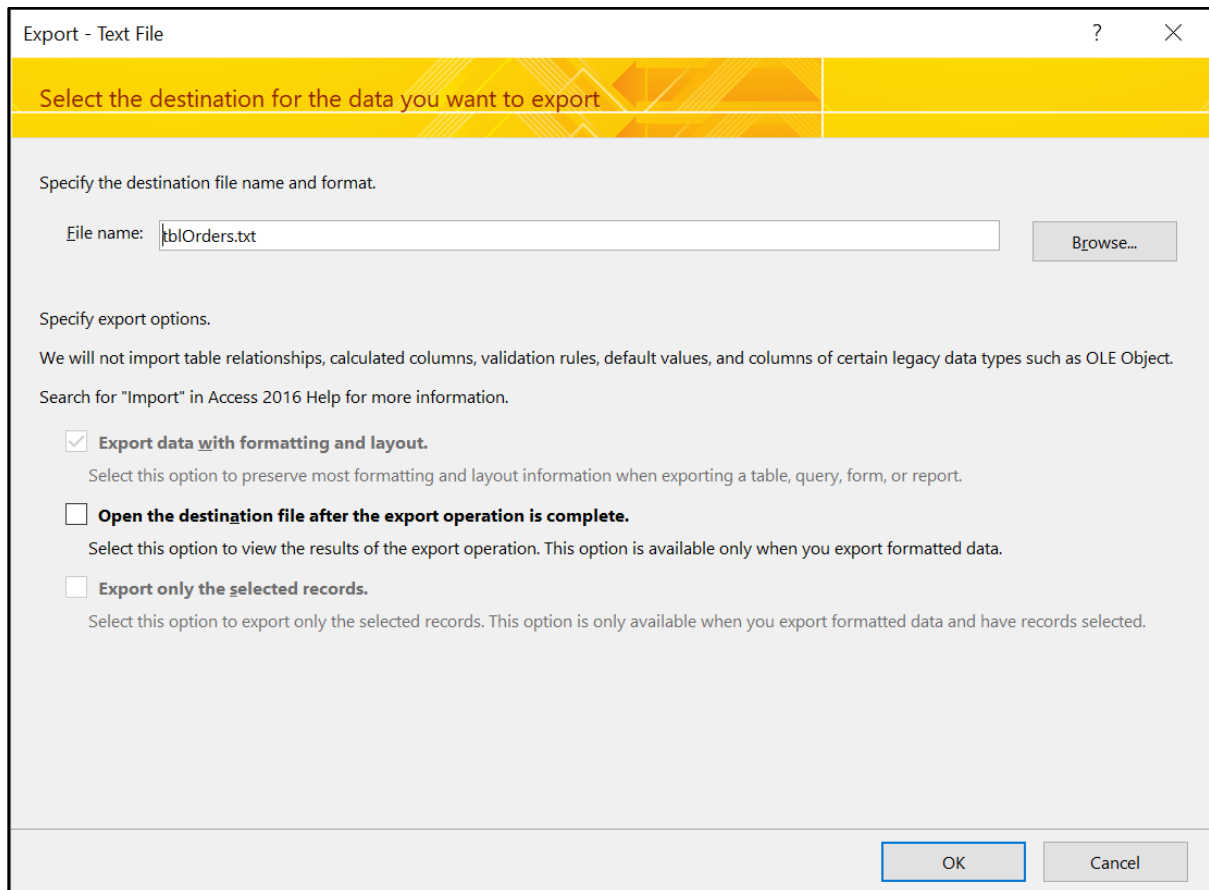

Figure 21: Export - Text File example, select the destination field

5. If you want to open the destination program after the export operation is complete, select the **Open the destination file after the export operation is complete** check box. Select **OK**.

6. In the **Encode As** dialog box, select the file format that you want. By default, **Windows (default)** is selected. Select the appropriate option, and then select **OK**, as depicted in the following screenshot.
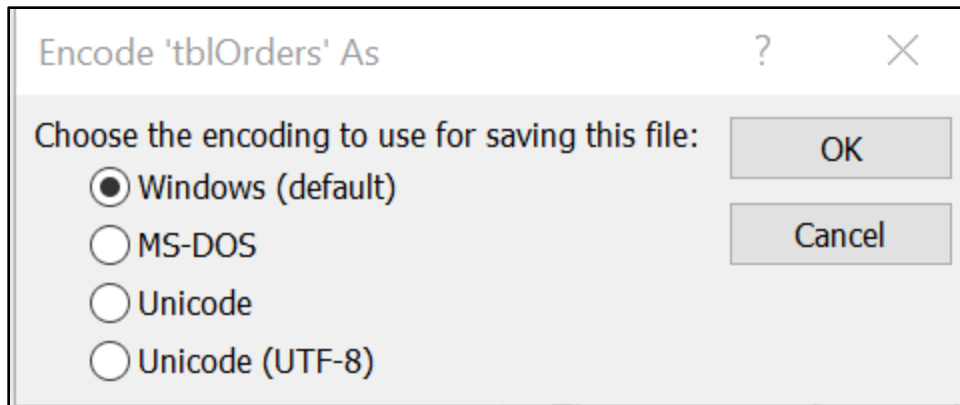
Figure 22: Encode - Text File format dialog box options example

7. In the **Export – Text File** dialog box, you can save the export steps so that you can quickly repeat the operation in the future. To do so, select the **Save export steps** check box, and then select **Close**, as depicted in the following screenshot.
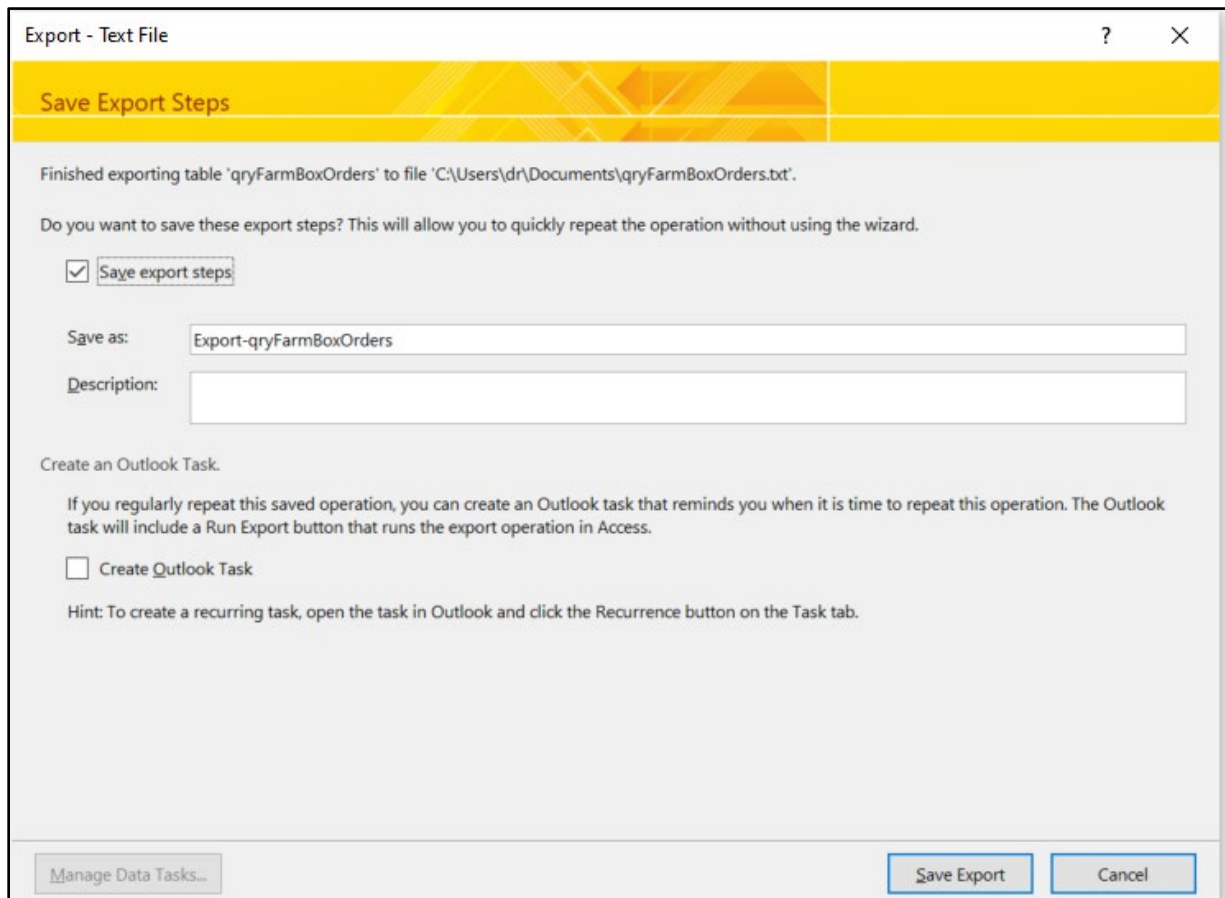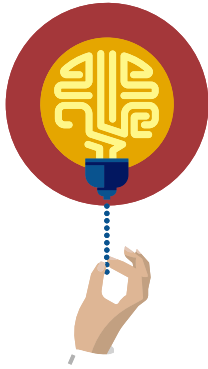

Figure 23: Export TXT file save

Did you know?

You cannot append data to an existing text file.

Additional information

To learn more about exporting data to a text file, go to: [Export data to a text file](#)

Export a query to XML

When you export data to XML, Access creates a copy of the selected data and then stores the copied data in a file that you can export as an XML file. To export data to an XML file:

1. If the destination program is open, close it before you continue.

2. In Access, in the **Navigation Pane** of the source database, select the object that you want to export.

3. On the **External Data** tab, in the **Export** group, select **XML File**, as depicted in the following screenshot.
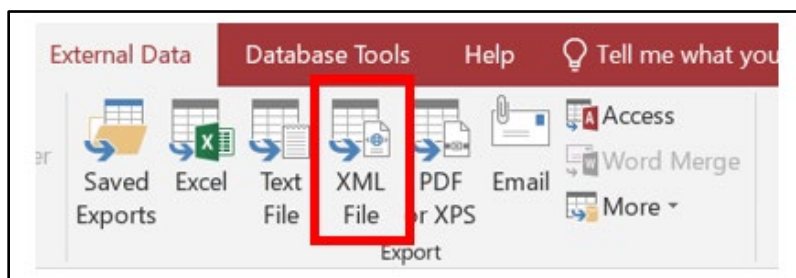
Figure 24: Export data to XML file option

4. In the **Export – XML File** dialog box, specify the destination file name and format, and then select **OK**, as depicted in the following screenshot.

Figure 25: Export - XML File example, select the destination field

5. In the **Export XML** dialog box, which the following screenshot depicts, select the file format that you want to use, and then select **OK**. The default option is **Data (XML)**.
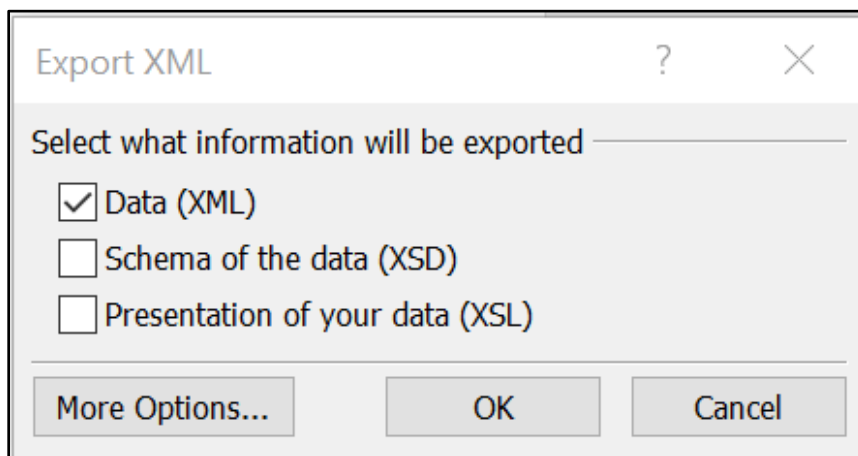
*Figure 26: **Export XML** dialog box*

6. In the **Export – XML File** dialog box, you can save the export steps so that you can quickly repeat the operation in the future. To do so, select the **Save export steps** check box, and then select **Close**, as depicted in the following screenshot.
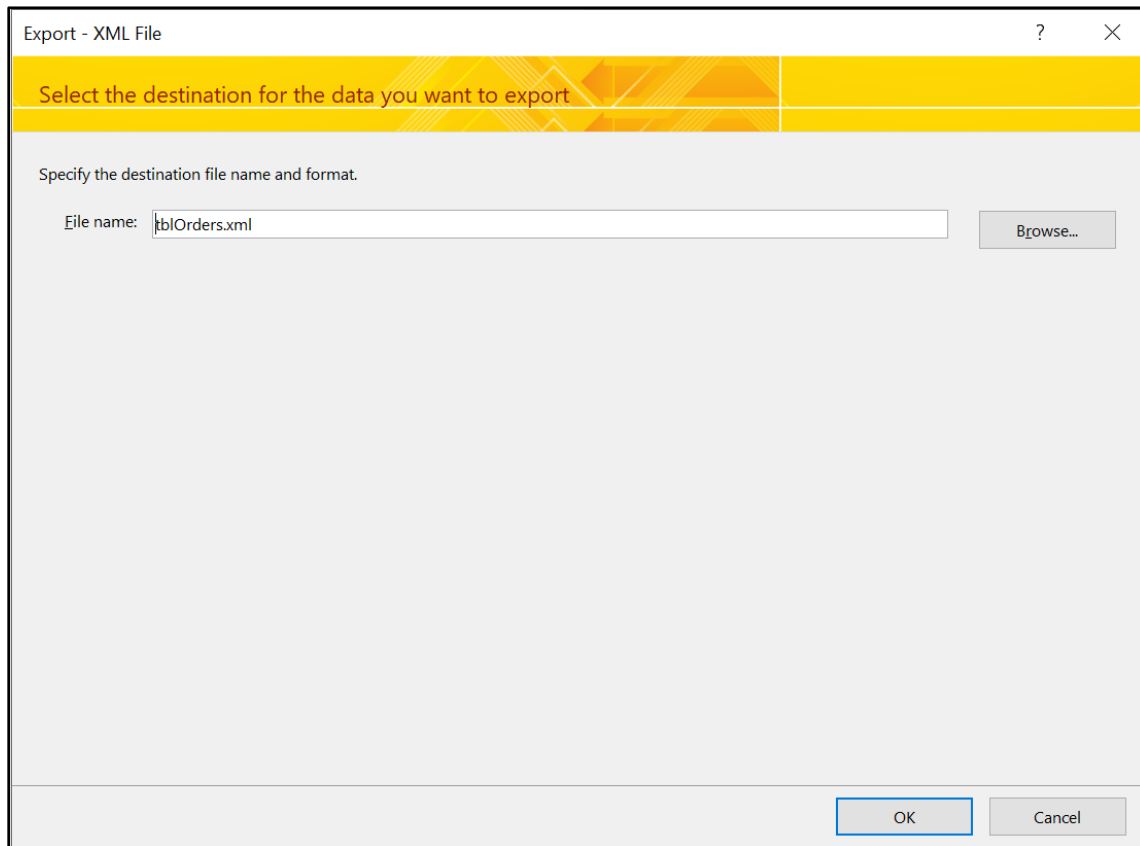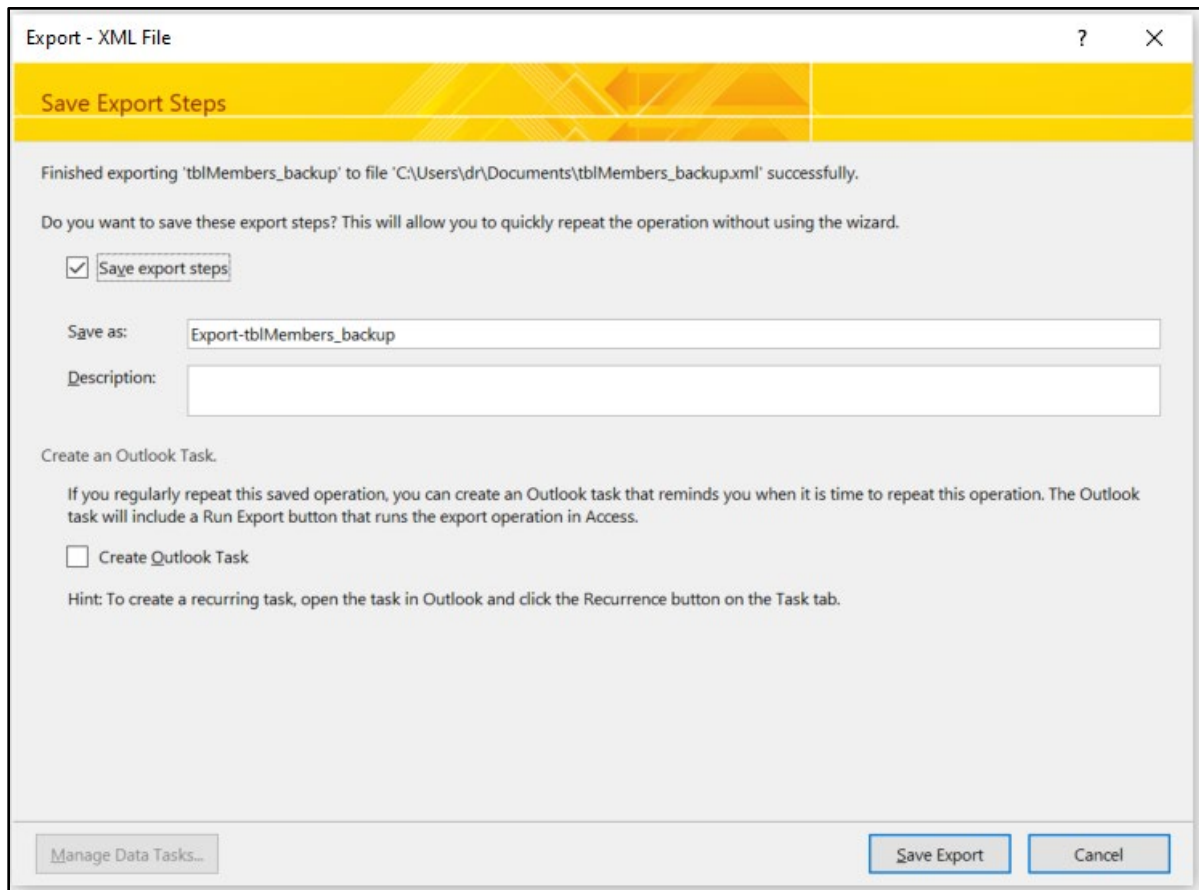

Figure 27: Save export steps

Additional information

To learn more about exporting data to XML, go to: XML for the uninitiated

Activity: Show me how

In this activity, follow along as the teacher leads a discussion about alternate options for exporting data and demonstrates the steps to export a query to Excel, text, and XML.

Resources required

You'll need the following resources for this activity:

- None.

Activity instructions

Participate in the activity by following these instructions:

1. Partner with a classmate. Follow along with the teacher's demonstration steps.

2. In this activity, collaborate with your partner by sharing your favorite Access options for exporting data.

3. Participate in the discussion. Remember there is usually more than one way to do something.

4. Share and discuss your ideas.

Try-it: Export a query to Excel, text, and XML

In this leveled try-it activity, you'll practice exporting data to Excel, text, and XML files.

Try-it 1

Resources

You'll need the following resources for this try-it:

- Open **L3_T2_try1_background_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it to export data to Excel:

1. If necessary, close Excel, and then, in **L3_T2_try1_background_starter.accdb**, select **rptMembers**, and on the **External Data** tab, select **Excel**.

2. In the **Export - Excel Spreadsheet** dialog box, on the **Select the destination for the data you want to export** page, enter **L3_T2_try1_background_solution.xls** as the destination file and save it as an **Excel 97 - Excel 2003 Workbook**.

3. In the **Export - Excel Spreadsheet** dialog box, review the default options in the **Specify export options** section, and then select **OK**.

4. On the **Save Export Steps** page, leave the check box clear, but for future reference, you can save the export steps by selecting the **Save export steps** check box.

5. Select **Close**.

Try-it 2

Resources
You'll need the following resources for this try-it:

- Open **L3_T2_try2_background_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions
The following are the general tasks that you need to perform during this try-it to export data to text:

1. If necessary, close any destination programs for .txt files, and then in **L3_T2_try2_background_starter.accdb**, select **rptMembers**, and on the **External Data** tab, select **Text File**.

2. In the **Export – Text File** dialog box, enter **L3_T2_try1_background_solution.txt** as the destination file, and save it using the option **Text Files**.

3. On the **Select the destination for the data you want to export** page, review the default options and then select **OK**.

4. In the **Encode** dialog box, review the encoding options, and then select **OK**.

5. On the **Save Export Steps** page, leave the check box clear, but for future reference, you can save the export steps if you want by selecting the **Save export steps** check box.

6. Select **Close**.

Try-it 3

Resources
You'll need the following resources for this try-it:

- Open **L3_T2_try3_background_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Presenting complex data

Instructions

The following are the general tasks that you need to perform during this try-it to export data to XML.

1. If a destination program is open for XML, close it, and then, in **L3_T2_try3_background_starter.accdb,** select **rptFarmBoxOrders_L3**, and on the **External Data** tab, select **XML File**.

2. In the **Export – XML File** dialog box, select **Browse**, and enter **L3_T2_try3_background_solution.xml** as the destination file, save it as **XML**, and then select **OK**.

3. In the **Export XML** dialog box, verify that the **Data (XML)** check box is selected, and then select **OK**.

4. On the **Save Export Steps** page, select **Close**.

Topic 3: Export a report to PDF

PDF is a common format for sharing final versions of files for viewing online or for printing reports using commercial printers. This topic explores how to export a report to PDF.

Export a report to PDF

To export a report to a PDF file:

1. Close the destination program if it is open.

2. In the **Navigation Pane** of the source database, select the object that you want to export.

3. On the **External Data** tab, in the **Export** group, select **PDF or XPS**, as depicted in the following screenshot.
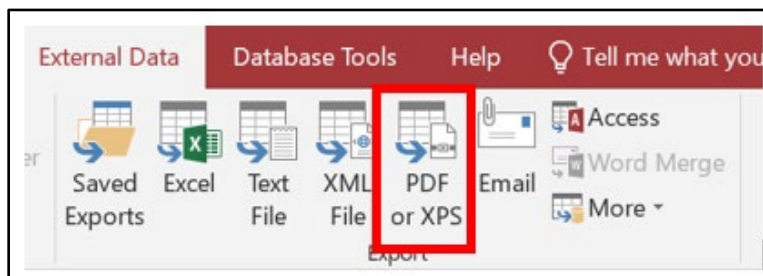

Figure 28: Export data to PDF file option

Microsoft

4. In the **Publish as PDF or XPS** dialog box, in the **File name** field, enter a name for the document.

5. In the **Save as type** drop-down box, select **PDF (*.pdf)**.

6. Select **Options**, and then in the **Options** dialog box, set the range you want to print, choose whether to print markup, and select PDF output options. Select **OK**, as depicted in the following screenshot.
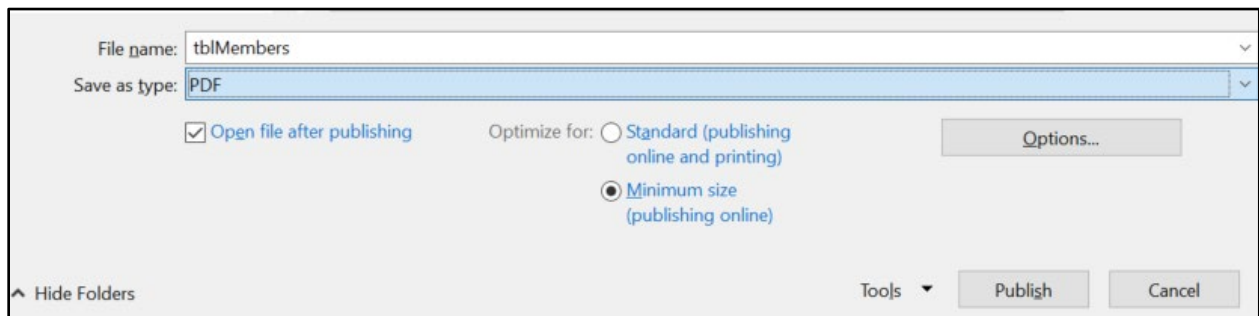
Figure 29: Save as type

7. Select **Publish**. Save your database.
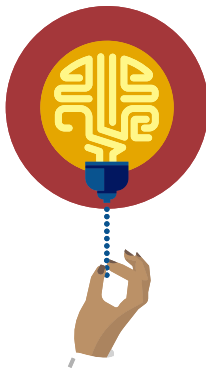
Did you know?

Adding accessibility tags to PDF files makes it easier for screen readers and other assistive technologies to read and navigate a document by using Tables of Contents, hyperlinks, bookmarks, and alt text. Accessibility tags also make it possible to read the information on different devices, such as large type displays, personal digital assistants (PDAs), and mobile phones.

Additional information

To learn more about creating accessible PDFs, go to: Create accessible PDFs

Activity: Show me how

In this activity, follow as the teacher leads a discussion and demonstration about alternate options for exporting data to PDF.

Resources required

You'll need the following resources for this activity:

- None

Activity instructions

Participate in the activity by following these instructions:

1. Partner with a classmate.

2. In this activity, collaborate with your partner by sharing your favorite alternative outputs for data by exporting a query to Excel, text, XML, and PDF.

3. Participate in the discussion. Remember there is usually more than one way to do something. Share and discuss your ideas.

Try-it: Export a report to PDF

In this standalone try-it activity, you'll practice exporting a report to PDF.

Resources

You'll need the following resources for this try-it:

- Open **L3_T3_try_background_starter.accdb** in this lesson's **Learning Activity Resources** folder.

Instructions

The following are the general tasks that you need to perform during this try-it to export a report to PDF:

1. Close any destination programs, and then, in **L3_T3_try_background_starter.accdb,** select **rptMembers**, and on the **External Data** tab, select **PDF or XPS**.

2. In the **Publish as PDF or XPS** dialog box, enter **L3_T3_try_background_solution.pdf**, and save as **PDF**.

3. Select the options to open the file after publishing is complete, and to use minimum size. Select **Publish**. Review the PDF.

4. In Access, in the **Export – PDF** dialog box, leave the **Save export steps** check box clear, and then select **Close**.

Microsoft

Wrap-up

Use these questions to check what you learned in this lesson:

1. Alternative object export options for queries and/or reports include:

   Select all that apply.

   a. .TXT

   b. .PSD

   c. Excel

   d. XML

2. Adding accessibility tags to PDF files makes it easier for:

   Select the correct option.

   a. Screen readers to hide unnecessary data.

   b. Assistive technologies to read and navigate the document.

   c. Non-mobile devices to read and navigate the document.

   d. You to edit screen reader files for ease of use.

3. If Access does not include a **Save As** command for an alternative object format, you must use the commands in the _____ group to copy the data.

   Fill in the blank space.

4. Access creates a _____ file when you don't need formatting to create a delimited or fixed-width file.

   Fill in the blank space.

5. What is the procedure for exporting reports to a PDF format?

   Indicate the correct sequence by adding numbers 1–4 next to the following items.

   a. Follow the prompts in the **Export** dialog box. _____

   b. Select the destination for the data you want to export. _____

   c. Select PDF as your export type. _____

   d. Open and review the source database. _____

Glossary

Bound control A control whose source of data is a field in a table or query is called a bound control. You use bound controls to display values that come from field records in your database. The values can be text, dates, numbers, **Yes/No** values, pictures, or graphs. For example, a text box that displays a member's last name might get this information from the **Last Name** field in the **Members** table.

Bound report A report is either bound or unbound. A bound report is one that can display data and has a table, query, or SQL statement specified in its **Record Source** property.

Calculated control A control whose source of data is an expression rather than a field is called a calculated control. You specify the value that you want to use as the source of data in the control by defining an expression.

Controls Controls are the parts of a form or report that you use to enter, edit, or display data.

Expression An expression can be a combination of operators, such as "=" and/or "+", control names, field names, functions that return a single value, and constant values.

.PDF Portable Document Format (PDF) is a common format for sharing final versions of files. A PDF format preserves document formatting and enables file sharing. When the PDF format file is viewed online or printed, it retains the format that is intended. The PDF format is also useful for documents that will be reproduced using commercial printing methods. PDF is accepted as a valid format by many agencies and organizations, and viewers are available on a wider variety of platforms than XPS.

Report Wizard	The **Report Wizard** guides users through a series of questions and then generates a report based on users' responses.
.txt	Access creates a text file (*.txt) when you don't need formatting to create a delimited text file where each record appears on its own line and the fields are separated by a single character (called a delimiter). The same applies for a fixed-width text file where each record appears on a separate line, and the width of each field remains consistent across records.
Unbound control	A control that doesn't have a source of data (such as a field or expression) is called an unbound control. You use unbound controls to display information, pictures, lines, or rectangles. For example, a label that displays the title of a form is an unbound control.
Unbound report	An unbound report is not based on a table, query, or SQL statement; that is, the **Record Source** property of the report is empty.
XML	Extensible Markup Language (XML) in documents contains data that is surrounded with tags where the tags define the structure and meaning of the data.

Table 3: Glossary terms and definitions

Microsoft

Cornerstone

Overview

In this Cornerstone, you'll create and modify reports, add report controls, and add information in page and report headers and footers. You'll then configure report print options and then export queries to alternative formats.

Objectives

The following table outlines the Cornerstone objectives and their corresponding MOS exam objectives.

Create and modify reports with complex data.	• 5.1.1: Group and sort fields on reports • 5.1.2: Add report controls • 5.1.3: Add and modify labels on reports
Add report controls.	• 5.1.2: Add report controls • 5.2.2: Modify report positioning • 5.2.3: Format report elements • 5.2.6: Insert images on reports
Work with page and report headers and footers.	• 5.2.3: Format report elements • 5.2.5: Insert information in report header and footer
Configure print options.	• 1.3.1: Configure print options for records, forms, and reports • 5.2.4 Change report orientation
Export a query to various file formats.	• 1.3.2: Exports objects to alternative formats
Export a report to PDF format.	• 1.3.2: Exports objects to alternative formats

Table 4: Cornerstone objectives

Microsoft

Duration

50 minutes

Instructions

1. Complete the tasks for each file.

2. When saving your file, add your name to the end of the filename, for example: "Background_Espino". Follow your teacher's directions for where to save your files.

3. When you're done with the Cornerstone, assess your completion and enter the points you think you earned within the task lists. You can accept the help of your teacher if required.

Tasks

You'll work with one file in this Cornerstone. The following are the tasks you need to do within that file:

File 1: Cornerstone_harvest_starter.accdb

Task: Create and modify reports with complex data (10 points)

1. Add a subreport control to **rptEmployees**. (3 points) (Exam objective 5.1.2)

2. Reposition the subreport control and modify a label. (2 points) (Exam objective 5.1.3)

3. Use **Report Wizard** to create a multi-table report. (3 points)

4. Add grouping and sorting to new report. (2 points) (Exam objective 5.1.1)

Points scored: _____ / 10

Task: Add report controls (6 points)

1. Add a logo to **rptHarvestDates**. (1 point) (Exam objective 5.2.6)

2. Resize and reposition the logo. (1 point) (Exam objective 5.2.2)

3. Add calculated control to **rptCropHarvesting_subreport**. (3 points) (Exam objective 5.1.2)

4. Format the calculated control. (1 point) (Exam objective 5.2.3)

Points scored: _____ / 6

Microsoft

Task: Work with page and report headers and footers (4 points)

1. Add a label to the **Report Header** in **rptEmployees**. (1 point) (Exam objective: 5.2.5)

2. Format the label. (1 point) (Exam objective: 5.2.3)

3. Add page numbers to the footer. (2 points) (Exam objective: 5.2.5)

Points scored: _____ / 4

Task: Configure print options (2 points)

1. Change report orientation. (1 point) (Exam objective: 5.2.4)

2. Set report margins. (1 point) (Exam objective 1.3.1)

Points scored: _____ / 2

Task: Export a query to various file formats (4 points)

1. Export **qryHarvestingDates** to Excel. (2 points) (Exam objective: 1.3.2)

2. Export **qryCropHarvesting** to a text file. (1 point) (Exam objective: 1.3.2)

3. Export **qryCropHarvesting** to an xml file. (1 points) (Exam objective: 1.3.2)

Points scored: _____ / 4

Task: Export to PDF format (2 points)

• Export the Employee Harvesting report to PDF format. (2 points) (Exam objective: 1.3.2)

Points scored: _____ / 2

FILE 1 TOTAL POINTS: _____ /28

Microsoft