Microsoft® Access 2019 & 365

COMPREHENSIVE

IAN EWELL Davis Technical College



Microsoft Access 2019 & 365: Comprehensive

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Preface

his textbook is part of our new approach to learning for introductory computer courses. We've kept the best elements of our proven, easy-to-use instructional design and added interactive elements and assessments that offer enormous potential to engage learners in a new way.

Why Did We Write This Content?

In today's digital world, knowing how to use the most common software applications is critical, and those who don't are left behind. Our goal is to simplify the entire learning experience and help every student develop the practical, real-world skills needed to be successful at work and in school. Using a combination of text, videos, interactive elements, and assessments, we begin with fundamental concepts and take learners through a systematic progression of exercises to achieve mastery.

What Key Themes Did We Follow?

We had conversations with dozens of educators at community colleges, vocational schools, and other learning environments in preparation for this textbook. We listened and adapted our learning solution to match the needs of a rapidly changing world, keeping the following common themes in mind:

Keep it about skills. Our content focus is on critical, job-ready topics and tasks, with a relentless focus on practical, real-world skills and common sense. We use step-by-step instructional design to ensure that learners stay engaged from the first chapter forward. We've retained our proven method of progressively moving learners through increasingly independent exercises to ensure mastery—an approach that has successfully developed skills for more than 25 years.

Keep it simple. Our integrated solutions create a seamless experience built on a dynamic instructional design that brings clarity to even the most challenging topics. We focus our content on the things that matter most and present it in the easiest way possible. Concise chunks of text are combined with visually engaging and interactive elements to increase understanding for all types of learners.

Keep it relevant. Fresh, original, and constantly evolving content helps educators keep pace with today's student and work environments. We reviewed every topic for relevancy and updated it where needed to offer realistic examples and projects for learners.

How Do I Use This Book?

Our comprehensive learning solution consists of a print textbook, a groundbreaking interactive ebook, and our easy-to-use eLab course management tool featuring additional learning content, such as overviews and video tutorials, and assessment content. Our interactive ebook contains learning content delivered in ways that will engage learners.

The eLab assessment solution includes Project Grader exercises for most chapters that are automatically graded by the system, in addition to clear feedback and analytics on student actions.

Included with Your Textbook Purchase

Depending on your purchase option, some or all of the following are included with your textbook:

Interactive ebook: A dynamic, engaging, and truly interactive textbook that includes elements such as videos, self-assessments, slide shows, GIFs, and other interactive features. Highlighting, taking notes, and searching for content is easy.

eLab Course Management System: A robust tool for accurate assessment, tracking of learner activity, and automated grading that includes a comprehensive set of instructor resources. eLab can be fully integrated with your LMS, making course management even easier.

Instructor resources: This course is also supported on the Labyrinth website with a comprehensive instructor support package that includes detailed lesson plans, lecture notes, PowerPoint presentations, a course syllabus, test banks, additional exercises, and more.

Student Resource Center: The exercise files that accompany this textbook can be found within eLab and in the Student Resource Center, which may be accessed from the ebook or online at: **Labyrinthelab.com/office19**

We're excited to share this innovative, new approach with you, and we'd love you to share your experience with us at: lablearning.com/share

Visual Conventions

This book uses visual and typographic cues to guide students through the lessons. Some of these cues are described below:

Cue Name	What It Does
Type this text	Text you type at the keyboard is printed in this typeface.
Action words	The important action words in exercise steps are presented in boldface.
Ribbon	Glossary terms are highlighted with a yellow background.
Note! Tip! Warning!	Tips, notes, and warnings are called out with special icons.
	Videos, WebSims, and other ebook or online content are indicated by this icon.
Command→Command→ Command→Command	Commands to execute from the Ribbon are presented like this: Ribbon Tab \rightarrow Command Group \rightarrow Command \rightarrow Subcommand.
■ Design→Themes→Themes 🗎	These notes present shortcut steps for executing certain tasks.

Display Settings

Multiple factors, including screen resolution, monitor size, and window size, can affect the appearance of the Microsoft Ribbon and its buttons. In this textbook, screen captures were taken at the native (recommended) screen resolutions in Office 2019 running Windows 10, with ClearType enabled.

The Microsoft Office Specialist Exam and This Text



This textbook has been certified and carries the ProCert Certified logo, distinguishing this courseware as a trusted and critical part of preparing for a certification exam. This solution meets all course objectives to prepare students to take the Microsoft Office Specialist (MOS) Core exam for this subject matter.

For more information on MOS certification, go to: certiport.pearsonvue.com/Certifications/Microsoft

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OVERVIEW

Introducing Microsoft Office and Using Common Features

Introducing Microsoft

nmon Featur

n this chapter, you will be introduced to Microsoft Office and given an overview of the various versions of the software. Understanding what is offered in each will help you make the best decision about which version meets your needs. You'll also practice using some of the features that are common across the Office suite. Once you learn how to use a feature in one application, you can use the same or similar steps in the others.

LEARNING OBJECTIVES

- Describe similarities and differences between Office 2019 for the desktop, Office 365, and Office Online
- Identify uses of cloud storage
- Identify parts of the Office user interface
- Identify Office features available through Backstage view
- Use the Office Clipboard
- Format text in Office applications

Introduction to Microsoft Office

Microsoft Office is a software suite that enables users to create, format, revise, collaborate, and share files quickly across multiple devices. The Microsoft Office 2019 software suite for Windows includes Word, Excel, Access, PowerPoint, Outlook, OneNote, Publisher, and Skype. A software suite is a collection of applications generally produced by the same manufacturer and bundled together for a better price. Being produced by the same manufacturer also means that each application offers the same user interface. Examples of features shared among the different Office 2019 apps are the Ribbon, Quick Access toolbar, a spelling and grammar checker, and collaboration tools.

What Devices Will Microsoft Office Work With?

Microsoft Office works on desktops, laptops/notebook computers, and all-in-one PCs and Macs, as well as Windows, Android, and iOS smartphones and tablets (though some apps, like Publisher and Access, work only on PCs).

If you are writing a paper or preparing a business plan, you probably want to create it on a desktop, laptop, or all-in-one computer. If you want to open, read, share, or make simple changes to a Word document, you could select any device. This chapter assumes you will be using a desktop, laptop, or all-in-one computer.

To learn more about the operating systems (Windows, Android, macOS, or iOS) and types of devices (all-in-one computer, desktop, laptop, smartphone, or tablet) that will run Microsoft Office, do a web search for *Microsoft Office 2019 products*.

What Storage Does Microsoft Office Provide?

Microsoft OneDrive is the cloud storage location included with Microsoft Office 2019 and Office 365, and it provides a convenient way to save, store, and share files, photos, and videos via your computer, smartphone, or tablet anytime, anywhere, and on any device—provided you have an Internet connection or Wi-Fi access. Depending on the Microsoft Office product you use or purchase, you will receive anywhere from five gigabytes to five terabytes of OneDrive cloud storage.

You may want to use cloud storage as your primary saving method so you can access your files at home, at school, at work, or anywhere. Or you may decide to use cloud storage as a backup for your files located on your computer's hard drive or your flash drive. Instead of emailing files to yourself, use OneDrive as a faster way to store something in the cloud. To learn more about OneDrive, do a web search for *OneDrive*.

Which Microsoft Office Should I Use?

You may have heard others talk about Microsoft Office 2019, Office 365, and Office Online and are not sure which one is right for you. Base your decision on the apps and features you need, in addition to the pricing structure.

• Office Online: This version is free and requires a Microsoft account. It includes limited versions of Word, Excel, PowerPoint, and OneNote. No software is installed on your computer, as the apps are accessed and run in a web browser. The apps are not the same as the full-version apps in the other variations of Office and lack many features of those full versions. This version requires an Internet connection. Office Online is great for simple tasks, like writing a short letter or creating a basic slide show presentation.

- Microsoft Office 2019: This version is software that is purchased once and installed on one PC. It does not require an Internet connection to run. It does not have all the features of Office 365, and you must pay for future major upgrades. Choose from a variety of plans that may include Word, Excel, PowerPoint, OneNote, Outlook, Publisher, Access, and Skype.
- Office 365: This version requires users to pay a monthly or annual subscription fee for installing and using the software on one or more devices (PC/Mac and mobile devices). All upgrades are included, so you always have the latest-and-greatest version, and all Office 2019 apps are included. Microsoft says the Office 365 apps can include features not present in the Office 2019 apps, as Office 365 is updated more frequently than Microsoft Office.

While Microsoft Office has three distinct formats—Microsoft Office 2019, Office 365, and Office Online—and the examples provided in this chapter can work in each of the Office formats, this book assumes you are using Office 2019 on the desktop or Office 365 in a subscription-based plan, as well as Windows 10. Remember that Office 365 can change at any time. If you are using Office 365, keep in mind that your screen may not match all the illustrations in this book. Changes made to Office 365 after publication of this title may result in additional differences between your book and the software.

What Are the Microsoft Office Apps?

In this chapter, you will learn about four of the Microsoft Office applications included in the Microsoft Office suite: Word, Excel, Access, and PowerPoint.

	Application	What It Is Used For
	Word	Word-processing software used to create, edit, format, and share documents, such as letters, reports, essays, and business plans.
_	Excel	Spreadsheet software, arranged with rows and columns, used to perform calculations and analyze numerical data. Use Excel to prepare a budget or income statement, or to determine the amount of interest paid on a loan.
	Access	Database software that stores and helps you quickly retrieve data. In Access, you create and enter data into a table and then use forms, reports, and queries to display the desired results.
	PowerPoint	Presentation software used to create, edit, format, and share slides designed to tell a story; market a product; or explain a concept.

The Microsoft Office suite includes the following additional applications:

Application	What It Is Used For
OneNote N	Note-taking software used to organize notes (handwritten or typed), audio recordings, screen captures, or sketches you have collected or created to share with others.
Outlook	Personal information management software used to create, send, and receive emails, record tasks, maintain one or more calendars, schedule meetings and appointments, manage contacts, and take notes.
Publisher 🗾	Desktop-publishing software used to design and lay out text and images, often for newsletters or brochures.
Skype S	Internet communication software used to share audio, video, text, messages, files, or desktop screens.

Microsoft Accounts

A Microsoft account provides you with access to your Microsoft settings, files, contacts, and more. A valid Microsoft account can include Hotmail, Bing, MSN, Office, OneDrive, Outlook, Skype, Store, Windows, or Xbox Live. Once logged in to your computer, you can log in to your Microsoft account from any Office app. If you do not have a Microsoft account, you can create one for free by doing a web search for *Microsoft account*.

Common Features in Microsoft Office Apps

The Office 2019 applications share some frequently used features. They include the Ribbon, Quick Access toolbar, and common commands.

The Ribbon

Within each application, you will find the Ribbon displayed along the top of the window. The Ribbon contains tabs and commonly used buttons and other icons that are specific to the application. The buttons are arranged in groups within each tab. While the Ribbon changes with each application, some tabs, groups, and commands are common throughout the Microsoft suite. In this chapter, we will look at the Access Ribbon and, specifically, the File, Home, Create, External Data, Database Tools, and Help tabs.

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View the video "Ribbon Overview."

The Quick Access Toolbar

Each application has a one-line Quick Access toolbar located, by default, in the top-left corner of the application window. This helpful toolbar contains some frequently used commands to help you be more efficient as you work. You can customize the toolbar with the buttons you use most frequently. The settings for each application's Quick Access toolbar work independently; therefore, you need to customize the Word, Excel, Access, PowerPoint, and Outlook Quick Access toolbars separately.



View the video "Quick Access Toolbar Overview."

Undo/Redo

Within any application, you may type text or perform a command or action and then change your mind about what you did. As long as you have not exited the application, you may be able to undo the action.



Some actions, such as saving or sharing, cannot be undone.

You may want to redo an action you just undid. Sounds confusing, right? Use the Redo button to undo the undo, or to reapply the action. This puts the command or action you just undid back into effect.



Undo and Redo on the Quick Access toolbar

The Undo and Redo commands in Access operate differently from the same commands in other Office applications. Because of a database's nature, many changes made within Access, such as creating an object or deleting a record, cannot be undone or redone. Also, the Undo and Redo commands do not function the same across all object types.



In Access, the Undo and Redo commands are most often used while working with text entry and control design.

📃 Quick Access toolbar→Undo ち or Redo 🖸

DEVELOP YOUR SKILLS: 01-D1

In this exercise, you will use the Undo button.

- **1.** Log in to your computer, start Access, and tap **Enter** to accept the default template Blank Database.
- 2. Click the Create 🛅 button.

A new database has been created using the default name Database1 and placed in your Documents folder. You can delete this file after the chapter exercises if you like.

- 3. Type Hello and tap Enter.
- 4. Type: Field
- 5. Click the **Undo** 5 button once to remove the word *Field*.
- 6. Type **Record** and tap **Enter**.
- 7. Click the **Undo** 5 button once to remove the word *Record*.

Because you tapped **Enter**, the database created a new record. Using the Undo command in this instance would remove the entire record and not just the word Record.

8. Keep Access open.

Unless otherwise directed, always keep any files or programs open at the end of an exercise.

Common Features on the File Tab

In this section, you will learn about the features on the File tab that are used in a similar manner throughout multiple Microsoft applications, including Word, Excel, PowerPoint, and Access. Here you will use Microsoft Access to save, close, open, and print.

Backstage View

When you are working in your file and open the File tab, the Backstage view displays. Think of your Backstage view as your personal manager for the open file and application. Use the Backstage view to update file information, select account settings, view program options, open new files, save, print, and provide feedback to Microsoft, and recover unsaved files. These are the "big-picture" items you do to your file and not the specific tasks you perform using the other tabs on the Ribbon.

Program Options

Microsoft provides preference settings that you can customize for each application (that is, Access or Word) so they are automatically applied each time you use the application on your device. To change your preferences, use the Options feature on the File tab. Some custom options include adding your username and initials, saving files to a default file location, and customizing the Ribbon.

General	General options for working with Access.		
Current Database	lase		
Datasheet	User Interface options		
Object Designers	✓ Enable Live Preview ⁽¹⁾		
Proofing	ScreenTip style: Show feature descriptions in ScreenTips 🔻		
Language	✓ Show shortcut keys in ScreenTips		
Client Settings	Disable hardware graphics acceleration		
Customize Ribbon	Creating databases		
Quick Access Toolbar	Default file format for Blank Database: Access 2007 - 2016 🔻		
Add-ins	Default database folder: C:\Users\Ewell\Documents\ Browse		
Trust Center	New database sort order: General - Legacy		
	Personalize your copy of Microsoft Office		
	User name: setup		
Initials: s			
	Always use these values regardless of sign in to Office.		
	Office <u>Theme</u> : Colorful 💌		

Options include allowing you to set defaults for the file format and personalizing with username and initials.



Saving Files

In most Office applications, you should save frequently to prevent data or information loss. Some people prefer to save important files every few minutes, while others save at less frequent intervals.

When an Access file is created, it is also named and saved in the location chosen by the user. A key feature of Access is that your file will constantly save as changes to data or objects are entered or updated. Because of this feature, you will not need to utilize the save settings reserved for other Office applications (Word, Excel, PowerPoint). However, it is still good practice to use the saving commands, especially when working on major design or layout changes.

The saving commands are found on the File tab, and you'll see different options, including Save and Save As. In Access, these commands work to save either an individual object within the database or to save the entire database file.

View the video "Using Save and Save As."

An Access database file is most likely to be saved to a shared location such as SharePoint. In a small organization a file may be saved to a personal device (for example, on the hard drive of a PC). Depending on the file size, it could possibly be saved to a flash drive or to the cloud in OneDrive.

File \rightarrow Save or Save As

DEVELOP YOUR SKILLS: 01-D2

In this exercise, you will use Save to save an open object and Save As to store an Access database file in a new folder.

Before You Begin: Download the student exercise files from your eLab course or the Student Resource Center (labyrinthelab.com/office19) and determine your file storage location before beginning this exercise.

- In your open Access database, choose File to display the Backstage view and then click Save. Because Table1 is open, Access prompts you to save this object by opening a dialog box.
- **2.** In the Save As dialog box, type **New Table** for the table name and then click **OK**. *Notice the table name has changed and is indicated in the object tab.*
- 3. Choose File to display the Backstage view and then click Save As.
- **4.** Verify the Save Database As option is chosen from the File Types menu on the left and the Access Database option is chosen to the right.
- 5. Click the Save As 😾 button and then choose Yes to close all objects.
- 6. In the Save As dialog box, navigate to the **Overview Chapter 1** folder in your file storage location.
- **7.** Click the **New Folder** command located to the right of the Organize command, just under the address bar.

Save As
$\leftarrow \rightarrow$ \checkmark \bigstar This PC \Rightarrow Documents \Rightarrow
Organize 🔻 New folder
Desktop Name

- 8. Type My Database for the new folder name and tap Enter twice.
- 9. Click in the File Name box and type: OV-D2-Database



- **10.** Click the **Save** button.
- **11.** Click **File** to display the Backstage view and then click **Close**.

Finding, Searching, and Opening Files

Files can be opened within an application by using the Open dialog box, choosing from a recently saved files list within the application, using File Explorer, or typing the filename in the Windows Search box. Within Windows 10, as well as previous versions of Windows, you can use File Explorer to locate and manage your files. You can click the File Explorer icon on the taskbar and then search for files located on your PC, flash drive, or OneDrive.



View the video "Opening Files."

Printing

If you are connected and have access to a printer, you should be able to print. Before printing, you should verify formats, ensure proper layout, and review the file to see if you have used the fewest possible number of pages. Use the Print Preview feature to browse the pages before printing so you don't waste time or printing resources, and use the options in the Settings area to adjust elements such as page orientation, paper size, margins, and more.

Keep in mind that you can print to paper or to PDF if you want to be eco-friendly.



View the video "Printing Files."

File→Print

DEVELOP YOUR SKILLS: 01-D3

In this exercise, you will open an Access database file using Windows Explorer and then print an Access object.

- 1. Ensure that Access is open and then click the File tab to display the Backstage view.
- 2. Choose Open.
- 3. Open OV-D3-WinDesign from your Overview Chapter 1 folder.
- 4. Click Enable Content if the Security Warning bar displays.

The Security Warning appears whenever a database file is opened for the first time. When working with the files that correspond to this text, you should always click the Enable Content button that appears. You should never open files unless you know or trust the file sender.

- 5. Save your database in the same location as: OV-D3-WinDesignRev
- **6.** Choose the **CustomersMultiItem** form located in the Navigation pane on the left by clicking the form name (don't double-click).



- 7. Click the File tab.
- 8. Choose **Print** from the menu and then choose **Print Preview** from the list of options to the right.

The object opens in Print Preview.

9. Choose Print Preview→Zoom→Two Pages 🛄.

The form is currently set to print across two pages with only a portion of the fields printing on the second page.

10. Choose Page Layout → Landscape

The entire form is now set to print across the length of one page.

11. Choose **Print Preview** \rightarrow **Print** \rightarrow **Print** to open the Print dialog box.

Print	? ×
Printer Name: Fax Status: Ready Type: Microsoft Shared Fax Driver Where: SHRFAX:	Properties
Print Range All Pages From: To:	Copies Number of Copies: 1
Selected Record(s)	OK Cancel

The Print dialog box allows you to set the print range and the number of copies and select which printer will perform the job.

- **12.** Click the **Cancel** button at the bottom right of the dialog box.
- 13. From the Ribbon, click Close Print Preview 🔀

Templates

A template is a database that has created objects with preconfigured fields, relationships, and settings. The fonts, styles, and object and control layout settings such as orientation and size may already be built in. Instead of creating each object and selecting these settings when you prepare a blank database file, you may opt to use a template to save time.

In most Office applications including Access, you can search for online templates using the Search feature available when you create a new database. Templates are arranged according to categories; for example, by business, personal, and industry.

Most Office applications include sample templates that are stored on the hard drive of your computer when you install the software. Access does not include this feature because of large file sizes of most database templates.

File→New

DEVELOP YOUR SKILLS: 01-D4

In this exercise, you will open a prebuilt database template. You will need an Internet connection to complete this exercise.

- **1.** Choose **File** \rightarrow **New** and then select the **Students Database** template.
- 2. Name the database Students and click Create 🛅.

Explore the database. Notice the many objects available in the Navigation pane to the left. Open and explore a few objects of your choice by double-clicking on the object's name.

3. Click File to display the Backstage view and then click **Close** to close the database without saving.

Common Features on the Home Tab

In this section, you will learn about the features on the Home tab that are used in a similar manner throughout multiple Microsoft applications, including Word, Excel, Access, and PowerPoint. You will

use Microsoft Access to Cut, Copy, and Paste with the Office Clipboard; format text; use the Mini toolbar; and find and replace text.

The Office Clipboard

Located at the far left on the Home tab, the Clipboard group contains the Cut, Copy, Paste, and Format Painter buttons. Selecting the Clipboard dialog box launcher opens the Clipboard pane, which displays at the side of your application. The Clipboard contains thumbnails (small images) of what you have recently cut or copied from your Microsoft Office file(s) during your Windows session, with the most recent item at the top of the list.

You can use the Clipboard to quickly paste text, pictures, or other images into your file. You can paste all items on the Clipboard into your file(s) as many times as desired, and you can clear all items from the Clipboard. The Cut feature in the Clipboard group allows you to cut data, and then paste it in the desired location. When data is cut, the original selection is removed from the source location and is pasted at the target location. When data is copied, the original selection remains in the source location and a new selection is pasted at the target location.

View the video "Clipboard Overview."

	CLIPBOARD FEATURES									
	Feature	What It Does								
	Cut 👗	Cut: Removes the original selection from the <i>source</i> location and places the selection on the Office Clipboard.								
	Сору 🛅	Copy: Creates a duplicate of the original selection, which remains in the source location, and places a copy of the selection on the Office Clipboard.								
	Paste 💼	Paste: Inserts a copy of the most recent item found on the Office Clipboard at the <i>target</i> location, or destination. Depending on the application, there are usually at least three paste choices: Keep Source Formatting, Merge Formatting, and Keep Text Only.								
		Keep Source Formatting: Pastes the text and the formatting (bold, italic, underline) of the selection from the source location to the target location. The selection pasted retains the original formatting from the source location.								
		Merge Formatting: Pastes the text and formatting (bold, italic, underline) of the selection from the source location to the target location and combines it with any formatting that is already at the target location. The selection pasted has formats from both the source and target locations.								
		Keep Text Only: Pastes the selection from the source location to the target location. The selection pasted takes on the formatting of the target location.								
	Format Painter v	Format Painter: Applies the character and paragraph formatting from the source selection to any characters or text selected. Double-click the Format Painter to apply formats to multiple selections.								
		Click the Format Painter button to turn it off when you are finished.								
	Home→Clipboard-	→Cut 🔏 Ctrl + X								
		→Copy 🖹 Ctrl+C								
	■ Home→Clipboard-	→Paste 💼 Ctrl+V								

DEVELOP YOUR SKILLS: O1-D5

In this exercise, you will use Access to copy data from the source destination to the target destination. You will also use a form control and cut data from its original location and paste it into the target location.

- 1. Ensure that Access is open and then choose File to display the Backstage view.
- 2. Choose Open.
- 3. Open OV-D3-WinDesignRev from your Overview Chapter 1 folder and save it as: OV-D5-WinDesignRev
- **4.** Open the **Customers** form located in the Navigation pane on the left by double-clicking the form name.



The form opens in Form View. Now you will move text from one field to another using the Cut command.

5. Follow these steps to cut data from the selection and paste to the target:



- A Highlight the text **Pickup at 6PM**, located in the Last Name text box.
- **B** Choose Home \rightarrow Clipboard \rightarrow Cut $\underline{\&}$.
- Click the **Notes** text box.

The note has been moved to the Notes text box and the Last Name textbox is now blank. Next you will use the Copy command.

6. Follow these steps to copy data from the selection and paste to the target:



- A Highlight the text **AndersM**, located in the Cust ID text box.
- Click the **Last Name** text box.

The data appears in both the Cust ID and the Last Name text box. Now you will make a final edit to the Last Name field.

7. Tap the **Backspace** key one time to remove the M.

Leave the form open for the next exercise.

Formatting Text Using Text Formatting Group Settings

To make your selection more visibly appealing and easy to read, you may want to use some or all of the font formats available in the Text Formatting group. To apply the formats, you must first select text.



The Format Painter applies multiple formats located in one control to another within the object. Think of the selected control as your paint can. You apply the formats found in your paint can, the selected control, to another control with the help of the paintbrush, or Format Painter. Whatever control you select gets the formatting. You can use Format Painter to format multiple controls by double-clicking the Format Painter button. To turn off the multiple-use feature and stop "painting," tap the [Esc] key.

DEVELOP YOUR SKILLS: 01-D6

In this exercise, you will make text bold, change the font color, and use the Format Painter.

- **1.** Choose **Home**→**Views**→**View** to switch to Layout View.
- 2. Select the First Name text box.

OVERVIEW

- 3. Choose Home→Text Formatting→Bold **B**
- 4. Choose Home→Text Formatting→Font Color ▲

Text in the First Name text box is now formatted to bold and red.

5. Follow these steps to apply formatting taken from the selected text to the chosen target using Format Painter:

Home	Create	Ext	ernal Da	ta Database To	ools Help	Design	Arrange	Format	V Tell me what you v	vant to do	
inn % ⊂ A × r	Cut Copy Format Pair	iter	Filter	2↓ Ascending 2↓ Descending 2⊕ Remove Sort	Selection *	Refresh All •	Save	∑ Totals ^{All} Spelling More *	Find P	Franklin Gothi B I <u>U</u>	k Book ([+ 11 +] :: ▲ + ½ - △ +] =
Clipb	oard	Fa		Sort & Filt	ler		Record	l.	Find		Text Formatting
ccess O	bje 🖲) «(stomers							
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		*			VVL	rici	nesi	er	custor	ners	
stomers				WWWWBEBEBES	R						
ployee Spour	ses		P								
ployees				Cust ID	AndersM			Telepi	hone (941) 555	5-2309	7
oice Details				Last Name	Anders			Email	AndersM	temail com	า
roices				Einst Namo	Marti			Notor	Distances	P.DA.A	
oducts				riist Name	Mark			Notes	Рокирас	орм	
stes				Street Address	205 Monta	na St					
		*		City	Bradenton						
stomers				State	FL 🗸			_			
stomersMulti	iltem			Zin	24211	1					
stomersSplitF	Form			<i>6</i> .4	34211						

🔕 Double-click the **Format Painter** 💉 button.

- B Click the **Cust ID** text box.
- Click the **Last Name** text box.

The same formatting applied to the First Name text box is now applied to both Last Name and Cust ID text boxes.

Leave the form open for the next exercise.

The Mini Toolbar

The Mini toolbar is a floating toolbar that contains some of the more commonly used formatting buttons found on the Home tab and specific to the application. The Mini toolbar appears at various times in all the Office applications, giving you a convenient way to choose the most commonly used commands.



In Access, the Mini toolbar appears only if you are working with rich text. By default, the text properties for most data types is plain text so you will not likely see the Mini toolbar unless you have changed the field settings.

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В	I	U	А	Ŧ	ah	-	=	= =	=	1 2 3	:	_		в	I	=	8	•	Α -		Ŧ	€.0 .00

The Mini toolbar in Access (left) and Excel (right)

DEVELOP YOUR SKILLS: 01-D7

In this exercise, you will use the Mini toolbar in Access to apply formatting.

- **1.** Choose **Views**→**View** to change to Form View.
- **2.** Highlight the text **6PM** in the Notes text box. *The Mini toolbar appears.*
- 3. In the Mini toolbar, click the **Bold B** button and the **Font Color A** button to apply red formatting.
- 4. Click anywhere in the form to close the Mini toolbar.
- 5. Click the **Close** × button at the far right of the Customers tab.



6. Click Yes when prompted to save your changes to the Customers form.

Find and Replace

Within a database you may need to locate text quickly. You may also need to substitute data for something else. The Find command is used to search for characters, symbols, numbers, words, phrases, or any other data that meet the criteria. The Replace command first finds whatever meets the criteria and then replaces it with data you desire.

DEVELOP YOUR SKILLS: 01-D8

In this exercise, you will use the Find command to locate the word dogs and then replace each occurrence with puppy.

1. Open the **Customers** table located in the Navigation pane on the left by double-clicking the table name.

	Assess Ohia		
All	Access Obje		
Search	P		
Tab	les	*	
	Customers		
	Employee Spouses	Cus	tomers
	Employees	_	
	Invoice Details		
	Invoices		

2. Choose **Home** \rightarrow **Find** \rightarrow **Find** \triangleright **.**

The Find and Replace dialog box opens.

Find Replace	
Find What: AndersM \checkmark Find Next	
Cancel	
Look In: Current field V	
Match: Any Part of Field 🗸	
Search: All V	
Match Case Search Fields As Formatted	

- 3. Click the drop-down arrow for the Look In option and choose Current Document.
- 4. Click the drop-down arrow for the Match option and choose Any Part of Field.
- 5. Type **dogs** in the Find What box.
- 6. Click Find Next.

The word dogs is highlighted in the table.

- **7.** Click the **Replace** tab in the Find and Replace box. *Verify that the Find What box displays* dogs.
- **8.** Type **puppy** in the Replace With box.
- 9. Click **Replace All** to change the one occurrence of the word *dogs* to *puppy*.
- **10.** Click **Yes** in the Microsoft Access message box.
- **11.** Close the Find and Replace box.

Help

When you are working in Microsoft Office, you may need to find out more about a topic as it relates to the application. Located to the right of the last tab on the Ribbon is the *Tell Me What You Want to Do* box. This box provides a quick way to access help or learn more about a feature in the application. When you click the box, suggestions related to the application display. Use the text box to enter words or phrases describing what you would like to do or locate next in the application. You can use the Tell Me... box to research or explain the meaning of a term with Smart Lookup. To view a list of Help topics, tap the **F1** function key on the keyboard.

Another Help feature is the *Tell Me More* link that may display at the bottom of a button's help tip. When you click the link, the Help window displays with more information about the specific feature. Using this method, you learn more about the feature without typing any search text.



Some buttons display robust ToolTips with a Tell Me More link when you point to them.

DEVELOP YOUR SKILLS: O1-D9

In this exercise, you will explore the Help and Tell Me More features.

1. With your Access database open, tap the F1 key.

The Access 2019 Help window appears.



2. Click in the Search Help box, type Tables, and press Enter.

Search results display numerous articles that include or relate to the topic of Tables.

- 3. Close the Help window.
- **4.** Follow these steps to open the Tell Me More link for the Table command:

				Α						
ab	a D	al Data	Extern	Create	lome	н				
y n	ery Qu ard Des	Que Wiza	arePoint Lists •	Table Sh Design	Table	B				
	Queries	0		Tables						
					Table	E				
	an 1ew In	Create a new blank table. You can define the fields directly in the new table, or open the table in Design view.								
		11	re C	ell me mo	? 1	оу				
J J	ery Qu ard Des Queries an new n	You can the n	arePoint Lists * nk table. directly ir e table in	Table Sh Design Tables e a new bla e the fields or open th	Table Table Creat define table, view. ? 1	.€ on oy				

- A Click the **Create** tab in the Ribbon.
- B In the Tables group, hover your mouse pointer over the Table command (don't click).
- Click the **Tell Me More** link at the bottom of the ToolTip.

The help window opens with topics related to the Create Table command.

5. Close the Help window and then **Close** Access.

Labyrinth Learning http://www.lablearning.com

ACCESS

be introduced to database concepts and

work with tables, the starting point of all

databases.

Getting Started with Tables



- Create database tables
 - Identify and choose data types
 - Sort and filter table records
 - Import a data source
 - Establish a relationship between two database tables

Project: Creating a Database

Winchester Web Design is a website development company that specializes in building websites for small businesses. You have been asked to build a database to help the company manage its employee, customer, and sales data. You'll get started by creating a database and building tables and table relationships.

Introducing Databases

It is likely that you routinely interact with databases. If you make an online purchase, your order information goes into a database. The database might be used to track your order status, product likes and reviews, past orders, or future promotions. If you post or like something on your Facebook account, that information is maintained in a database. If you search for or store a telephone number, that information is likely kept in a database. It is quite possible you have been using databases without even knowing it! Here, you will be introduced to what a database is and gain a better understanding of related terms, explore a sample database, and, finally, create your own!

While there are many definitions of a database, you can think of a database as an organized collection of related data files or tables. For example, a company might organize its information by both customers (external to the business) and employees (internal to the business). While the data relate to the same business, the types of data provided for customers and employees will likely differ.



Databases are the epicenter of our digital world.

Types of Databases

Large organizations typically use large custom-designed databases specifically for that company or industry. When you make travel plans, you are using a database that is specific to the airline industry. It contains real-time data, meaning that if there is only one seat left on a plane, whoever selects and pays for the seat first gets the reservation. If you are a small-business owner, you may use predesigned database software such as Microsoft Access to track information about your customers, products, and employees. Access provides the tools needed to let small organizations create, use, and maintain databases.

Open and Save an Access Database

Each time you start Access, the Backstage view displays options for opening an existing file, creating a new blank database, or selecting from a number of prebuilt templates. If you're creating a new database, Access will immediately prompt you to save the file in your desired storage location. You must save your file first because the database will constantly update data as it is entered or edited.

DEVELOP YOUR SKILLS: A1-D1

In this exercise, you will open an existing Access database and save it with a new name.

- **1.** Start Microsoft Access.
- **2.** Browse through the list of templates and then choose **Open Other Files** near the upper-left side of the window.
- 3. Click the Browse 🖆 button, navigate to your Access Chapter 1 folder, and double-click A1-D1-WinDesign.

The database opens with the database objects shown in the Navigation pane on the left.

4. Click Enable Content if the Security Warning bar displays.

The Security Warning appears whenever a database file is opened for the first time. When working with the files that correspond to this text you should always click the Enable Content button that appears. You should never open files unless you know or trust the file sender.

5. Choose File→Save As.

Notice the Save Database As option is already selected in the File Types task pane to the left. This allows users to save the entire contents of a database, including any objects, relationships, and settings.

- 6. Click Save As to accept Access Database as the file type.
- 7. Replace the 1 at the end of the filename with **Rev** to make it *A1-D1-WinDesignRev* and then click the **Save** button.

The database is saved as a Microsoft Access Database file type. This format saves databases as Access 2007–2019 files with the file extension of .accdb.

8. Click Enable Content when the Security Warning bar displays again.

Not only did you save the database with a new name, which creates another file, but you also closed the original database and opened the new one, so the Security Warning appears again.

9. Keep Access open, as you will continue to use the database to explore the Access environment.

Always leave the database file open at the end of an exercise unless instructed to close it.



Database Objects and the Access Window

The Access window includes the Ribbon, Navigation pane, and work area. The Navigation pane appears along the left side of the window and displays the database objects. A database object is a structure used to either store or retrieve data, and the four Access objects are tables, forms, queries, and reports. You can open and use database objects from the Navigation pane; you can also create new database objects using commands on the Ribbon along the top of the window. Whether you use the Ribbon to create a new object or double-click an existing object from within the Navigation pane, the object will open in the work area, where you create and modify database objects.

DATABASE O	BJECT TYPES
Access Object	What It Does
Table	Tables contain the database's data, and they let you enter, edit, delete, or view records in a row and column layout that is similar to that used in an Excel worksheet.
Form	Forms are used to view, edit, delete, and add data to a table one record at a time.
Query	Queries are used to search for specific table records using criteria and to sort and perform calculations on the results.
Report	Reports are printable database objects that can display, group, and summarize data from tables and/or queries.

View the video "Working with Access Objects."

DEVELOP YOUR SKILLS: A1-D2

In this exercise, you will open and view the four Access object types.

- **1.** Take a moment to explore the Access window, noticing the various tables, forms, queries, and reports in the Navigation pane.
- **2.** Double-click the **Customers** table from within the Navigation pane to open the table in the work area.

The table opens in Datasheet View by default, which appears similar to a worksheet with columns and rows. Datasheet View lets you view, add, and edit table records. One benefit of Datasheet View is it lets you see more than one record at a time.

- 3. Click in the first empty **Cust ID** cell at the bottom of the CustID column.
- **4.** Type **AdamsA** and tap **Tab** to complete the entry and move the insertion point to the next field.

Notice the pencil icon highlighted in yellow. This indicates the current record is active and being created or edited.

	+	ThibeauxP	Thibeaux	Pierre
	+	WinklerS	Winkler	Samuel
ø	+	AdamsA		
*				

Cust ID is known as a primary key field in this table, so each Cust ID must be unique.

5. Type Adams in the Last Name field and tap Tab.

- 6. Enter Anthony as the first name, 23 Pine St as the street address, and Bradenton as the city.

~		
AK	Alaska	^
AL	Alabama	
AR	Arkansas	
ΑZ	Arizona	
CA	California	
CO	Colorado	
СТ	Connecticut	
DC	District of Co	
DE	Delaware	
FL	Florida	
GA	Georgia	

The ST field is an example that utilizes field properties to make data entry easy and accurate.

8. Complete the record as follows, making sure to tap **Tab** after entering the information.

Tapping **Tab** after entering data completes the record, saving it in the database. As you enter the telephone number, Access will automatically format the entry for you.

- ZIP: **34210**
- Telephone: (941) 555-3648
- Email: AAdams@email.com
- Notes: Call for delivery.
- 9. Choose Home \rightarrow Views \rightarrow View menu button \checkmark and then choose Design View $\boxed{}$.

Each object type can be created or edited using Design View. Tables Design View is where fields can be added, removed, or edited and field properties can be set.

10. Click the View menu button 🗸 and choose Datasheet View

The Anthony Adams record is now the second record in the table. It moved up because the records are sorted in ascending order by the data in the Cust ID field.

Explore a Form

Now you will explore a form that is based on the Customers table. Forms help facilitate effective data entry by displaying one record at a time.

11. Double-click **Customers Form** in the Forms section of the Navigation pane.

The form displays all fields from the Customers table, but only one record is visible.

12. Locate the Record bar at the bottom of the form.

Record: I - 1 of 16 - I -

- **13.** Click the **Next Record** button to view the Anthony Adams record you just entered.
- **14.** Click in the **Notes** box and add the phrase **after 10:00** to the end of the note (that is, "Call for Delivery after 10:00").
- **15.** Click the **Next Record** button again to complete the edit.

This edit has now been saved in the Customers table.

Explore a Query

Now you will explore a query that is based on the Customers table. Queries choose specific database records using criteria that you specify.

16. Double-click **Customers Query** in the Queries section of the Navigation pane.

The query results look like a table displayed in Datasheet View, but the query displays only some of the fields from the underlying Customers table and records where the City is equal to Bradenton.

17. Click the View menu button 🗸 on the Ribbon and choose Design View 🕍

The query has fields from the Customers table and the criterion Bradenton. This is an example of a simple query based on a single table. Queries can draw data from multiple tables and can include more sophisticated criteria.

18. Choose **Query Tools**→**Design**→**Results**→**Run** ! to run the query and display only the Bradenton results.

Explore a Report

Now you will explore a report that uses multiple tables, including the Customers table.

19. Double-click Invoice Details Report in the Reports section.

Take a moment to scroll through and observe the report.

20. Switch to Design View 🕍.

The Report design grid may look complicated, but it's easy to create a robust report using the Access Report Wizard. The design grid can then be used to make modifications once the foundation has been set with the Wizard.

- 21. Switch to **Report View** , which is great for viewing reports.
- **22.** Follow these steps to display and then close an object:



A Display the Invoice report by selecting the tab at the far right.

The object type is indicated on each tab by the icon on the left of the tab.

- B Click the **Close Object** button at the far right to close the object.
- **23.** Close the three open objects that remain.
- **24.** Choose File \rightarrow Close to close the database.
Introducing Tables

A table is the starting point for entering, finding, and reporting useful information located in your database. A database can have separate tables, each tracking different types of data. A business might use a table to keep track of customer billing or employee contact information.

Table Features

Data are meaningful units of information such as names, numbers, dates, and descriptions organized for reference or analysis. The data stored in the Winchester Web Design database might include customer first and last names, business names, telephone numbers, and other important information.

A field is the smallest meaningful unit of information about one person, place, or item. Individually, each field represents a piece of data. Together the fields provide information. In most databases fields are displayed in columns.

A record is a collection of related fields about a person, place, or item, such as a single customer or employee. A collection of related records makes up a table. In most databases records are displayed in rows.

		Field I						Rec	ord	
T										
2		CustID 🚽	Last Name 👻	First Name 👻	Street Address 👻	City 🚽	ST 👻	ZIP 👻	Telephone 👻	
	+	AbramsJ	Abrams	John	1210 West Pier Wa	Palmetto	FL	34620	(941) 555-9902	
	+	AndersM	Anders	Mark	205 Montana St	Bradenton	FL	34211	(941) 555-2309	
	+	BlaserH	Blaser	Helen	600 Fowler	Tampa	FL	33802	(941) 555-1991	
	+	DavisP	Davis	Peter	65 Terracotta Way	Sarasota	FL	34024	(941) 555-1792	
	+	FleetwoodC	Fleetwood	Candace	92 Highland St	Sarasota	FL	34023	(941) 555-9256	
	+	HassanA	Hassan	Ahmed	2301 Proctor Rd	Sarasota	FL	34048	(941) 555-0809	

CustID field and BlaserH record in Customers table

Field Data Types

If you have ever filled out an online form, you might have seen instant formatting of some fields. When typing in currency values, the dollar sign and decimal point may appear automatically, and when entering a date, the slashes between month, day, and year spontaneously appear. This can be accomplished by assigning a data type to the field. A data type sets the characteristics of a particular field, identifying the type of values it may hold, such as alphanumeric text or numbers, dates, yes/no values, or even a hyperlink.

Primary Key Fields

Almost every database table should have a primary key field. A primary key is a unique identifier for each record in the table. Examples of field data that would make good primary keys are Social Security numbers, student IDs, and email addresses. Using a student ID as a primary key ensures that each student is uniquely identified in a student database table. Two students may have identical names, but they will never have identical student ID numbers.

Table Tools—Design—Tools—Primary Key 🏌

Creating a Table in a New Database

Instead of using a database that someone else has prepared, you can design your own using a blank database template in Access. Tables are the starting point for databases, and this shows up when a new blank database is first created. The new table has a single primary key field as a starting point for the database.

Table1									
	ID	*	Click to Add	•					
*	(New)							

The starting point in a blank database

DEVELOP YOUR SKILLS: A1-D3

In this exercise, you will create a new blank database and add an Invoices table in Datasheet View.

- **1.** Choose File → New → Blank Database.
- 2. Click Browse Folders 🧀 and navigate to your Access Chapter 1 folder.
- **3.** In the File Name box at the bottom of the window, enter **A1-D3-Datasheet** as the filename and then click **OK**.

The browsing window closes. Your new database file is now ready for creation in your chosen location using the filename you entered.

- 4. Click the Create button, and a new table will appear.
- 5. Follow these steps to change the name of the ID field and set the data type for a second field:



- Oouble-click the **ID** field name and type **InvNum** as the new name. This will be the primary key field.
- B Tap **Tab** to go to the second column and, if necessary, choose **Click to Add** to display the data type list.

Choose Date & Time.

Once the data type is selected, the heading for the new field becomes Field1.

- **6.** Replace *Field1* with the name **InvDate** and tap **Tab** to move to a new field. *Your table currently has a primary key field and one Date/Time field.*
- 7. Choose Short Text as the data type for the third field and change the field name to: EmpID
- 8. Tap Tab, choose Short Text for the fourth field data type, and change the field name to: CustID

Your simple table with four fields is now set up and ready for data to be entered.

- **9.** Click in the empty **InvDate** field directly below the InvDate header you just created (you might have to click twice) and type: **12/15/2019**
- **10.** Tap **Tab** and type **JFW** as the EmpID.
- **11.** Tap **Tab** and type **SmithW** as the CustID.
- **12.** Enter the data for the three additional records shown.

As you enter the records notice that the InvNum primary key field is automatically numbered because it has an AutoNumber property set.



You cannot enter data into a field that has an AutoNumber property set. Tap **Tab** or use your mouse to select the next field. Once you type data into the next field the AutoNumber field will automatically populate with the next available number in sequence.

2	InvNum	Ŧ	InvDate 👻	EmpID	T	CustID	Ŧ
		1	12/15/2019	JFW		SmithW	
		2	12/2/2019	WIW		SantosE	
		3	1/1/2019	MML		SantosE	
		4	11/30/2019	JMM		SmithW	

- **13.** Choose **File**→**Save** or click the **Save** ⊟ button on the Quick Access toolbar and save the table with the name: **Invoices**
- **14.** Close × the table.

Creating Tables in Design View

You may find it easier to create a new table in Design View than Datasheet View because Design View offers a straightforward layout and intuitive options for entering field names, setting data types, adding field descriptions, and setting field properties.

(reate-) ables-) able	
	C

Field Properties

Each field data type has numerous properties that can be set to assist with data entry, formatting of displayed data, and other useful functions. Some properties contain drop-down menus and built-in wizards to help guide the user in setting the property.

Properties are set while working in Design View by using the Field Properties Pane at the bottom of the window.



The field properties available are always based on the data type for the selected field. For example, a field set with the Number data type will include the Decimal Places property while fields set as Short Text would not.

	Field Nan	ne	Data Type	Description (Optional)
₿►	CustID		Short Text	
	CustlastName		Short Text	
	CustEirstNamo		Short Text	
	Custofins and data and		Short Text	
	CustStreetAddress		Short Text	
	CustCity CustState CustZIP		Short Text	
			Short Text	
			Short Text	
	CustPhone		Short Text	
	CustEmail		Hyperlink	
	Notes		Long Text	
			0	
0	eneral Lookup			Field Properties
G	ieneral Lookup	15		Field Properties
C F F	ieneral Lookup ield Size ormat	15		Field Properties
G F F	ieneral Lookup ield Size ormat nput Mask	15		Field Properties
G F F II	ieneral Lookup ield Size format nput Mask Caption	15		Field Properties
G F F II C	ieneral Lookup ield Size format nput Mask Caption Default Value	15		Field Properties
G F F I I C C	ieneral Lookup ield Size format nput Mask Caption Default Value /alidation Rule	15		Field Properties
	ieneral Lookup ield Size format nput Mask Caption Default Value /alidation Rule /alidation Text	15		Field Properties
	ieneral Lookup ield Size format nput Mask aption Jefault Value falidation Rule falidation Text Required	15 		Field Properties
O F F II O D V V F A	ieneral Lookup ield Size format nput Mask caption Sefault Value /alidation Rule /alidation Text Required sllow Zero Length	15 		Field Properties
G F F I I C I V V F A II	ieneral Lookup ield Size format nput Mask caption Jefault Value falidation Rule falidation Text Required Now Zero Length ndexed	15 Yes Yes Yes (No Du	plicates)	Field Properties
	ieneral Lookup ield Size format aption /alidation Rule /alidation Text Required Allow Zero Length indexed Jnicode Compression	15 Yes Yes Yes (No Du Yes	plicates)	Field Properties
G F F H C C V V F A H U H	ieneral Lookup ield Size format nput Mask Caption Pefault Value falidation Rule falidation Text Required falidation Text Required for Zero Length ndexed Jnicode Compression ME Mode	15 Yes Yes Yes (No Du Yes No Contro	plicates)	Field Properties
	ieneral Lookup ield Size format nput Mask caption oefault Value /alidation Rule /alidation Text Required Allow Zero Length ndexed Jnicode Compression ME Mode ME Sentence Mode	15 Yes Yes Yes (No Du Yes No Contro None	plicates)	Field Properties



View the video "Exploring Field Properties."

DEVELOP YOUR SKILLS: A1-D4

In this exercise, you will create a new table using Table Design View. Then you will adjust the width of the table columns.

1. Choose **Create** → **Tables** → **Table Design**

Access opens an empty table in Design View.

- 2. Type **CustID** in the Field Name box and tap **Tab**.
- **3.** Tap **Tab** to accept *Short Text* as the Data Type.
- **4.** Type **Customer Last Name and First Initial** in the Description field and tap **Tab**. It's a good idea to use field descriptions when setting up tables to help keep track of the purpose and intent of the fields.
- 5. Click in the **CustID** field and choose **Table Tools** \rightarrow **Design** \rightarrow **Tools** \rightarrow **Primary Key** [].

CustID is now a required field, and each record must have a unique customer ID. Notice the key icon next to the CustID field name, indicating it is the primary key field.

6. Click in the empty box below the CustID field and complete the following fields as shown:

	Table1		
	Field Name	Data Type	Description (Optional)
3	CustID	Short Text	Customer Last Name and First Initial
	CustLastName	Short Text	
	CustFirstName	Short Text	
	CustStreetAddress	Short Text	
	CustCity	Short Text	
	CustState	Short Text	2 character state abbreviation
	CustZip	Short Text	5 digit ZIP code
	CustPhone	Short Text	Area code and number
	CustEmail	Hyperlink	
	Notes	Long Text	Special comments

- **7.** Click anywhere in the **CustLastName** field, and the Field Properties for that field will display at the bottom of the window.
- 8. Change the Field Size property to 25 and enter Last Name as the Caption property.

The field will now accept only last names of up to 25 characters in length. The Caption property will make Last Name the label that appears for the field when the table is displayed in Layout View and when the table is used in queries, forms, and reports. Good database design requires the actual field names follow certain guidelines such as eliminating spaces within the name. The caption lets you follow good design principles while having more descriptive labels for fields.

9. Change the Field Size and Caption properties for the remaining fields as follows:

Field Name	Field Size	Caption
CustFirstName	25	First Name
CustStreetAddress	25	Street
CustCity	15	City
CustState	2	State
CustZip	5	ZIP
CustPhone	15	Telephone
CustEmail		Email

10. Choose **File**→**Save** or click **Save** □ on the Quick Access toolbar and save the table as: **Customers**

If you ever forget to save, Access will prompt you to save when you close a table or other object.

Set an Input Mask Property

In the next few steps, you will set an input mask property for the CustPhone field. The input mask will automatically format telephone numbers as they are entered, adding parentheses, (), around the area code and a hyphen, -, between the digits.

- **11.** Click anywhere in the **CustPhone** field and then click in the **Input Mask** property box.
- **12.** Click the **Input Mask** button on the right side of the property box to display the Input Mask Wizard.

The Input Mask Wizard has several steps that can be used to fine-tune the mask. However, the default settings will work just fine.

- **13.** Click **Finish** to complete the input mask and apply it to the CustPhone field.

Notice the CustID field is still listed as CustID because you did not apply a caption in the preceding steps. However, all other fields now display the captions you entered previously.

Enter Records

Notice as you are entering records that the input mask you just created formats the telephone numbers, and the email field is automatically formatted as a hyperlink because of the field type setting you made. Also, feel free to widen the columns slightly by dragging the double-headed arrow that appears between column headings if you need more space to see all the data.

15. Enter the following records.

Be sure to check your data entry for accuracy.

E	Customers									
1	CustID -	Last Name 👻	First Name 👻	Street 👻	City 👻	State 👻	ZIP 👻	Telephone 🔻	Email -	Notes 🔻
	AndersM	Anders	Mark	205 Pine St	Bradenton	FL	34211	(941) 555-2309	MAnders@email.com	
	DavisP	Davis	Peter	65 Maple St	Sarasota	FL	34228	(941) 555-1792	PDavis@email.com	
	JeffriesD	Jeffries	Daniel	102 Fern St	Bradenton	FL	34209	(941) 555-6939	DannyJ@email.com	

16. Choose File \rightarrow Close to close the database.

Sorting and Filtering Table Data

The primary purpose of any database is to locate and retrieve data quickly and efficiently. Sorting and filtering table records can help accomplish this goal.

When a table is created the records are automatically sorted using the primary key field. This can be changed by applying an ascending or descending sort to other table fields. You can even sort on more than one field, so customers could be sorted by last name and then by first name.

 \blacksquare Home \rightarrow Sort & Filter \rightarrow Ascending 1 or Descending $\overbrace{1}$

Filtering displays a subset of records. For example, in a customer table you may want to view only customer records for customers that live in a specific ZIP code. This is accomplished by applying a filter to the ZIP code field.

😑 Home—Sort & Filter—Filter 🍸

DEVELOP YOUR SKILLS: A1-D5

In this exercise, you will sort and filter records in a database for a medical clinic named Raritan Clinic East.

- 1. Open A1-D5-RCE from your Access Chapter 1 folder and save it as: A1-D5-RCERev
- 2. Double-click the **Patients** table in the Navigation pane to open it in Datasheet View.

The records are sorted in ascending order (smallest to largest) on the Patient ID primary key field. Records are always sorted on the primary key field unless a sort is applied to one or more other fields.

3. Click any name in the Last Name column and then choose Home \rightarrow Sort & Filter \rightarrow Ascending $[]_{\downarrow}$.

Apply a Filter

- 4. Double-click the Raritan Clinic East Doctors table in the Navigation pane.
- 5. Click anywhere in the **ZIP** column and click the **Filter Y** button.
- 6. Uncheck the Select All box and then check the 34205 box.
- 7. Click OK to apply the filter.

Just two records should now be visible. The remaining records are still in the table but are hidden from view because of the filter.

8. Close both tables and save the changes.

The sort and filter you applied will be active next time the tables are used.

9. Choose **File** \rightarrow **Close** to close the database.

Importing Data Sources

Organizations frequently have data in text files, Excel worksheets, and other formats that needs to be imported into a database. It's easy to import data into Access using the Import & Link tools. Data is imported into tables that become part of the database. Excel workbooks are the most common source of imported data.

📃 External Data—Import & Link—Excel 🚮

DEVELOP YOUR SKILLS: A1-D6

In this exercise, you will import an Excel worksheet into a new table.

- Open A1-D6-WinDesign from your Access Chapter 1 folder and save it as: A1-D6-WinDesignRev
- 2. From the Ribbon, choose External Data→Import & Link→New Data Source 💷 and then choose From File→Excel 🕡 from the menu.
- **3.** Take a moment to examine the options in the first screen of the Get External Data Wizard. You will leave the how and where option set to Import the Source Data into a New Table in the Current Database. Notice the data could also be appended (added) to an existing table if desired.
- 4. Click the **Browse** button, navigate to your **Access Chapter 1** folder and choose **A1-D6-WebContacts**, and click **Open**.
- 5. Click **OK** to start the import and display the second Wizard screen.
- **6.** Check the **First Row Contains Column Headings** box and click **Next** to specify the Excel column headings as the field names in the new table.

The next Wizard screens let you adjust various settings, including field names and data types. In the next step you will change the data type for the email field, changing it to a hyperlink.

- 7. Click in the **Email** column and click the **Data Type menu** button \checkmark .
- 8. Choose Hyperlink and click Next.

The new Email field hyperlink formatting won't show up until the import is complete.

- 9. Click Next again to let Access add a primary key field with autonumbering.
- 10. Name the table Web Contacts and click Finish.
- **11.** Choose **Close** on the final Wizard screen without checking the Save Import Steps box. *The Web Contacts table appears at the bottom of the Tables list in the Navigation pane.*
- **12.** Double-click the **Web Contacts** table to open it in Datasheet View. Notice the hyperlink format is applied to the Email field.
- **13.** Adjust the column widths to fit the widest entries in each column by either dragging the column head borders or autofitting the columns by double-clicking between two column heads.
- 14. Click Save 🗟 on the Quick Access toolbar and close any open tables.

Relational Databases

Early database programs stored data in one large, flat file similar to a worksheet. If a salesperson sold merchandise and the same product was sold many times, these databases required the salesperson to enter the same product description and price for every transaction. Such repetitive data entry is time-consuming and bound to cause data errors and inconsistencies.

Relational databases like Access link tables using primary key fields. A good example is linking a Salesperson table with a Sales Invoices table. One salesperson might be linked to hundreds of sales invoices for which that person received commissions. Once a relationship between the Salesperson and Sales Invoices tables is created, all that's needed to associate an invoice with a salesperson is to choose the correct salesperson when creating the invoice. This type of relationship is called a one-to-many relationship because one salesperson is responsible for many invoices. The other types of database relationships are one-to-one and many-to-many, although they are not frequently used.

📕 Database Tools—Relationships—Relationships 📑

Referential Integrity

Referential integrity is an option that can be chosen when creating a relationship between tables. It is a set of rules that prevents changes from being made to fields or records that are related to other fields or records. For example, if referential integrity were in effect, then a salesperson could not be removed from a database that has invoices assigned to that salesperson. Referential integrity would require all the invoices either be removed (not a good idea) or associated with a different salesperson before the original salesperson's record could be deleted. Referential integrity also requires the data types of related fields to be the same or compatible.

Data Normalization

A properly designed database organizes tables and fields into their smallest usable units and then links them using relationships. This is known as normalization. Normalization eliminates data duplication, decreases data entry errors and inconsistencies, reduces file size, and streamlines the search for necessary information. An example of reducing fields to their smallest usable units would be to use separate fields for first name and last name rather than a single name field. If a single name field were used, then the database could never be searched or sorted by just last name or first name.

DEVELOP YOUR SKILLS: A1-D7

In this exercise, you will open the Relationships window, add tables, create a one-to-many relationship between the Invoices table and the Employees table, and set referential integrity for the relationship.

- 1. Choose Database Tools -> Relationships -> Relationships
- 2. Click the Show Table 🛅 button.
- **3.** Add the **Employees** and **Invoices** tables to the Relationships window by double-clicking them from the list.
- **4.** Close the Show Table box.

The one-to-many relationship between the EmpID fields is automatically created because it is a primary key in the Employees table and a foreign (or secondary) key in the Invoices table. The line connecting the tables is called a join line. There's a 1 on the Employees side of the join line because EmpID is the primary key in that table. EmpID is a foreign key in the Invoices table, so it has an infinity symbol on that side of the join line. Each employee can have an unlimited number of invoices associated with them.



5. Click Close 🔀 in the Relationships group on the Ribbon and choose Yes to save the relationship.

6. Choose File \rightarrow Close to close the database and then close Access.

Self-Assessment

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

🖡 Reinforce Your Skills

REINFORCE YOUR SKILLS: A1-R1

Create a Table in Datasheet View

In this exercise, you will create a new database and a table using Datasheet View.

- 1. Start Access and choose **Blank Database** from the template list.
- 2. Click the Browse Folders 🖆 button and save the database to your Access Chapter 1 folder as: A1-R1-K4C
- **3.** Click the **Create** button to start a new database.
- 4. Double-click the ID heading and change the text to: StID

This will be the primary key field with autonumbering, so your records will automatically get numbered.

- 5. Tap Tab, choose Short Text as the data type, and change the heading from *Field1* to: StLName
- 6. Add the following as fields with the Short Text data type: StFName, StAdd, StCity, StST, StZIP, StPhone, and StAvail
- 7. Choose File→Save or click Save 🖯 on the Quick Access toolbar and save your table as: Staff
- **8.** Click the first empty cell in the StLName field and enter the following records using these guidelines:
 - Use **Tab** to complete entries.
 - Enter hyphens in the phone field, as the field is not formatted with an Input Mask.
 - Widen the columns as necessary.
 - Strive for 100% accuracy when entering data, including spaces between characters and uppercase and lowercase letters.

StID	StLName	StFName	StAdd	StCity	StST	StZIP	StPhone	StAvail
1	Bryant	Matthew	12 Macintosh St	Sarasota	FL	34022	941-555-7523	Thursday
2	Earle	Kevin	77 Kingfisher Ct	Sarasota	FL	34024	941-555-1368	Monday

9. Choose File→Close to close the database.

REINFORCE YOUR SKILLS: A1-R2

Create a Table in Design View

In this exercise, you will create a new table using Table Design View. Then you will adjust the width of the table columns.

- **1.** Choose **File** \rightarrow **New** and then choose **Blank Database** from the template list.
- 2. Click the Browse Folders 🖆 button and navigate to your Access Chapter 1 folder. Name the database file: A1-R2-K4C
- 3. Click the **Create** button and then switch to **Design View**
- 4. Save the table with the name **Children**, and the design grid will appear.

5. Replace the field name *ID* with **ChID** and tap **Tab**.

Notice the key icon to the left of the Field Name indicating this is a primary key field.

- 6. Change the Data Type to Short Text and tap Tab.
- 7. Type Last Name and First Initial and tap Tab to complete the description.
- **8.** Enter the remaining fields using the data types and descriptions shown:

Field Name	Data Type	Description (Optional)
ChLName	Short Text	
ChFName	Short Text	
ChAdd	Short Text	
ChCity	Short Text	
ChST	Short Text	2-char abbreviation
ChZIP	Short Text	5-digit ZIP code
ChPhone	Short Text	Area code & number
ChBday	Date/Time	

- 9. Click anywhere in the **ChPhone** field and then click in the **Input Mask** property box.
- 10. Click the Input Mask is button on the right side of the Input Mask property box and choose Yes if asked to save the table.
- **11.** Click **Finish** to accept the Phone Number input mask and apply it to the ChPhone field.
- **12.** Switch to **Datasheet View** , saving the table if prompted to do so.
- **13.** Enter these records, adjusting the column widths as necessary:

ChID	ChLName	ChFName	ChAdd	ChCity	ChST	ChZIP	ChPhone	ChBday
CregerK	Creger	Kurt	503 Hillview St	Sarasota	FL	34022	(941) 555-0245	10/12/2012
LangfordJ	Langford	James	43 Wisteria Ct	Bradenton	FL	34209	(941) 555-1098	8/13/2010

14. Choose **File**→**Close** to close the database, saving the changes if prompted.

REINFORCE YOUR SKILLS: A1-R3

Create, Import, and Sort Tables and Establish Relationships

The staff director of Kids for Change would like you to add two new tables to the database: one that stores various community activities and one that stores parent volunteers. You'll create one of these tables and import the other.

1. Open A1-R3-K4C from your Access Chapter 1 folder and save it as: A1-R3-K4CRev

The first thing you'll do is import a worksheet into a table, which will then be linked with other tables through relationships.

- 2. Choose External Data

 Import & Link
 New Data Source
- 3. From the menu that appears, choose From File \rightarrow Excel
- **4.** Click the **Browse** button on the first Wizard screen and navigate to your **Access Chapter 1** folder.
- 5. Choose A1-R3-ActivityParticipation and click Open.
- 6. Click **OK** to import the worksheet into a new table and display the next Wizard screen.
- 7. Click Next again to choose ActivityParticipation as the worksheet to use.

- **8.** Check the **First Row Contains Column Headings** box and click **Next** to specify the Excel column headings as the field names in the new table.
- 9. Click Next again to accept the data type of the two fields as Short Text.
- **10.** Click **Next** again to let Access add a primary key field.
- **11.** Click **Finish** to accept *ActivityParticipation* as the table name and then click **Close** to complete the import.

ActivityParticipation should now be in the table list.

Sort the Imported Worksheet

- **12.** Double-click the **ActivityParticipation** table to open it in Datasheet View. Notice the table is sorted in ascending order by Activity ID.
- **13.** Click anywhere in the **Child ID** column and choose **Home** \rightarrow **Sort & Filter** \rightarrow **Ascending** [2]. The records are now sorted by Child ID to easily see all the activities each child has participated in.
- **14.** Close the table and save the changes.

Create Relationships

15. Choose Database Tools \rightarrow Relationships \rightarrow Relationships \blacksquare .

Notice there is currently a relationship between the Donors and Donations tables.

- 16. Click the Show Table 🛄 button.
- **17.** Add the **Children**, **ActivityParticipation**, and **Activities** tables and then close the Show Table box.
- **18.** Drag the **Child ID** primary key field from the Children table and drop it on the ChildID field in the Activity Participation table.

Make sure ChildID appears in both the Table/Query and Related Table/Query lists.

- **19.** Check the **Enforce Referential Integrity** box and then click the **Create** button to complete the relationship.
- **20.** Drag the **ActID** field from the Activities table and drop it on the ActID field in the **ActivityParticipation** table.
- 21. Choose to Enforce Referential Integrity and then click Create.

These relationships will now allow a database user to determine all the activities a particular child has participated in and to view the details of those activities.

22. Click the Close 🔀 button above the relationships and choose Yes to save the relationships.

Add a Table in Design View

- 23. Choose Create→Tables→Table
- 24. Choose Home → Views → Design View 🕍 and save the table as: Volunteers

- **25.** Follow these guidelines to set up the table and enter a record:
 - Use the field names provided in the image.
 - Let VolID be the primary key field with autonumbering.
 - Set the data type of all fields (except the primary key field) to **Short Text**.
 - Enter the record shown here, including the hyphens in the phone number:

VolID	VolLName	VolFName	VolStreet	VolCity	VolST	VolZIP	VolPhone	AvailDay
1	Jones	Stan	892 South St	Sarasota	FL	34024	941-555-8929	Tuesday

26. Choose **File** \rightarrow **Close** when you are finished, saving the changes if prompted.

🗞 Apply Your Skills

APPLY YOUR SKILLS: A1-A1

Create a Database and Tables

In this exercise, you will create a new database with two tables.

- 1. Create a new database and save it to your Access Chapter 1 folder as: A1-A1-SunStateU
- 2. Create a new table named Classes using these field names, data types, and captions:

Field Name	Data Type	Caption
ClassID	Short Text (Primary Key)	
Department	Short Text	
ClassNumber	Short Text	Class Number
SectionNumber	Short Text	Section Number
RoomNumber	Short Text	Room Number
StartTime	Date/Time	Start Time
EndTime	Date/Time	End Time
CreditHours	Number	Credit Hours

- **3.** Brainstorm and add at least two records to the table and then close the table.
- 4. Create another new table named **Professors** using these fields and data types and making **ProfID** the primary key field:

Field Name	Data Type
ProfID	Short Text
ProfLastName	Short Text
ProfFirstName	Short Text
ProfDept	Short Text
ProfRank	Short Text

- 5. Brainstorm and add at least two new records to the table and then close the table.
- 6. Choose File→Close to close the database.

APPLY YOUR SKILLS: A1-A2

Import a Table and Establish a Relationship

In this exercise, you will import an Excel worksheet and establish a relationship between the new table and an existing table.

- 1. Open A1-A2-Customers from your Access Chapter 1 folder and save it as: A1-A2-CustomersRev
- 2. Open the **Customers** table in Datasheet View.
- 3. Sort the records in Ascending order on the CustZIP field.

- **4.** Widen all columns to fit the widest entry in the columns.
- 5. Close the table, saving the changes.

Import a Worksheet

- 6. Follow these guidelines to import the **A1-A2-Invoices** workbook in your **Access Chapter 1** folder as a table into the open database:
 - Leave all field names and data types as they are in the Wizard.
 - Make **InvNum** the primary key field.
 - Use **Invoices** as the table name.
- 7. Double-click the Invoices table to open it in Datasheet View.
- 8. Sort the table in Ascending order on the EmpID field.
- 9. Close the table, saving the changes.

Establish a Relationship

- **10.** Open the **Relationships** window and create a relationship between the CustID fields in the Customers and Invoices tables, enforcing referential integrity.
- **11.** Close the Relationships window and save the changes to the relationship.
- **12.** Choose File \rightarrow Close to close the database.

APPLY YOUR SKILLS: A1-A3

Create a Table, Import a Database, and Establish a Relationship

In this exercise, you will create a database to track the courses taught by specific teachers in a nonprofit organization.

- 1. Create a new database and save it to your Access Chapter 1 folder as: A1-A3-Teachers
- 2. Follow these guidelines to create the table shown:
 - Use the table name, field names, and data as shown.
 - Set all data types to **Short Text** and make **TeacherID** the primary key field.
 - Enter this data:

TeacherID	TFirstName	TLastName	TStatus
Amack	Alex	Mack	Fulltime
Bsmith	Brian	Smith	Parttime
Jjones	Jack	Jones	Parttime
Twatts	Tonya	Watts	Fulltime

- 3. Close the table and save it with the name: **Teachers**
- 4. Import the A1-A3-Courses workbook (Access Chapter 1 folder) using CourseID as the primary key field and naming the table: Courses
- **5.** Establish a one-to-many relationship between the **TeacherID** fields in the Teachers and Courses tables and enforce referential integrity.
- **6.** Close and save the Relationships window and close the database.

🖹 Project Grader

If your class is using eLab (labyrinthelab.com), you may upload your completed Project Grader assignments for automatic grading. You may complete these projects even if your class doesn't use eLab, though you will not be able to upload your work.

PROJECT GRADER: A1-P1

Taylor Games: Create and Import Tables

Taylor Games creates replacement parts for many different games as well as various types of dice. You've been asked to create a database to manage orders and inventory. It would like you to use the data from a spreadsheet that was previously created to manage inventory for various items.

- **1.** Download and open your Project Grader starting file.
 - Using eLab: Download **A1_P1_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A1_P1_Start from your Access Chapter 1 folder.
- 2. Create a new table named **Orders** that contains the following fields and criteria:

Field Name	Data Type	Primary Key	Field Size	Caption
Order_ID	AutoNumber	Yes		Order #
Order_Date	Date & Time			Date
SKU	Number		Double	
Item	Short Text			
Quantity	Number			
Cost	Currency			
Total_Cost	Currency			Total Cost

- **3.** Import data from an Excel file into a new table using the following guidelines in the Import Wizard:
 - Choose the A1_P1_Inventory.xlsx Excel workbook from your Access Chapter 1 folder.
 - The first row should contain column headings.
 - Leave all Field Options set to the default values.
 - Use **SKU** as the primary key.
 - Import to a table named: **Inventory**
- **4.** Sort the Inventory table data in **Ascending** order on the **Quantity** field; then close the table, saving the changes.
- **5.** Create a one-to-many relationship between the SKU fields in the Inventory and Orders tables, enforcing referential integrity. Close and save the relationship when you are finished.
- 6. Save your database.
 - Using eLab: Save it to your **Access Chapter 1** folder as **A1_P1_eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 1 folder as: A1_P1_Submission

PROJECT GRADER: A1-P2

WebVision: Design a Database and Create Tables

You are the Senior Sales Rep for WebVision, a startup company providing a unique closed-circuit television service. You've been asked to create an Access database of the most recent orders taken and relate them to the sales reps who made the sales.

- **1.** Download and open your Project Grader starting file.
 - *Using eLab:* Download **A1_P2_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A1_P2_Start from your Access Chapter 1 folder.
- 2. Create a new table named **Sales** Reps that contains the following fields and criteria:

Field Name	Data Type	Primary Key	Caption
RepID	Short Text	Yes	Rep ID
LastName	Short Text		Last Name
FirstName	Short Text		First Name
SalesTeam	Short Text		Sales Team

3. Enter the following data into the Sales Rep table and then close the table, saving the changes, if necessary:

Rep_ID	LastName	FirstName	SalesTeam
S101	Franks	Bernie	North
S102	Edmunds	Sally	Central
S103	Berry	Amy	West
S104	Lifestone	Ben	South

- **4.** Import data from an Excel file into a new table using the following guidelines in the Import Wizard:
 - Choose the A1_P2_Orders.xlsx Excel workbook from your Access Chapter 1 folder.
 - The first row should contain column headings.
 - Leave all Field Options set to the default values.
 - Use **OrderID** as the primary key.
 - Import to a table named: Orders
- **5.** Make the following changes in the Orders table:
 - Set the caption for the OrderID field to: Order Number
 - Set the caption for the RepID field to: **Rep ID**
 - Sort the data in the **Date** field in descending order and then close the table, saving the changes if necessary.
- **6.** Create a one-to-many relationship between the RepID fields in the Sales Reps and Orders tables, enforcing referential integrity. Close and save the relationship when you are finished.
- 7. Save your database.
 - Using eLab: Save it to your **Access Chapter 1** folder as **A1_P2_eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your **Access Chapter 1** folder as: **A1_P2_Submission**

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

A1-E1 That's the Way I See It

You've volunteered to help a nonprofit organization determine how much recyclable material is being collected by the five recycling centers in the area. You've been tasked with creating a database with contact information for the five centers. You will also visit the five centers, gathering information on the recyclables they accept and the annual number of metric tons of each that they've collected each year over the past three years. The annual tonnage information needs to be in a separate table that is related to the Centers table. Save your completed database as: **A1-E1-Recycle**

A1-E2 Be Your Own Boss

Your boss, the owner of Blue Jean Landscaping, has decided to sponsor the Sarasota Service Guild, a nonprofit organization created to raise money to help adults with disabilities. It needs a database that tracks businesses that donate to the guild and the donations that are made. Create a database with tables and fields to track the businesses and the donations they make. Create a relationship that can be used to relate businesses to the donations it has made over the past five years. Populate your tables with information for two businesses, with each making an annual donation over the past five years. Include relevant information about the businesses, including their names, addresses, and primary contact information. Include the amount and date of the annual donations. Save your completed database as: **A1-E2-BJL**

A1-E3 Demonstrate Proficiency

Stormy BBQ wants to modernize its business. It has hired you to design and create a database for its BBQ restaurant. Use Access to create a database with three tables: one for staff, one for menu items, and one for transactions where each transaction lists the menu items on that transaction including the quantity and price of each item. Relate the menu and transactions tables. Enter enough data to be able to view and modify the tables as needed. Save your completed database as: **A1-E3-StormyBBQ**

ACCESS

Working with Forms

f you have ever entered your personal information on a college application, filled out a loan application, or purchased an item from an online retailer, you have used a form. You also use forms to sign up for social media and email accounts. In this chapter, you will create and work with Access forms that provide an attractive, easy-to-use interface that allows users to focus on one table record at a time.

LEARNING OBJECTIVES

- Create basic forms
- Create forms using the Forms Wizard
- Modify forms using Layout View
- Modify forms using Design View
- Set properties for form sections and form controls
- Set the tab order of a form
- Create multiple item forms and split forms

Project: Designing Forms at Winchester Web Design

As the information technology (IT) director at Winchester Web Design, you are responsible for designing and formatting the forms and reports in the company database to make them more attractive, consistent, and user-friendly. Part of your job is to customize forms so they better identify the company. To accomplish this, you plan to create a consistent color scheme and add the corporate name and logo to all company forms.

Creating Forms

A form is a database object used to enter, edit, or view the data for individual table records. Forms are a nice alternative to the row and column arrangement of table Datasheet View. Being able to view and focus on a single record can help ensure data accuracy.

Record Sources

Forms display data from a record source, which is typically a single table or query. However, if a relationship exists between two or more tables, fields from all related tables can be displayed on the same form. An example is an Invoice form that displays fields from the Invoice, Products, Customers, and Employee tables.

Winchester Web Design Invoices											
	Inv	oice Number	1			Ir	vDate		3 /15/	2019	
	Cu	stomer ID	SmithV	V	•	E	mployee ID	I	FW 🖣	.]	
	Las	t Name	Smith			E	mp Last Name	• V	Vinchester		
	Firs	at Name	Williar	n		E	mp First Name	• J	ay		
	Street Address			79 Fifteenth Ave							
	City		Tampa		1						
	Sto	ite	FL	ZIP	34912	1					
	Tel	ephone	(941) 555-0793		1						
	Em	ail	<u>SmithB</u>	SmithBilly@email.com							
	4	ProdID -		De	scription		• Price •	Qty -	Line Toto	al 👻	
	01HP Home Page, Nav, CSS, Desig			ign	\$400.00	1	\$400	.00			
	02SP Secondary Page				\$200.00	(\$1,200	.00			
	05IM Image, Custom Designed				\$40.00	1	\$440	.00			
	*										
	Re	cord: 14 4 1 of 3	2 6 6	N	No Filter	Search					

A form with controls containing data from fields in the Invoice, Products, Customers, and Employee tables

Creating and Using Basic Forms

The Form button instantly creates a basic form based on the table or query selected in the Navigation pane. This is the easiest way to create a form using all fields from the selected table or query. Only one table or query can be used in a basic form.

📕 Create→Forms→Form 🖭

DEVELOP YOUR SKILLS: A2-D1

In this exercise, you will create a basic form and edit a record using the form.

1. Open A2-D1-WinDesign from your Access Chapter 2 folder and save it as: A2-D1-WinDesignRev

When completing exercises, always choose to Enable Content.

- **2.** Choose the **Employee Spouses** table in the Navigation pane by clicking the table name (don't double-click).
- **3.** Choose **Create** \rightarrow **Forms** \rightarrow **Form**

A basic form is created based on all fields in the Employee Spouses table and is displayed in Layout View. Layout View is used to size and position form controls.

Form View is used for entering, editing, and viewing table records one at a time. The navigation controls located in the record selector at the bottom of the form are used to browse table records and create new records.

5. Navigate to record 2 (the Tom Franklin record) by clicking once on the **Next Record** button in the navigation controls.

Record: H < 1 of 3 + H K No Filter Search

- 6. Change the last four digits of the phone number to: 6767
- 7. Choose File→Save or click Save □ on the Quick Access toolbar and save the form as:
 Employee Spouses
- **8.** Click the **Close** \times button on the right side of the form.

Creating Forms with the Form Wizard

The Form Wizard is a great way to get started with the creation of most forms. It allows you to build a form using the fields you choose from one or more tables or queries (record source). When choosing the fields your form requires, the Add and Remove buttons allow you to add or remove the field selected, while the Add All or Remove All buttons add or remove all fields within the record source with one command. You can also choose from multiple layout options—including Columnar, Tabular, Datasheet, and Justified—from within the Wizard. The form can then easily be modified using Layout View or Design View.



📕 Create—Forms—Form Wizard 🗔

DEVELOP YOUR SKILLS: A2-D2

In this exercise, you will use the Form Wizard to create a form.

- 1. Choose the **Customers** table in the Navigation pane.
- **2.** Choose Create \rightarrow Forms \rightarrow Form Wizard \square

Customers is chosen in the Tables/Queries list because you chose it before starting the Wizard.

3. Click the Add All Fields >>> button and click Next.

This adds all fields from the Customers table to the Selected Fields list. You could add fields from other tables and queries as well, although you won't do that now.

- 4. Click Next again to accept the Columnar layout format option.
- 5. Leave the form name as *Customers* and click **Finish**.

The form is displayed in Form View and is ready for data entry or editing.

Changing Forms in Layout View

A typical form has a header section where tiles, logos, and decorative elements are displayed and a detail section with control labels and text boxes. In a basic form, most labels will contain the name of the field, while the text box displays the field data for that record.

			Text box
		Customers	
		Customers	
Label —	•	Cust ID	AndersM
		Last Name	Anders
		First Name	Mark
		Street Address	205 Montana St
		City	Bradenton
		ST	FL 🗸
		ZIP	34211
		Telephone	(941) 555-2309
		Email	AndersM@email.com
		Notes	

These objects can easily be sized, moved, edited, and removed in Layout View. Multiple objects can be selected by holding the <u>Ctrl</u> key while clicking each desired one. Selecting multiple objects allows you to format or edit those objects at one time.



View the video "Reorganizing Forms in Layout View."

📕 Home—Views—Layout View 🧮

DEVELOP YOUR SKILLS: A2-D3

In this exercise, you will size, position, and edit controls, and you'll get extensive practice selecting multiple controls.

- 1. With the Customers form still open, click the **View menu** button 🗸 and choose **Layout View**
- 2. Click the Street Address label to select it.
- **3.** Click in the selected label, just to the right of *Address*.
- **4.** Tap the **Backspace** key until the word *Address* has been removed. *The label should now be* Street.
- 5. Click in the ST label and rename it to: State
- 6. Click in the **ZIP** label and change it to: **Zip**

Size Text Boxes

- 7. Click the large, empty Notes text box (not the label) to select it.
- 8. Hover the mouse pointer over the right edge until the adjust pointer appears.

Telephone	(941) 555-2309	
Email	AndersM@email.com	
Notes		(+)

- 9. Drag left, reducing the box width to equal the Email text box width.
- **10.** Reduce the width of the State text box so it is slightly wider than the two-character state abbreviation.

State	FL	\sim
-------	----	--------

Change the Position of Labels and Text Boxes

In the next few steps, you will move the text boxes so they are closer to their descriptive labels.

- **11.** Click the large **Notes** text box.
- **12.** Press and hold **Ctrl** and click the **Email** text box. Both boxes should be selected.
- **13.** Press and hold **Ctrl** while you select all other text boxes in the column.

Use Undo if you accidentally move the boxes while selecting.

14. Tap the **left arrow** \leftarrow key repeatedly to move the text boxes closer to their labels.

Customer	S
Cust ID	AndersM
Last Name	Anders
First Name	Mark
Street	205 Montana St
City	Bradenton
State	FL 🗸
Zip	34211
Telephone	(941) 555-2309
Email	AndersM@email.com
Notes	

- **15.** Click any empty part of the form (white background) to deselect all boxes.
- 16. Use the mouse and Ctrl key to select the Telephone, Email, and Notes labels and text boxes.
- **17.** Use the keyboard or drag with the mouse (when the four-headed arrow appears) to move the labels and text boxes up and right as shown.

-8	Customers			
	Customer	S		
Image: A start of the start	Cust ID Last Name First Name Street City State Zip	AndersM Anders Mark 205 Montana St Bradenton FL V 34211	Telephone Email Notes	(941) 555-2309 AndersM@email.com

18. Choose **File**→**Save** or click **Save** □ on the Quick Access toolbar to save the changes to the form.

Changing Forms in Design View

Form Layout View is a great tool for controlling the visual layout of a form, including editing, sizing, and rearranging labels and text boxes. However, some form design details can be more precisely set using Design View. In Design View you can set section properties as well as which Sections to include in a form. The Property Sheet is used in both Layout View and Design View to specify the details for any form object.

- 📕 Form Layout Tools→Design→Views→Design View 🔛
- 📕 Form Design Tools→Design→Tools→Property Sheet 🧮

Modifying Form Header and Footer Sections

The Form Header and Footer sections appear at the top and bottom of the form. The Form Header is the typical location for decorative features such as the title and logo controls, which are available in the Header / Footer group on the Home tab of the Ribbon.



Form Footers are used less frequently; however, you can place static data there, such as the date or various contact information. Form Footers are available with the same controls offered to the Form Header section. The Form Header and Form Footer can be modified in either Layout View or Design View.

DEVELOP YOUR SKILLS: A2-D4

In this exercise, you will format the Form Header and field labels and insert a logo to make the form look more professional.

 With the Customers form still open, choose Form Layout Tools→Design→Views→ Design View M.

The Form Header section contains the Customers title and the text boxes, and their labels are located in the Detail section.

2. Click in the **Customers** title box in the form header and change the title to: **Winchester Customers**

Next you will use the Property Sheet to precisely size, position, and format the title.

3. Choose Form Design Tools→Design→Tools→Property Sheet 📃.

The Property Sheet shows the settings for the currently selected object (the Customers title box).

4. Click in the Width box in the Property Sheet and then set the width to 5.5 and press Enter.



After setting a property, press **Enter** or **Tab**. Property settings don't take effect until after the current property box is no longer active.

- 5. Click in the Left box and enter: 1.5
- 6. Choose Lucida Calligraphy for the Font Name setting and enter 30 for the Font Size setting.

You can set text formats in this manner or directly in the Property Sheet, if desired.

Set Control Properties in the Detail Section

8. Click the Cust ID label (not the text box) in the Detail section.

The name CustID_Label appears at the top of the Property Sheet. The Property Sheet always indicates which control is selected.

Property Sheet Selection type: Label	
CustID_Label	•

9. Press and hold Ctrl and click all labels in the Detail section to select them all.

Properties can be set for multiple controls at the same time, provided the controls are of the same type (labels or text boxes). Notice in the Property Sheet that many properties, like Width and Height, are identical for all labels. Other properties, like Top and Left positioning, are blank because they are not the same for all labels.

10. Apply the same blue font color you just applied to the title to the selected labels.

Insert a Logo

- 12. Navigate to your Access Chapter 2 folder, choose WWD-Logo.bmp, and click OK.

Access places the logo in the upper-left corner of the Report Header section, but it's a bit small. The logo should be selected so the Property Sheet will show the logo properties.

13. Set both the width and height to: 0.8

The form header will increase in height slightly to accommodate the logo.

14. Switch to **Form View [16]** to see the changes.

Explore Property Sheets for Sections and the Form

- 15. Switch to Design View 🕍.
- **16.** Follow these steps to explore section and report properties :

-8	Customers ×	Property Sheet X
	· · · · · · · · · · · · · · · · · · ·	Property sneet
	✓ Form Header	Selection type: Section
:	A Network and Creek and and	FormHeader
-		CustiD
	Withhester	Custing_Label
		CustLastName_Label
Δ		CustPhone
•		CustPhone_Label
	Cust ID CustID Telephone CustPhone	CustState_Label
:	Last Name CustLastName Email	CustStreetAddress_Label CustStP
÷	First Name Notes Notes	Cust2IP_Label Detail
:	Street CustStreetAddress	FormFooter
-	City CustCity	FormHeader Label20
:	State Custs	Notes Label
2	Zip CustZIP	On Mouse Up
		On Mouse Move

A Click the Form Header section bar and view the Property Sheet.

The Property Sheet should be set to FormHeader. Here you can specify the visibility of the header area and set formats like the background color.

- B Click the **Detail** section bar and examine its properties.
- Scroll through the list and choose **Form** from the list.

The Form properties control the overall appearance and functionality of the form.



Properties for the form can also be accessed by clicking the Select Form box at the top-left corner of the form.



Tab Order

The most effective way to enter a record using a form is to use **Tab** to move from one field to the next. Forms have a **tab order** that determines which field the insertion point moves to each time the **Tab** key is tapped. The tab order can be changed to allow fields to be entered in a different sequence. This may be necessary if fields are rearranged on a form and when fields from more than one table appear on the same form.

```
Design—Tools—Tab Order 📑
```

DEVELOP YOUR SKILLS: A2-D5

In this exercise, you will change the form tab order to make the telephone number the second field in the tab order.

- 1. Switch to Form View 📃
- **2.** Use the **Tab** key to cycle through the fields.

The last name field is the first field in the tab order after the CustID field.

- 3. Switch to Design View 🕍.
- **4.** Choose **Form Design Tools**→**Design**→**Tools**→**Tab Order** 📑.
- 5. Follow these steps to adjust the tab order:

Tab Order	
Section: Form Header Detail Form Footer	Custom Order: CustID CustLastName CustFirstName CustStreetAddress CustCity CustState B_custZIP CustPhone CustEmail Notes

- A Choose **Detail** from the section pane to the left to see the current tab order for fields in the Detail section.
- B Click the small selection box next to the CustPhone field.
- C Drag the **CustPhone** selection box up and drop it above the CustLastName field. CustPhone should now be second in the tab order.
- 6. Click OK to complete the tab order change.
- 7. Switch to Form View 🔄 and tap Tab repeatedly to cycle through the fields.

The tab order remains the same with the exception of the CustPhone field, which is now second in the order.

Themes

Themes are prepackaged groups of design elements such as background colors, font families, font sizes, and other properties. When themes are applied, they impact all objects in the database (tables, forms, queries, and reports). The Themes group on the Ribbon lets you change just the colors or fonts or the overall design, including both the colors and fonts.



Form Design Tools \rightarrow Design \rightarrow Themes \rightarrow Themes 🔝

DEVELOP YOUR SKILLS: A2-D6

In this exercise, you will apply a theme to your form and adjust theme colors and fonts.

- **1.** Switch to **Design View** and choose **Form Design Tools** \rightarrow **Design** \rightarrow **Themes** \rightarrow **Themes** \bowtie **I**.
- 2. Hover over the thumbnail of the first available theme (first row, first column) in the gallery.

A ToolTip showing the theme name appears near the bottom of the mouse pointer and a live preview of the theme appears in the working area.

Themes A Fonts *	7
Aa Aa Aa Office Aa Aa Aa Aa Aa Aa	
Aa A	



With the exception of the first theme (Office), themes in the gallery are listed in alphabetical order from left to right, top to bottom.

- 3. Click to choose the Office theme from the gallery.
- **4.** Choose **Design→Themes→Colors** menu button **▼**.
- 5. Choose Blue Warm from the menu.
- 6. Choose Design→Themes→Fonts ▲ menu button → and then choose Franklin Gothic from the menu.
- 7. Switch to Form View 🔄 to see how your finished form looks with the new theme.

Access themes are subtle, applying small, incremental changes to the form. Keep in mind that themes are applied to all objects in the database (tables, forms, queries, and reports). And once a theme is applied, it cannot be undone.

8. Close your form, saving the changes if prompted to do so.

Creating Other Types of Forms

The basic form may not always meet the needs of an organization. Some organizations will benefit by equipping staff to view multiple records or compare a form to a corresponding table within the same object. Different departments within an organization may need to access the same database tables but view different fields from within those tables. A good example would be the difference between

what a customer service representative and a salesperson might need. They will both have a need to access customer information, but the salesperson will want to see sales history, sales opportunities, and other information that a customer service representative won't need. For these and other reasons, organizations may desire a variety of forms designed to make their staff highly efficient.

Creating Multiple Item Forms

Most forms are designed to let the user focus on one record at a time. Sometimes, however, it is necessary to print multiple items in a table using a layout more appropriate for printing and distributing than a table datasheet. The multiple item form is used for those occasions.

Multiple item forms resemble datasheets because data appears in rows and columns. However, multiple item forms can be customized to enhance the appearance of the form using colors, graphics, and other design elements.

🗧 Create→Forms→More Forms→Multiple Items 🔚

DEVELOP YOUR SKILLS: A2-D7

In this exercise, you will create a multiple item form.

- 1. Choose the **Customers** table in the Navigation pane.
- 2. Choose Create -> Forms -> More Forms -> Multiple Items

Notice the form's datasheet-like appearance.

- 3. Choose Form Layout Tools→Design→Themes→Themes ▲ and choose a theme that has text sizes and formatting you like.
- **4.** If necessary, click any of the customer ID data below the CustID column header to select all cells in that column.

The selected cells will have faint yellow borders.

- 5. Hover the mouse pointer over the right edge until the adjust pointer appears.
- **6.** Drag the right border of the selected cells to the left, reducing the column width to just accommodate the largest entry.
- 7. Reduce the widths of the remaining columns; see if you can get the form to fit on your screen.
- 8. Change the title to: Customers MultiForm
- **9.** Click the **Forms** icon in the form header next to the Customers MultiForm title and tap **Delete** to remove it.

Customers	
	Customers MultiForm

Your completed form is now ready to be used as an alternative to a datasheet for data entry and other uses.

10. Close the form, saving it as: CustomersMultiForm

Creating Split Forms

A split form simultaneously shows a table in Datasheet View and a form displaying a single record from the table. The views are synchronized so that a selected record in one view is also selected in the other view.

📕 Create—Forms—More Forms—Split Form 📃

DEVELOP YOUR SKILLS: A2-D8

In this exercise, you will create a split form.

- 1. Choose the **Customers** table in the Navigation pane.

Click any record in the datasheet and notice that it displays in the form.

- 3. Choose Form Layout Tools → Design → Themes → Themes and choose a theme that has text sizes and formatting you like.
- 4. Change the title to: Customers SplitForm
- 5. In the header, remove the Forms icon located next to the title control.

Sorting and Filtering Records by Form Field

Like tables, forms allow the user to filter or sort data using the commands provided in the Sort and Filter group. Ready-to-use filters are available for each data type, allowing a different filter to be used for each field. You can apply filters to any single field or to multiple fields—as long as those fields are present in Form View.



Filtering a Form

The Filter by Form command creates a blank form with a look and layout that mimics the original. This form allows you to filter multiple fields at one time by entering values directly in the text box or selecting from a drop-down list located in the field. When the filter is applied, only the records that match the values you entered will be displayed.



DEVELOP YOUR SKILLS: A2-D9

In this exercise, you will first sort records in a form. You will also add and then remove a filter from the form.

- **1.** Open the **Customers** form from the Navigation pane.
- 2. Select the Last Name text box control.
- **3.** Choose Home \rightarrow Sort & Filter \rightarrow Descending \boxed{A} .

The Last Name field is now sorted in descending order, making William Smith the first record in the form.

4. Choose **Home**→**Sort & Filter**→**Remove Sort**

The sort is removed, and the records are now back to the order held previously.

Filter by Form

- 5. Choose Home→Sort & Filter→Advanced.
- 6. Choose Filter by Form 🛅 from the menu.

A blank form appears with two new tabs at the bottom of the form.

7. Follow these steps to create a filtered form:

-8	Customers: Filter by	y Form		
	With the baseliest	Winche	ster Cı	ıstomers
▶				
	Cust ID	"DavisP"	Telephone	
	Last Name		Email	
	First Name		Notes	
	Street			
	City A	"Sarasota"	B	
	State	Bradenton		
	Zip	Sarasota		

- A Select the **City** text box control.
- Choose **Sarasota** from the list.

8. Choose Home→Sort & Filter→Toggle Filter T to apply the filter.

The Customers form is restored with the navigation control indicating the form is filtered to one record. This is the only record in our form with Sarasota in the City field.

-3	Customers			×
	Winshester	Winch	ester Cu	stomers
•	Cust ID	DavisP	Telephone	(941) 555-1792
	Last Name	Davis	Email	DavisAngie@email.com
	First Name	Peter	Notes	
	Street	65 Terracotta Way		
	City	Sarasota		
	State	FL 🗸	D	
	Zip	34228	145	
Reco	ord: I4 🕴 1 of 1	Filtered Search		

Tip!

The field drop-down menu provides a list of all data entered into the active field. This is a helpful option if you are not familiar with the data in a field or are unsure about keying in the values you would like to use in a filter.

- 9. Choose Home→Sort & Filter→Toggle Filter T to remove the filter.
- **10.** Save and then close your database file.

Self-Assessment

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

🖡 Reinforce Your Skills

REINFORCE YOUR SKILLS: A2-R1

Create and Customize a Form

Kids for Change has hired you to create a new form and customize it with a new design. In this exercise, you will use the Form Wizard to create a form, add an image, and set several formatting properties.

1. Open A2-R1-K4C from your Access Chapter 2 folder and save it as: A2-R1-K4CRev

Enable the content when prompted.

- 2. Choose the **Children** table in the Navigation pane.
- **3.** Choose Create \rightarrow Forms \rightarrow Form Wizard \square .
- **4.** Add all fields from the Children table to the Selected Fields list and click **Next**.
- 5. Keep the Columnar layout and click Next.
- 6. Name the form Kids for Change Children Volunteers and click Finish.

Edit and Format the Title

- 7. Switch to Design View 🕍.
- **8.** Click in the title box and position the insertion point just in front of the letter *C* in *Children*.
- 9. Press and hold the Shift key and tap Enter to force Children Volunteers to a new line.
- 10. If necessary, display the Property Sheet 📃
- **11.** Set these properties for the title:

Property	New Value
Width	3
Font Name	Arial
Font Size	18
Text Align	Center
Font Weight	Semi-bold

Insert a Logo and Set Properties

- **12.** Choose Form Design Tools→Design→Header/Footer→Logo 🚇
- 13. Navigate to your Access Chapter 2 folder, choose K4C-Logo.bmp, and click OK.
- **14.** Set these properties for the logo:

Property	New Value
Width	0.7
Height	0.7
Left	3.3

Format Text Boxes and Labels

- **15.** Click the **Child ID** label in the Detail section.
- **16.** Press and hold **Ctrl** while you select all other labels.
- **17.** Set these properties for the labels:

Property	New Value
Width	1.5
Height	0.25
Special Effect	Raised
Font Name	Arial
Font Weight	Semi-bold

18. Select all text boxes in the Detail section and set these properties:

Property	New Value
Height	0.25
Font Name	Arial
Font Weight	Semi-bold

- **19.** Choose Form Design Tools \rightarrow Design \rightarrow Themes \rightarrow Themes \bowtie and apply the Slice theme.
- **20.** Switch to **Form View** 🔄 to see your completed form.
- **21.** Choose File \rightarrow Close to close the database and save the changes to your form.

REINFORCE YOUR SKILLS: A2-R2

Create a Multiple Item Form and Apply a Theme

Kids for Change has hired you to redesign its database forms and apply a consistent and attractive theme to both new and existing forms. In this exercise, you will create a multiple item form for entering and managing staff information. Then you will apply a theme to the new form.

- 1. Open A2-R2-K4C from your Access Chapter 2 folder and save it as: A2-R2-K4CRev
- Choose the Staff table in the Navigation pane and choose Create→Forms→More Forms→ Multiple Items
- 3. Change the title to: Kids for Change Staff
- 4. Delete the small image that is just to the left of the *Kids for Change Staff* title.
- 5. Choose Form Layout Tools→Design→Themes→Themes 🙆 and apply the Ion theme.
- 6. Reduce the widths of all columns to fit the widest entries in the columns.
- 7. Switch to Form View 📃 to see your completed form.

REINFORCE YOUR SKILLS: A2-R3

Create and Sort a Form

You have been asked to help facilitate the management of the Kids for Change Activities table. In this exercise, you will create a form with a title and an image. Then you will sort the form to display the activities by day.

- 1. Open A2-R3-K4C from your Access Chapter 2 folder and save it as: A2-R3-K4CRev
- Using the Form Wizard, create a form that includes all fields in the Activities table. Choose the Columnar layout and save the form as: Activities Form
- 3. Switch to Layout View and change the title to: Kids for Change Activities
- **4.** Widen the title box so the text doesn't wrap inside the box.

You may need to click outside of the title box and then click on the title again before sizing it.

- 5. Reduce the widths of all labels so they are just slightly wider than the label text.
- **6.** Use the form to navigate through the ten records and reduce the width of the text boxes to be slightly wider than the widest entries.
- **7.** Move the text boxes closer to the labels.
- 8. Move the **Day of Week** and **Meet Time** labels and text boxes. Add a little extra space between all rows as shown here:

-8	Activities Form				
	Kids for C	Change Activi	ities		
•	Activity ID Activity Location	SWFri Sign Waving Cortez Rd. & Tamian	ni Tr.	Day of Week Meet Time	Friday 5:00 PM

- 9. Choose Form Layout Tools -> Design -> Header/Footer -> Logo
- 10. Navigate to your Access Chapter 2 folder, choose K4C-Logo.bmp, and click OK.
- **11.** Set these properties:

Property	New Value
Width	0.7
Height	0.7
Left	3.6
12. Reduce the height of the title box so it's just high enough to hold the title and then move it down in the Form Header so it is vertically centered in the header area.

Ξ	Activities Form			
	Kids for C	Change Activities	Kids for Charge	
•	Activity ID	BCSat	Day of Week Saturday	
	Activity	Beach Cleanup	Meet Time 9:00 AM	
	Location	Coquina Beach		

13. Choose **Form Layout Tools**→**Design**→**Themes**→**Themes** and apply the theme of your choice.

If you apply a theme that increases the text size, you may need to go back and adjust the controls' sizes again.

Apply a Sort

Now you will sort the records in order by the day of the week the activity occurs so you and others can easily see the weekly Kids for Change offerings.

- 14. Switch to Form View 🖃.
- 15. Select the Day of Week text box control.
- **16.** Choose **Sort & Filter** \rightarrow **Ascending** P.
- **17.** Choose File \rightarrow Close to close the database, saving the changes to the form.

🗞 Apply Your Skills

APPLY YOUR SKILLS: A2-A1

Create and Modify a Form

Universal Corporate Events is a planner of corporate and professional events. You have been tasked with revamping the image of Universal Corporate Events, including everything from reports to forms. In this exercise, you will create a new Personnel form.

- Open A2-A1-UniversalCorp from your Access Chapter 2 folder and save it as: A2-A1-UniversalCorpRev
- 2. Using the Form Wizard, create a form that includes all fields in the **Personnel** table. Choose the **Columnar** layout and save the form as: **Personnel Mgmt**
- 3. Switch to Layout View and display the Property Sheet.
- **4.** Click in the **title** box and set these properties for the title:

Property	New Value
Width	4
Left	1.5
Text Align	Center

5. Edit the title, creating a two-line title with **Universal Corporate Events** on the first line and **Personnel** on the second.

Remember to use the Ctrl + Enter keystroke combination to push Personnel to the second line.

- 6. Insert UCE-Logo.bmp, located in your Access Chapter 2 folder.
- 7. Set both the Width and Height properties to: 0.7

Modify the Detail Section

- 8. Apply the **Slice** theme to the form.
- 9. Set the Width property of all labels to: 1.2
- 10. Set the Width property of the EmpID, ST, and ZIP text boxes to: 0.6
- 11. Set the Width property of the First Name, Last Name, Address, and City text boxes to: 1.5
- 12. Set the Width property of the Email Address and Salary Grade text boxes to: 2
- **13.** Select all text boxes and move them closer to the labels.
- **14.** Reposition the **Telephone**, **Email Address**, **Date Hired**, and **Salary Grade** labels and text boxes up and to the right of the other fields, creating a two-column form.
- **15.** Switch to **Design View** and change the tab order, making EmpPhone the second field in sequence and leaving the rest of the tab order as it currently is.
- **16.** Switch to **Form View** to view the database and test the tab order.
- **17.** When you are finished, close the database, saving the changes you've made to the form.

APPLY YOUR SKILLS: A2-A2

Edit and Format Labels and Text Boxes

In this exercise, you will create a new Personnel form.

- 1. Open A2-A2-UniversalCorp from your Access Chapter 2 folder and save it as: A2-A2-UniversalCorpRev
- 2. Open the Event Schedules form and switch to Layout View.
- 3. Change the *Location* label to: Venue
- 4. Change the *Event ID* label to: **Event Code**
- **5.** Display the Property Sheet and change the properties for the Universal Corporate Events title as follows:

Property	New Value
Width	4.5
Height	0.3
Font Name	Georgia

6. Set these properties for the Scheduling subtitle:

4.5
0.3
Georgia
Light

7. Select all the labels in the Detail section and set these properties:

Property	New Value
Width	1.3
Height	0.3
Font Name	Arial
Font Size	12
Font Weight	Semi-bold

8. Select all the text boxes in the Detail section and set these properties:

Property	New Value
Height	0.3
Left	1.5
Font Name	Arial
Font Size	14

- 9. Apply the Slice theme.
- **10.** Switch to **Form View** and then make any changes needed.
- **11.** Close the database, saving the changes to the form.

APPLY YOUR SKILLS: A2-A3

Create a Form with a Logo and Filter

In this exercise, you will create a new form for managing UCE's event venue information, add and format a Form Header and title, and add an original company logo. You will then add a filter to the form to show only the events occurring in the city of Sarasota.

- Open A2-A3-UniversalCorp from your Access Chapter 2 folder and save it as: A2-A3-UniversalCorpRev
- Using the Form Wizard, create a form that includes all fields in the Venues table. Choose the Columnar layout and save the form as: Event Venues
- **3.** Switch to **Layout View** and display the Property Sheet.
- **4.** Click in the title box and set these properties:

Property	New Value
Height	0.35
Тор	0.25
Left	1.5
Font Name	Georgia

- 5. Insert the UCE-Logo.bmp logo, which is located in your Access Chapter 2 folder.
- 6. Set the Width and Height properties of the logo to: 0.8
- 7. Select all the labels in the Detail section and set these properties:

Property	New Value
Width	1.5
Height	0.25
Font Name	Arial
Font Size	12
Font Weight	Semi-bold

8. Select all the text boxes in the Detail section and set these properties:

Property	New Value
Height	0.25
Left	1.6
Font Name	Arial
Font Size	12

- 9. Apply any theme with an alternative theme color and the theme font of your choice.
- **10.** Change the tab order, making VenuWebsite the second-to-last field in sequence and leaving the rest of the tab order as is.
- **11.** Switch to **Form View** to see your completed form.

Apply a Sort and Filter

Universal Corporate Events would like to add an additional event in the city of Sarasota. It wants to review any events that are currently scheduled there before making a selection. Now you will add a filter to show only events occurring in the city of Sarasota.

- **12.** Sort the **City** field in descending order.
- **13.** Use the **Filter by Form** command to display only the records that include the city of Sarasota.
- **14.** Choose File \rightarrow Close to close the database, saving any changes to your form.

🖹 Project Grader

If your class is using eLab (labyrinthelab.com), you may upload your completed Project Grader assignments for automatic grading. You may complete these projects even if your class doesn't use eLab, though you will not be able to upload your work.

PROJECT GRADER: A2-P1

Taylor Games: Creating Forms

Taylor Games wants to provide forms for employees to enter inventory and orders. You will first create a basic order form and improve readability and layout. You will also create an inventory split form and enhance its appearance.

- **1.** Download and open your Project Grader starting file.
 - Using eLab: Download **A2_P1_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A2_P1_Start from your Access Chapter 2 folder.
- 2. Create a basic form based on the **Orders** table.
- 3. Change the Date label to: Order Date
- **4.** Set these properties for all label controls:

Property	Value
Width	1
Height	0.3

5. Set these properties for all text box controls:

/alue
2
.3

- 6. Set the SKU text box Font Weight property to: Bold
- 7. Insert a Logo control in the Form Header and set properties for it as follows:

Property	Value
Picture	Use Taylor Games Logo-B.png from your Access Chapter 2 folder.
Size Mode	Zoom
Width	0.75
Height	0.5

8. Set the following properties for the Title control located in the Form Header (contains the title *Orders*):

Property	Value
Width	2
Font Size	26
Text Align	Center
Font Weight	Bold

- **9.** Apply the **Facet** theme (the second theme in the Office category).
- 10. Save the form with the name: Orders
- **11.** Create a new split form based on the **Inventory** table.
- **12.** Set the Width property of all label controls to: **1**
- **13.** Set the following properties for all text box controls:

Property	Value
Width	3
Height	0.25

- 14. Set the SKU text box Font Weight property to: Bold
- **15.** Insert a **Logo** control in the Form Header and set properties for it as follows:

Property	Value
Picture	Use Taylor Games Logo-B.png from your Access Chapter 2 folder.
Size Mode	Zoom
Width	0.75
Height	0.5

16. Set the following properties for the Title control located in the Form Header (contains the title *Inventory*):

Property	Value
Width	2
Font Size	26
Text Align	Center
Font Weight	Bold

- **17.** Apply the **Facet** theme (the second theme in the Office category)..
- **18.** Save the form with the name: **Inventory**
- **19.** Close all open forms and then save your database.
 - Using eLab: Save it to your **Access Chapter 2** folder as **A2_P1_eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 2 folder as: A2_P1_Submission

PROJECT GRADER: A2-P2

WebVision: Work with Forms

WebVision is updating a database to provide forms for employees to enter data. You will first create a form using the Form Wizard and modify it for employee use. You will also create a multiple item form and enhance its appearance.

- **1.** Download and open your Project Grader starting file.
 - *Using eLab:* Download **A2_P2_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A2_P2_Start from your Access Chapter 2 folder.
- 2. Create a new form using the Form Wizard and the following guidelines:
 - It should be based on the **Orders** table.
 - Add all available fields.
 - Use **Columnar** layout.
 - Set the title as: **Orders**
- 3. Change the Date label to: Order Date
- **4.** Set these properties for all label controls:

Property	Value	
Width	1.2	
Height	0.25	

5. Set these properties for all text box controls:

Property	Value
	0.55
vviath	0.75
Height	0.25
Left	1.5
Text Align	Left

6. Delete the **Title** control from the Form Header (contains the title *Orders*) then insert a new **Title** control and set these properties for it:

Property	Value
Width	2
Height	0.35
Font Weight	Bold

7. Follow these guidelines to insert a **Logo** control in the Form Header and set properties for it:

Property	Value
Picture	Use WebVision Logo.jpg from your Access Chapter 2 folder.
Width	1.75

- 8. Apply the **Gallery** theme (the third theme in the Office category).
- **9.** Set the tab order from top to bottom for the fields in the Detail section as: OrderID, RepID, Date, Amount.
- **10.** Save the form.
- **11.** Create a new multiple item form based on the **Sales Reps** table.
- **12.** Set the Width property to **1** and the Height property to **0.25** for all controls in the Rep ID column:

Rep ID
S101
S102
S103
S104

13. Delete the Form Icon and Title controls from the Form Header.

Grders Sales Reps	
Sales Reps	
Rep ID	Last Name
\$101	Franks

14. Insert a new Logo control and set these properties for it:

Property	Value
Picture	Use WebVision Logo.jpg from your Access Chapter 2 folder.
Width	1.75
Height	0.35

15. Insert a new **Title** control and set these properties for it:

Property	Value
Width	2
Font Weight	Bold

- 16. Save the form with the name: Sales Reps
- **17.** Close all open forms and then save your database.
 - Using eLab: Save it to your **Access Chapter 2** folder as **A2_P2_eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 2 folder as: A2_P2_Submission

Extend Your Skills

These exercises challenge you to think critically and apply your new skills. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

A2-E1 That's the Way I See It

You've been asked to create a sales invoice form for Blue Jean Landscaping that shows all fields from the Sales Invoices query. Open **A2-E1-BJL** and create a well-designed form that is based on the Sales Invoices query and that includes a title and logo (use **BJL-Logo.bmp**). Make sure all fields are appropriately positioned and sized using the largest entries in the database as a guideline for determining the appropriate text box sizing. Apply a theme of your choice. Apply a filter to show only records with the Last Name of Ford. Save your form as: **Sales Invoices**

A2-E2 Be Your Own Boss

Blue Jean Landscaping wants a split form that's based on the Services table. The split form should include all fields from the table, a company logo, and the company name in the Form Header along with a *Landscape Services* subtitle. Begin with the file **A2-E2-BJL** and use the logo file **BJL-Logo.bmp**. Make sure all fields are appropriately positioned and sized using the largest entries in the database as a guideline for determining the appropriate text box sizing. Apply a theme of your choice. Sort the Equip ID field in ascending order. Save your form as: **Services Split Form**

A2-E3 Demonstrate Proficiency

You've been asked by the management of Stormy BBQ, a local BBQ restaurant, to create consistent forms and reports. Open the **A2-E3-StormyBBQ** database and examine the Merchandise form. Create a new form from the Restaurants table that closely matches the Merchandise form. Replicate the layout and formatting of fields and of the Form Header. You may not be able to create a perfect match but try to get the layout and formatting as close to the Merchandise form as possible. Add the **SBQ-Logo.bmp** file. Name your new form: **Restaurants**

ACCESS

Querying a Database

ne of the main goals of a database is to organize data so that information can be located and retrieved quickly. People in all types of businesses retrieve stored data and information daily, often at a moment's notice. In this chapter, you will search information that is stored in tables in a relational database and extract records that meet specific criteria using a query, a database object used to locate records based on the conditions you set.



LEARNING OBJECTIVES

- Create, save, and run select queries
- Create select queries using multiple tables
- Use simple query criteria
- Use AND and OR criteria in queries
- Use wildcard characters in query criteria
- Sort query results
- Create and format a calculated field

Project: Using Queries to Get Answers

You have been asked to query the Winchester Web Design database and compile two separate customer lists. The lists will be used to notify all past clients of updates to their website contact forms. The first list will include only the first and last names of the clients and their email addresses. The second list will include the first and last names of the clients and their mailing addresses, sorted by ZIP code. Additionally, you have been asked to build queries that instantly calculate the total income from all the Winchester Web Design services and from specific areas such as blogs or shopping carts.

Select Queries

A query asks a question, such as, *What are the customer addresses*? or *How much money did the company make last month*? The answer to the question is provided in a set of records.

All queries have common attributes:

- They function like a saved question you ask a database.
- They produce a subset of data from one or more tables.
- They are dynamic objects that display up-to-date data from tables.
- They can be used to create forms and reports with fields drawn from multiple tables.
- When you edit data in query results, you are actually editing the data stored in the source tables.

A select query is basically a database inquiry that selects only the records you want to see or edit, from one or more database tables, based on criteria that you set. The easiest way to create a select query is with the Query Wizard.

📕 Create→Queries→Query Wizard 🗔

DEVELOP YOUR SKILLS: A3-D1

In this exercise, you will use the Query Wizard to create a select query that generates a customer email list.

 Open A3-D1-WinDesign from your Access Chapter 3 folder and save it as: A3-D1-WinDesignRev

Notice in the Navigation pane that the database currently has three queries. When completing exercises, always choose to Enable Content.



2. Choose **Create** \rightarrow **Queries** \rightarrow **Query Wizard**

The New Query dialog box appears, allowing you to select the Query Wizard you would like. The Wizard can help you create four types of queries, shown in the right pane of the dialog box.

New Query	?	×
This wizard creates a select query from the fields you pick.	Simple Query Wizard Crosstab Query Wizard Find Duplicates Query Wizard Find Unmatched Query Wizard	
	OK Cancel	

- 3. Click OK to accept the Simple Query Wizard.
- **4.** Follow these steps to build the query:

Simple Query Wizard	
	Which fields do you want in your query? You can choose from more than one table or query.
Tables/Queries	
Table: Customers	
<u>A</u> vailable Fields:	<u>Selected Fields:</u>
CustFirstName CustFirstName CustStreetAddress CustCity CustState CustZIP CustPhone CustEmail	
	Cancel < Back Next > Finish
	E

- Make sure the Customers table is chosen in the Tables/Queries list. When building a query, you can use multiple tables and even existing queries.
- B Choose the **CustLastName** field from the Available Fields list.
- Click the **Add** button to add it to the Selected Fields list.
- Now add the CustFirstName and CustEmail fields, scrolling to find them as necessary, to the Selected Fields list.
- Click **Next**.

If you add the wrong field, double-click the name to move it back to the Available Fields list or select it and use the Move Back

- 5. Type Customers Email List in the query title field at the top of the dialog box.
- 6. Make sure the **Open the Query to View Information** option is chosen and click the **Finish** button.

Notice the query results datasheet includes only the three fields you chose from the Customers list.

	Customers Email List						
2	Last Name 👻	First Name 👻	Email 🚽				
	Abrams	John	JPAbrams@email.com				
	Anders	Mark	AndersM@email.com				
	Blaser	Helen	BlasingHel@email.com				
	Davis	Peter	DavisAngie@email.com				

7. Click the **Close** × button to the right of the *Customers Email List* tab to close the query.

Creating a Select Query Using Query Design View

Some queries display just a few fields but report on every single record in the table. That may not be a problem for a small table, but, when thousands of records and multiple tables are involved, it is often necessary to choose only specific records by setting precise criteria. Using Query Design View, Access allows you to:

- Select fields from multiple tables
- Locate records using criteria from one or more fields
- Perform calculations
- Sort query results and show or hide fields in query results

🗮 Create→Queries→Query Design 🛄

DEVELOP YOUR SKILLS: A3-D2

You have already created an email list for the Winchester Web Design customers and now need one for the company's employees. In this exercise, you will create a query to select fields from the Employees table in the Winchester Web Design database and then rearrange the columns in the query grid.

1. Choose **Create** \rightarrow **Queries** \rightarrow **Query Design** $\boxed{}$ to display the query design grid.

The Show Table list appears, showing the existing tables and queries in the database.

2. Choose the **Employees** table and click the **Add** button.

The Employees table appears in the design grid.

- **3.** Close the Show Table dialog box and close the Property Sheet if it's open. *Next you will add fields from the Employees table to the grid.*
- **4.** Double-click the **EmpFirstName** field in the Employees table to add it to the grid.

5. Now add the **EmpLastName**, **EmpPhone**, and **EmpEmail** fields to the grid by either doubleclicking or dragging them.



Use the scroll bar located at the right of the table fields to access all available fields in the list.

Field:	EmpFirstName	EmpLastName	EmpPhone	EmpEmail
Table:	Employees	Employees	Employees	Employees
Sort:				
Show:	\checkmark	\checkmark	\checkmark	\checkmark
Criteria:				
or:				

- 6. Choose File→Save or click the Save button on the Quick Access toolbar.
- 7. Type Employee Contact Info as the query name and click OK.
- **8.** Choose Query Tools \rightarrow Design \rightarrow Results \rightarrow Run \blacksquare .

Access runs the query and displays four columns of data (First Name, Last Name, Telephone, and Email) for all Employee records.

Rearrange Query Fields

- 9. Choose Home→Views→View→Design View .
- **10.** Select the **EmpLastName** column by placing your mouse pointer over the column heading until it becomes a downward-facing black arrow and then single-click.

EmpFirstName Employees	EmpLastivante v Employees	EmpPhone Employees	EmpEmail Employees

The entire column is selected, shown by shading it in black.

11. Follow these steps to rearrange the EmpFirstName and EmpLastName fields:

C		BA		
Field:	mpFirst	EmpLastName	EmpPhone	EmpEmail
Table:	Employees	Employees	Employees	Employees
Sort:				
Show:		\checkmark	\checkmark	\sim
Criteria:				
or:				

- Click the EmpLastName column heading again, this time without releasing the button. The button will change to a white arrow with a silhouetted box, indicating you can move the column.
- B Drag the **EmpLastName** column to the left of the *EmpFirstName* column until the thick vertical bar is positioned as shown.
- **C** Release the mouse button to complete the rearrangement.
- 12. Run ! the query.

Last Name should now appear first in the results.

13. Close the query and save the changes.

Designing a Query Using Multiple Tables

Until now, the query results presented in the datasheets you have worked with have displayed data from only one table. There will be times when you need to view data contained in different tables within the same database. Multi-table queries allow you to do this.

Choosing Fields to Include in a Query

When you build a multi-table select query, you start in Query Design view. Using the Show Table dialog box, you can select only those tables and fields that you want to display in the query results datasheet and leave out those fields that have no impact on the data you want to view or that are confidential. By specifying only certain tables and fields in a database and displaying only the desired fields in a query, you can create a report or a form that presents only pertinent data.

Multiple tables are effective in a query only if the tables are related. Using related tables allows a query to provide results based on all the data contained in the related table fields selected. For example, if you want to find the names and addresses of customers who placed orders from a specific employee, you would need fields from both the Customers table and the Invoices table. This is because the Customers table does not include any Employee fields, and the Invoices table does not include the Customer fields. It would be impossible to answer the question using only the Customers or Invoice tables alone.

View the video "Create a Multi-Table Select Query."

Selecting a Field That Appears in Multiple Tables

Sometimes the same field occurs as a primary key in one table and as a foreign (or secondary) key in another table. If this occurs, always use the table with the primary key in your query.





DEVELOP YOUR SKILLS: A3-D3

In this exercise, you will create a multi-table query using Query Design view to track the Winchester Web Design invoices by invoice number.

- **1.** Choose **Create**—**Queries**—**Query Design (**to display the query design grid.
- Double-click the Invoices, Invoice Details, and Products tables to add them to the query.
 If the Show Table dialog box is not visible, choose Query Tools→Design→Query Setup→Show Table.
- **3.** Close the Show Table dialog box.

- **4.** Double-click the **InvNum**, **InvDate**, and **EmpID** fields in the Invoices table to add those fields to the query grid.
- 5. Add the **ProdDescription** and **Price** fields from the Products table.
- **6.** Add the **Qty** field from the Invoice Details table.

Your query field list should look like this.

Field:	InvNum	InvDate	EmpID	ProdDescription	Price	Qty
Table:	Invoices	Invoices	Invoices	Products	Products	Invoice Details
Sort:						
Show:	\sim	\sim	\sim	\checkmark	\checkmark	\sim
Criteria:						
or						

7. Click the Sort cell for the InvNum field, click the menu button -, and choose Ascending.

E		
Field:	InvNum	InvDate
Table:	Invoices	Invoices
Sort:	Ascending	
Show:	\sim	\sim
Criteria:		
or:		

8. Choose **Query Tools** \rightarrow **Design** \rightarrow **Results** \rightarrow **Run** ! to run the query.

The query results are now sorted by invoice number in the first column.

9. Click the **Save** button on the Quick Access toolbar; then name the query **InvoicesList** and click **OK** to save the query.

Using Criteria in Queries

Queries let you specify criteria, which are conditions that field values must meet. Only records meeting the criteria are returned when the query is run.

Field:	InvNum	InvDate	EmpID	ProdDescription	Price	Qty
Table:	Invoices	Invoices	Invoices	Products	Products	Invoice Details
Sort:	Ascending					
Show:				\checkmark	\checkmark	\checkmark
Criteria:			"JFW"			
or:						

In this query, the EmpID criteria is set to JFW.

	Invoice Details Query								
2	InvNum 👻	Invoice Date 👻	Emp ID 👻	Description 👻	Price 🔻	Qty 👻			
	1	3/14/2017	JFW	Home Page, Nav, CSS, Design	\$400.00	1			
	1	3 /14/2017	JFW	Secondary Page	\$200.00	6			
	1	3/14/2017	JFW	Image, Custom Designed	\$40.00	11			
	5	6/18/2017	JFW	Home Page, Nav, CSS, Design	\$400.00	1			

Only records where EmpID is *JFW* are returned.

Criteria are commonly used with text, numeric, currency, and date fields. Review the table for examples of how criteria are used.

TYPES OF CRITERIA						
Field Type	Criteria	Examples of How Records Are Returned				
Text	Smith	Last name is Smith				
	>=Smith	Last names are from Smith through the end of the alphabet				
	Not Smith	Last name is not Smith				
Numeric &	> 123	Numeric value is greater than 123				
Currency	>=123	Numeric value is greater than or equal to 123				
Date	Date()	Date is today's date				
	< Date() – 30	The Date field is 30 days or more prior to today's date				



Search for Query Criteria in Access help for more criteria examples.

DEVELOP YOUR SKILLS: A3-D4

In this exercise, you will add criteria to the query grid and run the query.

- 1. With the InvoicesList query open, switch to Design View
- 2. Click the Criteria cell for the EmpID field.
- 3. Type JFW and tap Enter

Access will apply quotation marks indicating this is a literal value.

1			
Field:	InvNum	InvDate	EmpID
Table:	Invoices	Invoices	Invoices
Sort:	Ascending		
Show:			
Criteria:			"JFW"
or:			

4. Choose **Query Tools** \rightarrow **Design** \rightarrow **Results** \rightarrow **Run** ! to run the query.

The query results now include only records where the EmpID is equal to JFW.

5. Close the query and choose No when prompted to save the changes.

Saving changes to the query at this time would save the JFW criteria as part of the query. However, you will continue to use the query for all employees.

Wildcard Characters

Wildcard characters are used to locate records that have similar but not identical data. They help you locate records that match a pattern. For example, you might want to find all customers with last names that begin with the letter *B* or all products that begin with the word *Blog*.

COMMON WILDCA	ARD CHARACTERS
Wildcard Symbol	How It Is Used
Asterisk (*)	Substitutes for a group of characters that appear at the position of the asterisk
	Example : <i>R</i> * in the last name field will locate all last names beginning with <i>R</i> regardless of how many characters make up the name. In this case, <i>Rogers, Rich,</i> and <i>Rodriquez</i> would all appear in the results datasheet.
Question mark (?)	Substitutes for a single character that might appear at the position of the question mark
	Example : <i>m</i> ?s will locate records containing values such as <i>mrs, ms,</i> and <i>mbs</i> .
Open/close brackets []	Matches text or individual characters placed within the brackets individually
	Example : <i>ca</i> [<i>rt</i>] will find <i>cat</i> and <i>car</i> but not <i>cab</i> or <i>cad</i> .



Search for wildcard characters in Access help for more wildcard symbols and examples.

AND and OR Criteria

In some cases, you may need to locate records that meet multiple criteria. This can be done using AND and OR conditions. For example, you may want to locate all records where the employee is web certified AND lives in Sarasota. Or you may want to locate all employees who live in Sarasota OR Bradenton.

Field:	CustID	CustFirstName	CustLastName	CustCity
Table:	Customers	Customers	Customers	Customers
Sort:				
Show:	\sim	\checkmark		
Criteria:				"Sarasota"
or:				"Bradenton"

Create an OR condition by adding a second criterion to the Or row of a field.

Field:	InvNum	InvDate	ProdDescription	Price	Qty
Table:	Invoices	Invoices	Products	Products	Invoice Details
Sort:	Ascending				
Show:				\sim	\checkmark
Criteria:			"Image"		>10

Create an AND condition by adding another criterion to a different field on the Criteria row.

View the video "Create a Query with Criteria."

DEVELOP YOUR SKILLS: A3-D5

In this exercise, you will use wildcards to locate variable data and set multiple criteria in a query to find out which customers have gotten blogs and which customers have added more than ten images at a time to their websites.

- 1. Open the Invoices Query query in Design View.
- 2. Follow these steps to use wildcard characters and to use AND and OR criteria:

Field:	InvNum	InvDate	ProdDescription	Price	Qty	LineTotal: [Qty]*[Price]
Table:	Invoices	Invoices	Products	Products	Invoice Details	
Sort:						
Show:	\sim	\checkmark		\sim		
Criteria:			Like "Blog*"			
or:			Like "Image*"		>10	

A In the ProdDescription **Criteria** cell, type **Blog*** and tap **Enter**

Access converts Blog* to: Like "Blog*"

- In the ProdDescription Or cell, type Image* and tap Enter.
- **G** Enter **> 10** in the Qty **Or** cell. Be sure to type in the same row as *Like "Image*"* (the *Or* row).

These criteria will choose records where ProdDescription begins with Blog OR ProdDescription begins with Image AND the Qty is greater than 10.

3. Run ! the query.

Access displays the records that meet the specified criteria: either a blog or a transaction with more than ten images.

4. Close the query and save the changes.

Date Criteria

You can set date criteria to determine age, hired date, invoice date, and so forth. Access acknowledges the same comparison criteria for performing date comparisons that it does for locating other types of data, regardless of the format used to enter dates.

nples of How Records Are Returned
e is 06/22/2019
es that occur before 22/Oct/2019
es that occur after 01/01/19
es between 01/01/2019 and 06/30/2019

DEVELOP YOUR SKILLS: A3-D6

Winchester Web Design needs to track all invoices issued in 2018. In this exercise, you will query the database to locate customers with invoices dated from January 1, 2018, through December 31, 2018.

- **1.** Choose **Create** → **Queries** → **Query Design**
- 2. Use double clicks to add the **Customers**, **Invoices**, **Invoice Details**, and **Products** tables to the query.

- **3.** Close the Show Table dialog box.
- 4. In the Invoices table double-click InvNum and InvDate to add those fields to the query grid.
- 5. From the Customers table add the **CustID** field.
- 6. From the Invoice Details table add the Qty field.
- 7. From the Products table add the **ProdDescription** and **Price** fields.
- **8.** Hover your mouse pointer on the right edge of the InvDate column heading so a black, twodirection arrow appears.

	(+++)
InvDate	ustID
Invoices	Customers
\checkmark	\checkmark

9. Click and drag the column heading to the right until the column is about three times the original width.

You will enter a long entry in the next step and widening the InvDate column will allow you to see the entire entry.

 Click in the Criteria cell for the InvDate field and type: Between January 1, 2018 And December 31, 2018

Access formats the expression. Your query grid should now match this example. Regardless of how you type the dates—whether January 1, 2018; 01/01/18; or 1-1-2018—Access formats the data after you enter it so it appears as #1/1/2018#.

InvNum	InvDate	CustID	Qty	ProdDescription	Price
Invoices	Invoices	Customers	Invoice Details	Products	Products
\sim		\checkmark	\checkmark	\checkmark	\sim
	Between #1/1/2018# And #12/31/2018#				

11. Run ! the query.

Notice that only records with a date in 2018 appear in the results.

- **12.** Choose **File**→**Save** or click the **Save** button on the Quick Access toolbar.
- **13.** Save the query as **Invoices2018** and then close it.

Sorting, Showing, and Limiting Results

The query grid contains a Sort row that lets you sort the query results. At times you may also want to use fields to specify criteria but may not want those fields to be displayed in the query results. This can be accomplished by unchecking the Show box for the desired field(s).

Limiting the Number of Results Displayed

Large databases with thousands of records often return so many records that it can be challenging to find what you are looking for. Limiting the number of records displayed can be beneficial, especially when these records are sorted.

For example, if you set up a query to sort in descending order and then limit the number of items displayed to ten, you would, in effect, have a list of the top ten items in the table being queried. The Return feature lets you set the number of records to be displayed, or returned, in the query results.

📕 Design—Query Setup—Return 🔚

DEVELOP YOUR SKILLS: A3-D7

In this exercise, you will create a query that sets a sort order and hide a field from displaying in the query results. You will also limit the number of records returned.

- **1.** Choose **Create** → **Queries** → **Query Design**
- 2. Use double clicks to add the Customers, Invoices, Invoice Details, and Products tables to the query.
- **3.** Close the Show Table dialog box.
- **4.** In the Customers table double-click the **CustID**, **CustFirstName**, and **CustLastName** fields to add them to the design grid.
- **5.** From the Invoices table add the **InvDate** field.
- 6. From the Products table add the **ProdDescription** field.
- 7. From the Invoice Details table add the Qty field.
- 8. Follow these steps to set a criterion and set the sort order:

Field:	CustID	CustFirstName	CustLastName	InvDate	ProdDescription	Qty B
Table:	Customers	Customers	Customers	Invoices	Products	Invoice Details
Sort:						Descending 🗸
Show:	\checkmark			\checkmark		\checkmark
Criteria:					Like "Image*"	
or:						

- In the ProdDescription Criteria cell, type Image* and tap Enter. Access converts Image* to Like "Image*". This criterion will choose only records where the product description begins with Image.
- In the **Sort** cell for the Qty field, choose **Descending** from the list of sort options.
- 9. Run ! the query.

The records are now sorted in descending order (largest to smallest) by quantity.

CustID is an important key to have in the query because it is a primary key field. But it isn't needed in the query results because it contains the same information that appears in the CustFirstName and CustLastName fields, so you will hide it from the query results.

- **10.** Choose **Home**→**Views**→**Design View** is switch back to Design View.
- 11. Uncheck the **Show** box for the CustID field and **Run** ! the query.

The CustID field is still part of the query design, but it no longer shows in the query results.

- **12.** Switch back to **Design View** and choose **Query Tools**→**Design**→**Query Setup**→ **Return I** menu button **↓**.
- 13. Choose 5 from the list and run the query.

The query returns seven records (not five). This is because the query returns all records with the five largest quantities. But three records had a Qty of 14, which is the fifth highest amount, so all those records were returned, increasing the total to seven records.

14. Save the query as **Most Images** and then close it.

Calculated Fields

Calculated fields are fields containing formulas that perform calculations. Formulas used in calculated fields are often based on other fields within the query. Calculated fields are added as an additional field to a query and are not part of the underlying query tables. They are added to the query design grid and their calculated results then appear in the query results. A calculated field:

- Creates a new field in a query that can also be used in a form or report
- Can be used to perform mathematical operations, such as addition and multiplication
- ▶ Has a name and can be formatted with properties just like a regular field
- Enables you to combine values in two text fields into one field, such as LastName and FirstInitial
- Updates and recalculates each time you run the query

Identifying Parts of a Calculated Field

The structure of a calculated field includes a field name and a mathematical expression. An example of a calculated field in an Access query is Wage: 12.00 * 40, where Wage is the calculated field name and 12.00 * 40 is the calculation to be performed. Another example is Total: Price * Quantity, where Total is the calculated field name and Price * Quantity are the calculations performed using the data in those query fields.

Price	Qty	LineTotal: [Price]*[Qty]
Products	Invoice Details	

Price 👻	Qty 👻	LineTotal 👻
\$200.00	6	\$1,200.00
\$40.00	11	\$440.00
\$400.00	1	\$400.00
\$40.00	15	\$600.00

The LineTotal calculated field multiplies Price * Qty. The query results.

Each calculated field can contain the following elements:

CALCULATED FIELD	ELEMENTS
Element	Description
Calculated field name	This is the unique name you assign to the field and is followed by a colon (:) to separate the field name from the expression.
Field names from existing tables	Field names from the query can be added to the calculated field expression. Access adds brackets [] around field names.
Arithmetic or comparison operators	Use +, -, *, /, (), ^, <, =, and > to perform mathematical operations or compare values.
Concatenation (i.e., linking together)	An ampersand (&) can be used to join text values from multiple fields. For example, FirstName&LastName.
	Spaces can be added between fields by using quotation marks around a single space (""). For example, the quotation marks in FirstName& "" &LastName create a space between the first and last names in the query results.

Calculated Field Properties

You can set field properties such as size, number format, and default values within tables. Likewise, you can set field properties in calculated fields. This is almost always needed in calculated fields as the query results need to be formatted with the correct number of decimal places, commas, currency format, and other formatting as needed. Field properties are set using the field Property Sheet.

📕 Design—Show/Hide—Property Sheet 📃

DEVELOP YOUR SKILLS: A3-D8

In this exercise, you will create and format a calculated field.

- 1. Open the InvoicesList query and switch to Design View.
- 2. Click in the first cell of the blank column next to the Qty field.

Price	Qty	
Products	Invoice Details	
\checkmark	\checkmark	
	>10	

- **3.** Type the calculated field expression, taking care to include the colon between *LineTotal* and *Price:* **LineTotal:Price * Qty**
- **4.** Tap **Enter** to accept the entry and allow Access to format the expression by adding brackets to the field names.

Access does not always format your expression by adding brackets to field names. Brackets are required for Access to identify the entry as a field within the query. If you want to use field data within a calculated field expression, you need to include the name of your calculated field within brackets. In this example our calculated field is named LineTotal, and it will multiply the data in the Price field by the data in the Qty field in each record when the query is run. Your completed field should match the following.

Field:	InvNum	InvDate	EmpID	ProdDescription	Price	Qty	LineTotal: [Price]*[Qty]
Table:	Invoices	Invoices	Invoices	Products	Products	Invoice Details	
Sort:	Ascending						
Show:			\sim	\checkmark	\checkmark	\checkmark	\checkmark
Criteria:							
or:							

5. Right-click anywhere in the column of your calculated field and choose Properties.

The Property Sheet opens.

- 6. Click the Format field, then click the menu button and choose Currency from the list.
- 7. Click the Caption field and type: Line Total

The currency format will display the calculated results with a dollar sign and two decimals. The caption will become the column heading for your calculated field in the query results.

1

8. Run ! the query, and your calculated field results will appear as shown:

	InvoiceList						
4	InvNum -	Invoice Date 🔹	Emp ID 👻	Description -	Price 🔹	Qty 🗸	Line Total 👻
	1	3/14/2017	JFW	Secondary Page	\$200.00	6	\$1,200.00
	1	3/14/2017	JFW	Image, Custom Designed	\$40.00	11	\$440.00
	1	3/14/2017	JFW	Home Page, Nav, CSS, Design	\$400.00	1	\$400.00
	2	4/1/2017	MJW	Image, Custom Designed	\$40.00	15	\$600.00
	2	4/1/2017	MJW	Home Page, Nav, CSS, Design	\$400.00	1	\$400.00
	2	4/1/2017	MJW	Secondary Page	\$200.00	7	\$1,400.00

9. Save and close the query and then close the database.

Self-Assessment

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

🖡 Reinforce Your Skills

REINFORCE YOUR SKILLS: A3-R1

Create Queries Using Criteria and Wildcards

Kids for Change is planning to fine-tune its database by adding queries that enable it to track activities as well as staff/volunteer availability. In this exercise, you will create various queries that will yield the desired information.

- 1. Open A3-R1-K4C from your Access Chapter 3 folder and save it as: A3-R1-K4CRev
- **2.** Choose Create \rightarrow Queries \rightarrow Query Wizard \square
- 3. Choose Simple Query Wizard and click OK.
- **4.** Add the **Activity**, **Location**, **Day**, and **MeetTime** fields from the Activities table to the Selected Fields list and click **Next**.
- 5. Name the query Activities List and click Finish.
- **6.** Review the query results and then close the query.

Create a Query in Design View

- 7. Choose Create→Queries→Query Design 🔄 to start a new query.
- 8. Add the Volunteers table and then close the Show Table dialog box.
- **9.** Add the **VolLastName**, **VolFirstName**, **VolPhone**, and **VolDay** fields to the query design grid (in that order).
- **10.** Run the query and take a moment to review the results.

Now you will change the field order.

- 11. Switch to Design View 🔛.
- **12.** Click and drag the **VolDay** field, dropping it in front of the *VolLastName* field.

Field:	VolDay	VolLastName	VolFirstName	VolPhone
Table:	Volunteers	Volunteers	Volunteers	Volunteers
Sort:				
Show:			\checkmark	\checkmark
Criteria:				
or:				

13. Run ! the query and review the results.

You may notice the field names appear differently from those used in the query grid. Field names in queries retain any caption labels previously set in table properties.

14. Save the query as **Volunteer List** and then close the query.

Create a Multi-Table Query

- **15.** Create a new query in **Query Design** view, add the **Activities** and **Staff** tables to the query, and then close the Show Table dialog box.
- **16.** Move the fields from the indicated tables to the query design grid:

From This Table	Add These Fields
Activities	 Activity
	• Day
	 MeetTime
Staff	 StaffLastName
	 StaffFirstName
	 StaffPhone

- **17.** Set the Sort option for the Activity field to **Ascending**.
- **18. Run** ! the query and view the results.
- 19. Save the query as Activity Staffing List and then close it.

Add Wildcard and AND/OR Criteria to a Query

20. Right-click the Activity Staffing List query in the Navigation pane and choose Design View.

You can open a query in Design View using this method or you can run it first and then switch to Design View. Remember to try right-clicks if you are having trouble finding commands.

21. Create a Saturday or Sunday OR condition in the Day field.

Typing the quotation marks " " isn't necessary, as Access will add them for you.

Field:	Activity	Day	MeetTime
Table:	Activities	Activities	Activities
Sort:	Ascending		
Show:	\sim		
Criteria:		"Saturday"	
or:		"Sunday"	

22. Run the query.

Only activities for Saturday or Sunday should be displayed.

- 23. Switch to Design View and delete Sunday to remove the OR condition.
- 24. Enter 12:00 in the MeetTime Criteria field, tapping Enter when finished.

This creates a Saturday AND 12:00 meet-time condition. Access will format the 12:00 condition like this: #12:00:00 PM#

Field:	Activity	Day	MeetTime
Table:	Activities	Activities	Activities
Sort:	Ascending		
Show:	\checkmark	\checkmark	\checkmark
Criteria:		"Saturday"	#12:00:00 PM#
or:			

25. Run the query.

Because both conditions must be met, just one activity meeting (a car wash) should be returned by the query.

26. Switch to Design View and remove both the Saturday and 12:00 criteria.

27. Type S* in the Criteria cell for the Day field and tap Enter

Access recognizes the asterisk * wildcard character and formats the condition as Like "S*". The query will return all records where the name of the day begins with S (Saturday and Sunday) and should produce the same results as when you used the Saturday OR Sunday condition earlier in this exercise.

- **28.** Run the query and take a moment to observe the results.
- **29.** Save the changes and close the query.

Add Date Criteria to a New Query

Now you will create a query that returns the records of the youngest children so you can determine which children may need more supervision.

- **30.** Create a new query in **Design View**, adding the **Children** table and the fields **ChildLastName**, **ChildFirstName**, and **BirthDate**.
- **31.** Run the query and take a moment to observe the results.

Now you will add a condition.

32. Switch to **Design View**, type **>January 1**, **2010** in the **BirthDate Criteria** field, and tap **Enter**.

Once again Access will apply formatting to the criterion.

33. Run the query.

Only records where the child was born after January 1, 2010, should be displayed.

- 34. Choose File→Save or click the Save button on the Quick Access toolbar and save the query as: Younger Children
- **35.** Close the query and then close the database.

REINFORCE YOUR SKILLS: A3-R2

Limit the Records Returned and Use Calculated Fields

Kids for Change is planning to fine-tune its database further by adding queries that will produce calculated results. You are in charge of the IT department. In this exercise, you will generate the desired query results.

- 1. Open A3-R2-K4C from your Access Chapter 3 folder and save it as: A3-R2-K4CRev
- 2. Run (open) the Children List query.

The query returns the records of all children in the database in alphabetical order by last name.

- 3. Switch to Design View and choose Query Tools→Design→Query Setup→ Return Immenu button .
- **4.** Choose **5** from the list.
- 5. Click in the Sort cell for the BirthDate field and choose Descending.
- 6. Run the query.

Only the records for the five youngest children should be displayed.

7. Close the query, saving the changes.

Add a Calculated Field and Format the Field

As part of its community give-back policy, Kids for Change puts 10% of all donations into a scholarship fund. Now you will add a field that calculates 10% of each donation.

- 8. Run the **Donations Query** query and take a moment to observe the results.
- **9.** Switch to **Design View** and use the scrollbar at the bottom of the grid to scroll the query grid to the right until the first empty column is visible.

You will enter a calculated field in this column.

- **10.** Type **ScholarFund:Amount*.1** in the first cell (the Field cell) of the empty column, being sure to include the colon between *ScholarFund* and *Amount*.
- **11.** Tap **Enter** to complete the calculated field, and if necessary, widen the column so you can see the entire calculated field.
- **12.** If the Property Sheet is not open, right-click anywhere in your calculated field column and choose **Properties**.
- 13. Click in the Format field and choose Currency from the drop-down list.
- **14.** Type **Scholar Fund** in the Caption field.
- **15.** Run the query and take a moment to ensure that the calculated field is calculating correctly and is formatted with the Currency format.
- **16.** Close the query, saving the changes, and then close the database.

REINFORCE YOUR SKILLS: A3-R3

Create Select Queries Using Criteria and Calculated Fields

In this exercise, you will help Kids for Change further develop its database by adding queries that will produce calculated and formatted results based on specific search criteria.

- 1. Open A3-R3-K4C from your Access Chapter 3 folder and save it as: A3-R3-K4CRev
- 2. Use the Query Wizard to create a simple query using the Donors table and the DonorLName, DonorFName, DonorPhone, and DonorEmail fields.
- 3. Use Donor Contact List as the query name and finish the query.
- **4.** Review the query results and then close the query.
- 5. Using Query Design, create a new query with the Staff table and the StaffLastName, StaffFirstName, StaffStreet, StaffCity, StaffST, and StaffZIP fields.
- 6. Save the query as: Staff Mailing List
- 7. Run the query, review the results, and then close the query.

Create a Multi-Table Query

- 8. Create a new query using **Query Design** view and add the **Activities** and **Children** tables to the design grid.
- **9.** Move the fields from the indicated tables to the query design grid:

From This Table	Add These Fields
Activities	 Activity
	• Day
	 MeetTime
Children	 ChildLastName
	 ChildFirstName
	 ChildPhone

10. Save the query as: Participant List

11. Run the query and review the results.

Add Criteria Including Wildcards and Dates

Now you will add criteria to the Participant List query to list the children signed up for 9:00 AM Saturday activities.

12. Switch to **Design View**.

- **13.** Create an AND condition by setting **Saturday** as a criterion in the Day field and **9:00** as a criterion in the MeetTime field.
- **14.** Run the query.

The only records returned are those where the day is Saturday AND the meet time is 9:00.

15. Close the query, saving the changes.

Now you will use a wildcard to select nearby donors so they can be invited to local activities.

- 16. Right-click the **Donations Query** query in the Navigation pane and choose **Design View**.
- **17.** If necessary, scroll right through the field list until you locate the DonorZIP field.
- **18.** Enter **34*** in the DonorZIP Criteria field. *The asterisk is a wildcard character.*
- **19.** Run the query.

Only records where the ZIP code begins with 34 are returned by the query.

- 20. Switch to Design View and remove the criteria from the DonorZIP field.
- **21.** Enter **>01/01/2018** in the DonationDate Criteria field.
- **22.** Run the query and review the results.

Sort and Limit Query Results

- 23. Switch to Design View.
- **24.** Set the DonationDate field to sort in **Descending** order.

25. Use the **Query Tools**→**Design**→**Query Setup**→**Return** Image menu button verticate list to limit the records returned to 5.

26. Run the query and review the results.

Add a Calculated Field and Format the Field

- 27. Switch to **Design View** and set the Return number back to All.
- **28.** Create a calculated field by entering **NetAmt: Amount-ScholarFund** in the first empty column's Field row.
- **29.** Right-click in the new calculated field column and open the Property Sheet.
- **30.** Set the Format to Currency and type **Net Donation** as the Caption.
- **31.** Run the query and review the results.
- **32.** Close the query, saving the changes, and then close the database.

🛇 Apply Your Skills

APPLY YOUR SKILLS: A3-A1

Create Queries Using Criteria and Wildcards

The new CEO of Universal Corporate Events has asked you to refine a number of queries to be more selective in data output. In this exercise, you will create queries; add criteria, wildcards, and AND/OR conditions to a query; and add date criteria to a query.

- 1. Open A3-A1-UCE from your Access Chapter 3 folder and save it as: A3-A1-UCERev
- 2. Use the Query Wizard and this table to create a simple select query:

Table to Use	Fields to Add	Query Name
Personnel	 PerLastName 	Personnel Contact List
	 PerFirstName 	
	 PerPhone 	
	 PerEmail 	

- **3.** Review the results and then close the query.
- 4. Create a query in **Design View** that uses the tables and fields indicated:

From This Table	Use These Fields
Events	 EventName
Schedules	VenueID
	ContactID
	EventDate
	• Guests
Menus	 MenuPlan
	Chg/PP

- **5.** Run the query and review the results.
- 6. Save the query as **Event List** and then close it.

Use Wildcards and AND/OR Criteria

UCE is planning a recruiting event in Sarasota and would like to contact employees from greater Sarasota (area code 941) to involve them in the planning. You will modify a query to return the records of personnel who live in the Sarasota area.

- 7. Open the Personnel Contact List query in Design View.
- 8. Enter the wildcard text ***941*** in the PerPhone Criteria field.
- **9.** Run the query and verify that each telephone number in the query results contains *941* somewhere in the number.
- **10.** Close the query, saving the changes.

- 11. Create a new query in **Design View** from the **Venues** table that includes the **VenueName**, **VenueCity**, **VenuePhone**, and **VenueWebSite** fields.
- 12. Enter Sarasota in the VenueCity Criteria field and Tampa in the Or row of the VenueCity field.
- **13.** Run the query and verify that the city is *Sarasota* or *Tampa* in each record.
- 14. Save the query as Tampa-Sarasota Venues and then close it.

Add Date Criteria

- **15.** Run the **Event List** query and notice the range of dates.
- 16. Switch to **Design View** and type >May 1, 2019 in the EventDate Criteria field.
- **17.** Sort the query in **Ascending** order on the **EventDate** field.
- **18.** Run the query and make sure it produces the intended results.
- **19.** Close the query, saving the changes, and then close the database.

APPLY YOUR SKILLS: A3-A2

Limit the Records Returned and Use Calculated Fields

You've been asked to improve Universal Corporate Events' data retrieval and formatting. In this exercise, you will sort and limit records returned in query results and create a query using a calculated field.

- 1. Open A3-A2-UCE from your Access Chapter 3 folder and save it as: A3-A2-UCERev
- 2. Run the Event Revenue query and review the results.
- 3. Switch to **Design View** and set the sort order of the TotalRev calculated field to **Descending**.
- 4. Set the Return number to 5 to limit the number of records returned by the query to the top five.
- **5.** Run the query and review the results.
- 6. Switch to Design View and change the Return value back to All.

Add a Calculated Field and Format the Field

- 7. Create a new calculated field using the name and the expression: Comm: TotalRev*.08
- 8. Open the Property Sheet for the new calculated field and set the Format to **Currency** and use **Commission** as the Caption.
- **9.** Run the query and review the results.
- **10.** Close the query, saving the changes, and then close the database.

APPLY YOUR SKILLS: A3-A3

Create Select Queries Using Criteria and Calculated Fields

In this exercise, you will create and modify a number of queries for more precise, targeted data selection for Universal Corporate Events.

1. Open A3-A3-UCE from your Access Chapter 3 folder and save it as: A3-A3-UCERev

To begin, you will create a query to list contact information for the event venues that have an 800 telephone number so they can be reached by phone at no charge to the caller.

- 2. Create a simple query named **TollFreeVenues** that uses the **Venues** table to generate a list of venue names and their corresponding phone numbers and websites.
- **3.** In **Design View**, add the wildcard text ***800*** to the Criteria row to return only records for which the venue phone number includes *800*.
- **4.** Run the query and resize the columns in the query results so all data is visible.
- **5.** Close the query, saving the changes.

Add Wildcard and Date Criteria and Sort the Query

Because June is the most popular month for weddings, UCE wants to pay special attention to weddings scheduled for June so they can hire extra part-time workers.

- 6. Using the **Query Wizard**, create a simple query that uses all fields from the Event List query.
- 7. Leave the Wizard's Detail or Summary option set to Detail.
- 8. Name the query **June Weddings** and finish the query.
- 9. Switch to Design View.
- 10. Add the wildcard text Wed* (for Weddings) to the EventName Criteria field.
- **11.** Set the sort order of the EventDate field to **Ascending**.
- 12. In the EventDate Criteria field, enter: Between June 1, 2019 And June 30, 2019
- **13.** Run the query and review the results.
- **14.** Close the query, saving the changes.

Limit the Number of Records in Query Results

Now you will sort the Location Scheduling query by the largest number of guests and return the ten highest values so the company can focus extra personnel and resources to those events if the guests are scheduled for a full menu plan.

- 15. Display the Location Scheduling query in Design View.
- 16. Sort the query in **Descending** order by **Guests**.
- 17. Set the number of records returned to: 10

You'll need to click in the Return cell and type 10. If Access changes the 10 to 100, delete the extra zero (0).

- **18.** Run the query and review the results.
- **19.** Close the query, saving the changes.

Add and Format Calculated Fields

Now you will add a calculated field that subtracts the venue contact's commission from the total revenue to result in a net revenue amount.

- 20. Display the Event Revenue query in Design View.
- **21.** Add a calculated field named **NetRev** that subtracts Comm from TotalRev.
- 22. Format the new field as **Currency** and set the Caption as: **Net Revenue**
- **23.** Add a criterion to the TotalRev field to choose only records where the TotalRev is greater than 3000.
- **24.** Run the query and review the results.
- **25.** Close the query, saving the changes, and then close the database.

🖹 Project Grader

If your class is using eLab (labyrinthelab.com), you may upload your completed Project Grader assignments for automatic grading. You may complete these projects even if your class doesn't use eLab, though you will not be able to upload your work.

PROJECT GRADER: A3-P1

Taylor Games: Creating Queries

Taylor Games wants to evaluate where levels of inventory are too high. You will use the inventory data to create several queries, leverage wildcard characters, and add a calculated field.

- **1.** Download and open your Project Grader starting file.
 - Using eLab: Download **A3_P1_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A3_P1_Start from your Access Chapter 3 folder.
- 2. Use **Query Design** to create a simple query using the following guidelines:
 - Add all fields from the **Inventory** table in the same sequence as they appear in the table.
 - Set the criteria to include all records where (Quantity is greater than 75) AND (Total Cost is greater than 250).
 - Save the query as **Overstock** and run it.

	Query1						
1	Item	•	SKU	-	Quantity 👻	Cost 👻	Total Cost 👻
	Vinyl 3-hole card holders		527	73359	621	\$0.76	\$471.96
	Replacement pieces - Monopoly		52	73363	88	\$3.25	\$286.00

3. Add criteria to the Overstock query so that the query logic now becomes (Quantity is greater than 75 AND Total Cost is greater than 250) OR (Item contains the word *dice* AND Quantity is greater than 75) and then run the query.

R.	Overstock								
4	Item 👻	SKU 👻	Quantity 👻	Cost 👻	Total Cost 👻				
	Vinyl 3-hole card holders	5273359	621	\$0.76	\$471.96				
	Replacement pieces - Monopoly	5273363	88	\$3.25	\$286.00				
	20-sided dice - White	5273368	247	\$0.38	\$93.86				

- **4.** Add a calculated field named **Overstock Qty** that subtracts 75 from the Quantity field in each record.
- 5. Sort the query results on the **Overstock Qty** field in descending order.

E	Overstock								
2	Item 👻	SKU 👻	Quantity 👻	Cost 👻	Total Cost 👻	Overstock 👻			
	Vinyl 3-hole card holders	5273359	621	\$0.76	\$471.96	546			
	20-sided dice - White	5273368	247	\$0.38	\$93.86	172			
	Replacement pieces - Monopoly	5273363	88	\$3.25	\$286.00	13			

- **6.** Save and close the query.
- **7.** Save your database.
 - Using eLab: Save it to your **Access Chapter 3** folder as **A3_P1_eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your **Access Chapter 3** folder as: **A3_P1_Submission**
PROJECT GRADER: A3-P2

WebVision: Querying a Database

WebVision would like to create a monthly query that will calculate the Sales Rep commissions for each order. You will use the data in multiple tables to create a select query and add a calculated field.

- **1.** Download and open your Project Grader starting file.
 - *Using eLab:* Download **A3_P2_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A3_P2_Start from your Access Chapter 3 folder.
- 2. Use the **Query Wizard** to create a simple query using the following guidelines:
 - Add the **RepID**, **LastName**, and **SalesTeam** fields from the **Sales Reps** table in that sequence.
 - Add the **OrderID**, **Date**, and **Amount** fields from the **Orders** table in that sequence.
 - Use the **Detail** option.
 - Name the query: June Commissions
- 3. Set the Date criteria to include records between 6/1/2019 And 6/30/2019.
- 4. Sort the query results on the **RepID** field in **Ascending** order.
- Add a calculated field named Commissions that multiplies the Amount field in each record by: 0.02
- **6.** Apply the **Currency** number format to the Commissions field and then run, save, and close the query.

R.	June Commissions								
1	Rep ID 👻	Last Name 🔹	Sales Team 👻	Order Numb 👻	Date 👻	Amount 👻	Commission -		
	S101	Franks	North	9	6/7/2019	\$38,024	\$760.48		
	S101	Franks	North	5	6/15/2019	\$29,382	\$587.64		
	S102	Edmunds	Central	10	6/3/2019	\$62,569	\$1,251.38		
	S102	Edmunds	Central	6	6/14/2019	\$52,063	\$1,041.26		
	S102	Edmunds	Central	2	6/23/2019	\$60,093	\$1,201.86		
	S103	Berry	West	11	6/2/2019	\$36,759	\$735.18		
	S103	Berry	West	7	6/11/2019	\$46,146	\$922.92		
	S103	Berry	West	3	6/20/2019	\$53,933	\$1,078.66		
4	S104	Lifestone	South	8	6/8/2019	\$35,249	\$704.98		
	S104	Lifestone	South	4	6/19/2019	\$63,958	\$1,279.16		

- 7. Save your database.
 - Using eLab: Save it to your **Access Chapter 3** folder as **A3_P2_eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 3 folder as: A3_P2_Submission

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

A3-E1 That's the Way I See It

Blue Jean Landscaping needs queries to better manage its customer and equipment lists and you've volunteered to assist. Open **A3-E1-BJL** and save it as: **A3-E1-BJLRev**

Create a query named **813** Area Code that uses all fields from the Customers table. The query should return only customers with a phone area code of 813 sorted in ascending order by city. Create another query named **Equipment Value** that uses all fields from the Equipment table. Use a calculated field named **EquipValue** to determine the total value of equipment by multiplying the Cost by the quantity In Stock. Sort the results with the largest Equipment Values appearing first and format the EquipValue field using the Currency format.

A3-E2 Be Your Own Boss

Blue Jean Landscaping wants to devise more targeted data retrieval. Open **A3-E2-BJL** and save it as: **A3-E2-BJLRev**

Create a query that returns a contact list for BJL's customers sorted by last name. Create another query that creates a customer mailing list sorted by ZIP code. Use a wildcard to select only records where the ZIP code begins with 33. Add a calculated field to the Sales Invoices query that multiplies Cost by Qty Sold to produce a total. Format the new field as Currency and assign it a caption. Finally, limit the number of records returned to the largest five invoice totals, so those customers can be targeted for preferred customer offers.

A3-E3 Demonstrate Proficiency

You've been asked by the management at Stormy BBQ to query its database. Open **A3-E3-StormyBBQ** and save it as: **A3-E3-StormyBBQRev**

Create a query that uses data from the DailyReceipts table and determines the total revenue received for each item using the ItemPrice and QtySold fields. Include all fields from the table in the query and sort in descending order on the field that is used to perform the daily total calculations. Create another query using the Merchandise table that contains all fields from the Merchandise table and a sequence of calculated fields. For each item, the calculated fields should determine the Stock Cost of that item (Cost * Stock), the List Price Revenue if all items were sold at list price (Listprice * Stock), and the Profit, which is the difference between the revenue and cost.

ACCESS

Using Reports to Display Information

Ithough reports can summarize data from a single database table, they often present specific data from multiple tables or from queries based on multiple tables. Both forms and reports use many of the same tools and techniques to organize and present information in a readable format. In this chapter, you will create reports to organize and summarize data into meaningful information.

LEARNING OBJECTIVES

- Create basic reports using the Report tool
- Create reports with the Report Wizard
- Change field alignment and size in Layout View
- Change field properties
- Insert logos and dates
- Insert new fields

Project: Turning Data into Information with Reports

Forms are great for entering data and displaying single records. Most businesses, however, want to filter and summarize data, as well as display specific data, such as running totals, in a readable format. Winchester Web Design needs a new report to summarize the sales for each employee and display sales totals. As its database manager, you have agreed to create a report to meet these needs.

Introducing Reports

Because reports are often presented in a readable format and end up as a printout, there are some basics that every report should include. Of course, it should be well organized, look professional, and be visually appealing. Imagine finding a report on your desk without a date, page numbers, or a title that states what it is for. How might this affect the usability and readability of the data?

Most reports should have both a title and a subtitle. The title may simply be the company name. The subtitle should state specifically what the report is for, such as Monthly Income or Product List. Every report requires a date and should include the page number, even if the report is only one page. Once you have a good handle on the who, what, and when, you will be ready to create your first report.

Basic Reports

Use the Report button to instantly create a basic report for a selected table or query. This is the easiest way to create a report using all fields from the table or query. Only one table or query can be used in a basic report.

📕 Create→Reports→Report 📃

DEVELOP YOUR SKILLS: A4-D1

In this exercise, you will create and explore a basic report and then apply a multiple column format to that report.

 Open A4-D1-WinDesign from your Access Chapter 4 folder and save it as: A4-D1-WinDesignRev

Click the Enable Content button, if it appears.

- 2. Choose the **Products** table in the Navigation pane.
- **3.** Choose Create \rightarrow Reports \rightarrow Report \square .

A basic report is displayed in Layout View. In Layout View you can easily move and size report objects.

- **4.** Close any boxes that may be open, such as the Property Sheet or Field List pane.
- Choose Home→Views→View menu button → Report View □.
 Report View is best when viewing how a report will be presented electronically.

6. Choose Home \rightarrow Views \rightarrow View menu button $\checkmark \rightarrow$ Design View \bowtie .

The report body contains sections populated with text labels and controls that display the date, time, and other data and that perform calculations.

7. Mouse over the report control tools in the Controls group of the Ribbon, reviewing the ToolTips that appear.



Apply Multiple Columns

- **8.** Choose **Home**→**Views**→**View menu button** → **Print Preview** (a) to see how your report will look when printed.
- **9.** Choose **Print Preview**→**Page Layout**→**Landscape** and then click the **Columns** button. *The Page Setup dialog box appears with the Columns tab active.*
- **10.** Set the Number of Columns property to **2** and the Width property under Column Size to **4.5** and then click **OK**.

The report is now formatted to print records into two even columns.

- **11.** Click **Close Print Preview** × on the right side of the Ribbon.
- 12. Choose File→Save or click the Save button on the Quick Access toolbar and save the report as: Products
- **13.** Close the report.

Report Organization and Structure

Reports can display data from multiple tables and even from queries. Report data must often be grouped and sorted so it can be easily analyzed and interpreted. Effective reports turn data into information by displaying it in an organized and understandable manner. Queries are often the best data source for reports as they can receive data from multiple tables, sort the data, and even include calculated fields.

Sections

Sections provide the structure needed to effectively organize and present information. There are several types of sections, with each type used for a specific purpose.

REPORT SECTIONS	
Section(s)	Description
Report Header and Footer	Displayed only at the top of the first page and bottom of the last page. Some uses include titles, subtitles, and logos.
Page Header and Footer	Displayed at the top and bottom of every page. Some uses include descriptive labels, page numbers, and dates.
<mark>Group Header</mark> and <mark>Group</mark> Footer	The group header shows the fields on which report data is grouped. For example, grouping by Salesperson might list each salesperson and all the transactions that person is responsible for. The group footer displays summary information such as the total of all transactions for each salesperson.
Detail	Main part of the report where the records are displayed. The records are typically organized in groups. The detail sections are where field headings appear.

Winchester Web Design Invoices for Q1 2018



The Report Header appears at the top of the report.

This image shows a report in Layout View with the various sections highlighted.

Group headers show the records grouped first by employee ID and then by invoice number.

Detail sections show headings, records, and, in this case, a LineTotal column calculated from the underlying query.

	WIS VV					
InvNum 29 Invoice Date	Last Name	ProdID	Description	Price	Qtv	LineTotal
3/11/2018	Klein	01HP	Home Page, Nav, CSS, D	\$400.00	1	\$400.00
3 /11/2018	Klein	02SP	Secondary Page	\$200.00	9	\$1,800.00
3/11/2018	Klein	03BL	Blog, Integrated into Sit	\$300.00	1	\$300.00
3 /11/2018	Klein	06HR	Hourly Rate for Modific	\$80.00	3	\$240.00
					Sum	\$2,740.00
InvNum 30 Invoice Date	Last Name	ProdID	Description	Price	Qty	LineTotal
3 /20/2018	Klein	06HR	Hourly Rate for Modific	\$80.00	3	\$240.00
3 /20/2018	Klein	02SP	Secondary Page	\$200.00	1	\$200.00
3 /20/2018 3 /20/2018	Klein Klein	02SP 05IM	Secondary Page Image, Custom Designe	\$200.00 \$40.00	1	\$200.00 \$80.00
3 /20/2018 3 /20/2018	Klein Klein	02SP 05IM	Secondary Page Image, Custom Designe	\$200.00 \$40.00	1 2 Sum	\$200.00 \$80.00 \$520.00
3 /20/2018 3 /20/2018	Klein Klein	02SP 05IM	Secondary Page Image, Custom Designe	\$200.00 \$40.00	1 2 Sum Sum	\$200.00 \$80.00 \$520.00 \$18,440.00

The Grand Total line appears in the report footer and adds all group totals (some not shown here).

Group footers show totals for invoice numbers 29 and 30.

The group footer for employee ID MJW adds the group totals for all invoices with an EmpID of MJW (some not shown here).

Grouping and Sorting

A group is a collection of records that has at least one data element or key field in common. In the preceding example, records are grouped first by employee ID MJW and then by invoice numbers 29 and 30. A group consists of a header, records, and a footer. Grouping helps organize the information in meaningful ways. Groups are arranged by level. Each nested group (lower level) will appear indented below the group above it (higher level), so you can visualize how groups are prioritized.

Once grouping has been set, summary options become available. Summary options allow users to summarize a group with calculated values such as a total, average, maximum, or minimum value. These calculations are based on the remaining ungrouped fields whose data contains a numeric value.

It is important that records first be sorted using the same field used for grouping. Otherwise, a new group might be created each time the data in the group changes. Sorting can be added in the report; however, it's best to make the sorting occur in the underlying tables or queries.

The Report Wizard

The Report Wizard is a great way to get started with most reports. It lets you choose multiple tables or queries, group and sort data, perform calculations, and organize and present the information. The Wizard builds the report for you, creating the necessary structure and organization.

View the video "Grouping and Sorting in the Report Wizard."

📕 Create—Reports—Report Wizard 🗔

DEVELOP YOUR SKILLS: A4-D2

In this exercise, you will create a detailed Invoice report using the Report Wizard.

- 1. Choose the Invoice Details Query Q1 2018 query in the Navigation pane.
- 2. Choose Create \rightarrow Reports \rightarrow Report Wizard \square

Invoice Details Query Q1 2018 is chosen in the Tables/Queries list because you chose it before starting the Report Wizard.

- Double-click the EmpID field to add it to the Selected Fields list or choose it and click the Add > button.
- Add the InvNum, InvDate, CustLastName, ProdID, Price, Qty, and LineTotal fields to the Selected Fields list.

Do not select CustFirstName and ProdDescription. If you add every field to the report, there won't be enough room to display all the information. Be sure that EmpID is the first field on the list.

- 5. Click **Next**, and the Wizard will ask if you want to add grouping levels.
- 6. With EmpID still selected, click the Add > button to set EmpID as the first grouping level.

All invoices associated with a particular employee will be grouped together.

Click Add > once more, this time to make the InvNum field the second grouping level.
 The information will first be grouped by employee ID and then within each employee group by invoice number.

8. Click Next, and the sort order and summary information screen will appear.

This is where you can add totals and other calculations and sort the results within groups. The underlying query sorts the invoices in ascending order, so it isn't necessary to add sorting in this report.

9. Click the Summary Options button in the lower part of the dialog box.

Price, Qty, and LineTotal are numeric fields, so they can be used to create totals as well as average, minimum, or maximum values.

10. Check the **Sum** box for the LineTotal field.

This will sum the invoices associated with each employee ID.

Field	Sum	Avg	Min	Max
Price				
Qty				
LineTotal				

- **11.** Leave the other settings as they are and click **OK**.
- **12.** Click **Next** because sorting isn't needed.
- **13.** Choose **Outline** for the layout type and **Landscape** for the orientation.
- **14.** Leave the Adjust the Field Width box checked and click **Next**.
- 15. Name the report Invoice Details Report Q1 2018 and click Finish.

Your report displays in Print Preview, showing invoice totals and summary totals for each employee.

- 16. Take a moment to review the report using the page controls at the bottom of the screen (there should be ten pages, including unnecessary extras resulting from the width of the summary totals control). The Report Wizard provides a great starting point; however, the report needs some formatting and layout work.
- 17. Click the **Close Print Preview** button on the right side of the Ribbon.

The report will display in Design View.

Modifying Reports

Reports can be created from scratch using Design View, but the Report Wizard is much easier to use and far more efficient. And while the Report Wizard provides a great starting point, it's often necessary to add, delete, move, or resize fields and to enhance a report in other ways such as adding titles and a company logo. These and other enhancements can be done using Layout View or Design View.

Layout View allows controls to be moved and sized while viewing how the report will look when printed. Design View gives you a detailed view of the report to allow design changes to individual controls, sections, and report structure without affecting the underlying data.



View the video "Modify Reports in Design View."

Controls

Controls determine where field data, titles, headings, images, and other information are precisely positioned within report sections. There are three types of controls used in reports.

TYPES OF CO	ONTROLS	
Control Type	Description	
Bound	Controls that display data from the table or query	
Unbound	Objects that enhance the appearance of a report, such as labels, titles, lines, and images	
Calculated	Controls that display calculated fields from queries or that perform calculations within the report itself	

Here are the controls available on the Design tab of the Ribbon.



Adding Fields to a Report

Sometimes fields need to be added to an existing report. The Existing Fields tool displays a list of tables and their fields. Fields are added to the report in Design View by dragging them from the Field List pane into report sections. Adding a field creates a text box control where the field data is displayed and a label control that contains the field name. The label can be changed, allowing you to be creative with the field names displayed on the report.

Report Design Tools—Design—Tools—Add Existing Fields 🔠

DEVELOP YOUR SKILLS: A4-D3

In this exercise, you will delete unneeded controls, add controls, and rearrange and resize controls to produce a more attractive, well-balanced report.

- 1. If necessary, open Invoice Details Report Q1 2018.
- 2. Switch to Layout View
 - Layout View lets you easily move controls and adjust their sizes while seeing how the report will look when printed.
- **3.** Close any open boxes, such as the Property Sheet or Field List pane.

4. Follow these steps to delete and rearrange the invoice number summary controls:

npID		JFW					
InvNum				20			
In	voice Date	Last Name	ProdID		Price	Qty	LineTotal
	1/4/2018	Smith	05IM		\$40.00	14	\$560.00
	1/4/2018	Smith	06HR		\$80.00	5	\$400.00
Y	1/4/2018	Smith	04SC		\$400.00	1	\$400.00

- Click the Summary for 'InvNum' control and tap Delete to remove it.
- B Click the Sum label and then tap or hold the right arrow → to move it across the report next to the Total text box.
- With the Sum label still selected, press the **Ctrl** key and click the **Total** text box. Both controls should be selected.
- D Tap the up arrow ↑ three times to move the controls up.

This section of the report should now look like this.

Price	Qty	LineTotal
\$40.00	14	\$560.00
\$80.00	5	\$400.00
\$400.00	1	\$400.00
	Sum	1360

5. Follow these steps to rearrange the EmpID field controls:

InvNum	32		
Invoice Date Last Name	ProdID	Price	Qty LineTotal
4 /5 /2018 Smith	06HR	\$80.00	4 \$320.00
A			Sum 320
Summary for 'EmpID' = JFW (7 detail records)			
			2640
			G

- A Scroll down to the Summary for 'EmpID' control, click to select it, and then tap **Delete** to remove it.
- B Scroll down, click the Sum label, and tap the right arrow → multiple times until the Sum label aligns with the Sum and Qty controls above it.
- O With the Sum label selected, press Ctrl, click the Total text box, and then tap the up arrow ↑ three times to move the controls up.

6. Follow these steps to change the width and alignment of the Price controls:

Price		<u>L</u> ayout	►
		Select Entire Row	
\$40.00		Select Entire Column	
\$80.00			
\$400.00		lotal	
	AL	C + C 11 + + - 1 +	
	-	<u>P</u> roperties	

- A Click any Price label and then press Ctrl and click any price text box to select all price labels and text boxes.
- B Right-click the selected controls and choose **Properties** at the bottom of the menu.
- 7. Set the Width property to: 0.8

The setting won't take effect until you tap **Enter** or click in another box.

8. Set the Left property to 6.625 and tap Enter so you can see the change take effect.

The Left property determines the position from the left side of the page.

Change the Width of a Control and the Overall Report

Now you will work in Design View as you adjust the width of the page numbering control located in the Page Footer section.

- 9. Switch to Design View
- **10.** Click the **="Page"** numbering control in the page footer section.

You may need to move the Property Sheet box to be able to see the control. This control determines how page numbers appear in the report, including their position within the page footer.

```
="Page " & [Page] & " of " & [Pages]
```

- **11.** With the Property Sheet box visible, set the Width property to **2** and tap **Enter** to see the change. *Now you will change a width setting for the entire report.*
- **12.** Follow these steps to change the report width :

Property Sh	neet)	
Selection type: Repo	ort	Ą	
Report		9	
Format Data Eve	ent Other All		
Caption	Invoice Details Report Q1	~	
Default View	Report View		
Allow Report View	Yes		
Allow Layout View	Yes		
Picture Type	Shared		
Picture	3_WWD-Background		
Picture Tiling	No		
Picture Alignment	Center		
Picture Size Mode	Stretch		
Width	9" B		
Auto Center	No		
Auto Resize	Yes	1	

A Click the **Selection Type** button in the Property Sheet box and choose **Report**.

B Set the width to: 9

You are now viewing the properties for the report rather than for individual controls. The overall report width will now be 9", although this won't be readily visible in Design View.

ACCESS

Add a Control

Now you will add the Product Description control to the report and reposition it and its label.

13. Choose **Report Design Tools** \rightarrow **Design** \rightarrow **Tools** \rightarrow **Add Existing Fields E**.

This tool lets you add new fields to reports.

14. Follow these steps to add the ProdDescription field and to move its label:

✓ InvNum Header		InvDate
		EmpID
		CustID
Invivum		Products
Invoice Date Last Name	Price	ProdID
	3	ProdDescription
✓ Detail		Price
InvDate CustLastName	ProdDescriptio Price C	LineTotal
f Inublum Footer		Fields available in related t
		E EmpSpourser

- Orag the ProdDescription field from the Field List pane between the ProdID and Price fields in the Detail section.
- B Select the new Description label (it will be hard to see) then right-click the selected label and choose Cut from the menu.
- **C** Right-click **InvNum Header** and choose **Paste**.

This pastes the field label in the header section. You will move it in the next step.

15. Follow these steps to reposition the fields:

InvNum Header					
Description frivit	Lest Name	Proche			Price
🗲 Detail			R		
InvDate	CustLastName	 ProdID	ProdDescri	ptio Price	

- A Drag the **Description** label between the ProdID and Price labels in InvNum Header.
- Use the arrow keys to position the **Description** label and **ProdDescription** field so they are left-aligned with each other and roughly centered between the ProdID and Price fields.
- 16. Close the Field List pane and switch to Layout View.
- 17. Click the Save button on the Quick Access toolbar to save your changes.

At this point, the top part of the report should closely match this example. You will continue to enhance the appearance of this report.

Invoice Details Query (Q1 2018				
EmpID JFW					
InvNum		20			
Invoice Date Last Name	ProdID	Description	Price	Qty	LineTotal
1/4/2018 Smith	05IM	Image, Custom	\$40.00	14	\$560.00
1/4/2018 Smith	06HR	Hourly Rate for	\$80.00	5	\$400.00
1/4/2018 Smith	04SC	Shopping Cart,	\$400.00	1	\$400.00
				Sum	1360

Header and Footer Objects

The Header/Footer group on the Design tab lets you easily add page numbers, titles, the date and time, and logos while working in Design View. Logos are especially useful because they can make reports look more professional and visually appealing. When a new report is created, a title control is generated based on the name of the report, so the Title tool is often used to add subtitles.



DEVELOP YOUR SKILLS: A4-D4

In this exercise, you will enhance the report header by adding a subtitle, logo, and the date and time. You will also format these controls.

1. Switch to **Design View M**.

The first thing you will do is increase the height of the header area to accommodate a logo and subtitle.

2. Right-click the Report Header section bar and choose Properties.

Report Header

3. Set the Height property to: 0.9

Format the Title and Subtitle

- 4. Click in the existing title control, **Invoice Details Report Q1 2018**, and replace the text with: Winchester Web Design
- **5.** Set these properties for the title control:

Property	Setting
Width	3.5
Font Size	22
Text Align	Center
Font Weight	Bold

6. Choose Report Design Tools \rightarrow Design \rightarrow Header/Footer \rightarrow Title \Box .

The report name appears in the new title control, which is placed on top of the existing title.

- **7.** Drag the new subtitle control so it is left-aligned with and just below the *Winchester Web Design* title.
- 8. Replace the text in the new subtitle control with: Invoices for Q1 2018

9. Set these properties for the subtitle control:

Property	Setting
Width	3.5
Height	0.35
Special Effect	Shadowed
Text Align	Center
Font Weight	Bold

Insert a Logo

10. Choose **Report Design Tools** → **Design** → **Header/Footer** → **Logo**

The Insert Picture dialog box opens, prompting you to insert an image file.

- **11.** Navigate to your **Access Chapter 4** folder, choose **WWD-Logo.bmp**, and click **OK**. Access places the logo in the upper-left corner of the Report Header section.
- **12.** Set the Left property of the logo to: **4**

The logo moves over to the 4" position.

13. Set both the Width and Height properties to: 0.8

Add the Date and Time and Review the Report

- **14.** Choose Report Design Tools \rightarrow Design \rightarrow Header/Footer \rightarrow Date and Time \blacksquare .
- **15.** Follow these steps to insert a date control into the header:

	Date and Time	?	×	
	Include Date			
	O Friday, September 07, 2018			
	07-Sep-18			
A	A 0 9///2018			
B	B Indude Time			
	11:53:29 AM			
4	O 11:53 AM			
	0 11:53			C
	A Choose the mm/dd/yyyy d	ate fo	rmat (th	e third format).
	B Uncheck the Include Time	check	box.	
	G Click OK.			
	The date is inserted at the right ea	dge of	the head	ler.

16. Switch to **Report View** and review your report header.



1/13/2019

Formatting Controls

It is important to ensure that the data values are fully displayed in a report, while at the same time taking care not to leave unsightly and unnecessary blank space between columns. To accomplish this, you must resize, reposition, and align controls. It is best to adjust controls in Layout View because you can see the actual field values while making the adjustments. Multiple controls can be formatted simultaneously after you select them. You will need to use the **Ctrl** key when selecting any nonadjacent controls.

DEVELOP YOUR SKILLS: A4-D5

In this exercise, you will use both Design View and Layout View to resize, reposition, and align report controls.

- 1. Switch to **Design View** in the Invoice Details Report Q1 2018 report.
- **2.** Click the vertical ruler to the left of the InvNum label and text box in InvNum Header, as shown here, to select both of them.

You can also click one field and hold down Ctrl while clicking the other.

	✓ InvNum Header	
(→	, invNum	
	Invoice Date Last Name	ProdID

- **3.** Tap the **up arrow** [1] five times to nudge the controls up closer to the InvNum Header.
- Select the remaining controls in the InvNum Header section, as shown here, and tap the up arrow ↑ five times to nudge them up.

	✓ InvNum Header	· · · · · · · · · · · · · · · · · · ·
:	finvNum	
-		
:	Involce Dabe List Name	iption

5. Position the mouse pointer over the top edge of the Detail section bar until your pointer becomes a two-headed arrow.

		✓ InvNum Header
	•	lovNum
ł	•	
ľ	2	Invoice Date Last Name Product Product Product Price Opy Line Total
	•	
		♦ Deta +

- **6.** Click and drag with the mouse upward until the section bar is just below the controls you moved previously.
- 7. If necessary, choose **Report Design Tools**→**Design**→**Tools**→**Property Sheet** limit to display the Property Sheet.
- 8. Select the **EmpID** label and text box in the EmpID Header section.

→	EmpID FINVNum Header	

9. Set the Top property for these controls to: 0

This will move them up so they are just below the EmpID Header section bar. You can move controls by setting properties, using the arrow keys, or dragging. Setting properties is a way to position them with precision.

10. Click **EmpID Header**, and it will turn black to indicate it is selected.

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	• •	•••	•••	• •	•••	•••	•••	•••		11	• •	• •	 	 	•••	• •	• •	• •	• • •	-		• • •	• • •		•••	•••	•••	• •	•••	• •	•••	•••	Ŀ	•••	•••	• •	• •	• •	•••	• •	• •	• •	•••	•••	٠ī	•••	• •	• •	• •	 • • •	-	• • •	• •	• •	• •	• •
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11. Set the height to: 0.33

Access sometimes changes a precise property value that you type, so don't worry if your Height property differs slightly from 0.33.

- **12.** Switch to **Layout View**.
- **13.** Click one of the text boxes in the Description column to select all the fields and then drag left to widen the column almost to the ProdID column.

ProdID	Description	Price	Qty LineTotal
05IM ←	Image, Custom	\$40.00	14 \$560.00
06HR	Hourly Rate for	\$80.00	5 \$400.00
04SC	Shopping Cart,	\$400.00	1 \$400.00

14. Select the **Last Name** boxes and drag left to shorten the boxes as shown.

Invoice Date	Last Name	ProdID
1/4/2018	Smith	05IM
1/4/2018	Smith	06HR
1/4/2018	Smith	04SC

15. Press **Ctrl** and click the **Last Name** label to select the label with all the text boxes.

Invoice Date	Last Name	ProdID
1/4/2018	Smith	05IM
1/4/2018	Smith	06HR
1/4/2018	Smith	04SC

In the next step, you will nudge the boxes to the right. Sometimes while moving a group of controls in Layout View, the screen scrolls down to the end. If this occurs, just keep nudging until you are finished and then scroll back up to the top of the report.

- **16.** Tap the **right arrow** \rightarrow eight times to nudge the text boxes to the right.
- **17.** Select the **ProdID** label and one of the text boxes below it and then nudge the entire selection to the left six times.
- **18.** Scroll to the top of the report, click the **InvNum** text box with *20* in it, and then drag the left border to the right to shorten the box as shown.

InvNum		۹ ۲	→ 20
Invoice	e Date Last	t Name ProdID	

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19. Tap the **left arrow** \leftarrow enough times to position the text box closer to the InvNum label.

InvNum	20		
Invo	ice Date	Last Name	ProdID
1,	/5 /2018	Smith	05IM

- **20.** Scroll to the bottom of the report until the Sum controls are visible.
- 21. Use Ctrl to select the two Sum text boxes and the Grand Total text box.

Sum	2740
Qty	LineTotal
3	\$240.00
1	\$200.00
2	\$80.00
Sum	520
Sum	3260
	19920
Page 1 of 1	

22. In the Property Sheet, set the Format property to **Currency**.

When you apply formatting, the fields may no longer fit in the text box. When a value is too large for the text box, it fills the box with the # symbol.

23. With the controls still selected, press **Ctri** and click one of the unselected **LineTotal** text boxes in the column so all line total boxes are selected.



- **24.** Now drag the right border of one of the controls to the right until the Grand Total is fully visible.
- **25.** Switch to **Print Preview** view to see how your report will look when printed.
- **26.** Close Print Preview. Feel free to return to **Design View** or **Layout View** to make additional adjustments to the report.
- 27. Save the report.

Themes

Themes in a report function identically to themes in forms, including any steps taken to apply and modify them. Don't forget that when a theme is applied in any object, the applied theme impacts all objects in the database.

📕 Report Design Tools→Design→Themes→Themes 🔤

Backgrounds

Backgrounds are images in a report or form that add a visual element beyond applying a basic back color in report sections. Backgrounds appear behind form controls and include additional settings for size, alignment, and mode. Using the Background Image command in the Background group on the Ribbon allows you to select the image of your choosing to be inserted as a background image.

📕 Report Design Tools—Format—Background—Background Image 🔤

DEVELOP YOUR SKILLS: A4-D6

In this exercise, you will apply a theme and insert a background image into your report.

- **1.** Switch to **Design View** and choose **Report Design Tools** \rightarrow **Design** \rightarrow **Themes** \rightarrow **Themes** \bowtie
- 2. Hover over each theme's thumbnail and take note of the ToolTips that appear to show the theme names, then choose **Office** theme to apply it to the report.
- 3. Choose Report Design Tools→Format→Background→Background Image Image menu button →Browse.

The Insert Picture dialog box appears.

- **4.** Navigate to your **Access Chapter 4** folder, select the file named **WWD-Background.jpg**, and click **OK**.
- 5. If necessary, choose **Report Design Tools**→**Design**→**Tools**→**Property Sheet** to display the Property Sheet.
- 6. If necessary, click the **Selection Type** button in the Property Sheet box and choose **Report**.
- **7.** Set the Picture Size Mode property to **Stretch** so the inserted image spans the entire report page background.



When setting the property for a background image, be sure to evaluate the size and format of the image file being inserted. Smaller images may need to be tiled or stretched to fill the report page.

- 8. Switch to Print Preview to see your finished report.
- 9. Choose File \rightarrow Close to close the database, saving the changes to your report.

Self-Assessment

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

Reinforce Your Skills

REINFORCE YOUR SKILLS: A4-R1

Create and Modify a Report

The president of Kids for Change wants a report that lists financial donations the organization has received since its inception, grouped by donor. He also wants to list the amount that Kids for Change is depositing into its scholarship fund for local high-school students. In this exercise, you will create a basic donations report and create a more customized report. Then you will rearrange, resize, and format controls and also add a logo and title.

- Start Access, open A4-R1-K4C from your Access Chapter 4 folder, and save it as: A4-R1-K4CRev
- 2. Choose the **Donations** table in the Navigation pane.
- **3.** Choose **Create** \rightarrow **Reports** \rightarrow **Report** $\boxed{\Box}$.
- 4. Take a moment to review the report and then close it, saving it as: Quick Donations List

Create a Report Using the Report Wizard

Now you will create a donations report that is grouped by donor IDs and includes donation totals.

- 5. Choose **Donations Query** in the Navigation pane and then choose **Create**→**Reports**→ **Report Wizard [**].
- 6. Add DonorID, DonorLName, DonorFName, DonationDate, and Amount to the Selected Fields list and click Next.

The next Wizard screen asks how you want to view your data. This screen appears because the query uses two tables and the Wizard wants to know which table will be used for the first grouping level.

- 7. Choose By Donations and click Next.
- 8. Choose **DonorID** as the grouping field and add it to the grouping area.
- 9. Click Next and then click the Summary Options button.
- **10.** Check the **Sum** box for the Amount field and click **OK** to add a sum calculation for that field; click **Next**.
- **11.** Choose **Block** for the layout and **Landscape** for the orientation; click **Next** to display the final Wizard screen.
- 12. Enter Donations Report 2017-2018 as the title and click Finish.
- **13.** Review both report pages and then close Print Preview.

You will continue to use this report.

Add, Delete, and Edit Report Controls

14. In Design View, open the Property Sheet, if necessary.

In the next few steps you will select and format text boxes that display field data and the labels for those text boxes. The text boxes are located in the Detail section, while their labels are located in the Page Header section.

DonoriD	Last Name	First Name	— Labels
DonorID Header			
DonorID	DonorLName	DonorFName	— Text boxes
DonorID Footer			

- 15. Click the DonorID text box and set the width to: 0.5
- **16.** Use **Ctrl** to select the **DonorLName** and **DonorFName** text boxes and set the Width property to **1** and apply it to both controls.
- **17.** Select the **Last Name** label in the Page Header section and the **DonorLName** text box in the Detail section and set their left properties to: **1.5**
- Select the First Name label in the Page Header section and the DonorFName text box in the Detail section and set their left properties to: 3
- **19.** If necessary, scroll to the right of the report grid to see the other controls. Then set the left properties for the controls listed as indicated:

Control	Location	Left Property
Date label	Page Header	5
DonationDate text box	Detail	4.5
Amount label	Page Header	6.2

- **20.** Select the **Amount** text box in the Detail section and both **=Sum(Amount)** controls located in the DonorID footer and in the report footer.
- **21.** Set the width to **1** and the left property to **6** for each of the three controls.

Add a New Field and Format It

- **22.** Choose **Report Design Tools**→**Design**→**Tools**→**Add Existing Fields** to open the Field List pane.
- **23.** Drag **ScholarFund** from the Field List pane and drop it to the right of the Amount text box in the Detail section.

The corresponding Scholar Fund label is partly on top of the Amount text box.

24. Click the Scholar Fund label and tap Delete to remove it.

Next you will use the Label control tool to insert a new label in the Page Header for the Scholar Fund.

- **25.** Choose **Report Design Tools** \rightarrow **Design** \rightarrow **Controls** \rightarrow **Label** *Aa*.
- **26.** Drag the **Page Header** section above the ScholarFund text box to create a rectangular label box.
- 27. Type **Scholarship** into the new label, adjusting the size of the label box as necessary.
- **28.** Close the Field List pane and then scroll to the left in the design grid.
- **29.** Click the long **Summary for " & "'DonorID'...** control in the DonorID Footer section.

- **30.** Tap **Delete** to remove the control.
- **31.** Click in the **Sum** label located in the DonorID Footer and replace the label text *Sum* with: **Donor ID Total**
- 32. Select the title in the report header section and replace it with: Kids for Change

Add a Logo and a New Title

- 33. Choose Report Design Tools→Design→Header/Footer→Logo →, navigate to your Access Chapter 4 folder and choose K4C-Logo.bmp, and click OK.
- 34. Set the width and height of the logo to: 0.7
- **35.** Drag the logo toward the right side of the header so it is positioned above the Amount fields.
- **36.** Choose **Report Design Tools** \rightarrow **Design** \rightarrow **Header/Footer** \rightarrow **Title**
- 37. Drag the new title to the left and position it below the Kids for Change title.
- **38.** Switch to **Report View** to see how your report looks and then, if necessary, switch back to **Design View** and make the desired adjustments to your report.
- **39.** Close the database, saving the changes to your report.

REINFORCE YOUR SKILLS: A4-R2

Use Controls and Apply a Theme

In this exercise, you will size, align, and format report controls, apply a theme, and add the date to the Page Header.

- 1. Open A4-R2-K4C from your Access Chapter 4 folder and save it as: A4-R2-K4CRev
- 2. Double-click the Donations Report 2017-2018.

The report has some alignment problems, and the formatting of controls is inconsistent.

- 3. Switch to Design View and open the Property Sheet, if necessary.
- **4.** Select the two titles in the report header section and set these property values:

Property	Value
Width	4
Height	0.4
Left	2
Text Align	Center

- 5. Press Ctrl and click the Donations Report 2017-2018 subtitle to deselect it.
- 6. Set the font size of the Kids for Change title to: 22
- 7. Set the width and height of the logo to: 0.8
- **8.** Set the logo's top property to: 0.05

Be sure to type 0.05 and not 0.5.

- **9.** Click the vertical ruler to the left of the controls in the Detail section to select all the controls in that section.
- Choose Report Design Tools→Arrange→Sizing & Ordering→Size/Space→Equal Horizontal ^I to evenly space all controls in the Detail section.

- **11.** Click the **Last Name** label in the page header and then press **Ctrl** and click the **DonorLName** text box in the Detail section.
- **12.** Choose **Report Design Tools**—**Arrange**—**Sizing & Ordering**—**Align**—**Left** to left-align the controls.
- **13.** Follow the procedures in the previous two steps to left-align the First Name controls.
- 14. Click the **Date** label in the page header and drag to center it above the DonationDate text box.
- **15.** Select the **Donor ID Total** label (in the DonorID footer), the **Grand Total** label (in the report footer), and the **DonationDate** text box (in the Detail section).
- **16.** Choose **Report Design Tools**→**Arrange**→**Sizing & Ordering**→**Align**→**Right** ito rightalign the controls.
- **17.** Select the **Amount** text box located in the Detail section and the two **=Sum([Amount])** calculated controls located in the DonorID footer and the report footer.
- **18.** Choose **Report Design Tools**→**Arrange**→**Sizing & Ordering**→**Align**→**Right** ito rightalign the controls.

Add the Date to the Page Header

Now you will add a date control to the page header section so when viewing the report on a computer, readers don't have to scroll to the very end of the report to check the date.

- 19. Click =Now() in the page footer section and tap Delete to remove it.
- **20.** Choose **Report Design Tools** \rightarrow **Design** \rightarrow **Header/Footer** \rightarrow **Date and Time** \blacksquare .
- **21.** Choose the **mm/dd/yyyy** date format (the third format).
- 22. Uncheck the Include Time checkbox and click OK.

The new date control is inserted on the right-hand side of the Report Header. You may need to move the Property Sheet to be able to see the new date box.

23. Click the new date control and set these property values:

Property	Value
Width	1
Тор	0.875
Left	3.5
Text Align	Center

- 24. Switch to **Print Preview** to review the completed report.
- 25. Feel free to return to **Design View** to make any adjustments you feel are necessary.
- **26.** Close the report when you are finished, saving any changes.

Apply Themes to a Report

- 27. Display the Quick Donations List report in Design View.
- **28.** Choose **Report Design Tools**→**Design**→**Themes**→**Themes** and apply the **Integral** theme.

- **29.** Review the report in **Print Preview** and, if desired, switch back to **Design View** to choose another theme.
- **30.** Save the report and close it when you're finished.

REINFORCE YOUR SKILLS: A4-R3

Create Reports and Modify Controls

Kids for Change is rapidly expanding, adding new activities and staff members almost daily. To meet the organization's need to match staffers with the new activities, you will create two new reports.

- 1. Open A4-R3-K4C from your Access Chapter 4 folder and save it as: A4-R3-K4CRev

Access generates a report of Kids for Change's activities in Layout View. Notice the vertical dotted line toward the right side of the report. This is a page break line indicating the report extends beyond a standard 8.5" x 11" printed page.

- 3. Click an **Activity** text box to select the entire Activity column of text boxes.
- **4.** Hover the mouse pointer over the right border of one of the text boxes until it is a resize arrow ↔ and then drag left to reduce the width of the boxes to fit the widest entry in the column.
- 5. Resize the remaining columns to fit the widest entries in the columns.
- 6. Switch to Design View and display the Property Sheet.
- 7. Click the ="Page" control in the page footer and set the width to 1 and the left property to: 6
- Choose Report from the Selection Type list at the top of the Property Sheet box and set the width to: 7

Access may change the property, making it greater than 7 to account for any variations in your report. Setting this property to 7 adjusts the overall width of the report.

- 9. Select the =Count(*) control in the Report Footer and set the Height property to: 0.25
- 10. Switch to Print Preview.

The report should now fit nicely on one page.

11. Close Print Preview and then save the report as Activities Report and close it.

Create a Report Using the Report Wizard

Now you will use the Report Wizard to create a staff availability report to match staffers with specific activities. The report will be grouped by activity.

- **12.** Click the **Staff Schedule** query in the Navigation pane and then choose **Create** \rightarrow **Reports** \rightarrow **Report Wizard** $\boxed{$
- **13.** Add the **Activity**, **Day**, **MeetTime**, **StaffLastName**, **StaffFirstName**, **StaffPhone**, and **Hours** fields to the Selected Fields list.
- **14.** Click **Next**, add **Activity** as a group, and click **Next** again.
- **15.** Click **Next** two more times, once to skip the Sort Order and Summary screen and once to accept Stepped as the layout.
- 16. Name the report Staff Availability Report and click Finish.

Size, Add, Delete, and Edit Report Controls

- **17.** Close Print Preview and then display the report in **Layout View**, opening the **Property Sheet** if necessary.
- 18. Select the Activity label and Activity text box and set the Width property to: 1.2
- **19.** Set the properties for both the label and text box controls as indicated:

Label and Text Box	Width Property	Left Property
Day	0.9	1.5
Meet Time	0.75	2.5
Last Name	0.8	3.3
First Name	0.8	4.2
Telephone	1.1	5.1
Hours	0.4	7

- 20. Switch to Design View and then choose **Report Design Tools**→**Design**→**Tools**→ Add Existing Fields to display the Field List pane.
- **21.** Drag the **HrlySal** field to the right of the StaffPhone text box in the Detail section.

A label control is included with the text box. You will delete the label then add a new label in the Page Header section.

- **22.** Click the **HrlySal** label control, which will be on top of the StaffPhone box, and delete it.
- **23.** Close the Field List pane and open the **Property Sheet**.
- 24. Select the HrlySal text box and set the width to 0.55 and the left property to: 6.3
- **25.** If necessary, use the arrow keys to nudge the control up or down to align it with the other controls in the Detail section.
- **26.** Choose **Report Design Tools**→**Design**→**Controls**→**Label** *Aa* and drag a new label between the *Telephone* and *Hrs* labels in the Page Header section.
- 27. Type Hrly Sal in the new label, tap Enter, and then set the width to 0.55 and the left property to: 6.3
- **28.** If necessary, use the arrow keys to nudge the control up or down to align it with the other controls in the page header section.
- 29. Switch to Print Preview to review your report.

Add a Subtitle and a Logo

- **30.** Close Print Preview and switch to **Design View**.
- 31. Select the title in the report header and replace the text with: Kids for Change
- **32.** Set these property values for the Kids for Change title:

Property	Value
Width	4
Left	2
Font Size	22
Text Align	Center

33. Choose **Report Design Tools**→**Design**→**Header/Footer**→**Title** to insert a new title and then enter these property values for it:

Property	Value
Тор	0.46
Width	4
Left	2
Font Size	20
Text Align	Center

- **34.** Choose **Report Design Tools**→**Design**→**Header/Footer**→**Logo** 🗁 and navigate to your **Access Chapter 4** folder.
- 35. Choose the K4C-Logo.bmp and click OK to insert it.
- 36. Set the width and height of the logo to: 0.8

Add the Date to the Page Header Section

- **37.** Choose **=Now()** in the page footer and delete it.
- **38.** Choose **Report Design Tools** \rightarrow **Design** \rightarrow **Header/Footer** \rightarrow **Date and Time** \blacksquare .
- **39.** Choose the **mm/dd/yyyy** date format (the third format) and uncheck the **Include Time** checkbox; click **OK**.

The new date control is inserted on the right-hand side of the page header.

- **40.** Click the new date control and tap the **up arrow** ↑ repeatedly to move it to the top of the report header section.
- **41.** Drag the left border of the date box to the right to the 6.5" mark on the horizontal ruler.
- **42.** Review your report using **Print Preview** and return to **Design View** to make any adjustments you feel are necessary.
- **43.** Save the changes to your report and then close it.

Finalize the Report

- 44. Display Activities Report and take a moment to review it.
- **45.** Switch to **Design View** and choose **Report Design Tools** \rightarrow **Design** \rightarrow **Themes** \rightarrow **Themes** \bowtie **I**.
- **46.** Choose any theme.
- **47.** Choose **Report Design Tools**→**Format**→**Background**→**Background Image** and select **Browse** from the menu.
- **48.** Navigate to your file storage location, select the file **K4C-Background.jpg**, and click **OK**.
- **49.** If necessary, choose **Report Design Tools**→**Design**→**Tools**→**Property Sheet** to display the Property Sheet.
- 50. If necessary, click the **Selection Type** button in the Property Sheet box and choose **Report**.
- **51.** Set the property for Picture Alignment to **Top Right**.
- 52. Switch to Print Preview to review the report.
- **53.** Close the database, saving the changes to your report.

🗞 Apply Your Skills

APPLY YOUR SKILLS: A4-A1

Create and Modify Reports

Universal Corporate Events is ready to add reports to its database. In this exercise, you will create two reports: The first is a basic report that lists contacts' telephone numbers; the second lists the event venues and their contact information (address, telephone number, and website), grouped by the contact person. Then you will add, delete, and edit the venue report controls and also add a logo and title.

- 1. Open A4-A1-UCE from your Access Chapter 4 folder and save it as: A4-A1-UCERev
- 2. Use the **Report** is tool to create a report based on the **Contacts** table.
- 3. Save the report as **Contacts** List and then close it.

Use the Report Wizard and Delete and Edit Report Controls

Now you will use the Report Wizard to create a list of the event venues, including their address, phone number, and website, grouped by contact person.

- 4. Choose the Venues table and start the Report Wizard.
- **5.** Choose all the fields *except* VenueID.
- 6. Leave VenueContact as the only grouping level.
- **7.** Do not add a sort or change any layout options.
- 8. Name the report **Venues** List and finish the report.
- 9. Switch to **Design View** and delete the **=Now()** control in the page footer.
- **10.** Change the *VenueContact* label in the page header to: **Contact**
- 11. Change the VenueName label in the page header to: Name of Venue

Add a New Title and a Logo

12. Change the *Venue List* title in the report header to **Universal Corporate Events** and then set these properties for it:

Property	Value
Width	4
Height	0.4
Left	2
Font Name	Arial Narrow
Font Size	22
Text Align	Center

13. Insert a new title, leaving the name set as *Venue List* and setting these properties:

Property	Value
Width	4
Height	0.4
Тор	0.45
Left	2
Font Name	Arial Narrow
Font Size	20
Text Align	Center

14. Insert UCE-Logo.bmp from your Access Chapter 4 folder into the header.

The logo should be positioned on the left side of the header.

- **15.** Set the logo's width and height properties to: **0.8**
- 16. Review your report in Layout View.

The report has layout problems that are addressed in the next exercise.

17. Save the report, close it, and close the database.

APPLY YOUR SKILLS: A4-A2

Fine-Tune Reports

The CEO of Universal Corporate Events has sent back the first draft of the Contacts List and Venues List with a list of modifications he would like you to make. In this exercise, you will resize, align, and format controls on the Venues List report and apply a theme and background image to the Contacts List report.

- 1. Open A4-A2-UCE from your Access Chapter 4 folder and save it as: A4-A2-UCERev
- 2. Display the Venue List report in Layout View.
- **3.** Modify the position and width of all columns as necessary so all data is visible.
- 4. Insert a date in the header using the **mm/dd/yyyy** format and omitting the time.
- 5. Save and then close the report.

Apply a Theme and Insert a Background

- 6. Display the Contacts List report in Design View.
- 7. Apply a theme of your choice to the report.
- 8. Delete the Logo control next to the title in the report header section.
- 9. Insert a background image using the image file UCE-Background.jpg and set the alignment to Bottom Right.
- **10.** View the report in **Report View** and make any adjustments you feel are necessary.
- **11.** Save and close the report and then close the database.

APPLY YOUR SKILLS: A4-A3

Create and Modify Reports

Universal Corporate Events is ready to add more reports to its database. In this exercise, you will create two reports: a basic report using the Menus table as the record source and a report that lists personnel contact information grouped by last name. Then you will add, delete, and edit report controls; modify the captions of several labels to make them more readable; and add a logo, title, and subtitle to the venue report.

- 1. Open A4-A3-UCE from your Access Chapter 4 folder and save it as: A4-A3-UCERev
- 2. Use the **Report** tool to create a report based on the **Menus** table.
- 3. Save the report as **Menus** List and close it.

Now you will use the Report Wizard to create a list of the company personnel and their addresses, phone numbers, and email addresses. The report will be grouped by last name.

- 4. Choose the **Personnel** table and start the **Report Wizard**.
- 5. Add PerLastName, PerFirstName, PerAddress, PerCity, ST, PerZIP, PerPhone, and PerEmail to the Selected Fields list.
- 6. Use **PerLastName** as the only grouping level.
- 7. Do not add a sort and leave the layout default values.
- 8. Name the report **Personnel List** and finish it.

Modify Controls and Add a New Title, Logo, and Date

- 9. Switch to Design View and delete the =Now() and ="Page" controls in the page footer.
- 10. Change the *PerLastName* label in the page header to: Last Name
- **11.** Change the *Personnel List* title in the report header to **Universal Corporate Events** and then set these properties for it:

Value
4
0.4
2
Arial Narrow
22
Center

12. Insert a new title, leaving the name set as *Personnel List* and setting these properties:

Property	Value
Width	4
Height	0.4
Тор	0.5
Left	2
Font Name	Arial Narrow
Font Size	22
Text Align	Center

13. Insert **UCE-Logo.bmp** from your **Access Chapter 4** folder into the header.

The logo should be positioned on the left side of the header.

- 14. Set the logo's Width and Height to: 0.8
- 15. Insert a date in the header using the mm/dd/yyyy format and do not include the time.
- **16.** Move the new **Date** control to the top-right corner of the report header and shorten its width so it doesn't overlay the title.

Review the Report and Apply a Theme

17. Review your report in **Layout View**.

Some controls, such as Telephone and Email Address, may not be wide enough to display all data. You will need to move some columns to the left to create space to allow for the expansion of the Telephone and Email Address columns. Remember that an entire column can be selected by clicking the column heading and using **Ctrl** to select any box in the column.

- **18.** Move and widen columns as necessary so all data is visible, but make sure the Email Address field does not go past the vertical dotted page break line.
- **19.** Save the report and close it.
- 20. Display the Menus List report in Design View.
- **21.** Apply a theme of your choice to the report.
- 22. Review your report in **Report View** and change the theme if desired.
- **23.** Save and close the report.

🖹 Project Grader

If your class is using eLab (labyrinthelab.com), you may upload your completed Project Grader assignments for automatic grading. You may complete these projects even if your class doesn't use eLab, though you will not be able to upload your work.

PROJECT GRADER: A4-P1

Taylor Games: Create and Modify a Basic Report

Taylor Games needs a basic inventory report. You will first create the report using the Report command, then modify it to improve readability and enhance its appearance.

- **1.** Download and open your Project Grader starting file.
 - Using eLab: Download **A4_P1_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A4_P1_Start from your Access Chapter 4 folder.
- 2. Create a basic report based on the **Inventory** table.
- **3.** Set the following properties for the Total Cost Total control located at the bottom of the report:

Vinyl 3-hole card holders	5273359	621	\$0.76	\$471.96
				\$ 2 003 84
		Page 1 of 1		

Property	Value	
Format	Currency	
Height	0.25	
Font Weight	Bold	

4. Delete the Logo, Date, and Time controls from the Report Header.

Inventory	
 	
Inventory	Sunday, October 7, 2018
	7:29:11 AM

5. Insert a Date and Time control in the report header and set properties for it as follows:

Property	Value
Date Format	Use the second format (DD-MM-YY).
Time Format	None
Width	4
Text Align	Center

6. Format the Title control (contains the title *Inventory*) in the Report Header as follows:

Property	Value
Width	6.25
Font Size	26
Text Align	Center
Font Weight	Bold

7. Insert a background image and set properties for it as follows:

Property	Value	
Picture	Use Taylor Games BG.png from your Access Chapter 4 folder.	
Picture Alignment	Bottom Right	
Picture Size Mode	Stretch	

Hint: Set the Property Sheet's selection type to Report to access the needed properties.

Property Sheet	
Selection type: Report	
Report	\sim

- **8.** Apply the **Facet** theme (the second theme in the Office category).
- 9. Save the report as **Inventory** and then close it.
- **10.** Save your database.
 - *Using eLab:* Save it to your **Access Chapter 4** folder as **A4_P1_eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 4 folder as: A4 P1 Submission

PROJECT GRADER: A4-P2

WebVision: Work with Reports

WebVision would like a report that displays the sales orders for each sales team. You will first create the report using the Report Wizard and then modify it to improve readability and enhance its appearance.

- **1.** Download and open your Project Grader starting file.
 - Using eLab: Download A4_P2_eStart from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A4_P2_Start from your Access Chapter 4 folder.
- 2. Create a new report using the Report Wizard and these guidelines:
 - Add the **SalesTeam** field from the **Sales Reps** table.
 - Add the **OrderID**, **Date**, and **Amount** fields from the **Orders** table.
 - View the data by **Orders**.
 - Add **SalesTeam** as the only grouping level.
 - Sort by **Date** in descending order.
 - Add summary options that include a Sum calculation on the Amount field and show Detail and Summary.
 - Use **Outline** layout.
 - Set the Orientation to **Landscape**.
 - Use Orders by Region as the title.
- 3. Delete the Summary for Sales Team control.

="Summarv for " & "'SalesTeam' = " &	Ŧ	SalesTeam Footer												
Sum		="Summarv for " & "'SalesTeam' = " 8												
		Sum												

4. Set the following properties for the SalesTeam label:

	SalesTeam Header																																					
2	<u> </u>		_			-	-		-	1	-					-	u	u	-																			
:	-	-	-			i	i				i	i				i			ł	ļ		Ì	Ì		Ì	ļ		ļ	Ì		I			Ì			Ì	
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Property	Value
Caption	Sales Team (add a space to the current caption)
Font Size	14
Font Weight	Bold

- 5. Set the Page Header section height to: 0.25
- **6.** Move the **SalesTeam** label into the Page Header section. Move only the label (not the Sales Team text box).

Sales Team		
	der	
	SalesTeam	
	Date Order Number Amount	

7. Set the following properties for the SalesTeam text box:

Property	Value
Width	1
Тор	0
Left	0
Font Size	12
Font Weight	Semi-Bold

- 8. Insert the LastName field from the Sales Reps table into the SalesTeam Header section.
- 9. Delete the LastName label control.
- **10.** Set these properties for the LastName text box:

Property	Value
Тор	0.2
Left	1
Border Style	Transparent
Font Weight	Bold

11. Set the Date text box Width property (located in the Detail section) to **1** and the Text Align property to **Left**.

- 12. Set the Date label (located in the SalesTeam Header section) Left property to: 0.5"
- Set the Sum label (located in the SalesTeam Footer section) Left property to 3 and the Font Weight property to Semi-Bold.
- **14.** Set the following properties for the Grand Total label (located in the Report Footer):

Property	Value
Width	1
Left	2.5
Font Weight	Semi-Bold

15. Set the following properties for both the Sum of Amount text box and the Amount Grand Total Sum (Sum) text box:

	Sum	=Sum([An
		7
Grand	Total	=Sum([An

Property	Value
Border Style	Transparent
Font Weight	Bold

16. Delete the **Title** control (*Orders by Region*) from the report header and insert a new **Title** control using the following properties:

Property	Value
Width	2
Height	0.35
Font Weight	Bold

- Insert WebVision Logo.jpg from your Access Chapter 4 folder and set the Width property to: 1.75
- **18.** Save and close the report.
- 19. Save your database.
 - Using eLab: Save it to your **Access Chapter 4** folder as **A4_P2_eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 4 folder as: A4_P2_Submission

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

A4-E1 That's the Way I See It

You've been asked to create a sales report for Blue Jean Landscaping that shows the total amount of sales by equipment type, drawing the information from sales invoices. Open **A4-E1-BJL** and save it as: **A4-E1-BJLRev**

Create a well-designed report header with a title and logo (use **BJL-Logo.bmp**). Make sure all information is visible and that the report is easy to read and understand. The date and page numbering should appear at either the top or bottom of the report. Save your report as: **Equipment Sales**

A4-E2 Be Your Own Boss

Blue Jean Landscaping has asked you to add reports to its company database that provide listings of its equipment, services, and customers in an attractive and useful manner. Open **A4-E2-BJL** and save it as: **A4-E2-BJLRev**

Use the Store Inventory query as a record source to create a report that is grouped by manufacturer and includes item name, price, quantity in stock, inventory amount, and a sum of the InvTot field. Use the default layout settings. Use the skills you learned in this chapter to size, rearrange, and format the report controls. Create a well-designed report header with a title and logo (use **BJL-Logo.bmp**). Name the report: **Store Inventory Report**

Create another report using the Service Invoices Query that includes all fields except InvNum. Group the results by InvDate and sum the LineTotal field. Choose the Stepped and Landscape layout options and use **Service Invoices Report** as the report name. Format the report controls and create the same consistent header with a logo, title, and subtitle as in the Store Inventory Report. Add the background image **BJL-Background.jpg** that is aligned bottom left to the report.

A4-E3 Demonstrate Proficiency

You've been asked by Stormy BBQ to prepare a Manufacturer Stock Level report that shows the total number of items in stock for each manufacturer. Open **A4-E3-StormyBBQ** and save it as: **A4-E3-StormyBBQ-Rev**

Locate the table or query in the database that will provide the data you need and use all fields from that table or query. Organize the report so the total stock for each manufacturer is displayed. Create a well-designed report header with a title and logo (**SBQ-Logo.bmp**). Make sure all information is visible and the report is easy to read and understand. The date and page numbering should appear at either the top or bottom of the report. Save your report as: **Manufacturer Stock Levels**

ACCESS

Refining Table Design

t's important to understand what makes Access a relational database management system and why properly designed databases perform better. Well-designed databases reduce redundant data and create critical connections between the objects that help make them more efficient. In this chapter, you will develop important database table relationships and use tools to help speed data entry and ensure data accuracy.

LEARNING OBJECTIVES

- Create and modify relationships
- Format a table datasheet layout
- Modify table structures
- Set field properties
- Use the Lookup Wizard

Project: Maintaining and Formatting Databases

Winchester Web Design is a website development company that specializes in building websites for small businesses. You are tasked with maintaining the company's database. After reviewing the objects in the database, you decide to make some changes that will make the database more efficient and improve data entry. You will create a lookup field to streamline data entry. In the process, you will add formatting to make the tables more colorful. You will then examine the relationships between tables to ensure they accurately define the database.

Creating and Modifying Relationships

As you build tables and other objects in a relational database, Access creates some of the relationships between tables based on each table's field structure. It's a good idea to examine and edit these relationships manually. For example, you may choose to cascade updated or deleted records, that is, to automatically update or delete all affected records as part of a single operation.

Cascade options can be invaluable in cases in which a store pulls a product off its shelf and therefore needs to remove that product from its merchandise list, order list, inventory list, and advertising list. In most cases, you also must enforce referential integrity to ensure relationships between records in related tables are valid. Finally, it may be wise to create and display those relationships in a report to add to the database documentation.

Relationship Types

Database relationships connect data in one table to data stored in other tables. Access supports three different types of relationships:

A one-to-one relationship means each record in Table A can have only one matching record in Table B, and each record in Table B can have only one matching record in Table A. This is the least common relationship.

Example: A main Customers table linked to a CustPassword table (one customer has one password)

A one-to-many relationship means each record in Table A can have multiple matching records in Table B, but a record in Table B can have only one matching record in Table A. This is the most common relationship.

Example: One employee will have many sales, and a product will be sold many times

• A **many-to-many relationship** occurs when two tables may each have many matches in the other table but they do not share key fields, so they use a third junction table to connect the two tables, completing the relationship. The junction table has a one-to-many relationship to each table.

Example: A Vendors table and a Products table, where one vendor provides many different products and one product is available from many vendors

Adding and Modifying Relationships

There are times when a database designer must add or edit a relationship. You can examine, create, edit, and delete relationships between tables in the Relationships window. The Show Table command in the Relationships window displays the Show Table window containing a list of tables and their fields. Tables are added to the Relationships window with a click of the Add button. Fields from one table
added to the Relationships window can be dragged and dropped onto a field in another table to begin creating a relationship between those fields. Conversely, relationships can be edited by selecting the join line between the relational fields and using the Edit Relationships command on the Ribbon.



The Edit Relationships Box

The Edit Relationships dialog box displays the tables and fields involved in the relationship along with options for establishing referential integrity, cascade protocols, and the relationship type being created.

		une
	Products ProdID ProdDescription	InvoiceDetails InvNum ProdID
	Price	Qty
	Edit Relationships	? ×
Table fields to be joined –	Table/Query: Related Table/Query: Products V ProdID ProdID	OK Cancel Join Type
	Enforce Referential Integrity	Create New
Relationship options —	Cascade Update Related Fields	
	Relationship Type: One-To-Many	

many join line

Type of relationship to be created

Referential Integrity Requirements

Perhaps the most important database relationship protocol is referential integrity, which is a set of rules used to maintain the validity of the related data in a database. It ensures that you don't delete a record or change a primary key that is related to data in a foreign table. It also requires the data types of the related fields (both the primary and foreign keys) to be the same or compatible.

Referential integrity is a critical part of a relational database, so let's look at it from several views using real-life examples:

- If the ProdID primary key in the Products table has a Number data type (Field Size property: Long Integer), then the ProdID foreign key in the Invoice Details table must also have the Number data type (Field Size property: Long Integer).
- You cannot have a listing in the Invoice Details table for a product you don't sell. This means you cannot have a foreign key (ProdID) in the Invoice Details table without a matching primary key (ProdID) in the Products table.
- You cannot delete the primary key (ProdID) from the Products table when there is a corresponding foreign key (ProdID) in the Invoice Details table.
- You cannot change the primary key value (01HP) from the Products table when there is an existing and corresponding foreign key value (01HP) in the Invoice Details table, unless Cascade Update is enabled.

Relationship Cascade Options

Two additional relationship options are available for controlling updates to related tables: Cascade Update and Cascade Delete. Each has a unique function for maintaining database relationships, and it's important to know what they control.

RELATIONSHI	P CASCADE OPTIONS
Cascade Option	Description
Cascade Update	Updates the value in the key field of a related table if you change the primary key value in the primary table. For example, if you change a ProdID in the Products table, the ProdID field value in the Invoice Details table updates for each invoice.
Cascade Delete	Deletes records in a related table any time you delete related records in the primary table. Consider this option if you deleted an employee from the Employees table and want to also delete their spouse from the Spouses table. Take care, though, as any records associated with the deleted record are removed. So, if your Employees table is linked to your Invoices table, it would not be wise to delete all 2018 invoice records for an employee just because that employee retired in 2019.

View the video "Creating Relationships."

DEVELOP YOUR SKILLS: A5-D1

In this exercise, you will open the Relationships window, add a table, and create a relationship between tables with referential integrity enforced.

Before You Begin: Download the student exercise files from your eLab course or the Student Resource Center (labyrinthelab.com/office19) and determine your file storage location before beginning this exercise.

 Open A5-D1-WinDesign from your Access Chapter 5 folder and save it as: A5-D1-WinDesignRev

When completing exercises, always choose to Enable Content.

- 2. Choose Database Tools -> Relationships -> Relationships
- **4.** Double-click the **EmpSpouses** and **All_Customers** tables to add them to the Relationships window and then close the Show Table box.

Typically, all tables will be in the Relationships window, but sometimes tables are added later.

5. Rearrange the tables in the Relationships window by dragging their title bars so they are arranged as shown.

Arranging the tables this way helps you see all the relationships, as the relationship lines are not overlapping.



Manually Set Relationships

Now you will create a one-to-many relationship between the Employees table and the Invoices table so one employee may have many invoices.

6. Follow these steps to create a relationship between the Employees and Invoices tables:



- Select the **EmpID** field in the Employees table and drag it to the **EmpID** field in the Invoices table.
- B When the mouse pointer is positioned as shown, release the mouse button.

The Edit Relationships dialog box opens once the mouse button is released.

7. Check the Enforce Referential Integrity box and click Create.

Access creates a join line and places symbols at each end. The Employees end of the join line displays a 1, and the Invoices end displays an infinity sign (∞).

8. Drag the **CustID** field from the All_Customers table to the **CustID** field in the Invoices table.

In the new relationship being created, the CustID field in the All_Customers table will be the primary key and the CustID field in the Invoices table will be the foreign key.

- 9. Enforce referential integrity and click **Create** to complete the relationship.
- Choose File→Save or click the Save button to save the database changes and leave the Relationships window open.



Unless otherwise directed, keep Access and any databases or database objects being used open at the end of each exercise.

Editing and Deleting Relationships

Deleting relationships and setting cascade options can have a ripple effect on records and data in a database, so it's a good idea to back up a database before removing a relationship or setting cascade options and then test the settings. That way you can restore the database from the backup if the changes you make result in data loss.

When to Review Relationships

Any time the structure of a table changes—whether it's through adding or removing fields, changing data types, or creating lookup fields—you should review and update the relationships among database tables.

Deleting Relationships

To modify tables after relationships have been set, you must temporarily delete existing relationships so Access is free to make the revisions without violating integrity rules. For example, say you have an existing Short Text data type field, such as State, and you want to change it to a Lookup data type. If you attempt to change its data type, Access will warn you that you must first delete its relationships to any other tables. After you delete the relationship and change the field's data type, you may have to reestablish the relationship and edit those relationship properties.

DEVELOP YOUR SKILLS: A5-D2

In this exercise, you will edit the relationship between the Employees and Invoices tables so if you change the Employee ID in the primary table (Employees), Access will update the Employee ID in the related foreign table (Invoices).

 Right-click the join line between the Employees table and the Invoices table and choose Edit Relationships.

The mouse pointer must be right on the join line or you won't see the Edit Relationships option on the right-click menu.

- 2. Check the Cascade Update Related Fields checkbox and click OK.
- **3.** Right-click the join line linking the **ProdID** fields in the Products and InvoiceDetails tables. *Your mouse pointer must be directly on the line for the menu to appear.*
- 4. Choose **Delete** and then click **Yes** to confirm the deletion.
- 5. Choose File→Save or click the Save button to save the relationship changes.

Documenting and Printing Relationships

After you have inspected the relationships, you may want to create a report to view a printable version of them. You can also display the database objects that make use of, or are used by, other objects in the database. This is done through the Object Dependencies panel.

- \blacksquare Database Tools \rightarrow Relationships \rightarrow Relationships \rightarrow Relationship Report 🖻
- \blacksquare Database Tools \rightarrow Relationships \rightarrow Object Dependencies \blacksquare

DEVELOP YOUR SKILLS: A5-D3

In this exercise, you will create a relationship report and examine object dependencies for the Employees table.

- **1.** Choose Relationship Tools \rightarrow Design \rightarrow Tools \rightarrow Relationship Report \square .
- 2. Choose Print Preview→Page Layout→Landscape is so all tables and relationships are shown.
- **3.** Save the report as: **Relationships**

The report is added to the Report group in the Navigation pane.

4. Close the report and then close the Relationships window.

Display Object Dependencies

- **5.** Select the **Employees** table in the Navigation pane without opening it.
- Choose Database Tools→Relationships→Object
 Dependencies .
- **7.** Ensure the **Objects That Depend on Me** option is selected in the Object Dependencies panel.

The objects listed below each type are dependent on the Employees table.

8. Choose the Objects That I Depend On option.

The Employees table has relationships with, or depends on, the EmpSpouses, Invoices, and States tables.

9. Close the Object Dependencies panel.



Modifying Table Structures

Database integrity and data validity are important aspects of database maintenance. Access features that enable you to modify table fields, control the data entered, and format the data to ensure consistent reporting include but are not limited to:

- Renaming tables, forms, and other database objects
- Adding and removing fields from tables
- Changing data types

Renaming Tables and Adding, Deleting, and Editing Table Fields

As you create tables, you define each field by setting the data type and entering the field name. Access works behind the scenes and sets default properties for the field that limit the number of characters in a field, as well as the format and data type of characters valid for the field. You can accept the default properties Access sets or modify the properties. Properties available depend on the data type selected for the field. Take care when adding, deleting, or editing fields because of the impact such actions might have on the table data.

Renaming Tables

When you save a table, give it a name that describes the data it contains. You can change the name later without affecting its data, but note that table names are often included in other database objects that use the table's data, which means renaming a table can impact other database objects. Access should automatically update the name of the table used in other database objects. However, if you rename a table, you should make sure that every form, query, or report that uses that table still functions the same.

A good database design principle is to name all your tables in a similar fashion, for example, using the underscore between words in all tables named with more than one word (Invoice_Details). Traditionally, spaces are *not* used in table names because referencing the table in a query or entering the table name in an expression could be confusing. For instance, is *Invoice Details* two objects or one object? Fortunately, Access will enclose a table name like *Invoice Details* in [square brackets] when it uses it in an expression.

Adding Fields to Existing Tables

Periodically you will need to create new fields in existing database tables and then add data to these fields. You can add a field either in Datasheet View or in Table Design View and then move it where you want it to be in the layout.

Deleting Fields

When you delete a field that contains data, Access displays a warning that deleting the field will remove all its data. If you delete a field in Design View and have not saved the table, you can recover the deleted field using Undo. If, however, you save the table after deleting the field, the data is lost, and you have to add the field name to the Table Design and then reenter all field data in the table to restore the data. Fields are deleted in Design View by clicking the field header and tapping **Delete**.

Editing Field Data Types

Many Access data types start with a different letter, which means you can type a letter, and the data type that begins with that letter will display. For example, if you want to change the data type of a field from Short Text to Number, you click in the field's Data Type and type *N*.

Any time you change the data type of a field that contains values that fail to conform to the new data type, Access deletes any nonconforming data. For example, if you change a field's data type from Short Text to a Number data type and someone has accidentally entered *1O* (using a capital *O*) instead of *10* (using a zero), Access will warn you that you are about to delete data that did not conform, thus the entry made using the capital *O* will be removed after the change is confirmed. The great thing about this is that Access will allow only valid field data, which results in more accurate data.

The Yes/No Data Type

The Yes/No data type sets the field so only two entries are possible: Yes/No, True/False, or On/Off. When you set the Yes/No data type for a field, Access places a checkbox for the field in the datasheet and on forms where the data appears. Checking the checkbox indicates a value of Yes, True, On, etc.; clearing the checkbox indicates a value of No, False, or Off.

DEVELOP YOUR SKILLS: A5-D4

In this exercise, you will rename a table, delete a table field, add a table field, and modify the data type of a field.

- 1. Right-click the **All_Customers** table in the Navigation pane and choose **Rename**.
- 2. Type Customers and tap Enter.
- 3. Open the **Customers** table and switch to **Design View**.

4. Click the field selection box on the left edge of the Notes field to select the field.

Notes Long Text

5. Tap Delete and choose Yes to confirm.

The field and any data within it have been permanently removed from the database. However, before continuing, you could use Undo to restore the field and data because you made the deletion while working in Design View.

Add New Fields

Now you will add a Yes/No field to the Customers table.

6. Right-click the CustStreetAddress field selection box and choose Insert Rows.

A new row opens above the CustStreetAddress row.

- 7. Click in the empty Field Name box of your new field and type: Business
- 8. Tap Tab and set the data type to Yes/No.
- 9. Save the table and then switch to **Datasheet View**.

Your new Yes/No Business field has all boxes unchecked, which means it is set to No.

 Check the Business field boxes for the records with these CustIDs: DavisP, HassanA, and KleinJ.

These records are now identified as having a business.

11. Close the Customers table.

Formatting a Table Datasheet Layout

If field values are longer than anticipated, Access displays only the portion of the data that fits within the column width, hiding some of the data. Or the opposite scenario may occur, in which one or two fields were added and you need to display all the fields on one screen, which means you may have to modify the width of each column to fit the screen. Alternatively, you can maximize the Access window or close the Navigation pane to provide more room without having to modify the width of each column.

Changing the Width of Columns

Access offers some useful techniques to adjust the width of each column in a datasheet to display all data in the column:

- **Drag a column border:** Drag a column border to make the column on the left of the border wider or narrower.
- **Double-click a column heading border:** Double-click the right border of a column to change the width of the column on the left to fit either the longest data entry in the column or column heading, whichever is wider.
- **Right-click a field heading and choose Field Width:** Select the Field Width command from the context menu to open the Column Width dialog box and type the width, reset the standard width, or select Best Fit to automatically size the field width to the longest entry.

Moving and Hiding Data Columns

There will be times when you want to reposition a column of data in a table layout—perhaps to display the email address before the telephone number. When you rearrange the columns in a datasheet, the table layout remains the same but the fields display in a different order in the datasheet. You may also want to hide some columns so you can better view other field columns. When you hide columns, Access temporarily removes them from display, but the data remains in the table—it's not deleted. If you want to view data in hidden columns later, unhide the column.

Saving a Table Layout

Changing the layout of a table datasheet has no real effect on table data or structure; however, when you make changes to a table datasheet, Access recognizes the differences between the structure of the table and its layout and prompts you to save the changes to the layout when you close the table. If you abandon the changes, the next time you open the table datasheet, the column widths will return to their original size and any columns that were hidden will show. If you save the changes, the next time you open the table datasheet has been the table datasheet. Access recalls the layout and displays the formatting changes.

DEVELOP YOUR SKILLS: A5-D5

In this exercise, you will adjust the column width to allow for the best display of data in a datasheet. You will also rearrange columns and hide a column.

- 1. Display the Customers table in Datasheet View.
- **2.** Position the mouse pointer over the border between the Street Address and City column headings so the adjust pointer appears as a double-headed arrow.



- Double-click and notice that the Street Address column width adjusts to fit the widest entry in the column.

 CustID Last lar CustID -
- **4.** Position the mouse pointer on the **CustID** column heading and then drag right to select both the **CustID** and **Last Name** columns.
- **5.** Position the mouse pointer between the column headings and double-click when the adjust pointer appears.

CustID - Hast Nar -AbramsJ Abrams AndersM Anders

Both columns will be Best Fit.

- 6. Click the First Name column heading to select the column. Do not release your mouse button.
- **7.** Drag the **First Name** column to the left of the Last Name column, releasing the mouse button when the black vertical bar is between the CustID and Last Name columns.

CustID -	Last Name 📼	First Name 👻	Street Address 🕞
AbramsJ	Abrams	John	1210 West Pier Way
AndersM	Anders	Mark	205 Montana St

The First Name column should now be before the Last Name column.

8. Click the table selection button to select all data.



- 9. Double-click the border between any of the selected column headings to Best Fit all columns.
- **10.** Save the layout changes.

Enhancing a Datasheet

Changing the datasheet layout enables you to make necessary adjustments, such as widening a field so a longer value can be fully displayed. Enhancing the datasheet layout enables you to improve its readability. Some of the features you can apply to enhance a datasheet include gridlines, font size and color, and background color.

As you apply enhancements to the datasheet, Access formats all data and gridlines to match the format you choose. The Text Formatting group on the Home tab displays tools for enhancing the most commonly formatted features on a datasheet such as fonts, colors, fills, and alignments. It also contains tools for formatting alternate rows and gridlines. Finally, you can find more formatting options in the Datasheet Formatting dialog box (launched from the Text Formatting group).



Dialog box launcher opens the Datasheet Formatting box

Home—Text Formatting

DEVELOP YOUR SKILLS: A5-D6

In this exercise, you will use the Text Formatting tools to set datasheet enhancement options for the Customers table.

- **1.** Choose **Home→Text Formatting→Alternate Row Color** 🖮 **menu button** ▼.
- **2.** Choose **Blue, Accent 1** (the fifth color on the top row under Theme Colors). *Alternate rows in the datasheet should now be blue.*
- **3.** Choose **Home→Text Formatting→Font menu button** → and choose **Arial** from the list. *All table data should now be formatted with the Arial font.*
- 4. Choose Home→Text Formatting→Gridlines and choose Gridlines: Horizontal.

The datasheet will display only horizontal gridlines now.

 Click the dialog box launcher at Home→Text Formatting to open the Datasheet Formatting dialog box.



- 7. Click OK to apply the black gridlines.
- **8.** Save the changes to the Customers table.

Setting Field Properties

Use field property settings to further define the properties of each field. The Field Properties pane appears in the lower portion of the Table Design View or on the Fields tab in Datasheet View.

COMMON FIELD PROPERTIES		
Field Property	Description	
Field Size	Sets a field length for the number of characters each field can hold	
Format	Sets a predefined display layout for fields (that is, currency or percent)	
Input Mask	Identifies the format of values entered—with hyphens or without, alphabetic or numeric, uppercase or lowercase, etc.	
Caption	Sets a column heading title to describe the data content better than the actual field name and includes spaces where appropriate	
Default Value	Adds a default value for a specific field in each record, such as FL for the State field, abbreviated as "ST"	
Validation Rule	Controls actual values entered into a field, such as less than 100 or greater than 01/01/2017	
Validation Text	/alidation Text Provides a tip that identifies valid data entries, such as "All dates must be after 01/01/2017"	
Required	Sets the field as required to ensure a value is entered in the field	

Why Set Field Properties?

Different people add data to databases—and they often enter the data using varying formats. For example, some people type parentheses around the area code when entering phone numbers. Others may separate the area code from the number using a hyphen. Both formats are accurate, but displaying mismatched data can be distracting. Entering parentheses or hyphens can also be timeconsuming. Setting field properties to control how data appears helps maintain data consistency throughout a database.

Set Field Sizes, Captions, and Default Values

Maintaining database integrity, data validity, and data format are important considerations when building a database. You should make every effort to ensure that data is entered consistently, contains the required number of characters, and falls within valid data ranges.

Setting Field Size

Rather than using a default field size, you can set the Field Size property to limit the number of characters that can be entered into the field for each record. For example, you can limit data entry of state names to the two-character state abbreviation.

Sometimes, when you reduce an existing field size to limit data entry, Access warns that data may be lost due to the reduced field size. In most cases, you are familiar with the data, so you can choose *Yes* to continue. For instance, truncating Florida to FL would not create invalid data. However, if you are uncertain, you should choose *No*, check the data to ensure that it fits the new limit, and then set the field size.

Identifying Field Size for Number Fields

Number fields are identified by special formats in the Properties panel. In general, number fields should be set to define the largest value anticipated for the field. Setting the proper field size controls for number fields helps optimize database performance.

NUMBER FIELD F	NUMBER FIELD FORMATS		
Field Size Property	Description		
Byte	Stores whole numbers between 0 and 255 using 1 byte and allows no fractions or decimal points; uses the minimal amount of memory, allowing for the fastest processing		
Integer	Stores whole numbers between –32,768 and 32,767 using 2 bytes rather than the standard 7 bytes normally used for high values		
Long Integer	Stores whole numbers between –2,147,483,648 and 2,147,483,647 using 4 bytes rather than the standard 14 bytes normally used for high values		
Single	Stores positive and negative numbers to exactly seven decimal places using 4 bytes		
Double	Stores positive and negative numbers to exactly 15 decimal places using 8 bytes		
Replication ID	Identifies replication of tables, records, and other objects in Access 2003 or earlier databases using 16 bytes		
Decimal	Stores positive and negative numbers to exactly 28 decimal places using 12 bytes		

Setting Text to Uppercase or Lowercase Format

Text fields have unique field properties available for formatting data. Access provides a Format field that enables you to force a specific format to all characters in the field. The most common format characters are used to force uppercase (>) and lowercase (<). Using the Text Format property eliminates the need to spend valuable time entering multiple characters in the Input Mask property.

Setting Captions

As you may have noticed, many field names contain no spaces or include an underscore, such as LastName or Last_Name. The Caption field property enables you to type a more descriptive name for a field that is more suitable for display on forms, in datasheets, and on reports—such as Last Name.

Setting Default Field Values

Validation rules control the data you enter in table fields. Setting a default value for a field automatically enters the most common data value and can save time and help reduce the number of errors made during data entry.

For instance, all the employees at Winchester Web Design live in Florida. Consequently, it saves time and reduces inconsistency when the default value for the State field is set to FL. The default value appears whenever a new record is added. If you need to enter a different state, you simply type in the new state's two-character abbreviation to replace the default value.

Making a Field Required

Whenever you create a primary key field, its properties are automatically set to be required and indexed, allowing no duplicates. A database index is a structure whose main function is to speed up database operations. An index that is set on key fields enables faster searches and retrieval of data.

ĺ∎	Products		
2	Field Name	Data Type	
	ProdID	Short Text	
	ProdDescription	Short Text	
		Fiel	d P
G	eneral Lookup		
C	Caption		\wedge
C	Default Value		
N	Validation Rule		
V	/alidation Text		
F	Required	Yes	
A	Allow Zero Length	Yes	
Indexed		Yes (No Duplicates)	
l	Jnicode Compression	Yes	

A key field must have a value; by default, every other field does not require that a value be entered. There are times, however, when non-key fields must have values. For instance, you must include an employee last name and first name when entering a new record into your Employees table. The Required field property helps to easily accomplish this.

DEVELOP YOUR SKILLS: A5-D7

In this exercise, you will set field sizes, captions, and default values in the Customers table.

- **1.** If necessary, open the **Customers** table and switch to **Design View**.
- 2. Click anywhere in the **CustState** field and set these field properties:
 - Field Size: 2
 - Format: >
 - Caption: **ST**
 - Default Value: **FL**

Entering > for the Format property converts entries to uppercase. Access places quotation marks around the Default Value field property when you click in another field property or save the table. Setting field sizes consistent with the data they hold helps the data display properly when it's included in forms and reports.

3. Click anywhere in the **CustLastName** field and change the field size to **25** and the required property to **Yes**.

- **4.** Click anywhere in the **CustPhone** field and change the field size to **15** and the required property to **Yes**.
- 5. Choose File→Save. For both the Some Data May Be Lost message and the Data Integrity Rules Have Been Changed message, choose Yes.
- 6. Switch to **Datasheet View** and enter this data in a new record:

Field	Data to Enter	
CustID	JonesK	
First Name	Ken	
Last Name	Leave this field blank.	
Business	Check the box to set it to Yes .	
Street Address	2300 Maple Ave.	
City	Palmetto	
ST	This field already shows FL because you set FL as the default value.	
ZIP	34628	
Telephone	Leave this field blank.	
Email	KJones@email.com	

7. Tap Tab after entering the email address.

You are prompted to enter a value for the Customers.CustLastName field because you made it a required field.

- 8. Click OK, select the Last Name field, and type: Jones
- 9. Tap Tab through the remaining record fields.

You are prompted to enter a value for the Customers.CustPhone field, since it is also a required field.

10. Click **OK** and then tap the left arrow ← to select the **Telephone** field; type **9415553232** and tap **Tab**.

Access automatically applies parentheses, (), to the area code and a hyphen, -, after 555.

Custom Text and Memo Field Formats

Standard field formats in Access cannot meet the needs of every text or memo field contained in every database. That's why Access provides tools for creating custom formats. Custom formats for Text and Memo fields can contain two sections:

- Section 1 contains a symbol and is followed by a semicolon when a second section is entered.
- Section 2 contains the value of the alternate value when no value is entered. This alternate is a *null* value and is enclosed in quotation marks with no space between: "".

An example of a two-section format for a text field would look like this: @; "N/A"

The @ symbol tells Access to display the field data if a value is entered, and N/A tells Access to display N/A (Not Applicable) if no value is entered. The @ symbol displays all characters that will fit the Field Size property, and if there are fewer characters than the Field Size value, Access pads the rest of the field with blank spaces.

Short Text and Long Text Field Unique Properties

Text and Memo fields are formatted to hold text characters (abc), symbols (#\$%), and numbers (123) on which no mathematical calculations will be performed, such as FirstName, LastName, City, and also ZIPCode, PhoneNumber, and SocSecNumber. Because of the broad scope of data that these data types can contain, Access provides several field properties for controlling and formatting data entry in the field.

HORT TEXT AND LONG TEXT FIELD UNIQUE PROPERTIES		
Property	Description	
Allow Zero Length	This allows data entry of zero length in a field. Data is entered as open and close parentheses with no character between: (). This entry shows that there is no value to enter. For example, if you have a field in a Customers table that requires a land phone number and the customer has no landline, enter () in the field.	
Text Format	This property sets the text in a Long Text field as Plain Text or Rich Text. Rich text fields can be formatted with different font types, sizes, and colors.	
Text Align	This positions the text on the left, center, or right side of the field box or column. The Distribute setting spreads out the text to fill the column or text box size.	
Append Only	This adds a series of date-stamped comments to a single Long Text field, making it easy to create a history log of comments added to the fields. These comments are stored in a separate table and accessed through the Append Only Long Text field.	

Entering Field Properties

Access provides three basic techniques for setting field properties:

- Type the value into the property box.
- Choose the value from the property list. (For example, click the drop-down menu button to select a valid entry from the list.)
- Click the Build button at the right side of a field property to open the Wizard associated with that property and choose the desired settings. For example, click the Build button to open the Input Mask Wizard to format the display of text and field dates.

DEVELOP YOUR SKILLS: A5-D8

In this exercise, you will set additional properties to require the entry of a customer's first name.

- 1. Display the **Customers** table in **Design View**.
- 2. Click anywhere in the CustFirstName field and type @ for the Format field property.

Using the @ symbol will display all characters that fit within the field size and pad any remaining positions with spaces.

3. Choose **Yes** in the Required field property and **No** in the Allow Zero Length field property to prohibit a null value from being entered.

These settings will require a CustFirstName to always be entered.

- Choose File→Save and choose Yes when advised that the data integrity rules have been changed.
- 5. Switch to Datasheet View.
- 6. Click in the CustID field of the new, blank record at the bottom of the table and type: SmithA
- 7. Type **Smith** in the Last Name field and then close the Customers table.

A message informs you that you must enter a value in the CustFirstName field. This is because you set the Allow Zero Length property to No, which requires an entry of at least one character to be made.

8. Click **OK** to dismiss the message and then click **Yes** to close the database object (Customers table) now.

The table will close and the new record you started to enter will not be saved.

Formatting Data Using Input Masks

Consistency of data format is important for visual aesthetics; it also helps ensure accuracy in searches, queries, and sorts. You can control data formats using the field property input mask. Using input masks, you can set the characters you want displayed in fields, such as the parentheses in an area code, and Access requires the user to enter the data within that format.

The Input Mask Wizard

The Input Mask Wizard is a valuable tool for setting the most common formats used in databases. You can also set input masks to require a specific number of characters in a field or to convert characters to capital or lowercase.

Setting input masks ensures that the data format in tables is consistent. Because the table data is consistent, data displayed in forms and reports will also be consistent.

Telephone 👻	Telephone -
941-55-52309	(941) 555-2309
9415551792	(941) 555-1792
941 555-6939	(941) 555-6939
(941)555-7820	(941) 555-7820
9415551029	(941) 555-1029
9415550793	(941) 555-0793

Input masks can automatically format unformatted data.

The Build <u>---</u> button that appears at the right end of the Input Mask box when you click the box starts the Input Mask Wizard, which helps you build the mask.

Input Mask Symbols

When you use the Input Mask Wizard, Access places the necessary coding into the Field Properties pane. Access uses several symbols to control the appearance of data.

INPUT MAS	K SYMBOLS	
Symbol	Description	Example
0	Requires a numeric digit	(000) 000-0000 requires an area code as part of the phone number.
9	Data is optional but must be a digit	(999) 000-0000 requires a seven-digit phone number with an optional three-digit area code.
#	Restricts data to a digit, +, -, or space	#99.99 permits + or – in the position of the #.
L	Requires an alphabetic character (that is, a letter)	LL requires the entry of two alphabetic characters in the State field.
?	Restricts, but does not require, data to alphabetic characters	L????L requires two alphabetic characters, one on each end of the data, but permits four additional alphabetic characters between.
А	Requires an alphabetic or numeric character	000-AAAA permits a phone number to be entered either as 555-1234 or 555-HOME.
a	Allows, but does not require, alphabetic or numeric characters	(aaa) AAA-AAAA requires a seven-digit phone number but not the area code.
&	Requires any alphanumeric character (letter or number) or a space	&&&& permits data entry such as a four- character ID along the lines of 01HP, 1 HP, or 1234.
С	Allows, but does not require, any character or space	CCCC could contain an entry such as 01HP, 1 HP, HP, etc.
.,:;-/	Characters used to separate parts of numeric, date, time, and currency values	<i>#,###.##</i> permits numeric data. 99/99/00 permits date data.
		99:00:00 permits time data.
<	Converts characters to lowercase	<aaa abc="" abc.<="" and="" as="" characters="" converts="" data="" entry="" lowercase="" of="" permits="" such="" td="" three="" to=""></aaa>
>	Converts characters to uppercase	>aa permits entry of two characters such as fl and converts the data to FL.
!	Displays input mask characters from right to left	!(#) 000-0000 right-aligns the phone number so if only seven numbers are entered, the area code is left blank. This affects fields defined with the Number data type.
	Causes characters that follow the \ to display as literal characters	(\A) appears as (A).
"Literal Text"	Places text between the quotation marks into the field value at the identified position	"ID-"0000 places ID- before the numbers entered. A space may be enclosed in quotes to ensure it appears in the value.
Password	Creates a password entry text box; any character typed in the text box is stored as a character but displays as an asterisk (*)	When <i>passWord1</i> ! is typed, Access shows *******************

Storing Input Mask Characters

Access provides two methods for storing the input mask with the table data—with or without the symbols. Storing the symbols with the data increases the size of the database file. Therefore, companies that store extremely large volumes of data often prefer storing the data without the input mask symbols. You can choose one of these methods while running the Input Mask Wizard.

Using Smart Tags

As you work in Access, you will periodically see smart tags, such as the Paste Options smart tag, which you may have seen in Word and other Microsoft applications. Smart tags allow you to apply formatting changes you make to a field in one table to the same field anywhere else it occurs in the database. For example, if you modify the field format properties in a table, the Property Options smart tag lets you apply the same format changes to the field when it appears in other forms, queries, and reports. This helps ensure data consistency throughout the database.

DEVELOP YOUR SKILLS: A5-D9

In this exercise, you will set the primary key, change a field size, and apply a custom input mask to a field in the Products table. Then you will apply a standard telephone input mask to a field in the Employees table.

1. Open the **Products** table in **Datasheet View**.

The ProdID field consists of two numeric characters and two alphabetic characters.

- 2. Switch to **Design View** and click the **Primary Key** button to make ProdID the primary key field.
- **3.** Click in the **Input Mask** field properties box and type **"PROD-"00AA** (use zeros and not the letter O for 00).

This input mask formats the ProdID field to automatically begin with PROD- followed by two numbers and then two letters.

- Choose File→Save and the Property Update Options smart tag will appear next to the input mask you just entered.
- 5. Click the smart tag 🗾 and choose Update Input Mask Everywhere ProdID Is Used.

Access displays the Update Properties dialog box, which contains a list of all objects using the field. For this field, only one object is listed.

- **6.** Click **Yes** to update the Products Report object and then switch to **Datasheet View**. *The ProdID field now has* PROD- *preceding each product ID*.
- 7. Close the Products table.

Use the Input Mask Wizard

Now you will apply a standard input mask format to a field.

8. Open the Employees table in Datasheet View.

The Telephone field contains numbers without any other symbols.

- 9. Switch to **Design View** and click anywhere in the **EmpPhone** field.
- **10.** Click in the **Input Mask** field property box and then click the **Build** button on the right side of the box.
- **11.** Choose **Phone Number** as the input mask and click **Finish**.

12. Save the table and then switch to Datasheet View.

Notice the phone numbers are now formatted with parentheses and a hyphen because of the input mask.

13. Switch back to **Design View**.

Create Additional Settings

14. Change field properties to set the field sizes, input masks, and captions as indicated.

For the EmpLastName and EmpFirstName input masks, you're using 24 question marks; you're using 14 question marks for the EmpCity input mask. These input masks use >L< to specify that the first character should automatically be capitalized and the next 24 or 14 question marks specify that up to 24 or 14 alphabetic characters may be entered.

Field	Field Size	Input Mask	Caption
EmpID	3	>LLL	ID
EmpLastName	25	>L ???????????????????????????????????</td <td>Last Name</td>	Last Name
EmpFirstName	25	>L ???????????????????????????????????</td <td>First Name</td>	First Name
EmpStreetAddress	30		Street Address
EmpCity	15	>L ?????????????</td <td>City</td>	City
EmpST	2	>LL	State
EmpZIP			ZIP
EmpEmail			Email
HireDate			Hire Date
WebCert			Web Cert

15. Choose File \rightarrow Save and choose Yes when advised that some data may be lost.

16. Switch to Datasheet View.

The column headings now show captions rather than field names. The Caption property lets you use descriptive headings for fields, as field names cannot contain spaces.

17. Enter these records, using **Tab** to move between fields and only lowercase letters in the ID, Last Name, and First Name fields:

Field Name	Field Data
ID	Fdr
Last Name	Roberts
First name	Fred
Street Address	362 Lakeview Ave.
City	Sarasota
State	FL
Zip	34234
Phone	9415553981
Email	FredRoberts@email.com
Hire Date	9/26/2018
Web Cert	Yes (check)

Notice as you enter the data into the fields that some letters are automatically converted to uppercase due to the input mask rules you set.

18. Close the Employees table.

Setting Validation Rules

A validation rule is a field property that enables you to limit the values entered in the field to reduce inaccurate data entry. You could, for example, set a validation rule to limit the value typed into an HoursWorked field to 50 or fewer, or the value of Pay Rate to less than \$60.

Setting Appropriate Data Types for Validation Rules

For validation rules to be effective, the field for which you are setting the rule must be formatted appropriately for the data type to be entered. For example, if you set a validation rule requiring a four-digit number, the data type for the field should be set to Number. If you are requiring dates that occur before a specific date, the data type for the field should be Date/Time.

Validation Text Messages

When you set a validation rule for a field, it's a good idea to set validation text, which contains instructions or valid data values to help guide data entry. Access displays the text as a message each time an invalid value is entered in the field.

Setting Different Types of Validation Rules

Validation rules are used to examine data entered into tables and forms. You can set comparison rules. Samples of comparison rules you can set to determine whether the value is within a valid range are shown in the following table:

VALIDATION RULES		
Comparison	Validation Rule Example	Validation Text Example
Greater than	>100	Enter a value greater than 100.
Less than	<100	Enter a value less than 100.
Equal to	=1 Or =2	Enter a value of 1 or 2.
Date after a date	>#1/1/2017#	Enter a date after January 1, 2017.
Greater than or equal to	>=100	Enter a value of 100 or more.
Less than or equal to	<=100	Enter a value of 100 or less.
Like	Like "ID-0000"	Enter a four-digit value starting with ID
Between	Between 1 and 8	Enter a value from 1 to 8.

The same wildcards used to enter input masks are used in validation rules. For example, the question mark is substituted for each character that is required, such as in *ID-????*. The asterisk (*) can substitute for a group of characters that may vary, such as in *ID-**.

DEVELOP YOUR SKILLS: A5-D10

In this exercise, you will set validation rules for data entered into fields in the Products table.

- **1.** Display the **Products** table in **Design View**.
- 2. Click anywhere in the **Price** field and then click in the **Validation Rule** field property box.
- **3.** Type **>=25** as the validation rule.
- 4. Click in the Validation Text box and type: All prices must be at least \$25
- Choose File→Save and choose Yes to acknowledge that the date integrity rules have been changed.

Test the New Validation Rules

6. Switch to Datasheet View.

All ProdID entries begin with PROD- because of the input mask you set earlier.

- 7. Click in the ProdID field for the new, blank record and type: 07SW
- 8. Tap Tab, type Switchboard Page as the description, and tap Tab again to move to the Price field.
- 9. Type 20 in the Price field and tap Tab.

The warning appears because of the validation rule you just set for the Price field. Notice the All prices must be at least \$25 validation message you set is displayed in the alert.

- 10. Click OK to acknowledge the error message, type 30 for the price, and tap Tab.
- **11.** Close the Products table.

Setting Lookup Fields with the Lookup Wizard

All tables in a relational database are related in some way to each other, as well as to other objects in the database. Data from one table is often used in another table. A lookup field enables you to select a field value in one table by looking up values from another table; or you could select from a list of values entered by the database designer. The list of valid entries appears in a drop-down menu in the table accessing the values.



A lookup field displays a menu arrow at the right end of the field during data entry.

Using a lookup value also enables you to look up values from one field and return a value from a different field in the connected table. For example, you can look up a product number by typing the common product name. When a lookup field is created using values in another table, a relationship is also created between the lookup field and the field that contains the values.

Benefits of Lookup Tables

Adding a lookup field to a table serves three primary purposes:

- It reduces the time required to enter the data repeatedly.
- It reduces errors associated with data entry.
- It restricts data to valid entries.

For example, if you are processing time card data before issuing employee checks, setting a lookup field of valid employee IDs helps ensure only valid employees receive checks. Lookup fields also help reduce the number of redundant fields contained in database tables.

Performing a Lookup

Access provides the following two ways to use the Lookup feature:

Lookup Wizard: This data type launches the Lookup Wizard, which walks you through the process of setting up a lookup field.

InvoiceDetails				
🕗 Field Name	Data Type			
InvNum	Number			
ProdID	Short Text 🗸 🗸			
Qty	Short Text			
	Long Text			
	Number			
	Date/Time			
	Currency			
	AutoNumber			
	Yes/No			
	OLE Object			
	Hyperlink			
	Attachment			
	Calculated			
	Lookup Wizard			

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\sim	<u> </u>	

View the video "Using the Lookup Wizard."

• **Lookup tab:** This option in the Design View Field Properties pane sets the data source containing the values you want to display in the field.

General Lookup	
Display Control	Combo Box 🗸
Row Source Type	Table/Query
Row Source	SELECT [Products]. [ProdID], Products. [ProdDescription], [Products]. [Price] FROM Products;
Bound Column	1
Column Count	3

DEVELOP YOUR SKILLS: A5-D11

In this exercise, you will delete the relationship between two tables and create a lookup field in the Products table that displays a list of valid products. You will then use the lookup field to enter data into the Invoice Details table.

- **1.** Make sure all tables are closed (you cannot make relationship changes to an open table).
- **3.** Right-click the join line linking the **EmpID** fields in the Employees and Invoices tables. *Your mouse pointer must be directly on the line for the menu to appear.*
- 4. Choose **Delete** and then click **Yes** to confirm.
- Using the same procedure, delete the relationship between EmpID in the Employees table and EmployeeID in the EmpSpouses table.
- **6.** Close the Relationships window.
- 7. Display the InvoiceDetails table in Design View.

8. Click in the ProdID **Data Type** box and then click the drop-down **menu** button \checkmark .

InvoiceDetails				
4	Field Name	Data Type		
	InvNum	Number		
	ProdID	Short Text 🦷		
	Qty	Short Text	/	
		Long Text		

- 9. Choose Lookup Wizard from the menu.
- **10.** Click **Next** to accept the current setting, *I* Want the Lookup Field to Get the Values from Another Table or Query.
- **11.** Choose **Table: Products** in the next Wizard screen and then click **Next**.

The Products table will contain the values to be looked up.

- **12.** Move all three available fields to the **Selected Fields** list and click **Next**.
- 13. Choose ProdID as the sort field, leave the sort order as Ascending, and click Next.

The next Wizard screen lets you adjust the width of the lookup field columns, which determines how the columns appear when the lookup field is used.

- **14.** Uncheck the **Hide Key Column** checkbox and then double-click the right borders of all three column headings to best fit the columns; click **Next**.
- **15.** Click **Next** again to choose ProdID as the field that uniquely identifies the row.
- **16.** In the next screen, leave the label set to ProdID, check the **Enable Data Integrity** box, and choose the **Cascade Delete** option.
- 17. Click Finish and then choose Yes in the two warning boxes.

Test the Lookup Field

- 18. Switch to Datasheet View.
- **19.** Click in the **ProdID** field for the 02SP record (second record in the table).
- 20. Click the drop-down **menu** button and choose the 07SW product.

InvoiceDetails							
InvNum	-	Prod	D 👻	Qty	Ŧ		
	1	01HP			1		
	1	02SP	\sim		6		
	1	01HP	Но	me Pa	age	e, Nav, CSS, De	\$400.00
	2	02SP	02SP Secondary Page			\$200.00	
	2	03BL	03BL Blog, Integrated i		rated into Site	\$300.00	
	2	04SC Shopping Cart, Basic		\$400.00			
	2	05IM	05IM Image, Custom Designed		\$40.00		
ſ	3	06HR	Но	urly R	at	e for Modificat	\$80.00
	3	07SW Switchboard Page		\$30.00			
	4	0201			4		

This product ID replaces the 02SP for that record, so invoice 1 still has three products listed on it, but one of them has changed. This lookup field makes it easy for you to view a listing of products when adding them to invoices.

21. Close the InvoiceDetails table.

Creating Lookup Fields for Multiple Values

You have already created a lookup field that enabled you to select a single item from a list. You can also set up lists that allow you to select multiple values to enter for each lookup field. If, for example, an inventory item is available from more than one supplier, you can set up the field to allow you to select all suppliers for an item. To create a selection list, simply check the Multiple Items option as you move through the Lookup Wizard screens.

DEVELOP YOUR SKILLS: A5-D12

In this exercise, you will create a lookup field in the Invoices table that allows you to assign two or more employees to an inventory item.

- 1. Display the Invoices table in Design View.
- 2. Click in the EmpID Data Type box, click the menu button -, and choose Lookup Wizard.

	Invoices	
4	Field Name	Data Type
P	InvNum	AutoNumber
	InvDate	Date/Time
	EmpID	Short Text
	CustID	Short Text

3. Click **Next** to accept the current setting, *I* Want the Lookup Field to Get the Values from Another Table or Query.



If you choose the I Will Type the Values in That I Want option, you can create your own list of items.

4. Choose Table: Employees and click Next.

The Employees table will contain the values to be looked up.

- Move the EmpID, EmpLastName, and EmpFirstName fields to the Selected Fields list and click Next.
- 6. Choose EmpID as the sort field, leave the sort order as Ascending, and click Next.
- 7. Click **Next** to accept the default width settings for the columns.
- **8.** In the final Wizard screen, check the **Allow Multiple Values** box, leave the label set to **EmpID**, and click **Finish**.
- 9. Choose Yes in the message box to confirm you want to store multiple values.
- **10.** Choose **Yes** to save the table and choose **Yes** one last time to confirm that some data may be lost.

Test the Multiple Values Lookup Field

- **11.** Switch to **Datasheet View**.
- **12.** Click in the **Emp ID** field for the third record (invoice 3).

13. Click the drop-down **menu** button **v** to display the list of employees.

InvNum -		Invoice Date 👻		Emp	o ID			Cu	st ID	-
:	1	3/14/2017	Win	chester				Smi	thW	
:	2	4/1/2017	Wat	ters				Sant	tosE	
:	3	5 /10/2017	Win	chester,	Mansf	ield	\sim	Sant	tosE	
	4	5 /29/2017		Winche	ster	Jay			hW	
ļ	5	6/18/2017		Kramer		Joh	n		ersM	
(6	6/22/2017	\square	Mansfie	ld	Jul	ie		iesD	
	7	7/10/2017		Waters		Mi	ke		ertsJ	
	8	7/10/2017	<					>	sP	
	9	7/19/2017			OK		Car	icel	sP	

- 14. Check the box for Winchester (leave Mansfield checked) and click OK.
- **15.** Double-click the border between the Emp ID and Cust ID columns to best fit the Emp ID column.

Invoice 3 now has two employees assigned to it. Notice that both employee names are visible in the Emp ID field.

16. Close the database, saving the changes to the Invoices table.

Self-Assessment

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

🖡 Reinforce Your Skills

REINFORCE YOUR SKILLS: A5-R1

Create Relationships and Modify Table Structure

The president of Kids for Change, an organization that encourages young people to participate in community-based projects, has asked you to modify its database. In this exercise, you will create a relationship between tables and create a relationship report. You will rename a table and add a new field, delete and modify fields, and enhance the datasheet with color.

- 1. Open A5-R1-K4C from your Access Chapter 5 folder and save it as: A5-R1-K4CRev
- 2. Choose Database Tools -> Relationships -> Relationships 📑 and then click Show Table 🛄
- 3. Add the Volunteers table to the Relationships window and then close the Show Table box.
- **4.** Expand the **Volunteers** field list by dragging down on the bottom edge of the list until all fields are shown.
- **5.** Drag the **ActID** field from the Activities table and drop it on the **ActID** field in the Volunteers table.
- **6.** Check the **Enforce Referential Integrity** checkbox and click **Create** to establish the relationship.

The join line has a 1 at the Activities table end and an infinity symbol (∞) at the Volunteers table end.

- 7. Choose Relationship Tools \rightarrow Design \rightarrow Tools \rightarrow Relationship Report \square .
- **8.** Close the report, saving it as **Relationships** and then closing the **Relationships** window, saving the changes if prompted.

Modify the Table Structure

- 9. Right-click the **Staff** table and choose **Rename**; then type **PaidStaff** and tap **Enter**].
- 10. Display the PaidStaff table in Design View.
- **11.** Right-click the row selector for the StaffStreet field and choose **Insert Rows**.
- 12. Click in the new Field Name box and then type Parent and tap Tab.
- **13.** Set the Data Type of the new field to **Yes/No** and enter **Parent of K4C child** in the Description box.
- 14. Switch to Datasheet View and save the table.
- Check the Parent Yes/No boxes for parents with the last names of Lockwood, Kendall, and Riggs.
- **16.** Close the PaidStaff table and then open the **Donations** table in **Design View**.
- **17.** Click the row selector for the Acknowledgement field and tap **Delete**. Choose **Yes** to confirm and then close the Donations table, saving the changes.

Format a Table Datasheet Layout

- **18.** Display the **Children** table in **Datasheet View**.
- **19.** Click the **First Name** column heading and then hover the mouse pointer over the heading until the white pointer appears.

- **20.** Drag the **First Name** column to the left of the Last Name column.
- 21. Drag the mouse pointer over the Address, City, ST, and ZIP columns to select those columns.
- 22. Right-click one of the selected column headings and choose Hide Fields.
- **23.** Double-click the right edges of the Mother and Father column headings to best fit those columns.
- **24.** Choose **Home**→**Text Formatting**→**Alternate Row Color** I menu button → and choose any light alternate row color.
- **26.** Click the **Text Formatting** dialog box launcher to open the Datasheet Formatting dialog box.



- **27.** Choose these settings:
 - Use the Gridline Color list to choose a dark gridline color to create a nice contrast with the light alternate row color you chose.
 - In the Border and Line Styles section, choose **Column Header Underline** as the border style.
 - Also in the Border and Line Styles section, choose **Dots** as the line style.
- **28.** Click **OK** to apply the formats and then close the database, saving the changes.

REINFORCE YOUR SKILLS: A5-R2

Set Field Properties and Create Lookup Fields

As head of Tech Development for Kids for Change, you want to set some database field properties. In this exercise, you will set field size, convert values to uppercase, set captions and default values, make a field required, and create a custom format for an ID field. You will set a predefined telephone input mask, add a validation rule, and set a lookup field.

- 1. Open A5-R2-K4C from your Access Chapter 5 folder and save it as: A5-R2-K4CRev
- 2. Display the Volunteers table in Design View.
- **3.** Use this table to set the Field Size and Caption properties:

Field Name	Field Size	Caption
VolID	12	
VolLastName	25	Last Name
VolFirstName	25	First Name
VolStreet	25	Street
VolCity	25	City
VolST	2	ST
VolZIP	5	ZIP Code
VolPhone	15	Telephone
ActID	6	Act/Day

- 4. Set the Required property of the ActID field to Yes.
- 5. Select the VolST field and set the Format property to > and the Default Value to: FL

Using > as the Format property will convert lowercase values to uppercase values.

- 6. Switch to **Datasheet View** and choose **Yes** to save the table; click **Yes** twice to acknowledge the two messages that appear.
- 7. Enter this new record:

Field Name	Value
VolID	10
LastName	Graves
FirstName	Matthew
Street	915 Beneva St
City	Sarasota
ST	FL
ZIPCode	34232
Telephone	9415556198
Act/Day	BCSat

8. Close the Volunteers table.

Set an Input Mask and Validation Rules

- 9. Display the Activities table in Design View.
- 10. Set the Input Mask property of the ActID field to: "K4C-">LLL<LL

This input mask starts each ActID with the literal value K4C- followed by three uppercase (>) letters and two lowercase (<) letters; for example, K4C-DWTue for dog walking on Tuesday.

- 11. Switch to Datasheet View, saving the changes to the table.
- **12.** Scroll to the end of the table and click in the first empty **Activity ID** field.

Access automatically places the new prefix in the field because of the input mask you just created.

- **13.** Close the Activities table and then display the **Volunteers** table in **Datasheet View**. *Notice the Telephone field displays numbers with no formatting.*
- **14.** Switch to **Design View**, click anywhere in the **VolPhone** field, and then click in the **Input Mask** property box.
- **15.** Click the **Build** button to start the Input Mask Wizard.
- 16. Choose the Phone Number mask and click Finish.
- **17.** Switch to **Datasheet View**, saving the changes to the table.

Notice the Telephone field is now formatted with the input mask characters.

- **18.** Close the Volunteers table and then display the **Children** table in **Design View**.
- 19. Set the Validation Rule property of the BirthDate field to: >01/01/2008
- **20.** Enter **Only children born after January 1, 2008, may enroll** in the Validation Text property.

- **21.** Switch to **Datasheet View**, choose **Yes** to save the table, and then choose **Yes** again when the data integrity message appears.
- **22.** Enter this information into a new record:

Field Name	Value
ChildID	CasadoM
LastName	Casado
FirstName	Marty
Address	302 Waterside Ave
City	Bradenton
ST	FL
ZIP	34202
Telephone	9415551652
BirthDate	11/24/2007

The input mask will not allow you to enter the birth date because it is prior to 01/01/2008.

- 23. Click OK and then change the Birth Date value to: 11/24/2008
- **24.** Complete the record by entering **Sandy** for Mother, **Javier** for Father, and **9415551653** for Emergency.

Set a Field as a Lookup Field

- **25.** Switch to **Design View**.
- **26.** Click anywhere in the **ChildST** field and then click the **Lookup** tab in the Field Properties box and choose **Combo Box** as the Display Control.

General Lookup	
Display Control	Combo Box
Row Source Type	Table/Query
Row Source	States
Bound Column	1
Column Count	2
Column Heads	No
Column Widths	0.3";1.2"
List Rows	16
List Width 🤿	1.5"
Limit To List	No

- **27.** Enter these lookup properties (also shown in the preceding image):
 - Row Source: **States**
 - Column Count: 2
 - Column Widths: **0.3**; **1.2**
 - List Width: 1.5
- **28.** Switch to **Datasheet View** and save the changes to the table.
- **29.** Click in the **ST** field for *DriverJ*, which is missing the state.
- **30.** Open the combo box of lookup values and choose **FL**.
- **31.** Close the database, saving the changes.

REINFORCE YOUR SKILLS: A5-R3

Set Relationships and Add a Lookup Field

The Kids for Change database is performing better, but you want to improve table appearance and facilitate data entry and validation. In this exercise, you will add a field to indicate whether a staffer has a master's degree, delete an unneeded table, and rearrange fields. You will hide a field, resize columns to better display data, create a custom input mask with data validation, and apply a predefined input mask.

- 1. Open A5-R3-K4C from your Access Chapter 5 folder and save it as: A5-R3-K4CRev
- **3.** Establish a relationship by dragging the **DonorID** field from the Donors table to the **DonorID** field in the Donations table.
- 4. Check the Enforce Referential Integrity checkbox and click Create.
- 5. Choose Relationship Tools \rightarrow Design \rightarrow Tools \rightarrow Relationship Report \square .
- 6. Close the report, saving it as **Relationships** and then closing the Relationships window.

Modify the Table Structure

- 7. Display the **PaidStaff** table in **Design View**.
- 8. Right-click the ActID row selector, choose Insert Rows, and type Masters for the new field name.
- 9. Set the Data Type to Yes/No and enter Master's degree or higher as the Description.
- 10. Switch to Datasheet View and save the table.
- Check the Master's checkboxes for records with the last names of Bryant, Lockwood, and Riggs.
- 12. Switch to Design View.
- **13.** Click the field selector box for the **2ndDay** field and tap **Delete** to remove it. Choose **Yes** to confirm the deletion.
- 14. Switch to **Datasheet View** and save the table.

Format a Table Datasheet Layout

- **15.** Move the **Email Address** column to the left of the Master's column.
- **16.** If necessary, scroll to the right until the HrlySal column is visible. Right-click the **HrlySal** column heading and choose **Hide Fields**.

The hourly salary field is no longer displayed, but the data remains in the table.

17. If necessary, scroll to the left and then double-click the right edge of the **Email Address** column heading to Best Fit the column.

All email addresses should now be visible.

- **19.** Choose **Home**→**Text Formatting**→**Gridlines** imenu button → and choose **Gridlines**: **Horizontal**.
- **20.** Open the Datasheet Formatting dialog box via the dialog box launcher in the Text Formatting group.

- **21.** Open the **Gridline Color** menu, choose a dark color to complement the light row color, and click **OK**.
- **22.** Close the PaidStaff table, saving the changes.

Set Field Properties

- 23. Display the **Donors** table in **Design View**.
- **24.** Set these field sizes and captions:

Field Name	Field Size	Caption
DonorLName	25	Last Name
DonorFName	25	First Name
DonorStreet	25	Street
DonorCity	25	City
DonorST	2	ST
DonorZIP	5	ZIP
DonorPhone	15	Telephone
DonorEmail	(No change)	Email Address

- **25.** Set the Required property of the DonorLName field to **Yes** and set the Allow Zero Length property to **No**.
- 26. Set the Format property of the DonorST field to > and the Default Value property to: FL
- **27.** Switch to **Datasheet View**, saving the changes to the table, choosing **Yes** in the warning box, and choosing **Yes** again in the second warning box.
- 28. Enter this record, closing the Donors table when finished:
 Field Name Value
 DonorID (Automatically sot)

i leta i talle	Value		
DonorID	(Automatically set)		
LastName	Castro		
FirstName	Lana		
Street	4040 Conquistador Way		
City	Bradenton		
ST	FL		
ZIP	34212		
Telephone	9415556626		
EmailAddress	MCastro@email.com		
Acknowledgement	For Mina		

Set Formats, Input Masks, and Allow Zero Length

- 29. Display the **Donations** table in **Design View**.
- **30.** Set these field properties in the DonationType field:
 - Input Mask: >L<LL
 - Validation Rule: **Bus Or Pvt**
 - Validation Text: Must be Bus or Pvt

- **31.** Switch to **Datasheet View**, saving the changes to the table and choosing **Yes** in both warning boxes.
- **32.** Add this record to test the new input mask:

Field Name	Value		
DonorID	12		
DonationDate	04152013		
Amount	1000		
DonationType	Pmt		

33. Tap **Tab** after entering the donation type.

The validation text message appears because Pmt is not an allowable DonationType entry. This is because the validation rule you set allows only entries of Bus or Pvt.

- 34. Click OK and then type Pvt in the DonationType field.
- 35. Close the Donations table and then display the **Donors** table in **Design View**.
- **36.** Set the Format property of the Acknowledgement field to: @; No Comments

This will display the phrase No Comments when the Acknowledgement field is left blank.

- **37.** Click in the **DonorPhone** field and then click in the **Input Mask** property box.
- **38.** Click the **Build** button to start the Input Mask Wizard, saving the table when prompted.
- 39. Choose the Phone Number mask and click Finish.
- 40. Switch to Datasheet View, saving the changes to the table.

Notice that all telephone numbers now have proper and consistent formatting. Also notice that the phrase No Comments appears in all records in which no Acknowledgement was entered.

41. Close the Donors table.

Set a Field as a Lookup Field

- 42. Display the **PaidStaff** table in **Design View**.
- **43.** Click anywhere in the **ActID** field and then click the **Lookup** tab in the Field Properties box and choose **Combo Box** as the Display Control.
- 44. Enter these Lookup properties:
 - Row Source: Activities
 - Column Count: 2
 - Column Widths: 0.5; 1.5
 - List Width: 2
- **45.** Switch to **Datasheet View** and save the changes to the table.
- 46. Right-click the Email Address column heading and choose Unhide Fields.
- 47. Check the HrlySal box and then close the Unhide Columns box.

The hourly salary field, which had been hidden, reappears.

48. Test the new lookup field by adding this record:

Field Name	Value
StaffID	(Automatically entered)
LastName	Francesco
FirstName	Dominic
Parent	Yes (checked)
StreetAddress	105 26th Street
City	Sarasota
ST	FL
ZIP	34209
Telephone	9415558287
Masters	Yes (checked)

49. Type **E** in the Activity field.

Access displays the first value that begins with the letter E: EBSun.

- **50.** Tap **Tab** to accept the EBSun entry.
- 51. Type 27 in the Hrly Sal field and DomFrancesco@email.com in the Email Address field.
- **52.** Close the database, saving changes to any tables if prompted.

🛇 Apply Your Skills

APPLY YOUR SKILLS: A5-A1

Create Relationships and Modify Table Structure

The CEO of Universal Corporate Events has asked you to make some changes to the UCE database. In this exercise, you will create a relationship between two tables, set referential integrity, and create a relationship report. You will rename and add a Yes/No field to a table as well as delete, modify, and rearrange fields. Finally, you will improve the appearance of the Menus table.

- 1. Open A5-A1-UCE from your Access Chapter 5 folder and save it as: A5-A1-UCERev
- **2.** Establish a relationship between the **VenueID** fields in the **Venues** and **Schedules** tables, enforcing referential integrity.
- 3. Create a relationships report named: Relationships
- 4. Close the report and the Relationships window.

Modify a Table's Structure and Column Display

- 5. Change the name of the Contacts table to: **VenueLiaisons**
- 6. Insert a new field in the Venues table above the VenueWebSite field with these settings:

Field Name	Data Type	Description			
Kitchen	Yes/No	Does venue	have	a	kitchen?

- 7. Switch to **Datasheet View**, saving the changes, and check the **Yes/No** Kitchen boxes for **HyattS**, **ManYC**, and **SaraCC**, **SaraYC**, and **TmpCon**.
- 8. Close the Venues table and then open the Schedules table in Design View.
- 9. Delete the **VenueName** field and then close the Schedules table, saving the changes.
- 10. Display the Personnel table in Datasheet View.
- **11.** Move the **Date Hired** field to the left of the Last Name column.
- **12.** Hide the Date of Birth field so it is no longer displayed.
- **13.** Apply **Best Fit** to the **Address** and **Email Address** columns to make the widest entries in the columns fully visible.
- **14.** Close the Personnel table, saving the changes.

Change the Formatting of a Datasheet

- **15.** Display the **Menus** table in **Datasheet View**.
- **16.** Apply a light alternate row color and horizontal gridlines and change the gridline color to **Black**.
- **17.** Close the database, saving the changes to the Menus table.

APPLY YOUR SKILLS: A5-A2

Set Field Properties, Apply Input Masks, and Create Lookup Fields

In this exercise, you will modify field properties in the UCE database tables to more accurately describe and limit the data. You will set field sizes and captions, convert field values, set a default value for easier data entry, and make a field required. You will also set a custom format for an ID field, apply a predefined input mask to a telephone field, add a validation rule, and set lookup fields.

- 1. Open A5-A2-UCE from your Access Chapter 5 folder and save it as: A5-A2-UCERev
- 2. Display the VenueLiaisons table in Design View and set these field sizes and captions:

Field Name	Field Size	Caption	
LiaisonID	12		
LiaisonLName	25	Last Name	
LiaisonFName	25	First Name	
LiaisonStreet	25	Street	
LiaisonCity	25	City	
LiaisonState	2	State	
LiaisonZIP	5	ZIP Code	
LiaisonPhone	15	Telephone	
LiaisonEmail		Email Address	

- **3.** For the LiaisonPhone field, set the Required property to **Yes** and the Allow Zero Length property to **No**.
- 4. Set the Default Value property of the LiaisonState field to: FL
- **5.** Switch to **Datasheet View**, saving the changes to the table and choosing **Yes** in the warning boxes, and then add this record:

Field Name	Value	
LiaisonID	AntonV	
LastName	Anton	
FirstName	Vera	
Street	44 West Florida St.	
City	Bradenton	
State	FL	
ZIP	34205	
Telephone	9415554248	
EmailAddress	VAnton@email.com	

6. Close the VenueLiaisons table.

Create a Custom Field Format

- 7. Display the **Personnel** table in **Design View**.
- **8.** Set these properties for the **PerID** field:
 - Field Size: 10
 - Input Mask: "UCE-"9999
 - Caption: ${\bf ID}$

Each PerID will start with the literal value UCE, followed by four numbers, such as UCE-1001.

- **9.** Switch to **Datasheet View**, saving the changes to the table and responding **Yes** to the warning message.
- **10.** Click in the empty **ID** field in the new record at the bottom of the table.

If your input mask is set up properly, Access will automatically add the prefix UCE to the entry.

- **11.** Close the Personnel table after verifying your input mask is set up properly.
- **12.** Display the **VenueLiaisons** table in **Design View**.

Set an Input Mask

- **13.** Use the Input Mask Wizard to apply the **Phone Number** mask to the LiaisonPhone field.
- **14.** Switch to **Datasheet View**, saving the changes to the VenueLiaisons table. *The telephone numbers should now have the input mask applied.*
- **15.** Close the VenueLiaisons table. Display the **Schedules** table in **Design View**.
- **16.** Set these field properties for the **Guests** field:

Validation Rule	Validation Text	
>=35	At least 35 guests must be entered	

Set a Field as a Lookup Field

- **17.** Click anywhere in the **EventID** field and then click the **Lookup** tab in the Field Properties box and choose **Combo Box** as the Display Control.
- **18.** Set these Lookup properties:

Row Source	Column Count	Column Widths	List Width
Events	2	0.6;1.5	2.1

- **19.** Click anywhere in the **Menu Code** field and then click the **Lookup** tab in the Field Properties box and choose **Combo Box** as the Display Control.
- **20.** Set these Lookup properties:

Row Source	Column Count	Column Widths	List Width
Menus	2	0.6;1.5	2.1

21. Switch to **Datasheet View** and save the changes to the table, responding **Yes** to any warning messages.
22. Enter this record:

Field Name	Value
ScheduleID	SEMBenson
VenueID	ManCtr
EventID	SEMNAR
MenuCode	DINBUF
EventDate	7/3/2019
Guests	30

Access displays a validation text message because the number of guests entered is less than the minimum of 35.

- 23. Click OK; change the number of Guests to 40 and add Miller in the Liaison field.
- **24.** Close the database, saving the changes to the table if prompted.

APPLY YOUR SKILLS: A5-A3

Improve Data Readability and Validation

The CEO of Universal Corporate Events wants you to clean up the company's database tables and improve data readability and validation. In this exercise, you will add, delete, and rearrange fields. You will hide the cost per person in the Menus table, resize columns and set field sizes, and modify a field to convert data. Finally, you will set captions, default values, and field requirements; create a custom input mask; and modify a field to look up values.

- 1. Open A5-A3-UCE from your Access Chapter 5 folder and save it as: A5-A3-UCERev
- **2.** Establish a relationship by dragging the **Grade** field in the SalaryGrades table to the SalaryGrade field in the Personnel table, enforcing referential integrity.
- 3. Create a relationships report named: Relationships
- 4. Review the object dependencies and then close the Object Dependencies panel.

Modify Table Structure and Column Display

- 5. Display the SalaryGrades table in Design View.
- **6.** Insert a new field in the SalaryGrades table above the Salary field with these settings:

Field Name	Data Type	Description
Salaried	Yes/No	Indicates salaried position

- **7.** Switch to **Datasheet View**, saving the changes, and check the **Yes/No** boxes for each record with data in the **Salary** field.
- 8. Close the SalaryGrades table and then display the **Events** table in **Design View**.
- 9. Delete the **MinGuests** field and then close the Events table, saving the changes.
- 10. Display the VenueLiaisons table in Datasheet View.
- **11.** Select the **Telephone** and **Email Address** columns and move both to the left of the Street Address column.

- **12.** Apply **Best Fit** to all the columns and then close the table, saving the changes.
- 13. Display the Menus table in Datasheet View.
- **14.** Hide the Cost/PP field and then close the table, saving the changes.

Change the Formatting of a Datasheet and Set Field Properties

- **15.** Display the **Venues** table in **Datasheet View**.
- 16. Apply a light alternate row color and horizontal gridlines and change the gridline color to Black.
- **17.** Close the Venues table, saving the changes.

Set Captions, Default Values, and Field Requirements

18. Display the Personnel table in Design View and set these field sizes and captions:

Field Name	Field Size	Caption
PerLastName	25	Last Name
PerFirstName	25	First Name
PerAddr	25	Street
PerCity	25	City
PerST	2	State
PerZIP	5	ZIP Code
PerPhone	15	Telephone
SalaryGrade		Salary Grade

- 19. Set the Required property of the PerLastName field to Yes.
- 20. Set the Default Value property of the PerST field to: FL
- **21.** Close the table, saving the changes and choosing **Yes** in the warning boxes.

Set Formats, Input Masks, Allow Zero Length, and Lookup Fields

- 22. Display the Schedules table in Design View.
- **23.** Enter **>LLLL<??????** as the Input Mask field property for the ScheduleID field. *This mask forces 4 uppercase letters followed by from 0 to 6 lowercase letters.*
- 24. Switch to Datasheet View, saving the changes.
- **25.** Scroll down and type any series of 10 lowercase letters in the ScheduleID field of a new record. *Because of the input mask, Access converts the first 4 letters to uppercase.*
- **26.** Tap **Esc** to remove the data you just entered.
- **27.** Type any series of 8 uppercase letters in the ScheduleID field. Because of the input mask, Access converts all but the first 4 letters to lowercase.
- **28.** Tap **Esc** to exit the record without saving and then close the Schedules table, choosing **OK** and **Yes** when prompted.
- **29.** Display the **Venues** table in **Design View**.
- **30.** Set the Format field property of the VenueWebSite field to: **@; No Website** *This will display* No Website *if there is no data in the VenueWebSite field.*

- **31.** Set the Allow Zero Length property of the VenueLiaison field to **No**.
- **32.** Save the Venues table, choosing **Yes** in the warning box.
- **33.** Use the Input Mask Wizard to apply the Phone Number mask to the VenuePhone field.
- **34.** Click anywhere in the **VenueST** field and then click the **Lookup** tab in the Field Properties box and choose **Combo Box** as the Display Control.
- **35.** Set these Lookup properties:

Row Source	Column Count	Column Widths	List Width
States	2	0.3;1.2	1.5

36. Switch to **Datasheet View**, saving the changes if prompted, and enter this record:

Field Name	Value
VenueID	BradCC
Name	Bradenton Country Club
Street	2903 9th Ave
City	Bradenton
ST	FL
ZIP	34205
Phone	9415550031
Kitchen	Yes
Website	bcc.com
Liaison	AntonV

37. Close the database, saving the changes to the Venues table and any other open tables.

Project Grader

PROJECT GRADER: A5-P1

Taylor Games: Designing Tables and Creating Relationships

Taylor Games is getting ready to take customer orders, but before it can begin, its database tables need to be refined. You will add a relationship, modify data types, create a lookup field, set a validation rule, add a new field, and set additional field settings.

- **1.** Download and open your Project Grader starting file.
 - Using eLab: Download **A5_P1_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A5_P1_Start from your Access Chapter 5 folder.
- **2.** In the **Order Details** table, use the **Lookup Wizard** in the Line Item field and apply the following Wizard settings to convert the field to a lookup field:
 - Get the values from the **Inventory** table.
 - Add **SKU** and then **Item** to the Selected Fields list.
 - Do not set a sort order.
 - Hide the Key Column.
 - Leave the label as *Line Item*.
 - Do not enable data integrity or allow multiple values.
- 3. In the Orders table, use these guidelines to add a new lookup field below the Order_Date field:
 - Name the field **Service** Rep and initiate the **Lookup Wizard**.
 - Get the values from the **Service Reps** table.
 - Add Rep_ID, First_Name, and Last_Name (in that order) to the Selected Fields list.
 - Sort by Last_Name in Ascending order.
 - Hide the Key Column.
 - Leave the label as Service_Rep.
 - Do not enable data integrity or allow multiple values.
- 4. Set the Caption property of the new Service_Rep field to: Service Rep
- 5. Use these guidelines to apply formatting to the Orders table:
 - Apply horizontal gridlines.
 - Apply alternate row color using the Turquoise, Accent 1 theme color.



- **6.** Create a relationship using these guidelines:
 - Create a One-To-Many relationship between the **Order_ID** field in the Orders table and the **ID** field in the Order Details table.
 - Enforce referential integrity.
 - Allow cascade updating of related fields.
- 7. Set these field properties in the **Service Reps** table:
 - Make Position a required field.
 - In the Hire_Date field, set the Caption to: Hire Date
 - In the Hire_Date field, set this Validation Rule: >#12/31/2018#
 - In the Hire_Date field, set this Validation Text: 2019 or later new hires
- **8.** In the Service Reps table, follow these guidelines to create a new field:
 - Position the new field below the Hire_Date field.
 - Field Name: CSR_Training
 - Data Type: Yes/No
 - Caption: **Trained?**
- **9.** With the Service Reps table in **Datasheet View**, check the boxes in the *Trained*? column for the first three service reps.
- **10.** Save your database.
 - Using eLab: Save it to your **Access Chapter 5** folder as **A5 P1 eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 5 folder as: A5 _ P1 _ Submission

PROJECT GRADER: A5-P2

WebVision: Refining Table Design

The WebVision database is growing, which requires additional settings and relationships. You will create a lookup field, add and delete table fields, and create relationships that connect your tables. You will then change the name of a table and set field properties.

- **1.** Download and open your Project Grader starting file.
 - *Using eLab:* Download **A5_P2_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A5_P2_Start from your Access Chapter 5 folder.
- 2. In the Orders table, delete the Amount field and the data in it.
- **3.** Use these guidelines to create a new lookup field in the Orders table:
 - Position the field below the RepID field.
 - Name the field: **Customer**
 - Use the Lookup Wizard and get the values from the **Customers** table.
 - Add **Customer ID** and **Company Name** to the Selected Fields list.
 - Do not set a sort order.
 - Hide the Key Column.
 - Use the label: Customer
 - Do not enable data integrity or allow multiple values.

4. In the Orders table, use the **Customer** lookup field to add customers to existing orders as shown here:

Order Number	Rep ID	Customer
1	S101	Wide World Imports
2	S102	Fourth Coffee
3	S103	Alpine Ski House
4	S104	Westwind Traders
5	S101	Coho Vineyard & Winery

- 5. In the Orders table, adjust the width of the Customer column to fit the widest entry.
- **6.** Create a relationship using these guidelines:
 - Create a One-To-Many relationship between the OrderID field in the Orders table and the Order ID field in the Order Details table.
 - Enforce referential integrity.
- 7. Rename the Products and Services table as: Line Items
- 8. In the **Customers** table, set these field properties for the State/Province field:
 - Field Size: 2
 - Input Mask: **>LL**
- 9. In the Customers table, set these field properties for the Postal Code field:
 - Field Size: 5
 - Input Mask (zeros): 00000
- **10.** In the Customers table, create an input mask on the Phone Number field using these guidelines:
 - Use the Input Mask Wizard.
 - Choose the **Phone Number** input mask.
 - Keep the placeholder character set to the default.
 - Store the data With the symbols in the mask.
- **11.** Save your database.
 - Using eLab: Save it to your **Access Chapter 5** folder as **A5 P2 eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 5 folder as: A5 _ P2 _ Submission

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

A5-E1 That's the Way I See It

You have decided to enhance the table structure in the Blue Jean Landscaping database. Open and then save **A5-E1-BJL** as **A5-E1-BJLRev** and begin by creating a relationship between the MerchID fields in the StoreMerchandise and SalesInvoices tables. Enforce referential integrity and create a relationships report (call it **BJL Relationships**). Autofit all columns in the StoreMerchandise table, apply the input mask "*BJL*"-9999 to the MerchID field, and switch the order of the Manufacturer and ItemName fields. In the Customers table, make the last name required, display the message *No Email* for customers without an email address, and use the Input Mask Wizard to apply the Phone Number input mask to the CustTelephone field.

A5-E2 Be Your Own Boss

You want to improve how your Blue Jean Landscaping database looks and behaves. Open and save **A5-E2-BJL** as **A5-E2-BJLRev** and first create relationships between the CustID fields in the Customers and SalesInvoices tables and between the CustID fields in the Customers and ServiceInvoices tables. Enforce referential integrity and create a relationships report (named **BJL Relationships**). In the ServiceInvoices table, hide the ServID field, autofit all remaining columns, and make all fields required. In the ServiceReps table, apply the input mask *"BJLRep-"9999* to the RepID field and the Phone Number input mask to the RepPhone field. Finally, set RepState as a combo box lookup field with the field properties Row Source=States, Column Count=2, Column Widths=0.5, 1.5, List Width=2.

A5-E3 Demonstrate Proficiency

Stormy BBQ is continuing to update its database as it remodels its flagship location in Key West to give it a more tropical look and feel. It's also added more employees! To begin, open **A5-E3-SBQ** and save it as: **A5-E3-SBQRev**

Apply the techniques learned in this chapter to format and dress up the Staff table. Set appropriate field sizes and captions, autofit columns as needed, and display the text *No Email Available* for staff members who don't have an email address.

Labyrinth Learning http://www.lablearning.com

ACCESS



Customizing Input Forms

R elational database design often requires data from more than one table or query to appear on the same form. Customizing forms and their controls while applying other form settings gives designers more control while simultaneously making forms more efficient and easier to use. In this chapter, you will add a subform to a main form, which is a handy technique used to include data from a different source. You will also explore Access features to create calculated fields, add tips to form controls, and set control properties to protect and limit data entry.

LEARNING OBJECTIVES

- Create a form that contains a subform
- Add a calculated control to a form
- Add a total row to a form
- Disable form fields
- Lock form fields
- Add ScreenTips to forms
- Create pop-up forms

Project: Formatting Functional Forms

Winchester Web Design has seen sales increase over recent months and wants to simplify data entry as a result. You've been asked to design advanced forms to make data entry easier for all team members and less prone to errors. You will create an invoice form that contains a subform containing invoice details. Your form will also contain a calculated field for creating totals, and you will use form features to enhance data entry. The database relationships will be critical for setting up these forms.

Subforms

Although many forms are designed to enter data into a single table, there are times when you may need forms that perform actions such as processing customer invoices, calculating totals, and locating data from multiple tables. One of the best ways to accomplish this is through a subform, which is a secondary form placed on a main form. Subforms work well when one-to-many relationships are set, allowing the user to work with multiple tables on a single form. Subforms are simply subsets of data linked by parent fields on the main form to child fields on the subform.

١	Winchester V	Veb Design				
	Invoi	ces 🛛 🙀				
•						
	InvNum	1	Invoi	ice Date		3/14/2017
	Cust ID	SmithW 🗸	Empl	ID		JFW
	Last Name	Smith	Emp	Last Name		Winchester
	First Name	William	Emp	First Name		Јау
	Street Address	879 Fifteenth Ave				
	City	Tampa				
	State	FL V				
	Zip	34912				
	Telephone	(941) 555-0793				
	Email	SmithBilly@email.com				
)
		∠ ProdID Description		✓ Price ✓	Qty -	
		01HP Home Page, Nav, CS	S, Design	\$400.00	1	
		03BI V Blog. Integrated int	Site	\$200.00	1	
		01HP Home Page, Nav, CSS, I	Design \$	\$400.00 00	11	
		* 02SP Secondary Page	Š	\$200.00		
		03BL Blog, Integrated into Si	te \$	\$300.00		
		04SC Shopping Cart, Basic	Ş	\$400.00		
		05IM Image, Custom Designe	ed \$	40.00		
		06HR Hourly Rate for Modifie	ations	\$80.00		
				Carach		

The detail data from related tables appears in a subform.

A main form displaying customer and employee information

Creating Subforms

The easiest way to create a subform is to use the Form Wizard, which creates a new form with an option to add a subform. Subforms can also be added to existing forms by placing a Subform control on the existing form, where you can specify the subform's position and size. When the Subform control is added to the form, the Subform Wizard launches, allowing you to set subform properties.



- View the Video "Creating Subforms with the Form Wizard."
 - 📕 Create—Forms—Form Wizard 🗔
 - 📕 Design—Controls—Subform 🗐

DEVELOP YOUR SKILLS: A6-D1

In this exercise, you will use the Form Wizard to create an invoice form that contains an invoice details subform.

- 1. Open A6-D1-WinDesign from your Access Chapter 6 folder and save it as: A6-D1-WinDesignRev
- **2.** Choose **Create** \rightarrow **Forms** \rightarrow **Form Wizard** \blacksquare .
- **3.** Choose **Table: Invoices** from the Tables/Queries list and then add the **InvNum** and **CustID** fields to the Selected Fields list.
- **4.** Add the fields indicated to the Selected Fields list, making sure to add them in the order shown:

Customers	Invoices	Employees	InvoiceDetails	Products	InvoiceDetails
CustLastName	InvDate	EmpID	ProdID	ProdDescription	Qty
CustFirstName		EmpLastName		Price	
CustStreetAddress		EmpFirstName			
CustCity					
CustState					
CustZIP					
CustPhone					
CustEmail					

 Click Next and notice that the data is arranged by invoice number and the Form with Subform(s) option is already chosen.

The subform preview in the Wizard includes the ProdID, ProdDescription, Price, and Qty fields.

6. Click Next to accept the settings; click Next again to accept the Datasheet subform layout.

7. In the final Wizard screen, name the form **Customer Invoices** and the subform **Customer InvoiceDetails Subform** and then click **Finish**.

Customer Invoices . 1 InvNum Invoice Date 3/14/2017 Cust ID SmithW ~ EmpID JFW Last Name Last Name Winchester Smith First Name William First Name Jay Street Address 879 Fifteenth Ave City Tampa ST FL ~ ZIP 34912 Telephone (941) 555-0793 Email SmithBilly@email.com Customer InvoiceDetails ProdID Description ÷ Price 01HP Home Page, Nav, CSS, Design 02SP Secondary Page 05IM Image, Custom Designed Record: 14 4 1 of 3 ► ► ► ► No Filter Search 4

The new form and subform display in Form View.

8. Double-click the right border of each subform column heading to autofit the columns.

	ProdID 👻	Description 😽	+ Price -	Qty
	01HP 🗸	Home Page, Nav, CSS, Design	\$400.00	
	02SP	Secondary Page	\$200.00	
	05IM	Image, Custom Designed	\$40.00	
*				

- 9. Click the empty **ProdID** cell in the new row at the bottom of the subform.
- **10.** Click the drop-down **menu** button **→** and choose **03BL**.

It's easy to populate the first three fields of the new subform record.

11. Enter **1** in the **Qty** column and tap **Tab** to complete the record.

Modifying Subforms

When you use the Form Wizard to create a subform, Access creates the subform and a main form with the subform embedded within it. Both are displayed in the Navigation pane. You can then open and modify the subform by itself in Layout View or Design View, or you can open the main form and modify it and the embedded subform together.

For	ns
-8	Customer InvoiceDetails Subform
-8	Customer Invoices

The Customer InvoiceDetails Subform and the Customer Invoices main form are displayed in the Navigation pane.

Subforms and their controls have their own Property Sheets that allow you to precisely control the subform layout and design. And you can use the same keystroke and mouse techniques to arrange and size subform controls that you use with main forms.

DEVELOP YOUR SKILLS: A6-D2

In this exercise, you will modify the Customer Invoices form and subform by deleting, moving, and sizing controls, and adding a graphic to the form.

1. Switch to Layout View.

You will begin by modifying the layout and controls on the main form.

- 2. Click the **ST** label in the main form to select it and then click inside the label and change it to: **State**
- 3. Change the **ZIP** label to: **Zip**

City	Tampa
State	FL 🗸
Zip	34912
Telephone	(941) 555-0793

- 4. Locate the EmpID label and notice the Last Name and First Name labels below it.
- 5. Change the employee Last Name label to Emp Last Name and the employee First Name label to: Emp First Name

EmpID		JFW
Emp Last Name		Winchester
Emp First Name		Jay

6. If necessary, display the Property Sheet by choosing Form Layout Tools→Design→Tools→ Property Sheet :

As you select and move controls in the following steps, you may need to drag the Property Sheet out of the way or close and reopen it as needed.



You can also tap **F4** to toggle the Property Sheet open and closed.

 Select the text boxes shown here by holding Ctrl while clicking the boxes and then set the Width property to: 1

InvNum	1		Invoice Date	3 /14/2017
Cust ID	SmithW	\sim	EmpID	JFW
Last Name	Smith		Emp Last Name	Winchester
First Name	William		Emp First Name	Jay
Street Address	879 Fifteenth Ave			
City	Tampa			
State	FL	\sim		
Zip	34912			
Telephone	(941) 555-0793			
Email	SmithBilly@email.com			

8. Select the text boxes shown here and set the Width property to: 2

InvNum	1		Invoice Date	3 /14/2017
Cust ID	SmithW	\sim	EmpID	JFW
Last Name	Smith		Emp Last Name	Winchester
First Name	William		Emp First Name	Јау
Street Address	879 Fifteenth Ave			
City	Tampa			
State	FL V			
Zip	34912			
Telephone	(941) 555-0793			
Email	SmithBilly@email.com			

Modify, Lay Out, and Size Controls on the Subform

9. Select the **CustomerInvoiceDetails** label on the subform and tap **Delete**.

Customer InvoiceDetails	\square	ProdID -	Description -	Price 👻	Qty -
		01HP	Home Page, Nav, CSS, Design	\$400.00	:
		02SP	Secondary Page	\$200.00	(

10. Click the right border of the subform frame and drag left until the frame is slightly wider than the subform.

\geq	ProdID -	Description -	Price 👻	Qty 👻	
	01HP	Home Page, Nav, CSS, Design	\$400.00	1	
	02SP	Secondary Page	\$200.00	6	
	03BL	Blog, Integrated into Site	\$300.00	1	←
	05IM	Image, Custom Designed	\$40.00	11	

11. With the subform frame still selected, use the left arrow ← key to nudge the subform to the left to align it with the main form labels.

	Telephone			(941) 555-0793	(941) 555-0793			
+	Email			SmithBilly@email	SmithBilly@email.com			
	2	ProdID	÷	Description 👻	Price 👻	Qty 👻		
		01HP		Home Page, Nav, CSS, Design	\$400.00	1		
		02SP		Secondary Page	\$200.00	6		
		03BL		Blog, Integrated into Site	\$300.00	1		
		05IM		Image, Custom Designed	\$40.00	11		
	*							

Modify the Form Header

In the next few steps, you will modify the form title and add color and a logo to the header.

- **12.** Use these guidelines to modify the form:
 - Click the title box control to select it and then click just in front of *Invoices* and press **Shift** + **Enter** to move *Invoices* to a new line.
 - Set the Width property to: 3
 - Replace Customer with: Winchester Web Design
 - Select both lines and choose Home→Text Formatting→Center = to center the title in the box.



13. Click to the right of the title box in an empty part of the form header.

The title box will become deselected when you select the form header.

- **14.** If necessary, display the Property Sheet and click in the **Back Color** property box.
- **15.** Click the **Build** button and choose a light blue color or whatever color you feel looks best in the form header.
- **16.** Choose Form Layout Tools → Design → Header/Footer → Logo 🗁.
- 17. Navigate to your Access Chapter 6 folder, choose WWD-Logo.bmp, and click OK.
- 18. Set the Width and Height properties to 0.8 and the Left property to: 4

19. Review your completed form and then close it, saving the changes to both the form and subform.

Wi	nchest II	er Web Design nvoices		Winch	ICESTER DESIGN	
Inv	Num	1			Invoice Date	3 /14/2017
Cus	st ID	SmithW	`	/	EmpID	JFW
Las	t Name	Smith			Emp Last Name	Winchester
Firs	st Name	William			Emp First Name	Jay
Stre	eet Address	879 Fifteenth Ave		_		
City	Y	Tampa				
Sta	te	FL 🗸				
Zip		34912				
Tel	ephone	(941) 555-0793				
Em	ail	SmithBilly@email	.com			
				-		
4	ProdID -	Uescription -	Price -	Qty -		
	0250	Secondary Page	\$200.00	1		
03BL Blog Integ		Blog. Integrated into Site	\$300.00	1		
	05IM	Image, Custom Designed	\$40.00	11		
*			÷			

Adding Calculations to Forms

There are several ways to add calculations to forms, and the easiest way is to build a form based on a query that already has a calculated field. If your form is based on one or more tables or is based on a query without a calculated field, you will need to create a calculated control by adding an unbound control to the form and placing a formula within the control source property.

Applying Totals to Forms in Datasheet Layout

The Form Wizard has an option for creating a form in Datasheet Layout View. A form in Datasheet Layout View looks just like a table in Datasheet View. The Totals feature is available for tables in Datasheet View and for forms in Datasheet Layout View. The Totals feature lets you easily use an aggregate function such as count, sum, or average to create totals for numeric fields in the datasheet.

Home \rightarrow Records \rightarrow Totals Σ

DEVELOP YOUR SKILLS: A6-D3

In this exercise, you will create a form that uses the Totals feature to count the number of individual line items on customer invoices and to total the amounts of all invoices.

- **1.** Choose **Invoices Query** in the Navigation pane and then choose **Create** \rightarrow **Forms** \rightarrow **Form Wizard** \blacksquare .
- 2. Move all fields to the Selected Fields list and click **Next**.
- 3. Choose **Datasheet** as the layout and click **Next**.
- 4. Name the new form Invoices Query Form and click Finish.

The form looks like a table when displayed in Datasheet View.

5. Choose Home \rightarrow Records \rightarrow Totals Σ .

A Total line appears at the bottom of the datasheet layout.

18	12/4 /2017	Secondary Page
19	12/9/2017	Secondary Page
Total		

6. Click in the **Qty** cell on the Total row.

A menu button appears at the left end of the cell.

The Count function simply counts the number of rows containing a quantity while the Sum function adds all line totals in the column.

18	12/4 /2017	Secondary Page	\$200.00	4	\$800.00
19	12/9/2017	Secondary Page	\$200.00	3	\$600.00
Total				125	\$62,920.00

8. Scroll through the datasheet's 125 rows and notice that the Total row remains fixed at the bottom of the window.

The Totals feature is an easy way to use aggregate functions and is available in forms and in tables and queries.

9. Close the Invoices Query Form, saving the changes if prompted.

Creating Calculated Controls in Forms

The Totals feature is useful when you want to create totals for all records in a datasheet. But sometimes it's necessary to display calculations in Form View, which displays just a single record at a time. You can do this by inserting a calculated control. A calculated control is an unbound text box control placed on the form with a formula inserted in the Control Source property. Usually, the formula references other controls on the form that are bound to underlying database fields. For example, you would use the formula =Price*Qty to display the total amount of a transaction, with both the Price and Qty fields shown on the form. Calculated controls can also contain aggregate functions or an array of built-in functions and expressions made available by using the Expression Builder. The Expression Builder dialog box contains a list of available fields in the current object and a selection of built-in operators, functions, and expressions that can be leveraged by both novice and advanced users.

Expression Builder ×						
Enter an <u>Expression</u> to create a <u>calculated control</u> : (Examples of expressions include [field1] + [field2] and [field1] < 5)						
[Price]*[Qty]+[Tax]		OK Cancel Help << Less				
Expression Elements Customer InvoiceDetails Si Functions A6-D1-WinDesignRev.accc Constants Operators Common Expressions	Expression Categories ProdID_Label ProdDescription_Label ProdDescription Price_Label Price Qty_Label Qty Label8 Tax Label15	Expression Values				

View the Video "Calculated Controls in Forms."

DEVELOP YOUR SKILLS: A6-D4

In this exercise, you will add a calculated control to the Customer InvoiceDetails subform.

1. Display the **Customer InvoiceDetails** subform in **Design View**.

The first step is to insert a new control.

2. Position the mouse pointer on the top edge of the **Form Footer** section bar until the resize pointer appears and then drag down slightly to make room for two new text boxes.

🗲 Detail	
ProdID	ProdID
Description	ProdDescription
Price	Price
Qty.	Qty
🗲 Form Footer	

3. Choose Format Design Tools → Design → Controls → Text Box abl

4. Click just below the Qty control text box to insert a new control.

Ŀ	Price		Price			
1 - - -	Qty:		Qty			
-	le	ti8	Unbound			

5. Use the arrow keys as needed to nudge the control so it is aligned with the Qty control.

Create Formulas

- If necessary, choose Format Design Tools→Design→Tools→Property Sheet to display the Property Sheet.
- 7. Click the All tab in the Property Sheet box and set these properties:

Property	Value	Format Data Ever	nt Other All
Name	Tax	Name	Tax
Control Source	=(Price*Qty)*.07	Label Name	Label8
Format	Currency	Control Source	=([Price]*[Qty])*0.07
Decimal Places	2	Decimal Places	2

Notice that the text for Price and Qty are now surrounded by brackets, which indicates that these are fields.

8. Click the **Text8** label on the subform and set these properties:

Property	Value	Qtiy:	Qty
Caption	Tax		
Width	0.25	(Tax)	=([Pri
_eft	0.25		

- 9. Choose Format Design Tools \rightarrow Design \rightarrow Controls \rightarrow Text Box able.
- **10.** Click just below the Tax control text box to insert a new control.

Qty:		Qty
Te)	d:10	Unbound

- **11.** Use the arrow keys as needed to align the control with the Tax and Qty controls above it.
- **12.** Click the **All** tab in the Property Sheet box and set these properties:

Property	Value
Name	Line Total
Format	Currency
Decimal Places	2

13. Click the **Control Source** property and then click the **Build ...** button to the far right.

The Expression Builder dialog box appears.

14. Follow these steps to create a calculated control with the Expression Builder:

Expression Builder			×
Enter an Expression to create a <u>calc</u> (Examples of expressions include [fie	ulated control: eld1] + [field2] and [field1] < 5	0
[Price]*[Qty]+[Tax]			OK Cancel Help << Less
Expression Elements Customer InvoiceDetails Si Grunctions A6-D1-WinDesignRev.accc Constants Operators Common Expressions	Expression Categories ProdID_Label ProdDescription_Label ProdDescription Price_Label Price Qty_Label Qty Label8 Tax		Expression Values
< >	Label15	Y	AfterRenderEmMacro V

- A Scroll the Expression Categories pane until the Tax control is visible.
- Double-click the **Price** control to enter the field into the formula.
- C Tap [*] and then double-click the **Qty** control.
- **D** Tap **+** and then double-click the **Tax** control.
- Ensure your formula matches the example and then click **OK**.
- **15.** Click the **Text10** label on the subform and set these properties:

Property	Value	Qty:
Caption	Invoice Total	involice:Total
Width	1	
Left	0.25	

16. Switch to **Form View** to see your new calculated controls in action.

=:	Customer InvoiceDetails Subform	
	ProdID	DIHP ~
	Description	Home Page, Nav, CSS, Design
	Price	\$400.00
	Qty	1
	Invoice Total	\$400.00

- **17.** Navigate to record 16 and others for which the quantity is greater than 1 and notice that your calculated controls always perform the correct calculations.
- **18.** Close and save the form.

Setting Properties to Assist and Control Data Entry

Some properties are meant to assist with data entry, while others help control or limit it. These properties are easily set using the Property Sheet.

Disabling Form Fields

Sometimes a form may include data that users should not enter themselves or even access, for example, setting up passwords or entering Social Security numbers. Many forms also contain settings that enter default values, such as states, or values that correspond to data contained in another field, such as city and ZIP code fields. To protect a field on a form from being edited during data entry, you can disable the field in the Property Sheet. Disabled fields are unavailable for data entry; they're still visible, but they appear grayed out and are not accessible to the user. During data entry, Access automatically skips a disabled field and moves directly to the next enabled and accessible field. To disable a field, just set the Enabled property to No.

Locking Form Fields

Another way to protect fields from being edited is to lock them. Locked fields remain available on the form and appear as normal; this allows users to click in the field, but they cannot change the data. Locked fields improve readability when a form is printed versus disabled fields, which appear grayed out and print faintly. To lock a field, set the Locked property to Yes.

DEVELOP YOUR SKILLS: A6-D5

In this exercise, you will disable the InvNum field in the Customer Invoices form and the LineTotal field in the Customer InvoiceDetails subform. In addition, you will lock the Price field in the subform so it cannot be edited.

- 1. Display the **Customer Invoices** form in **Design View**.
- 2. Click the **InvNum** text box on the main form and then click the **Data** tab on the Property Sheet.
- 3. Disable the text box by changing the Enabled property to No.
- 4. Click anywhere on the subform to make it active and then click the **ProdID** text box.

CustPhone CustEmail			Validation Text Enabled Locked Auto Expand	res Yes No	
Form Header		-			
ProdID	ProdID	-			
Description Price	ProdDescription	ļ			

- **5.** Disable the ProdID text box.
- 6. Click the **Price** text box in the subform and set the Locked property to **Yes**.

Test the Property Settings

- 7. Switch to Form View and try clicking in the disabled InvNum field.The field is grayed out, and you can't click in it.
- Try clicking in any of the cells of the disabled ProdID field in the subform.
 In the subform, only the data appears grayed out, but you still cannot click in the field.
- **9.** Click in any **Price** field in the subform and try changing the number. *Locking allows users to select a field, but the data cannot be changed.*

Adding Control Tips

When you create a table and define fields, you can enter field details in the Description column. These field descriptions appear in the status bar when the fields are active during data entry. They also appear in the status bar when a field appears on a form. Although forms identify most fields with control labels, sometimes labels for specific fields, such as State and ZIP, are removed from a form when the controls are grouped under a more general label such as *Address*.

To help data entry personnel determine what data to type in a field, you can add descriptive messages to display onscreen by setting the ControlTip Text property for a control. ControlTips appear when the user points to the control. Setting control tips helps to provide explanations for controls.

DEVELOP YOUR SKILLS: A6-D6

In this exercise, you will create control tips for the disabled and locked fields on the Customer Invoices form to explain why they are inaccessible.

- 1. Display the Customer Invoices form in Design View.
- 2. Click the **InvNum** text box and then click the **Other** tab on the Property Sheet.
- 3. Click in the **ControlTip Text** property text box and type: **Invoice numbers are assigned automatically and cannot be changed.**
- **4.** Enter these control tips for the subform controls:

ProdID text box	Product IDs are assigned by supervisors and cannot
	be edited.
Price text box	Product prices cannot be changed.

- 5. Save the changes to the form.
- 6. Switch to Form View and point to the InvNum field to display the control tip.
- **7.** Point to the ProdID and Price fields in the subform and notice the control tips do not appear. *Control tips display only in Form View. The subform is currently displayed in Datasheet View, so the*

tips don't show.

- **8.** Open the **Customer InvoiceDetails Subform** in **Form View** and point to the ProdID and Price controls to display the control tips.
- **9.** Close the Customer InvoiceDetails **Subform**.

Leave the Customer Invoices form open.

Creating a Pop-Up Form

Forms and reports can be set to open in pop-up windows that stay on top of other open database objects. Pop-up forms can prompt a user for information or display a window containing supplemental data. Such forms and reports can help data entry personnel look up values while processing orders or looking up item prices. You can apply different formats to pop-up forms.

POP-UP WIND	OW MODES
Mode	Description
Modal Pop Up	Displays a custom dialog box that prevents access to other database objects until the dialog box is closed or its required actions are taken
	Example: If you choose to print a report and have the Print dialog box open, you cannot make changes to the report until you click OK or Cancel in the dialog box.
Modeless Pop Up	Creates a pop-up window that sits on top of other open windows in such a way that users cannot work in the database while it is open
	Example: When processing orders, you could set the Inventory List to open as a modeless pop-up form to ensure you have the correct inventory number.

DEVELOP YOUR SKILLS: A6-D7

In this exercise, you will create and test a pop-up form using the Winchester Web Design Products table.

- 1. Select the Pop Up Products table from the Navigation pane.
- 2. Choose Create→Forms→Form Wizard 🗔
- 3. Add all three fields to the Selected Fields list, choose **Datasheet Layout**, and name the form: **Pop Up Products List**
- If necessary, choose Form from the Selection Type list and then click the Other tab and set the Pop Up property to Yes.
- **6.** Switch to **Datasheet View** and double-click the right border of each column heading to autofit the columns.
- **7.** Resize the window using the sizing handle until it just encloses the datasheet.

Property Selection type:	Sheet Form	
Form		\sim
Format Data	Event Other	AII
Pop Up	Yes	
Modal	No	

You may need to reposition the form first by dragging the title bar until you can see the frame borders.

St	E	Pop Up Produc	ts List – 🗆 X
Zi		ProdID 🔹	Description 🕞
Те		01HP	Home Page, Nav, CSS, Design
Er		02SP	Secondary Page
EI		03BL	Blog, Integrated into Site
_		04SC	Shopping Cart, Basic
1		05IM	Image, Custom Designed
		06HR	Hourly Rate for Modifications
	*		
	Re		e, custom Designed \$40.00

- **8.** Position the pop-up form in a location where all fields in the Customer Invoices form remain visible.
- **9.** Use the Navigation bar at the bottom of the Customer Invoices form to navigate through the records.

Notice the pop-up form remains available and in place.

10. Close the database, saving the changes to any unsaved forms.

Self-Assessment

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

Reinforce Your Skills

REINFORCE YOUR SKILLS: A6-R1

Create and Modify a Form with a Subform

In this exercise, you will create a new Donors form for Kids for Change. You will delete, move, and size controls; modify the title; and add a logo to the form.

- 1. Open A6-R1-K4C from your Access Chapter 6 folder and save it as: A6-R1-K4CRev
- **3.** Add all fields from the Donors table to the Selected Fields list, except the first field, DonorID. *Hint: Use the Move All Fields* >> *button and Remove*
 button on the DonorID field.
- **4.** Click the last field in the Selected Fields list.

This ensures the fields you add in the next step are placed at the bottom of the list.

- 5. Add all four fields from the Donations table to the Selected Fields list.
- Click Next and click Next again to leave the viewing options set to By Donors and a Form with Subform(s).
- 7. Leave the layout set to Datasheet and click Next.
- On the final Wizard screen, name the form Donors Form and the subform Donations Subform and click Finish.

The new form and subform display in Form View.

Adjust the Subform Layout

- **9.** Switch to **Layout View** then click the **Donations** label to the left of the subform and tap **Delete**.
- **10.** Double-click the right edge of each subform column heading to autofit the columns.
- **11.** Size the subform by dragging its borders and then use the arrow keys to position the subform as shown here:

Telephone	(813) 555-6666	
DonorEmail	BloodworthJ@email.com	
	∠ DonorID • DonationDate • Amount • DonationType •	
	1 10/3/2017 \$500.00 Pvt	
	1 10/14/2017 \$1,000.00 Pvt	
	* 1	
	Record: M 🚽 1 of 2 🗼 M 👫 🐁 No Filter Search	

Set Form Field Properties

12. Use the Navigation bar at the bottom of the main form window to move to the third record (McGovern).

Notice the email address text box is a bit too narrow for the email address.

- **13.** Click the email address to select it and then display the Property Sheet.
- 14. Click the Format tab and then set the Width property to: 1.8
- **15.** Use the Navigation bar to scroll through the database records.

The Acknowledgements text box is larger than it needs to be.

16. Click the **Acknowledgements** text box and set these properties:

Property	Value
Width	2
Height	0.5

17. Set the widths of the State and DonorZIP text boxes to: 0.8

Modify the Form Header

- **18.** Click the **Donors Form** title in the Form Header to select the title box and set the Width property to: **3.5**
- 19. Click in the title box and change the title to: Kids for Change Donor Form
- **20.** Choose Format Layout Tools → Design → Header/Footer → Logo
- 21. Navigate to your Access Chapter 6 folder, choose K4C-Logo.bmp, and click OK.
- 22. Set the Width and Height properties to 0.8 and the Left property to: 4
- 23. Switch to Form View to view your completed form.
- 24. Close the database, saving the changes to both the form and subform.

REINFORCE YOUR SKILLS: A6-R2

Add a Totals Row to a Form

In this exercise, you will add a Totals row to a form that counts the number of individual donations and totals the amount of the donations.

- 1. Open A6-R2-K4C from your Access Chapter 6 folder and save it as: A6-R2-K4CRev
- 2. Select the Donations Query in the Navigation pane and launch the Form Wizard.
- **3.** Move all fields except Acknowledgement, ScholarFund, and NetAmt to the Selected Fields list and click **Next**.
- 4. Accept the By Donations view and click **Next**.

- 5. Choose the Datasheet layout and click Next.
- 6. Name the new form Total Donations and click Finish.
- 7. Click the Select All box at the top-left corner of the datasheet to select all columns.

Total Don	atio	ons
DonorID	•	Last Name 🔹
	1	Bloodworth
	1	Bloodworth

- **8.** Double-click the right edge of any column heading to autofit all columns.
- **9.** Choose Home \rightarrow Records \rightarrow Totals Σ .

A Total row is added to the bottom of the datasheet.

- **10.** Click in the **Last Name** cell on the Total row.
- **12.** Click in the **Amount** cell on the Total row and choose **Sum** from the menu.
- **13.** Autofit the Amount column so the total is visible.

The donations total \$11,150, all in even dollar amounts so decimal places aren't needed.

- **14.** Switch to **Layout View** and then click the **Amount** text box and display the Property Sheet.
- **15.** On the **Format** tab, set the Decimal Places property to **0** and then close the Property Sheet.
- 16. Switch to Datasheet View and autofit the Amount column again.
- **17.** Close the database, saving the changes to any unsaved forms.

REINFORCE YOUR SKILLS: A6-R3

Disable and Lock Fields, Calculated Controls, and Pop-Up Forms

In this exercise, you will disable and lock subform fields to prevent information from being altered by those without permission to do so. You will also add a calculated control to a form and create a pop-up form for easy access to donor information.

- 1. Open A6-R3-K4C from your Access Chapter 6 folder and save it as: A6-R3-K4CRev
- 2. Display the **Donations** subform in **Design View** and then click the **DonorID** text box and display the Property Sheet.
- 3. Click the **Data** tab and change the Enabled property to **No**.
- 4. Click the **Other** tab and then click in the **ControlTip** text box and type: **Donor IDs are set** by the administrator and cannot be edited.
- 5. Click in the **Amount** text box on the form and then click the **Data** tab and set the Locked property to **Yes**.
- 6. Click the Other tab and then click in the ControlTip Text box and type: Donor totals are calculated by the program and cannot be edited.
- **7.** Switch to **Form View** and point to the DonorID and Amount controls to see the control tips you just created.
- **8.** Close the form, saving the changes.

Create a Calculated Control

- **9.** Choose the **ScholarFund Donations** table in the Navigation pane and launch the **Form Wizard**.
- **10.** Add all fields to the form and click **Next**.
- **11.** Choose the **Datasheet** layout option and click **Next**.
- **12.** Leave the name as *ScholarFund Donations* and click **Finish**.
- **13.** Switch to **Design View** and then drag the top edge of the **Form Footer** section bar down to make room for a new text box.
- **14.** Choose **Format Design Tools**→**Design**→**Controls**→**Text Box** → and then click just below the ScholarFund control to insert a new text box there.
- 15. Use the arrow keys as needed to align the control with the ScholarFund control.
- **16.** Make sure the new control is still selected and, if necessary, display the Property Sheet.
- **17.** Click the **All** tab and set these properties:

Property	Value
Name	Total Donation
Control Source	=Amount+ScholarFund
Format	Currency
Decimal Places	0

18. Click the text box label and set these properties:

Property	Value
Caption	Total Donation
Width	1
Left	0.25

19. Switch to **Form View** to see your new calculated control in action.

Notice the fields are of different widths, creating a poor form layout.

- 20. Switch back to Design View and set the Width property of all text boxes to: 1
- 21. Switch back to Form View.

The field widths are now consistent, but the left alignment of the DonationType field needs to be changed.

- 22. Switch back to **Design View** and set the Text Align property of the DonationType text box to **Right**.
- **23.** Switch back to **Form View** to view your completed form.

Create a Pop-Up Form

- 24. Choose the **Donors** table in the Navigation pane and launch the **Form Wizard**.
- 25. Add the DonorID, DonorLName, and DonorFName fields to the Selected Fields list and click Next.
- 26. Choose Datasheet layout and click Next.

27. Enter Donor Popup as the name, choose the option to Modify the Form's Design, and click Finish.

The form displays in Design View.

- 28. Click the Other tab and set the Pop Up property to Yes.
- 29. Save the change to the form and then switch to Datasheet View.
- **30.** Autofit the three columns in the pop-up form.
- **31.** Adjust the height and width of the pop-up form by dragging the frame borders until the datasheet fits nicely within the frame.

You may need to drag the form slightly by the title bar before sizing it.

- **32.** Drag the pop-up form to the right of the ScholarFund Donations fields.
- **33.** Navigate through the records in the ScholarFund Donations form while the pop-up form remains in place, giving you access to all donor information at a glance.
- **34.** Close the database, saving changes to any unsaved forms.

🗞 Apply Your Skills

APPLY YOUR SKILLS: A6-A1

Create a Form and Subform and Add a Totals Row

Universal Corporate Events would like you to help them track venues, employees, and their pay. In this exercise, you will create a form with a subform, as well as a quick form that counts salaried employees and totals and averages the salaries.

- 1. Open A6-A1-UCE from your Access Chapter 6 folder and save it as: A6-A1-UCERev
- 2. Select the Venues table and start the Form Wizard.
- 3. Move all fields from the Venues table to the Selected Fields list except VenueLiaison.
- 4. Choose the **Schedules** table in the Tables/Queries list.
- 5. Move all fields from the Schedules table to the Selected Fields list except Schedules.VenueID.
- 6. Accept viewing your data By Venues and the Form with Subform(s) option.
- 7. Choose **Datasheet** as the layout option.
- **8.** Use **Venue Events** for the main form's name and **Venue Events Subform** for the subform's name.
- 9. Switch to Layout View and then modify the subform layout as described:
 - Remove the Venue Events label.
 - Widen the frame enough so all columns are visible.
 - Autofit all columns.
 - Reduce the frame width until it is just wide enough to contain the datasheet.
 - Nudge the frame to align it with the text boxes on the main form.
- **10.** Close the form, saving the changes to the form and subform.
- 11. Choose Salaried Personnel Query in the Navigation pane and start the Form Wizard.
- Add all fields to the Selected Fields list, choose the **Datasheet** layout, and name the new form: Salaried Personnel Totals
- **13.** Switch to **Design View** and then select the **Salary** label and the **SalaryAmt** text box controls.
- **14.** Press **Ctrl** + **C** and then **Ctrl** + **V** to copy and paste a duplicate salary field under the existing label and text box.

You may need to drag the Form Footer section down slightly to make room for the salary field.

- 15. Change the name of the first Salary label to: Total Salaries
- 16. Change the name of the second Salary label to: Average Salary
- 17. Switch to Datasheet View and autofit all columns.
- **18.** Add a **Totals** row and insert these functions:
 - Count in the Salaried field
 - **Sum** in the Total Salaries field
 - Average in the Average Salary field

Notice the Count function displays the 11 records where the box in the Salaried field was checked.

- **19.** Uncheck several **Salaried** boxes and notice that the function updates the changes.
- **20.** Close the database, saving the changes to any unsaved forms.

APPLY YOUR SKILLS: A6-A2

Add a Calculated Control to a Form and Change the Form's Layout

In this exercise, you will add a calculated control to a main form by first copying an existing field, which will retain the formatting of the existing field. You will also adjust the size and position of the controls to change the form's appearance.

- 1. Open A6-A2-UCE from your Access Chapter 6 folder and save it as: A6-A2-UCERev
- 2. Open the Event Pricing Entry form in Form View.

Notice that the labels have a raised effect. You will create a calculated control while retaining the formatting of these fields by copying and pasting an existing field.

3. Switch to Design View and then select the Chg/PP label and the ChgPP text box.

In the next step, you may need to drag the Form Footer bar down slightly to make room for the new controls.

4. Press [Ctrl] + [C] to copy the controls and [Ctrl] + [V] to paste them.

An identical text box and label appear below the existing text box and label.

- 5. Change the Chg/PP label text for the new label to: Total
- On the Data tab of the Property Sheet, change the Control Source property of the new text box to: =Guests*ChgPP
- 7. Change the Width property of all eight control labels to 1 and the Left property to: 1.5
- **8.** Switch to **Form View** and navigate through several records to verify the calculated control is working and the text boxes are wide enough to accommodate all records.
- 9. Close the database, saving the changes to the form.

APPLY YOUR SKILLS: A6-A3

Create a Pop-Up Form

In this exercise, you will create a pop-up form to help facilitate data entry.

- 1. Open A6-A3-UCE from your Access Chapter 6 folder and save it as: A6-A3-UCERev
- 2. Select the Events table and launch the Form Wizard.
- 3. Move both the **EventID** and **EventName** fields to the Selected Fields list, choose the **Tabular** layout, and name the form: **Events Pop Up**
- 4. Switch to **Design View** and delete the *Events Pop Up* title in the Form Header section.
- Set the Top property to 0.1 for the Event ID label and the Event Name text box in the Form Header.
- 6. Set the Form Header Height property to: 0.4
- 7. Choose Form from the Selection Type drop-down list at the top of the Property Sheet.
- 8. On the **Other** tab, set the Pop Up property to **Yes**.

- 9. Switch to Form View and display the Venue Events form in Form View.
- 10. Move the pop-up form so you can view the data in the Venue Events form and subform.You can see what each Event ID on the Venue Events subform means by looking on the Events Pop Up form.
- **11.** Close the database, saving the changes to the form.

🖹 Project Grader

PROJECT GRADER: A6-P1

Taylor Games: Creating and Customizing an Input Order Form

Taylor Games is getting ready to take customer orders, but before it can begin, its service reps need a new order form. In this exercise, you will create a form that contains a subform and modify the design for visual appeal. Then you will lock a form field and add a calculated control.

- **1.** Download and open your Project Grader starting file.
 - Using eLab: Download **A6_P1_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A6_P1_Start from your Access Chapter 6 folder.
- 2. Use the Form Wizard and these guidelines to create a new form and subform:
 - Add all available fields from the **Orders** table.
 - Add (in order) Line Item and Quantity from the Order Details table.
 - Add the **Price** field from the **Inventory** table.
 - View the data by Orders as a Form with Subform(s).
 - Use the **Datasheet** layout.
 - Use Order Form as the form title and Order Subform as the subform title.
 - You will modify the form's design in the next steps.
- 3. Set the Width property of the Order_ID text box to: 0.5
- 4. Set the Width property of the Service_Rep text box to: 1.05
- **5.** Set the ControlTip Text property of the Customer_State text box to: **Use two letter abbreviation**
- 6. Set these properties for the Order Subform_Label (contains the text Order):

Property	Value					
Тор	2.85					
Left	0.25					

7. Set these properties for the Order Subform:

Property	Value				
Height	2.5				
Тор	3.1				
Left	0.25				

8. In the Order Subform, set the Locked property of the Price control to **Yes**.

9. In the Order Subform, insert an unbound text box control directly below the Price control.

	Form Header	
Line_Item ~ Quantity Quantity	Ø Detail	
Quantity Quantity	Line Item:	Line_Item
	Quantity	Quantity

10. Set these properties for the unbound text box control:

Property	Value
Name	LineTotal
Format	Currency

- **11.** Create a formula in the unbound text box control that multiplies the Quantity field by the Price field.
- **12.** Set these properties for the Unbound label control (contains the text *Text6*):

Property	Value
Name	LineTotal
Caption	Line Total
Width	1
Left	0.25

- **13.** In the order form, use these guidelines to create a new Title control:
 - Delete the current Title control from the Form Header (contains the title Order Form).
 - Insert a new Title control.
 - Set these properties for the new Title control:

Value
2
0.5
26
Center
Bold

14. Insert a Logo control in the Form Header and set these properties for it:

Property	Value
Picture	Insert the Taylor Games Logo.png picture from your Access Chapter 6 folder.
Width	1
Height	0.6

- 15. Set the Back Color property for the FormHeader section to: Background Light Header
- **16.** Save your database.
 - Using eLab: Save it to your **Access Chapter 6** folder as **A6 P1 eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 6 folder as: A6 _ P1 _ Submission

PROJECT GRADER: A6-P2

WebVision: Create and Add a Subform

WebVision has improved its database normalization and would like to capitalize on these changes in the current order form. In this exercise, you will start by adding a calculated field to an existing query. Then, you will create a datasheet form, add a total row, and add the datasheet form as a subform to the existing order form. You will then disable form fields and create a pop-up form. Last, you will enter a new order using the form you created.

- **1.** Download and open your Project Grader starting file.
 - Using eLab: Download A6_P2_eStart from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A6_P2_Start from your Access Chapter 6 folder.
- 2. In the **OrderDetails Query**, add a calculated field named **Line Total** that multiplies the Quantity field by the Cost field.
- 3. Create a datasheet form that is based on the OrderDetails Query.
- **4.** Add a Totals row to the new form and then SUM the data in the Line Total column.
- 5. Save the form with the name: OrderDetails Subform
- **6.** Insert the OrderDetails Subform into the Orders form (by dragging it from the Navigation pane into the detail section).

	Jider Details			:::				::::			
	Orders				Ör	de	r Ni	im	per		rderl
💷 s	Sales Reps		:		Ör	de	r Da	ite			Date
Queri	es	☆	- I	:::							
j j	une Commissions		1		Ke	p I			· · · · · · · · · · · · · · · · · · ·	· · · ·	RepiD
	Orders Detail		:		Cu	stc) m e	1			Cust
Form	s :	*	-								
-8 (Order Details		:			3					
== (Orders		2								
== s	Sales Reps		-								

7. Delete the subform label (named OrderDetails Subform).

8. Set the OrderDetails Subform properties using the following guidelines:

Property	Value
Link Master Fields	OrderID
Link Child Fields	OrderID
Width	5
Height	3
Тор	1.5
Left	0.25

- **9.** Delete the Order ID textbox and label controls from the subform.
- **10.** Disable the Cost and Line Total text box controls by setting the Enabled property to **No**.
- **11.** In **Layout View**, resize the columns for each of the subform columns so all field data is displayed.

Cu	ustomer Wide World Importers V				
2	Line	Item 👻	Quantity -	Cost +	Line Total 👻
	Closed Circuit N	Ionitor	3	\$250.00	\$750.00
	Cat6 Cable (1 fo	ot)	200	\$5.00	\$1,000.00
	HDMI Cable		3	\$5.00	\$15.00
	Video Server - T	100	1	\$500.00	\$500.00
	Installation (Sta	ndard Hourly)	14	\$25.00	\$350.00
*					
		Total			\$2,615.00

12. Set these properties in the **Sales Reps** form:

Property	Value
Pop Up	Yes
Modal	No

- **13.** Close all open objects, saving any changes, and then save your database.
 - Using eLab: Save it to your **Access Chapter 6** folder as **A6 P2 eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 6 folder as: A6 _ P2 _ Submission
Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

A6-E1 That's the Way I See It

You want to create a form with a subform in the Blue Jean Landscaping database. Open **A6-E1-BJL**. Save it as **A6-E1-BJLRev** and start the Form Wizard. Create a Blue Jean Landscaping Customer Sales form with a CustSales Details subform in datasheet layout that includes:

- ▶ SalesNum and SalesDate from the MerchSales table
- CustLastName from the Customers table
- ▶ ItemName, Manufacturer, and Price from the StoreMerchandise table
- QtySold from the MerchSalesDetails table

Enhance the appearance of the forms and add any features you feel will help facilitate effective data entry.

A6-E2 Be Your Own Boss

Blue Jean Landscaping would like you to add calculated controls to the newly created Sales Invoices form so it may show order totals. They have also asked that several field properties be modified to assist and control data entry. Open **A6-E2-BJL** and save it as: **A6-E2-BJLRev**

Open the SalesInvoices form and add a calculated control that multiplies Cost by Qty Sold to produce a line total. Disable the Invoice number field, lock the Cost field, and add a control tip that will notify the user they cannot change the cost. Enhance the appearance of the forms and add any features you feel will help facilitate effective data entry.

A6-E3 Demonstrate Proficiency

Stormy BBQ is continuing to update its database and now wants to have a more exact record of its merchandising sales. Open **A6-E3-SBQ**. Save it as **A6-E3-SBQRev** and then create a new form using the default form and subform names in datasheet layout that includes:

- SalesID and SalesDate from the MerchSales table
- SKU from the MerchSalesDetails table
- Manufacturer, ItemName, and ListPrice from the Merchandise table
- QtySold from the MerchSalesDetails table

In the subform, add a calculated control that multiplies ListPrice by QtySold to produce a line total. Create a pop-up tabular form using the Merchandise table that displays SKU, ItemName, and ListPrice. Enhance the appearance of the forms as desired.

Labyrinth Learning http://www.lablearning.com

ACCESS

s your database grows, so will the need to quickly retrieve and modify exact data. Complex queries help with this because they allow you to further refine search results and perform actions that modify records. In this chapter, you will explore queries designed to enhance the timeliness and accuracy of large relational databases. You will create crosstab queries and use parameter queries that prompt you to enter values to generate or modify records. You will also create action queries to update databases and automate database tasks.

Creating Complex Queries

LEARNING OBJECTIVES

- Create a crosstab query
- Create a find unmatched query
- Create a find duplicates query
- Create and run parameter queries
- Create and run action queries

Project: Handling Growing Databases

You are responsible for analyzing the data-retrieval processes for the growing Winchester Web Design database. You decide to develop queries to increase the efficiency of both data entry and updates, as well as to better analyze data. The tools you will use include crosstab queries for data analysis, parameter queries that will prompt the user for input, and action queries to update and maintain the database.

Crosstab Queries

Crosstab queries allow you to easily analyze data. A crosstab query lists the fields to be grouped on the left side (rows) of the datasheet, and it arranges the fields to be summarized across the top (columns) so you can calculate sums, averages, counts, or totals by both group and subgroup. For example, if you have a database that contains sales records for your employees, the description of each product they sell, and their total sales for each product, you could create a crosstab query to display the total sales by product for each employee.

	Original Data								
Employee	Line Total								
JFW	Secondary Page	\$1,200.00							
JFW	Image, Custom Designed	\$440.00							
JFW	Home Page, Nav, CSS, Design	\$400.00							
MIM	Image, Custom Designed	\$560.00							
MIM	Home Page, Nav, CSS, Design	\$400.00							
MIM	Secondary Page	\$1,400.00							
MIM	Hourly Rate for Modifications	\$400.00							
MML	Image, Custom Designed	\$240.00							
MML	Secondary Page	\$400.00							

The original data format is arranged by record.

	Reorganized by Crosstab Query										
Emp Name	Tot Sales	Home Pg	2nd Page	Blogs	Carts	Images	Hourly				
Kramer	\$13,680.00	\$800.00	\$7,600.00	\$600.00		\$2,520.00	\$2,160.00				
Mansfield	\$10,520.00	\$400.00	\$4,800.00	\$600.00	\$1,200.00	\$1,680.00	\$1,840.00				
Waters	\$20,080.00	\$1,600.00	\$10,000.00	\$1,200.00	\$1,200.00	\$2,080.00	\$4,000.00				
Winchester	\$17,100.00	\$2,000.00	\$8,800.00	\$300.00	\$800.00	\$3,040.00	\$2,160.00				

Using a crosstab query, you can display the data grouped by employee with totals for the various products.

Both tables and queries can be used as the basis of crosstab queries. You can create a crosstab query while working with an existing query in Design View using the Crosstab option; alternatively, use the Query Wizard.



 $\blacksquare Design \rightarrow Query Type \rightarrow Crosstab \blacksquare$

Watch the video "Creating Crosstab Queries."

DEVELOP YOUR SKILLS: A7-D1

In this exercise, you will create a crosstab query that lists every employee and their total invoice amount generated by product.

- Open A7-D1-WinDesign from your Access Chapter 7 folder and save it as: A7-D1-WinDesignRev
- 2. Double-click the **Employee Sales** query to run it and display the resulting datasheet.

The query contains line item sales data. Each employee has multiple transactions, and each transaction contains the product description, price, and quantity. The LineTotal field is a calculated field that multiplies price by quantity. You will use this query as the basis for your crosstab query.

- 3. Close the Employee Sales query.
- 4. Choose Create \rightarrow Queries \rightarrow Query Wizard \square
- 5. Choose Crosstab Query Wizard and click OK.
- 6. Choose the Queries view option and then choose Query: Employee Sales from the query list.

Crosstab Query Wizard	
Which table or query contains the fields you want for the crosstab query results?	Query: Customer Invoice Perameter Query: Employee Sales Query: Invoice Details Query Query: Invoices Query
To include fields from more than one table, create a query containing all the fields you need and then use this query to make the crosstab query.	View
	○ <u>I</u> ables

- 7. Click **Next** to accept the Employees Sales query as the basis of your crosstab query.
- 8. Choose EmpLastName from the Available fields list and add it to the Selected Fields list.

Your crosstab query will display employee last names as row headings in the query results datasheet. Each employee will have a single row, with their last name displayed in the first cell of the row and their sales information displayed in the other row cells.

9. Click Next and choose ProdDescription for the column headings.

The various product descriptions (Blog, Home Page, Web Page) will appear as column headings.



The sample query at the bottom of the Wizard can be a useful guide for deciding which fields to use as the row and column headings.

10. Click **Next**, choose **LineTotal** from the Fields list, and then choose **Sum** from the Functions list.

The crosstab query will examine all transactions in the underlying Employee Sales query and sum the line totals for each product description. For example, a grand total of all line totals will be created where the product description is Blog and the employee is Kramer.

Crosstab Query Wizard		
What number do you want calculated for each column and row intersection?	Fields: EmpID Price	Functions: Avg Count
For example, you could calculate the sum of the field Order Amount for each employee (column) by country and region (row).	Cine Total	First Last Max Min SiDev
Do you want to summarize each row?		Var
\checkmark Yes, include row sums.		

11. Leave the Yes, Include Row Sums option checked and click Next.

This option creates one additional column in the datasheet to hold a total for each employee. The total will be the sum of all cells in the crosstab query datasheet for that employee.

- **12.** Leave the default query name as *Employee Sales_Crosstab* and click **Finish**.
- **13.** Take a moment to examine the query results.

2	Last Name 🔻	Total Of Lin 🝷	Blog 🔹	Home Page -	Hourly Billir -	Image 🔹	Shopping Ca -	Web Page 🔻
	Kramer	\$13,680.00	\$600.00	\$800.00	\$2,160.00	\$2,520.00		\$7,600.00
	Mansfield	\$10,520.00	\$600.00	\$400.00	\$1,840.00	\$1,680.00	\$1,200.00	\$4,800.00
	Waters	\$20,120.00	\$1,200.00	\$1,600.00	\$4,000.00	\$2,120.00	\$1,200.00	\$10,000.00
	Winchester	\$16,940.00	\$300.00	\$2,000.00	\$2,160.00	\$2,880.00	\$800.00	\$8,800.00

Complete the Query Wizard steps again, if necessary, so you fully understand how the query options produce the resulting datasheet.

14. Close the query.

Find Queries

Database tables often contain common fields that link, or relate, the tables. For example, the Product ID field from a Products table also appears in an Invoices table, so invoices can show only existing products. Thus, it's important that records entered in one table have a matching record in the related table. That is, an invoice should never show a product that is not in the Products table.

Sometimes databases are poorly designed and incorrect data is allowed. For example, a user may enter a product that does not exist into a new invoice. Data is also sometimes imported from other data sources, which might result in incorrect or duplicate data. Fortunately, Access provides two additional Query Wizard options to help resolve these types of data conflicts.

Find Unmatched Query

The find unmatched query locates records in one table that have no matching records in another table. For example, you could create a find unmatched query to ensure each record in an Invoice table has a corresponding record in a Customers or Products table.

Find Duplicates Query

A find duplicates query locates records containing duplicate field values in a single table or query datasheet. For example, you could create a find duplicates query to locate all customers with the same last name in a Customers table or to find all customers located in a particular state or ZIP code.

DEVELOP YOUR SKILLS: A7-D2

In this exercise, you will create a query to locate records in the Customers table that do not have a matching customer ID in the Invoices table. Then you will create a query to identify records with duplicate customer last names.

- **1.** Choose **Create**→**Queries**→**Query Wizard** , choose **Find Unmatched Query Wizard**, and click **OK**.
- **2.** Click **Next** to choose the Customers table.

When the query is created, records from the Customers table will appear in the query results.

3. Choose the Invoices table and click Next.

You will set up the query to find records in the Invoices table that do not have a matching customer record in the Customers table. Notice that the CustID fields are chosen as the matching fields in the Wizard screen. They're automatically chosen because a one-to-many relationship is already set up between these fields in the Customers and Invoices tables.

- 4. Click Next to accept CustID as the matching field.
- 5. Add CustLastName, CustFirstName, CustPhone, and CustEmail to the Selected Fields list.

These are the fields from the Customers table that will be displayed in the query results, creating a contact list of customers who don't have invoices in the system. In other words, these are customers who haven't purchased anything in a while, making them potential prospects for new sales.

6. Click **Next** and then click **Finish** to accept the default query name *Customers Without Matching Invoices*.

Customers Without Matching Invoices											
Last Name 👻	First Name 👻	Telephone 👻	Email 👻								
Abrams	John	(941) 555-9902	JPAbrams@email.com								
Fleetwood	Candace	(941) 555-9256	CandyWin@email.com								
Winkler	Samuel	(941) 555-2054	SamWinkler45@email.com								

Your query should produce a data set of three records only.

7. Close the datasheet after reviewing it.

Create a Find Duplicates Query

8. Choose Create→Queries→Query Wizard , choose Find Duplicates Query Wizard, and click OK.

- 9. Click Next to choose the Customers table as the query to search for duplicate field values.
- **10.** Add **CustLastName** to the Duplicate Value Fields list and click **Next**.

You are looking only for the records of customers who have the same last name.

11. Add **CustFirstName** and **CustPhone** to the Additional Query Fields list and click **Next**.

These fields will appear in the resulting datasheet but aren't used in the duplicate values test. Only CustLastName is being checked for duplicates.

12. Name the query Customers with the Same Last Name and click Finish.

The query results show just two customers with the same last name (Roberts).

ĺ	Customers with the Same Last Name									
	🖂 Last Name 👻		First Name 👻	Telephone 🔻						
		Roberts	John	(941) 555-7820						
		Roberts	Ilsa	(941) 555-7821						

13. Close the query after reviewing the results.

Parameter Queries

A parameter query is a select query that prompts users to enter new criteria values each time the query is run. The query then generates results based on the value(s) entered. For example, a parameter query that searches for customers with a specific last name might prompt the user to enter the desired last name when the query is run. The query then returns only records containing the last name entered by the user. Parameter queries are created by enclosing the desired prompt text with square brackets, [], in the query Criteria row.

Field:	InvNum	Invi	Date	CustLastNam	e					
Table:	Invoices	Inv	oices	Customers						
Sort:	Ascending					Surr	ound tl	ne parameter		
Show:			\checkmark		7	quer	y prom	ipt text in		
Criteria:				[Enter Custon	ner Last Name] — squa	ire bra	ckets in a		
or:					1	ר Crite	eria cel	l.		
		Enter Para	meter Value	? X						
						The	promp	t text appears		
		Enter Custo	mer Last Name	2			when	the query is rur		
		Smith				The	user en	ters the desire		
						para	imeter	value here.		
			OK	Cancel						
Custo	mer Invoice Para	ameter								
∠ Inv	Num 🚽 In	voice Date 🝷	Last Namer	Descriptio	on 👻	Price 🝷	Qty -	LineTotal 🝷		
	1	3 /14/2017	Smith	Home Page		\$400	1	\$400		
	1	3 /14/2017	Smith	Web Page		\$200	6	\$1,200		
	1	3 /14/2017	Smith	Image		\$40	11	\$440		

In this example, only records in which the customer last name is *Smith* are returned.

Complex Parameter Queries

Suppose you want to see all items purchased by a particular customer and those equal to or greater than a particular price; for example, all items purchased by Smith with a price greater than or equal to \$300. You can do this by creating an AND condition using parameters in the CustLastName and Price fields.

Field:	InvNum	InvDate	CustLastName	ProdDescription	Price
Table:	Invoices	Invoices	Customers	Products	Products
Sort:					
Show:		\sim		\checkmark	
Criteria:			[Enter Customer Name]		>=[Enter Minimum Price]
or:					

You can also create expressions with prompts for multiple values in the same query field or include logical criteria such as greater than (>), less than (<), and equal to (=).

EXAMPLES OF PARAMETER QUERY CRITERIA FOR A SINGLE FIELD							
Parameter Criteria	Result						
Between [What is the start date?] And [What is the end date?]	These criteria prompt the user to enter start and end dates. Access recognizes the Between and And expressions and returns dates within the range entered.						
>=[Enter minimum price]	This displays the prompt <i>Enter minimum price</i> and returns only records greater than or equal to the price entered.						

DEVELOP YOUR SKILLS: A7-D3

In this exercise, you will use parameters to return customer records based on user input.

- 1. Display the **Customer Invoice Parameter** query in **Design View**.
- 2. Click in the **CustLastName** criteria field and enter the criterion: **[Enter Customer Last** Name]

Field:	InvNum	InvDate	CustLastName
Table:	Invoices	Invoices	Customers
Sort:			
Show:		\checkmark	
Criteria:			[Enter Customer Last Name]
or:			

3. Run the query, type **Roberts** in the parameter box that appears, and click **OK**.

All line items from invoices 34 and 7, where the customer last name is Roberts, are returned.

Create an AND Parameter Condition

Switch to Design View and enter this parameter in the Price criteria box: >=[Enter Minimum Price]

5. Run the query and enter **Roberts** in the first parameter box and **300** in the second.

Now the record set has records only with Roberts in the Last Name field in which the price is greater than or equal to 300.

	Customer Invoice	e Paramet	ter						
\angle	InvNum -	n 🔹 Invoice Date 🝷 Last I		Last Nam 🝷	Description -	Price 🔻	Qty -	LineTotal	*
	3	4 8	3 /4 /2018	Roberts	Home Page	\$400	1	\$400)
	3	4 8	3 /4 /2018	Roberts	Blog	\$300	1	\$300)
		7 7	/10/2017	Roberts	Home Page	\$400	1	\$400	2
		7 7	/10/2017	Roberts	Shopping Cart	\$400	1	\$400)

6. Close the query, saving the changes.

Action Queries

An action query performs an action that modifies a database table or a group of records in a table. They can modify, move, update, or delete groups of records with a single action. You can even use an action query to create a new table by adding various fields and data from other tables.

An action query is run whenever it is opened, so if you create an update query designed to increase prices by 10% on all items in a table, Access will increase those prices every time you run the query. Action queries do this without opening the underlying tables being modified by the query. For this reason, an action query may accidentally be run more than once, inadvertently changing the underlying table data multiple times. It's good practice *to not* save action queries after running them or to delete action queries if they are saved. This will help maintain the validity of the database as changes to the underlying data cannot easily be undone.

Action queries require that content within a database be enabled. As a result, if you did not click the Enable Content button found at the top of the Access window when you first opened the database, Access will display an error message advising you to enable content before you can create or run action queries.

SECURITY WARNING Some active content has been disabled. Click for more details. Enable Content

Make Table Queries

A make table query is an action query that can create a new table using data from multiple database tables. It's also a great way to move data produced from a calculated query field into a table. When you create a new table using a make table query, Access prompts you for a table name and even allows you to save the data in another database. A reason to move records to another database, for example, would be to archive them when they become obsolete, such as when a product is no longer available. When you rerun a make table query, Access will replace the table created with the previous running of the query. To retain the previously created table, you must first rename it; this way it won't be replaced.

📕 Design—Query Type—Make Table 🛅

DEVELOP YOUR SKILLS: A7-D4

In this exercise, you will create a make table action query to save all of the 2017 invoice records in a new table.

- 1. Open Invoices Query in Design View.
- 2. Enter Between 1/1/2017 And 12/31/2017 as the criterion for the InvDate field.

This criterion will produce a datasheet with old invoices no longer needed in the database. You'll then use the make table query feature to move the records to a new table.

Field:	InvNum	InvDate	ProdDescription
Table:	Invoices	Invoices	Products
Sort:			
Show:	\checkmark		
Criteria:		Between #1/1/2017# And #12/31/2017#	
0.0			

- 3. Choose Query Tools→Design→Query Type→Make Table 🛅
- 4. Enter 2017 Invoices as the table name and click OK.
- 5. Run ! the query and choose Yes to paste 61 rows into a new table.

The new table named 2017 Invoices appears at the top of the Tables section in the Navigation pane.

6. Open the new 2017 Invoices table in Datasheet View.

Notice that all of the line items listed have a 2017 invoice date.

- **7.** Close the 2017 Invoices table and then close the invoices query without saving the changes. It's important not to save the query because it's used for other purposes and because you want to preserve the new table without risking an overwrite of it.
- 8. Open the Invoices table in Datasheet View.

The Invoices table still contains the 2017 records.



Make table queries don't remove data from underlying tables; they simply copy the data to new tables.

9. Close the Invoices table.

Append Queries

An append query adds a group of records from one or more tables to the end of one or more tables in the same or in another database. For example, if you want to offer a new set of products, you could use an append action query to add the new items from a new products table to the existing products table. Or you might use an append query to automatically add new customers to the Customers table the first time a customer places an order.

Formatting the Source and Destination Tables

In an append query, the table that records are drawn from is called the source table. The table receiving the records is the destination table. To successfully run an append query, the structures, field names, data types, and field order for both tables should be the same.

Identifying the Source and Destination Tables

Append queries are created in the database that contains the source table. When the query is run, the Append dialog box prompts you to identify the destination database and table. Access identifies the destination table in the Append To row of the query grid.

📕 Design—Query Type—Append 🛃

DEVELOP YOUR SKILLS: A7-D5

In this exercise, you will create an action query to append records from the New Products table to the existing Products table.

- 1. Open the **Products** table and notice that it contains six records.
- **2.** Open the **NewProducts** table to see the five records that will be appended to the Products table.

The tables have the same field structure, which includes field order and matching field names and field data types.

- **3.** Close both tables and then choose **Create**→**Queries**→**Query Design I** to create a new query.
- 4. Add the **New Products** table to the query window and then close the Show Table dialog box.
- **5.** Add all fields from the New Products table to the query grid in the same order they appear in the New Products list.
- 6. Choose Query Tools→Design→Query Type→Append 📥
- 7. Click the Table Name menu button -, choose Products, and click OK.

An Append To row is added to the query. When you run the query, it will copy all records from the underlying New Products table to the Products table. The tables have identical field structures, so the data will drop right into the existing table.

Field:	ProdID	ProdDescription	Price
Table:	New Products	New Products	New Products
Sort:			
Append To:	ProdID	ProdDescription	Price
Criteria:			
or:			

8. Run ! the query and choose Yes to append the five rows to the Products table.

Nothing appears to happen when you run the query—but don't run it again! You will see the changes only after you open the destination table to which the records were appended. If you do run the query again, Access will add the same records to the destination table again, creating duplicate data.

9. Display the **Products** table in **Datasheet View** to verify that the new records were appended.

The Products table should now contain 11 records.

 Close the Products table and then close the new append query, saving it as: Append Products

Update Queries

An update query is an action query that makes global changes to a group of records in one or more tables. For example, you can use an update query to increase the prices for every product in a specific category or to update the area code for phone numbers that change when the phone company adds or changes an area code. To ensure the corresponding fields in related tables are updated consistently, check the Cascade Update Related Fields checkbox in the Edit Relationships window.

Identifying the Query Grid Update Row

Append, update, crosstab, and delete queries all add a query-specific row to the query grid. The update query places an Update To row in the query grid so that you can tell Access how to update the desired field(s). In most cases, this will be changing one value to another by substitution, mathematical operation, formula, or comparison.

 \blacksquare Design \rightarrow Query Type \rightarrow Update \swarrow

DEVELOP YOUR SKILLS: A7-D6

In this exercise, you will create an update action query that increases the prices of every item in the Products table by 10%.

1. Open the **Products** table in **Datasheet View** and notice the Home Page price is \$400.

The update query will increase this and all other prices by 10%.

- 2. Close the Products table and then choose $Create \rightarrow Queries \rightarrow Query Design$.
- 3. Add the **Products** table to the query window and then close the Show Table dialog box.
- **4.** Add all fields from the Products table to the query grid in the same order they appear in the Products list.
- 5. Choose Query Tools \rightarrow Design \rightarrow Query Type \rightarrow Update \checkmark .

An Update To row is added to the query grid.

6. Click in the Update To cell for the Price field and enter: [Price]*1.1

Be sure to include the square brackets, [], when entering this formula so Access will recognize Price as a field. Multiplying by 1.1 increases the price by 10%.

Field:	Products.*	ProdDescription	Price
Table:	Products	Products	Products
Update To:			[Price]*1.1
Criteria:			
or:			

- 7. Run ! the query and choose Yes when the warning prompt appears to update 11 rows.
- **8.** Close the query without saving it.

Once again, it's good practice not to save action queries, such as update queries. Running a query by accident can corrupt data and recovering corrupted data is often difficult or impossible to do.

- **9.** Open the **Products** table in **Datasheet View** and notice the Home Page price went from \$400 to \$440 (an increase of 10%).
- **10.** Close the Products table.

Delete Queries

A delete query removes a group of records from one or more tables. For example, you could create a delete query to remove records for a discontinued line of products or to delete records you have appended to another table to prevent inadvertently running an append query multiple times.

Preparing for Delete Queries

To ensure corresponding records in related tables will be deleted concurrently, check the Cascade Delete Related Records checkbox in the Edit Relationships window. When you set up a delete query, Access replaces the Sort row of the query grid with a Delete row. You can set criteria for specific fields in a table to identify the conditions that must be met in order to delete records, or you can set no criteria to remove all records from a table.

📕 Design—Query Type—Delete 📐

DEVELOP YOUR SKILLS: A7-D7

In this exercise, you will create a delete query to remove the 2017 invoices from the Invoices table.

1. Open the Invoices table in Datasheet View.

The table still has invoices dated from 2017. These invoices were copied to the 2017 Invoices table using a make table query in a previous exercise. Because make table queries do not delete records, you'll take care of this using a delete query.

- 2. Close the Invoices table and then choose **Create** -> **Queries** -> **Query Design**
- 3. Add the Invoices table to the query window and then close the Show Table dialog box.
- 4. Add only the InvDate field to the query grid.
- 5. Enter Between 1/1/2017 And 12/31/2017 as the criterion for the InvDate field.

Access may view typing 2017 as an attempt to insert the 2017 Invoices table. To avoid adding this table to the criteria, tap **Spacebar** at the end of the criteria and then press **Enter**.

6. Choose Query Tools \rightarrow Design \rightarrow Query Type \rightarrow Delete $\boxed{}$

A Delete row is added to the query grid.

7. Run ! the query and choose Yes when the prompt to delete 19 rows appears.

A second warning appears, notifying you that the records cannot be deleted because there is a key violation. This is because the Cascade Deleted Records option is not activated for a relationship between the Invoices and Invoice Details table. This option must be activated for you to run delete queries.

8. Choose No in the warning message box and then choose Database Tools→Relationships→ Relationships ^[-]. **9.** Right-click the join line between the Invoices and Invoice Details table and choose **Edit Relationship**.



- 10. Check the Cascade Delete Related Records box and click OK.
- **11.** Close the Relationships window, saving the changes to the relationship layout if prompted.
- **12.** Run ! the query again, choosing **Yes** when the warning prompt appears.

This time, the delete query runs, removing the 2017 records from the Invoices table.

13. Close the query without saving it.

Remember, it's good practice not to save action queries, especially when they are relatively easy to re-create, as in this example.

- **14.** Open the **Invoices** table in **Datasheet View** and notice that the 2017 invoices have been removed.
- **15.** Close the Invoices table and then close the database.

Self-Assessment

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

🖡 Reinforce Your Skills

REINFORCE YOUR SKILLS: A7-R1

Create Crosstab and Find Queries

Kids for Change is fine-tuning its database. In this exercise, you will create a crosstab query to track donations and find queries to locate problem records.

- Open the A7-R1-K4C database from your Access Chapter 7 folder and save it as: A7-R1-K4CRev
- 2. Choose Create→Queries→Query Wizard , choose Crosstab Query Wizard in the first screen, and click OK.
- **3.** Choose the **Queries** view, choose **Donations Query** as the query that contains the fields you want in the results, and click **Next**.
- **4.** In the next Wizard screen, move **DonorLName** to the Selected Fields list and click **Next**. Donor last names will become your row headings and the field where the results are grouped.
- 5. In the next Wizard screen, choose only **DonationDate** as the field to appear in the column headings and click **Next**.

Because DonationDate is a date field, the Wizard asks you to choose an interval, such as day, month, or year.

- 6. Choose Month as the interval and click Next.
- **7.** Choose **Amount** in the Fields list and **Sum** in the Functions list to identify the field that contains values and the function you want to use.
- 8. Click Next, leave the query name unchanged, and then finish the query.

The query returns the total donations for each donor, organized by month.

9. Close the query.

Create a Find Unmatched Records Query

- 10. Launch the Query Wizard, choose Find Unmatched Query Wizard, and click OK.
- **11.** Choose the **Activities** table and click **Next**.

The Activities table will display in the query results.

- **12.** Choose **Volunteers** as the table with related records and click **Next**.
- **13.** Choose **Day** in the Activities table field list and **VolDay** in the Volunteers table field list and then click **Next**.
- 14. Add Activity, Day, and MeetTime to the Selected fields list and then click Next.
- **15.** Click **Finish** to accept the default query name.

Your query should return four records of activities that do not have a matching volunteer assigned to them.

16. Close the query when you have finished viewing the results.

Create a Find Duplicates Query

- 17. Launch the Query Wizard, choose Find Duplicates Query Wizard, and click OK.
- **18.** Choose **Donors** as the table to check for duplicates and click **Next**.
- **19.** Add **DonorLName** to the Duplicate-Value Fields list and click **Next**. You are looking only for records of donors with the same last name.
- 20. Add DonorFName and DonorPhone to the Additional Query Fields list and click Next.
- **21.** Accept *Find Duplicates for Donors* as the default query name and click **Finish**. *The query should return records for Clay Boltwood and Nancy Boltwood.*
- **22.** Close the database, saving the changes to any unsaved queries.

REINFORCE YOUR SKILLS: A7-R2

Create a Parameter Query

In this exercise, you will make a copy of an existing query. You will modify the copied query, turning it into a parameter query to return donor records by state.

- Open the A7-R2-K4C database from your Access Chapter 7 folder and save it as: A7-R2-K4CRev
- 2. Click Donations Query in the Navigation pane to select it.
- **3.** Press Ctrl + C to copy and Ctrl + V to paste the copy.
- 4. Enter Donations by State as the new query name and click OK.
- 5. Display the Donations by State query in Design View.
- 6. Type [Enter State Abbreviation] in the Criteria cell of the DonorST field and tap [Enter] to complete the entry.

Field:	DonorID	DonorLName	DonorFName	DonorStreet	DonorCity	DonorST
Table:	Donations	Donors	Donors	Donors	Donors	Donors
Sort:	Ascending					
Show:			\checkmark	\checkmark	\checkmark	\checkmark
Criteria:						[Enter State Abbreviation]
or:						

- 7. Run ! the query.
- 8. Type **MA** in the Parameter Value prompt box and click **OK**.

Only donations from Massachusetts donors are returned.

- **9.** Close the query, saving the changes.
- **10.** Choose **File**→**Close** to close the database; if you see a message regarding emptying the Clipboard, click **Yes**.

REINFORCE YOUR SKILLS: A7-R3

Create Action Queries

Kids for Change is improving and updating its records. In this exercise, you will create a make table query that produces a table to archive the 2017 donation records, a query that appends new records to the Children table, an update query that reduces the duration of each activity by half, and a query that deletes old donations from the Donations table.

 Open the A7-R3-K4C database from your Access Chapter 7 folder and save it as: A7-R3-K4CRev

Remember, you must enable a database if you will be running action queries, so click the Enable Content button that appears after saving the file.

To begin, you will create the make table query.

- 2. Open Donations Query and switch to Design View.
- **3.** Scroll the query grid to the right and type **Between 1/1/2017 And 12/31/2017** in the Criteria cell of the DonationDate field.
- **4.** Choose **Query Tools**→**Design**→**Query Type**→**Make Table**
- 5. Type 2017 Donations as the name of the new table and click OK.
- 6. Run ! the query and choose Yes in the warning box.
- 7. Close the Donations Query without saving the changes.

Create an Append Query

- 8. Open the **Children** table and notice that it contains 17 records; close the table.
- 9. Choose **Create** → **Queries** → **Query Design** to create a new query.
- 10. Add the NewChildren table to the query window and then close the Show Table dialog box.
- **11.** Add all fields from the NewChildren table to the query grid in the same order they appear in the NewChildren list.
- **12.** Choose Query Tools \rightarrow Design \rightarrow Query Type \rightarrow Append +.
- **13.** Click the **Table Name menu** button *▼*, choose **Children**, and click **OK**.

The Append To row is added to the query grid.

- **14.** Run ! the query and choose **Yes** to add the 10 rows to the Children table.
- 15. Close the query, saving it as: Append New Children

Create an Update Query

- **16.** Display the **Activities** table in **Datasheet View** to see the current Hrs values (*2 or 4 hours*) and then close the table.
- **17.** Choose Create \rightarrow Queries \rightarrow Query Design $\boxed{}$.
- **18.** Add the **Activities** table and close the Show Table dialog box.
- **19.** Add the **Hours** field to the query grid.
- **20.** Choose Query Tools \rightarrow Design \rightarrow Query Type \rightarrow Update \mathbb{Z}_{+}^{1} .

An Update To row is added to the query.

21. Type **[Hours]/2** in the Update To cell of the Hours field.

It's important to include the square brackets so that Access can perform the correct calculation. This calculation will divide the current activity hours value in half.

- 22. Run ! the query and choose Yes to update 25 rows; close the query without saving it.
- **23.** Open the **Activities** table and note the activities that were listed as 2 and 4 hours each are now 1 and 2 hours; close the table.

Create a Delete Query

- **24.** Open the **Donations** table and notice it contains donations from the year 2017; close the Donations table.
- **25.** Choose Create \rightarrow Queries \rightarrow Query Design **Sector**.
- 26. Add the **Donations** table to the query and then close the Show Table dialog box.
- 27. Double-click the **DonationDate** field to add it to the query grid.
- 28. Type Between 1/1/2017 And 12/31/2017 in the Criteria row for the DonationDate field.
- **29.** Choose Query Tools \rightarrow Design \rightarrow Query Type \rightarrow Delete \downarrow .

A Delete row is added to the query grid.

- **30.** Run ! the query and choose **Yes** in the warning box.
- **31.** Close the query without saving it and then open the **Donations** table and confirm that the 2017 records have been removed.
- **32.** Close the database.

🗞 Apply Your Skills

APPLY YOUR SKILLS: A7-A1

Create Crosstab and Find Queries

Universal Corporate Events has asked you to create queries to analyze the company's data and identify unmatched and duplicate database records. In this exercise, you will respond to this request by creating crosstab, find unmatched records, and find duplicate records queries.

- Open the A7-A1-UCE database from your Access Chapter 7 folder and save it as: A7-A1-UCERev
- 2. Use the Query Wizard to create a crosstab query using these parameters:

View	Query: Event Revenue
Row Heading(s)	VenueID
Column Heading(s)	ContactID
Field(s)	TotalRev
Function(s)	Sum
Name	Contact Revenue by Venue

3. Finish the query.

Seven data rows should be returned.

4. Close the query and then use the **Query Wizard** to create a find unmatched query using these parameters:

View	Table: Venues
Related Records	Table: Schedules
Fields in Venues	VenueID
Fields in Schedules	VenueID
Fields to see in query results	VenueName, VenueStreet, VenueCity, VenueST, VenueZIP, VenuePhone, VenueWebSite
Name	Venues Without Event Scheduled

5. Finish the query.

Three data rows should be returned.

6. Close the query and then use the **Query Wizard** to create a find duplicates query using these parameters:

View	Query: Event List
Duplicate-Value Field	EventDate
Additional Fields	VenueID, ContactID, MenuPlan, Guests
Name	Find Double-Booked Dates

7. Finish the query.

Two data rows should be returned.

8. Close the database.

APPLY YOUR SKILLS: A7-A2

Create a Parameter Query

In this exercise, you will create a parameter query to return personnel records by city.

- Open the A7-A2-UCE database from your Access Chapter 7 folder and save it as: A7-A2-UCERev
- 2. Create a new query using **Query Design** and add the **Personnel** table to the query.
- 3. Add the PerLastName, PerFirstName, PerAddr, PerCity, PerPhone, and PerEmail fields to the query.
- 4. Make [Enter City] a criterion for the PerCity field.
- 5. Run the query using **Sarasota** as the parameter value.

The query should return five records in which the city is Sarasota.

6. Close the database, saving the query as: **Personnel City**

APPLY YOUR SKILLS: A7-A3

Create Action Queries

Universal Corporate Events is updating and consolidating its events data. In this exercise, you will create a make table query to archive the records for older events, an append query to add new records to the Schedules table, and an update query to change personnel salaries. Finally, you will create a query to delete older events from the main Schedules table.

 Open the A7-A3-UCE database from your Access Chapter 7 folder and save it as: A7-A3-UCERev

You will start by creating a make table query.

- Display Schedules Query in Design View and add the criterion <01/01/2019 to the EventDate field.
- 3. Use the Make Table query type to create a new table with the name: Older Events
- **4.** Run the query.

The new table should contain six records.

5. Close the Schedules Query without saving the changes.

Create an Append Query

- 6. Create a new query, adding all fields from the New Schedules table.
- **7.** Use the **Append** query type to convert the query to an append query using **Schedules** as the table name to append to.
- **8.** Run the query, choosing **Yes** when asked if you wish to add the 30 rows to the Schedules table.
- 9. Close the query, saving it as: Append Schedules
- **10.** Open the **Schedules** table to verify it contains 72 records; close the table.

Create an Update Query

- **11.** Create a new query using the **SalaryGrades** table and adding only **SalaryAmt** to the query grid.
- **12.** Use the **Update** query type to add an Update row to the query.
- **13.** Use an update criterion that multiplies the SalaryAmt field by: **1.07** *This will produce a 7% increase to the numbers in the SalaryAmt field.*
- 14. Run the query, choosing Yes to update 21 records.
- 15. Close the query, saving it as: Salary Updates
- **16.** Close the SalaryGrades table.

Create a Delete Query

- 17. Create a new query using only the EventDate field from the Schedules table.
- **18.** Use the criterion **<1/1/2019** in the EventDate field.
- **19.** Use the **Delete** query type and then run the query, choosing **Yes** to delete six records.
- **20.** Close the new query without saving it.
- **21.** Open the **Schedules** table to verify all records with an event date prior to 1/1/2019 have been deleted and then close the database.

🖹 Project Grader

PROJECT GRADER: A7-P1

Taylor Games: Updating Inventory

Taylor Games has new inventory it would like to add to its database. It has noticed that the selling prices for some of the new items are above or below the desired profit margin and need to be updated. In this exercise, you will start by using an append query to merge data with new inventory into the inventory table. Then, you will create a calculated field and a complex parameter query with criteria to identify which items are below and above the desired margin and make a new table using the results. Last, you will make an update query and modify the sales price so all items are within the desired margin.

- **1.** Download and open your Project Grader starting file.
 - Using eLab: Download **A7_P1_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A7_P1_Start from your Access Chapter 7 folder.
- 2. Use these guidelines to create an Append query:
 - Create a new query adding all fields from the **New Inventory** table.
 - Append to the **Inventory** table in the current database.
 - Run the query to complete the append action, then save the query with the name: **Inventory Append**
- 3. Create a new query named Margin Parameter that uses all fields from the Inventory table.
- 4. In the **Margin Parameter** query, add a calculated field named **Margin** that calculates: Cost/Price
- 5. Add this parameter to the Margin Parameter query: Between [Enter Minimum Margin] And [Enter Maximum Margin]
- 6. In the Margin Parameter query, use the **Make Table** action to make a table in the current database with the Table Name: **Items Within Margin**
- **7.** Run the query to create the Items Within Margin table using these minimum and maximum margin numbers:
 - Enter Minimum Margin: 0.5
 - Enter Maximum Margin: 0.75
- **8.** Use these guidelines to create an Update query:
 - Add only the **Price** field from the Inventory table to the query grid.
 - Set the Update To criteria as: [cost]*1.5
 - Run the query and save it as: Margin Update
- 9. Save your database.
 - Using eLab: Save it to your **Access Chapter 7** folder as **A7 P1 eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 7 folder as: A7 _ P1 _ Submission

PROJECT GRADER: A7-P2

WebVision: Create a Crosstab Query and Update Orders

WebVision has noticed some discrepancies in recent orders and customer records. It would also like to see the total sales for each sales rep for the customers they service. In this exercise, you will start by creating a Crosstab query. Then, you will create a Find Unmatched query to track down orders that do not contain any details and a Delete query to remove the incomplete orders. Last, you will create a Find Duplicates query to find duplicate customer records.

- **1.** Download and open your Project Grader starting file.
 - Using eLab: Download **A7_P2_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A7_P2_Start from your Access Chapter 7 folder.
- 2. Use these guidelines to create a Crosstab query using the Crosstab Query Wizard:
 - Contains fields from the **OrderDetails** query.
 - Use the **RepID** field for row headings.
 - Use the Company Name field for column headings.
 - Calculate each column and row intersection using the Sum function on the Line Total field.
 - Name the query: Rep Sales by Customer
- 3. Make these changes to the **Rep Sales by Customer** query:
 - Change the name of the Total of Line Total field to: **Total**
 - Set the Format field property to **Currency** for both the **Line Total** and **Total** fields.
- 4. Use these guidelines to create a Find Unmatched query:
 - The **Orders** table contains the records in the query results.
 - The Order Details table contains the related records.
 - Use the **OrderID** field in the Orders table and the **Order ID** field in the Order Details table as the matching fields.
 - Show all available fields in the query results.
 - Name the query: Orders Without Details
- 5. Use these guidelines to create a Delete query:
 - Base the query on the **Order Details** table.
 - Add Order ID to the query grid.
 - Set Criteria to delete records where the **Order ID** is greater than **5**.
 - Run the query and click **Yes** when prompted.
 - If performed correctly, you will see a prompt notifying you that you are about to delete two rows.
 - Save the query with the name: Incomplete Order Delete
- **6.** Use these guidelines to create a Find Duplicates query:
 - Search the **Customers** table for duplicate values.
 - Use **Billing Address**, **City**, **State/Province**, and **Postal Code** for fields that may contain duplicate information.
 - Add all remaining available fields to the Additional Query Fields list.
 - Name the query: Duplicate Customers

- **7.** Save your database.
 - Using eLab: Save it to your **Access Chapter 7** folder as **A7 P2 eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 7 folder as: A7 _ P2 _ Submission

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

A7-E1 That's the Way I See It

You would like to make several enhancements to the Blue Jean Landscaping database to ensure more accurate data in query results. Open **A7-E1-BJL** and save it as: **A7-E1-BJLRev**

Make a copy of the Service Invoices Query, naming it *Acre Rate Range*, and then modify it to add a parameter that prompts the user to enter the rate per acre. The query should return only records that match the acre rate entered by the user. The second update is to the StoreMerchandise table. Create a *New Merchandise* append query that appends all records from the NewMerchandise table to the StoreMerchandise table. Verify that your queries function properly.

A7-E2 Be Your Own Boss

Business has picked up at Blue Jean Landscaping! You're modifying the database to ensure efficiency and to cope with unexpected situations. Open **A7-E2-BJL** and save it as: **A7-E2-BJLRev**

Use the Store Inventory query as the basis for a new query named *Manufacturer Item Inventory* that prompts the user to enter a manufacturer and returns all records for that manufacturer. Create a *2019 Sales* query that creates a new table containing all 2019 sales records from the Merch Sales query. Finally, create a *New Customers* append query that appends all records from the NewCustomers table to the Customers table.

A7-E3 Demonstrate Proficiency

Stormy BBQ has asked you to refine the merchandising section of its database to reflect recent price changes and move older records. Open **A7-E3-SBQ** and save it as: **A7-E3-SBQRev**

Create a query to copy the 2018 merchandise sales records from the MerchSales table into a new table and then create a delete query to remove those records from the MerchSales query. Decide what names to assign to the new table and to either of the two queries you choose to save. Create a query that increases the list prices of all items in the Merchandise table by 5%. You decide whether to save the query after running it (and which name to use, if you save it).



Customizing Reports

atabase reports summarize the data contained in tables or displayed in query results and enable you to provide information in a page layout suitable for printing. Although forms and reports serve different purposes within the context of a relational database, the techniques used to customize them are similar. In this chapter, you will import reports from other databases and use features to create custom reports.

LEARNING OBJECTIVES

- Import a report into a database
- > Add a subreport to a main report
- Create a report from a subreport
- Create calculated controls on a subreport
- Set page breaks in reports
- Add a chart to a report

Project: Billing Customers

The company manager of Winchester Web Design, a small web page design company, wants you to improve its invoice report for customer billing. After reviewing invoices from several companies, the company manager has sketched out a design for the new invoice report layout. Your job is to create a sample of the new invoice report for the company's executive team.

Importing a Report into a Database

Access offers a variety of ways to create reports. In addition to using the Report Wizard or starting from scratch in Design View, you can import reports from another database. Because most companies require some type of invoice to send with customer orders, locating a sample invoice report to import is not difficult.

Sometimes you have the report you want, but during its design it may have become corrupted, either due to inadvertent changes to the report itself or because of changes to an underlying query. That's when backups are invaluable. If a report becomes corrupted, you can restore it by importing database objects from a backup copy of a database. The record source should already match, and there should be no need to edit the properties or the field names.

Identifying Report Record Sources

Reports you import retain two connections to their original database. The first is the source database table or query name, shown in the Record Source property, and the second are the field names, which appear in report text boxes. As a result, when you import a report from another database, you often must establish new control sources to the destination database. You can accomplish this by:

- Editing the imported report's Record Source property to link to a table or query in the destination database.
- Editing, if necessary, the field names in the imported report's text boxes to match those in the new record source table or query.

📕 External Data—Import & Link—New Data Source—From Database—Access 🚮

DEVELOP YOUR SKILLS: A8-D1

In this exercise, you will import a report from a backup copy of a database. You will rename the report and view data from an existing table using the imported report.

- 1. Open A8-D1-WinDesign from your Access Chapter 8 folder and save it as: A8-D1-WinDesignRev
- **2.** Look in the Reports section in the Navigation pane and notice the database contains three reports.
- **3.** Choose **External Data**→**Import & Link**→**New Data Source**→**From Database**→**Access** *The Get External Data* – *Access Database dialog box appears.*
- 4. Click the **Browse** button and navigate to your **Access Chapter 8** folder.

5. Choose the file A8-D1-WinDesign-Backup and click Open.

This database is a backup copy of the WinDesign database.

- **6.** Leave the **Import tables, queries, forms, reports** storage setting selected and click **OK**. Access opens the Import Objects dialog box and displays object names contained in the backup database in tabbed groups.
- 7. Click the **Reports** tab, choose **Customer Invoices**, and click **OK**.
- 8. Leave the Save Import Steps box unchecked and click **Close**.

The Customer Invoices report is added to the Reports section of the Navigation pane.



- 9. Double-click the Customer Invoices report to open it in Report View.
- **10.** Scroll down as necessary to see the empty space between the customer information and signature blocks.

This is a great spot to insert a subform/subreport that includes the invoice detail lines.

Adding a Subreport to a Main Report

Subreports display subsets of data in reports and are derived from related database tables, similar to subforms on forms. However, a subreport can display table data by using a table, query, form, or another report as its source object. Forms are frequently created before reports and often already display the required report data. To streamline the report design and layout, it's best to use a subform as the basis of a subreport.

	Winchester We Customer In	b Design ivoice	10/19/2018
Invoice Number	42	Invoice Date	12/5/2018
Last Name	Abrams	Customer ID	AbramsJ
First Name	John	Customer Phone	(941) 555-9902
Street Address	1210 West Pier Way	Email	JPAbrams@email.com
City	Palmetto		
State	FL		
ZIP	34620		
Invoice Details			
Winches	ter Web Design Invoice Details		
1 01HP Ho	ome Page, Nav, CSS, Design \$40	00.00 1 \$4	00.00
2 02SP Se	condary Page \$20	00.00 5 \$1,0	00.00
	Invoice Total	\$1,4	00.00

This invoice report uses a subform to display invoice details.

Adding a Subreport

The procedures used to add a subreport to a report are basically the same as those used to add a subform to a form. You can create the subreport using the Report Wizard or add an unbound subreport control to the report. Then you identify the database object containing the fields you want to display as a subreport.



View the video "Adding a Subreport Using the Wizard."

🗧 Report Design Tools→Design→Controls→Subform/Subreport 🗐

DEVELOP YOUR SKILLS: A8-D2

In this exercise, you will add a subreport to the Customer Invoices report. You will use the InvoiceDetails subform as the source for the subreport.

- **1.** Display the **Customer Invoices** report in **Design View**.
- 2. Choose **Report Design Tools**→**Design**→**Controls**→**Subform/Subreport** (at the bottom of the controls list).

3. Click just below the ZIP label to insert a control and launch the **SubReport Wizard**.

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- 4. Choose the Use an Existing Report or Form option.
- 5. Choose InvoiceDetails Subform from the list and click Next.
- 6. Click **Next** again to accept the *Choose from a list* linking method.
- **7.** Click **Finish** to accept *InvoiceDetails Subform* as the name. *The subform is inserted in the report.*

Set Properties

- Display the Property Sheet, if necessary, and click the Data tab. Notice the Source Object is set to Form.InvoiceDetails Subform.
- 9. Switch to the Format tab in the Property Sheet and set these properties:

Property	Setting	_
Width	5.6	
Height	1.5	
Тор	2.9	_
Left	0.5	
		_

10. Click the **InvoiceDetails Subform** label, which is just below the ZIP label, and set these properties:

Property	Setting
Caption	Invoice Details
Width	1.2
Height	0.30
Тор	2.5

Property	Setting
Left	0.5
Font Name	Arial Rounded MT Bold
Font Size	10
Fore Color	Blue Accent 1 Darker 50%

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		11	
Standard	Colors		

- 11. Switch to Report View to see your completed report.
- **12.** Use the Navigation bar and the scroll bar to review the database records.

The information in both the report and the subform changes each time a new record is displayed.

13. Close the report, saving the changes.

Creating a Report from a Subreport

Using a subform as the record source for a subreport is convenient because the subform already includes the needed data. However, when a subreport uses a form as the record source, any changes made to the subreport layout are reflected in the source form. If you don't want the source form to be changed, you can save the subreport as a separate report in the database, change the main report's Record Source property to the new report object, and then edit the subreport.

Access allows you to save an existing form as a new form and an existing report as a new report. When a subform is used as the record source for a subreport, you can open the subreport in a separate window and save it as a separate report.

File \rightarrow Save As \rightarrow Save Object As \rightarrow Save As

DEVELOP YOUR SKILLS: A8-D3

In this exercise, you will create and save a new report based on the subreport from the Customer Invoices report. You will then edit the source object property in the main report to display the new subreport.

- 1. Open InvoiceDetails Subform from the Forms section of the Navigation pane.
- Choose File→Save As, choose Save Object As from the File Types list, and then click the Save As button in the right pane.
- **3.** Type **WWD Customer Invoices Subreport** as the name, choose **Report** from the As drop-down list, and click **OK**.

A new report is added to the Reports section of the Navigation pane.

- 4. Close the InvoiceDetails Subform.
- 5. Open the new WWD Customer Invoices Subreport in Design View.
- 6. Display the Property Sheet, if necessary, and then click the **All** tab and type **Customer Invoices Subreport** as the caption.

Create a Title for the Subreport

7. Choose Report Design Tools→Design→Header/Footer→Title.

Access places a title and empty placeholder controls in the Report Header.

8. Type Winchester Web Design Invoice Details in the title control and tap Enter.

9. Set these property values for the new title control:

Property	Setting
Width	3
Height	0.25
Left	1
Font Name	Arial
Font Size	12
Text Align	Center

 Click the **Report Header** section bar and set the Height property to: 0.3069

Inserting the title in the header widens the subreport, so you will now reset the width.

11. Click the report selector button and set the Width property to: **5.6**

	WWD Customer Invoices Subreport
(•	1 2
	F Report Header
-	Winchester Web I



- Close the subreport, saving the changes, and then open the Customer Invoices report in Design View.
- **13.** If necessary, display the Property Sheet and click the **Data** tab.
- **14.** Click the subreport to select it.
- **15.** Click in the **Source Object** property box.

A drop-down menu button appears at the far right of the property box.

- **16.** Choose **Report.WWD Customer Invoices Subreport** from the drop-down menu.
- **17.** Switch to **Report View** to see how the new subreport looks.

Notice the change in appearance compared to the subform used previously.

- **18.** Scroll through the report, seeing how the subreport always shows the correct invoice details.
- **19.** Close the Customer Invoices report, saving the changes.



Numbering Items in a Report

As the number of records in a table grows, the length and number of records in a report or subreport also grows. You can number the records in a report to help track the items listed. If a report is grouped, you can set the count to restart numbering at the beginning of each group.

Setting Properties to Number Items

By adding a text box to the Detail section and setting its Control Source property to =1, you can automatically number items in a report. In addition, you can set the Running Sum property to identify the portion of a report for which you want to count items. For example, suppose you have an invoice report that groups services by invoice number. You can set the Running Sum property to count the items in each group and then start counting again with the next group.

Numbering Subreports Separately

Access does not permit numbering items in a subreport control on a main report. However, because you saved the subreport as a separate report, you can add the numbering controls directly to the subreport by opening it in a separate window. Any edits you make when it is open as a separate item are reflected in the main report the next time you open it.

DEVELOP YOUR SKILLS: A8-D4

In this exercise, you will reposition the controls in the WWD Customer Invoices Subreport page header and add a text box control to count the number of line items.

- 1. Display the WWD Customer Invoices Subreport in Design View.
- 2. Right-click the **Detail** section bar and choose **Page Header/Footer**. You will add labels to the Page Header section.
- 3. Click the Page Header section bar and change the Height property to: 0.3
- **4.** Select the **ProdID** label in the Detail section and use **Ctrl** + **X** to cut the control.
- 5. Click in the **Page Header** section bar and use [Ctrl] + [V] to paste the label.
- 6. With the **ProdID** label still selected, set both the Width and Left properties to: 0.5
- **7.** Use the procedure in steps 4–6 to move the **Description**, **Price**, **Qty**, and **LineTotal** labels one at a time into the Page Header section, setting the Width and Left properties as follows:

	Property	Width	Left
2	Description	2	1.25
	Price	0.75	3.5
	Qty	0.3	4.5
	LineTotal	0.75	5

8. If necessary, click the **Description**, **Price**, **Qty**, and **LineTotal** labels and use the up arrow key to nudge them so they're vertically aligned with the ProdID label.

✓ Page Header		
ProdID: Description	Price	Qty Line Total

Move and Resize Report Text Box Controls

9. Set these property values for the text boxes in the Detail section:

Text Box Control	Width	Тор	Left
ProdID	0.5	0.1	0.5
ProdDescription	2	0.1	1.25
Price	0.75	0.1	3.5
Qty	0.3	0.1	4.5
LineTotal	0.75	0.1	5

- 10. Click the Detail section bar and set the Height property to: 0.5
- **11.** Click the **Selection Type menu** button \checkmark at the top of the Property Sheet and choose **Report**.
- **12.** Set the Width property to: **6**

_							
F	WWD Customer Invoices Subreport	×	Drop	orty C	hac	.+	
		• 🔺	FIUP	erty 5	nee	3U -	
			Selection	type: Rep	oort		
	Report Header	_					
:	Winchester Web Design Invoice Details		Report				\sim
	✓ Page Header						
	ProdID Description Price Otv Line Total		Format	Data E	vent	Other	All
-			Caption		1	nvoices S	ubform
			Default V	/iew	F	Report Vi	ew
			Allow Re	port View	1	/es	
-	Prod v ProdDescription Price Qty=[Price]*[Q		Allow Lay	yout View	۱	/es	
-			Picture Ty	ype	E	Embedde	d
	✓ Page Footer		Picture		((none)	
_		I	Picture Ti	iling	1	No	
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Gr	oup. Sort. and Total	×	Picture Si	ize Mode	(Clip	
-			Width		6	6"	
			Auto Cer	nter	1	No	

13. Switch to **Report View**.

There is room for a small field to the left of the ProdID field, which is where you will insert numbering.

Add and Format a Text Box

- **14.** Switch to **Design View** and choose **Report Design Tools** \rightarrow **Design** \rightarrow **Controls** \rightarrow **Text Box** $\xrightarrow{\text{abl}}$.
- **15.** Click to the left of the ProdID text box in the Detail section to position the new box in that area. *The precise location is not important, as you will set the position, using specific properties, in a moment.*



16. Click the new label control and tap **Delete** to remove it.

You may need to move your new text box if it is obscuring the label.

-	ProdDescrip
-	C DOULD
:	Description

17. Click the new text box control and set these property values using the **All** tab in the Property Sheet:

Property	Setting
Name	txtCount
Width	0.3
Тор	0.1
Left	0.1
Back Style	Transparent
Border Style	Transparent

Set Control Properties to Sum

- Click the Data tab and set the Control Source property to =1 and the Running Sum property to Over Group.
- **19.** Switch to **Report View** and scroll through the report.

Notice that the numbering continues sequentially throughout the report.

- **20.** Close the WWD Customer Invoices Subreport, saving the changes.
- 21. Display the Customer Invoices report in Design View.
- 22. Click the InvoiceDetails Subform and set the Width property to: 6
- **23.** Switch to **Print Preview** and use the navigation bar to review the various report pages. *Each invoice begins on a new page and the invoice detail line items begin at number 1 for each invoice.*
- 24. Close Print Preview and then close the Customer Invoices report, saving the changes.

Creating Calculated Controls on a Subreport

Reports summarize data in tables and queries to present useful, organized information. This means that a report would typically show subtotals, grand totals, and averages to summarize a specified group of data. You can do this by adding calculated controls.

Positioning Calculated Controls

Calculated controls are built-in reports using the Control Source property of an unbound text box control to which you add a formula. The section or group where a calculated control is placed determines how Access performs the calculation.
A calculated control in a Detail section performs a calculation for each detail line.



A calculated control in a Group Footer section calculates the total for the group.

A calculated control in a Page Footer section calculates the total for the page.

A calculated control in a Report Footer section calculates the total for the entire report.

DEVELOP YOUR SKILLS: A8-D5

In this exercise, you will add a calculated control to the report footer section in the WWD Customer Invoices Subreport.

- 1. Display the WWD Customer Invoices Subreport in Design View.
- 2. Click the Report Footer section bar and set the Height property to: 0.3

✓ Detail	Height	0.3
	Back Color	Background
Prod ProdDescription Price Qty =[Price]*[Q	Special Effect	Flat
	Auto Height	No
✓ Page Footer	Can Grow	No
	Can Shrink	No

- **4.** Click anywhere in the **Report Footer** section.
- 5. Switch to the All tab in the Property Sheet and set these properties for the new text box control:

Property	Setting
Name	CustomerTotal
Control Source	=Sum([Price]*[Qty])
Format	Currency
Height	0.25
Тор	0
Left	4.75

6. Click the new label control and set these property values:

Property	Setting
Caption	Invoice Total
Width	1.2
Height	0.25
Тор	0
Left	3
Fore Color	Text Dark

- 7. Close the subreport, saving the changes.
- 8. Display the **Customer Invoices** report in **Report View**.

nvoice Details										
Win	chester Web Design Invoice Details									
1 01HP	Home Page, Nav, CSS, Design \$400.00	1 \$400.00								
2 02SP	Secondary Page \$200.00	5 \$1,000.00								
	Invoice Total \$1,400.00									

Growing and Shrinking a Subreport

When the number of records or amount of data displayed in a subreport varies, you can set the Can Grow and Can Shrink properties to allow the subreport space to expand or shrink so more data displays vertically. You can also change the orientation of the print layout to allow more horizontal space on each report page.

The subform without the Can Grow property enabled displays less vertical data, requiring a scroll bar.

		Winch	nester Web Design Invoice Det	ails								
	1	01HP	Home Page, Nav, CSS, Design	\$400.00	1	\$400.00						
	2	02SP	Secondary Page	Secondary Page \$200.00 5 \$1,00								
						•						
•						Þ						
		Winch	nester Web Design Invoice Det	ails								
	1	01HP	Home Page, Nav, CSS, Design	\$400.00	1	\$400.00						
	2	02SP	Secondary Page	\$200.00	5	\$1,000.00						
			Invoic	e Total		\$1,400.00						
					~							

The subform with the Can Grow property enabled is expanded to display more vertical data.

DEVELOP YOUR SKILLS: A8-D6

In this exercise, you will adjust the margins of the Customer Invoices report and set the Can Grow and Can Shrink properties. These properties will adjust the size of the subreport to fit the contents.

1. Display the **Customer Invoices** report in **Design View**.

- **2.** Choose **Report Design Tools** → **Page Setup** → **Page Size** → **Margins** → **Narrow**.
- 3. Click the InvoiceDetails Subreport.
- 4. If necessary, display the Property Sheet; on the **Format** tab, set the Can Grow property to **No**.
- 5. Switch to **Report View** and scroll through the report.

The subform now displays a vertical scroll bar in order to view additional records.

- 6. Switch to Design View and click the InvoiceDetails Subreport.
- **7.** Click the **Format** tab on the Property Sheet and, if necessary, set the Can Grow and Can Shrink properties to **Yes**.
- 8. Switch to **Report View** and scroll through the report.

The subreport grows and shrinks to best fit the contents.

9. Save the report.

Setting Page Breaks and Customizing Controls

As you view the Winchester Web Design Customer Invoices report in Report View, you may notice that the number of invoice records displayed on each screen varies depending on the number of items ordered. To ensure each customer invoice starts on a new page, you can add a page break control. By default, when you view a report in Print Preview, data for each customer/record automatically appears on a separate page; however, multiple records appear on the same page when the report is displayed in Report View.

To add a title or general company information to an invoice, place title controls in the Page Header rather than the Report Header, which prints only on the first page.



Add the page break at the end of the Detail section so Access knows to start a new page before printing the next page header.

📕 Report Design Tools→Design→Controls→Insert Page Break 💾

DEVELOP YOUR SKILLS: A8-D7

In this exercise, you will modify the Customer Invoices report by adding a title and the current date as well as setting up page breaks to print each invoice on a separate page.

1. Display the **Customer Invoices** report in **Design View**.

To begin, you will modify the report title.

- **2.** Click the **Customer Invoice** title control in the Page Header section and then click just in front of *Customer* to position the insertion point there.
- **3.** Type **Winchester Web Design** and then press **Shift** + **Enter** to force *Customer Invoice* to a second line.
- **4.** Click an empty area in the Page Header section and then click the title control once more to select it.
- **5.** Set the Width property to **4** and the Left property to **2**.

ACCESS

Add a Date Control

In the next few steps, you will insert a date that will display in the report header.

- 6. Choose Report Design Tools \rightarrow Design \rightarrow Header/Footer \rightarrow Date and Time \square .
- 7. Choose the third date option **MM/DD/YYYY** format, remove the check from the **Include Time** box, and click **OK**.

Access places the new date control in the Report Header section. Next, you will move the date to the Page Header section so it appears on every page rather than just the first page of the report.

- **8.** Select the date control and press $\boxed{CtrI} + \boxed{X}$ to cut it from the report header.
- 9. Click the **Page Header** section bar and press $\boxed{Ctrl} + \boxed{V}$ to paste the date into the page header.
- **10.** Set these properties for the date control:

Setting
2
0.2
0.4
5.8

Add a Page Break Control

- **11.** Scroll to the bottom of the Detail section.
- **12.** Choose **Report Design Tools** \rightarrow **Design** \rightarrow **Controls** \rightarrow **Insert Page Break**
- **13.** Place the page break in the Detail section just above the Page Footer section bar.



14. Switch to **Print Preview** and use the navigation bar to browse the pages.

The date appears on each invoice because you added it in the Page Header section. Each invoice begins on a new page. Sometimes it's not necessary to add a page break to a report and doing so may add an unneeded page. If this occurs in your report, remove the page break.

15. Close Print Preview and then close the report, saving the changes.

Adding Charts

Summarized and numerical data is often displayed visually using a chart. By adding a chart to a report, the information and relationships between report data is more easily interpreted. While you can add charts to reports and forms, they're more commonly used in reports. Access offers multiple chart types, including column, bar, line, and pie, among others.

You can insert charts using the Chart control or the Insert Chart command.

📕 Report Design Tools→Design→Controls→Insert Chart 嶋

Formatting Modern Charts

You can format and modify common settings using either the Property Sheet or the Chart Settings task pane, which means formatting charts in Access is similar to formatting charts in other Microsoft Office applications, like Excel and PowerPoint.



View the video "Adding Modern Charts."

📕 Report Design Tools—Design—Tools—Chart Settings 嶋

Refreshing Chart Data

Like many other Access objects, charts use the contents in a table or query as the data source. When the data source of a chart is changed, the chart may not automatically reflect those changes. The Refresh All command manually updates a chart to match record source data.

Home \rightarrow Records \rightarrow Refresh All

DEVELOP YOUR SKILLS: A8-D8

In this exercise, you will modify Winchester's Employee Sales report by adding a chart. You will then format the chart and manually update it after making changes to the record source.

- 1. Display the Employee Sales report in Design View.
- 2. Choose Report Design Tools -> Design -> Controls -> Insert Chart 🛄

A menu appears allowing you to select the chart type.

3. Choose Column → Clustered Column.

Your mouse pointer changes to a chart icon with a plus sign.

- 4. Click in the upper-left corner of the Page Footer section to insert the chart control.
- 5. Close the Property Sheet and the Chart Settings pane, if necessary.
- **6.** Hover your mouse pointer over the bottom right of the new chart control until a diagonal double-pointed arrow appears.
- **7.** Resize the control by dragging to the bottom right until your chart is as tall as the Page Footer section and as wide as all text box controls in the Detail section.





Format the Chart

8. Choose **Report Design Tools** \rightarrow **Design** \rightarrow **Tools** \rightarrow **Chart Settings**

The Chart Settings pane appears.

- 9. Choose EmployeeSales from the Data Source drop-down list.
- **10.** Choose **EmpLastName** for the Axis.
- 11. Choose ProdDescription as the Legend.
- 12. Choose LineTotal (Sum) for the Values.
- **13.** Open the Property Sheet and set these chart properties:

Property	Setting
Has Legend	Yes
Chart Title	Total Sales
Category Axis Font Size	14
Primary Values Axis Format	Currency



There are many chart properties and settings available. If you will use charts frequently, you may want to explore each of these settings.

14. Switch to **Report View** to see the newly created chart.



Refresh the Chart

- 15. Open the InvoiceDetails table and change the quantity for the first record to: 100
- **16.** Switch to the **Employee Sales** report and choose **Home**→**Records**→**Refresh All** *The Home Page column for Winchester rises dramatically.*
- 17. Switch to the InvoiceDetails table and change the quantity for the first record back to: 1
- **18.** Switch to the **Employee Sales** report and refresh the chart using the **Refresh All** command. *The chart data has normalized.*
- **19.** Close the Employee Sales report, saving any changes, and then close the database.

Self-Assessment



Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

🖡 Reinforce Your Skills

REINFORCE YOUR SKILLS: A8-R1

Import a Report and Add a Subreport

In this exercise, you will import a report from the Kids for Change database and then add a subform with details on the activities provided by the staff.

- 1. Open A8-R1-K4C from your Access Chapter 8 folder and save it as: A8-R1-K4CRev
- 3. Click Browse and navigate to your Access Chapter 8 folder, choose A8-R1-K4C-Backup, and click Open.
- 4. Leave the **import** storage setting chosen and click **OK**.
- 5. Click the **Reports** tab, choose **Staff Report**, and click **OK**.
- **6.** Leave the Save Import Steps checkbox unchecked and click **Close** in the Get External Data dialog box.
- 7. Display the newly imported **Staff Report** in **Report View**.

The empty space between the staff records is where you will insert the subreport.

Add and Format a Subreport

- Switch to Design View and choose Report Design Tools→Design→Controls→ Subform/Subreport ((scroll to the bottom of the controls list).
- **9.** Click just below the Activity ID label in the Detail section to insert a control and launch the Subreport Wizard.

2	Email Address Email A	ddress
:	Activity ID	
-		
·		
1:		
3		

- 10. Choose Staffing Subform from the Use an Existing Report or Form option and click Next.
- **11.** Click **Next** again to accept *Choose from a List* as the linking method.
- **12.** Click **Finish** to accept *Staffing Subform* as the name.

A small green triangle in the report selector indicates a possible error. Clicking the triangle displays a smart tag that shows the error and possible solutions. In this case, the report is wider than the page. You will correct this in the next few steps.

Staff Report												
	1											
FReport Header												
✓ Page Header												
	• rage fielder											

13. Click the Staffing Subform label and tap Delete

	Activity ID ActID
-	
	Staffing Subform
-	1
3	E Datail

14. Click the subreport and set these properties:

Property	Setting
Width	7.7
Height	0.5
Тор	3
Left	0
Border Style	Transparent

15. Click the report selector and set the Width property to: 7.8

The green smart tag indicator should be gone.

Staff Report																
) ·	•	•	I	•	•	•	1	•	•	•	I	•	•	•	2
	Report Header															
Fage Header																

- **16.** Save Staff Report and then switch to **Report View**.
- **17.** Scroll through the report to see that the activity details now appear under the staff information.
- **18.** Close the database.

REINFORCE YOUR SKILLS: A8-R2

Create a Report from a Subreport and Number Report Items

In this exercise, you will save a subreport as a separate report. You will also update a report of donations to Kids for Change, numbering them in order to add a count of the donations per donor.

- 1. Open A8-R2-K4C from your Access Chapter 8 folder and save it as: A8-R2-K4CRev
- 2. Open Staff Report and switch to Design View.
- 3. Right-click the subreport control and choose Subreport in New Window.

The Staffing Subform subreport opens in a separate window.



- **4.** Choose **File**→**Save As**→**Save Object As**→**Save As**.
- 5. Type K4C Staffing Subreport as the name, choose **Report** from the Save As drop-down list, and click **OK**.
- **6.** Close the subform and the report.
- 7. Display the new K4C Staffing Subreport in Design View.
- 8. Click the **Detail** section bar and set the Height property to: 0.3
- Right-click the Detail section bar and choose Report Header/Footer.
 The Report Header section appears.
- **10.** Click the **Report Header** section bar.
- 11. Set the Back Color property to Blue, Accent 1, Lighter 80%.



12. Choose **Report Design Tools**→**Design**→**Controls**→**Label** *Aa* and then click in the **Report Header** section above the ActID control and type: **ID**

	F Report Header					
	ActID Activity Day					
·						

13. Add six more labels: Activity, Day, Time, Venue, Street, and City

You don't need to be precise with the label positions, as you will modify their properties in the next step.

	ŀ		t Header									
-												
-			ACTIVITY	D	ay	Time		Venue		Street	~**¥	
	✓ Detail											
-	ActID Activity Day MeetTime VenueName VenueStreet VenueCity											
	✓ Report Footer											

14. Press Ctrl and click all seven labels to select them and then set these properties:

Property	Setting
Height	0.2
Тор	0
Font Name	Arial Rounded MT Bold
Font Size	10
Fore Color	Blue, Accent 1
	Theme Colors

- **15.** Click in an empty spot in the Report Header section to deselect the labels.
- **16.** If necessary, click the individual labels and widen them so the text is fully visible and then align them with the text boxes in the Detail section.

-	ID Activity Day Time Venue Street City										
•											
	✓ Detail										
-	ActID Activity Day MeetTime VenueName VenueStreet VenueCity										
	✓ Report Footer										

- **17.** Close and save K4C Staffing Subreport.
- 18. Display Staff Report in Design View and click the subreport control.

-	Activity ID ActID	\sim
-		
3	· · · · · · · · · · · · · · · · · · ·	3 · ·
-		

19. Set these properties on the **All** tab of the Property Sheet:

Property	Value
Name	Staffing Subreport
Source Object	Report.K4C Staffing Subreport

20. Switch to **Report View** to see the changes and then close and save Staff Report.

Number Report Items

- **21.** Display **Donations Report** in **Design View**.
- 22. Choose **Report Design Tools**→**Design**→**Controls**→**Text Box** → and click in the **Detail** section to the left of the DonorID text box.

	F DonorlD Header					
	🗲 Detail					
ò	Donorl DonorLName					
-						
	✓ Page Footer					

23. Click the label control for the new text box (to the left of the text box—it may be difficult to see) and tap **Delete**.

	DonorlD Header	
:	Text27 Unbound	pnorLName
	DonorlD Footer	

24. Select the new text box control and then set these property values on the All tab of the Property Sheet:

Property	Setting
Name	txtCounter
Control Source	=1
Width	0.3
Тор	0
Property	Setting
Left	0.3
Border Style	Transparent
Font Name	Arial
Font Weight	Semi-Bold

25. Click the Data tab in the Property Sheet and set the Running Sum property to Over All.

26. Switch to Report View.

Text16

Access numbers the detail lines consecutively for each individual donation.

27. Close the database, saving the changes to the Donations Report.

REINFORCE YOUR SKILLS: A8-R3

Insert Calculated Fields and Page Breaks

Kids for Change wants to improve its donations reporting. In this exercise, you will add a field to calculate the total monthly donations for each donor. You will set the subreport to grow and shrink, and you will add custom controls and a page break. You will then add a column chart that shows total donations by donor with data labels.

1. Open A8-R3-K4C from your Access Chapter 8 folder and save it as: A8-R3-K4CRev

You will begin by adding a calculated field to a report.

2. Display K4C Donors Subreport in Design View.

Unbound

3. Choose **Report Design Tools**→**Design**→**Controls**→**Text Box** → and click in the Page Footer section under the Amount text box to place a new text box there.

5. Click the new text box and set these properties on the **All** tab of the Property Sheet:

Property	Setting
Name	MonthTotal
Control Source	=Sum([Amount])
Format	Currency
Width	1.3
Height	0.2
Property	Setting
Тор	0
Left	5
Font Name	Arial Rounded MT Bold
Text Align	Right

6. Close and save K4C Donors Subreport.

Grow and Shrink a Subreport

7. Display Monthly Donations Report in Design View.

8. Click the subform to select it.



- 9. Click the All tab in the Property Sheet and set the Can Grow and Can Shrink properties to Yes.
- **10.** Switch to **Report View** and scroll through the report.

Notice how the number of donations per month changes and the report shrinks and grows to accommodate the number of donations each month.

Modify the Title

- 11. Switch to Design View.
- **12.** Click the **Monthly Donations Report** title control in the Page Header section and then click just in front of *Monthly* to position the insertion point.
- **13.** Type **Kids for Change** and press **Shift** + **Enter** to force *Monthly Donations Report* to a second line.
- **14.** Click a blank part of the header and then click the title control again to select it.

15. Set these properties for the title control:

Property	Setting
Width	4
Left	2
Text Align	Center

16. Switch to **Print Preview** and scroll through the first page of the report.

More than one month appears per page.

17. Use the navigation bar to navigate to page 2.

The April donations spill over from the previous page. In the next steps, you will insert a page break so each month begins on a new page.

Insert a Page Break

- **18.** Close Print Preview and then switch to **Design View** and choose **Report Design Tools**→ **Design**→**Controls**→**Insert Page Break** ⊣.
- **19.** Click in the left side of the DonationDate Footer section to place the page break.

DonationDate Footer							

- 20. Set the Top property of the page break control to: 0
- **21.** Click the **DonationDate Footer** section bar and set the Height property to: **0.001**

This will make the DonationDate Footer section as short as possible so the page break doesn't push the DonationDate header to the next page.

22. Switch to **Print Preview** and use the navigation bar to scroll through the report pages.

Now the donations for each month start on new pages.

Add a Column Chart

- 23. Close the Monthly Donations report, saving the changes, and then display the **Total Donations Chart** report in **Design View**.
- **25.** Choose **Column**→**Clustered Column**.
- 26. Click in the upper-left corner of the **Detail** section to insert the chart control.
- 27. Choose **Donations Query** from the Data Source drop-down list.
- 28. Choose DonorLName for the Axis, (None) as the Legend, and NetAmt (Sum) for the Values.

 Click the Format tab at the top of the Chart Settings pane and check the box for Display Data Label.



- **30.** Resize your control by dragging to the bottom right until your chart fills the entire Detail section.
- **31.** Open the Property Sheet and set these chart properties:

Property	Setting
Has Legend	No
Has Title	No
Primary Values Axis Format	Currency

32. Switch to **Report View** and view the report; close the database, saving the changes.

🗞 Apply Your Skills

APPLY YOUR SKILLS: A8-A1

Work with Reports and Subreports

In this exercise, you will help Universal Corporate Events create a report that breaks down the company's revenue by venue. You will add a subreport to a main report.

1. Open A8-A1-UCE from your Access Chapter 8 folder and save it as: A8-A1-UCERev

The first step is to import the needed report.

- 2. Choose External Data \rightarrow Import & Link \rightarrow New Data Source \rightarrow From Database \rightarrow Access
- 3. Choose A8-A1-UCE–Backup from your Access Chapter 8 folder.
- 4. Leave the Import storage setting chosen and click OK.
- 5. Click the Reports tab, choose Venue Revenue Report, and click OK.
- 6. Choose to not save the import steps and click Close.
- 7. Display the newly imported Venue Revenue Report in Report View.

The empty space between the locations is where you will insert the subreport.

Add a Subreport

- 8. Switch to Design View and choose Report Design Tools→Design→Controls→ Subform/Subreport
- 9. Click in the **VenueID** header section below the other controls and launch the Subreport Wizard.
- 10. Choose VenueRevenue Subform from the Use an Existing Report or Form option and click Next.
- **11.** Choose the second linking option (link by VenueID) and click **Next** again.



- **12.** Click **Finish** to accept *VenueRevenue Subform* as the name.
- **13.** Delete the VenueRevenue Subform label located just above the subform.



14. Select the new subform and set these properties:

Property	Setting
Width	7
Height	1.5
Тор	1.3
Left	0.25
Border Style	Transparent

- 15. Click the VenueID Header section bar and set the Height property to: 3
- **16.** Switch to **Report View** and scroll through the report.

Each venue now has an event data subform associated with it that contains all the revenue data for the events.

17. Close the database, saving the changes to the Venue Revenue Report.

APPLY YOUR SKILLS: A8-A2

Create a Report from a Subreport and Number Report Items

In this exercise, you will continue to help Universal Corporate Events create an effective venue revenue report. You will create a report from a subreport and number items on a subreport.

- 1. Open A8-A2-UCE from your Access Chapter 8 folder and save it as: A8-A2-UCERev
- 2. Display Venue Revenue Report in Design View.
- 3. Right-click the subreport and choose **Subreport in New Window**.

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- 4. Save the object as a report named: VenueRevenue Subreport
- 5. Close VenueRevenue Subreport.
- 6. Make sure the subform/subreport is selected and the Property Sheet is displayed.
- 7. Set the Source Object property on the All tab to Report. VenueRevenue Subreport.
- 8. Save the Venue Revenue Report and then switch to **Print Preview**.

The subreport will be displayed.

9. Close Print Preview and close Venue Revenue Report.

Format the Report

Now you will resize the labels and move them from the Detail section to the Report Header section.

10. Display the **VenueRevenue SubReport** in **Design View** and set the Width property to: **6** *This widens the subreport enough to accommodate the changes you are about to make.*

- **11.** Use **Ctrl** and the mouse to select all labels and text boxes in the Detail and Report Footer sections.
- **12.** Click the **Format** tab in the Property Sheet and set the Border Style property to **Transparent** and the Fore Color property to **Black, Text 1**.
- **13.** Click an empty part of the form to deselect all controls and then click each label individually and reduce the size to just fit the caption (label text).
- 14. Click the **Report Header** section bar and set the Height property to: 0.3
- **15.** Click the **VenueID** label and press **Ctrl** + **X**.
- **16.** Click in the **Report Header** section, press CtrI + V to paste the label, and then use the arrow keys to nudge it to about 0.25 in from the left edge.

-	✓ VenuelD		
•	VenuelD	~	
	Schedule ID Schedule ID		

17. Cut and paste the remaining labels from the Detail section into the Report Header and then use the arrow keys to align them approximately as shown:

	Report Header		
	VenueID Schedule ID	Event Date	Menu Code: Guests: CostPP Line Total:
1.1			
	🗲 Detail		
		VenuelD 🗸	
1 -			
		ScheduleID	

18. Rearrange the Detail section text boxes by dragging them with the mouse, nudging them with the arrow keys, and reducing their widths to align them with the Report Header labels.

:	VenuelD Schedule ID Event Date Menu Code Guests CostPP Line Total
	✓ Detail
-	Venue Venue ScheduleID EventDate MenuCod V Guests CostPP =[Guests]*

- 19. Click the Detail section bar and set the Height property to: 0.3
- **20.** Use the right arrow → key to right-align the calculated control in the Report Footer section with the Line Total label and the Detail section calculated control.

• 4 • •	•	I	•	•	•	5	•	•	•	I	•	•	•	6
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Guests]*	[0	òos	stF	p])								



21. Switch to **Layout View** and, if necessary, resize and reposition the controls so they are aligned nicely and all data is visible.

F	VenueRevenue	Subreport					
	VenuelD	Schedule ID	Event Date	Menu Code	Guests	CostPP	Line Total
	PalmCt	BRTLuna	10/11/2019	BARSNK	50	\$7.50	\$375.00
	WMinst	HOLMiller	12/31/2019	CHFBRK	100	\$16.00	\$1,600.00
	Meadow	HOLMiller	7/1/2019	DESSRT	25	\$13.00	\$325.00

22. Save the subreport.

Number Report Items

23. Switch to **Design View** and insert a new text box in the Detail section to the left of the VenueID text box.

:	VenuelD Schedule ID Event Date
•	yenu ScheduleID EventDate
•	+ Venut ScheduleID EventDate

24. Delete the associated label control.

	🗲 Detail		
•	Te Unbound	ScheduleID	EventDate
:/		Cost/	PP

25. Click the new text box control and set these property values in the **All** tab of the Property Sheet:

Property	Setting
Name	txtCount
Control Source	=1
Width	0.2
Тор	0
Left	0
Border Style	Transparent

- 26. Click the Data tab in the Property Sheet and set the Running Sum property to Over All.
- **27.** Select all text boxes in the Detail section and set the Top property to: **0**

28. Save the VenueRevenue SubReport and then display the Venue Revenue Report in Print Preview.

Navigate through the report and notice that the detail lines for each venue are now numbered sequentially.

29. Close the database, saving changes to any reports.

APPLY YOUR SKILLS: A8-A3

Add a Calculated Field and a Page Break

Universal Corporate Events continues to refine its database reports. In this exercise, you will first add a field to calculate the total of all the venues' revenues. You will also add a page break to another report to allow each month to begin on a new page.

- 1. Open A8-A3-UCE from your Access Chapter 8 folder and save it as A8-A3-UCERev
- 2. Display Venue Revenue Report in Report View.
- **3.** Scroll through the report and notice that each venue is associated with Line Total calculations and a total of all line totals per venue.

The one thing missing is a grand total at the bottom of the report that sums all totals for the venues. You will add a calculated control that produces a grand total.

- 4. Switch to **Design View**.
- 5. Click the **Report Footer** section bar and set the Height property to: 0.4
- **6.** Insert a text box anywhere in the Report Footer section and set these properties for the label control: *Hint: Use the Format tab on the Property Sheet.*

Property	Setting
Caption	Grand Total for All Venues
Width	2
Тор	0.1
Left	2
Font	Semi-Bold
Weight	

Fore Color Blue, Accent 1, Darker 50%



7. Set these property values for the new text box:

Hint: Use the All tab on the Property Sheet.

Property	Setting
Name	ActivityCost
Control Source	=Sum([Guests]*[ChgPP])
Format	Currency
Width	1.5
Тор	0.1
Property	Setting
Left	5
Border Style	Transparent
Font Weight	Semi-Bold
Fore Color	Blue, Accent 1, Darker 50%

 Select the VenueRevenue Subform and set the Can Grow and Can Shrink properties on the Format tab of the Property Sheet to Yes.

This ensures that all venue detail lines will be displayed.

9. Switch to **Report View** and scroll to the end of the report.

Notice the Grand Total for All Venues label and the grand total calculated control.

10. Close Venue Revenue Report, saving the changes.

Insert a Page Break

- **11.** Display the **Event Revenue Report** in **Print Preview**.
- **12.** Scroll through the first page and notice that several months are included.

The page break you are about to insert will position each month on a separate page.

13. Close Print Preview and then switch to **Design View** and insert a **Page Break** 💾 control on the left side of the EventDate Footer section, just below the *Total for* label.

Be sure to position the break below the label or portions of the report will be cut off.

:	EventName	EventDate	MenuPlan
	EventDate Footer		
·	Total for [[Event	Date],"mmmm	
	✓ Paga Footer		
•	=Now()		
1	Report Footer		

- 14. Switch to **Print Preview** and notice that just one month appears on the first page.
- **15.** Use the navigation bar to go to the next page, and, once again, just one month will be displayed because of the page break.
- **16.** Close the report, saving your changes.

Insert a Pie Chart

- **17.** Display the **Revenue by Venue** report in **Design View**.
- **18.** Use the **Insert Chart** command to create a new pie chart.
- **19.** Click in the upper-left corner of the **Detail** section to insert the chart control and use these chart settings:
 - Data source: Event Revenue
 - Legend: (None)
 - Values: TotalRev (Sum)
- 20. On the Format tab, check the box for the Display Data Label option.
- **21.** Resize your chart control to fill the entire Detail section.
- **22.** On the Property Sheet, set these properties for the chart:

Property	Setting
Legend Position	Bottom
Has Title	No
Primary Values Axis Format	Currency

23. Close the database, saving the changes to the report.

🖹 Project Grader

PROJECT GRADER: A8-P1

Taylor Games: Updating Inventory

Taylor Games is ready to take sales orders. Before it begins, it needs to create a printable sales receipt for its customers. In this exercise, you will start by adding a subreport to a main report. Next, you will add calculated controls to provide order subtotals, taxes, and totals. You will then set page breaks for printing individual receipts.

- **1.** Download and open your Project Grader starting file.
 - Using eLab: Download **A8_P1_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A8_P1_Start from your Access Chapter 8 folder.
- 2. Add a subreport to the Sales Receipt report using these guidelines:
 - Position the subreport in the detail section below the text boxes.
 - Use the **OrderDetails** report for the data.
 - Leave all linked field options set to the default values.
 - Leave the Name as OrderDetails.
- 3. Delete the OrderDetails subreport label and set the following subreport properties:

Property	Value	
Width	6	
Height	3	
Тор	0.45	
Left	0	
Border Style	Transparent	
Can Shrink	Yes	

- **4.** In the *Detail* section of the subreport, set the Border Style property for all text box controls to **Transparent**.
- **5.** In the *Report Footer* section of the subreport, insert a new text box control and set these properties for it:

Property	Value
Name	Subtotal
Control Source	=Sum([Line Total])
Format	Currency
Тор	0.10
Left	4.2
Border Style	Transparent

6. Set these properties for the new unbound label (contains the text *Text40*):

Property	Value
Name	Sub Total
Caption	Sub Total
Width	1
Тор	0.10
Left	3.5

7. Insert a new text box control below the Subtotal text box and set these properties for it:

Property	Value
Name	Taxes
Control Source	=[Subtotal]*.075
Format	Currency
Тор	0.4
Left	4.2
Border Style	Transparent

8. Set the following properties for the new unbound label (contains the text *Text42*):

Property	Value	
Name	Ταχ	
Caption	Ταχ	
Width	1	
Тор	0.4	
Left	3.5	

9. Insert a new text box control below the Taxes text box and set these properties for it:

Property	Value
Name	Order Total
Control Source	=[Subtotal]+[Taxes]
Format	Currency
Тор	0.7
Left	4.2
Border Style	Transparent
Font Weight	Bold

10. Set the following properties for the new unbound label (contains the text *Text44*):

Property	Value
Name	Total
Caption	Total
Width	1
Тор	0.7
Left	3.5
Font Weight	Bold

11. Insert a page break control below the subreport and just above the Sales Receipt form's page footer.

:	·	Line_Item	~	Quantity	Price	Line Total
-		Fage Footer				
2 •				:=:"P	age " & [Page]	& of & [Pages]
:		Report Footer				
- 3	- - - -				Sub Tot Tax Total	3 =Sum([Line Tote =[Subtotal]*0.0 =[Subtotal]+[T
-						
_	Ŧ	Page Footer				
-						="Page" & [Page]
	Ŧ	Report Footer				

- **12.** Save your database.
 - Using eLab: Save it to your **Access Chapter 8** folder as **A8 P1 eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 8 folder as: A8 _ P1 _ Submission

PROJECT GRADER: A8-P2

WebVision: Create a Chart and Back Up the Database

WebVision would like you to make some database improvements. In this exercise, you will create a chart displaying the total sales for each sales rep. You will also import an invoice report, located in a backup database, and make a few changes to improve visual design.

- **1.** Download and open your Project Grader starting file.
 - Using eLab: Download **A8_P2_eStart** from the Assignments page. You *must* start with this file or your work cannot be automatically graded.
 - Not using eLab: Open A8_P2_Start from your Access Chapter 8 folder.
- 2. Use the **Report Design** tools to create a new report with the name: **Annual Sales by Rep**
- **3.** Insert a date and time control using these guidelines and properties:
 - Use the second date option.
 - Do not include a time.

Property	Value
Width	1
Text Align	Center

- 4. Insert the **WebVision Logo.jpg** image from your **Access Chapter 8** folder and set the Width property to: **1.25**
- **5.** Set the ReportHeader section Back Color property to **Background Form**.

6. Add a pie chart to the Detail section using these chart settings:

Setting	Value
Data Source	Rep Sales by Customer query
Axis (Category)	Last Name
Legend (Series)	(None)
Values (Y axis)	Total (Sum)
In the Format list	Check the Display Data Label box

7. Set these chart properties:

Property	Value
Тор	0
Left	0
Width	6.5
Height	5
Legend Position	Bottom
Legend Text Font Size	14
Chart Title	Annual Sales by Rep
Chart Title Font Size	20
Primary Values Axis Format	Currency

- 8. Set the Report Width property to: 6.5
- **9.** Use these guidelines to import a report from another database:
 - Choose the **A8_P2_Backup** Access database located in your **Access Chapter 8** folder as the data source.
 - Choose the **Invoices** report as the object to import.
- **10.** Save your database.
 - Using eLab: Save it to your **Access Chapter 8** folder as **A8 P2 eSubmission** and attach the file to your eLab assignment for grading.
 - Not using eLab: Save it to your Access Chapter 8 folder as: A8 _ P2 _ Submission

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

A8-E1 That's the Way I See It

You would like to modify a database report to show sales details for the Blue Jean Landscaping database. Open **A8-E1-BJL** and save it as: **A8-E1-BJLRev**

Import the Customer Sales Report from **A8-E1-BJL-Backup**. Then add the Customer Sales Subform to the Detail section of the Customer Sales Report.

A8-E2 Be Your Own Boss

As the owner of Blue Jean Landscaping, you pride yourself on creating organized and easy-to-use reports. You want to add more calculations to your report and to add page breaks for more organized viewing of the data. Open **A8-E2-BJL** and save it as: **A8-E2-BJLRev**

Open Customer Sales Report and create a new subreport from the CustomerSales Subform. Calculate the line totals for each subreport line using the formula *Price*QtySold*. Insert a page break so each customer appears on a separate page when you view the report in Print Preview.

A8-E3 Demonstrate Proficiency

The Stormy BBQ Key West store and restaurant is enjoying increased sales, so you must make some changes to the database reports to produce more useful sales results. Open **A8-E3-SBQ** and save it as: **A8-E3-SBQRev**

Import the Merchandise Sales Report from **A8-E3-SBQ-Backup**. Insert the MerchandiseSales Subform into the Detail section of the Merchandise Sales Report to add individual sale line items (choose Show each record in Merchandise using SKU). Save the subform as a report, being sure to close the subform, and then open the new subreport so the changes you make are not reflected in the subform. Calculate each line total (*ListPrice*QtySold*) in the Detail section of the subreport. Create a new report that includes a pie chart in the Detail section. Ensure the chart uses the MerchandiseSalesQuery as the data source and displays the total sales by Item Name.

ACCESS

9

Customizing the Database Interface and Startup Options

Ared databases can experience a growing number of issues that accompany the unpredictable actions of multiple users. To limit these issues, designers can modify interface and startup options to help reinforce consistent data entry and protect vital data. In this chapter, you will create a navigation form, which is an attractive, user-friendly interface that allows for quick and accurate data entry. You will also split a database to protect the database tables and their data while still allowing users to create and modify their own personal queries, forms, and reports. Finally, you will set and modify various Access options.



LEARNING OBJECTIVES

- Set Access options
- Split a database
- Explore switchboards and create a navigation form
- Set and modify startup options

Project: Customizing—As You Like It

Winchester Web Design is a website development company that specializes in building websites for small businesses. You are building the company's database, which is almost complete. The owner is concerned about its ease of use and future maintenance and would like to allow individuals to make their own customized queries and reports while maintaining a standard company interface and ensuring data validity and database security.

Setting Access Options

Each Microsoft Office application provides options to control the way the application performs. Access options can control the color of datasheets, set default fonts, create sections on the Navigation pane, add a title to the application window, customize the Quick Access toolbar, set a default startup form, and so on. Some options control settings for the active database, while others control default settings for all databases used on a particular device.

Displaying Access Options

The Access Options dialog box groups features by type. It lists the categories in a panel on the left side and their associated options in the panel on the right side. Some options are used frequently while others are rarely used.

	Access Options	? ×
Option categories	General Current Database Datasheet Object Designers Proofing Language Client Settings	General options for working with Access. User Interface options CreenTip style: Show feature descriptions in ScreenTips Chow shortcut keys in ScreenTips Disable hardware graphics acceleration
	Customize Ribbon Quick Access Toolbar Add-ins Trust Center	Creating databases Default file format for Blank Database: Access 2007 - 2016 Default database folder: C:\Users\setup\Documents\ New database folder: General - Legacy

Option sections for the selected General category show current settings.

Datasheet Effects

Users may prefer a specific font or cell style and don't want to apply the desired changes each time they enter data. Options to customize how a datasheet will appear by default can be found in the Datasheet category of the Access Options dialog box. Examples of datasheet options that can be set include gridlines, cell effects, column widths, and font properties.

■ File→Options→Datasheet

DEVELOP YOUR SKILLS: A9-D1

In this exercise, you will display and explore options in the Access Options dialog box.

Before You Begin: Download the student exercise files from your eLab course or the Student Resource Center (labyrinthelab.com/office19) and determine your file storage location before beginning this exercise.

- Open A9-D1-WinDesign from your Access Chapter 9 folder and save it as: A9-D1-WinDesignRev
- 2. Choose File → Options and click the Datasheet category.
- 3. Explore the options for the current database but don't change any.

These settings apply to any database opened using your installation of Access. Changing these settings will affect any database opened on this device from here out.

4. Click Cancel when you have finished.



Unless otherwise directed, keep Access and any databases or database objects being used open at the end of each exercise.

Setting Personal Information and Database Properties

The Access Options dialog box includes a General category that allows you to set the format in which databases are created and to set personal information for your copy of Microsoft Office.

Database properties are similar to other object properties, except they identify or describe an *entire* database, such as the database title and author, names of objects contained in the database, or the date and time it was created or last updated.

■ File→Options→General

File→Info

DEVELOP YOUR SKILLS: A9-D2

In this exercise, you will you will personalize your copy of Microsoft Office and change database properties.

1. Choose **File**→**Options**.

The Access Options window opens with the Datasheet category selected.

- **2.** Explore the general options for the database but don't change them.
- 3. Click **Cancel** to close the Access Options dialog box.

Now you will set database properties.

4. Choose **File** \rightarrow **Info** and follow these steps to set the database properties:

	View and edit d	atabase properties				
AC09-D01-Wi	? X					
General Sum	nmary Statistics Contents Custom					
Title: B	Winchester Web Design Database					
Subject:						
Author:	Student					
Manager:	Jay Winchester					
Company:	Winchester Website Design					
	AC09-D01-Wi General Sun Title: Subject: Author: Manager: Company:	View and edit d AC09-D01-WinWebRev.accdb Properties General Summary Statistics Contents Custom Title: Winchester Web Design Database Subject: Image: Image:				

- Olick the View and Edit Database Properties link.
- If necessary, click the **Summary** tab on the Properties dialog box.
- C Type **Jay Winchester** in the Manager line.
- **D** Type **Winchester Website Design** in the Company line.
- 5. Click OK.

Customizing the Navigation Pane

The Navigation pane is your tool for selecting database objects and identifying objects associated with each object type. You use the Navigation pane to display objects in different views. You can also customize it to contain additional sections to make the pane even more useful.

Navigation Pane Categories and Groups

The Navigation Options dialog box shows two list boxes: one that identifies the categories of objects displayed on the Navigation pane and one that shows the groups available for display on the pane.

	Navigation Options		? ×	
	Grouping Options			
	Click on a Category to change the Category dis Ca <u>t</u> egories	play order or to add groups Groups for "Object Type"	_	
Categories	Tables and Related Views	Tables		
available –	Object Type	Queries		Constant and the last
by default		Forms		Groups available
		Reports		
		Macros		cutegory
		Modules 🗸		
Buttons for				Buttons for
adding, deleting, _	Add Item Delete Item Rename Item	Add Group Delete Group		adding deleting
and renaming items		Rename Group		and renaming
	Display Options	Open Objects with		groups
	Show Hidden Objects Show System Objects	○ S <u>i</u> ngle-click		
	Show Search <u>B</u> ar			
		ОК	Cancel	

Working with Groups

Access prevents you from changing, deleting, or adding additional object type groups to the essential Tables and Related Views and Object Type categories. However, the Custom category allows you to rename, delete, and add groups to a category. When you add or rename groups in the Navigation pane, you must reassign objects to the groups so Access knows where to place them.



Customizing the Navigation pane applies the control settings to the active database only. You must customize the Navigation pane for any other databases.

DEVELOP YOUR SKILLS: A9-D3

In this exercise, you will customize the Navigation pane and assign objects to new Navigation pane groups.

1. Choose **File** \rightarrow **Options** and follow these steps to customize the Navigation pane:

	Access Options	
	General	Picture Property Storage Format
Λ	Current Database	Preserve source image format (smaller file size)
	Datasheet	 Convert all picture data to bitmaps (compatible with Access 2003 and earlier)
	Object Designers	Navigation B
	Proofing	✓ Display <u>N</u> avigation Pane
	Language	Navigation Options

- A Choose Current Database.
- B Scroll, if necessary, to the Navigation section.
- Click the **Navigation Options...** button.

Access displays the Navigation Options dialog box.

2. Follow these steps to create a new item:

Navigation (Options			
Grouping (Options Click on a Category to	change the Category di	display order or to add groups	
	Tables and Related Vie	ews	Unassigned Objects	
	Object Type			
B	Custom Category 1	A .	-	
A	Add Ite <u>m</u> De <u>l</u> ete	e Item R <u>e</u> name Item	Add Group	
			<u>R</u> ename Group	

A Click Add Item.

Type Winchester Web Design in the Custom Category 1 box and tap Enter.

A new item named Winchester Web Design appears in the Categories list.

3. Click Add Group.

Navigation (Navigation Options							
Grouping Options Click on a Category to change the Category display order or to add groups								
Categories <u>Groups for "Winchester Web Design"</u>								
	Tables and Related Views				Custom Group 1		•	
	Object Type			\checkmark	Unassigned Objects			
Grouping Options Click on a Category to change the Category display order or to add groups Categories Groups for "Winchester Web Design" Tables and Related Views Object Type Winchester Web Design								

A new item named Custom Group 1 appears in the Groups list.

- 4. Type **Customers** in the Custom Group 1 box and tap **Enter**.
- 5. Click Add Group and then type Invoices and tap Enter.

Navigation	Options					
Grouping	Options					
	Click on a Category to change the Cat	egoŋ	/ disp	lay o	rder or to add groups	
	Ca <u>t</u> egories			<u>G</u> rou	ups for "Winchester Web Design"	
	Tables and Related Views			\square	Customers	
	Object Type			\Box	Invoices	•
	Winchester Web Design		•	\square	Unassigned Objects	

- **6.** Click **OK** to close the Navigation Options dialog box. Click **OK** to close the Access Options dialog box.
- 7. Follow these steps to display the new Winchester Web Design category:



- (A) Click the **Navigation Pane Options** button.
- B Choose Winchester Web Design.

All objects for the Winchester Web Design category are in the Unassigned Objects group.

- 8. In the Unassigned Objects group on the Navigation pane, right-click the **Customers** table object and choose **Add to Group→Customers**.
- 9. One at a time, right-click the **Customers Form**, the **Customer Invoice Report**, and the **Customer Invoice Subreport** to add them to the Customers group.
- **10.** Assign these objects to the Invoice group:
 - InvoiceDetails
 - Invoices

- Invoice Form
- Invoice Details Subform
- Invoice Details Report
- Invoices Query

• Invoice Details Query

11. Click the **Navigation Pane Options** button and choose **Object Type**.

The Navigation pane returns to the more traditional view, which groups objects by type (Tables, Queries, Forms, and Reports).

Setting Up Current Database Formats

Current database settings enable you to change the way Access displays and works with the *active* database. You can, for example, change the text Access displays in the title bar when the database is open, show or hide the Navigation pane, enable views, or change the way Access displays open objects.

Changing Title Text in the Application Bar

Sometimes, the actual filename assigned to a database may be different from the text you want users to see when they open the database. You can change the text that appears in the title bar using the Current Database options window.

Type the text you want displayed in the title bar into the Application Title text box.

Application Options			
Application <u>T</u> itle:	Winchester Web De	sign	
Application <u>l</u> con:			Browse
Use as Form a	and Report Icon		

Setting Object Window Format

Open database objects are set to format as tabs within the database work area. You have to click the tab of the object you want to see in the work area.

	Tabs for opened documents are aligned at the top of the work area.							
	🖪 Navigation Form 📄 Invoices Query 🔚 Employee Report 🖽 Customers							
2	1	CustID	•	Last Name 👻	First Name 👻	Street Address 👻	City -	
	÷	AbramsJ		Abrams	John	1210 West Pier Wa	Palmetto	
	÷	AndersM		Anders	Mark	205 Montana St	Bradenton	
	÷	BlaserH		Blaser	Helen	600 Fowler	Tampa	

You can change the format so objects display as overlapping windows in the work area, or you can move and resize the objects for easier comparison of styles, layout, and contents.





After changing the document window options, close and then reopen the database to view the new settings.

■ File→Options

DEVELOP YOUR SKILLS: A9-D4

In this exercise, you will change settings for the current database, editing the title and changing the window options.

 Choose File→Options and follow these steps to change the application title text and window display:

	Access Options							
	General	Options for the current database.						
A	Current Database							
	Datasheet	Application Options B						
	Object Designers	Application <u>T</u> itle: Winchester Web Design						
	Proofing	Application Icon: Browse						
	Language	Use as Form and Report Icon						
	Client Settings	Display Form: (none)						
	Customize Ribbon	Web Display Form: (none)						
	Quick Access Toolbar	 Display Status Bar Document Window Options Overlapping Windows 						
	Add-ins							
	Trust Center	 Tabbed Documents 						

- A Choose Current Database.
- Type Winchester Web Design as the application title.
- **G** Choose **Overlapping Windows**.
- 2. Explore the other options for the current database and then click **OK**.

You must close and then reopen the database for the settings to take effect.

- **3.** Choose **OK** in the message dialog box and then close and reopen the database.
- 4. Display the Customers and Products tables in separate windows.
- 5. Drag the title bar of the Products table window down slightly to view the Customers table.

							Customers					
	2		CustID	Ŧ	Last	: Name 👻	First	t Name 👻	Street Address 🕞	City	-	
		+	AbramsJ		Abr	ams	Johi	n	1210 West Pier Way	Palmetto	>	
		Ŧ	AndersM									
		+	BlaserH		===							
		+	DavisP		4_	ProdID	*	[Description	 Price 	Ŧ	
		+	Fleetwood		÷	PROD-01	ιΗP	Home Pa	ge, Nav, CSS, Design	\$400.00	0	
		+	HassanA		+	PROD-02	2SP	Secondar	\$200.00	0		
		+	JeffriesD		+	PROD-03	BL	Blog, Inte	grated into Site	\$300.00	0	

Move and resize the open objects so you can see both at the same time.

- 6. Choose File→Options→Current Database, set the document window preference back to Tabbed Documents, and click OK. Then click OK in the message box.
- 7. Close the tables and then close the database.

Splitting a Database

Sometimes users want to edit the design and layout of queries, forms, and reports or even develop their own objects to meet their particular needs. If the database is shared with other users, this may cause problems.

Record Locking

Multiple users can simultaneously use an Access database to add, edit, and delete data. Whenever an Access database is opened, Access creates a small temporary file by the same name but with the extension *.laccdb*. This file manages record locking. The initial file extension character, *l*, stands for *locked*, which means whenever one user edits a record, no other user can edit it until the first user moves to another record—essentially "unlocking" it. Record locking helps maintain consistent data and protects the integrity of record updates.

Reasons for Splitting Databases

Allowing users to create their own objects in a shared database can create confusion and increase the chance of data corruption or broken database relationships. To protect company data, many businesses prohibit users from creating and saving new objects. One way to protect table data when allowing users to create and customize objects to meet their personal needs is to split the database.

The Database Splitter

The database splitter converts a database into two files: one that contains the tables holding the data that support all other database objects and one that contains the database reports, forms, queries, and other objects that use the data. After a database is split, multiple users in a networked environment can access the database at the same time. As a result, each user can access, design, and modify their own database objects and update data from the database tables without interrupting other users or increasing the number of objects contained in the central database.

Split Database Terminology

Two terms are often associated with split databases:

- Front end refers to the up-front portion of a split database with which users interact—the queries, forms, and reports they use or may create and customize. Access places a blue arrow beside each table name in a split database to identify objects users can view but not change.
- Back end refers to the underlying database tables that support the front end. These tables are protected so users cannot modify their structure. Access adds _be to the end of the back-end portion of the database filename.


When you split a database, Access links the front and back ends of the database so users can work with controls on forms, queries, and reports.

Backing Up a Database Prior to Splitting

Access recommends you back up a database before you split it to preserve the database in case an error occurs during the splitting process. One quick way to do this is to select and copy the database in Windows Explorer and then paste a backup copy in the desired folder.

 \blacksquare Database Tools \rightarrow Move Data \rightarrow Access Database \rightarrow Split Database

DEVELOP YOUR SKILLS: A9-D5

In this exercise, you will split the Winchester Web Design database.

1. Open A9-D1-WinDesignRev from your Access Chapter 9 folder.

Do not open any database objects.

- 2. Choose File→Save As→Save Database As→Save As.
- 3. Navigate to your **Access Chapter 9** folder; then change the filename to **A9-D6-WinDesign-Backup** and click **Save**.

You back up the database so you have a copy in case errors occur when the database is split.

- 4. Close the new backup database and then reopen A9-D1-WinDesignRev but don't open any objects.
- 5. Choose Database Tools -> Move Data -> Access Database
- 6. Review the information in the Database Splitter dialog box and then click **Split Database**.

Access opens the Create Back-End Database dialog box and displays the same filename with _be at the end to identify it as the back-end file.

- 7. Navigate to your Access Chapter 9 folder and click Split.
- 8. Click OK in the message box.

All the table names now have a blue arrow in front of them.

9. Right-click the **Customers** table in the Navigation pane and choose **Design View**.

Access warns you that Customers is a linked table that can't be modified; it's linked to the back-end database. You can open the table in Design View, but you can't modify the structure or data types. To add, change, and delete records, you'd open the table in Datasheet View. Any changes to data in the front-end database are reflected in the table in the back-end database.

- **10.** Read the warning message and then click **No**.
- **11.** Right-click the **Customers Form** in the Navigation pane and choose **Design View**. *The front-end form displays in Design View.*
- 12. Select the Notes label and Notes text box and tap Delete.
- 13. Save the form and close A9-D1-WinDesignRev.
- **14.** Choose **File**→**Open** and navigate to your **Access Chapter 9** folder; rename **A9-D1-WinDesignRev** to **A9-D6-WinDesign-Split** and then open **A9-D1-WinDesignRev_be**.

The Winchester Web Design tables are the only objects in the back-end database.

15. Close the back-end database.

Customizing the Database Interface

Access offers multiple options for customizing the user interface. Switchboards and navigation forms can be set to automatically open when a database is opened. They provide buttons and tabs to perform an array of functions from displaying forms and reports to printing, saving, and even closing the database and exiting Access.

Database Switchboards

A switchboard is an easy-to-use interface with menus and buttons for opening database objects and performing common tasks such as adding records and printing reports.



Underlying Switchboard Items table

The Switchboard Manager

Switchboards were common in older versions of Access. To create a switchboard, the Switchboard Manager command button must be on the Ribbon, which you can do via the Customize Ribbon group in Access Options. The Switchboard Manager button might be on the Database Tools tab if you open a database created in a previous version of Access or one that already contains a database switchboard.

Navigation Forms

An alternative to the switchboard is a navigation form, a special interface that allows you to quickly access forms and reports in your database. Microsoft introduced navigation forms to accommodate online databases published to the web because the Access Navigation pane will not display in a browser.

Navigation Form Features

A navigation form usually has tabs across the top to group common elements with subnavigation links along the left side or directly below. The navigation form opens like a regular form in the Access window.



Tabs can group forms and reports by subject.

Individual objects can be accessed via controls listed on the side of an active tab.

Note!

When you create a tab that matches the name of a form or report in the database, Access automatically assigns the form or report to the tab in the navigation form.

Navigation Form Layouts

The Winchester Web Design database includes the Employees Form, the EmployeeSpouses Form, and the Employee Report that you can place on the same Employees tab on a navigation form. You

can also add other forms and reports. Access offers six different navigation form layouts from which you can choose. You can also change the fonts, colors, and themes.

Form Wizard	
Horizontal Tabs	
Uertical Tabs, Left	
Vertical Tabs, Right	
Horizontal Tabs, 2 L <u>e</u> vels	
Horizontal Tabs and Vertical Tabs, Left	
Horizontal Tabs and Vertical Tabs, <u>R</u> ight	

DEVELOP YOUR SKILLS: A9-D6

In this exercise, you will create a navigation form with tabs for the categories in the Winchester Web Design database. Then you will add subnavigation links for forms and reports within each tab's category.

- Choose File→Open and navigate to your Access Chapter 9 folder; rename
 A9-D6-WinDesign-Backup as A9-D7-WinDesignRev and then open that file.
- **2.** Follow these steps to create a new navigation form:

	A												
Home	Create	e Externa	al Data	Databa	ise Tools	; He	lp (₽ Tell m	ne what you	want to do			
Table	Table Design	SharePoint Lists *	Query Wizard	Query Design	Form	Form Design	Blank Form	Forr	m Wiza. igation • Horizontal	Penert Pener	et Plank G	💦 Rep	ort
	lables		Que	ries			Form		<u>V</u> ertical Ta	ıbs, Left			-
									Vertical Ta	ıbs, Right			
									Horizonta	Tabs, 2 L <u>e</u> vels			
							C		Horizonta	Tabs and Vert	ical Tabs, <u>L</u>	eft [2
									Horizonta	Tabs and Vert	ical Tabs, <u>R</u>	ight	
🔺 Cl	ick the	e Create	e tab.										
B Cł	noose	Forms-	→Nαvi	igatio	n.								
C Cł	noose	Horizor	ntal Ta	abs an	d Ve	rtical	Tabs	, Left					

The new navigation form opens in Layout View, which is the recommended view for editing.

3. Follow these steps to review the new navigation form:

😑 Navigation Form	🗐 Navigation Form					
A 😑 Navi	gation Fori	m				
+						
	[Add New]	C				
[Add New]						
B						

- A Notice the form icon and title in the Form Header section.
- B Click to select the **Vertical Navigation** control.
- Click to select the Horizontal Navigation control.
- Click to select the **Navigation Subform**.
- Double-click the Add New tab in the Horizontal Navigation control and then type Employees and tap Enter to display another Add New tab.

You can point to the right border of a tab until the mouse appears as a two-headed pointer and drag the border to the left or right until the tab title is best displayed.



5. Create additional tabs for: Customers, Invoices, and Products

Add Items to Tabs

6. Follow these steps to add an item to a tab:



- A Click the **Employees** tab.
- B Drag the **Employees Form** into the Vertical Navigation control.
- When the pink bar appears just above the Add New tab, drop the form.

7. Drag the forms and reports to the tab indicated:

Tab	Form or Report			
Employees	EmployeeSpouses Form			
Employees	Employee Report			
Customers	Customers Form			
Customers	Customer Invoice Report			
Invoices	Invoice Form			
Invoices	Invoice Details Report			
Products	Product Form			
Products	Products Report			

8. Save the form as WWD Navigation Form and then switch to Design View.

Add a Title and Logo and Apply Formatting

- 9. Delete the Title and Logo controls in the Form Header section.
- **10.** Choose **Form Design Tools**→**Design**→**Controls**→**Label** and draw a label in the Form Header section.
- **11.** Type **Welcome to Winchester Web Design** as the label, tap **Enter**, and then set these properties on the Property Sheet:

Property	Value
Width	5.5
Height	0.45
Тор	0.1875
Left	1.5
Font Name	Georgia
Font Size	22
Text Align	Center
Font Weight	Semi-bold
Fore Color	Blue, Accent 1, Darker 50%

- 12. Click the Form Header section bar; type 0.8 for the Height property and choose Blue, Accent
 1, Lighter 80% for the Back Color property.
- **13.** Choose **Form Design Tools**→**Design**→**Controls**→**Insert Image**, navigate to your Access Chapter 9 folder, and choose **WWD-Logo**.

If the WWD-Logo is displayed in the Image Gallery, you can just click it.

- **14.** Draw the new logo image in the Form Header section to the left of the title.
- **15.** In the Property Sheet, make these settings:

Setting	Value
Width	0.7
Height	0.7
Тор	0.05
Left	0.5

- Click the Detail section bar and type Accent 1, Lighter 90% for the Back Color and Alternate Back Color properties.
- **17.** Click the left column of the navigation form (**NavigationControl5**) in the Selection Type list and choose **Transparent** for the Back Style property.
- Select the top navigation control row (NavigationControl0) and choose Transparent for the Back Style property.
- **19.** Switch to **Form View** and click the **Employees** tab.

The form includes three objects listed for the Employees tab and the selected object displayed in the Navigation Subform.

20. Save the WWD Navigation Form.

Adding Custom Command Buttons

Now that you have a navigation form that opens each of the forms and reports in the database, you can use Design View to add command buttons that will perform functions. Then you can size and position the buttons and add the text that will be displayed on each button.

	Hire Date		12/1/2010		
	Web Cert	✓			
Re	cord: I4 4 1 of 4	► ► ► <mark>©</mark>	K No Filter	Search	
~					
E	xit Access				
C					

A button is added to the form to exit Access when work is completed.

When you use the Command Button control from the Ribbon to create an action command button on a form, the Command Button Wizard opens and walks you through the process. Placing command buttons in the Detail section will replicate the button for each entry in the form.

Form Design Tools \rightarrow Design \rightarrow Controls \rightarrow Button

DEVELOP YOUR SKILLS: A9-D7

In this exercise, you will create a command button on the WWD Navigation Form. You will then add text and attach a command to the button.

- **1.** Display the **WWD Navigation Form** in **Design View**.
- 2. Expand the Form Footer section by dragging the bottom of the form down.
- 3. Click the Form Footer section bar and type Accent 1, Lighter 90% for the Back Color of the Form Footer section.

4. Choose **Form Design Tools**→**Design**→**Controls**→**Button** and draw a button in the main Form Footer section.



Access launches the Command Button Wizard after you draw the command button.

5. Follow these steps to complete the first button:

Command Button Wizard	d			
Sample:	What action do pressed? Different action	you want to ha is are available f	ppen when the b for each category	utton is 7.
	<u>C</u> ategories:		Actions:	
	Record Naviga Record Opera Form Operation Report Operat Application Miscellaneous	ition tions ins tions	Quit Applicat	tion B
[Cancel	< <u>B</u> ack	<u>N</u> ext >	Einish
A Choose Application	n.			

Click Next.

6. Follow these steps to complete the button:

Command Button Wizard			
Sample:	Do you want t If you choose choose Picture	text or a picture on the button? Text, you can type the text to display. If you e. you can dick Browse to find a picture to disp	ı Nav.
Exit Access	● <u>T</u> ext:	Exit Access B	
	O <u>P</u> icture:	Stop Browse	
		Show All Pictures	G

- A Choose the **Text** option.
- **B** Type **Exit Access** as the text to appear on the button.
- Click Finish.
- 7. Save changes to the form and then switch to Form View.
- 8. Click the Exit Access command button on the form.

The database and Access close.

Setting Startup Options to Open a Form

Switchboards and navigation forms provide an interface between the user and the forms, queries, and reports contained in the database. In many cases, data entry personnel have no need to create objects or see the Navigation pane.

As a result, many businesses set startup options that display either the most commonly used form, such as the Invoice Form, or the database interface so it is the first thing users see when they open the database. Setting these startup options is also a way to protect the database from unauthorized access.

Overriding Startup Options

After you set startup options for a database, the Navigation pane and many of the underlying objects and database tools may be hidden. To override the startup settings, press and hold the **Shift** key as you open the database in Access.

File \rightarrow Options \rightarrow Current Database

DEVELOP YOUR SKILLS: A9-D8

In this exercise, you will set the WWD Navigation Form to open automatically each time you open the database.

- 1. Open A9-D7-WinDesignRev from your Access Chapter 9 folder.
- 2. Choose File -> Options -> Current Database and follow these steps to apply startup options:

Application Options		
Application <u>T</u> itle:		
Application lcon:		Browse
Use as Form a	and Report Icon	
Display Form:	WWD Navigation Form	
Web Display Form:	(none) 🔻	
✓ Display Status Ba	r	
Document Window	Options	
Overlapping	Windows	
Tabbed Docu	ments	
Display Documents	ment Tabs	
Navigation		
Display <u>N</u> avigatio	on Pane	
Navigation Option	5	•

- Olick the **Display Form** list button and choose **WWD Navigation Form**.
- **B** Uncheck the box to **Display Navigation Pane** located in the Navigation section.
- Click OK.
- 3. Click OK to acknowledge the message box.
- 4. Close the database and open it again.

Access opens the database with the navigation form hidden and the WWD Navigation Form displayed.

5. Click the Exit Access command button.

Self-Assessment

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

Reinforce Your Skills

REINFORCE YOUR SKILLS: A9-R1

Set Options and Properties

You have been promoted to lead designer and are now responsible for all security aspects of the Kids for Change database. In this exercise, you will personalize Access, modify navigation options, and display multiple objects in an overlapping format.

 Start Access, open A9-R1-K4C from your Access Chapter 9 folder, and save it as: A9-R1-K4CRev

Don't forget to enable content.

- Choose File→Options. In the General category, modify the username and/or initials as you feel necessary.
- 3. Choose **Current Database**, scroll to the Navigation section, and click the **Navigation Options...** button.
- 4. Click Add Item.

A new item appears in the Categories list named Custom Category 1.

- 5. Type Kids for Change in the Custom Category 1 box and tap Enter.
- 6. Click Add Group and type Activities for the new item that appears in the Groups List.

Tables and Related Views		◄	Activities	•
Object Type		✓	Unassigned Objects	
Kids for Change				

- 7. Add two more groups, using **Children** as the first name and **Volunteers** as the second.
- 8. Click OK twice.
- 9. Click the Navigation Pane Options button and choose Kids for Change.

Access places all objects for the Kids for Change category into the Unassigned Objects group.

10. In the Unassigned Objects group on the Navigation pane, right-click the **Activities** table object and choose **Add to Group→Activities**.



- **11.** Right-click the **Activities List** query and add it to the Activities group and then add the **Activities Form** and **Activity Costs Report**.
- **12.** Assign the **Children** table, **Children List**, **Children Form**, and **Children Report** to the Children group.
- **13.** Assign the **Volunteers** table, **Volunteers Subform**, **Volunteers Form**, and **Volunteers Report** to the Volunteers group.

Set Database Properties

- 15. Open the Access Options dialog box and choose Current Database.
- 16. Click the Application Title text box and type: Kids for Change
- **17.** Choose the **Overlapping Windows** option and click **OK**. You must close and then reopen the database for the settings to take effect.
- **18.** Choose **OK** in the message dialog box; then close and reopen the database.
- **19.** Open the **Activities** and **Children** tables to display the objects in separate overlapping windows. You can move and resize the open objects so you can see both at the same time.
- **20.** Close the database.

REINFORCE YOUR SKILLS: A9-R2

Create a Navigation Form and Set Startup Options

Kids for Change has asked you to provide a more efficient way for its data entry personnel to access forms and reports. In this exercise, you will create a navigation form that displays when the Kids for Change database is opened.

- 1. Open A9-R2-K4C from your Access Chapter 9 folder and save it as: A9-R2-K4CRev
- 2. Choose Create → Forms → Navigation → Horizontal Tabs and Vertical Tabs, Left.

The new navigation form opens in Layout View.

- Double-click the Add New tab in the horizontal navigation control; type Activities as the tab name and tap Enter.
- **4.** Create four more tabs:
 - Children
 - Donors
 - PaidStaff
 - Volunteers

Navigation Form						
😑 Navigation Form						
	Activities	[Add New]				
[Add New]						

5. Click the **Activities** tab and then drag the **Activities** form from the Navigation pane into the vertical navigation link area, placing it above the Add New tab.



When the pink bar appears just above the Add New tab, drop the form.

All	Access Objects	∍ «	Navigation F	orm		
Searc	:h	P	🔚 Navi	gation Fo	rm	
	Staff Schedule			-		
For	rms 🌣	:		Activition	Children	
-8	Activities Form			Activities	children	
-8	Activity Staffing		[Add New]			
-8	Activity Staffing Subform					
-8	Children Form					

6. Add the forms and reports to the tab indicated:

Tab	Form or Report	Tab	Form or Report
Activities	 Activity Costs Report 	PaidStaff	Staff Form
			Activity Staffing
			 Activity Costs Report
Children	Children Form	Volunteers	Volunteers Form
	Children Report		 Volunteers Report
Donors	Donors Form		
	 Donations Report 		
	 Monthly Donations Report 		

- 7. Save the form as K4C Navigation Form and then switch to Design View.
- **8.** Delete all the controls in the Form Header section.
- Choose Form Design Tools→Design→Controls→Label, draw a title label named
 Kids for Change in the Form Header section, and tap Enter.
- **10.** Enter these properties for the new title label:

Property	Value
Width	4
Height	0.4
Тор	0.2
Left	2
Font Name	Cambria
Font Size	23
Text Align	Center
Fore Color	Blue, Accent 1, Darker 50%

 Click the Form Header section bar; type 0.8 for the Height property and choose Dark Blue, Text 2, Lighter 80% for the Back Color property. **12.** Choose **Form Design Tools**→**Design**→**Controls**→**Insert Image**, navigate to the **Access Chapter 9** folder, and choose **K4C-logo.bmp**.

If the K4C-Logo is in the Image Gallery, you can click it there.

- **13.** Draw the logo image in the Form Header section to the left of the title.
- **14.** With the **K4C-Logo** selected, type **0.7** for the Width and Height properties, **0.05** for the Top property, and **0.5** for the Left property.
- **15.** Switch to **Form View** and click each tab to verify that the objects display in the navigation subform; save your changes to the form.

Add a Command Button

- 16. Switch to Design View and expand the Form Footer section downward.
- **17.** Choose **Form Design Tools**→**Design**→**Controls**→**Button** and draw a button in the Form Footer section.

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HЕ																					Т															-	_	_	_	_	_	_	-		-	÷			_	_	_	_	_	_	_	_	-													Т	
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UN.																					L																									L						÷						ł												1	
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114																					L																									L												ł													
UP.																					L																									L						÷						ł												1	
16																					L																									L						.,						ł												1	
11-																					L																									L						4						ł													
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UN.																					L																									L						•	1		_	-	٦	ł												1	
UN.																					L																									L							1				I	ł												1	
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- 18. Choose Application and Quit Application, and then click Next.
- 19. Choose the Text option; type Exit Access and click Next.
- 20. Name the command button **cmdExitAccess** and click **Finish**.
- **21.** Save your changes to the form.

Set Access Startup Options

- **22.** Choose File → Options → Current Database.
- 23. Type Kids for Change for the application title.
- **24.** Click the **Display Form menu** button and choose **K4C Navigation Form**.
- 25. Click OK twice and then close and reopen the database.

The K4C Navigation Form opens when the database is opened and includes Kids for Change in the title bar and the Exit Access command button in the Form Footer.

26. Click the Exit Access command button to close the database and exit Access.

REINFORCE YOUR SKILLS: A9-R3

Split a Database and Hide the Navigation Pane

Kids for Change would like its table data to be protected. In this exercise, you will split the database and hide the Navigation pane to protect the table data from unauthorized users.

- 1. Open A9-R3-K4C from your Access Chapter 9 folder and save it as: A9-R3-K4C-Backup
- 2. Close the new backup database and reopen A9-R3-K4C, but don't open any objects.
- 3. Choose Database Tools→Move Data→Access Database 🛂.

- Click the Split Database button and then navigate to your Access Chapter 9 folder and click Split.
- 5. Click OK in the message box.

Table names now have a blue arrow in front of them.

- **6.** Right-click the **Activities** table in the Navigation pane and choose **Design View**. Access informs you that Activities can't be modified because it is linked to the back-end database.
- 7. Click **No** in the message box.
- 8. Right-click the Volunteers Form in the Navigation pane and choose Design View.
- Select the Available Day label and the ActID text box at the bottom of the Detail section and tap Delete.

3	Telephone	VolPhone
-	Available Day	ActID
ŀ	Form Footer	

10. Save the form and then save the database as: A9-R3-K4CRev

Hide the Navigation Pane

- **11.** Choose File → Options → Current Database.
- **12.** In the Navigation section, uncheck the box next to **Display Navigation Pane** and then click **OK**.
- **13.** Close and then reopen the database.

Access opens the database but does not display the Navigation pane.

14. Close the database.

🗞 Apply Your Skills

APPLY YOUR SKILLS: A9-A1

Set Options and Properties

As head of technology for Universal Corporate Events you have been tasked with fine-tuning the company's database. In this exercise, you will personalize Windows settings, modify the object navigation options, and alter the way open objects appear on the screen.

- Start Access, open A9-A1-UCE from your Access Chapter 9 folder, and save it as: A9-A1-UCERev
- Choose File→Options. In the General category, modify the personal settings as you feel necessary.
- 3. Choose Current Database and open the Navigation Options dialog box.
- 4. Create a new item named: Universal Corporate Events
- 5. Create a new group named: Events
- 6. Add two more groups: Menus and Venues
- 7. Close the Navigation Options dialog box and the Access Options dialog box.
- **8.** Click the **Navigation Pane Options** button and choose **Universal Corporate Events**. Access places all objects for Universal Corporate Events into the Unassigned Objects group.
- In the Unassigned Objects group, right-click the Events table object and choose Add to Group→Events.
- **10.** Assign these objects to their appropriate groups:

Group	Object	Group	Object
Events	Event Revenue	Venues	 VenueLiaisons table
	 Event Pricing Entry 		 Venues table
	 Event Schedules 		Venue Events
	EventCosts Subform		 Venue Events Subform
	• Events Form		 Venues Form
			 Venues Report
Menus	 Menus table 		
	 Menus Form 		
	Event Menus Report		

11. Click the **Navigation Pane Options** button and choose **Object Type**.

Set Database Properties

- 12. Open the Access Options dialog box and choose Current Database, if necessary.
- 13. Click the Application Title text box and type: Universal Corporate Events
- **14.** Choose the **Overlapping Windows** option and click **OK**.
- **15.** Choose **OK** in the message dialog box; then close and reopen the database.

16. Open the **Personnel** and **Venues** tables in separate overlapping windows.

You can move and resize the open objects so you can see both at the same time.

								Personnel					
2	ID	Ŧ		S	alary Grade	Ŧ	Last Name 👻	First Name	 Address 	Ŧ	City	-	
	1001		Ch	e	f-Basic		Allison	Renee	Fowler Pkwy		Tampa		
	1002		W	ait	tstaff-1st Leve		Dhana	Nazrene	15 Whitfield		Sarasot	а	
	1003								Venues				
	1004	1.	_	_									
	1005	11	4,		Venue ID 👻		Name	Ŧ	Street	*	City	×	
	1006			+	BradCC	Bra	adenton Comm	unity Club	2903 9th Ave	E	Bradento	n	
	1000			+	Brooks	Bro	ooksville Camp	grounds	John Brown Road Brooksville				
	100/		_					0		_			

- Choose File→Options→Current Database and reset the Document Window option to Tabbed Documents.
- **18.** Close the database.

APPLY YOUR SKILLS: A9-A2

Create a Navigation Form and Set Startup Options

The president of Universal Corporate Events wants a custom navigation form. In this exercise, you will create a navigation form with links that open associated forms and reports as well as a command button that closes the database and exits Access. You will also modify the startup options.

- 1. Open A9-A2-UCE from your Access Chapter 9 folder and save it as: A9-A2-UCERev
- 2. Choose Create -> Forms -> Navigation -> Horizontal Tabs and Vertical Tabs, Left.

The new navigation form opens in Layout View.

- **3.** Double-click the **Add New** tab in the horizontal navigation control and then type **Events** and tap **Enter**.
- 4. Create two more tabs, naming the first **Menus** and the second **Venues**.
- **5.** Click the **Events** tab and then drag the **Event Costs** form from the Navigation pane into the vertical navigation link area.
- 6. Add these forms and reports to the tab indicated:

Tab	Form or Report		Tab	Form or Report
Events	Events Form	١	Venues	 Venues Form
	 Event Pricing Entry 			• Venue Events Form
	 Event Schedules 			 Venues Report
	 Event Revenue Report 			
Menus	 Menus Form 			
	• Event Menus Report			

- 7. Save the form as: UCE Navigation Form
- 8. Switch to **Design View** and delete all controls in the Form Header section.
- 9. Display the Personnel Form in Design View.

- **10.** Copy the logo and title from the Personnel Form and paste them into the Form Header of the UCE Navigation Form. Then close the Personnel Form.
- **11.** Click the **Form Header** section bar; on the Property Sheet, enter **0.8** for the Height property and choose **Blue, Accent 5, Lighter 80%** for the Back Color property.
- 12. Select the pasted title control and replace Personnel Form with: Navigation Form
- **13.** Type **2** for the Left property.
- **14.** Select the logo and type **0.5** for the Left property.
- **15.** Switch to **Form View** and verify that each object displays in the navigation subform.
- **16.** Save your changes to the form.

Add a Command Button

- 17. Switch to Design View.
- **18.** Expand the Form Footer section of the main form by dragging the bottom of the form down.
- **19.** In the main Form Footer section, create a command button with the text **Exit Access** that will close the application.

Hint: Choose the Application category with the Quit Application action.

- 20. Name the command button: cmdExitAccess
- **21.** Save the form. Switch to **Form View** and click the new command button to close the database and Access.

APPLY YOUR SKILLS: A9-A3

Display the Navigation Form on Startup and Split the Database

The president of Universal Corporate Events wants the navigation form to be displayed on startup. She also wants to protect the table data from unauthorized use. In this exercise, you will set the newly created navigation form to display each time someone opens the database. You will then split the database.

- 1. Open A9-A3-UCE from your Access Chapter 9 folder and save it as: A9-A3-UCERev
- 2. Choose File→Options→Current Database.
- 3. Type Universal Corporate Events for the application title.
- 4. Click the Display Form list button and choose UCE Navigation Form.
- 5. Click OK twice.
- 6. Close and then reopen the database.

Access opens the database and displays the UCE Navigation Form.

The UCE Navigation Form automatically opens in Form View when the database is opened. The form includes Universal Corporate Events in the title bar and the Exit Access command button in the Form Footer.

Split a Database

- 7. Close any open database objects and then choose File \rightarrow Save As \rightarrow Save Database As \rightarrow Save As.
- **8.** Navigate to your **Access Chapter 9** folder, change the filename to **A9-A3-UCERev-Backup** and click **Save** to create a backup copy, and then close the database.
- 9. Open A9-A3-UCERev, choose Database Tools→Move Data→Access Database, and click Split Database.
- **10.** Navigate to your **Access Chapter 9** folder and click **Split**; click **OK** in the message box. All the table names now have a blue arrow in front of them.
- **11.** Right-click the **Personnel** table in the Navigation pane and choose **Design View**. *Personnel is linked to the back-end database and can't be modified.*
- **12.** Click **No** in the message dialog box.
- 13. Right-click the Personnel Form in the Navigation pane and choose Design View.
- **14.** Delete the word *Grade* from the Salary Grade label.
- **15.** Close the Personnel Form, saving the changes.
- **16.** Navigate to your **Access Chapter 9** folder and open **A9-A3-UCERev_be**. Tables are the only objects in the back-end database.
- **17.** Close the database.

🖹 Project Grader

This chapter does not include Project Grader exercises. Project Grader content is based on the learning objectives for a chapter, and sometimes those learning objectives cannot be accurately graded by the system. Objectives from this chapter that can be accurately graded may be included in later chapters, if applicable.

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

A9-E1 That's the Way I See It

You would like to create a navigation form in the Blue Jean Landscaping database. Open **A9-E1-BJL** and save it as: **A9-E1-BJLRev**

Use these guidelines to create horizontal tabs and a vertical left navigation form:

- Create five tabs: Customers, Equipment, Manufacturers, Merchandise, and Sales
- Add all related forms and reports to the corresponding tabs.
- Add a title control with the name BlueJean Landscaping Navigation Form and then add a logo using BLJ-Logo.bmp.
- Add a command button labeled **Exit Database** that exits the application.
- Name the form: BlueJean Landscaping Navigation Form

Enhance the appearance of the forms and add any features you feel will help facilitate effective data entry.

A9-E2 Be Your Own Boss

As the owner of Blue Jean Landscaping, you would like to set startup options and apply database properties to help streamline user performance and security in the company database. Open **A9-E2-BJL** and save it as: **A9-E2-BJLRev**

Set an application title using the company name. Display the Blue Jean Landscaping Navigation Form on startup and apply overlapping windows. Then, hide the Navigation pane. Apply any other Access options you feel will help facilitate effective data entry or security.

A9-E3 Demonstrate Proficiency

Stormy BBQ is concerned about lower-level staff accessing database tables and inadvertently introducing errors and would like the database split to ensure data accuracy. It would also like to set navigation options. Open **A9-E3-SBQ** and save it as: **A9-E3-SBQRev**

Create a new navigation item labeled with the company name. Add the indicated groups. Add as many related objects as you can to the corresponding group and then split the database. Finally, apply any other Access options you feel will help facilitate effective data entry.

Groups Daily Menu Merch Staff Restaurants

QASIA

AUSTRALIA

O AFRIC

Q ANTARCTICA

ACCESS



Importing and Exporting Data Using Word, Excel, and HTML

ata can be stored on all types of computer systems and in many formats. Maintaining files and other data so they're easy to share with others can be challenging; fortunately, Access tools make it relatively easy to import, export, format, and upload files for sharing. In this chapter, you will share Access data with other Microsoft Office programs, as well format data for other systems and the web.

LEARNING OBJECTIVES

- Convert Access 2019 files to previous Access formats
- Host Access files in SharePoint
- Attach files to database records
- Integrate Access data with Word and Excel
- Display Access data on the web

Project: Capturing More Data

The Winchester Web Design database stores all data related to customers, employees, products, and invoices. Having all the data stored in one electronic file makes it very convenient for sharing it within the company. Sometimes, however, data must be exported so it can be used offsite by someone who may not have Access on their computer. You have been assigned the task to experiment with file formats to make both non-sensitive and sensitive data available to others.

Converting Access 2019 Databases to Earlier Formats

Access 2019 databases carry a unique format that is incompatible with versions of Access older than 2007. The obvious difference is the filename extension. Versions of Access prior to 2007 created files with an *.mdb* extension. Access 2007–2019 versions create files with an *.accdb* extension (for *Access database*). To share a database made in a more current version of Access with someone who has an Access version prior to 2007, you must save the database in a format that the older version recognizes.

When you try to convert some newer databases to an earlier version of Access, you may get an error message.



Older versions of Access do not support some of the features and formats supported in more current versions, such as the Long Text data type that has replaced the Memo field, the Attachment data type that has replaced the OLE object field, and the Custom Web App and Web App Action Bar.

Identifying the Format of an Access Database

When you open a database, Access identifies the version of the file in the title bar.

A10-D1-WinDesignRev : Database- C:\Users\setup\[A10-D1-WinDesignRev.accdb (Access 2007 - 2016 file format) - Access

When you open a database created in Access 2007–2019, the title bar will reference the Access 2007–2016 file format.

A10-D1-WinDesign2003 : Database- C:\A10-D1-WinDesign2003.mdb (Access 2002 - 2003 file format) - Access

When you open a file created in an older version of Access, the title bar will reference the Access 2002–2003 file format.

File→Save As→Save Database As→Access 2002–2003 Database

DEVELOP YOUR SKILLS: A10-D1

In this exercise, you will save an Access 2019 database in the Access 2003 file format.

1. Open A10-D1-WinDesign from your Access Chapter 10 folder and save it as: A10-D1-WinDesign2019

Remember to enable content, if necessary.

 Choose File→Save As→Save Database As→Access 2002–2003 Database and then click Save As.

The Save As dialog box opens.

3. Change the filename to A10-D1-WinDesign2003 and click OK.

A10-D1-WinDesign2003 : Database- C:\A10-D1-WinDesign2003.mdb (Access 2002 - 2003 file format) - Access

The filename and file format information display in the title bar, indicating that the database is now in Access 2002–2003 file format. The filename and path might be too long to show the file format, however. If you click the File tab, more of the path is visible.

4. Close all open databases.

Attaching Files to Database Records

Older versions of Access used fields with the OLE Object data type to add images to records. For example, a company might want to include employee photos in their employee table. However, adding a single uncropped, high-resolution image taken from one of today's smartphones or adding long and wordy comments to records with long text fields can significantly increase the size of the database.

A database's size affects its speed and efficiency. Attaching files—rather than embedding the data— can significantly reduce the size of the database.

Using the Attachment Data Type

The Attachment data type allows you to attach one or more pictures, spreadsheet files, documents, charts, and other file types to a specific field in the table. You can use an Attachment field to store multiple files of varying file types without increasing the size of the actual database file.

Attachment Limitations and Notes

- After assigning the Attachment data type to a field, you cannot change it.
- A maximum of 2 gigabytes of data can be attached to a database.
- The file size for individual attachments is limited to 256 megabytes.
- You cannot attach files to a record in Access 2003 or earlier.

Managing Attachments

Access identifies fields that contain attachments with a paperclip icon in the field name. A paperclip icon followed by a number indicates the number of attachments for each individual record. For instance, you might have a products database where you have

Hire Date 👻	Web Cert 👻	U
3/14/2019		⊎ (2)
3/22/2019	\checkmark	(0)
7/30/2019		(1)
		(0)

one photo of the product front and another of the product back. Or perhaps you want to store both a casual and a publicity dress photo for your employees.

Adding an attachment is as simple as double-clicking the paperclip icon for the record to which you want to attach the file. Then you navigate to the image or file you want to attach.

Atta	achments		×
A <u>t</u> ta	chments (Double-click to open)		
0	JayAndJulie.jpg		<u>A</u> dd
	Jaywinchester.jpg		<u>R</u> emove
			<u>O</u> pen
			<u>S</u> ave As
			Sa <u>v</u> e All
		OK	Cancel

DEVELOP YOUR SKILLS: A10-D2

In this exercise, you will add an Attachment field to the Winchester Web Design Employees table in Design View and attach two photos to a table record.

- Open A10-D2-WinDesign from your Access Chapter 10 folder and save it as: A10-D2-WinDesignRev
- 2. Display the Employees table in Design View.
- **3.** Follow these steps to add a new field to the table:

2	Field Name	Data Type	Description (Optional)
	EmpPhone	Short Text	
	EmpEmail	Hyperlink	
	HireDate	Date/Time	
	WebCert	Yes/No	Web Certification
A)	EmpPhoto	Attachment B	Office ID Photo

- A Type **EmpPhoto** in the first available row in the Field Name column.
- B Choose **Attachment** from the Data Type list.
- **C** Type **Office ID Photo** in the Description column.
- 4. Save the changes to the table and then switch to **Datasheet View**.
- 5. Follow these steps to add an attachment to the first table record:

1											×
	5S 👻	City 👻	ST 👻	ZIP 👻	Tele	phone 👻	Email 👻	Hire Date 🕞	Web Cert 👻	0	
		Bradenton	FL	34210	(941)	555-9382	Winchest	11/30/2017	/ 🗹 (A 0(0)	
		Sarasota	FL	34234	(941)	Attachme	ents				X
	Lane	Bradenton	FL	34210	(941)	Attachine					
		Bradenton	FL	34210	(941)	A <u>t</u> tachmen	ts (Double-c	lick to open)			
										B <u>A</u> dd	

A Scroll to the new attachment field and double-click the **paperclip** icon for the first record.

B Click Add.

- **6.** Navigate to your **Access Chapter 10** folder, double-click **JayWinchester.jpg**, and click **OK**. *Access places the number* 1 *in parentheses following the attachment icon for the first record.*
- 7. Double-click the **paperclip** icon for record 1 to open the Attachments dialog box.
- **8.** Click **Add** and then double-click **JayAndJulie.jpg**; click **OK** to close the Attachments dialog box.

Now a 2 follows the paperclip icon for the first record.

- **9.** Double-click the **paperclip** icon again, select **JayWinchester.jpg**, and click **Open**. *The photo displays in your default program used to view images.*
- **10.** Switch to Access and close the Attachments box; save and close the Employees table.

Integrating Access with Word

There are several ways to share data between Access and Word—the easiest being to use Copy and Paste. For instance, you can select all or part of an Access table or query, copy it, and then open a Word document and paste the copied Access selection as an unlinked object.

A variation of this is to select the desired rows or columns in an Access table or query and *export* the data as a linked source to a Word document. A linked file allows source data to be placed into a destination file that is automatically updated when changes are made to the source file, so if you were to link an Access table to a Word document on Monday and then change the Access data on Tuesday, those changes would be reflected in the Word document the next time the Word file is opened (as long as the Access file hasn't been deleted or moved).

Another process is Mail Merge, which allows you to merge selected data fields (such as names and addresses) with a Word document, producing personalized letters that can be mailed to thousands of potential customers. You can also publish Access data into a Word document for inclusion in a report.

There are additional Export tools on the External Data tab of the Ribbon that let you connect to other Microsoft Office applications using various file formats. One is a text file, or a plain alphanumeric text file without



any formatting or font information. A variation of a text file is a rich text file (RTF), which contains minimal formatting, such as color or bold. Both text files and rich text files are very small in size, relative to normal Word documents, and are compatible across virtually all hardware and software platforms.

Copying Data from Access to Word

You can use copy-and-paste and drag-and-drop techniques to copy Access data into a Word document. Note that pasted data is not linked, so editing data that has been inserted into Word has no effect on the data stored in Access and vice versa.

DEVELOP YOUR SKILLS: A10-D3

In this exercise, you will copy data from an Access table into a new Word document using copy-and-paste and drag-and-drop techniques.

- 1. Display the **Products** table in **Datasheet View**.
- 2. Follow these steps to make a copy of all the records in the Products table:



- Olick the table selector button to select all product records.
- B Choose Home→Clipboard→Copy.
- 3. Start Word, choose Open Other Documents, navigate to your Access Chapter 10 folder, and double-click A10-D3-WWD-ProdLetter.docx.

The document, a letter to the company's customers, opens in Microsoft Word.

4. Position the insertion point under the line that reads ...and consider adding one of these product features to your current website.



5. Choose **Home**→**Clipboard**→**Paste menu button →Keep Source Formatting**.



- 6. Close the Products table in Access.
- **7.** Arrange your Word and Access windows side by side so you can view both programs simultaneously.
- 8. In Access, open the Employee Contact Info query.
- 9. Follow these steps to drag the Employee Contact Info query records into Word:



The mouse pointer becomes a black circle with a line through it 🔊 as you drag records over the Access work area. When you cross onto the Word document, it becomes a white move arrow with a plus sign. When you copy and paste or drag data to a Word document, the name of the Access object (Employee Contact Info) is displayed as a title at the top of the object.



The drag-and-drop process can be challenging. You must precisely position the mouse pointer over the left side of a field in the first column. If you can't get it to work, use Copy and Paste.

10. Compare your Word document to this example.

If the report extends to a second page, delete any unnecessary blank lines.

<u>Wind</u> (941	<u>CHESTERJAY@EMAIL.(</u>) 555-9382	COM Winchester Wieb Design
March	n 11, 20XX	
Dear	Valued Customer,	
We w	ould like you to review ou	r products and services and consider adding one
of the	se product features to you	ur current website:
	Products	
ProdID	Description	Price
01HP	Home Page, Nav, CSS, Design	\$400.00
02SP	Secondary Page	\$200.00
03BL	Blog, Integrated into Site	\$300.00
04SC	Shopping Cart, Basic	\$400.00
05IM	Image, Custom Designed	\$40.00
06HR	Hourly Rate for Modifications	\$80.00
07LC	Logo Creation	\$100.00
08PS	Photo Shoot, 1 hour onsite	\$100.00
09IM	Image Map	\$40.00
10SS	Slide Show	\$100.00
11QR	QR Code	\$50.00
If we (conve	can be of assistance, pleas nience. Employee Contact	e contact any of our employees at your
First Na	ame Last Name Telephone	Email
Jay	Winchester (941) 555-9382 v	VinchesterJay@email.com
John	Kramer (941) 555-3490 K	(ramer)@email.com
the state of the s	Mansfield (941) 555-5218	ulieMansfield@email.com
Julie	history Kossister boos	vikeWaters@email.com

(941) 555-9382

- 11. Close the Employee Contact Info query.
- **12.** Save the Word document as **A10-D3-WWD-ProdLetterRev** and then close it and exit Word. Maximize Access.

Publishing Data to Word

The most commonly used tools for integrating Access data with other applications appear in the Export group on the External Data tab, and other tools appear on the More list. These tools enable you to send data from a database object to Word and other applications. When you export a database object to Word, Access formats it in rich text format, launches Word, and opens the data in a new document. You can then edit and save the document in Word without affecting the data in the database.



You can use these same techniques to drag Access table data into Excel and PowerPoint.

📕 External Data→Export→More→Word 🌆

DEVELOP YOUR SKILLS: A10-D4

In this exercise, you will export a list of the Winchester Web Design employees to a Word document.

- **1.** Open the **Employees** table in **Datasheet View**.
- Choose the External Data→Export→More menu button →Word a.
 The Export RTF File dialog box opens.
- 3. Follow these steps to export the table to Word as a small, cross-platform rich text file:

Specify the dest	ination file name and format.
<u>F</u> ile name:	C:\Users\setup\Documents\A10-D4-WWDEmp.rtf
Specify export o	ptions.
We will not imp such as OLE Obj	ort table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types ject.
Search for "Impo	ort" in Access 2016 Help for more information.
Export	data <u>w</u> ith formatting and layout.
Select t	his option to preserve most formatting and layout information when exporting a table, query, form, or report.
Open ti	he destination file after the export operation is complete.
Select t	his option to view the results of the export operation. This option is available only when you export formatted data.
Export	only the <u>s</u> elected records.
Select t have re	his option to export only the selected records. This option is only available when you export formatted data and cords selected.

- A Click Browse, open your Access Chapter 10 folder, and save the file as: A10-D4-WWDEmp.rtf
- B Click the Open the destination file after export... checkbox.
- Click OK.

Access exports the table and opens it in Word. When you export data to a Word document, there is no title added as there is when you copy data into Word.

- 4. Close the Export RTF File dialog box and switch to Word.
- Choose Layout→Page Setup→Margins and then choose Narrow to fit more of the data on the page.
- **6.** Choose Layout → Page Setup → Orientation → Landscape.
- 7. Resize the columns to fit as much of the data on the page as possible.

EmpID	Last Name	First	Street Address	City	ST	ZIP	Telephone	Email	Hire Date	Web	EmpPhoto
		Name								Cert	
JFW	Winchester	Jay	9972 2nd Ave.	Bradenton	FL	34210	(941) 555-9382	WinchesterJay@email.com	11/30/2017	Yes	2
JK	Kramer	John	5050 Milton St.	Sarasota	FL	34234	(941) 555-3490	KramerJ@email.com	1/6/2018	No	0
JMM	Mansfield	Julie	400 South Lily Lane	Bradenton	FL	34210	(941) 555-5218	JulieMansfield@email.com	12/8/2017	Yes	0
MJW	Waters	Mike	124 26th St.	Bradenton	FL	34210	(941) 555-3981	MikeWaters@email.com	4/16/2018	No	0

- 8. Close the Word file, saving changes, if prompted.
- **9.** Switch to Access and close the Employees table.

Merging Access Data with Word Documents

Access databases often contain valuable data that can be used in letters, mailings, and other documents. Retyping such data can be time-consuming and may result in inaccurate data entry. The Export tool is useful for merging data with Word.

When merging data with Word, Access gives you two options:

- **1. Link to an existing Word document:** This option creates a link to an existing document so Word can locate the database and pull the most up-to-date data into the merge document. The link between the Word document and the database includes a path used to locate the data each time you open the merge document. If the database file is moved to a different folder, Word will be unable to locate it and cannot complete the merge.
- 2. Create a new Word document: This option creates a new Word document and merges it with the data linked to an Access database table. The next time you open the Word document, Word automatically looks for the database containing the merge data.

📕 External Data→Export→Word Merge 🌆

DEVELOP YOUR SKILLS: A10-D5

In this exercise, you will export Access data containing customer addresses and link it to the Word customer letter.

- Open the Customers table and choose External Data→Export→Word Merge .
 The Microsoft Word Mail Merge Wizard opens.
- **2.** Choose the **Link Your Data to an Existing Microsoft Word Document** option and click **OK**. *Access opens the Select Microsoft Word Document dialog box.*
- **3.** Navigate to your **Access Chapter 10** folder and open **A10-D3-WWD-ProdLetter**. *Word opens your document along with the Mail Merge task pane.*
- 4. Follow these steps in Word to add fields to the merge document:



- A Click in the blank line between the phone number and the date.
- B Choose Mailings→Write & Insert Fields→Insert Merge Field menu button ▼.
- Choose **CustFirstName**.

- 5. Tap Spacebar to insert a space after (CustFirstName)).
- 6. Choose Mailings→Write & Insert Fields→Insert Merge Field→CustLastName.
- 7. Tap Enter and choose CustStreetAddress from the Insert Merge Field list.
- 8. Tap Enter and choose CustCity from the Insert Merge Field list.
- 9. Type a comma, tap Spacebar, and choose CustState from the Insert Merge Field list.
- **10.** Tap **Spacebar** and choose **CustZIP** from the Insert Merge Field list.

If the field names were FirstName, LastName, City, etc., instead of CustFirstName, CustLastName, CustCity, you could click the Address Block icon to insert the address fields in one step.



11. Choose **Mailings**—**Preview Results**—**Preview Results** to verify the customer name and address display properly.



- **12.** Save and close the Word document; exit Word.
- **13.** Switch to Access and close the Customers table.

Integrating Access with Excel

Many people find using formulas in Excel more user-friendly and sophisticated than the calculated fields in Access. Luckily, you can send Access data to Excel to perform calculations. The process of sending data to other files or applications is called exporting data. The process of retrieving data from other files or applications is called importing data.

Importing Data from Excel Files

When you import data from Excel, Access uses the Import Spreadsheet Wizard to guide you through the process. Imported data becomes part of the database file. Because the data is imported and not linked, any changes made to the Excel file after the import have no impact on the table data in Access.

Tools on the External Data tab can be used to import and to export data.

The tool for importing from Excel is in the Import & Link group.



The tool for exporting to Excel is in the Export group.

■ External Data→Import & Link→New Data Source→From File→Excel

DEVELOP YOUR SKILLS: A10-D6

In this exercise, you will import an Excel worksheet into your database.

- **1.** Close all Access database objects and choose **External Data** \rightarrow **Import & Link** \rightarrow **New Data Source** to open the menu.
- 2. Choose From File→Excel

Access launches the Get External Data – Excel Spreadsheet dialog box.

- Choose the Import the Source Data into a New Table in the Current Database option, click Browse and navigate to your Access Chapter 10 folder, and double-click A10-D6-WebContacts.xlsx.
- 4. Click **OK** to launch the Import Spreadsheet Wizard.
- 5. Choose the Show Worksheets option and click Next.
- 6. Check the First Row Contains Column Headings box and click Next.
- 7. Click **Next** to import all worksheet fields to the new table, without changes.
- 8. Click Next to let Access create a primary key.
- 9. Type Web Contacts in the Import to Table Name box and click Finish.
- **10.** Close the Get External Data window.

View Imported Table Data

11. Open the new **Web Contacts** table.

The data imported is not linked to the Excel spreadsheet. If you update the data in Excel, it will not be updated in the Access file. Once this data is imported, there is no longer a connection between the two files.

- **12.** Adjust column widths as needed and then save and close the Web Contacts table.
- **13.** Close the WinWebDesign database.
- 14. Start Excel and open A10-D6-WebContacts.xlsx from your Access Chapter 10 folder.
- 15. Change the street address in cell C2 to: 888 Import Lane
- 16. Save and then close the A10-D6-WebContacts.xlsx file.
- In Access, open A10-D2-WinWebDesignRev, close any open objects, and open the Web Contacts table.

Notice the address has not changed because the Excel worksheet was imported into Access but not linked to an Access table.

18. Close the Web Contacts table.

Linking an Excel Worksheet to an Access Database

When you want the data in the Access database to reflect the most current data contained in an Excel spreadsheet, you can import and link the Excel spreadsheet to the Access database table. When you link a spreadsheet to a database, any change to the spreadsheet data is reflected in Access when you open the linked table in Access. Access uses an Excel icon, with a small arrow to the left, to identify a table linked to a spreadsheet.

No edits can be made to linked spreadsheets from within the Access table. You must open the source Excel spreadsheet to make changes to the data or structure.



DEVELOP YOUR SKILLS: A10-D7

In this exercise, instead of importing, you will link the WebContacts spreadsheet to the Winchester Web Design database.

- **1.** Choose External Data \rightarrow Import & Link \rightarrow New Data Source \rightarrow From File \rightarrow Excel
- 2. Choose the Link to the Data Source by Creating a Linked Table option, click Browse, navigate to your Access Chapter 10 folder, and open A10-D6-WebContacts.xlsx.
- 3. Click OK to launch the Link Spreadsheet Wizard.

- 4. Click Next to accept Sheet1.
- 5. Check the First Row Contains Column Headings checkbox and click Next.
- 6. Type Web Contacts Linked in the Linked Table Name box and click Finish.
- **7.** Click **OK** in the Link Spreadsheet Wizard message and locate the linked item, identified by the Excel icon and arrow in the Navigation pane Tables group.
- 8. Open the Web Contacts Linked table in Access and try to edit the data.

The object icon indicates that the table is linked. Access prevents data editing when the linked file is open in Access.

- 9. Close the Web Contacts Linked table.
- **10.** Switch to Excel and open **A10-D6-WebContacts.xlsx**.
- 11. Change the street address in **cell C2** to: 222 Link Lane
- 12. Save and then close A10-D6-WebContacts.
- **13.** Switch to Access and open the **Web Contacts Linked** table.

The street address for the first record is now 222 Link Lane because the table is linked to the updated Excel worksheet.

14. Close the Web Contacts Linked table.

Fixing Broken Links

When you link an Excel spreadsheet to an Access database, Access identifies the drive and folder in which the Excel file was located at the time you created the link. Access searches for the Excel file each time you open the database. If the original Excel file was moved and the path is no longer valid, Access is unable to connect to the linked file.

As a result, Access contains a feature called the Linked Table Manager that aids in locating and redirecting the database to the correct file so you can view the data. A list of linked files along with the external location in which it is stored are displayed in the Linked Table Manager dialog box. Linked files can then be selected along with an option to tell Access you want to redirect the link to a new location where the file has been moved.

External Data—Import & Link—Linked Table Manager 🔤

DEVELOP YOUR SKILLS: A10-D8

In this exercise, you will open the Linked Table Manager and update the linked table location.

- **1.** Choose External Data \rightarrow Import & Link \rightarrow Linked Table Manager $\boxed{12}$.
- 2. Follow these steps to review the information contained in the dialog box:

	=	8	linke	ed Table Manager		
	S	ele	ct the	e linked <u>t</u> ables to be upd	ated:	
A		•	⇒⊠	Web Contacts Linked	(C:\Users\setup\Desktop\AC19-10-student files\AC10-D6-WebCor	
		<				
	1	•				C
B		2	<u>A</u> lway	s prompt for new location	n	
D			<u>a</u> iwa)	s prompt for new locaut		

- A Click the checkbox beside the linked filename and review the linked file identified.
- B Check the Always Prompt for New Location checkbox.
- Click OK.

The Always Prompt for New Location option enables you to navigate to the folder containing the linked file if the file has been moved.

- 3. Locate the Excel file A10-D6-WebContacts.xlsx and click Open.
- 4. Click **OK** to acknowledge that the linked tables were successfully refreshed.
- 5. Click Close in the Linked Table Manager dialog box.
- 6. Close the A10-D2-WinDesignRev database.

Exporting Access Data to Excel

If you want to use the Excel calculations on Access data, you can export the data to create a new Excel file. Some fields, such as ZIP codes, which are defined as the Short Text data type, or a Yes/No data type, which displays values of True/False, may require additional formatting or manipulation in Excel. Overall, though, the steps are similar to those used to export Access data to merge with Word.

📕 External Data→Export→Excel 🌆

DEVELOP YOUR SKILLS: A10-D9

In this exercise, you will export data from an older Winchester Web Design Invoices table to create a new Excel workbook.

- Open A10-D9-Invoices from your Access Chapter 10 folder and save it as: A10-D9-InvoicesRev
- 2. Click the Invoices table in the Navigation pane to select it (but don't open it).
- **3.** Choose External Data \rightarrow Export \rightarrow Excel
- **4.** Ensure the file format is set to **Excel Workbook (*.xlsx)** and check the first two available checkboxes under Specify Export Options.
- Click Browse, navigate to your Access Chapter 10 folder, and save the file as: A10-D9-Invoices.xlsx
- 6. Click Save and then click OK in the Export Excel Spreadsheet dialog box.

Excel opens the new workbook containing the invoice data. Resize columns as necessary.

ID	InvDate	LastName	FirstName	Phone	Description	Amount
1	10-Sep-17	Walters	Sue	555-4578	Website for Pottery	\$400.00
2	08-Oct-17	Williamson	Dan	555-9769	Mowing company site	\$500.00
3	04-Nov-17	Roberts	Nancy	555-3421	Family Photo Website	\$350.00
4	16-Nov-17	Hamilton	Becky	555-4673	Blog	\$200.00
5	02-Dec-17	Sanchez	Javier	555-0879	Memorabilia site	\$450.00
6	14-Dec-17	Smithers	Tim	555-8072	Add 1 page to existing site	\$159.00

7. Close the workbook, saving if prompted. Exit Excel and switch back to Access.

The Save Export Steps dialog box is displayed and indicates that Invoices was successfully exported.

8. Close the Export dialog box, without saving the export steps, and close the database.

Displaying Access Data on the Web

In addition to sharing data from Access with other Microsoft Office applications, Access allows data to be stored on the web, either by hosting data on a SharePoint site, saving the database file directly to online storage, or exporting database objects in an HTML format universally available to anyone in the world. Additionally, there may be times when you want to add web page access to database objects.

Storing Data on Microsoft SharePoint

A database file can be hosted on Microsoft SharePoint. This allows any SharePoint user to access the data from a SharePoint list at any location with an Internet connection using a web browser. You can assign permission levels for each user, restricting or allowing them to complete specified actions such as only reading data, making changes to data, or having full control over the design. A database synchronized to a SharePoint site can be modified in Access offline and any changes will appear to the SharePoint site when reconnected.
Alternately, you can save a database file directly to SharePoint, allowing users to access the database at any location with an Internet connection. Doing so requires an active SharePoint site with user authentication for accessing and editing the database file.

Hom	e Create	External Data	Database To	ols Help 🖓 T	ell me what you w	vant te do	
nd ase	Visual Run Basic Macro Macro	Relationships Relationships Relatior	Object ependencies ships Analyze Performation Database Docum		enter ance Database Mov	SharePoint Ad	dd- s ≠ d-ins
Where do you want to move your data?							
This wizard moves all your data to a SharePoint site by creating a SharePoint list for each tabl linking each list back to your existing database.					ble and then		
,	What <u>S</u> harePoint	site do you want	to use?				
https://lablearning.		ng.sharepoint.com	n				

Exporting Access Objects as Web Pages

Hypertext Markup Language (HTML), the code or language in which web pages are written, allows files to be formatted and viewed in any web browser, anywhere in the world. Access allows you to save each database object separately as an HTML file and display that data online.

Updating HTML Data

When data in the database changes, HTML files do not automatically update. Consequently, many companies update their HTML files regularly and display a date and time to indicate when data was published. To create a web-based file for Access data, you use the External Data tab to export the object as an HTML file.

Saving HTML-Formatted Objects

When you export a database object as an HTML file, you can preserve the formatting and layout of what you have already designed in Access. When you click OK, Access displays the HTML Output Options dialog box, which enables you to choose the default or other encoding to apply to the file.

```
External Data→Export→More→HTML Document 顕
```

DEVELOP YOUR SKILLS: A10-D10

In this exercise, you will export a table in HTML format and view it in a web browser.

- 1. Open A10-D2-WinWebDesignRev and close any open objects.
- 2. Click the **Products** table in the Navigation pane to select it.
- Choose External Data→Export→More→HTML Document .
 The Export-HTML Document window appears.
- 4. Click Browse, navigate to your Access Chapter 10 folder, and click Save.
- Check the first two checkboxes under Specify Export Options and click OK. The HTML Output Options dialog box appears.

6. Click OK to create the file with the default encoding.

Access creates the HTML file and opens it as a web page in your default web browser. You can now upload it to your website or to your network.

	Products						
ProdID	ProdID Description						
01HP	Home Page, Nav, CSS, Design	\$400.00					
02SP	Secondary Page	\$200.00					
03BL	Blog, Integrated into Site	\$300.00					
04SC	Shopping Cart, Basic	\$400.00					
05IM	Image, Custom Designed	\$40.00					
06HR	Hourly Rate for Modifications	\$80.00					
07LC	Logo Creation	\$100.00					
08PS	Photo Shoot, 1 hour onsite	\$100.00					
09IM	Image Map	\$40.00					
10SS	Slide Show	\$100.00					
11QR	QR Code	\$50.00					

- 7. Close your web browser window.
- 8. Switch back to Access and close the dialog box.

Importing HTML Files

When data you want to use is in an HTML file, you can import that data to create a new table, append it to an existing table, or link the HTML file to the database. The steps for importing HTML data are similar to those used to import Excel and other types of data.

External Data—Import & Link—New Data Source—From File—HTML Document 📴

DEVELOP YOUR SKILLS: A10-D11

In this exercise, you will import a list of web resources contained in an HTML file into Access as a new table.

- 1. Close any open objects in the A10-D2-WinDesignRev database.
- 2. Choose External Data \rightarrow Import & Link \rightarrow New Data Source \rightarrow From File \rightarrow HTML Document \blacksquare
- 3. Click Browse and navigate to the Access Chapter 10 folder.
- 4. Double-click A10-D11-WebResources.html and select the Import the Source Data into a New Table in the Current Database option.
- 5. Click OK to launch the Import HTML Wizard.
- 6. Check the First Row Contains Column Headings checkbox and click Next.
- **7.** Click **Next** again, this time to keep the existing field names and data types and to import all fields into the table.
- 8. Choose the No Primary Key option and click Next.

Because the HTML document is just a short list of website addresses, there is no need to set a primary key to uniquely identify each site.

9. Type **Resources** for the Import to Table name and click **Finish**.

- **10.** Close the dialog box. Open the **Resources** table and resize the columns as necessary.
- **11.** Review the data and then save and close the **Resources** table.

Adding Hyperlinks to Database Objects

Hyperlinks attached to database forms and reports are a convenient way to access other database objects, external files associated with the database, or websites. You can create a hyperlink to:

- Open an external website.
- Launch another application and open a specific file.
- Add a new table field for a customer's email address.

The Insert Hyperlink dialog box enables you to select an existing file or web page, an object in the active database, or an email address. Although the hyperlink text generally identifies the action of the hyperlink, you can also add a ScreenTip to display more descriptive text when the user points to the hyperlink. Typically, hyperlinks are underlined and formatted a light blue text color. When you point to a hyperlink, the mouse pointer appears as a pointing hand. Clicking (rather than double-clicking) performs the action associated with the hyperlink.

2	Resource 👻	Web Address 👻
	Style Sheet (CSS) Web Resources	http://msdn.mig/osoft.com/en-us/library/gg309314.aspx
	Web Page (HTML) Web Resources	http://msdn.mi.rosoft.com/en-us/library/gg309536.aspx
	Image (JPG, PNG, GIF, ICO) Web Resources	http://msdn.microsoft.com/en-us/library/gg334549.aspx
	Create Accessible Web Resources	http://msdn.microsoft.com/en-us/library/jj602948.aspx
	Import Files as Web Resources	http://msdn.microsoft.com/en-us/library/gg327924.aspx



In this exercise, you will add a hyperlink to Winchester's About Us Page form.

1. Display the About Us Page form in Design View.

- 2. Click the **Detail** section bar and choose **Form Design Tools**→**Design**→**Controls**→**Link** (to open the Insert Hyperlink dialog box.
- **3.** Follow these steps to add a hyperlink to the company web address:

Insert Hyperlin	nk		
Link to:	Text to displ	ay: Microsoft.com B	
Existing File	<u>L</u> ook in:	Reports 🕥 🎦	
or Web Page	Current	Products List.docx	
	Folder	Products Page.html Products Report.txt	
Object in This D <u>a</u> tabase	<u>B</u> rowsed Pages	Products.bmp Products.xls	
E- <u>m</u> ail Address	Re <u>c</u> ent Files	G	
Ryperlink	Addr <u>e</u> ss:	http://microsoft.com	U

- A Choose Existing File or Web Page.
- **B** Type **Microsoft.com** for the text to display.
- **C** Type **http://microsoft.com** for the address.
- D Click OK.

Access places the hyperlink control in the top-left corner of the Detail section.

4. Switch to **Form View** and click the hyperlink.



The Microsoft website opens in your web browser.

5. Close your browser window. Close all database objects, saving changes if necessary, and then exit Access.

Self-Assessment



Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

Reinforce Your Skills

REINFORCE YOUR SKILLS: A10-R1

Format Fields and Integrate with Word

As lead designer for Kids for Change, you are in charge of database maintenance. Kids for Change has asked you to store staff photos in the database and export data to a Word document. In this exercise, you will add an attachment field for staff photos, copy Access data to Word, and export a table to Word in rich text format.

1. Open A10-R1-K4C from the Access Chapter 10 folder and save it as A10-R1-K4C-Rev, choosing Yes when asked to close all open objects.

To begin, you will create an Attachment field.

- 2. Display the **PaidStaff** table in **Design View**.
- **3.** Scroll down to the first empty row and complete the field using these guidelines:
 - Type **StaffPhoto** in the Field Name column.
 - Choose **Attachment** from the Data Type list.
 - Type **Staff ID Photo** in the Description column.
- 4. Save the PaidStaff table and switch to Datasheet View.
- Double-click the paperclip icon for the first record (Matthew Bryant).
 The Attachments dialog box opens.
- **6.** Click **Add**, navigate to your **Access Chapter 10** folder, and double-click **MathewBryant.jpg**. *Access adds the filename of the photo to the Attachments dialog box.*
- 7. Click OK to close the Attachments dialog box and then close and save the PaidStaff table.

Copy Access Data to Word

- 8. Display the K4CActivityList table in Datasheet View.
- **9.** Click the **table selector** button and then choose **Home** \rightarrow **Clipboard** \rightarrow **Copy b**.
- 10. Start Word and open A10-R1-K4C-Welcome.docx from your Access Chapter 10 folder.
- **11.** Position the insertion point under the line *Below are just a few of the activities we are offering this year* and choose **Home**→**Clipboard**→**Paste**.
- 12. Save the Word document in your Access Chapter 10 folder as: A10-R1-K4C-WelcomeRev
- 13. Switch back to Access and close K4CActivityList.
- **14.** Position the Word and Access windows side by side and make sure the *We hope that you...* paragraph is visible in the Word document.
- **15.** Open the **Welcome Staffers** query in Access and click the **table selector** button to select all staffer records.

16. Hover the pointer over the left side of the first column so it becomes a white arrow and then drag and drop the records below *We hope that you...* in the Word document.

	Welcome Staffe	15	×		L 2	<u> </u>		2	
1	Last Name 📼	First Name 👻	Telephone		-	Car Wash	Sat	12:00 PM	
	Riggs	Tammy	(941) 555-219		-	Dog Walking	Tue, Thu	6:00 PM	
	Sanchez	Cokie	(941) 555-000		-	Eco-Bake Sale	Sun	8:00 AM	
	Nancesco	Dominic	(941) 555-828	I.		<u>Foodbank</u> Drive	Sun	7:00 PM	
	Anderson	Paul	(800) 555-298	ľ	-	Garden Work	Wed	5:00 PM	
	Pratt	Donna	(941) 555-655			Newspaper Drive	Mon	6:00 PM	
	Gordon	Sandy	(941) 555-927		-	Recycling Drive	Tue	6:00 PM	
*			(,		-	Turtle Watching	Sat	5:00 PM	
				r		We hope that y contact any of o	ou can fi our Welc rd to spe	nd severa come Staffe nding the	l act ers: upc

17. Save and close the Word document.

Export Access Data to Word

- **18.** Switch to Access and maximize the window.
- 19. Close the Welcome Staffers query and then click the Venues table to select it.
- **20.** Choose External Data \rightarrow Export \rightarrow More \rightarrow Word $\boxed{$
- 21. Click the **Browse** button, navigate to your **Access Chapter 10** folder, and save the file as: A10-R1-K4C-Venues
- **22.** Click the **Open the Destination File After the Export Operation Is Complete** checkbox and click **OK**.
- **23.** Close the Word document, saving the changes if prompted, and then close the Export RTF File dialog box in Access.

Merge Access Data into a Word Document

24. Open the **Volunteers** table and choose **External Data** → **Export** → **Word Merge**.

The Microsoft Word Mail Merge Wizard opens.

- 25. Choose Link Your Data to an Existing Microsoft Word Document and click OK.
- **26.** Open **A10-R1-K4C-WelcomeRev** from your **Access Chapter 10** folder; maximize the Word window.
- **27.** Position the insertion point under the K4C logo and above *Dear K4C Volunteer*, and then choose **Mailings**→**Write & Insert Fields**→**Insert Merge Field menu button** →**VolFirstName**.

Access inserts the table field between chevrons on the document.

«VolFirstName»

Dear K4C Volunteer,

- 28. Tap Spacebar and enter the VolLastName field.
- 29. On the next line, enter the VolStreet field.

- **30.** On the next line, enter the **VolCity** field, then the **VolST** field, and then the **VolZIP** field, taking care to include spaces between fields and a comma after the city.
- 31. Choose Mailings—Preview Results 🗠 to verify the customer name and address display properly.



32. Save and close the Word document and exit Word. Save and close the database.

REINFORCE YOUR SKILLS: A10-R2

Integrate Access with Excel

Kids for Change would like you to share some of the data in its database with Excel. In this exercise, you will add a table that is linked to an Excel spreadsheet and export a table to Excel.

1. Open A10-R2-K4C from your Access Chapter 10 folder and save it as: A10-R2-K4CRev

To begin, you will import unlinked Excel data into Access.

- **2.** Choose **External Data** \rightarrow **Import & Link** \rightarrow **New Data Source** \blacksquare \rightarrow **From File** \rightarrow **Excel**. Access launches the Get External Data Excel Spreadsheet dialog box.
- 3. Choose Import the Source Data into a New Table in the Current Database, click Browse, and open A10-R2-K4C-Contacts.xlsx from your Access Chapter 10 folder.
- 4. Click **OK** to launch the Import Spreadsheet Wizard and import the data using these guidelines:
 - First Row Contains Column Headings.
 - Import all worksheet fields to the new table, without changes.
 - Let Access add the primary key.
 - Type **Venue Contacts** for the Import to Table name.
- 5. Close the Get External Data window without saving the import steps.
- 6. Open the new **Venue Contacts** table and resize the columns as desired.

The table lists four fields and nineteen records. The data is not linked to the source table in Excel, so if you update the data in Excel, the Access file will not update.

7. Save and close the Venue Contacts table.

Link an Excel Spreadsheet to an Access Database

- 8. Choose External Data \rightarrow Import & Link \rightarrow New Data Source \rightarrow From File \rightarrow Excel
- 9. Choose Link to the Data Source by Creating a Linked Table, click Browse and open A10-R2-K4C-Contacts.xlsx from your Access Chapter 10 folder, and click OK.

- 10. Check the First Row Contains Column Headings checkbox and click Next.
- **11.** Type **Venue Contacts Linked** for the Linked Table name and click **Finish**; click **OK** in the message box.

The imported table has a different icon than the other tables in the Navigation pane. The icon has an arrow pointing toward the Excel icon instead of the Access table icon.

- 12. Open A10-R2-K4C-Contacts in Excel and change the contact for All Angels Church from *Kevin Gregory* to: Dina McMullen
- **13.** Save and close Excel and then switch to Access and open the **Venue Contacts Linked** table. *The name is also changed in the table.*
- **14.** Close the Venue Contacts Linked table.

Use the Linked Table Manager

- **15.** Choose External Data → Import & Link → Linked Table Manager 201.
- **16.** Click the checkbox beside the linked filename and review the linked file identified.
- 17. Check the Always Prompt for New Location checkbox and click OK.

Access opens the Select New Location dialog box so you can navigate to the folder containing the linked file—in the event the file has been moved.

- 18. Open A10-R2-K4C-Contacts.xlsx from your Access Chapter 10 folder.
- **19.** Click **OK** in the dialog box and then close the Linked Table Manager dialog box.

Export Access Data to Create a New Excel Workbook

- **20.** Click **Donations Query** in the Navigation pane and then choose **External Data** \rightarrow **Export** \rightarrow **Excel**
- Ensure the file format is set to Excel Workbook (*.xlsx) and check the Export Data with Formatting and Layout and Open the Destination File After the Export Operation Is Complete checkboxes.
- 22. Save the export in your Access Chapter 10 folder as: A10-R2-K4C-Donations.xlsx
- **23.** Click **OK** in the dialog box. Close Excel and then close the Export Excel Spreadsheet box.

REINFORCE YOUR SKILLS: A10-R3

Integrate Access with the Web

Kids for Change would like you to share some of the data in its database for display on the web. In this exercise, you will import an HTML file as a new database table, export a table to view on the web, and add a hyperlink from the Activities Form to the Activity Costs Report.

- **1.** Open **A10-R3-K4C** from your **Access Chapter 10** folder and save it as: **A10-R3-K4CRev** You will begin by exporting an object in HTML format.
- 2. Close the navigation form and then select the **Activities Query** in the Navigation pane.
- 3. Choose External Data \rightarrow Export \rightarrow More \rightarrow HTML Document $\boxed{\mathbb{I}_{2}}$.
- 4. Click **Browse**, navigate to your **Access Chapter 10** folder, and save the file as: A10-R3-K4C-Activities.html
- 5. Check the Export Data with Formatting and Layout and Open the Destination File After the Export Operation Is Complete checkboxes.

6. Click OK twice to create the file with the default encoding.

Access creates the HTML file and opens it as web page in your default web browser. You can now upload it to your website or to your network.

7. Close your web browser window; switch back to Access and close the Export – HTML Document dialog box.

Import an HTML File as a Database Object

- Close any open objects and then choose External Data→Import & Link→New Data Source→ From File→HTML Document .
- 9. Click Browse and open A10-R3-K4C-Partners.html from your Access Chapter 10 folder; select Import the Source Data into a New Table in the Current Database and click OK.
- 10. Check the First Row Contains Column Headings checkbox and click Next.
- **11.** Click **Next** to accept the default field names and data types, choose **No Primary Key** on the next screen, and click **Next**.
- **12.** Type **NonProfits** for the Import to Table name and click **Finish**.
- **13.** Close the Get External Data dialog box. Open the **NonProfits** table and size the columns so you can view the data.
- 14. Review the data and then save and close the NonProfits table.

Add a Hyperlink to a Form

- 15. Display the Activities Form in Design View.
- **16.** Click the **Detail** section bar and choose **Form Design Tools** → **Design** → **Controls** → **Link**
- **17.** Choose **Object in This Database**, expand the Reports section, choose **Activity Costs Report**, and click **OK**.

Insert Hyperlink							
Link to:	Text to display: Activity Costs Report						
	Select an obje <u>c</u> t in this database:						
Existing File	🖶 🔤 Queries						
of web rage	Forms						
a	Reports						
Object in This	📔 🛛 Activity Costs Report						
D <u>a</u> tabase	Children Report						

Access places the hyperlink control in the top-left corner of the Detail section.

18. Drag the new hyperlink control to the right of the Telephone controls.

-	City	
2	Telephone VenuePhone	Activity Costs Report
:		

- **19.** Save the changes to Activities Form, switch to **Form View**, and click the hyperlink. *The Activity Costs Report opens.*
- **20.** Close Access, saving any changes.

🗞 Apply Your Skills

APPLY YOUR SKILLS: A10-A1

Change the Database Format, Create Attachments, and Integrate Access with Word

Universal Corporate Events needs your help adding employee photos and merging data with Word. In this exercise, you will add an attachment field to a table for employee photos. Then you will copy Access data into Word, export a table to Word, and merge Access data into a Word document.

- Start Access, open A10-A1-UCE from your Access Chapter 10 folder, and save it as: A10-A1-UCERev
- 2. Open the **Personnel** table in **Design View**. Type **PerPhoto** in the first available Field Name record, choose the **Attachment** data type, and enter the description: **Personnel ID Photo**
- **3.** Save the Personnel table and switch to **Datasheet View**.
- **4.** Add the **ReneeAllison.jpg** photo from your **Access Chapter 10** folder to the Renee Allison record.
- 5. Close the Attachments dialog box; save and close the Personnel table.

Copy and Export Access Data to Word

- 6. Start Word and open A10-A1-UCE-Promotions.docx from your Access Chapter 10 folder.
- 7. Run the **Event Organizers** query in Access and then select all records in the query datasheet.
- **8.** Position the Word and Access windows side by side and then drag and drop the Access query records into the Word document on the empty line below the paragraph that ends ...contact one of our Event Organizers first!
- 9. Close the Event Organizers query and then maximize the Word window.

The bottom portion of the letter includes the Event Organizers query. The name of the Access object is displayed as a title at the top of the object.

10. Save the Word document in your **Access Chapter 10** folder as:

A10-A1-UCE-PromotionsRevised

- **11.** Select the **Menus** table and choose **External Data** → **Export** → **More** → **Word**.
- 12. Click Browse and save the file in your Access Chapter 10 folder as: A10-A1-Menus.rtf
- **13.** Check the **Open the Destination File After the Export Operation Is Complete** checkbox and click **OK**.
- **14.** Close the Word document; switch to Access, close the dialog box, and then maximize the Access window.

Merge Access Data into a Word Document

- Open the BusinessOwners table in Datasheet View and choose External Data→Export→ Word Merge.
- Link your data to the Word document A10-A1-UCE-PromotionsRevised in your Access Chapter 10 folder.

- **17.** Position the insertion point under the UCE URL and above the date and then create an address block as described:
 - On the first line, choose **First_Name** from the merge fields list, tap **Spacebar**, and choose **Last_Name**.
 - On the second line, choose **Address**.
 - On the third line, choose City, ST, and ZIP and add a comma and space between each field.
- **18.** Choose Mailings → Preview Results → Preview Results.



19. Close the files in Word and Access, saving changes when prompted.

APPLY YOUR SKILLS: A10-A2

Integrate Access Data with Excel and Link Spreadsheets

The president of Universal Corporate Events wants you to integrate some of the company's data with Excel. In this exercise, you will add a table that links to an Excel spreadsheet and export a table to Excel.

- 1. Open A10-A2-UCE from your Access Chapter 10 folder and save it as: A10-A2-UCERev
- 2. Choose External Data → Import & Link → New Data Source → From File → Excel.
- **3.** Choose to link your data by creating a linked table and then browse to your **Access Chapter 10** folder and open **A10-A2-UCE-Customers.xlsx**.
- 4. Check the First Row Contains Column Headings checkbox and click Next.
- 5. Type **BestCustomers-Linked** for the Import to Table name and click **Finish**.
- 6. Click OK in the message box and then open the new **BestCustomers-Linked** table.

In the next few steps you will change the last name Fran to Francesca in the second record of the Excel spreadsheet. This change will be reflected in the Access table because they are linked.

7. Close the table, saving it if prompted, and then open A10-A2-UCE-Customers.xlsx in Excel and change the first name in the second record from *Fran* to: **Francesca**

- **8.** Save and close the Excel workbook and then open the **BestCustomers-Linked** table in Access. *The first name is also changed to Francesca in the table.*
- **9.** Close the BestCustomers-Linked table.
- **10.** Choose External Data → Import & Link → Linked Table Manager.
- **11.** Mark the checkbox beside the linked filename, check the **Always Prompt for New Location** checkbox, and click **OK**.
- 12. Locate the A10-A2-UCE-Customers file and click Open.
- **13.** Click **OK** in the dialog box and then close the Linked Table Manager.

Export Access Data to Create a New Excel Workbook

- **14.** Select the **Menus** table in the Navigation pane and choose **External Data Export Excel**.
- **15.** Ensure the file format is set to **Excel Workbook (*.xlsx)** and check the two available checkboxes under Specify Export Options.
- **16.** Click **Browse**, save the file as **A10-A2-UCE-Menus** in your **Access Chapter 10** folder, and click **OK**. *Excel opens and displays the workbook containing the Menus data.*
- **17.** Close the Excel workbook and then switch to Access and close the Export Excel Spreadsheet box.
- **18.** Close the database, saving any changes.

APPLY YOUR SKILLS: A10-A3

Export and Import to the Web and Add Hyperlinks

In this exercise, you will export a table to make it available for viewing on the web, import an HTML file as a table, and add a hyperlink from the Venues Form to the Venue Revenue Report.

- 1. Open A10-A3-UCE from your Access Chapter 10 folder and save it as: A10-A3-UCERev
- **2.** With the **Menus** table selected, choose **External Data** \rightarrow **Export** \rightarrow **More** \rightarrow **HTML Document**.
- 3. Click Browse and save the file in your Access Chapter 10 folder as: A10-A3-UCE-Menus.html
- 4. Check the boxes for Export Data with Formatting and Layout and Open the Destination File After the Export Operation Is Complete; click OK.
- **5.** In the HTML Output Options Dialog box, leave the option for **Default Encoding** selected and click **OK**.

Access creates the HTML file and opens it as a web page in your default web browser.

6. Close your web browser window. Switch back to Access and close the Export – HTML Document dialog box.

Import an HTML File as a Database Object

- Close any open objects and then choose External Data→Import & Link→New Data Source→From File→HTML Document.
- 8. Click Browse, open A10-A3-UCE-Events.html from your Access Chapter 10 folder, and click OK.
- 9. Check the First Row Contains Column Headings checkbox and click Next.
- **10.** Click **Next** again to accept the default field options, choose **No Primary Key** on the next screen, and click **Next**.

- **11.** Type **AdditionalEvents** for the Import to Table name and click **Finish**.
- **12.** Close the Get External Data dialog box and then open the **AdditionalEvents** table and widen the columns as necessary.
- **13.** Review the data and then save and close the AdditionalEvents table.

Add a Hyperlink to a Form

- 14. Display the Venues Form in Design View.
- **15.** Click the **Detail** section bar and choose **Form Design Tools** \rightarrow **Design** \rightarrow **Controls** \rightarrow **Link**.
- 16. Type Open Venue Revenue Report for the Text to Display.
- **17.** Choose **Object in This Database** in the Insert Hyperlink dialog box.
- **18.** Expand the Reports section, click **Venue Revenue Report**, and click **OK**. *Access places the hyperlink control in the top-left corner of the Detail section.*
- **19.** Drag the hyperlink control to the right of the Venue ID.
- 20. Save changes to the Venues Form and then switch to Form View.

UNIVERSAL CORPORATE E V E N T S	niversal Corpo Venues F	rate Events orm	
Venue ID Venue Name	BradCC Bradenton Communit	y Club	Open Venue Revenue Report
Address	2903 9th Ave		
City	Bradenton	Telephone	(800) 555-6487

When you point to the hyperlink, a ScreenTip displays the hyperlink's destination.

- 21. Click the hyperlink to open the Venue Revenue Report in Report View.
- **22.** Close all open database objects and then close the database.

🖹 Project Grader

This chapter does not include Project Grader exercises. Project Grader content is based on the learning objectives for a chapter, and sometimes those learning objectives cannot be accurately graded by the system. Objectives from this chapter that can be accurately graded may be included in later chapters, if applicable.

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

A10-E1 That's the Way I See It

To streamline customer outreach, you want to export data from the Blue Jean Landscaping database to Word. Open A10-E1-BJL and save it as A10-E1-BJLRev

Use the Customers table and the Mail Merge function to export the indicated fields into the **A10-E1-BJL-Promotion** document in the empty area between the date and body of the letter.

Open the Services table and copy the Services column header and field data, pasting it into empty space between the two body paragraphs. Enhance the appearance of the Word document using any techniques you feel will help improve customer outreach. Fields to Add: First Name Last Name Street Address City ST ZIP

A10-E2 Be Your Own Boss

You want to export data in the Blue Jean Landscaping database to a spreadsheet so you can perform quick calculations. You also need to link new merchandise data from Excel. Open **A10-E2-BJL** and save it as: **A10-E2-BJLRev**

Export the Merch Sales Query as an Excel spreadsheet named **Merch Sales.xlsx** and preserve the data with formatting and layout. Use **A10-E2-BJL-NewMerchandise.xlsx** to create a linked table named **New Merch** that contains the column headings from the sheet's first row. Apply any changes to the table you feel will help improve data entry or visual appearance.

A10-E3 Demonstrate Proficiency

Stormy BBQ is concerned that sales employees cannot access merchandise data while they are on the road. They would like you to publish it to the web for easy access and to add a hyperlink to the MerchSales form. Lastly, they've asked you to begin adding photos of the current staff. Open **A10-E3-SBQ** and save it as: **A10-E3-SBQRev**

Export the MerchSales table as an HTML document named **MerchSales.html** (preserve the data with formatting and layout). Add a hyperlink to the Merchandise table at the bottom-left corner of the MerchSales form using **Available Merchandise** as the text to display. Add an Attachment field to the Staff table and attach the **HankGore.jpg** file to the Hank Gore record. Apply any other changes you feel will help improve the database.

ACCESS



Maintaining a Database

s you prepare your database for distribution, you will make your last design tweaks and confirm it is optimized for speed and ease of use. At this stage, security should be a main priority, as protecting a database from data loss and unauthorized access is critical. In this chapter, you will customize Access settings and add easy-to-use command buttons to a form. You will also create macros; explore database security features; set a database password; and then analyze, compact, and repair a database.

LEARNING OBJECTIVES

- Add command buttons to forms
- Manage database objects and create macros
- Back up, restore, analyze, compact, and repair a database
- Set database security using encryption and passwords

Project: Improving and Maintaining a Database

The prototype of the Winchester Web Design database is almost complete. After reviewing the database, the company's owner is pleased with the overall design. He now wants to add some command buttons and macros to improve navigation and to ensure the database runs as efficiently as possible. A major concern is the security of the database and the data it contains. The owner would like to institute both security protocols and a regular backup policy.

Using Command Buttons to Improve Navigation

In addition to adding labels, text boxes, images, and other controls to database forms, you can add command buttons to use for record navigation, such as finding a record or going to the previous/next record, and report operations, such as printing a specific report or even exiting Access. To create a button, you draw a button shape in the desired location on the form and use the Command Button Wizard to walk you through the process.

📕 Form Design Tools→Design→Controls→Button 📼

DEVELOP YOUR SKILLS: A11-D1

In this exercise, you will add command buttons to the Form Footer section of the Invoice Form to make navigation easier and to quickly view an invoice report.

- 1. Open A11-D1-WinDesign from your Access Chapter 11 folder and save it as: A11-D1-WinDesignRev
- 2. Enable content and then close the Winchester Web Design Navigation Form.



Many of the activities in this chapter require you to enable content to function properly. Enable content when the option appears.

- 3. Open the Invoice Form in Design View.
- Click the Form Footer section bar and type 0.75 for the Height property on the Property Sheet. (Hint: Tap [F4] to open the Property Sheet.)
- 6. Draw a button in the Form Footer under the left end of the subform.

If the Command Button Wizard doesn't open, delete the button and then choose Form Design Tools \rightarrow Design \rightarrow Controls \rightarrow Use Control Wizards and draw the button again.

7. Follow these steps to add a command button:

Your command button may show a different number than 33.

State Telephone	CustSt ZIP: Cust Command Button Wizard	stZIP	
Email	Sample:	What action do you want to happ pressed? Different actions are available fo	pen when the button is
Prodit		Categories: Record Navigation Record Operations Form Operations Report Operations Application Miscellaneous	Actions: Find Next Find Record Go To First Record Go To Last Record Go To Next Record Go To Previous Record
Form Footer Command33		Cancel < Back	Next > C Einish

- A Choose the Record Navigation category.
- B Choose the **Go To First Record** action.
- Click Next.
- 8. Click the Picture option, choose Go To First, and click Next.
- 9. Enter cmdFirst as the meaningful name and click Finish.

The command button shows the Go To First picture in the Form Footer section and is programmed to go to the first record when in Form View.

10. Repeat steps 5–9 to add commands in the order shown:

Category	Action	Picture	Name
Record Navigation	Go To Previous Record	Go To Previous	cmdBack
Record Navigation	Go To Next Record	Go To Next	cmdNext
Record Navigation	Go To Last Record	Go To Last	cmdLast
Record Navigation	Find Record	Binoculars (Find)	cmdFind

	ProdID
Form	Footer
	╘╺╴┝╺

 Draw a button to the right of the Find button, choosing Report Operations as the category and Preview Report as the action; click Next.

- 12. Select the Invoice Details Report as the report to preview and click Next.
- 13. Choose the MS Access Report picture, if necessary, and click Next.
- 14. Enter the name **cmdPreviewInvoices** and click **Finish**.
- Select the new buttons and choose Form Design Tools→Arrange→Sizing & Ordering→ Align→Top.
- **16.** With the buttons still selected, choose **Form Design Tools**→**Arrange**→**Size & Ordering**→ **Size/Space**→**Equal Horizontal**.
- 17. Switch to Form View and test each button.
- 18. If necessary, close the Invoice Details Report and then save and close the Invoice Form.

Creating Macros to Improve Efficiency

A macro is an object that combines a series of steps into a single step so a more detailed task can be automated. For example, if you regularly export your data to another database, instead of choosing External Data \rightarrow Export \rightarrow Text File and then entering the filename and selecting export options, you could create a macro to perform all the steps with one double-click of the mouse.

ExportCustomers		×	
ExportWithForm	atting	×	
Object Type	Table	Y	
Object Name	Customers		
Output Format	Text Files (*.txt)	Y	
Output File	Customers.txt		
Auto Start	No	~	
Template File			
Encoding		~	
Output Quality	Print	~	
+ Add New Action	~		
Customers.txt - Notep	ad		- 🗆 X
File Edit Format View	v Help		
CustID	Last Name	First Nam	e Street Address
AbramsJ	Abrams	John	1210 West Pier Way
AndersM	Anders	Mark	205 Montana St
BlaserH	Blaser	Helen	600 Fowler
DavisP	Davis	Peter	65 Terracotta Way
			×
<			×

The ExportCustomers macro exports the Customers table to the default My Documents folder as a text file (bottom figure). If needed, a specific file path could be entered for the output file.

Create \rightarrow Macros & Code \rightarrow Macro

DEVELOP YOUR SKILLS: A11-D2

In this exercise, you will create a macro that will display a message box to provide basic directions on when and where to back up the Winchester Web Design database.

- **1.** Choose Create \rightarrow Macros & Code \rightarrow Macro
- 2. Choose MessageBox from the Add New Action drop-down menu.

2	Macro1	
+	N N	
	GoToRecord A	
	LockNavigationPane	
	MaximizeWindow	
	MessageBox	
	MinimizeWindow	

3. Enter the following into the MessageBox text boxes:

Property	Setting
Message	Be sure to back up every Friday
Веер	Yes
Туре	Information
Title	Back-Up Policy

2	Macro1		×
-	MessageB	ох	×
	Message	Be sure to back up every Friday	
	Веер	Yes	\sim
	Туре	Information	\sim
	Title	Back-Up Policy	
+	Add New /	Action 🗸	

- 4. Save the macro as: Back-Up Policy
- 5. Choose Macro Tools \rightarrow Design \rightarrow Tools \rightarrow Run ! to test the macro.

A message box should appear with the title, message, and icon you entered.

- 6. Click OK to close the message box.
- **7.** Close the Back-Up Policy macro.

Back-Up Policy is now listed in the Navigation pane under the Macros group heading.

Using Macros to Display Adaptable Reports

Now that you have created a simple macro to display a reminder message, you can add a command button to a form that will run a macro to display a report. By adding a "where" condition, you can

not only open the report of your choosing, you can also specify the macro to display a specific record within the report based on matching the criteria for a field in the current object. For example, if you would like to print the invoice that corresponds to the record displayed in your Orders form, you can set the macro to display only the record that matches the Order ID field in both the Orders form and the Invoices report.

DEVELOP YOUR SKILLS: A11-D3

In this exercise, you will create a macro button that will be placed on the Employees Form to display a report of all the sales for the specific employee selected.

- **1.** Choose Create \rightarrow Macros & Code \rightarrow Macro
- Open the Add New Action drop-down menu, scroll the list downward, and choose OpenReport.
- 3. Open the **Report Name** drop-down menu and choose **Invoice Details Report**.
- 4. Complete the OpenReport text boxes as indicated:

As you start to enter in the Where Condition text box, Access will suggest field names from a drop-down menu, allowing you to quickly and more accurately select from the list.

Property	Setting
Report Name	Invoice Details Report
View	Report
Where Condition	[EmpID]=[Forms]![Employees Form]![EmpID]
Window Mode	Normal

- 5. Save the macro as: Invoice Details Report by Employee
- 6. Display the Employees Form in Design View.
- 7. Choose **Design**→**Controls**→**Button** and draw a button in the top-right corner of the Details section of the Employees Form.

The Command Button Wizard starts.

Form Header						
Winsbester	Winchester Web Employees I	Design Form				
🗲 Detail	🗲 Detail					
EmptD	EmpID	Command28				
Last Name First Name	EmpLastName EmpFirstName	ß				

- 8. Choose the Miscellaneous category and the Run Macro action; click Next.
- 9. Choose Invoice Details Report by Employee and click Next.
- **10.** Accept the default macro picture and click **Next** again.
- **11.** Name the button **cmdRptByEmployees** and click **Finish**.

- **12.** Switch to **Form View** and navigate to *Mike Waters* (EmpID MJW).
- **13.** Click the new **Run Macro** button to display all records in which the EmpID is *MJW*.
- **14.** Close the report and form, saving the changes to the form.

Managing Database Objects

Protecting databases and the quality of data they contain is vital to the reliability and performance of any database. At the same time, learning efficient ways to manage database objects helps to save a great deal of time as you build a database. The general cleanup and maintenance of a database can be accomplished in a number of ways. You can create new objects from existing objects, rename database objects, and delete unneeded or duplicate database objects.

Creating New Objects from Existing Objects

Often, databases contain separate objects that are similar in structure and in the data they hold. For example, the Employees table in the Winchester Web Design database contains fields similar to those found in the Customers table. When you build a database that contains similar objects, you can copy the original object, save it using a new name, and then modify the new object to fit its specific needs. There are two basic ways to copy objects:

- Use the Save Object As command and rename the object to create another instance of it.
- Use the contextual menu Copy and Paste commands.

Renaming Database Objects

You might create a table, query, form, or report and save it with the first name that comes to mind and then, after working with the object for a while, you might want to change the name. When an object is renamed, Access automatically renames all the relationships and record sources that use the renamed object. For instance, if you update the Invoices table to Orders, the record source for the queries, forms, and reports based on the table will be updated to reflect the new name.

Deleting Database Objects

During the development of a database, there are times when it is wise to create a temporary table, query, form, or report for testing purposes. Once the database is completed, you should remove these objects so they don't clutter the Navigation pane or confuse users.

DEVELOP YOUR SKILLS: A11-D4

In this exercise, you will copy, rename, and delete a report. You will also save a table in the Winchester Web Design database as a new table and edit the field names for the new table.

- **1.** Right-click the **Products Report** in the Navigation pane and choose **Copy**.
- 2. Right-click again and choose **Paste**, keep *Copy Of Products Report* as the report name, and click **OK**.
- 3. Right-click Copy Of Products Report and choose Rename; type Delete This Report and tap Enter.

- 4. Select the **Delete This Report** report in the Navigation pane.
- 5. Tap **Delete** and click **Yes** to confirm the deletion.



You can also right-click an object and choose Delete from the menu.

- 6. Open the Employees table and choose File -> Save As -> Save Object As -> Save As.
- 7. Type Business Contacts in the Save 'Employees' To text box and click OK.
- 8. Switch to Design View.
- **9.** Select and edit the **Business Contacts** field names, replacing each *Emp* prefix with a **Bus** prefix (so *EmpID* is *BusID*, *EmpLastName* is *BusLastName*, and so on).
- 10. Right-click the HireDate field, choose Delete Rows, and then click Yes to confirm.
- 11. Delete the WebCert field and then save the changes to the Business Contacts table.
- 12. Switch to Datasheet View to confirm your changes and then close the Business Contacts table.

Backing Up a Database

All databases should be safeguarded to protect their data. Most organizations have a scheduled procedure to back up all files on their network, including the databases.

When you back up a database using the built-in Access tools, Access automatically places the date of the backup in the filename so you can easily identify and retrieve each backup file. You choose the drive and folder in which you want to save the backup. To restore the database, simply open the backup.

\Xi File—Save As—Save Database As—Back Up Database 🖹

DEVELOP YOUR SKILLS: A11-D5

In this exercise, you will back up your Winchester Web Design database.

- 1. Close any open objects in the Winchester Web Design database.
- **2.** Choose **File**→**Save As**→**Save Database As**→**Back Up Database** and then click **Save As**. Access opens the Save As dialog box and adds the current date to the end of the filename.
- 3. Save the file in your Access Chapter 11 folder.

Access saves the backup file to the desired location, adding the date the backup occurred to the filename. However, the open database file is still the original Winchester Web Design database.

- **4.** Close the database, navigate to your **Access Chapter 11** folder, and open the backup database. A backup is only as current as the time the backup was created. It's important to have a policy that schedules and mandates a daily or weekly backup.
- 5. Close the backup database and reopen A11-D1-WinDesignRev.

Analyzing and Documenting Databases

Each time you change the design or content of a database, the chance that the database will become corrupted increases. Access includes several tools that help you protect, document, analyze, and even repair databases. The main tools found in the Analyze group on the Database Tools tab are:

- Performance Analyzer: This tool analyzes the performance of a database to locate and identify potential trouble spots that affect how the database functions.
- Database Documenter: This tool documents objects in the database so you can track changes to design and relationships. It builds an Object Definition document that provides a detailed description of each database object.

Reviewing and Analyzing Performance

When you run the Performance Analyzer, Access reviews each selected object in the database, looks at all the relationships, and identifies any problems that might affect database performance. Access often makes recommendations for improvements to optimize database efficiency. In some cases, Access identifies tables in which no primary key is set. In other cases, Access will suggest a more efficient data type or that you use fewer controls on a form.

Some changes recommended by the Performance Analyzer may not be necessary. For example, Access frequently recommends that phone numbers be formatted using the Number data type. Not only is this unnecessary, it may even cause problems for extensions that are commonly preceded by an X, such as X209. As you review the recommended changes, you will begin to identify those requiring your attention and those you can ignore.

There are two options for analyzing database performance. The Analyze Performance tool enables you to choose the database objects you want to analyze. The Analyze Table tool analyzes a table using the Table Analyzer Wizard.

💳 Database Tools—Analyze—Analyze Performance 🔚

Documenting a Database

As you plan a new database, you must analyze the needs of the business and the requirements of the database. In the process, you create a list of fields required and then organize and group those fields into the tables that will provide the data for forms, queries, and reports. The list identifies and defines each field and the tables and objects in which the fields are used within the database. When the database is finished, you may choose to document the database so it can be efficiently updated and maintained in the future.

Documentation provides insight into the structure of the entire database as well as the structure of each object within the database. Maintaining a database can be very time-consuming. Without proper documentation to identify potential impacts of changing field properties, object structures, and so forth, you can potentially corrupt one database object that, in turn, wreaks havoc on the entire database. Each time you change the structure of any database object, remove an object from, or add an object to the database, you should run the Database Documenter to provide up-to-date documentation about the database. Such information will prove invaluable to database administration.

🗖 Database Tools—Analyze—Database Documenter 🗟

DEVELOP YOUR SKILLS: A11-D6

In this exercise, you will analyze and document your Winchester Web Design database.

1. Choose **Database Tools** \rightarrow **Analyze** \rightarrow **Analyze Performance**

The Performance Analyzer opens.

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III Tables	Queries	E Forms	Reports	🛣 Macros	
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- 2. Click the **Tables** tab and click **Select All** to check all the tables listed.
- 3. Click **OK** and view the suggestions under Analysis Notes.

The data types have been set properly, so you can ignore the suggested ideas.

- 4. Click Close.
- 5. Choose Database Tools -> Analyze -> Database Documenter 📳

The Documenter opens.

6. Click the Tables tab, check the InvoiceDetails, Invoices, and Products tables, and click OK.

Access produces a report about a dozen pages long that documents the tables, fields, and relationships of the selected tables.

- **7.** Scroll through the report and examine the documentation provided.
- 8. Choose **Print Preview** \rightarrow **Data** \rightarrow **Excel** is to open the Export Excel Spreadsheet Wizard.
- **9.** Check the **Open the Destination File After the Export Operation Is Complete** box, if necessary.
- **10.** Click **Browse**, navigate to your **Access Chapter 11** folder, type **A11-D6-Objects** as the filename, click **Save**, and then click **OK**.
- **11.** Browse through the Excel spreadsheet and close it when finished.
- **12.** Close the wizard without saving the export steps and then close the print preview.

Compacting and Repairing a Database

When you delete a record in Access, the record is not really deleted—it's marked for deletion. The process of marking a record as deleted is quicker than completely deleting and reordering or rewriting all the records in a table. A similar process is used when you shorten the contents of a record—the space that was used for the longer data is not released.

As you work with databases, they can become sluggish and the data stored in the databases can become fragmented. Fragmentation occurs when parts of your database file become separated by incidental data that has been added to the disk you are using. For example, if you saved a 10-megabyte database file to your hard drive and saved an Excel spreadsheet to the same hard drive shortly afterward, it would be written next to the 10-megabyte database file.

Then, if a large group of new records were added to the database file, they would have to be stored after the Excel file and not after the original database file because the adjacent space is now occupied by the spreadsheet. As you add more records and save other files, both your files and storage drive become fragmented and less efficient.

Consequently, over time databases can become bulky and inefficient. This issue can be resolved by compacting, or compressing, your database to remove wasted and unused space left from deleted and edited records.

To ensure optimal performance, Access enables you to *compact* and *repair* databases as often as you want. Sometimes Access recognizes a problem when a database is opened and attempts to repair the file before you work with it. Even if there is no file corruption, the normal maintenance tasks of adding, deleting, and editing records, creating and running queries, and so forth, may reduce database performance. You may want to compact and repair the database manually on a regular basis or set an option to automatically compact the database whenever you close Access.

📃 Database Tools—Tools—Compact and Repair Database 嘴

DEVELOP YOUR SKILLS: A11-D7

In this exercise, you will compact and repair your Winchester Web Design database.

- **1.** Close any open database objects.
- 2. Choose Database Tools -> Tools -> Compact and Repair Database 📺.

Access compacts and repairs the file. Because the database is relatively small, the compact and repair process takes only a moment. For larger databases, the process will take longer.

3. Close A11-D1-WinDesignRev and exit Access.

Setting Database Security

Imagine your doctor stores all your medical records in a large database that could be accessed by hospitals, clinics, and medical insurance companies who want to know more about the medications you take, conditions you might have, and doctor's visits. Databases, by nature, often hold confidential information. As a result, security is *imperative*. Companies that maintain large database files often restrict access to databases at the login or server level. Splitting a database can protect the data contained in databases, and Access offers tools that enable you to secure a database by assigning a password.

Opening a Database Exclusively

Most large business databases are designed to provide access to multiple users at the same time. As a result, the default setting for a database is as a shared file. Before you can set security for a database, you must ensure no one else is currently using the database. You do this by opening the file exclusively so Access locks the database and prevents others from accessing it at that time.

The Open dialog box contains numerous commands for opening databases after a file has been selected.

COMMANDS FOR OPENING DATABASES				
Command	Description			
Open	Provides full and typical access to the database and its objects and menus so you can create and edit			
Open Read Only	Opens the database so you can view and print data but does not allow design changes; however, you can save the database as a new file and edit that one			
Open Exclusive	Opens the database and locks it to prevent other users in a shared environment from accessing it			
Open Exclusive Read-Only	Opens the database and locks it so other users cannot access it and prevents edits to data and database objects			

Encrypting a Database Using a Password

Regardless of whether a backup routine is in place, valuable time can be lost reconstructing data if unauthorized users damage the database. Database passwords are intended to protect the database just as the passwords you use to access bank accounts or email accounts protect your financial and personal information.

Limits of Passwords

Database passwords provide limited security for databases by preventing unauthorized users from opening the database. You can set a password for any database you have on your personal computer, just as systems administrators set a password for shared databases on a network.



Access passwords are case-sensitive, or capable of distinguishing between upper- and lowercase characters.

Strong Passwords

Access passwords can use a combination of upper- and lowercase characters, symbols, and numbers. Access allows you to use any combination of characters in passwords *except* " \ [] : | <> + = ; , .? and *. Strong passwords are at least thirteen characters long and contain at least one of each of the character types indicated. Passwords cannot start with a space.

Weak Password: webdesign

Strong Password: TooHard2Cr@ck

Setting Up Databases for Assigning Passwords

To assign a database password, the database must initially be closed. The default access setting for databases that appear on a network is as a shared database, accessible to anyone who has access to its file location. To set a password, you must open the database *exclusively* using the Open Exclusive

command in the Open dialog box. This ensures that no one else is currently using the database and that, once you open it, other users are prohibited from opening it until you close it. If the file is not opened exclusively, you will get a warning message.



The Encrypt with Password command is a toggle. When a database has a password, the command button shows Decrypt Database.

📕 File—Info—Encrypt with Password 🞬

DEVELOP YOUR SKILLS: A11-D8

In this exercise, you will open the Winchester Web Design database exclusively and set a database password to protect the database.

- 1. Start Access, choose Open Other Files from the menu, and click Browse.
- 2. Navigate to your Access Chapter 11 folder; click A11-D1-WinDesignRev but *do not* open the database.
- **3.** Click the **Open menu v** button and choose **Open Exclusive**.

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- 4. Enable content and then close the WWD Navigation Form.
- 5. Choose File→Info→Encrypt with Password 📧.
- 6. Type Labyrinth123! in the Password text box and again in the Verify text box and then click OK.
- 7. Click **OK** to acknowledge that row level locking will be ignored.
- 8. Close A11-D1-WinDesignRev and then open it again.

If you forget your password, you won't be able to open the database.

9. Type Labyrinth123! in the Enter Database Password text box and click OK.

You must open the database exclusively again if you want to change or remove the password.

10. Close A11-D1-WinDesignRev.

Self-Assessment

Warning

Check your knowledge of this chapter's key concepts and skills using the Self-Assessment in your ebook or online (eLab course or Student Resource Center).

Reinforce Your Skills

REINFORCE YOUR SKILLS: A11-R1

Enhance and Clean Up a Database

Kids for Change would like to improve its forms by adding navigation and accessibility to other objects using buttons. It would also like to clean up database objects. In this exercise, you will add command buttons; create a macro that opens a report; and do some cleanup tasks by copying, renaming, and deleting objects.

1. Start Access; open A11-R1-K4C from your Access Chapter 11 folder, and save it as: A11-R1-K4CRev

Remember to enable content if the option appears. You will begin by adding command buttons to a form.

- 2. Open the Activities Form in Design View.
- 3. Click the Form Footer section bar and set the Height property to: 0.75
- **4.** Choose **Form Design Tools**→**Design**→**Controls**→**Button** and draw a button in the form footer under the *Telephone* label.

The Command Button Wizard opens.

- **5.** Choose **Record Navigation** as the category and **Go To First Record** as the action; click **Next**. *The wizard displays a sample button picture for each action.*
- 6. Leave the options for pictures as selected, click **Next**, enter **cmdFirst** as the meaningful name, and click **Finish**.

The command button shows the Go To First image in the Form Footer section and is programmed to go to the first record when in Form View.

7. Add these buttons in the order listed:

Category	Action	Picture	Name
Record Navigation	Go To Previous Record	Go To Previous	cmdBack
Record Navigation	Go To Next Record	Go To Next	cmdNext
Record Navigation	Go To Last Record	Go To Last	cmdLast
Record Navigation	Find Record	Binoculars (Find)	cmdFind

Form Footer						
K		M	٩			

- Draw a button to the right of the Find button, choosing Report Operations as the category and Preview Report as the action.
- 9. Select the Activity Costs Report as the report to preview and click Next.
- 10. Choose the **Preview** picture and click **Next**; enter the name **cmdPreviewCosts** and click **Finish**.
- Select the new command buttons and choose Form Design Tools→Arrange→Sizing & Ordering→ Align→Top.

All of the command buttons are aligned to the top.

- 12. With the buttons still selected, choose Form Design Tools→Arrange→Size & Ordering→ Size/Space→Equal Horizontal.
- **13.** Switch to **Form View** and test each of the new buttons; close the Activity Costs Report.

Create a Macro to Display Adaptable Reports

- **14.** Choose Create \rightarrow Macros & Code \rightarrow Macro \square .
- 15. Choose **OpenReport** from the Add New Action menu.
- **16.** Use this table to create the macro:

Report Name	Volunteers Report
View	Report
Where Condition	[ActID]=[Forms]![Activity Staffing]![ActID]

- 17. Save the macro as **Available Volunteers** and then close it.
- **18.** Display the Activity Staffing form in Design View and then choose Form Design Tools \rightarrow Design \rightarrow Controls \rightarrow Button \square .
- **19.** Draw the new button to the right of the Meet Time controls.
- 20. Choose the Miscellaneous category and the Run Macro action, click Next, choose Available Volunteers, and click Next again.
- **21.** Accept the default macro picture and click **Next**; name the button **VolunteersMacro** and click **Finish**.
- 22. Switch to Form View and click the new VolunteersMacro button.

The macro button displays the Volunteers Report record for the activity on the form.

To display the Volunteers Report for another activity, close the report, navigate to the desired activity, and click the macro command button.

23. Close the Volunteers Report and then save and close the Activity Staffing form.

Rename, Delete, and Save Object as a New Object

- 24. Right-click **Donations Report** in the Navigation pane and choose **Copy**.
- 25. Right-click again, choose **Paste**, type **Delete This Report** as the report name, and click **OK**.
- **26.** Select **Delete This Report** in the Navigation pane and tap **Delete**; click **Yes** to confirm the deletion.
- **27.** Open the **PaidStaff** table and choose **File**→**Save As**→**Save Object As**→**Save As**.
- **28.** Type **Professional Contacts** in the Save 'PaidStaff' To text box and click **OK**.
- 29. Display the new **Professional Contacts** table in **Design View** and rename the **StaffID** field to: **ProfID**
- **30.** Right-click the **Parent** field and choose **Delete Field**; confirm the deletion.
- **31.** Delete the **Masters**, **HrlySal**, and **ActID** fields. Click **Yes** to permanently delete the fields and to delete the ActID indexes.
- 32. Rename the *Email Address* field as: **ProfEmail**
- **33.** Save and close the Professional Contacts table and then close the database.

REINFORCE YOUR SKILLS: A11-R2

Perform Database Maintenance and Set a Password

Kids for Change would like a backup of its database. It would also like it to be optimized for speed and secured with a password. In this exercise, you will perform some maintenance procedures on the Kids for Change database, including backing up and analyzing objects. You will also add a password to protect the data from unauthorized users.

- 1. Start Access; open A11-R2-K4C from your Access Chapter 11 folder, close any open objects, and save the file as: A11-R2-K4CRev
- 2. Choose File→Save As→Save Database As→Back Up Database 📳
- 3. Click the Save As button, navigate to your Access Chapter 11 folder, and click Save.

Analyze and Document a Database

- 4. Choose Database Tools→Analyze→Analyze Performance 🔚
- 5. Click the Tables tab and click Select All to check all the tables listed.
- 6. Click OK and view the Analysis Results.

Because the data types have already been set properly, you can ignore the suggested ideas.

- 7. Click Close and then choose Database Tools \rightarrow Analyze \rightarrow Database Documenter \blacksquare .
- 8. Click the Tables tab, check the Activities and PaidStaff tables, and click OK.

The report documents the tables, fields, and relationships of the selected tables.

9. Choose Print Preview→Data→More→Word 🜆 to export the report to a Word RTF.

RTF files contain minimal formatting, are small, and are compatible across virtually all hardware and software platforms. Exporting to RTF ensures wider compatibility for various users.

- **10.** Browse to your **Access Chapter 11** folder, type **A11-R2-Tables** as the filename, and click **Save**.
- **11.** Check the **Open the Destination File After the Export Operation Is Complete** box and click **OK**. *Access creates and opens the Word document.*
- **12.** Page through the Word document and then close it and exit Word.
- **13.** Close the dialog box without saving the export steps and then close the print preview.

Compact and Repair a Database

Access has compacted and repaired the file. The K4C Navigation Form might open, depending on your system.

15. Close A11-R2-K4CRev.

Protect a Database

16. Choose File→Open→Browse, navigate to your Access Chapter 11 folder and click
 A11-R2-K4CRev, and then click the Open menu button ▼ and choose Open Exclusive.

No one else will be able to use the database until you exit Access.

Because you opened the database exclusively, you can set a password to open the database.

17. Choose File→Info→Encrypt with Password.

- **18.** Type **Labyrinth123!** as the password, verify it by typing it again, and click **OK**.
- **19.** Click **OK** to acknowledge the message about row-level locking.
- 20. Close A11-R2-K4CRev and then open it again.

Access displays the Password Required dialog box.

- 21. Type Labyrinth123! in the text box and click OK.
- **22.** Close the database.

REINFORCE YOUR SKILLS: A11-R3

Perform Maintenance and Back Up a Database

Kids for Change would like a reminder to back up the database regularly. It would also like to rename a form and save a volunteer list as a query. In this exercise, you will create a macro that reminds users to back up the database. You will also rename, delete, and save objects.

1. Open A11-R3-K4C from your Access Chapter 11 folder, close any open objects, and save the file as: A11-R3-K4CRev

Remember to enable content if the option appears.

Create a New Macro

- **2.** Choose Create \rightarrow Macros & Code \rightarrow Macro \square .
- **3.** Choose **MessageBox** from the Add New Action drop-down menu and use this information to create the macro:

-

- 4. Save the macro as: Back-up Routine
- 5. Choose Macro Tools→Tools→Run !

The Back Up Routine Information message box opens.

6. Click **OK** to close the message box and then close the Back-up Routine macro.

Back-up Routine is now listed under Macros in the Navigation pane.

Manage Database Objects

- 7. Right-click **Staff Form** in the Navigation pane and choose **Copy**.
- 8. Right-click again and choose **Paste**; rename the pasted object to **PaidStaff** Form and click **OK**.
- 9. Select the **Staff Form** in the Navigation pane and tap **Delete**; click **Yes** to confirm the deletion.
- **10.** Open the **Volunteers** table and choose **File** → **Save As** → **Save Object As** → **Save As**.
- **11.** Type **Volunteers List** in the Save 'Volunteers' To text box.
- **12.** Choose **Query** from the As drop-down menu and click **OK**.
- **13.** Close the Volunteers List Query and then close the database.

🗞 Apply Your Skills

APPLY YOUR SKILLS: A11-A1

Enhance a Database

Universal Corporate Events has asked you to improve forms by adding navigation and accessibility to other objects using macros and buttons. In this exercise, you will add command buttons to the Wage and Salary Form and create macros to increase efficiency.

1. Start Access; open A11-A1-UCE from your Access Chapter 11 folder, close any open objects, and save the file as: A11-A1-UCERev

Remember to enable content if the option appears.

- 2. Open Wage and Salary Form in Design View.
- 3. Set the Height property for the Form Footer section to: 0.75
- 4. Draw a button in the Form Footer under the Detail section labels.
- 5. Create a Go To First Record button that uses the Go To First picture option and name it: cmdFirst
- **6.** Add these command buttons, in the order listed, using the default picture options:
 - Go To Previous Record named: cmdPrevious
 - Go To Next Record named: cmdNext
 - Go To Last Record named: cmdLast
 - Find Record named: cmdFind
- 7. Draw a button to the right of the Find Record button using these specs:
 - Category: Report Operations
 - Action: Preview Report
 - Report to preview: Wage and Salary Report
 - Picture: **Preview**
 - Name: cmdPreviewReport
- **8.** Select all new command buttons and then top-align them and set equal horizontal space between them.

Hint: Go to Form Design Tools \rightarrow Arrange \rightarrow Sizing & Ordering.

- 9. Switch to Form View, test the buttons, and then close the Wage and Salary Report.
- **10.** Save and close the Wage and Salary Form.

Create a Macro

11. Choose **Create** \rightarrow **Macros & Code** \rightarrow **Macro**.

You will create a macro that opens the Event Revenue Report for the Event ID shown on the form.

12. Create an **OpenReport** macro using these guidelines:

Report Name	Event Revenue Report		
View	Report		
Where Condition	[Forms]![Event Costs]![EventID]=[Event		
	Revenue]![EventID]		
Macro Name	Event Revenue by Name		

- **13.** Close the macro.
- **14.** Display the **Event Costs** form in **Design View**.
- **15.** Create a new button under the Cost Details label using these specs:
 - Category: Miscellaneous
 - Action: Run Macro
 - Macro: Event Revenue by Name
 - Picture: default option
 - Name: cmdEventRevenue
- 16. Switch to Form View and navigate to the first record with an Event ID of BUSMTG.
- **17.** Click the new macro button.

The revenue report for this event type is displayed. You can display the report for other Event IDs by navigating to the event and running the macro.

- **18.** Close the Event Revenue Report; save and close the Event Costs form.
- **19.** Close the database.

APPLY YOUR SKILLS: A11-A2

Perform Database Maintenance and Set a Password

Universal Corporate Events would like a backup of its database. It would also like to fine-tune the objects and secure the database. In this exercise, you will perform maintenance procedures to reduce wasted space, defragment objects, and improve efficiency. You will also back up the database and add a password to protect data from unauthorized users.

- 1. Open A11-A2-UCE from your Access Chapter 11 folder, close any open objects, and save the file as: A11-A2-UCERev
- **2.** Choose File \rightarrow Save As \rightarrow Save Database As \rightarrow Back Up Database \rightarrow Save As.

The current date is added to the end of the database filename.

3. Save the file in your Access Chapter 11 folder.

Analyze and Document a Database

- 4. Choose Database Tools -> Analyze -> Analyze Performance.
- 5. On the Tables tab, click Select All to check all the tables listed and click OK.

- 6. Review the information presented and then close the dialog box.
- Choose Database Tools→Analyze→Database Documenter. The Documenter opens.
- 8. On the Tables tab, check Menus and Schedules, and then click OK.

Access generates a report for the tables, fields, and relationships of the selected tables.

- 9. Choose Print Preview→Data→More→Word.
- Browse to your Access Chapter 11 folder, use A11-A2-MenuSched as the filename, and click Save.
- **11.** Check the **Open the Destination File After the Export Operation Is Complete** box and click **OK**.
- **12.** Exit Word. In Access, close the Export RTF File dialog box without saving the export steps, close the preview, and close any open database objects.

Secure a Database

- Choose File→Open and then navigate to your Access Chapter 11 folder and open A11-A2-UCERev in Exclusive mode.
- 14. Encrypt the file with the password: Labyrinth123!
- **15.** Click **OK** to acknowledge the encrypting message.
- 16. Close and reopen A11-A2-UCERev, entering the password when prompted.
- **17.** Close the database.

APPLY YOUR SKILLS: A11-A3

Maintain Database Objects and Create a Macro

Universal Corporate Events would like you to add a message to remind employees to export reports every Friday and to clean up database objects to ensure the database runs smoothly. In this exercise, you will create a macro to display a message, create a new Products table based on data in the Menus table, and compact and repair the database.

- 1. Open A11-A3UCE from your Access Chapter 11 folder, close any open objects, and save the file as: A11-A3-UCERev
- **2.** Close the UCE Navigation Form.
- 3. Create a MessageBox macro, using Export all new reports on Friday! as the message, no beep, Information as the type, and Report Policy for the title.
- 4. Save the macro as **Report** Policy and then run it.
- **5.** Close the information box and then close the Report Policy macro.

Maintain Database Objects

- **6.** In the Navigation pane, copy and paste the Personnel Report, resulting in a new object named *Copy of Personnel Report*.
- 7. Rename the pasted object as: Staff Report

- **8.** Delete the Staff Report, confirming the deletion when prompted.
- 9. Open the Menus table, choose File → Save As → Save Object As, and click Save As.
- **10.** Save the object as a new table named **Products** and then display the table in **Design View**.
- **11.** Rename the table fields as indicated:

Field	Rename
MenuCode	ProdCode
MenuPlan	ProdPlan
ChgPP	Cost
CostPP	Price

12. Save and close the new Products table.

Last, you will compact and repair the database.

- **13.** Choose **Database Tools** → **Tools** → **Compact and Repair Database**.
- **14.** Close the database, choosing **Yes** to empty the Clipboard.

💼 Project Grader

This chapter does not include Project Grader exercises. Project Grader content is based on the learning objectives for a chapter, and sometimes those learning objectives cannot be accurately graded by the system. Objectives from this chapter that can be accurately graded may be included in later chapters, if applicable.

Extend Your Skills

These exercises challenge you to think critically and apply your new skills in a real-world setting. You will be evaluated on your ability to follow directions, completeness, creativity, and the use of proper grammar and mechanics. Save files to your chapter folder. Submit assignments as directed.

A11-E1 That's the Way I See It

You would like to modify a database form to provide buttons for navigation as well as opening a closely related report for the Blue Jean Landscaping database. Open **A11-E1-BJL** and save it as: **A11-E1-BJLRev**

Create a macro named **Service Invoices** that opens the Service Invoices Report in Report View for the last name shown on the form. In the Service Invoices form footer, create command buttons using the default picture options as indicated in the table. Then create a Run Macro button named **cmdServiceInvoicesReport** that opens the Service Invoices macro. Top-align the buttons

Go To First Record	cmdFirst
Go To Previous Record	cmdPrevious
Go To Next Record	cmdNext
Go To Last Record	cmdLast
Find Record	cmdFind

and set equal space horizontally between all buttons. Make any other changes to the form you feel would improve its look and feel.

A11-E2 Be Your Own Boss

As the owner of Blue Jean Landscaping, you would like to improve performance and security. Open **A11-E2-BJL** and save it as: **A11-E2-BJLRev**

Analyze the performance of all database tables. Use the Database Documenter to generate a report for the Services, ServiceInvoices, and ServiceInvDetails tables. Export the report to an Excel file (name it **ServicesTables**). Back up the database and then close and open **A11-E2-BJLRev** exclusively. Encrypt the file with a password of your choosing. Write the password down for your instructor or for future reference.

A11-E3 Demonstrate Proficiency

The Stormy BBQ Key West store and restaurant has asked you clean up unnecessary objects in its database and to save a table as a query for easy filtering and sorting of restaurants. Also, it would like the database compacted and repaired in case renaming and removing objects has affected efficiency. Open **A11-E3-SBQ** and save it as: **A11-E3-SBQRev**

Complete these actions:

- Delete the KeyWest Staff Query.
- Rename any form with the name of your choosing.
- ▶ Save the Restaurants table as a query named: **Restaurant List**
- Compact and repair the database.
Glossary

Access Database software that helps you quickly retrieve data; allows you to create and enter data into a table and then use forms, reports, and queries to display the desired results

action query Performs one of four actions on a group of records (delete, update, append, or create a new table)

aggregate function Function that performs a calculation on a set of values, returning a single value

append query Query that adds a group of records from one or more sources to the end of one or more tables

back end Refers to the underlying database tables that support the front end

calculated control Unbound text box control with a formula inserted in the control source property that references other controls within a form or report

Cascade Delete Relationship that records in a related table whenever related records in the primary table are deleted

Cascade Update Relationship that updates the value in the key field of a related table when the primary key value in the primary table is changed

chart Graphical display of data in a visual layout; create charts to better interpret the relationships between report data (can also be used with forms)

Clipboard Location within Microsoft Office that contains thumbnails of what you have recently cut or copied from your Microsoft Office file(s) during your Windows session; used to quickly paste text, pictures, images, or charts into a file

command buttons Controls used to create action buttons that can be placed on a form to perform such actions as opening a report, moving to the next record, or even exiting Access

compacting Removes wasted and unused space left from deleted and edited records

controls Objects placed in forms or reports that display data, text, checkboxes, lines, images, or buttons

Copy Creates a duplicate of the original selection, which remains in the source location, and places a copy of the selection on the Office Clipboard

crosstab query Query that lists fields to be grouped in rows and fields to be summarized in columns so you can calculate sums, averages, counts, or totals by group and subgroup

Cut Removes the original selection from the source location and places the selection on the Office Clipboard

data Information such as names, numbers, dates, descriptions, etc., organized for reference or analysis

database A collection of data related to a subject or purpose, organized by records and fields; for example, an employee database contains information for each employee, such as their name, employee ID, and contact information

Database Documenter Documents objects in the database so you can track changes to database design and relationships; builds an Object Definition document that provides a detailed description of each database object

database splitter Converts a database into two files one that contains the tables holding the data and one that contains the objects that use the data

Datasheet View Displays actual data values

delete query Query that deletes a group of records from one or more tables

description Optional field property in Design View to help identify special information about a field

Design View Where form, query, and report layout are defined; shows field names and labels, as well as other objects that can be displayed

Detail section Main section of a form or report that contains the text boxes that display data from underlying database tables; detail content varies from record to record **Excel** Worksheet software, arranged with rows and columns, used to create calculations and to make what-if analyses; perfect for preparing a budget or income statement or determining the amount of interest paid on a loan

exporting Process of sending data to other files or applications

expression Combination of field names and arithmetic and logical operators required to perform the calculation; an Access formula

Expression Builder Feature that assists users in building functions via a dialog box containing a list of available fields in the current object and an array of built-in operators, functions, and expressions

field Group or category of specific information or data, such as last names or phone numbers; in an Access table, each field is displayed in a column

find duplicates query Locates records containing duplicate field values in a single table or query datasheet

find unmatched query Locates records in one table that have no matching records in another table

foreign (or secondary) key Field in a secondary table that links to the primary key field in the main table, which contains the detailed information for an item

form Database screen used to enter, edit, and view data for an individual record in a layout that is more convenient and attractive than a table datasheet layout

Form Footer Bottom section of a form that appears on the last page of a page form; seldom used

Form Header Top section of a form that contains constant information, such as a title, logo, decorative line, or color scheme

Format Painter Applies the character and paragraph formatting from the source selection to any characters or text selected

fragmentation When parts of your database file become separated by incidental data that has been added to the storage location

Front end Refers to the up-front portion of a split database with which users interact

group Collection of controls or records with at least one feature in common; quick forms tie all automatically inserted text boxes and corresponding labels into one group, allowing you to move the entire group but not individual controls; or, if you want to display all vendors with offices in the same state, you could group on the State field

Group Footer displays summary information (such as the total of all transactions for each salesperson)

Group Header Identifies a field (such as EmpID) by which report data is grouped, so a summary (such as a total of each employee's sales) can be displayed for the grouped field

Hypertext Markup Language (HTML) Code or language in which web pages are written

importing Process of retrieving data from other files or applications

index (database) Like a book index; its main function is to speed up database operations; an index set on key fields uses one or more hidden columns in a table for faster data retrieval

input mask Controls data formats by setting the required characters to display as users enter data, such as slashes (/) for a date field

Keep Source Formatting Pastes the text and the selection with any formatting (bold, italic, underline) from the source location to the target location; the selection pasted retains the original formatting from the source location

Keep Text Only Pastes the selection from the source location to the target location; the selection pasted takes on the formatting of the target location

labels Part of a control that contains a caption identifying the data displayed in a text box or checkbox; e.g., the caption Last Name is a good label for the LastName field

Layout View Combines the editing ability of Design View with the layout look of Form/Report View so you can better visualize and modify the form's appearance; does not allow you to add, change, or delete records

linked file Allows source data to be placed in a destination file that automatically updates when changes are made to the source file

Linked Table Manager Aids in redirecting a database to the correct linked file if the file was moved, as in a removed thumb drive or a file moved to a different folder **lookup field** Enables users to select a field value in one table by looking up values from another table or by selecting values from a list they create.

macro Object that combines a series of steps into a single step so a more detailed task can be automated

Mail Merge Word feature used to personalize standard letters, envelopes, mailing labels, and other documents by combining a main document with a data source

make table query Query that creates a new table from the selected data in one or more tables

Merge Formatting Pastes the text and selection with any formatting (bold, italic, underline) from the source location to the target location and combines it with any formatting already at the target location; the selection pasted has formats from both the source and target locations

Microsoft account Account that gives you access to your Microsoft settings, files, contacts, and more, as well as to your computer or other devices; can include Bing, Hotmail, MSN, Office, OneDrive, Outlook, Skype, Stores, or Xbox Live

Microsoft Office 2019 Version of Microsoft Office that you purchase one time, for one device, similar to what you may have done to obtain software in the past; anytime there is a new version of Microsoft Office, you need to purchase it if you desire the most recent version (select Office Home & Student 2019 to install Office on one PC)

multiple item form A form resembling a datasheet with data appearing in row and column format

navigation form Form-like interface with tabs across the top to group common elements and sub-navigation links along the left side or directly below, allowing quick access to database forms and reports

Navigation pane Objects panel that lists existing database objects (specifically tables, queries, forms, and reports)

object A database structure used to store or reference data

Object Dependencies panel Allows the display of database objects that either use or are used by other objects

Office 365 Version of Microsoft Office that has a monthly subscription rate for one or more devices that offers automatic updates similar to how you make apps purchases on your smartphone or tablet

Office Online Version of Microsoft Office that is free when you are logged in to a Microsoft account; the online apps include Outlook.com, Word Online, Excel Online, PowerPoint Online, OneNote Online, and Sway; not all features of Office 365/2019 are available in these apps

OneNote Notetaking software used to organize notes (handwritten or keyed), audio/sound recordings, screen captures, or sketches you have collected or created to share with others

Outlook Personal information manager software used to create, send, and receive emails, record tasks, maintain one or more calendars, schedule meetings and appointments, manage contacts, and take notes

parameter query Query that filters records and returns only a subset that matches the value entered, delivering on-the-fly results

Paste Inserts a copy of the most recent item found on the Office Clipboard at the target location, or destination; there are usually at least three paste choices: Keep Source Formatting, Merge Formatting, and Keep Text Only

Performance Analyzer Analyzes database performance to locate and identify potential trouble spots that affect how the database functions

PowerPoint Presentation software used to create, edit, revise, format, and share slides designed to tell a story, market a product, or explain a concept

primary key Unique ID that cannot be the same for any two records (e.g., a student ID)

property Field attributes that control features such as format, field size, font size, weight, and color; available properties depend on the data type

Property Sheet Panel on the right side of a design window used to set values for controls, such as font size, color, alignment, etc., depending on the type of control

Publisher Desktop publishing software used to design and lay out text and images, often for newsletters or brochures

query Object used to select, search, sort, and extract table data based on criteria and conditions; displays results in a row-and-column format

real-time data Data that is updated and shown at the speed at which a computer receives and processes information

record Collection of details (fields) about an individual person, place, or thing, such as an employee record or a product record

record locking Helps maintain consistent data and protects the integrity of record updates by creating a small temporary file that locks a record being edited by another user

record source Field property that connects text boxes in a form, subform, or report to a field in an underlying table or query

referential integrity Relationship protocol that maintains the validity of related data; requires that the data types of related primary and foreign key fields are the same or compatible

report Database page that presents processed and summarized data from tables and queries as meaningful information in an easy-to-read format; designed to be printed

rich text file (RTF) Variation of a text file that contains minimal formatting, such as bold and color

sections The major parts of the form, such as the Form Header, Form Footer, Detail, Page Header, and Page Footer, that are separated by section bars

SharePoint Secure online location used to store, organize, collaborate, and share information from any device using a web browser

Skype Web communication software that utilizes the Internet to share audio, video, text, messages, files, or Desktops via a webcam on both the sending and receiving devices

smart tags Indicate common actions that may be taken if certain conditions are encountered or if a control has a problem; clicking a smart tag displays a list of possible actions

software suite Collection of applications generally produced by the same manufacturer and bundled together for a better price that provides a common user interface throughout each application

sort Process used to arrange data in a specific order, such as alphabetic, numeric, by date, or in ascending or descending order

source Original location of text that has been cut or copied

split form Two synchronized views of a table data in Layout/Form View and Datasheet View, shown simultaneously **subform** A secondary (child) form placed on a main (parent) form, allowing the user to view and complete data entries for multiple tables through one form

subreports Display subsets of data derived from related database tables, similar to subforms

switchboard Easy-to-use interface containing menus and buttons for opening database objects and performing common tasks such as adding records or printing reports

tab order Order in which Access moves among form fields when you press **Tab** or **Enter**

table File or collection of related records; contains the data used in all other database objects

target Destination location for pasted text

text boxes Controls that display the actual data stored in a field (e.g., Smith might be the data displayed in a LastName text box linked to the LastName field in an Employees table)

text file Small alphanumeric text file that lacks formatting and font information; compatible across virtually all hardware and software platforms

thumbnails Small images that represent an application, file, etc.

toggle Selecting a button once to turn it on and again to turn it off

update query Query that makes global changes to a group of records in one or more tables

validation rule Field property that enables you to limit values entered in the field to reduce errors associated with data entry (e.g., limit the value typed into an Hours Worked field to less than 60)

validation text Contains instructions or valid data values to help guide the data entry personnel

wildcard characters Special characters such as an asterisk (*) used to represent multiple characters or a question mark (?) to represent any single character

Wizard Tool that walks you through the selection and ordering of specific fields from the tables or queries that contain the data you want to place onto a form, query, or report

Word Word-processing software for creating, editing, revising, formatting, and sharing documents such as letters, reports, essays, and business plans

work area Main part of the screen where you design tables, queries, forms, and reports; where you enter data into tables and forms

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Labyrinth Learning http://www.lablearning.com