

# 8 MORE ON DATABASE USE

## Manipulating the Data in the Database

### LEARNING OUTCOMES

Lesson 6 introduced you to the database concept in general, and to the *Access* database in particular. You learned how to plan a new database, how to set it up, how to add records, make changes to records, and delete records. You also learned how to save a database, and how to make backup copies.

It is now time to start using those functions of the database that make it such a powerful tool for learning—for organizing data resulting from research, for helping you or your students to work on projects, for personalizing your interaction with students, and so forth. Some of the exercises cover aspects of database use—rules for finding and sorting records, for example—which may be difficult for you to grasp. Forewarned is forearmed; put your thinking cap on!

Lesson 8, then, after reviewing the basics, will introduce you to the following additional features of the *Access* database:

- searching and querying a database
- sorting records
- creating reports
- improving the report (making changes)
- printing reports

**A caveat before you begin:** You'll find it easiest to use the tutorial if you follow the directions carefully. On computers there are always other ways of doing things, but if you wander off on your own be sure you know your way back!

### 8.1 GETTING STARTED

What are some of the advantages that electronic databases have over manual record keeping systems such as filing cabinets, folders, rolodexes, and the like? By the time you completed Lesson 6 you must have had a clearer idea of what a database is, and can probably now come up with an answer to this question. Here are a couple of the reasons frequently forwarded for using a database. Can you find your response among them?

- One can store huge amounts of data in a small amount of space (on a 3 1/2" disk one can store about 500 pages of text, or over 7000 records, where each record might have up to 100 characters; on a zip disk you can store the equivalent of over 70 floppy disks; on a hard disk you can store the equivalent of dozens of zip disks, and so on);

- One can easily manage all the data—view records, add new records, delete old records, or change existing records. You learned how to handle these tasks in Lesson 6.

Here are some other reasons for using an electronic database.

- One can quickly find anything one needs to know, and get answers to questions about the data in the database. *What is Larry Dorey's phone number?*
- One can home in on a small subset of the data. *Which students have a GPA below 2.0?*
- One can instruct the computer to arrange (sort) records, and thus organize the data any way one likes. *I'd like a listing with everything sorted based on the student hobby field. That'll make it easy for me to identify students who have the same interests.*
- One can use the computer to create any number of reports for the purpose of supplying others with information pertaining to the data in the database. *My principal, Yvonne Singer, wants a monthly report of student progress in Reading, Writing, Math and Science.*

The purpose of this tutorial is to help you learn how to use the *Access* database in these last four ways. By the end of the tutorial you will have the basic skills you need to become a power user of the database. Whether you ever can call yourself a skilled user will depend, of course, on whether or not you continue to use *Access* as a tool to support your professional work in the classroom.

Make sure you have your **Work Files for Office 2010** available on your computer, then open **Access** (Start > All Programs > Microsoft Office > Access 2010)

From the **File** menu select **Open**.

*Access* will display the **Open** dialog box.

Locate the **Work Files for Office 2010** folder on your disk and **open** it, then **open** the **Access Files** folder

You are going to work first with a database similar to the one you created in Lesson 6. A database called *Students 2010* has been prepared for you.

In the **Access Files** folder open the **Students 2010** database (**NOT** the **Student Roster 2010** database)

On the **left frame** of the Access window, click on the **down arrow** to bring up the pull down menu of database objects (Fig. 8.1)

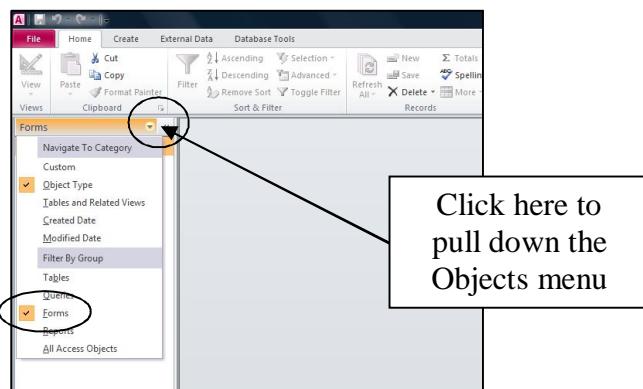


Fig. 8.1 Selecting a Form or a Table

Make sure the **Forms** object is selected (Fig. 8.1), then **double click** to open the **Student Records Form**

You should see the Forms View of the Students 2010 database, as illustrated in Fig. 8.2.

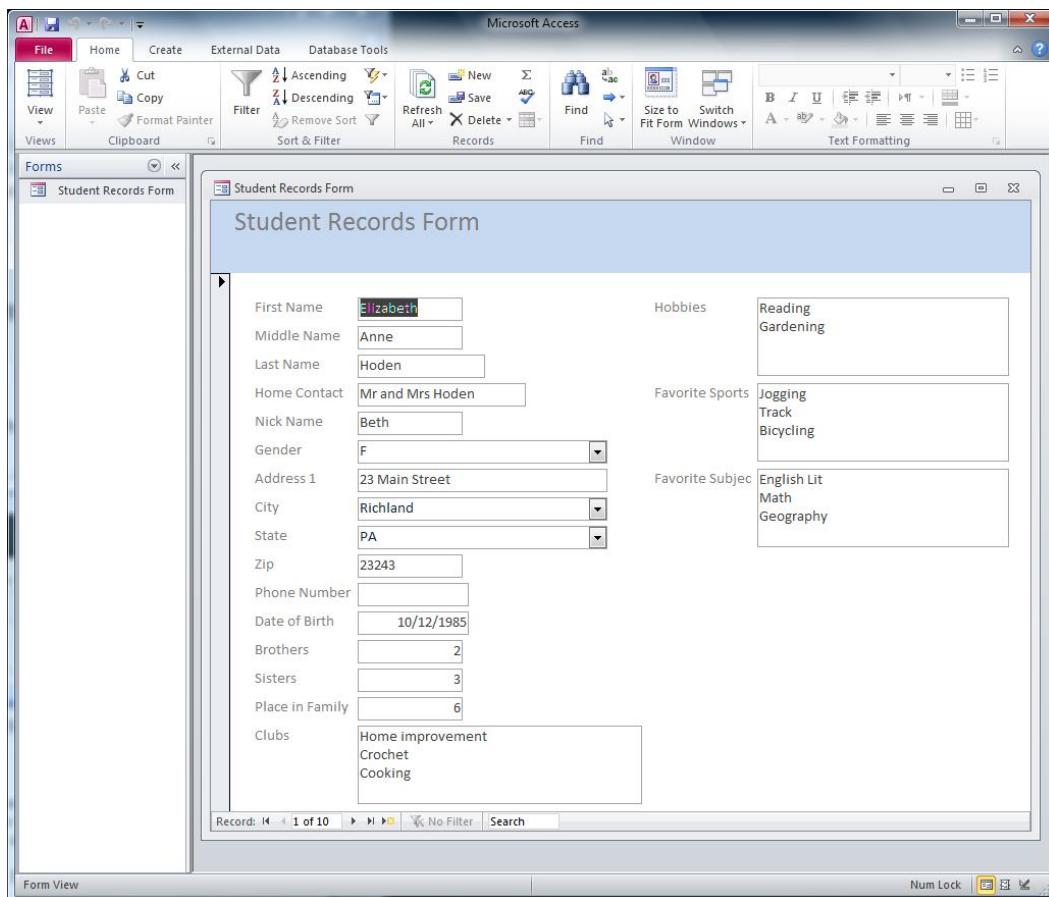


Fig. 8.2 The Forms View of the Students 2010 database

## 8.2 REVIEWING THE BASICS

You may not have worked with databases a great deal prior to using these tutorials, so it will be a good idea to start by recapitulating what you learned in Lesson 6 by way of reinforcement. Then you can move on to learn about the new features of the Access database that are targeted for this tutorial. Let's start with terminology.

A database is a document which contains a set of records. Each record is made up of one or more fields, and each field may or may not contain entries.

For example, a database of movie titles might have records for a few thousand movies. Each record will have fields for the movie title, the director, the producer, the star(s), and so on. A particular entry for the Movie Title field might be "Star Wars."

### Viewing the data in the database

When you first open an existing database into primary memory, it is generally best to open a Forms View of the database because you can easily view the contents of an entire record on the screen, thus showing you what all the records basically contain.

In the Forms View, as you can see, the data for one complete record is shown in the Form. Notice the database navigation tools at the bottom of the Form window (Fig. 8.3).

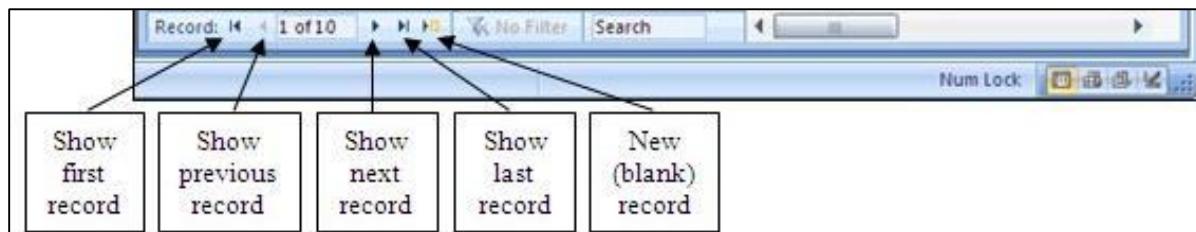


Fig. 8.3 Navigation tools in the Access database

Look them over now to re-familiarize yourself with how they work.

Now, close the **Student Records Form** and, in the **Objects menu** in the left frame of the database window, switch to **Tables**, and double click on **Student Records Table**

This Datasheet view (Fig. 8.4) shows the records across the screen in rows and columns much like the Spreadsheets you learned to use in Lessons 4 and 5.

The screenshot shows the Microsoft Access application window in Datasheet View. The ribbon is visible at the top, and the main area displays a grid of data for the "Student Records Table". The columns are labeled: First Name, Middle Name, Last Name, Home Conta, Nick Name, Gender, Address 1, and City. The data includes 10 records, such as Elizabeth Hoden, Mr and Mrs Hoi Beth, F, 23 Main Street, Richland, PA, and Joan Hodges, Mrs. James, F, 45 Chicago Blvd, Johnstown, PA. The status bar at the bottom shows "Record: 14 1 of 10" and includes navigation buttons.

First Name	Middle Name	Last Name	Home Conta	Nick Name	Gender	Address 1	City
Elizabeth	Anne	Hoden	Mr and Mrs Hoi Beth	F	23 Main Street	Richland	PA
Angela	Mary	Haverilla	Mr and Mrs Ha	Angie	F	22 Feldstone S	Johnstown
Alice	Louise	Garbett	Mr. Freedman	Ally	F	P.O.Box 123	Windber
Bernard	John	Ritter	Mr and Mrs Ritt	Bernie	M	123 Main Stree	Ligonier
Netiva	Esther	Cantor	Mr and Mrs. Ca	Neti	F	17 Chicago Blv	Richland
Joan	Mary	Hodges	Mrs. James	Joan	F	45 Chicago Blvd	Johnstown
Rebecca	Marilyn	Randall	Mr and Mrs Rar	Beckie	F	435 Knightdale	Johnstown
Dawn	Jane	Klochak	Mr and Mrs Klo	Dawn	F	P.O.Box 4	Windber
Sally	Joanne	Richter	Mrs Hodgkins	Sal	F	42 Smallman	Windber
Benjamin	David	Franklin	Mr and Mrs Fra	Benjie	M	67 Homewood	Johnstown
*							

Fig. 8.4 Viewing records in the Datasheet view

### Adding a record to the database

You can add a new record any time you want, wherever you may be in the database, because you can tell Access to sort everything into a specific order whenever you need to do so. You will learn how to do this in a later section of this tutorial (8.4 SORTING RECORDS). You are going to add a couple of new records now. It's easiest to do this in the Forms view of the database.

Close the **Student Records Table** and, in the **Objects menu** in the left hand side of the database window, switch to **Forms**, and double click on **Student Records Form**

In the Home Ribbon > Records Group, click on the New button (Fig. 8.5)

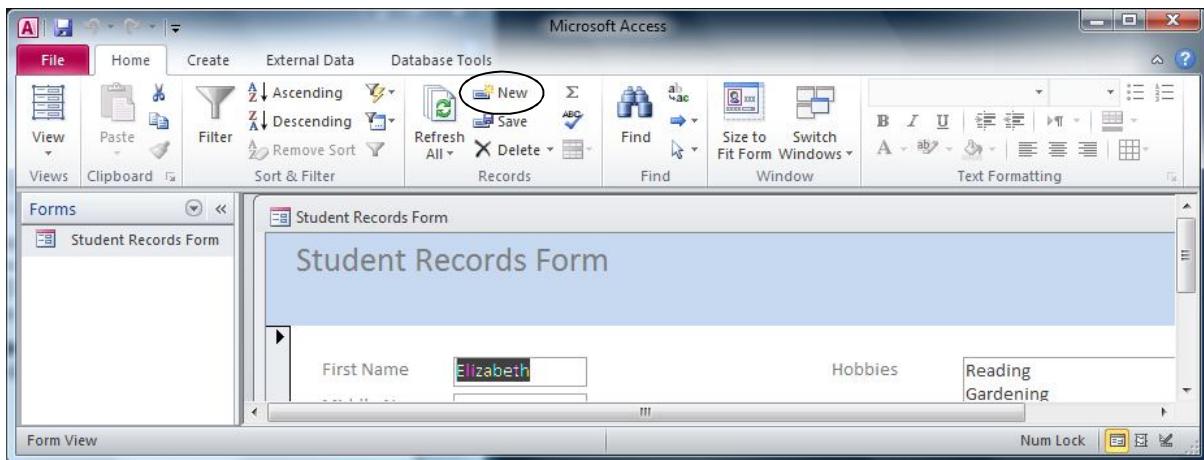


Fig. 8.5 The New button in the Records Group of the Home Ribbon

This will open up a set of empty fields for the new record (Fig. 8.6)

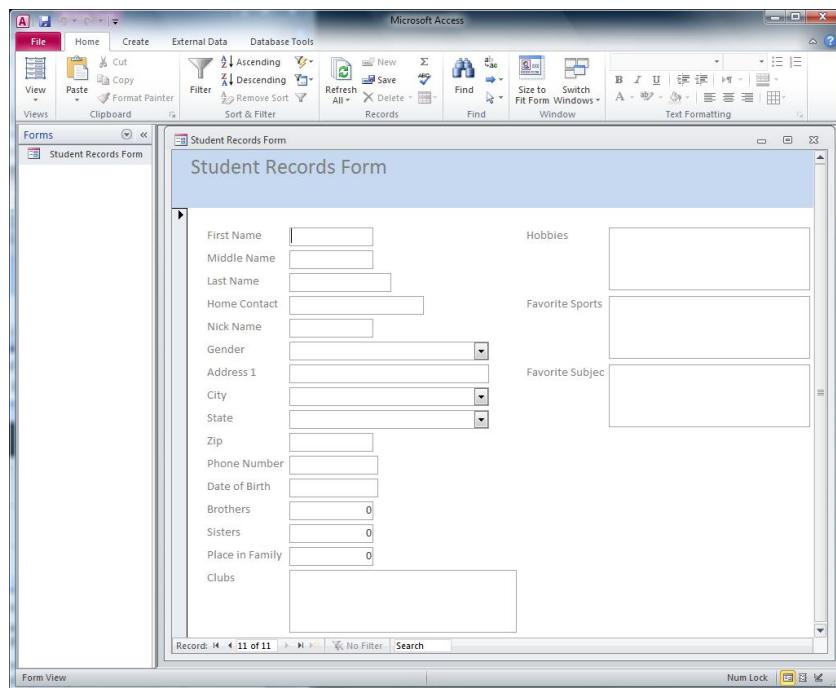


Fig. 8.6 Entering data for a new record

Enter the data for this **new** record, and at least one other new record (**two records in all**), pressing the **Tab** key after you type the data for each field

You can put any data in the records you are adding because you'll delete them in a bit. You can even skip a field, if no data is *required* for that field, by simply pressing Tab without entering any data.

### Clearing a field in a record

First you need to know that you cannot clear entries from a field that has been defined as *requiring* data of some kind in the field. If you try to clear data from these fields (in our database

the First Name through the Home Contact fields, for example) you will get a warning prompt from Access telling you that you cannot have a *null value* in these fields.

Use the **navigation tools** (see Fig. 8.3 on page 257) to go back to the **first** of the records you added just now

Click in the **Nick Name** field **entry box** (not on the field name) of the **first** of the records you added just now and **highlight** the **data** in the **Nick Name** field entry box, then in the **Home Ribbon > Clipboard Group** select **Cut (ctrl-X)**

Next go to the **second** of the records you added a moment ago, click in the **Clubs** field **entry box** and again select the data in the Clubs field, then in the **Home Ribbon > Clipboard Group** select **Cut (ctrl-X)**

Notice that this does not delete the field or the record; it simply clears the selected entries in a field. The field is still there, so new data can be entered into it.

### **Deleting (clearing) a record, or a set of records**

Use the **Navigation tools** to locate one of the records you just added, then In the **Records Group** of the **Home Ribbon**, in the **Delete menu**, select **Delete Record**

Access immediately displays a warning dialog box (Fig. 8.7) to tell you that if you go ahead you will permanently lose the data in the record.

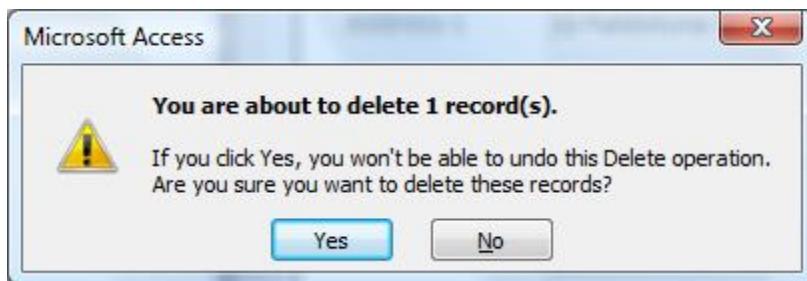


Fig. 8.7 Delete Record warning prompt

Click on **Yes** to delete the selected record

Notice that this removes the record(s) entirely.

### **Changing the data in a field**

Suppose some data gets entered incorrectly—through misspelling or a typo. Let's say you needed to update a nickname in a student's record. To change it you would do the following.

Locate the record in which you want to make the change (for this exercise select any record you like)

Click in the entry box for the field name that needs to be changed (use any entry in the **Nick Name** field for this exercise)

Change it to some other nick name in the same way you would in a word processor

All of the exercises in this section were by way of recapitulating what you learned in Lesson 6. Now let's move on to learn some more advanced features of the Access database.

## 8.3 SEARCHING AND QUERYING A DATABASE

This is a powerful function of the Access database. You can find anything in the database if you know what to do.

All you have to do is give Access any set of characters as the key for a search of the database, and the system will find that set of characters, if it exists, even if it is just a part (a subset) of a larger word or phrase.

There are several ways you can do this. But first you need to open another, larger, database onto the Access Desktop.

Close the **Students 2010** database document and from the **File** menu select **Open**

The disk containing your *Work Files for Office 2010* should still be in the drive.

Open the **Birds database** (inside the **Access** folder of your **Work Files for Office 2010**), then, in the Objects menu on the left side of the database window (see Fig. 8.8), open the **BirdSightings Form** (not the Table)

### Finding a single record using data from a specific field

You often may need to locate and display the contents of one particular record, or set of records, based on data from one specific field. The function Find, which is in the Home Ribbon > Find Group, is the Access command to do this. It works much the same as when you use the Find command in the word processor, which you learned about in Lesson 2.

Suppose, for example, you wanted to find the record for the bird with the Common Name *Northern Oriole* in the Birds database. Here is how you do this.

In the **Find Group** of the **Home Ribbon** click on the **Find** button (Fig. 8.8)

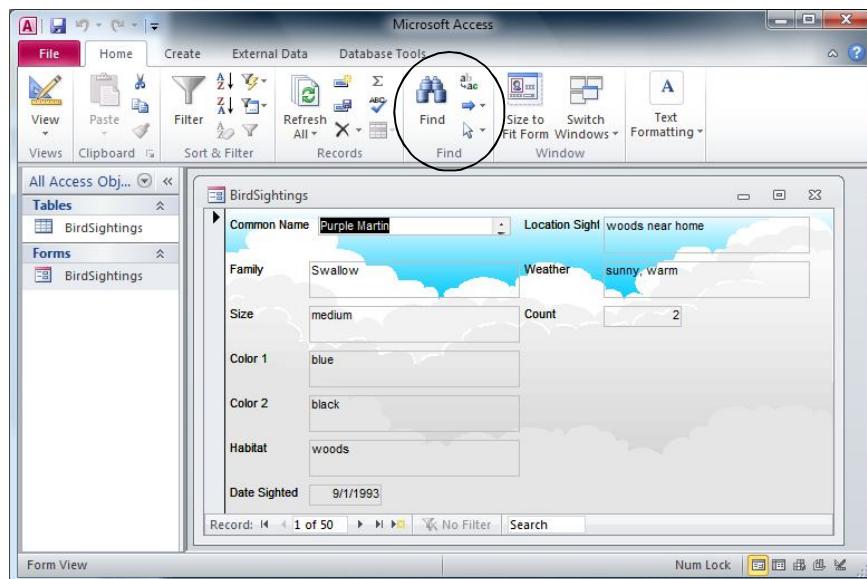


Fig. 8.8 The Find (and Replace) Group

Access now displays the Find and Replace dialog box (Fig. 8.9)

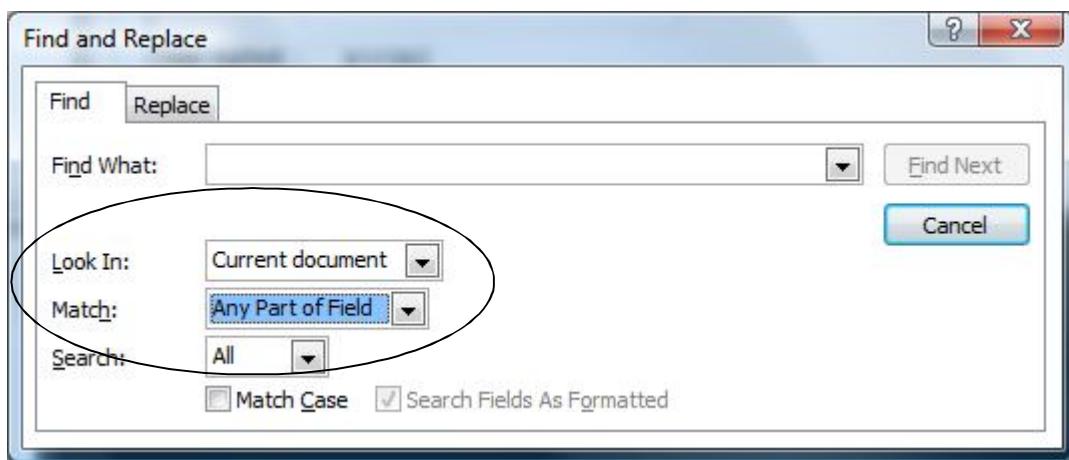


Fig. 8.9 The Find and Replace dialog box

You need to indicate what data you want found in the database by first identifying what part of the database you want *Access* to "Look In." For this first search, we'll tell *Access* to go look anywhere amongst the BirdSightings data. Also, you need to indicate if you want to match the data in a Whole Field or Any Part of a Field.

Click on the arrow to pull down the **Look In:** options and select **Current document**, then click on the arrow next to the **Match** options and select **Any Part of Field** from the drop down menu

The record(s) you find with a Find request are called the "found set".

In the **Find What:** entry box type **Northern Oriole** (or **northern oriole**—if you don't check the "**Match Case**" box, *Access* doesn't care whether you use upper or lower case letters)

Now click on **Find Next**, then click on **Cancel**

As you see, *Access* quickly locates the record containing the name "Northern Oriole." This one record alone is shown in the BirdSightings Form window. Of course, if you incorrectly typed Northern Oriole, *Access* would tell you that the search item was not found (Fig. 8.10).



Fig. 8.10 Warning message after unsuccessful search of the database

In the **Views** menu, select **Datasheet View** to see the records following the **Northern Oriole** record

#### Finding two or more records based on data from a single field

Next, let's search on criteria which will find more than one record. You want to find any bird with the primary color (Color1) that has any shade of black in its plumage.

### Close (X out of) the BirdSightings datasheet table

Double click on the **BirdSightings Form** to open it, and click to put the cursor anywhere in the **Color1** field

Click on the **Find** button in the Home Ribbon's **Find Group** (looks like a pair of binoculars), In the **Look In:** box select the option for **Current Field** and in the **Match:** box select the option for **Any Part of Field**, then type the word **Black** in the **Find What:** box

Click on **Find Next**, then move the **Find and Replace dialog box** out of the way, if necessary, so you can see the contents of the record

The search finds the first of 11 records where a bird in the database has the color “black” or even “blackish” in its plumage.

To see the data in the next record, click on **Find Next** again, and so on

See if you can count **11 records** of birds with the color **black** or **blackish** in the plumage?

To see a listing of all the records that result from a search such as this, you must use a filter.

### Filter by selection

The exercise that follows will use a filter to select the set of birds whose habitat is “marshes.” This is best done in the Tables View of the database.

Close the **BirdSightings Form**, and use the **All Access Objects menu** if necessary (Fig. 8.11) to switch to the **BirdSightings Table** (Fig. 8.11)

Common Name	Family	Size	Color 1	Color 2	Habitat
Purple Martin	Swallow	medium	blue	black	woods
Redhead	Duck	large	red	black, gray	lakes
Northern shoveler	Duck	large	green	white, brown	marshes
Black-crowned Night Heron	Heron	very large	blackish green	gray	forests
Barn Swallow	Swallow	small	bluish black	cinnamon	open fields
American Bittern	Heron	very large	brown	black	marshes
Ring-necked Duck	Duck	large	black	gray, purple	lakes
Mallard	Duck	very large	green	white, brown	marshes
Gadwall	Duck	large	gray	brown	marshes
Green-winged Teal	Duck	large	green	gray	marshes
American Coot	Rail	large	gray	black	marshes

Fig. 8.11 The BirdSightings Table

Scroll to the **right** to locate the **Habitat** column

Now (and this is tricky, so stay focused) position the **mouse arrow** near the **left edge** of one of the **marshes** entries until the **mouse pointer** will become a **hollowed-out plus sign** ( $\text{+}$ )—and, when it does, click the mouse button

This tells Access that you want the set of birds which lives among marshes.

In the **Home Ribbon** locate the **Sort & Filter Group** of tools (Fig. 8.12)

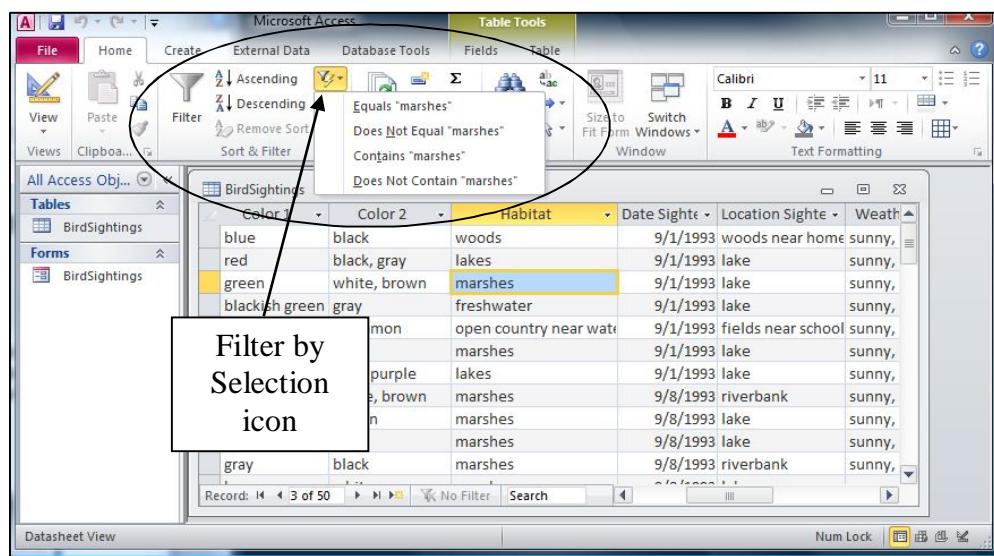


Fig. 8.12 Sort & Filter Group

Click on the **Filter by Selection** icon in the **Sort & Filter Group** (Fig. 8. 12)

In the menu that pops up, select **Equals “Marshes”**

You will now see a list of 15 birds in the database that live in marshes (Fig. 8.13).

Color 1	Color 2	Habitat	Date Sighted	Location Sighted	Weather
green	white, brown	marshes	9/1/1993	lake	sunny,
brown	black	marshes	9/1/1993	lake	sunny,
green	white, brown	marshes	9/8/1993	riverbank	sunny,
gray	brown	marshes	9/8/1993	lake	sunny,
green	gray	marshes	9/8/1993	lake	sunny,
gray	black	marshes	9/8/1993	riverbank	sunny,
brown	white, gray	marshes	9/8/1993	lake	sunny,
brown		marshes	10/1/1993	lake	cloudy,
grayish brown	white	marshes	10/1/1993	lake	cloudy,
gray	white, red	marshes	10/3/1993	lake	cloudy,
gray	cinnamon, white	marshes	10/3/1993	lake	cloudy,
black	red	marshes	10/16/1996	lake	cloudy,
olive	brown	marshes	5/1/1994	lake	sunny,
black	green, purple	marshes	5/21/1994	lake	sunny,
brown	white	marshes	5/21/1997	fields near school	sunny,

Fig. 8.13 The found set of filtered records

Click the **Toggle Filter** icon on the toolbar (Fig. 8.14) to go back to viewing all the records in the database



Fig. 8.14 Toggle Filter icon in the Sort & Filter Group

### Filter by Form

You can filter records using a Form, too. In other words, you can select a set of records no matter what database mode you are in—a Table or a Form. Here's how you do a Filter by Form.

Let's say you want to find all the records in which the birds have the color "black" or a combination of "black" and some other color in their plumage.

In the **Sort & Filter Group** of the **Home Ribbon** click on the **Advanced Filter Options** icon and, in the drop down menu, select **Filter by Form** (Fig. 8.15)

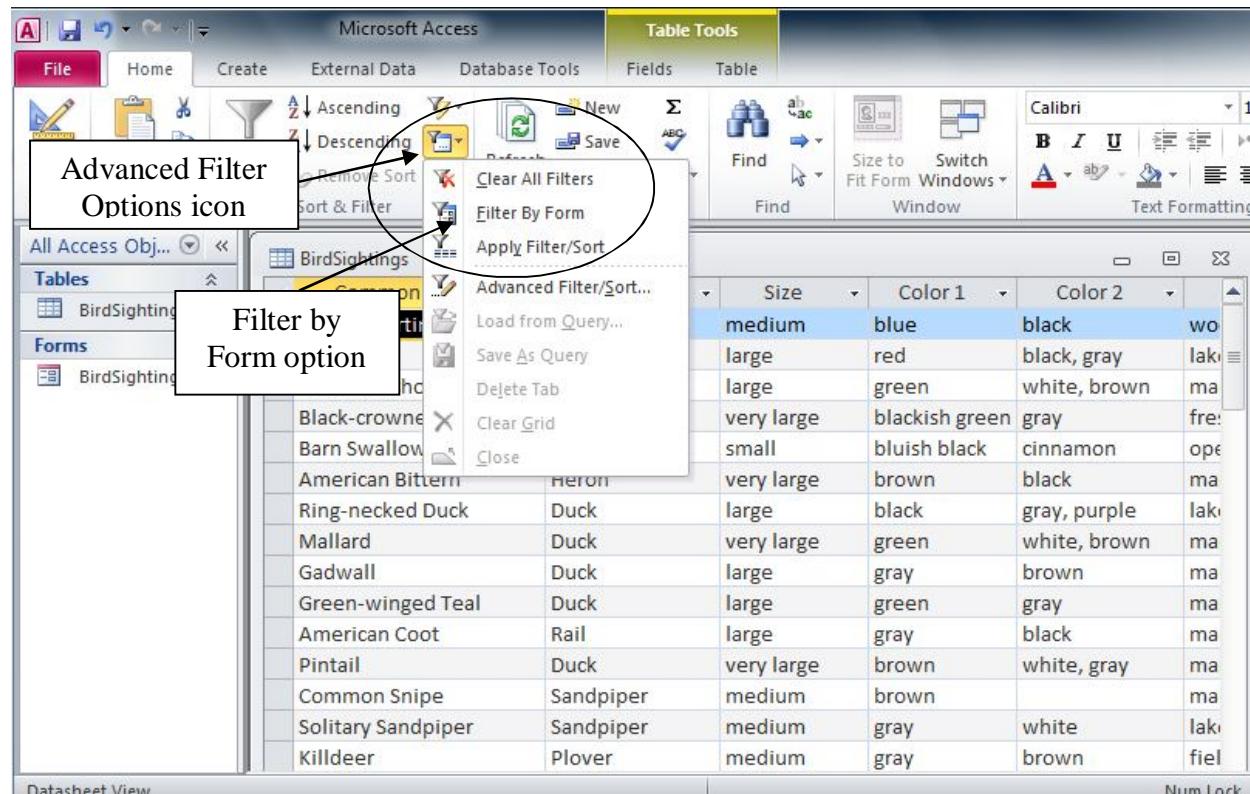


Fig. 8.15 Access Advanced Filter Options

Access presents an empty record for you to select the criteria for the filter (Fig. 8.16).

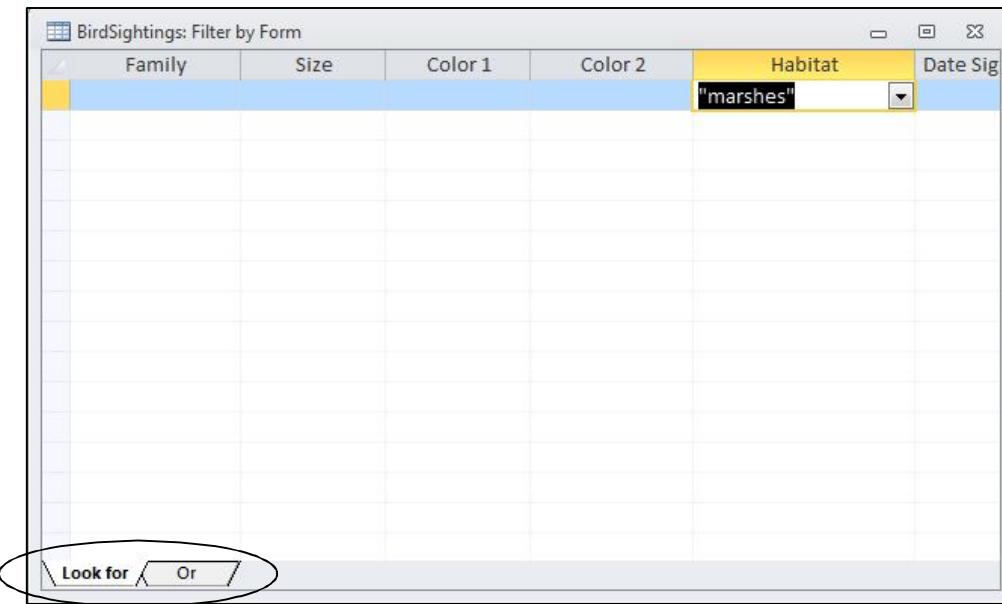


Fig. 8.16 The Filter by Form window with its *Look For* and *Or* tabs

But first you need to tell Access that the previous filter (for the birds that live among marshes) is no longer relevant. Access keeps previous search criteria active unless you remove them from the filter. So you need to remove "marshes" from the Habitat entry box. This is easy enough to do.

Drag to highlight the “**marshes**” habitat, if it isn’t already highlighted, and hit the **Backspace** key

Now you are going to do a Filter by *Form* using the *Color1* field. You want to find all the birds that have either *black*, or *blackish green* or *blackish blue* in their plumage.

To do this, click in the **data entry area** below the **column header** of the **Color1** field

You should now see a small down arrow at the right hand edge of the *Color1* data entry box (Fig. 8.17).

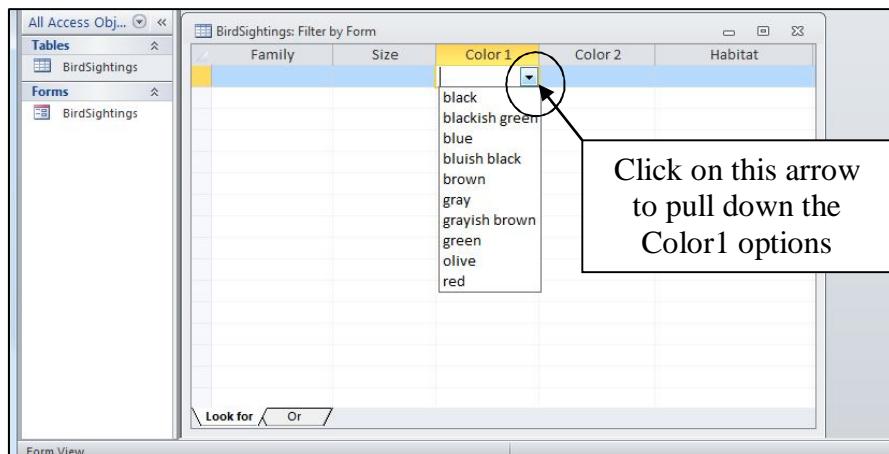


Fig. 8.17 The drop down list of colors

Click on the **arrow** on the **right edge** of the **Color1** data entry box to see the list of all the possible colors in the Color1 field (Fig. 8.17 above)

Click on the color “**black**” in the list, then click on the first **Or** in the **Look for** filter rule icons at the **bottom** of the **Filter by Form** dialog box (Fig. 8.17)

This will bring up a new, empty filter dialog box.

In the **Color1** field, click again on the **arrow** to see the list of **possible colors** and, in the drop down list, click on “**blackish green**”

Now, click on the next **Or** in the **Look for** filter rule icons at the bottom left of the dialog box, then, once more, click on the **arrow** on the **right edge** of the **Color1** data entry box

In the drop down list click on “**bluish black**”

That is all the colors in the Color1 field that have the color *black* in them.

Now click on the **Toggle Filter** button in the **Sort & Filter Group** of the **Home Ribbon** (Fig. 8.18)

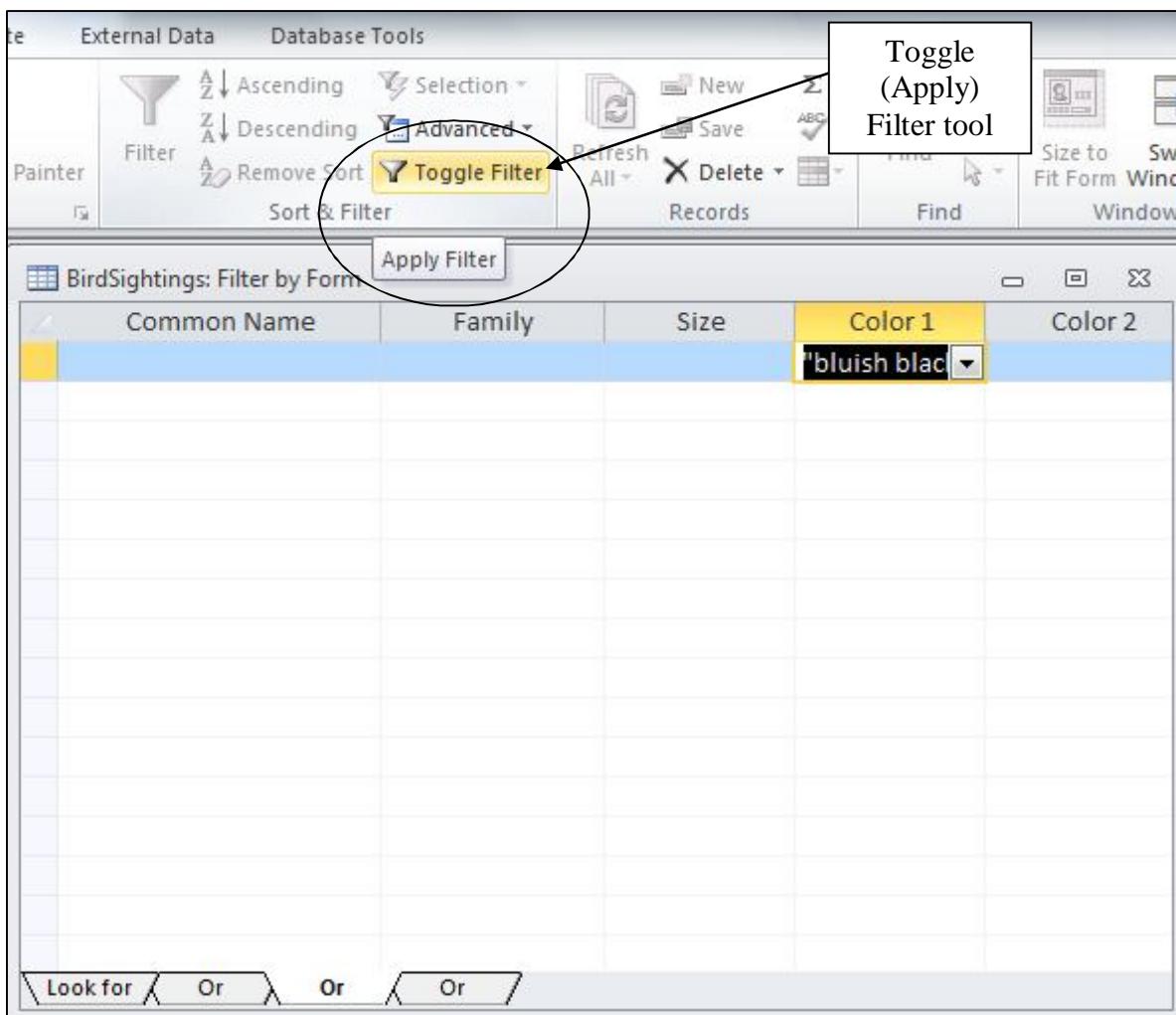
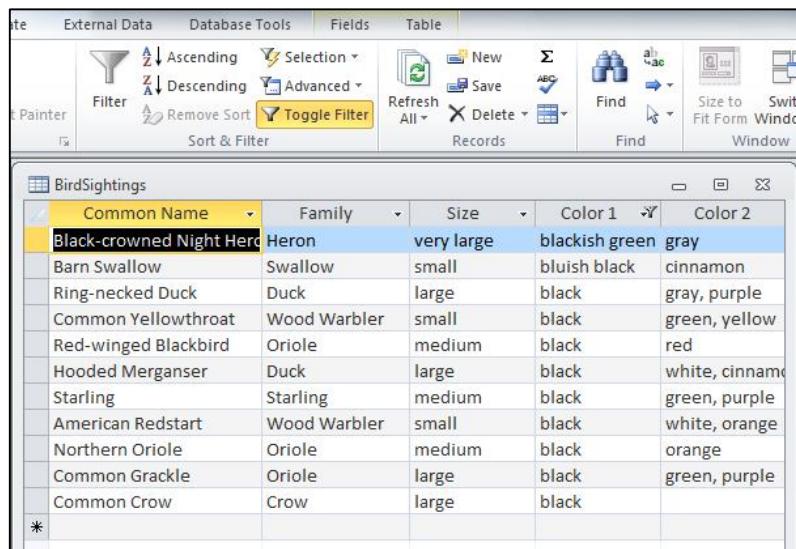


Fig. 8.18 The Toggle Filter button

## Lesson 8: More on database use

Immediately Access filters out the set of birds (11 records in all) with black in their plumage (Fig. 8.19).



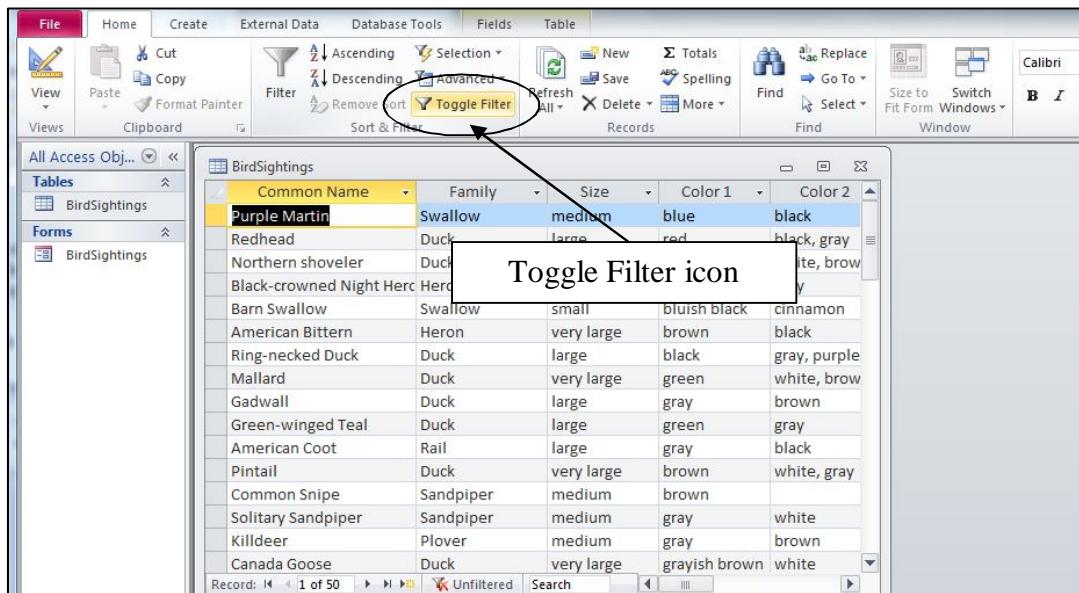
Common Name	Family	Size	Color 1	Color 2
Black-crowned Night Heron	Heron	very large	blackish green	gray
Barn Swallow	Swallow	small	bluish black	cinnamon
Ring-necked Duck	Duck	large	black	gray, purple
Common Yellowthroat	Wood Warbler	small	black	green, yellow
Red-winged Blackbird	Oriole	medium	black	red
Hooded Merganser	Duck	large	black	white, cinnamon
Starling	Starling	medium	black	green, purple
American Redstart	Wood Warbler	small	black	white, orange
Northern Oriole	Oriole	medium	black	orange
Common Grackle	Oriole	large	black	green, purple
Common Crow	Crow	large	black	

Fig. 8.19 The result of the color filter

### Searching based on criteria from more than one field

This time you are going to give Access two or more search criteria for your search of the database. The system will search every field of every record, locating only those records that contain the set of characters that make up the search criteria. Access will then display the complete contents of all the records that contain the data you're looking for.

Click on the **Toggle Filter** icon in the **Sort & Filter Group** of the **Home Ribbon** (Fig. 8.20)



Common Name	Family	Size	Color 1	Color 2
Purple Martin	Swallow	medium	blue	black
Redhead	Duck	large	red	black, gray
Northern shoveler	Duck	large	white, brown	brown
Black-crowned Night Heron	Heron	very large	black	gray, brown
Barn Swallow	Swallow	small	bluish black	cinnamon
American Bittern	Heron	very large	brown	black
Ring-necked Duck	Duck	large	black	gray, purple
Mallard	Duck	very large	green	white, brown
Gadwall	Duck	large	gray	brown
Green-winged Teal	Duck	large	green	gray
American Coot	Rail	large	gray	black
Pintail	Duck	very large	brown	white, gray
Common Snipe	Sandpiper	medium	brown	
Solitary Sandpiper	Sandpiper	medium	gray	white
Killdeer	Plover	medium	gray	brown
Canada Goose	Duck	very large	grayish brown	white

Fig. 8.20 Toggle Filter icon in the Sort & Filter Group

It doesn't matter where you are in the database to begin the search. Access will always search the entire database for the records you request. For instance, let's say you want to find all the records

for birds that you spotted in the month of September. You know there were several, but you don't remember which they were. Here are the steps you would follow to do this.

First you need to remove any filters from a previous search; this is because *Access* remembers them from search to search.

In the **Home Ribbon > Sort & Filter Group** click on the **Advanced Filter Options** icon and, in the drop down menu, select **Filter by Form**

Remove the “**black**” filter in the **Color1** box by hitting the **Backspace** key

Now click on the **first Or** tab in the filter search (**Look for**) tools at the bottom left of the window

Hit the **Backspace** key to remove the criterion “**blackish green**”, click on the next **Or**, and hit the **Backspace** key to remove “**bluish black**”

Now you are ready to create the new filter.

First, click on the **Look for** tab in the **lower left corner** of the **Filter by Form** window, then scroll across if necessary to the **Date Sighted** field entry box, which is immediately below the field name at the top of the column, and click to put the cursor in the data entry box

Click on the **arrow** that pops up on the right side of the data entry box in order to see the drop down list of all **dates** on which birds were sighted

Click on the **first** date which has a ‘**9**’ for the month (**September**)

After you click on it, you'll see the first date in the entry box with ‘#’ symbol to indicate its selection by the filter.

Click on the **first Or** tab, then click on the arrow in the **Date Sighted** box again and select the **second** date with a ‘**9**’ for the month

Now click on the **Toggle Filter** button in the toolbar

*Access* quickly finds the set of records for birds sighted on the 1st or 8<sup>th</sup> of September. How many records did you get? There should be 12. This might seem to you like a kind of silly exercise, if only because it probably wouldn't take you long to find the 12 records out of the 50 records in the database. Wouldn't take you a minute to do that, right? But suppose you have 500 records, or 5000 records, or, as is common in school districts in large cities, 500,000 records or more. The larger the database, the more you need tools like these filter tools—and the Sort tools in the next section—to help you out.

## 8.4 SORTING RECORDS

The three major advantages of an *electronic* computerized data storage system over a manual, paper-based filing system are clear:

1. electronically stored data gives *organizational flexibility*, which helps us cope with the inevitable *complexity* that increases as the amount of data collected grows;
2. electronically stored data *saves space*;
3. electronically stored data increases the speed of data access and thus *saves time*.

When we use old-fashioned filing cabinets to store data, we usually come up with some kind of organization. So we put labels on the drawers in the cabinets and labels on the folders inside the drawers. This organization is often based on numeric or alphabetic sequencing. The purpose, of course, is to enable us to quickly find what we have stored in the appropriate folder in the appropriate drawer.

This is a good system as long as we have no cause to frequently change the organization we have set up. It also assumes that space and time are not at a premium in our day to day operations. Unfortunately, coping with change, making good use of space, and saving time are factors critical to our productivity, so we should welcome any system which helps us cope with change and optimizes our use of space and time.

Today, using state of the art technology, we can electronically store the equivalent of the Library of Congress in a shoe box. And we can now access any specific item in that "box" in a few thousandths of a second. What is more, software such as *Access* makes it possible for us to organize that data more or less on the fly by sorting it any which way we want.

### Sorting on a single field

Take, for example, the Birds database that is on your Desktop at this time. As you can see, the bird names (Common Name field) are not sorted in any particular order. In fact, the database is sorted based on the *Date* on which each bird was *Sighted*.

So the ordering is chronological rather than alphabetical. It would therefore be difficult, especially if the database were very large, for you to visually scan the database to find the record for a particular bird. This is why *Access* makes available the *Go To Record*, *Sort Records* and *Match Records* functions under the *Organize* menu).

What if you wanted to print out a report listing all the birds in alphabetical order by name of bird? You would have to first organize the records alphabetically on the bird names. Fortunately *Access* has a *Sort Records...* function which enables you to complete this operation with the greatest of ease.

First you need to remove the filter you used to select the set of birds sighted in September.

**Click on the **Toggle Filter** tool (which right now should indicate that it will Remove an existing Filter) in the **Sort & Filter Group** of the **Home Ribbon****

You can best see the results of a sort if you are in the Datasheet (Table) view of the database, which is the view you should have on your screen.

**If you do not have the **Datasheet View**, select it now from the **Views Group** > **View menu** before proceeding**

**Click to put the cursor in any of the items in the **Common Name** field, then click on the **Sort Ascending** button in the **Sort & Filter Group** of the **Home Ribbon** (Fig. 8.21)**

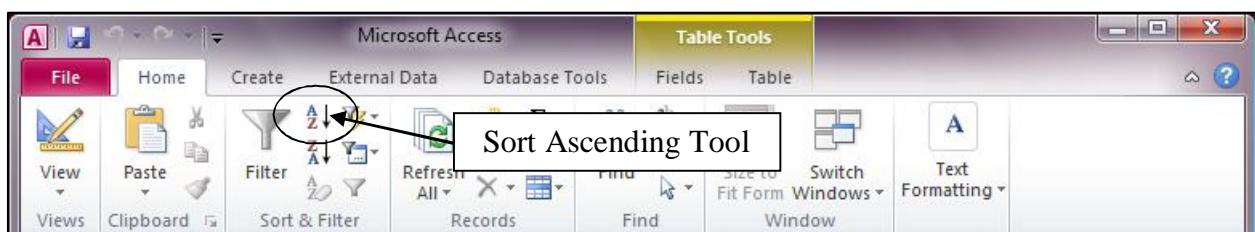


Fig. 8.21 The Access Sorting tools

Immediately Access sorts the records alphabetically on the Common Name field. There are other sorting options depending on the type of data in the field you are using as the basis, or key, for the sort:

- If your sort request is based on a Text field such as Common Name or Location Sighted, the sort can be either Ascending (A to Z) or Descending (Z to A).
- If you are sorting on a Number field such as the Count field, you again would be able to sort in Ascending (Low number to high number) or Descending (High number to low number) order.
- Finally, if you are sorting on a Date field such as Date Sighted, you would be able to sort in Ascending (Chronological) or Descending (Reverse Chronological) order.

## 8.5 CREATING REPORTS

### A word about the Access database reporting facility

- Planning is still an important prerequisite for good report definition. No matter how tempting it might be, always *resist* creating a report without first thinking and mapping out what you want as the finished version of a report.
- Changes you make to data fields for the report do *not* affect the data in the database at all. So you don't have to worry about losing data, or messing up the database when you create reports.
- You can create reports that contain just a few fields from a selected set of records by using the search criteria techniques that you already learned about in this lesson. For instance, you could use the Birds database to print a report listing just the name, color, and count of birds that were seen in your neighborhood. Shortly you will practice doing something along these lines.
- You can create numerous layouts or reports for a database, each report having different sets of data, and you can store them all along with the database.

In the next sections you will continue to work with the *Birds* database. You are going to create a simple report.

### Initial definition of the layout or report

You are going to create a layout or report format which will list all members of the duck family sighted during the reporting period covered by the database. The fields in the report will include the Common Name, Family, Date Sighted and Count fields.

#### *A word about selecting tabular layouts*

Bear in mind that most databases have many fields. If there are more field names in a report layout than can fit across the screen or page, the names simply wrap around, creating two or more lines, if necessary, in the top section (the Header) of the layout.

This can make for very untidy, not to say confusing, reports. The columnar report you are about to work with will not have this problem because you will be using only a small selection of the fields in the database (just 4 to be exact), but it is good to be aware of the problem should the occasion arise where you want to create a report that uses many fields.

You need to start by using a filter to create a new Table. You want to select only the birds in the Duck family for the Report.

In the **Sort & Filter Group** of the **Home Ribbon** click on the **Advanced Filter Options** tool, then select **Filter by Form** from the menu

Now click in the **Family** field entry box, just below the Family field name

Next click on the **arrow** to see the drop down list of all possible **families** of birds and click on **Duck**, then click on the **Toggle Filter (Apply Filter)** button in the **Sort & Filter Group** of the **Home Ribbon**

You should now see listed only the birds in the Duck family, which are the records you want for the Report.

Next, click on the **Create Tab** to show the **Create Ribbon** at the top of the Access window and, in the **Reports Group** of the **Create Ribbon** click on the **Report Wizard tool** (Fig. 8.22)



Fig. 8.22 The Report object in the database objects drop down list

You are now asked if you want to **save the Table** again before you can close it and move on to create the report, so click on **Yes** in the dialog box that pops up on the screen

This brings up the Report Wizard dialog box (Fig. 8.23).

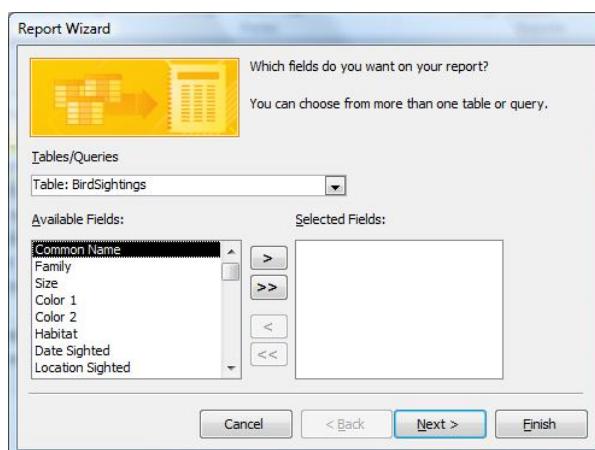


Fig. 8.23 The Report Wizard dialog box

In the Tables/Queries data box, leave the default **Table: BirdSightings** table as the source for the report's data

Then, in the **Report Wizard** dialog box, from the **Available Fields:** double click on the **Common Name**, **Family**, **Date Sighted**, and **Count** fields in order to move each of these **four fields** to the **Selected Fields:** box (Fig. 8.24)

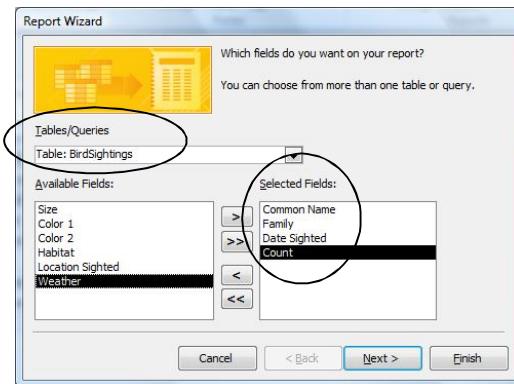


Fig. 8.24 Selecting the fields for the report

Now click on the **Next** button

Access now asks you in a new dialog box if you want to add any grouping levels to the report.

You don't want to add any grouping levels, so click on the **Next** button to bypass this dialog box

In the next dialog box you are asked if you want to sort the records. There is no need to do this since you already sorted them in Ascending Order based on the Common Name

Click on **Next** once more to proceed to the next step in the Report Wizard

The default setting for the report layout is *Tabular*, which is what you want. You are also going to print the report using *Portrait Orientation*, which is the default setting.

So make sure the radio buttons next to **Tabular** and **Portrait** Orientation are selected, then click on the **Next** button again

In the next step of the Report Wizard you have to enter the title for the report (Fig. 8.25).

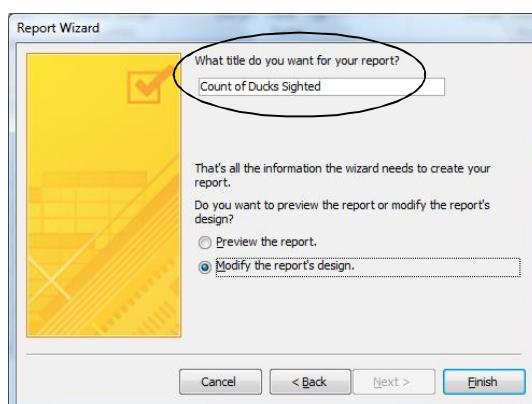


Fig. 8.25 Entering the title for the report

The default title, as you can see, is BirdSightings, but you want to make a more specific title to describe the contents of the Report.

For the **Title** of the report, type **Count of Ducks Sighted**, then click on the radio button next to “**Modify the report’s design**”

You need to select this option to modify the report’s design since, as you will see shortly, you need to rearrange the headers and fields so they fit nicely on the page of the report.

Finally, click on **Finish**

## 8.6 IMPROVING THE REPORT (MAKING CHANGES)

As you can see from Fig. 8.26, the new layout which you named *Count of Ducks Sighted* needs some work.

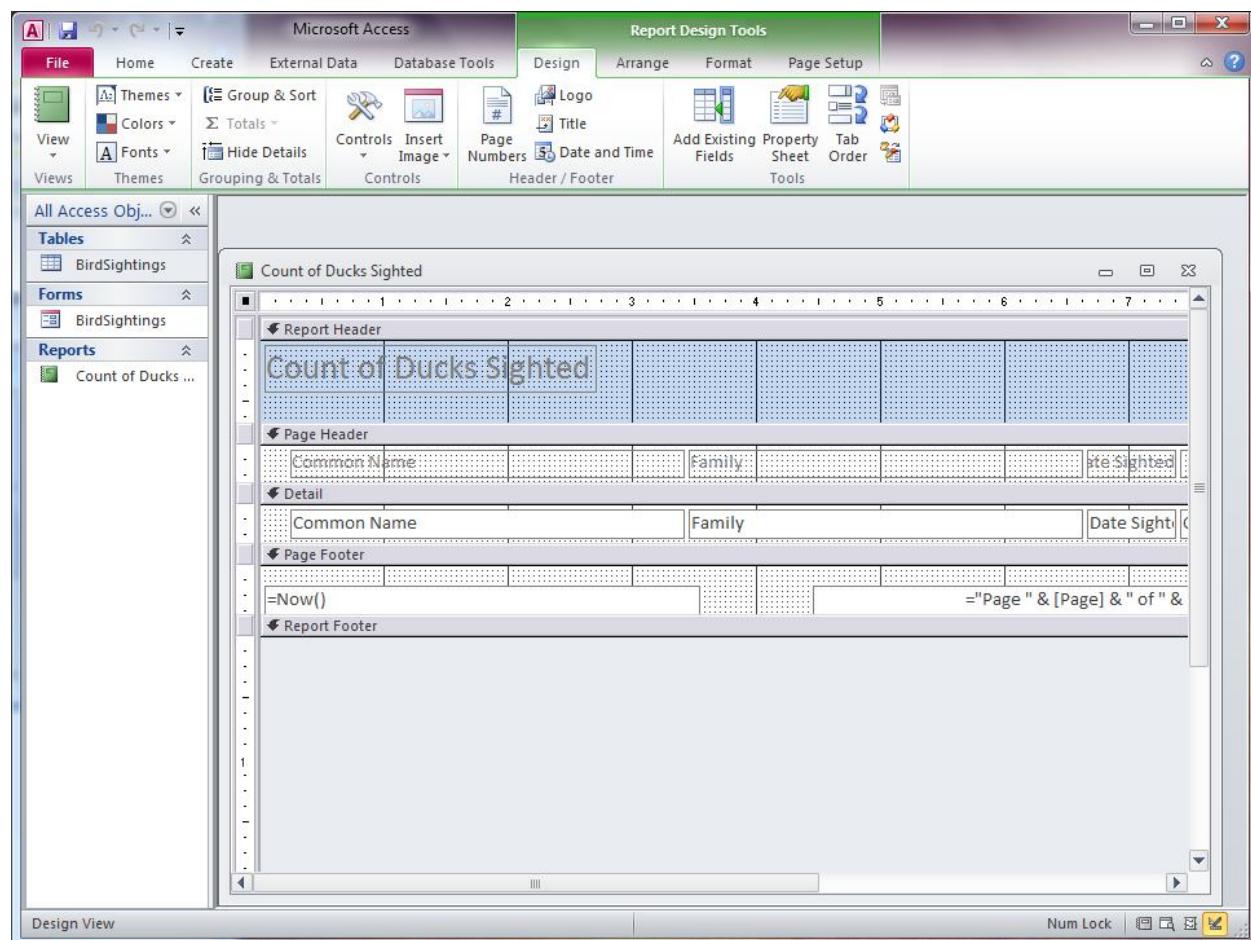


Fig. 8.26 The unmodified report in the Design View

After completing the following exercises, the report will look like that illustrated in Fig. 8.27 on the next page. The Modify window (Design View) for the report has five sections to it: a *Report Header* section, a *Page Header* section, a *Detail* section (where the data will be listed), a *Page Footer* section and a *Report Footer* section. The Report Header section is where you have the *Title* for the report (Count of Ducks Sighted), which is usually a larger print than the body of the

report and may also be centered at the top of the report. The Page Header section has the column headers for each of the columns in the columnar report and may also include the date. The Detail section is where the data for each record in the report are listed. The Page Footer and Report Footer are for special items such as page numbers.

The screenshot shows a Microsoft Access report window titled "Count of Ducks Sighted". The report contains a title "Count of Ducks Sighted" and a table with the following data:

Common Name	Family	Date Sighted	Count
Canada Goose	Duck	10/1/1993	25
Gadwall	Duck	9/8/1993	10
Green-winged Teal	Duck	9/8/1993	3
Hooded Merganser	Duck	10/16/1994	3
Mallard	Duck	9/8/1993	4
Northern shoveler	Duck	9/1/1993	8
Pintail	Duck	9/8/1993	15
Redhead	Duck	9/1/1993	6
Ring-necked Duck	Duck	9/1/1993	2

At the bottom of the report, there is a navigation bar with the text "Page: 1" and a "Filtered" button.

Fig. 8.27 Final version of the Count of Ducks Sighted report

In the Page Header section, the Common Name column needs to be widened so that the names of the birds will fit in the column. The space allowed for the Family column, however, is much wider than necessary.

Click once on the **Common Name** Page Header to select the box for the field

Now grab the **right edge of the box**—the **right** edge, not the left—and drag the edge of the box **to the right** to **increase its width** till it is about twice as wide as the header **Common Name** itself

Click once on the **Family** Page Header to select the box for the field

Now grab the **right edge of the box**—the right edge, not the left—and drag the edge of the box **to the left** to **reduce its width** till it is about the same width as the word **Family** itself

Notice that the Family box in the Detail section of the report also is reduced in size.

The **Date Sighted** Page Header and the **Count** header are fine as is

Your last task is to center the report title.

Click on the title **Count of Ducks Sighted**

Position the mouse arrow along the lower edge of the box till the arrow changes to a **crosshair icon**, then drag the title to the right a little till it is centered over the columns of the report

When you are done, the Design View for the report should look like Fig. 8.28.

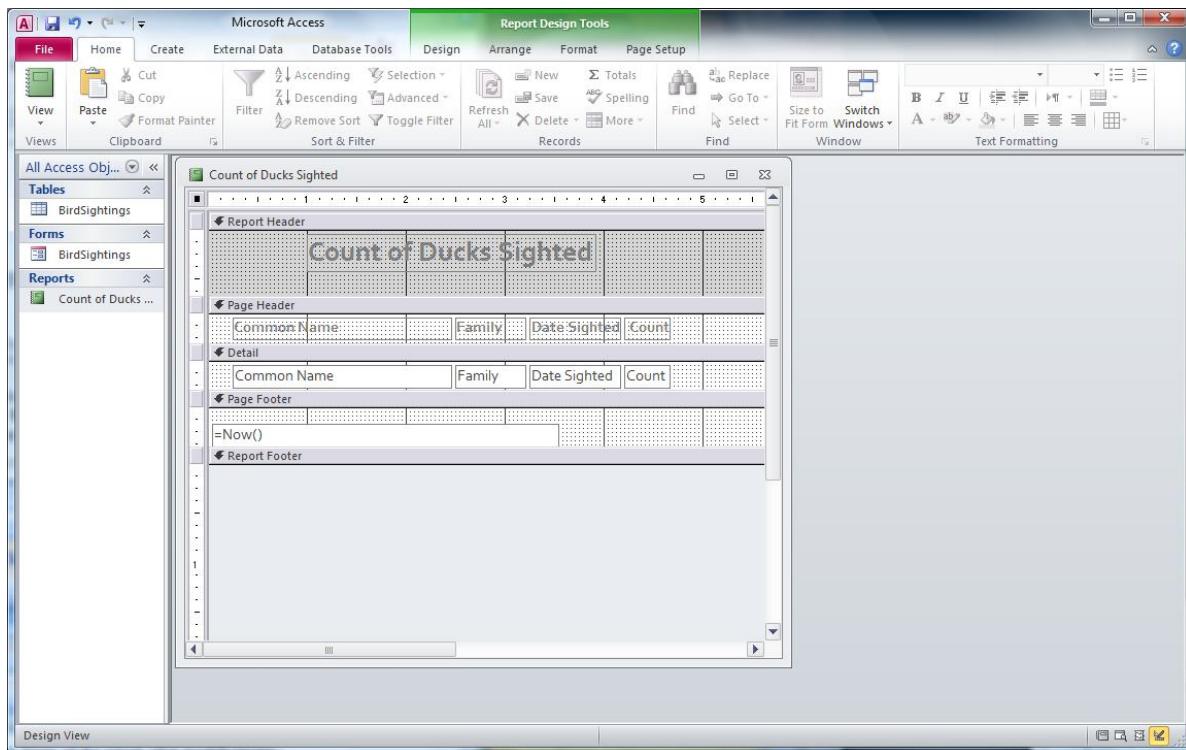


Fig. 8.28 The final Design View of the report after modifications

From the **View** menu select **Print Preview** to check out how your report will look when you send it to the printer

When you later open the *Birds.accdb* database to check the report, you'll need to click in the *Sort & Filter Group* on the *Toggle Filter* button.

The Count of Ducks Sighted report should look similar to that illustrated in Fig. 8.27. If you need to go back and do further modifications to the report, just go back to the *View* menu in the *Views Group* of the *Home Ribbon* and select *Design View*.

## 8.7 PRINTING REPORTS

Once you have prepared the new report, it is a straightforward process to print the report. The command to do this is the same as you have used to print any other documents from within Microsoft *Office*, whether you have been working in Word Processing or the Spreadsheet.

You should still be in the **Print Preview window**, so click on the **Print** button at the **top left** of the **Print Preview** window to print the **Count of Ducks Sighted** report

Remove the report from the printer and take a closer look at its contents. Notice that the only records in the report are those relating to ducks in the Family field. These are just a small subset of records drawn from the larger Birds database.

## LOOKING BACK

The *Access* database is a sophisticated tool for managing data. The key to success, as in so many activities, is PLANNING. Computers are wonderful tools to assist us in our professional lives, but only if we bring our intelligence to bear. The more skillful the user, the more powerful the impact of the computer on our professional and non-professional productivity.

You practiced three important skills of database management in this tutorial:

1. You learned how to search and query a database so that, no matter how large it might be, you could easily and quickly get the answers to any questions you might have. Getting answers to questions, research and so forth, is what creating electronic databases is all about.
2. You learned how to sort a database, and select out subsets of records.
3. You learned how to create and print new layouts or reports based on the data in a database.

Perhaps you have already learned about the value of database management systems such as *Access* in the educational process. Databases are the electronic storage bins for knowledge. Today they are both local and global in scope. More and more data is becoming available for on-line research. In time, maybe 50 years from now, maybe less, all knowledge will be accessible electronically. In the meantime, as teachers we should become aware of just what is available to our students, and do what we can to educate them to take advantage of information services of all kinds.

The role of teachers is changing. We are no longer the source of all knowledge. Rather, we are "knowledge brokers," intermediaries between our students and the source of the data they need so that they can "grow in wisdom and knowledge." As someone has observed, "Teachers should move away from being sages on the stage, and become, instead, the guides at the side."

## LOOKING FORWARD

There is more to learn about the *Access* database. It is beyond the scope of this book to cover all of the features of the software. However you have certainly learned the fundamentals and have the tools now to make a database work for you and for your students. The exercises that follow in the SKILL CONSOLIDATION section will help you reinforce the knowledge you have gained.

"Practice makes perfect" is as true of computer use as it is of any other skill-based activity like playing tennis or baking a cake. So is that other saying: "Use it, or lose it." You can probably identify many examples from your own experience where skills you were once proud to have mastered have become 'rusty' for lack of use. Likewise, you will quickly forget what you are learning in these tutorials unless you resolve to continue to apply the lessons learned on a regular basis, either for your own work or in the context of the classroom.

The best teachers will use all the help they can get. The purpose of these tutorials continues to be to sharpen your skills in the use of one of the most powerful classroom tools yet devised—

the electronic computer. You are to be congratulated for having persevered thus far. The remaining two tutorials will help you integrate the skills you have learned, and hopefully spur you on to a commitment to continue to incorporate the computer into your professional life both for your own sake and for that of your students.

## SKILL CONSOLIDATION

Complete as many of these exercises as you can to reinforce what you learned in Lesson 8.

1. Work with a group of your colleagues or classmates to specify and create a series of reports to accompany a database of student data such as the Roster Template database that you created in Lesson 6. Save the template with the set of reports.
2. From the Work Files for Office 2010 folder on your USB drive, open the Roster 2008 database onto the Desktop.
  - Add a record
  - Change the address and phone # in an existing field
  - Arrange the records chronologically on date of birth
3. Create a new database (do not use a database you already created) on any topic of your choosing.
  - Design the fields (at least 10) to be included in the database
  - Save the empty database document
  - Add at least 20 records
  - Save the database document again
  - Prepare a report using just 5 of the fields in the database
  - Save the database with the report and send the database to your professor as an attachment in email
4. Open the Birds database (in the Practice folder on your Work Disk) onto the Desktop.
  - Find all the birds that have *blue*, *grey*, *green*, or *olive* in their *Color1* plumage
  - Arrange (Sort) the birds in *descending order* (reverse alphabetical order—from Z to A)—the *Birds*, not the Colors!
  - Prepare a report using just the following 5 fields in the database: *Common Name*, *Family*, *Color1*, *Habitat*, *Count*
  - Save the *Birds* database with the report and send the database to your professor as an attachment in email