

11

Maintaining a Database



As 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.

Note!

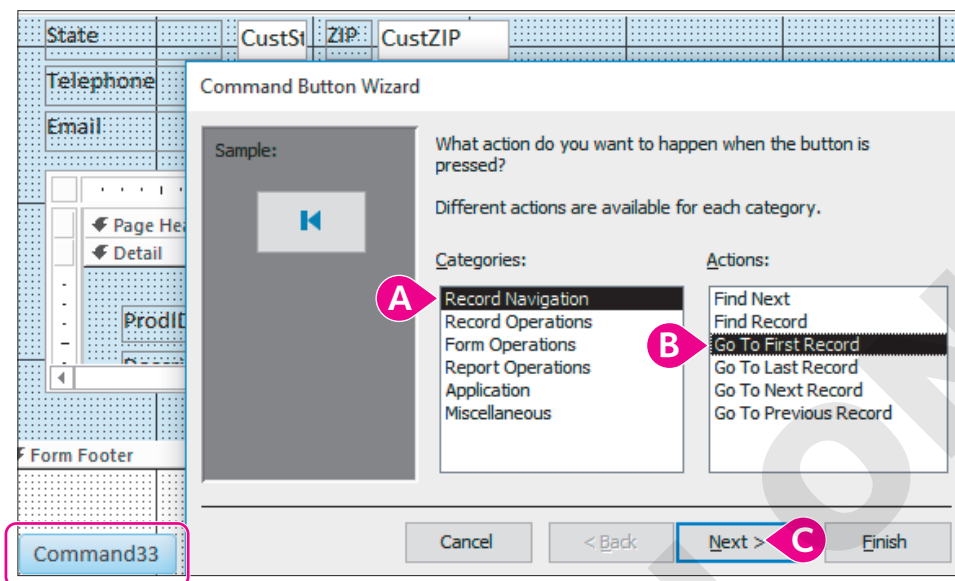
Many of the activities in this chapter require you to enable content to function properly. Enable content when the option appears.

3. Open the **Invoice Form** in **Design View**.
4. 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.)
5. Choose **Form Design Tools→Design→Controls→Button** .
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→Design→Controls→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.



A Choose the **Record Navigation** category.

B Choose the **Go To First Record** action.

C Click **Next**.

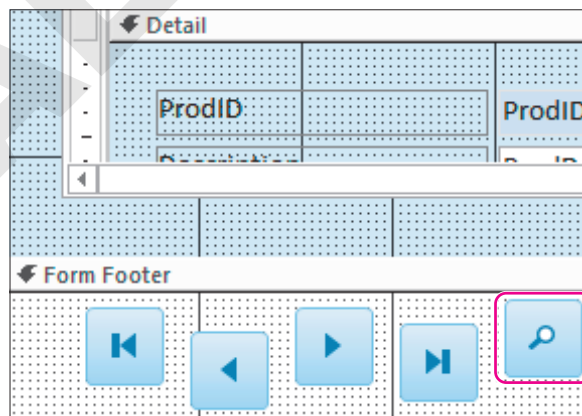
8. Click the **Picture** option, choose **Go To First**, and click **Next**.

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

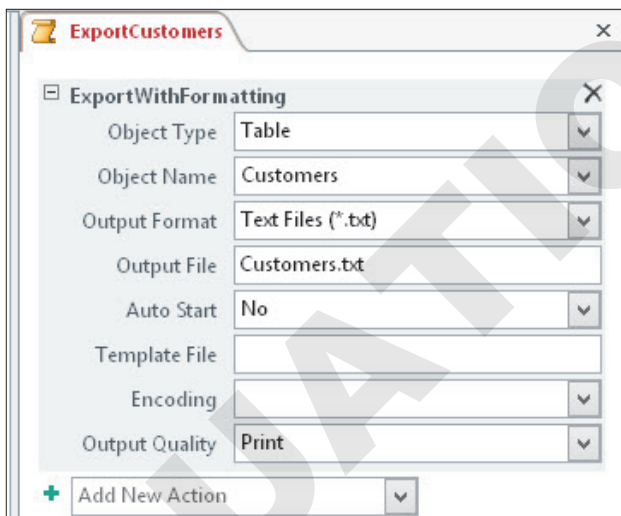


11. Draw a button to the right of the Find button, choosing **Report Operations** as the category and **Preview Report** as the action; click **Next**.

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**.
15. 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**→**Export**→**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.




CustID	Last Name	First Name	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

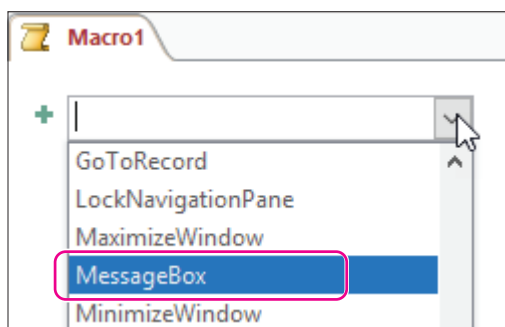
The ExportCustomers macro exports the Customers table to the default My Documents folder as a text file (bottom figure). If needed, a specific file path could be entered for the output file.

☰ Create→Macros & Code→Macro

DEVELOP YOUR SKILLS: A11-D2

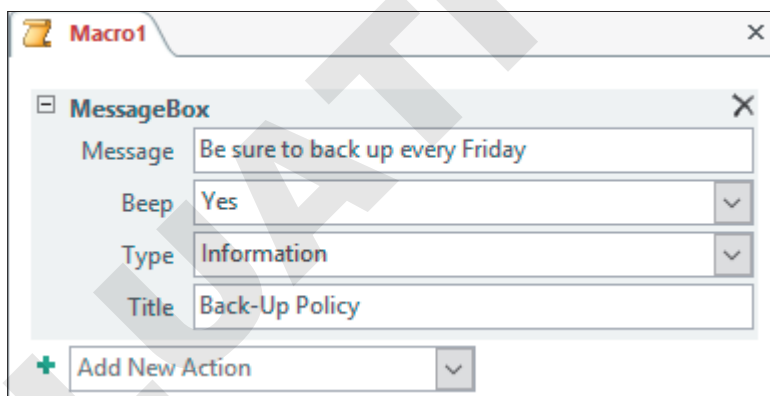
In this exercise, you will create a macro that will display a message box to provide basic directions on when and where to back up the Winchester Web Design database.


1. Choose **Create**→**Macros & Code**→**Macro** .
2. Choose **MessageBox** from the Add New Action drop-down menu.



3. Enter the following into the MessageBox text boxes:

Property	Setting
Message	Be sure to back up every Friday
Beep	Yes
Type	Information
Title	Back-Up Policy



4. Save the macro as: **Back-Up Policy**
5. Choose **Macro Tools**→**Design**→**Tools**→**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**→**Macros & Code**→**Macro** .
2. 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.



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.

 **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.

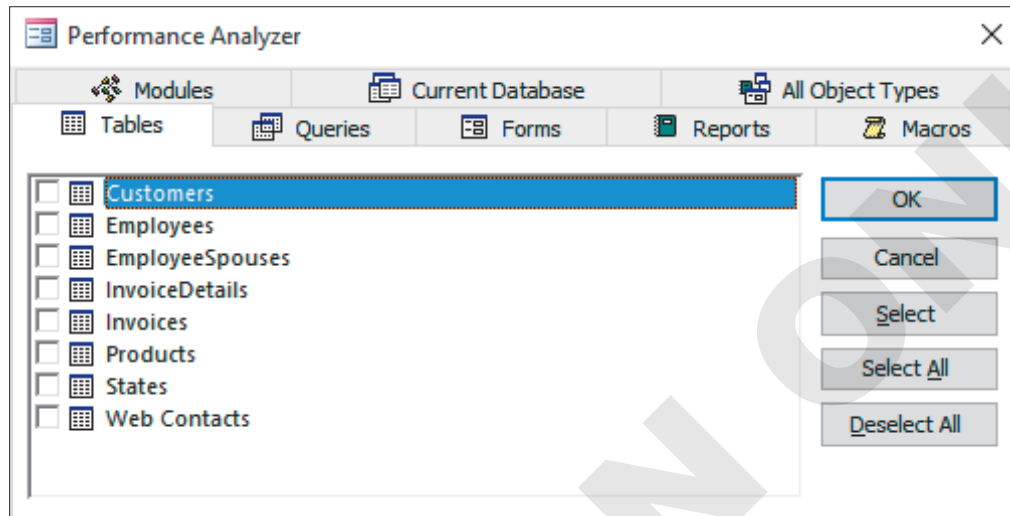
☰ Database Tools→Analyze→Database Documenter 



DEVELOP YOUR SKILLS: A11-D6

In this exercise, you will analyze and document your Winchester Web Design database.

1. Choose **Database Tools**→**Analyze**→**Analyze Performance** .

The Performance Analyzer opens.



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** .
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**→**Data**→**Excel**  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 

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.

Tip!

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.

Note!

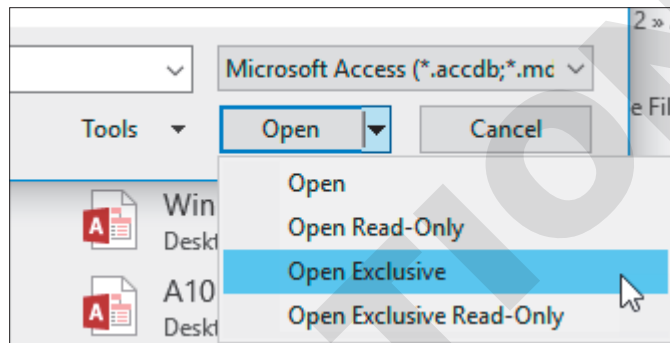
The *Encrypt with Password* command is a toggle. When a database has a password, the command button shows *Decrypt Database*.


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** ▼ button and choose **Open Exclusive**.



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.

Warning!

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



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

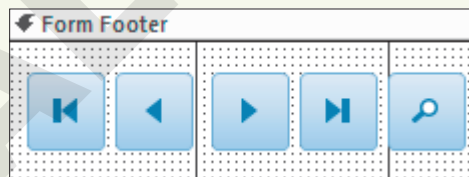
REINFORCE YOUR SKILLS: A11-R1

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




8. 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**.
11. 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**→**Macros & Code**→**Macro** .
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**→**Design**→**Controls**→**Button** .
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 ; 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→Analyze→Database Documenter** .
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

14. Choose **File→Info→Compact & Repair 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**→**Macros & Code**→**Macro** .
3. Choose **MessageBox** from the Add New Action drop-down menu and use this information to create the macro:

Message	Back up the database to SharePoint at the end of each day!
Beep	Yes
Type	Information
Title	Back-up Routine

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→Arrange→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→Macros & Code→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-UCF** from your **Access Chapter 11** folder, close any open objects, and save the file as: **A11-A2-UCFRev**
2. Choose **File→Save As→Save Database As→Back Up Database→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.
7. 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**.
10. 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

13. 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 and set equal space horizontally between all buttons. Make any other changes to the form you feel would improve its look and feel.

Go To First Record	cmdFirst
Go To Previous Record	cmdPrevious
Go To Next Record	cmdNext
Go To Last Record	cmdLast
Find Record	cmdFind

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.