

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 *Base* 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, as well as querying a database and creating reports from subsets of data—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 *Base* 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

Before you begin

If you did not complete Lesson 1 of these tutorials, you will need to create a new folder to add to the set of folders in the Work Files for LibreOffice folder. The new folder's name is *Data Files*. Here are the steps to create this folder:

Inside the *Work Files for LibreOffice* folder you should see three folders named *Base Files*, *Impress Files*, and *Miscellaneous Files*. You need to create a *New*, fourth, folder called *Data Files*. Here's how you do this.

In the **Work Files for LibreOffice** folder, **right click** in the *white space* below the list of the **existing three folders** then, in the drop-down menu (called a *Context Menu*) that pops up select **New > Folder**

The system immediately creates a new, *as yet unnamed*, folder.

Type **Data Files** for the new folder's name, and hit the **Enter/Return** key on the keyboard

What are the 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 Lessons 6 and 7, you must have had a clearer idea of what a database is. You 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 2020 generation flash drive or, even better, a hard disk—not to mention the so-called Cloud¹—you can store millions of database records);
- One can easily manage all the data—view records, add new records, delete old records, or change existing records.

You learned how to handle tasks such as these 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 *Base* 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 *Base* as a tool to support your professional work in the classroom. Practice makes perfect. If, after you complete this lesson, you never use a database again... Well, let's not go there, OK?

Make sure you have your **Work Files for LibreOffice** available on your computer, then **Open LibreOffice** and click on **Open File** or in the **File** menu select **Open**

Base will display the *Open* dialog box.

Navigate to your **disk drive > Work Files for LibreOffice > Base Files** folder

¹ The Cloud, as it's called, is a name for so-called data farms or server farms which companies such as Apple and Microsoft (to name but two) have configured in such a way that they can handle massive—as in humongous—amounts of data that are actually stored on a large number of computer storage facilities connected through a real-time communication network such as the Internet. You don't need to think about where your data is; you just use the Cloud to store copies of your data somewhere safe and *off* your own computer.

You are going to work first with a database similar to the one you created in Lesson 6, in order to standardize the directions that follow. The database, called *Students 2020*, has been prepared for you to use with this tutorial.

In the **Base Files** folder open the **Students 2020** database (**NOT** the Student Roster 2020 database)

In the **left frame** of the **Students 2020 Base** window, click on the **Forms icon**, then, in the **Forms** section, **double click** to open the **Students 2020 Form**

You should see the *Forms View* of the *Students 2020* database, as illustrated in Fig. 8.1.

ID	1	Brothers	2
First Name	Elizabeth	Sisters	3
Middle Name	Anne	Place in Family	6
Last Name	Hoden	Clubs	Home improvement Crochet Cooking
Home Contact	Mr and Mrs Hoden	Hobbies	Reading Gardening
Nick Name	Beth	Favorite Sports	Jogging Track Bicycling
Gender	F	Favorite Subjects	English Lit Math Geography
Address 1	23 Main Street		
City	Richland		
State	PA		
Zip	23243		
Phone Number	(814) 243-2456		
Date of Birth	10/12/1985		

Fig. 8.1 The Forms View of the Students 2020 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 *Base* 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, 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. 8.2).

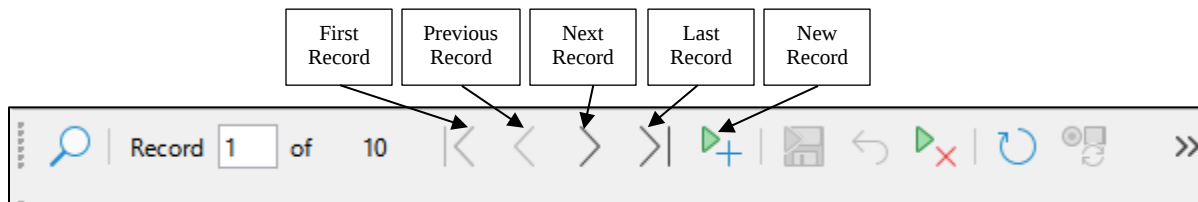


Fig. 8.2 Form Navigation tools in the *Base* database

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

Now, **File > Close the Students 2020 Form**

In the **Database frame** click on **Tables** and, in the **Tables** section, **double click** on **Students 2020 Table** to open it

This Table view (Fig. 8.3) shows the records across the screen in rows and columns much like the Spreadsheets you learned to use in Lessons 4 and 5.

ID	First Name	Middle Name	Last Name	Home Contact	Nick Name	Gender	Address 1
1	Elizabeth	Anne	Hoden	Mr and Mrs Hoden	Beth	F	23 Main S
2	Angela	Mary	Haverilla	Mr and Mrs Haveri	Angie	F	22 Feldste
3	Alice	Louise	Garbett	Mr. Freedman	Ally	F	P.O.Box 1
4	Bernard	John	Ritter	Mr and Mrs Ritter	Bernie	M	123 Main
5	Netiva	Esther	Cantor	Mr and Mrs. Cantoi	Neti	F	17 Chicag
6	Joan	Mary	Hodges	Mrs. James	Joan	F	45 Chicag
7	Rebecca	Marilyn	Randall	Mr and Mrs Randal	Beckie	F	435 Knigh
8	Dawn	Jane	Klochak	Mr and Mrs Klocha	Dawn	F	P.O.Box 4
9	Sally	Joanne	Richter	Mrs Hodgkins	Sal	F	42 Smalln
10	Benjamin	David	Franklin	Mr and Mrs Frankli	Benjie	M	67 Homev

Fig. 8.3 Viewing records in the Table view

Adding a record to the database

You can add a new record to the database any time you want. After you've added the record you can tell *Base* 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 some new records. It's best to do this in the *Forms view* of the database.

Close the **Students 2020 Table**, in the **Database frame** select **Forms**, and **double click** to open the **Students 2020 Form**, then click on the **New** button in the toolbar at the **bottom** of the **Form window** (Fig. 8.4)

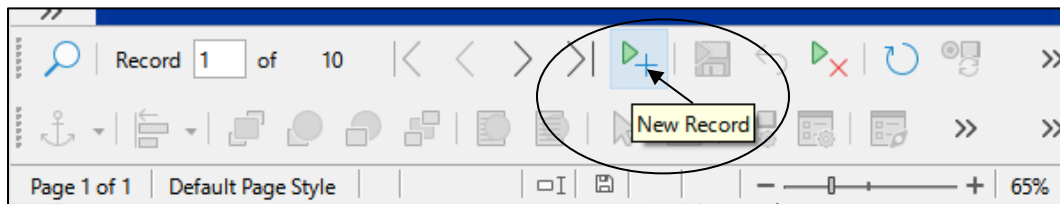


Fig. 8.4 The New button in the Records Group of the Home Ribbon

This will open up a set of empty fields for the new record (Fig. 8.5)

A screenshot of the 'Students 2020 Form' window in LibreOffice Base. The window title is 'Students 2020.odb : Students 2020 Form - LibreOffice Base: Database Form'. The menu bar includes File, Edit, View, Insert, Format, Styles, Table, Form, Tools, Window, and Help. The toolbar shows various icons for file operations and navigation. The form itself has a blue background and contains several input fields for student information, including ID, First Name, Middle Name, Last Name, Home Contact, Nick Name, Gender, Address 1, City, State, Zip, Phone Number, Date of Birth, Brothers, Sisters, Place in Family, Clubs, Hobbies, Favorite Sports, and Favorite Subjects. The status bar at the bottom indicates 'Page 1 of 1' and 'Default Page Style'. The 'New Record' button in the bottom toolbar is highlighted with a yellow box and an arrow.

Fig. 8.5 Entering data for a new record

Enter data for this **new** record, starting with the number **11** for the **ID** field (then **12**, etc.), pressing the **Tab** key after you type the data for each field, then add data for **at least one other** new record (**two records in all**)

You can put any data in the new records you are adding because you'll be deleting them in a bit. If no data is *required* for a particular field, you can skip a field (such as the last four fields), by simply pressing Tab without entering any data.

Clearing a field in a record

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 from *Base* telling you that you cannot have a *null value* in these fields.

Use the **navigation tools** (see Fig. 8.2 on page 285) to go back to the **first** of the records you added just now (**Record 11**)

In the **first** of the records you added, in the **Nick Name** field, **double click** in the **entry box** (not on the field name) on the **nick name** to **highlight** the **Nick Name entry**, then press **Ctrl+x** on the keyboard to **cut/delete** the data in the **Nick Name** field

Next go to the **second** of the records you added a moment ago (**Next Record**), click in the **Nick Name** field **entry box**, again highlight the **nick name** and press **Ctrl+x** on the keyboard to **cut/delete** the data from the field

Notice that this deletes neither the field nor the record; it simply deletes (i.e. clears) the selected *data* in the field. The field is still there, so new data can be entered at any time.

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

Locate one of the records you just added (**ID 11 or 12**), then in the **Form Navigation toolbar** (Fig. 8.6), select **Delete Record**



Fig. 8.6 Deleting a Record

Base 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.

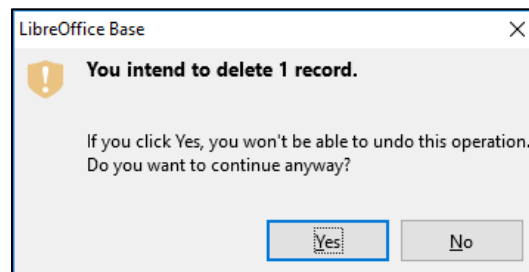


Fig. 8.7 Delete Record warning prompt

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

This removes the record entirely. If you added more than one record, delete that, too.

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 any **Nick Name** field, **double click** on the **nick name** to select it, then change it to some other nick name in the same way you would in a word processor

Simple. All 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 *Base* database.

8.3 SEARCHING AND QUERYING A DATABASE

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

All you have to do is give *Base* 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.

Close the **Students 2020 Form** (you'll be prompted whether you want to save the change you made to the nickname at the end of the previous exercise—Fig. 8.8)

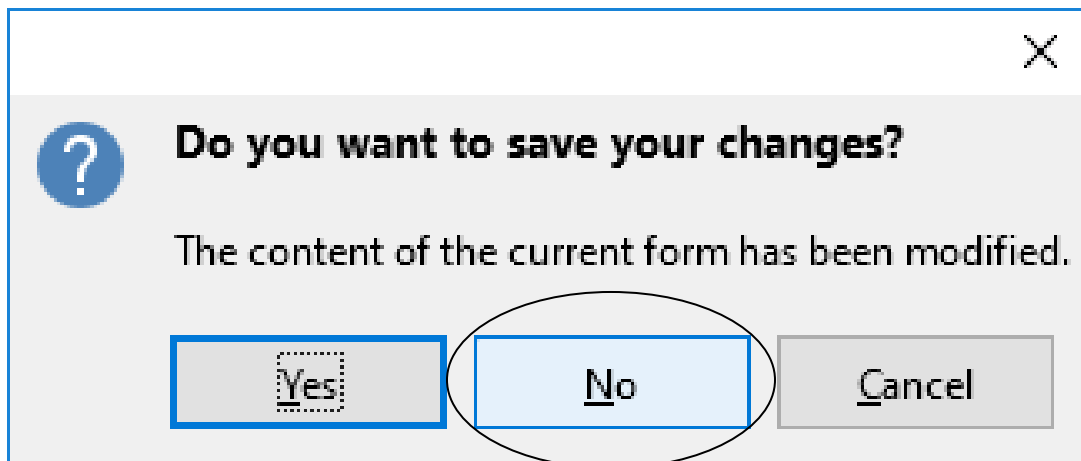


Fig. 8.8 Prompt to save changes

Click on **No**, then **Close** the **Students 2020** database and, in the **LibreOffice** window, select **Open File**

On your **disk drive** navigate, if necessary, to your **Work Files for LibreOffice** > **Base Files** folder

Double click to open the **Birds** database then, in the **Database** objects menu on the **left side** of the database window, click on **Forms** and, in the **Forms** section, **double click** on the **Birds Form** to open it (Fig. 8.9)

ID	1
Common Name	Purple Martin
Family	Swallow
Size	medium
Color 1	blue
Color 2	black
Habitat	woods
Date Sighted	01-Sep-93
Location Sighted	woods near home
Weather	sunny, warm
Count	2

Fig. 8.9 Birds Form

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 *Find* function, which is in the Home Ribbon > Find Group, is the *Base* 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*. Here is how you do this.

In the **Form Navigation toolbar** at the **bottom** of the **Form window**, click on the **Find Record tool**—it looks like a spy glass (Fig. 8.10)



Fig. 8.10 The Find Record tool in the Form Navigation toolbar

LibreOffice now displays the Record Search dialog box (Fig. 8.11).

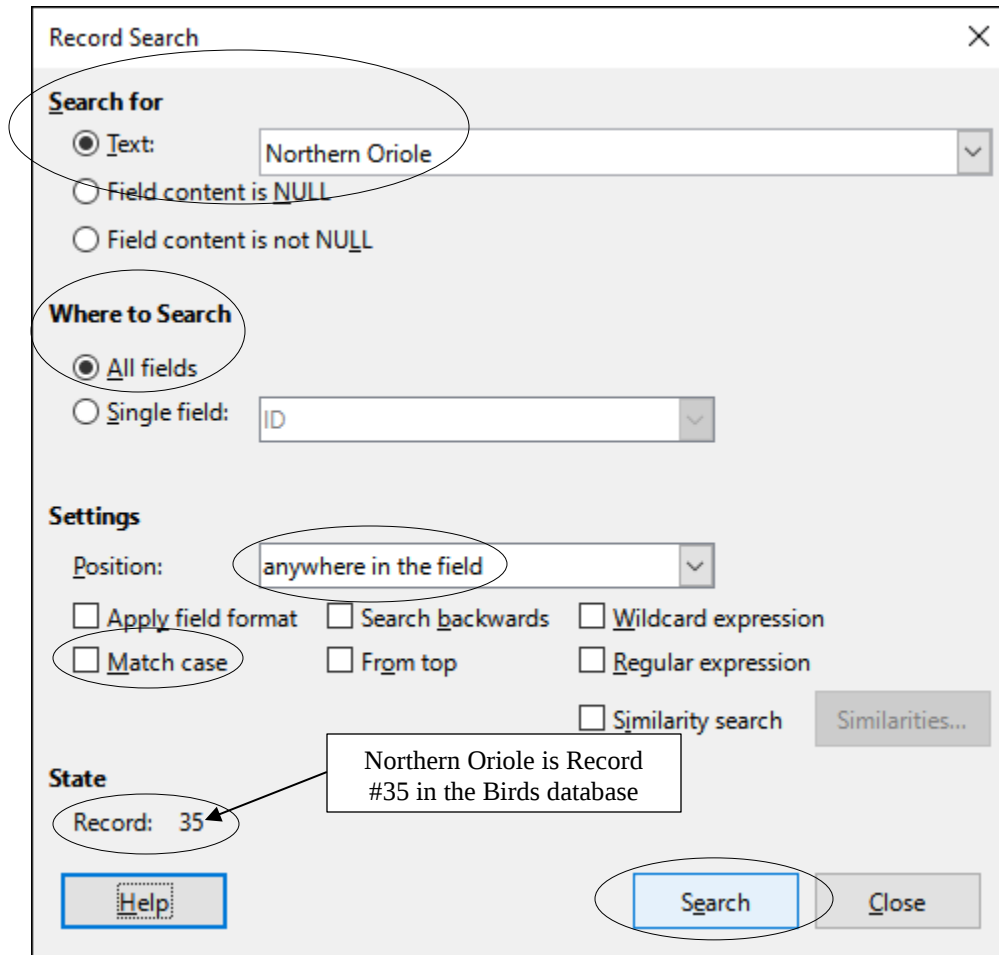


Fig. 8.11 The Record Search dialog box

You need to indicate what data you want to be found in the *Birds* database by typing in a search string, which for our search will be *Northern Oriole* (Fig. 8.11 above).

In the **Search for** box, type **Northern Oriole** or **northern oriole**—if you don't check the “**Match Case**” box (Fig. 8.11 above), *Base* doesn't care whether you use upper or lowercase letters

Before clicking on the *Search* button, you need to identify where you want to search (*All Fields*). You also need to indicate if you want to match the data in a whole field or part of a field (*Anywhere in the field*).

Click to check the **radio button** next to **All Fields** (*Anywhere in the Field* is already selected by default)

Now click on **Search**, and notice that the **number 35** appears in the **lower lefthand** corner of the search window, indicating that the **Northern Oriole** is **record #35** in the database (Fig. 8.11 above)

Click on the **Close** button

Base quickly locates the record containing the name "Northern Oriole" (Fig. 8.12).

The screenshot shows the 'Birds Form' window in LibreOffice Base. The title bar reads 'Birds.odb : Birds Form - LibreOffice Base: Database Form'. The menu bar includes File, Edit, View, Insert, Format, Styles, Table, Form, Tools, Window, and Help. The toolbar contains icons for file operations, editing, and navigation. The main area displays a form for Record 35 with the following fields:

ID	35
Common Name	Northern Oriole
Family	Oriole
Size	medium
Color 1	black
Color 2	orange
Habitat	woods
Date Sighted	15-Apr-95
Location Sighted	backyard
Weather	sunny, warm
Count	2

The status bar at the bottom indicates 'Page 1 of 1', 'Default Page Style', and navigation controls. The record navigation bar shows 'Record 35 of 41*' with navigation buttons.

Fig. 8.12 Record 35 displayed in the Birds Form window

As you see, Record 35 is displayed in the *Birds Form* window. The record(s) you find with a *Find* request are called the "*found set*."

Of course, if you typed *Northern Oriole* incorrectly, *Base* would tell you that the search item was not found (Fig. 8.13).

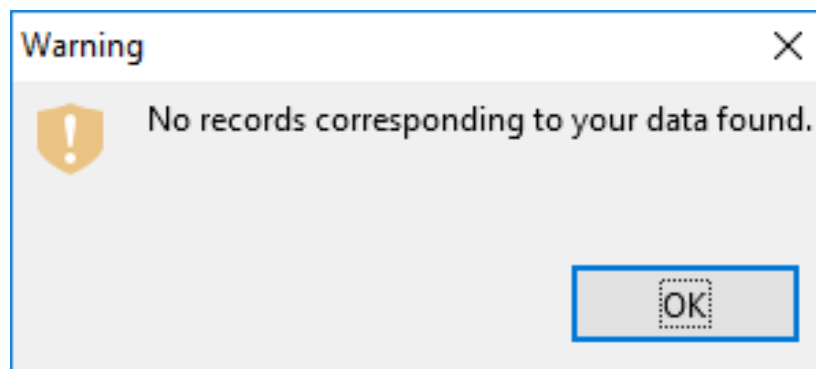


Fig. 8.13 Warning message after unsuccessful search of the database

Close the Birds Form (File > Close)

Now, in the **Birds > Database Objects frame** click on the **Tables** view, then **double click** on **Birds Table** to see a **columnar list** of all the birds in the database

In the **Birds Table > Edit menu** select **Find Record...** or hit **Ctrl+f**¹(Fig. 8.14)

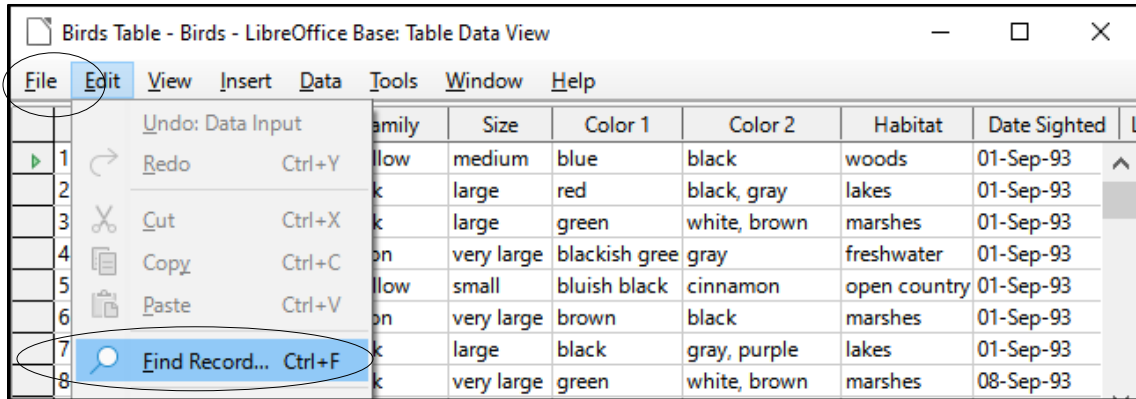


Fig. 8.14 The Birds Table window

LibreOffice displays the *Record Search* dialog box (Fig. 8.15), prompting you to fill in the relevant search criteria.

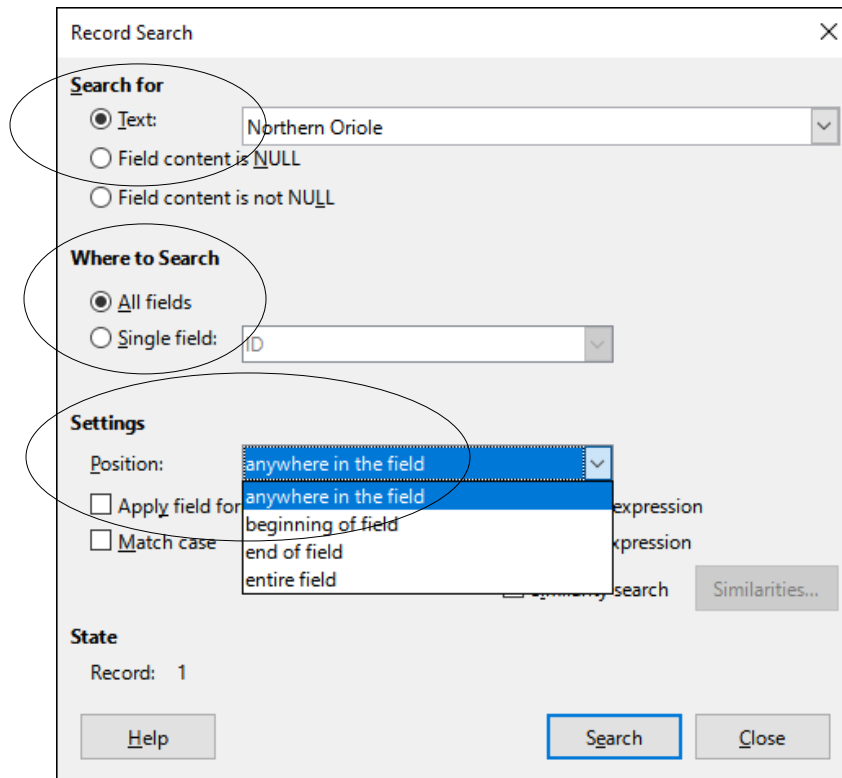


Fig. 8.15 The Record Search dialog box

¹ Ctrl+f is the shortcut to the *Record Search* dialog box. You can also use the *Form Navigation toolbar* for this purpose, as we will do later in the tutorial.

You need to indicate what data you want to be found in the *Birds* database by typing in a search string (which for our search will be *Northern Oriole*).

In the **Search for** box once again type **Northern Oriole** (or **northern oriole**—if you don't check the **"Match Case"** box, *Base* doesn't care whether you use upper or lowercase letters)

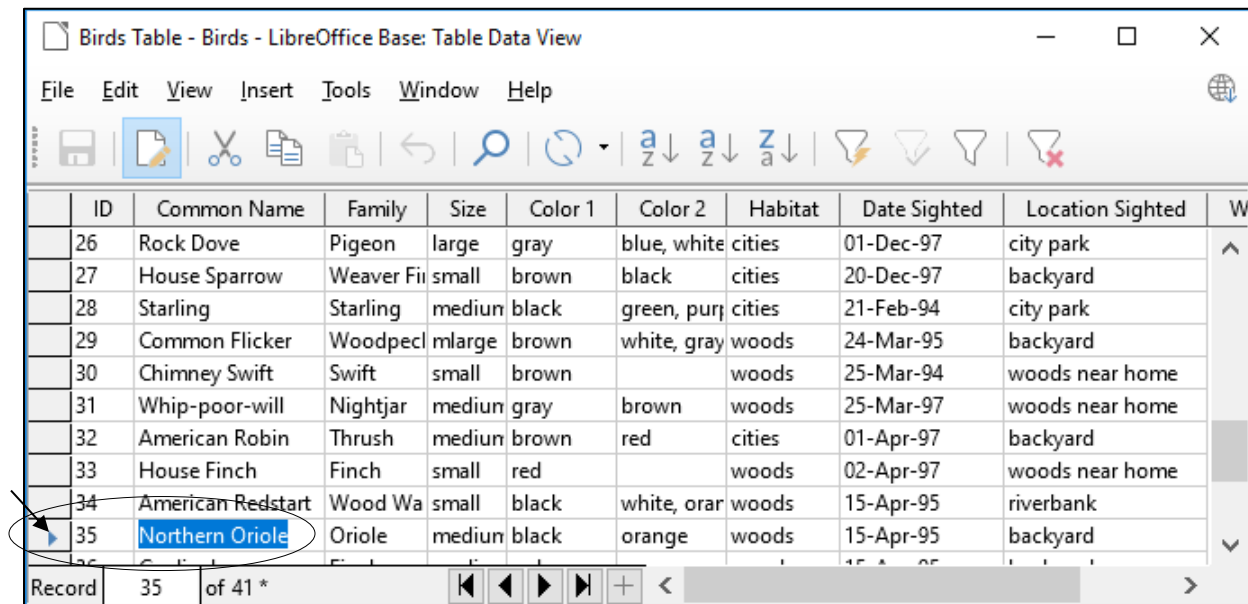
Before clicking on the *Search* button, you need to identify where you want to search (All Fields). You also need to indicate if you want to match the data in a whole field or part of a field.

The **radio button** next to **All Fields** should be **checked/ticked** and that the Search tool looks **anywhere in the field** (Fig. 8.15 previous page)

Now click on **Search** and notice that the **number 35** appears in the **lower left-hand** corner of the search window, indicating that the **Northern Oriole** is **record #35** in the database

Click on **Close** to end the search

Recall that the record(s) you find with a Find request are called the "found set". As you see, *Base* quickly locates the record containing the name "Northern Oriole." The record is displayed in the *Birds Table* window along with a **blue** pointer indicating its location in the database (Fig. 8.16).



	ID	Common Name	Family	Size	Color 1	Color 2	Habitat	Date Sighted	Location Sighted	
	26	Rock Dove	Pigeon	large	gray	blue, white	cities	01-Dec-97	city park	^
	27	House Sparrow	Weaver Fin	small	brown	black	cities	20-Dec-97	backyard	
	28	Starling	Starling	medium	black	green, purp	cities	21-Feb-94	city park	
	29	Common Flicker	Woodpeck	mlarge	brown	white, gray	woods	24-Mar-95	backyard	
	30	Chimney Swift	Swift	small	brown		woods	25-Mar-94	woods near home	
	31	Whip-poor-will	Nightjar	medium	gray	brown	woods	25-Mar-97	woods near home	
	32	American Robin	Thrush	medium	brown	red	cities	01-Apr-97	backyard	
	33	House Finch	Finch	small	red		woods	02-Apr-97	woods near home	
	34	American Redstart	Wood Wa	small	black	white, orar	woods	15-Apr-95	riverbank	
	35	Northern Oriole	Oriole	medium	black	orange	woods	15-Apr-95	backyard	▼

Fig. 8.16 Pointer indicating location of the Found record

Now **Close** the **Birds Table** (**File > Close**)

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.

If necessary, in the **Database Objects frame** on the **left** side of the window select the **Tables View**

Double click on **Birds Table** to see a list of all the birds in the database, then click to put the cursor **anywhere** in the **Color1** column

Hit **Ctrl+f** on the keyboard

This once again brings up the *Record Search* dialog box (Fig. 8.17).

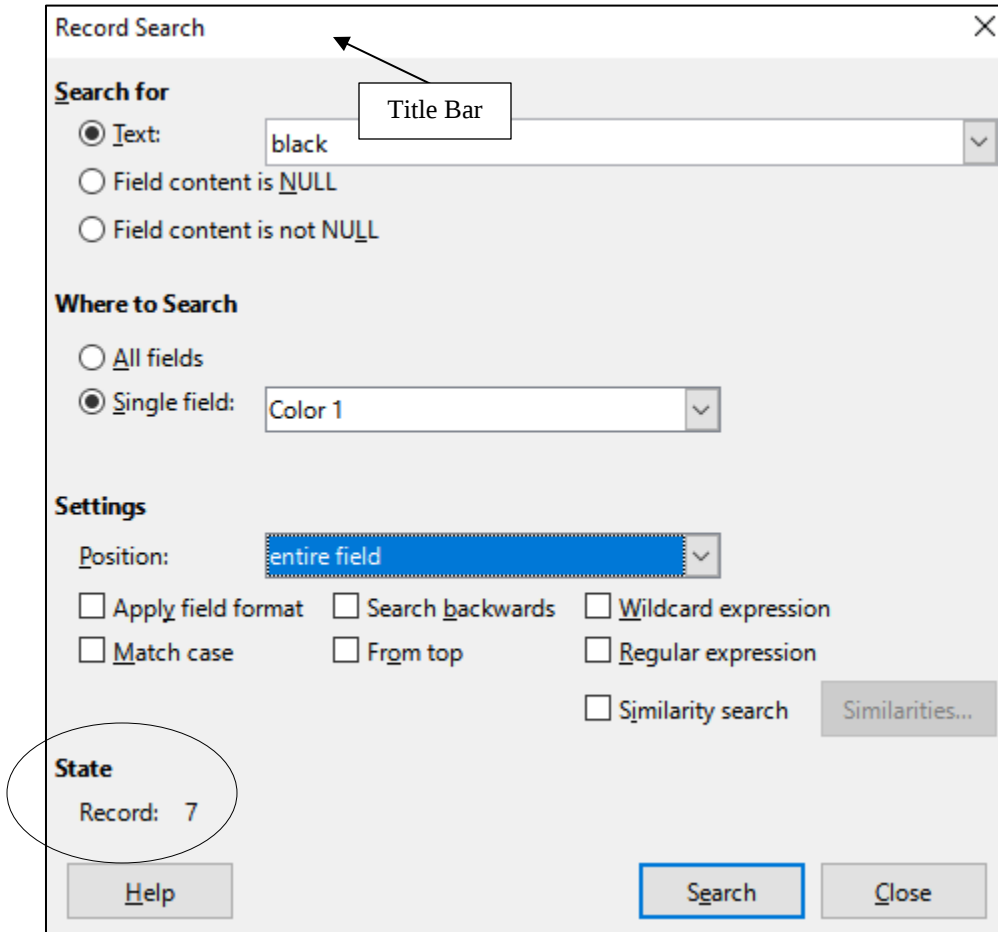


Fig. 8.17 Results of the search

In the **Search for section** make sure the **radio button** next to **Text** is selected, and type the word **black** (if it doesn't already have "black" there)

In the **Where to search** section make sure the **radio button** next to **Single field:** is selected and that **Color 1** is already in the **data entry box**

In the **Settings > Position:** box select the option for **entire field** to ensure that only those birds in the Color 1 field have plumage that is simply **black**

Click on **Search**

The search finds the first of 9 *records* where a bird in the Color1 field of the database has the color "black" (not "bluish black" or "blackish") in its plumage, in this case record 7 (Fig. 8.17).

If necessary, grab hold of the **Title Bar** of the **Record Search dialog box** (see Fig. 8.17 above) and **drag the dialog box out of the way** so that you can see the set of records in the Birds Table

Notice that the contents of the *Color 1 field* in *Record 4* is highlighted with a **red border**.

To see the data in the next record that has the **Color1 > Black**, click on **Search** again, and so on—keep count of how many records with the **Color 1 > black** anywhere in its entry

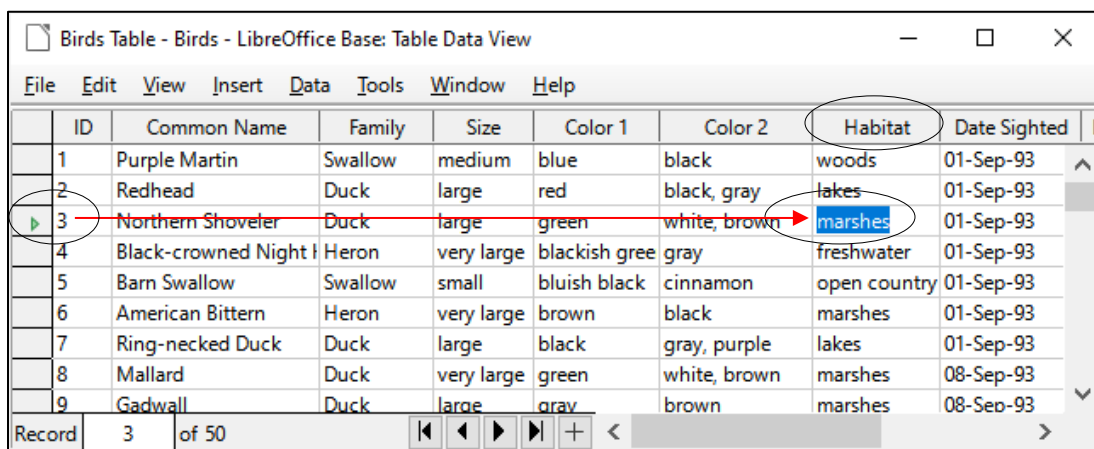
When you've finished counting, click on the **Close** button

Did you count 9 records of birds with the *Color1 black* in the plumage? To see a listing of *just those 9 records* that result from a search such as this, you must use a *filter*.

Using the AutoFilter

In general, filtering is best done in the *Table* view of the database. The exercise that follows will use *LibreOffice's* *AutoFilter* tool to select the set of birds whose habitat is “marshes.”

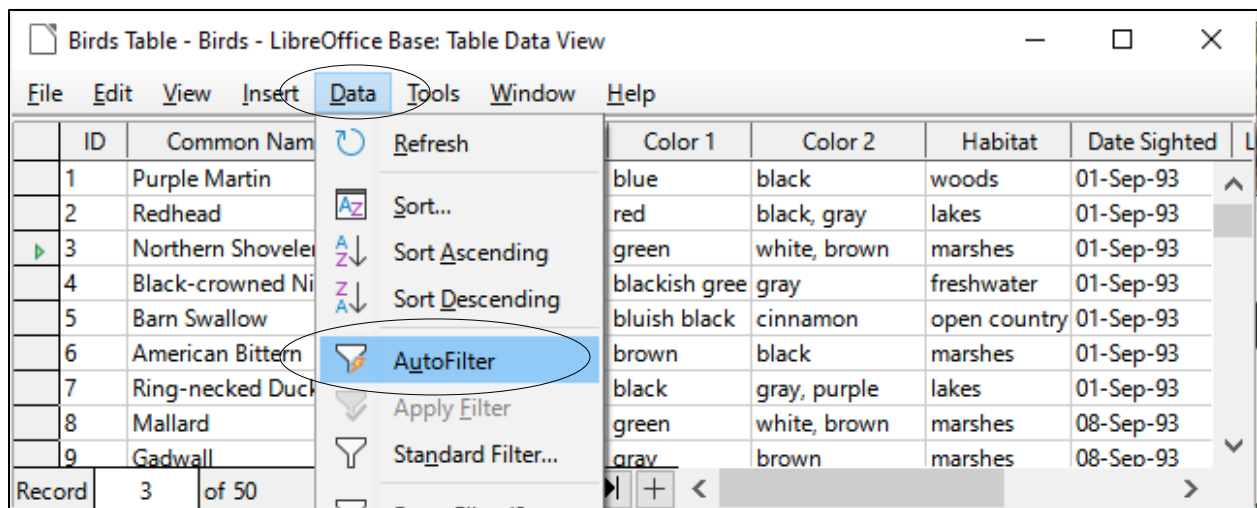
In the **Birds table**, if necessary, scroll to the **right** to locate the **Habitat** column (Fig. 8.18)



ID	Common Name	Family	Size	Color 1	Color 2	Habitat	Date Sighted
1	Purple Martin	Swallow	medium	blue	black	woods	01-Sep-93
2	Redhead	Duck	large	red	black, gray	lakes	01-Sep-93
3	Northern Shoveler	Duck	large	green	white, brown	marshes	01-Sep-93
4	Black-crowned Night Heron	Heron	very large	blackish green	gray	freshwater	01-Sep-93
5	Barn Swallow	Swallow	small	bluish black	cinnamon	open country	01-Sep-93
6	American Bittern	Heron	very large	brown	black	marshes	01-Sep-93
7	Ring-necked Duck	Duck	large	black	gray, purple	lakes	01-Sep-93
8	Mallard	Duck	very large	green	white, brown	marshes	08-Sep-93
9	Gadwall	Duck	large	gray	brown	marshes	08-Sep-93

Fig. 8.18 The Birds Table view showing the Habitat column

Now, in the **Habitat** column, scroll to the top of the column—to the first record—click on the first “**Marshes**” entry you see (there’s one in **Record 6**) then, in the **Data** menu select the **AutoFilter** tool (Fig. 8. 19)



ID	Common Name	Family	Size	Color 1	Color 2	Habitat	Date Sighted
1	Purple Martin	Swallow	medium	blue	black	woods	01-Sep-93
2	Redhead	Duck	large	red	black, gray	lakes	01-Sep-93
3	Northern Shoveler	Duck	large	green	white, brown	marshes	01-Sep-93
4	Black-crowned Night Heron	Heron	very large	blackish green	gray	freshwater	01-Sep-93
5	Barn Swallow	Swallow	small	bluish black	cinnamon	open country	01-Sep-93
6	American Bittern	Heron	very large	brown	black	marshes	01-Sep-93
7	Ring-necked Duck	Duck	large	black	gray, purple	lakes	01-Sep-93
8	Mallard	Duck	very large	green	white, brown	marshes	08-Sep-93
9	Gadwall	Duck	large	gray	brown	marshes	08-Sep-93

Fig. 8.19 Using the *AutoFilter* tool to find all the birds that have a Marshes Habitat

This tells *Base* that you want to *filter by selection* the set of birds that live among marshes. *Base* now displays a list of 15 birds in the database that live in marshes (Fig. 8.20).

	ID	Common Name	Family	Size	Color 1	Color 2	Habitat	Date Sighted	
▶	3	Northern Shoveler	Duck	large	green	white, brown	marshes	01-Sep-93	▲
	6	American Bittern	Heron	very large	brown	black	marshes	01-Sep-93	
	8	Mallard	Duck	very large	green	white, brown	marshes	08-Sep-93	
	9	Gadwall	Duck	large	gray	brown	marshes	08-Sep-93	
	10	Green-winged Teal	Duck	large	green	gray	marshes	08-Sep-93	
	11	American Coot	Rail	large	gray	black	marshes	08-Sep-93	
	12	Pintail	Duck	very large	brown	white, gray	marshes	08-Sep-93	
	13	Common Snipe	Sandpiper	medium	brown		marshes	01-Oct-93	
	16	Canada Goose	Duck	very large	grayish brown	white	marshes	01-Oct-93	
	17	Marsh Hawk	Hawk	large	gray	white, red	marshes	03-Oct-93	
	18	Virginia Rail	Rail	medium	gray	cinnamon, white	marshes	03-Oct-93	
	20	Red-winged Blackbird	Oriole	medium	black	red	marshes	16-Oct-96	
	40	Willow Flycatcher	Tyrant Flyca	medium	olive	brown	marshes	01-May-94	
	44	Common Grackle	Oriole	large	black	green, purple	marshes	21-May-94	
	49	Song Sparrow	Finch	medium	brown	white	marshes	21-May-97	▼
Record	1	of 15							

Fig. 8.20 The found set of filtered records

To go back to viewing **all the records** in the database, in the **Data menu** select **Reset Filter/Sort**

Using the Standard Filter

You also can filter records using *LibreOffice's Standard Filter*. You need this, for example, if you need to select a set of records based on *more than one criterion*.

Let's say you want to find all the records in which the birds have either the color "black" or a combination of "black" and some other color in their plumage. This involves filtering based on both the Color 1 *and* Color 2 fields.

In the **Data** menu, click on **Standard Filter...** (Fig. 8.21)

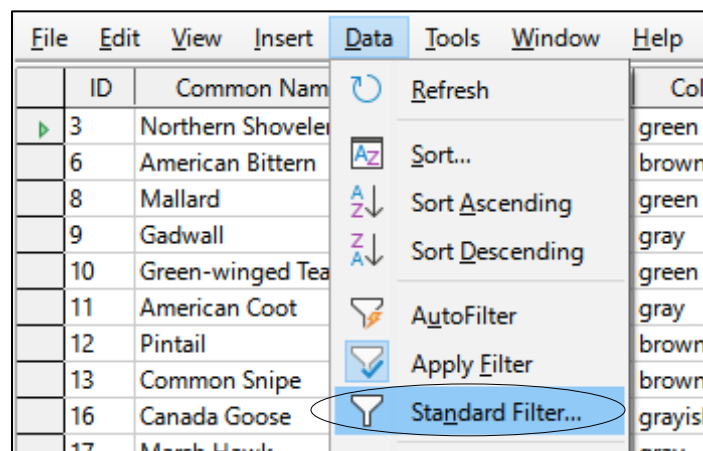


Fig. 8.21 The Standard Filter tool

When you click on the *Standard Filter* tool, *LibreOffice* presents the *Standard Filter* dialog box, in which you have the opportunity to set 2 or more criteria for the filter (Fig. 8.22).

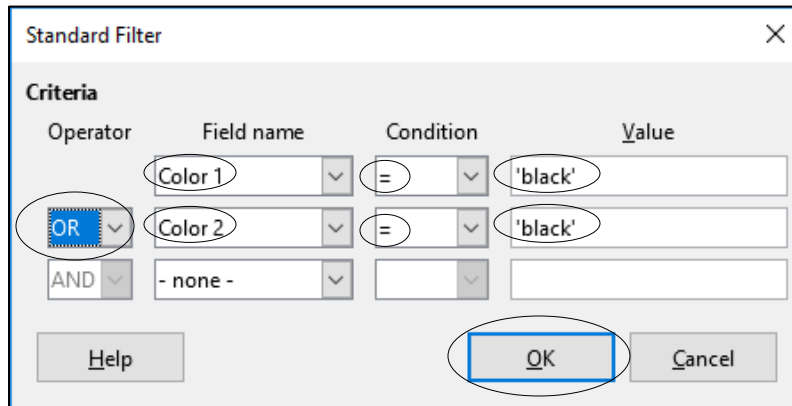


Fig. 8.22 The settings for the search in the *Standard Filter* dialog box

In the *first Field Name* box, click on the **down arrow** to **show all the fields** in the Birds database and click on **Color 1**, leave the **equals sign (=)** in the **Condition** box, then in the **Value** box type the **key word black** (all **lowercase** letters—after a few seconds the **quotes** are added by the system)

In the *second Field Name* box, click on the **down arrow** to **show all the fields** in the database and click on **Color 2**, leave the **equals sign (=)** in the **Condition** box, then once again in the **Value** box type the **key word black** (all **lowercase** letters—after a few seconds the **quotes** are added by the system)

Now **go back** to the **Operator** box to the **left of the Color2 Field name** and select **OR** for the operator (see Fig. 8.22 above), and finally click on **OK** to accept the query

These criteria that you have selected should find all the database records in which the birds have either the color “black” or a combination of “black” and some other color in their plumage, based on the Color 1 and Color 2 fields. Let’s see.

In the *Standard Filter* dialog box, click on **OK**

Now look at the set of records that the filter found (Fig. 8.23).

	ID	Common Name	Family	Size	Color 1	Color 2	Habitat	Date Sighted	Location Sighted	W
▶	1	Purple Martin	Swallow	medium	blue	black	woods	01-Sep-93	woods near home	sun
	6	American Bittern	Heron	very large	brown	black	marshes	01-Sep-93	lake	sun
	7	Ring-necked Duck	Duck	large	black	gray, purple	lakes	01-Sep-93	lake	sun
	11	American Coot	Rail	large	gray	black	marshes	08-Sep-93	riverbank	sun
	19	Common Yellowthroat	Wood Warbler	small	black	green, yellow	meadows	10-Oct-95	fields near school	sun
	20	Red-winged Blackbird	Oriole	medium	black	red	marshes	16-Oct-96	lake	cloud
	21	Hooded Merganser	Duck	large	black	white, cinnamon	lakes	16-Oct-94	lake	cloud
	27	House Sparrow	Weaver Finch	small	brown	black	cities	20-Dec-97	backyard	cloud
	28	Starling	Starling	medium	black	green, purple	cities	21-Feb-94	city park	cloud
	34	American Redstart	Wood Warbler	small	black	white, orange	woods	15-Apr-95	riverbank	sun
	35	Northern Oriole	Oriole	medium	black	orange	woods	15-Apr-95	backyard	sun
	44	Common Grackle	Oriole	large	black	green, purple	marshes	21-May-94	lake	sun
	46	Brown-headed Cowbird	Oriole	medium	green	black	woods	21-May-96	woods near home	sun
	47	Common Crow	Crow	large	black		rivers, meadows	21-May-96	backyard	sun

Fig. 8.23 Result of a *Standard Filter* of the Birds database

Check out the Color1 and Color 2 fields in the *Found Set of 14 birds*. One or other of them has the color ‘black’ somewhere in their plumage.

This might seem like a silly exercise. Maybe it wouldn’t take you long to find the 14 records out of the 50 records in the database. Wouldn’t take you a minute or two to do that just by scrolling and counting, 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 such as these filter tools—and the Sort tools in the next section—to help you quickly find the data you need.

In the **Data** menu select again **Reset Filter/Sort** to list all the records in the database before proceeding to the next section in the tutorial

8.4 SORTING RECORDS

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

1. **Enhanced Organizational flexibility:** Digital, electronically stored data with its easy ability to quickly access the data you need in any of multiple formats and the easy ability to organize it in any of multiple ways, provides more or less instant *organizational flexibility*—using filtering and sorting, for example—which helps you cope with the inevitable *complexity* that increases as the sheer amount of data grows.
2. **Saved Space:** Digital, electronically stored data *saves space*—physical space, that is. You don’t need a filing cabinet, or oodles of filing cabinets in a storage room, or, for some companies, a whole building for a data repository. For teachers, like you and me, all we need is a few gigabytes of storage on a disk drive, which we can carry on a car key chain or in a pocket (provided we’re careful to back up all the data on another computer in the office or at home).
3. **Saved Time:** Digital, 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 *Base* makes it possible for you to organize that data more or less on the fly by sorting it any which way you want—provided you organize the database in ways that allow you to do so.

Remember: a system is only as good as the people who own it—the people who plan it, design it, build it and maintain it.

Sorting on a single field

Take, for example, the *Birds database* that is on your desktop at this time. As you can see, the names of the birds (in the Common Name field) are not sorted in any particular order. In fact, as it happens, the *Birds database* that accompanies the *LibreOffice Work Files* is sorted based on the *ID* field (which is the *Primary Key* for the relational database).

So the ordering is numerical rather than alphabetical. It would therefore be time consuming, if not well-nigh impossible—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 *Base* makes available the *Find Record*, *Filter Records*, and *Sort Records* functions accessible in the Form Navigation toolbar. We've looked at the *Find Record* and *Filter Records* functions. Now let's check out the *Sort Records* function.

What if you wanted to print out a report listing all the birds in alphabetical order by name of bird? You would have to begin by organizing the records alphabetically on the bird names. Fortunately, *Base* has a set of *Sort* tools that enable you to complete this operation with the greatest of ease. Fig. 8.24 illustrates where, in the Form Navigation toolbar, you will find this set of *Sort* tools.

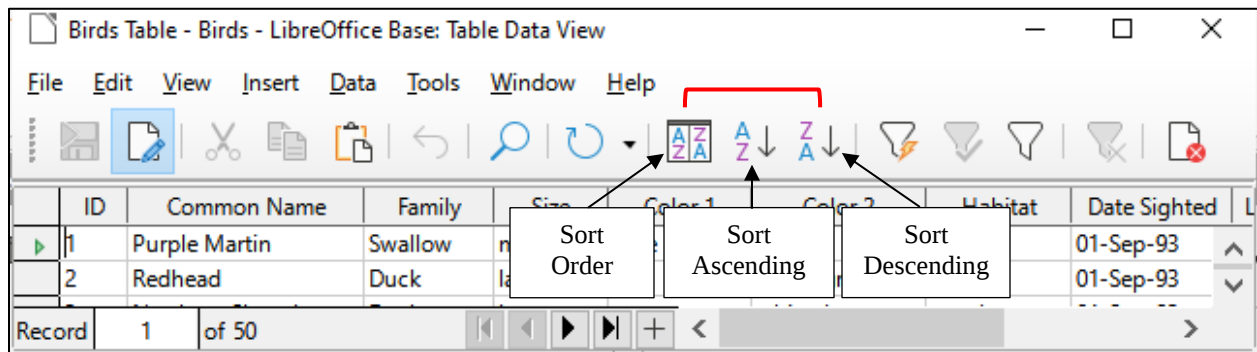


Fig. 8.24 The *Base* Sort tools in the Table Data toolbar

You can best see the results of a *Sort* if you are in the Table view of the database, which is the view you should have on your screen from the previous exercise. Notice, too, that the records are not sorted after the previous exercise

Click to put the cursor in any cell in the **Common Name** field, then click on the **Sort Ascending** button (Fig. 8.25)

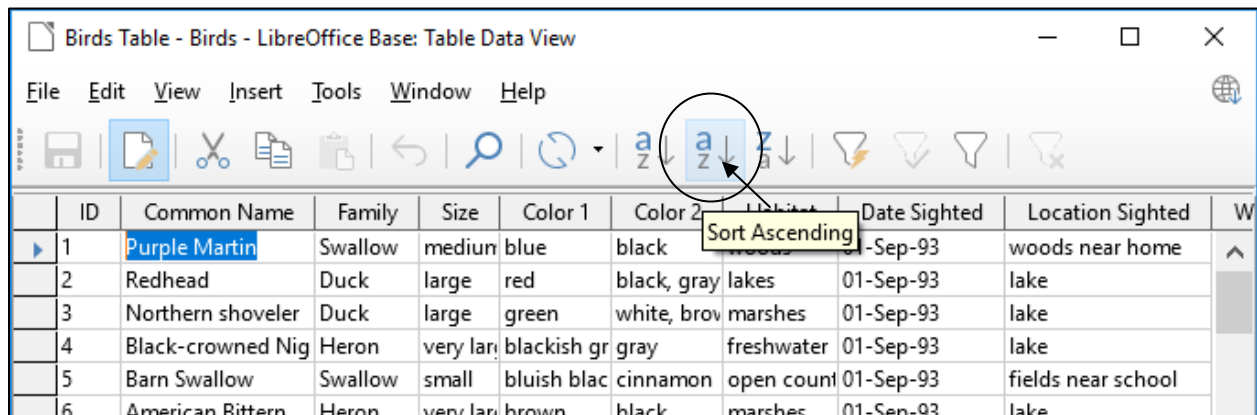


Fig. 8.25 The Sort Ascending tool

Immediately *Base* sorts the records *alphabetically* on the Common Name field, with the *American Bittern* at the top of the list, and so on. Notice that, when sorting on a single field like this, the entire record is sorted, based on that single field. So, all the data in a particular record is kept together in the database, just as it should be.

There are three basic sorting options depending on the type of data in the field you are using as the basis, or key, for the sort:

- *Alphabetical*: If your sort request is based on a *Text field* such as Common Name or Location Sighted, the sort will be *alphabetical* and can be either Ascending (A to Z) or Descending (Z to A).
- *Numerical*: If you are sorting on a *Number field* such as the Count field, the sort will be *numerical* and you again would be able to sort in Ascending (low number to high number) or Descending (high number to low number) order.
- *Chronological*: Finally, if you are sorting on a *Date field* such as Date Sighted, the sort will be *chronological*, and you would be able to sort in Ascending (chronological) or Descending (reverse chronological) order.

Let's do another quick sort for practice—which, as we know so well, makes perfect.

Click to position the cursor anywhere in the **ID column**, then click on the **Sort Ascending** tool (see Fig. 8.25 previous page)

Immediately *LibreOffice* sorts the data **based on the ID field**, with the value 1 at the top and the value 50 at the bottom—and the data that goes with each ID is, of course, sorted along with it. As you see, basic sorting of a database is simple.

8.5 CREATING QUERIES AND REPORTS

A word about the *Base* database reporting facility

Reports are what we submit to our bosses in response to information that they need. It doesn't matter to anyone why they need the report. All that matters is that they must have it. So we (teachers and others in the chain of command) must produce it. Period.

Base makes it easy to produce reports provided you have gathered into a database any and all information needed for a report. Let us assume that you have done that. What, then, are the criteria for a good report?

- Planning is still an important prerequisite for creating good reports. 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. 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 something along these lines.
- You can create numerous layouts or reports based on the data in a database, just as you can create numerous different tables or forms, each containing its own set of data from the database as a whole. Each report can be different—different fields, different sets of data within fields, and so on—and you can store them all along with the database.

In the next sections you will continue to work with the *Birds* database.

Initial definition of the layout or report

You are going to create a layout, or report, 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.

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 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 can get around this problem in various ways, the simplest of which is to change the font to one which requires less space, or reduce the size of the font you want to use, or lay out the fields in some format other than like a Table or Spreadsheet).

You might also consider whether you really need all the fields that you have selected for the report. Often, simpler is better. Simple reports are more likely to be read, and if they're read they're more likely to make the desired impact.

Creating a Query

You need to start by creating a *Query* to tell the *Birds database* exactly which data you want to use for the Report. You're going to select only the *Duck* family of birds for the Report. Once you have created the Query, it will be a simple matter to create the Report.

Here are the steps to create the Query. You're going to work with the *Birds database*, so keep that file open on your screen.

Close (File > Close) the Birds Table (NOT the Birds database, which you're going to work with now)

In the Birds Database frame (at left), click on the Queries icon then, in the Tasks section, click on Use Wizard to Create Query... (Fig. 8.26)

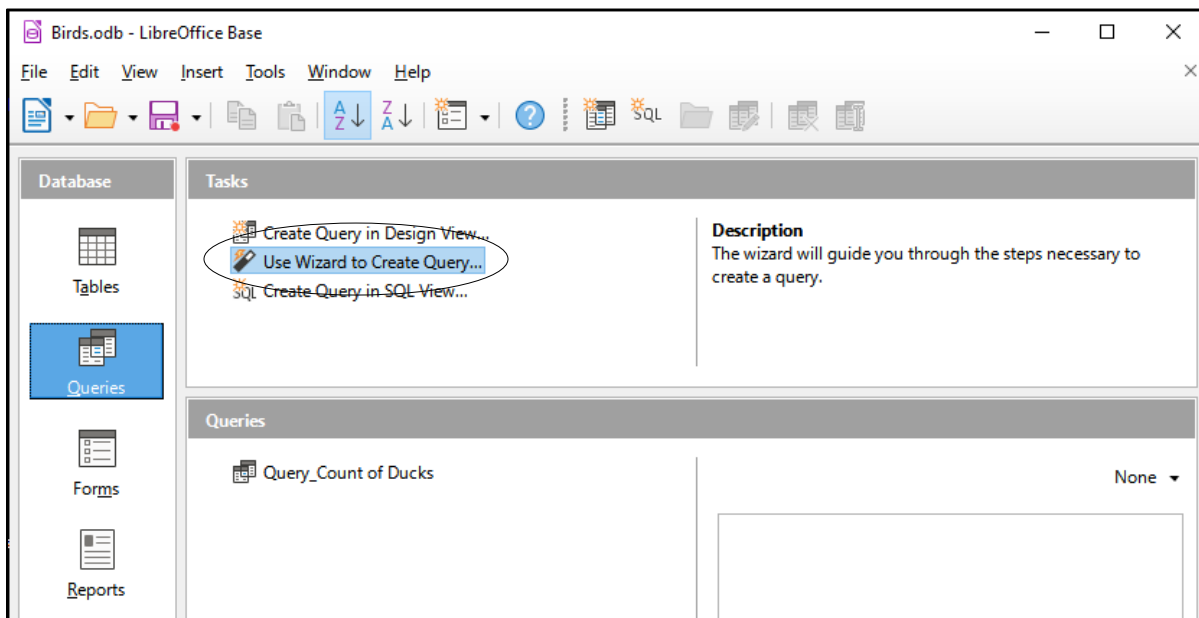


Fig. 8.26 Using a Wizard to create a Query

LibreOffice now presents the familiar *Query Wizard* window, asking you (Step 1) to select the fields (*Field Selection*) that will be involved in the Query (Fig. 8.27)

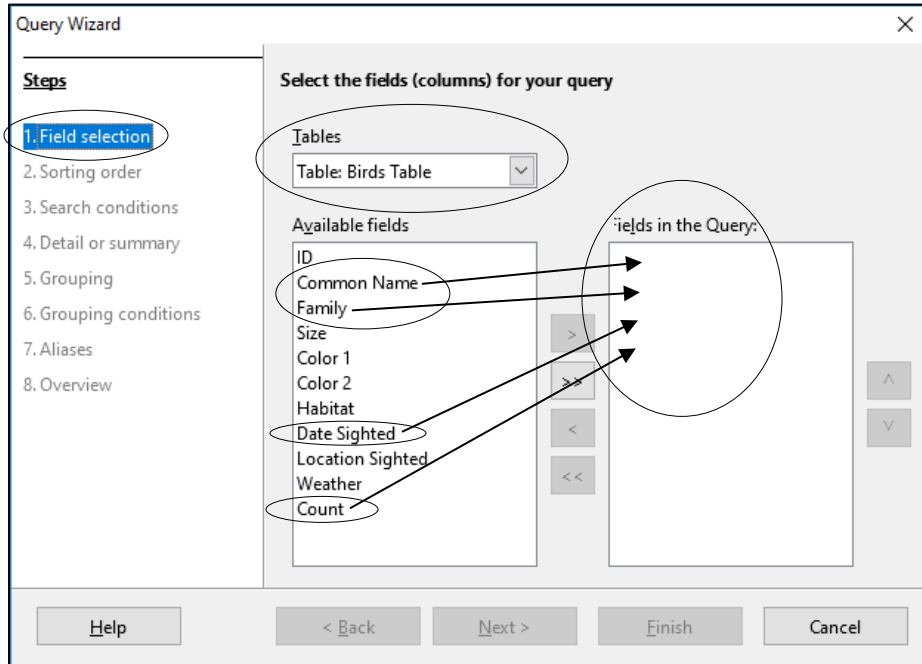


Fig. 8.27 Step 1 of the Query Wizard

Notice that the fields are all coming from the *Table: Birds Table* in the *Birds Base* database.

Double click, one after the other, on the **Common Name**, **Family**, **Date Sighted**, and **Count** fields to move them across to the **Fields in the Query** box (Fig. 8.28), then click on the **Next >** button

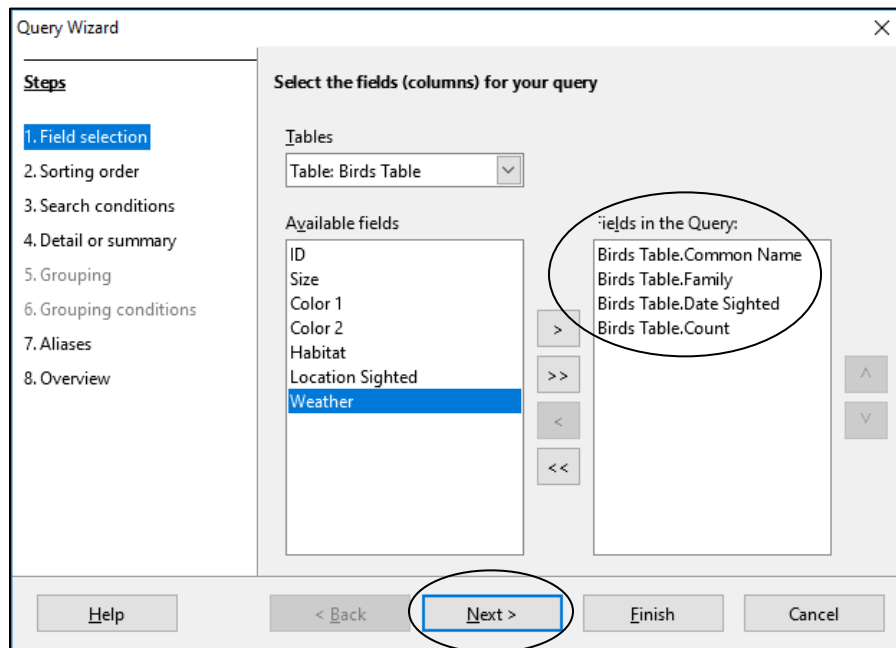


Fig. 8.28 Selecting the required fields for the Query

The next step in the Wizard, Step 2, asks you if you want to sort the data. There's no need to do this—the query will take care of selecting out the data you need.

Click on **Next >** to proceed to **Step 3**

In Step 3 you're going to *Select the search conditions* for the Query (Fig. 8.29).

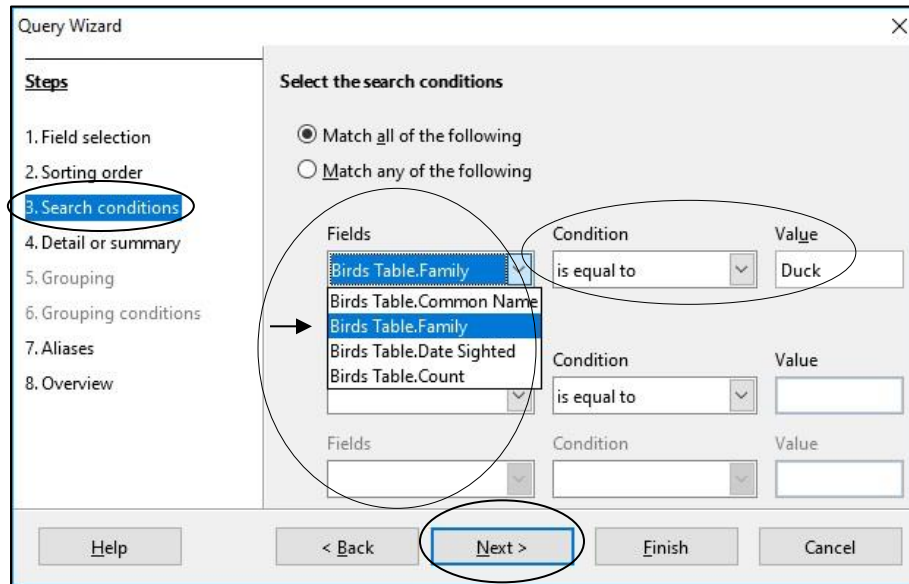


Fig. 8.29 Selecting the search conditions for the Query

In Step 1 you selected the *Fields* for the Query, and now you must select a *subset* from the family field for the *Report* you will build in the next exercise, a report which is based on the Query you are creating right now. This is where your logic skills will come in handy.

Click on the **down arrow** in the **Fields** box (Fig. 8.29 above) and, in the **drop down menu** of Fields, select **Birds Table.Family**, leave the **Condition** as **is equal to** and, in the **Value** box, type the entry **Duck** (we want every type of Duck—and *only Ducks*—in our report), then click on **Next>**

In the next step of the Wizard—Step 4 (Detail or summary)—**Detailed query (Show all records of the query)** is the default (Fig. 8.30)

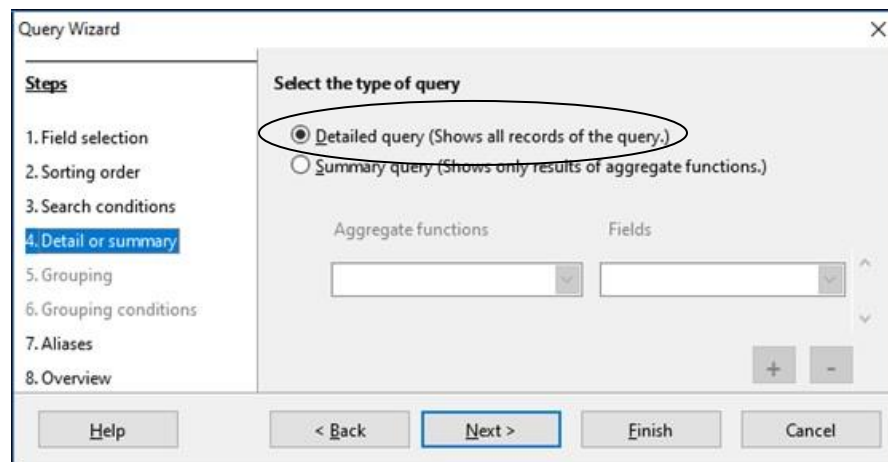


Fig. 8.30 Going with the default value for Step 4

Detailed query... is what you want, so click on **Next >** again

Steps 5 and 6 are **greyed out** because you don't need them for this query, nor do you need to change the field names in **Step 7. Aliases**, so click on **Next >** once again

Step 8 presents an overview of what should go into the Query that is going to determine the contents of the upcoming Report.

In this last step of the *Wizard*, change the **Name of the Query** to **Query_Count of Ducks** (Fig. 8.31)

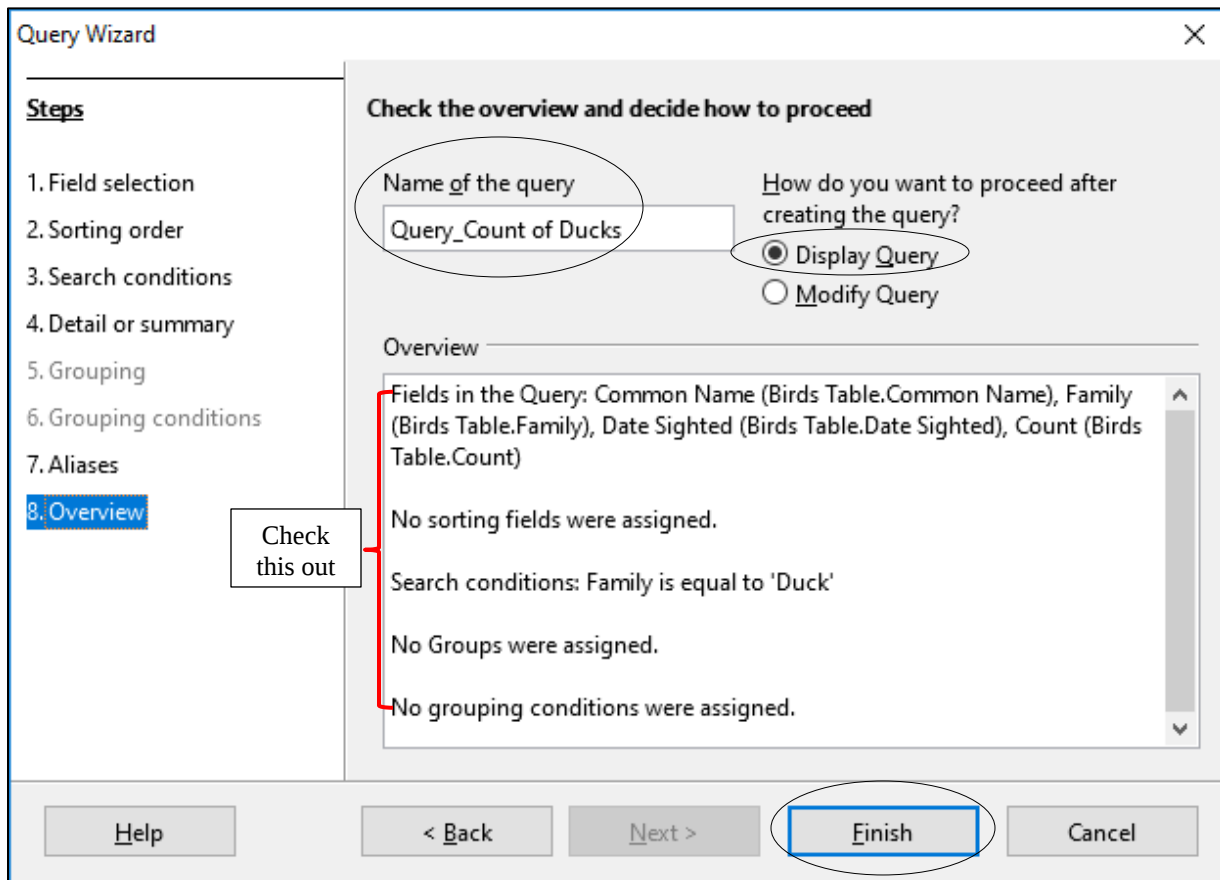


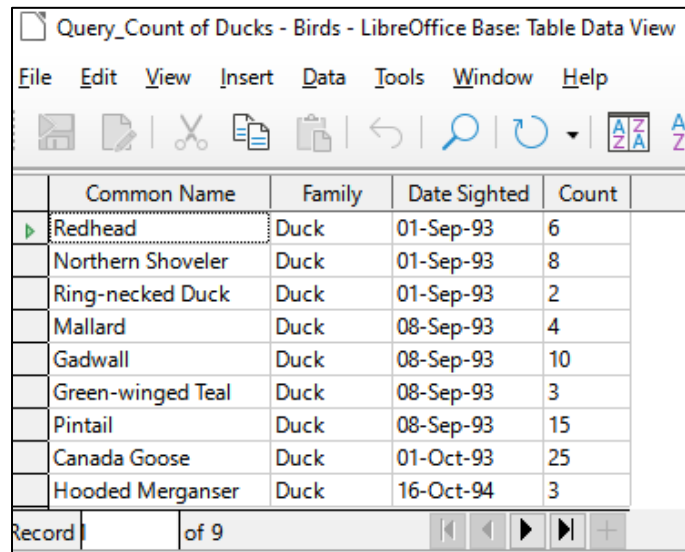
Fig. 8.31 Overview of the Query

For *How do you want to proceed after creating the query?* leave the default to **Display Query** so that you can check that the Query has successfully produced the **Found Set** of data you want for the report (Fig. 8.31 above)

While you're still on **Step 8**, read through the **Overview** section to see if what you have done in the previous steps makes sense (Fig. 8.31 above)

When you're ready, click on **Finish**

Base quickly uses the Query to produce a display of the *Found Set* (Fig. 8.32)



	Common Name	Family	Date Sighted	Count
▶	Redhead	Duck	01-Sep-93	6
	Northern Shoveler	Duck	01-Sep-93	8
	Ring-necked Duck	Duck	01-Sep-93	2
	Mallard	Duck	08-Sep-93	4
	Gadwall	Duck	08-Sep-93	10
	Green-winged Teal	Duck	08-Sep-93	3
	Pintail	Duck	08-Sep-93	15
	Canada Goose	Duck	01-Oct-93	25
	Hooded Merganser	Duck	16-Oct-94	3

Fig. 8.32 The Found Set for the Query *Count of Ducks*

What you see on your screen should be the same as in Fig. 8.32 above—9 records, all of them from the *Duck* family, showing their *Common Name*, *Date Sighted*, and *Count*. Now you're ready to go ahead and create the Report, which will be called *Count of Ducks Sighted*.

Creating a Report based on the Query¹

Close the Query_Count of Ducks window and, in the Birds database window, in the Database frame (at left) click on the Reports icon then, in the Tasks section, click on Use Wizard to Create Report... (Fig. 8.33)

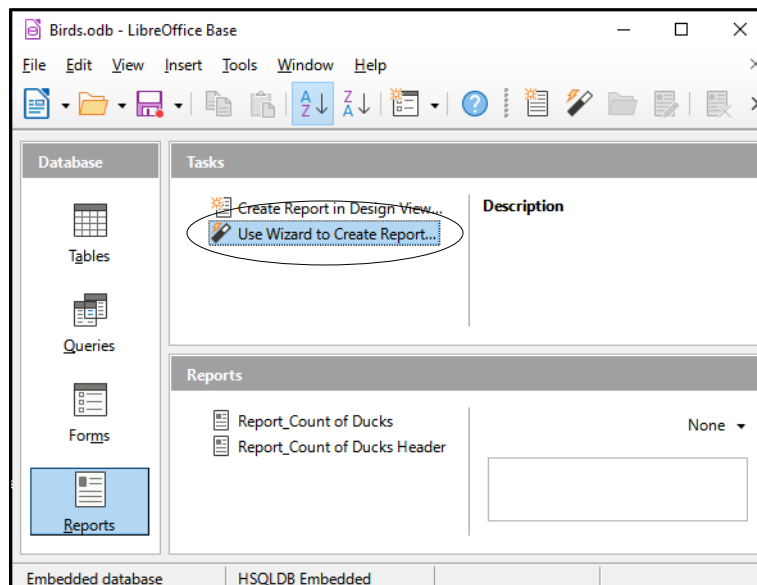


Fig. 8.33 Selecting the *Wizard* to create the report

¹ TheFrugalComputerGuy's video: <https://www.youtube.com/watch?v=7ZHRIQfV-s> does an excellent job of explaining how to create *savable* reports that include headers and other layout features. You should watch it!

This will bring up the *Report Wizard* dialog box (Fig. 8.34).

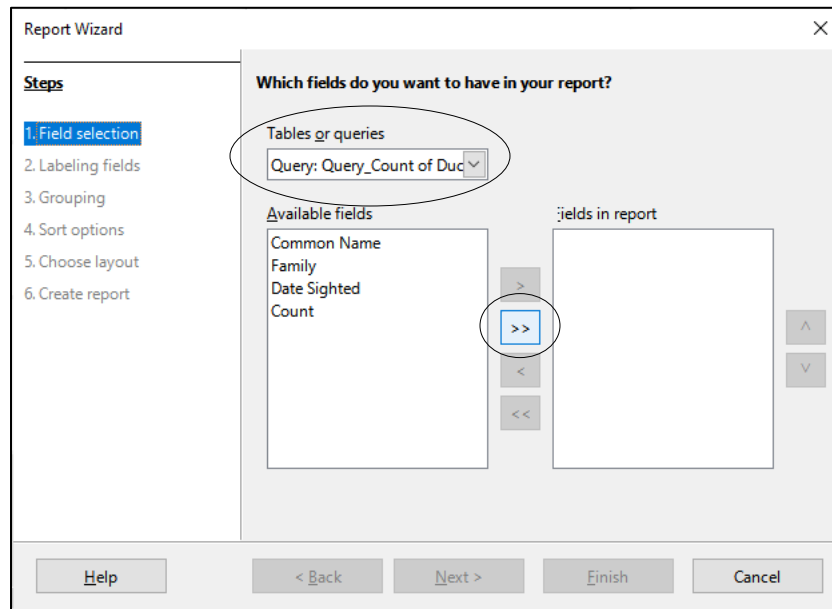


Fig. 8.34 The *Report Wizard* dialog box

In **Step 1** of the **Report Wizard**, in the **Tables or Queries** data box, leave the default **Query: Query_Count of Ducks** as the source for the report's data (Fig. 8.34 above)

Then, in the list of **Available fields**, click on the **double arrow** (again see Fig. 8.34 above) to move all **four fields** to the **Fields in report** box (Fig. 8.34 above), then click on **Next >**

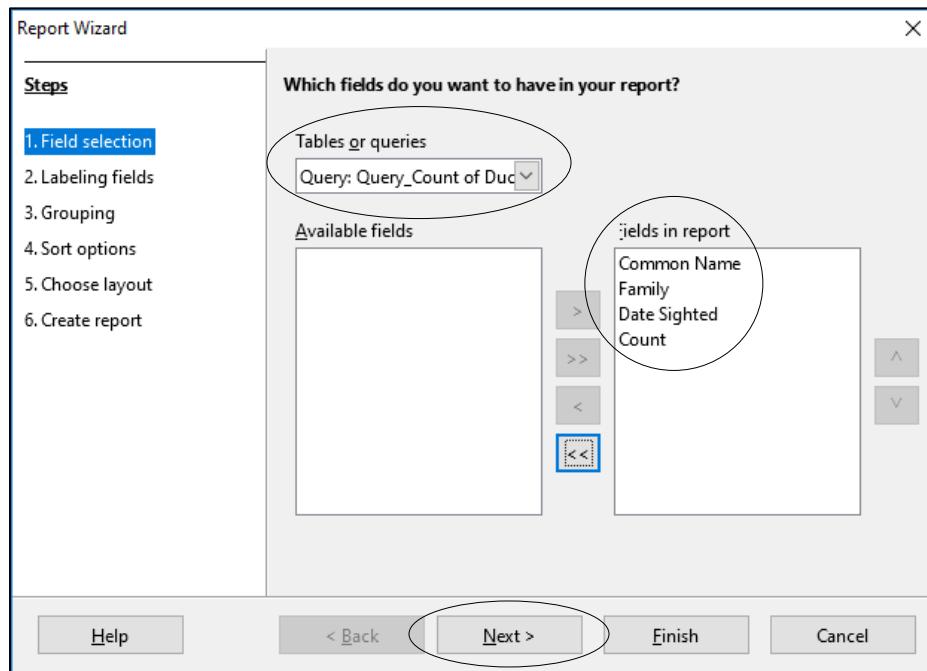


Fig. 8.35 Selecting the Fields for the report

This brings up **Step 2** of the *Report Wizard*, where you are asked to decide how you want to label the fields for the report (Fig. 8.36)

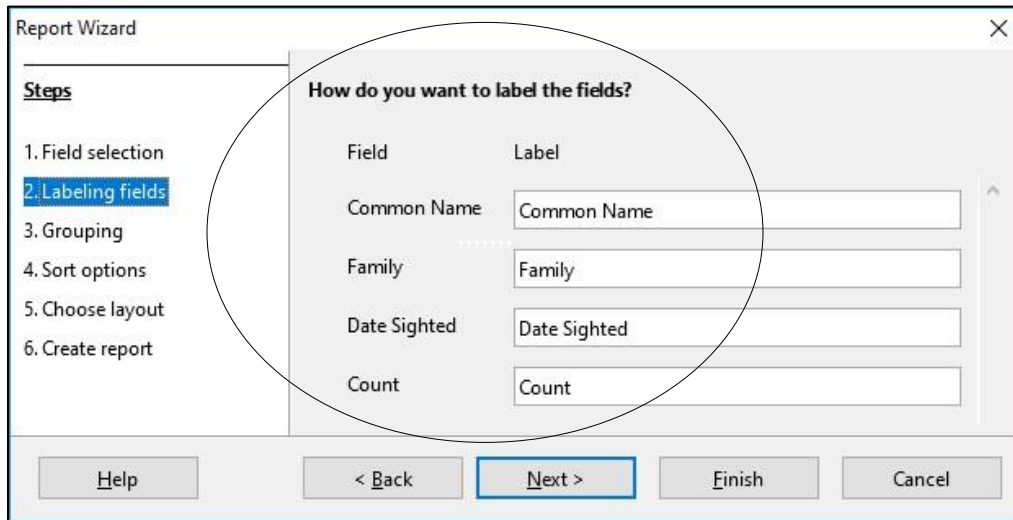


Fig. 8.36 Step 2 of the *Report Wizard*

The labels are fine as they are, so click on **Next >**

In **Step 3** of the *Report Wizard* you are asked if you want to group the data in the report using levels, which could be useful if you wanted, say, to group birds according to the year they were sighted and within each year group at a lower level according to the location where the birds were sighted and so forth. But there's no need for that in this report.

Click on **Next >** to proceed to **Step 4**

In **Step 4** you are asked if you want to **Sort** the data in the database prior to producing the report, but you already sorted the data in an earlier exercise based on the **ID field**.

So, click on **Next >** to proceed to **Step 5** of the *Report Wizard*, where you are asked to **Choose a layout** for the data in the Report (Fig. 8.37)

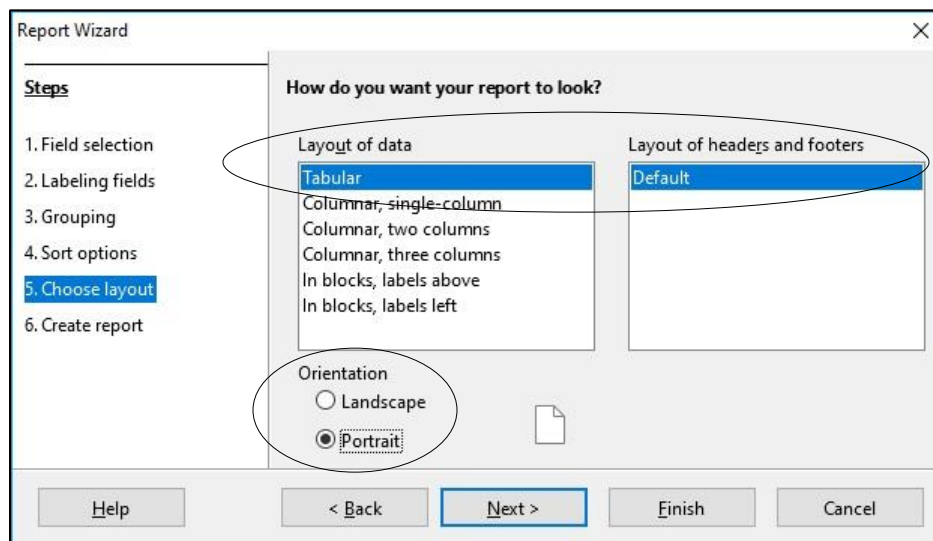


Fig. 8.37 Step 5 of the *Report Wizard*

Tabular is the default layout option and works well for this report, so leave that as is.

The four fields in the report can fit easily across the page using **Portrait Orientation**, so click on the **radio button** next to **Portrait** (Fig. 8.37 previous page), then click on **Next >** to proceed to **Step 6—Create report** (Fig. 8.38)

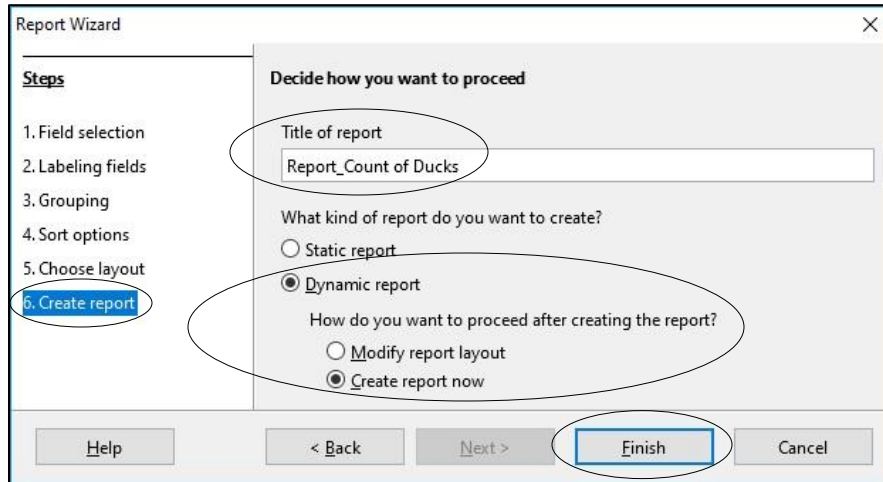


Fig. 8.38 Step 6 of the *Report Wizard* (Create Report)

In the **Title of report** data entry box type the title: **Report_Count of Ducks**

You want the report to be **Dynamic** so that the report will reflect changes to the data at a later date should the data in the database change, which is likely over time, so **check/tick** the **radio button** next to **Dynamic** (see Fig. 8.38 above)

You also want to have *Base* create the report after you click on Finish, so check the **radio button** next to **Create report now** (Fig. 8.38 above again), then click on **Finish**

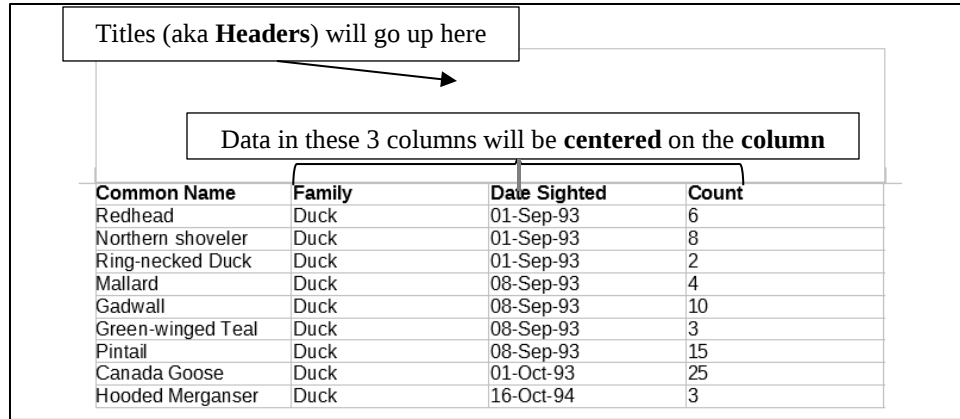
On the screen you should now see a rough and ready version of the report with column headers and, underneath them, the data for each column from the *Found Set* of Duck records (Fig. 8.39).

This document is open in read-only mode. Edit Document ×				
Common Name	Family	Date Sighted	Count	
Redhead	Duck	01-Sep-93	6	
Northern shoveler	Duck	01-Sep-93	8	
Ring-necked Duck	Duck	01-Sep-93	2	
Mallard	Duck	08-Sep-93	4	
Gadwall	Duck	08-Sep-93	10	
Green-winged Teal	Duck	08-Sep-93	3	
Pintail	Duck	08-Sep-93	15	
Canada Goose	Duck	01-Oct-93	25	
Hooded Merganser	Duck	16-Oct-94	3	

Fig. 8.39 Rough and ready version of the Count of Ducks report

Notice (Fig. 8.39 above) that the report is initially *read-only*—you can’t actually interact with it or make any changes to it as is, unless you click on the **Edit Document** button (Fig.8.39 above).

Click on **Edit Document** now to bring up the **editable** version of the **Count of Ducks Sighted** report (Fig. 8.40)



Titles (aka **Headers**) will go up here

Data in these 3 columns will be **centered** on the **column**

Common Name	Family	Date Sighted	Count
Redhead	Duck	01-Sep-93	6
Northern shoveler	Duck	01-Sep-93	8
Ring-necked Duck	Duck	01-Sep-93	2
Mallard	Duck	08-Sep-93	4
Gadwall	Duck	08-Sep-93	10
Green-winged Teal	Duck	08-Sep-93	3
Pintail	Duck	08-Sep-93	15
Canada Goose	Duck	01-Oct-93	25
Hooded Merganser	Duck	16-Oct-94	3

Fig. 8.40 Editable version of the Count of Ducks Sighted report

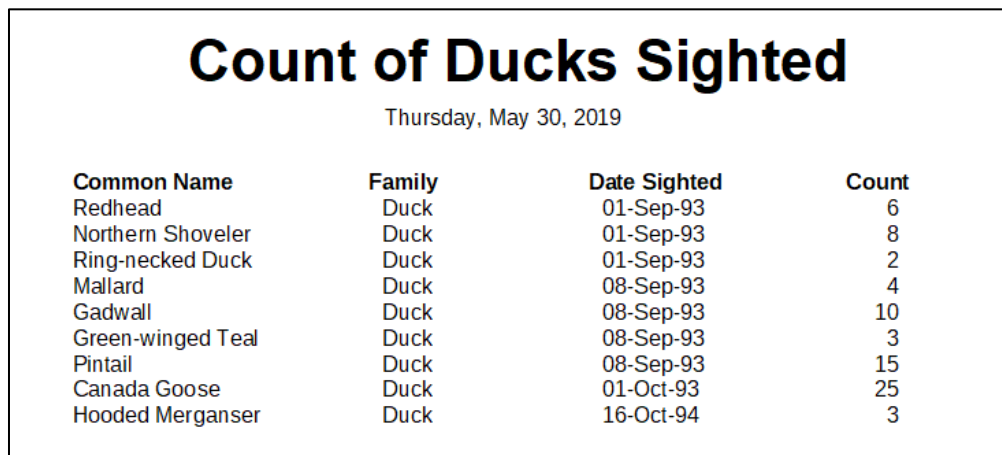
Working with this “editable” version of the report is OK if all you want to do is make some changes and then print out the edited report before moving on to other work. Thing is, doing it this way you can’t actually *save* your edits for future use. The steps that follow will show you how to use the *Base Report Builder* to edit a report *and* save your changes; thus, your efforts will not be wasted. First you need to *close* this “first pass” at the report.

Go to **File > Close**

Using the *Base Report Builder*

The *Bird* database should still be open on your screen, with the *Reports Object* selected in the *Database Objects* frame on the *left*, and the *Report_Count of Ducks* report listed in the *Reports* section of the *Birds* database window.

Your goal now is to work on the *Report_Count of Ducks* report till you’ve created something like the version in Fig. 8.41. Tips for doing this follow Fig. 8.41.



Count of Ducks Sighted

Thursday, May 30, 2019

Common Name	Family	Date Sighted	Count
Redhead	Duck	01-Sep-93	6
Northern Shoveler	Duck	01-Sep-93	8
Ring-necked Duck	Duck	01-Sep-93	2
Mallard	Duck	08-Sep-93	4
Gadwall	Duck	08-Sep-93	10
Green-winged Teal	Duck	08-Sep-93	3
Pintail	Duck	08-Sep-93	15
Canada Goose	Duck	01-Oct-93	25
Hooded Merganser	Duck	16-Oct-94	3

Fig. 8.41 The final version of the Count of Ducks Sighted Report

Here are some tips to help you along the way. But bear in mind that trial and error is the only way to end up with a final satisfactory outcome, so be patient and don't give up until you have something resembling the report in Fig. 8.41 above.

First, **right click** on the report titled **Report_Count of Ducks** and, in the Context Menu, select the option to **Edit** the report (Fig. 8.42)

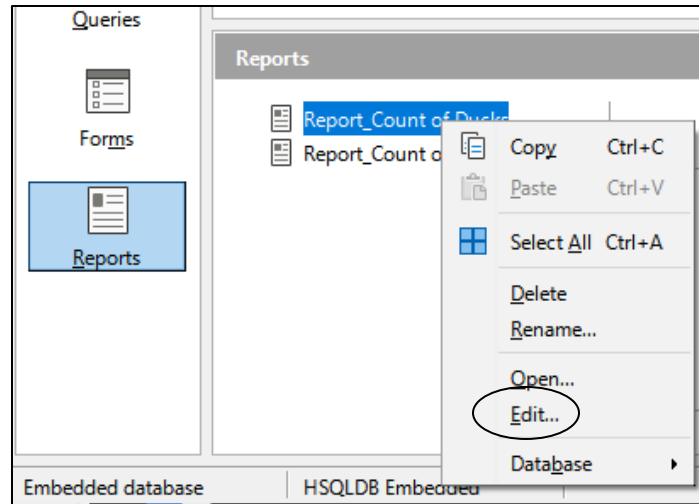


Fig. 8.42 Opening the report for Editing purposes

This brings up the *Base Report Builder* dialog box (Fig. 8.43).

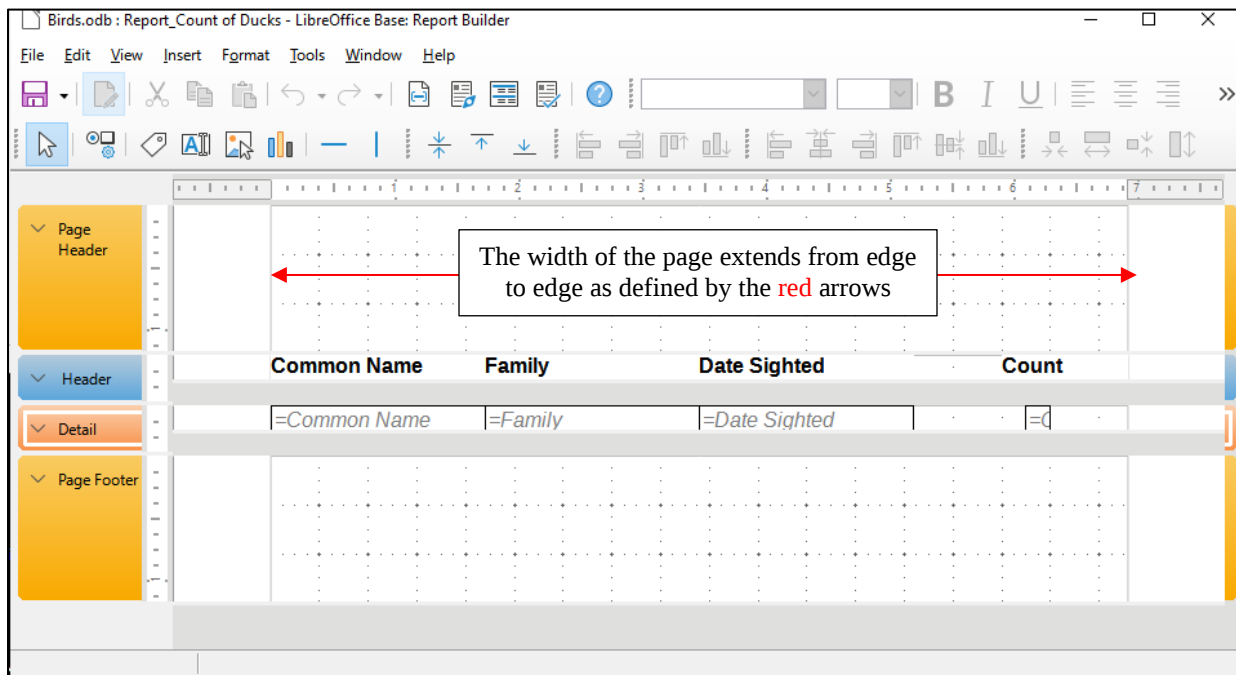


Fig. 8.43 The *LibreOffice Base: Report Builder*

Let's start with the Column Headers, which move *independently* of the data that is listed in the column. You're going to spread them out so that they are arranged evenly across the page. Let's start with the *Count* header.

Click on the **Count header** to bring up the square white **handles** that tell you it's selected (Fig. 8.44)

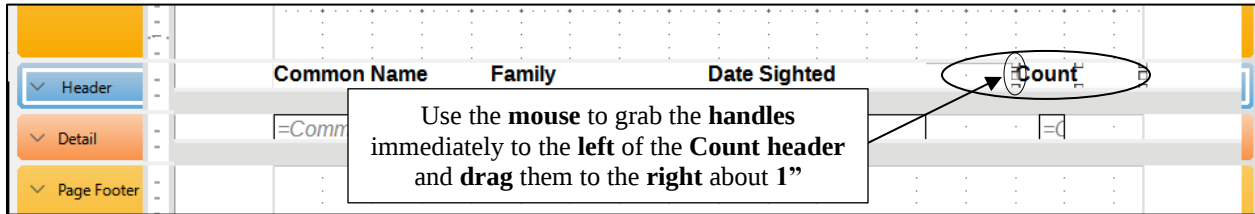


Fig. 8.44 The handles around the *Count* column header

Use the **mouse** to grab the **handle** immediately to the **left** of the **Count header** and **drag** it to the **right** about $\frac{1}{2}$ " (Fig. 8.45)

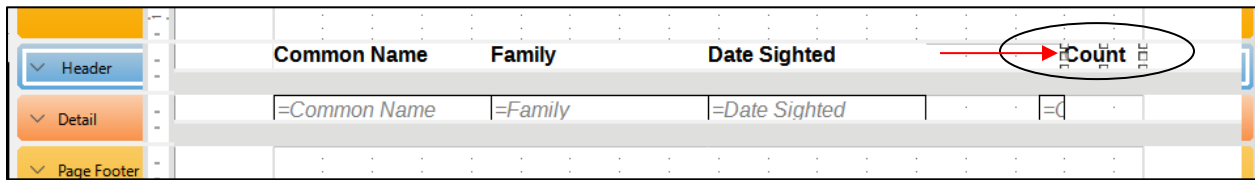


Fig. 8.45 The *Count* header dragged an inch to the right

Now you need to move the Count Detail (the set of data) in the Count column so that it's *centered* under the Count header.

Click on the **Count Detail** box to bring up the **handles** (Fig.8.46), use the **mouse** to grab the **handle** immediately to the **left** of the **Count Detail** box and **drag** it to the **right** to more or less **center** it under the **Count header** (Fig. 8.46)

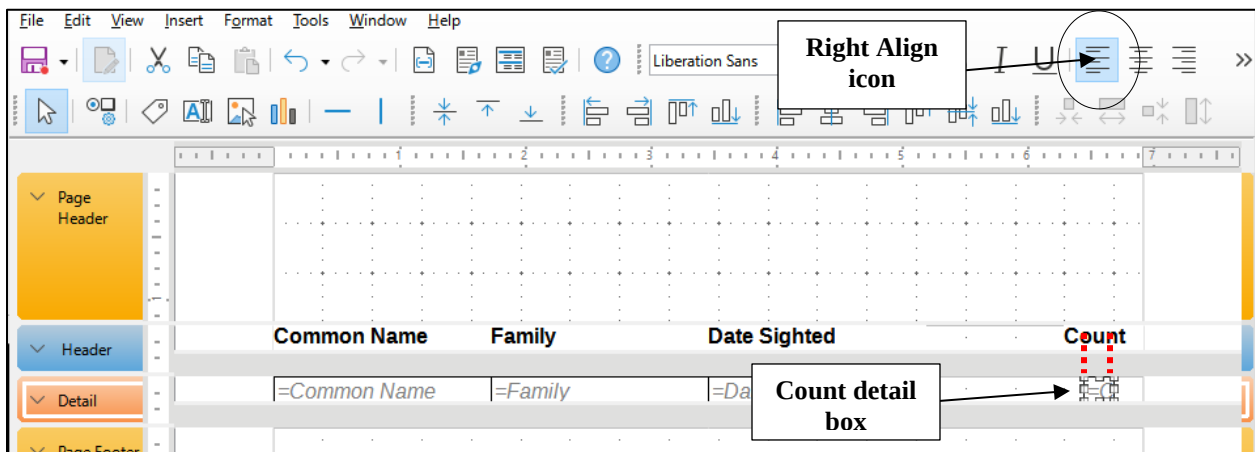


Fig. 8.46 Adjusting the position of the *Detail* data in the Count column

Now you need to *right align* the numeric Detail data in the Count column.

Click to select the set of numbers in the Count column (handles are around it) then click on the **right align icon** in the **Formatting toolbar**

Save the **Report_Count of Ducks (Ctrl+s)**, then check out your work by clicking on the **Execute Report** icon in the **Standard toolbar** (Fig. 8.47 on the next page)

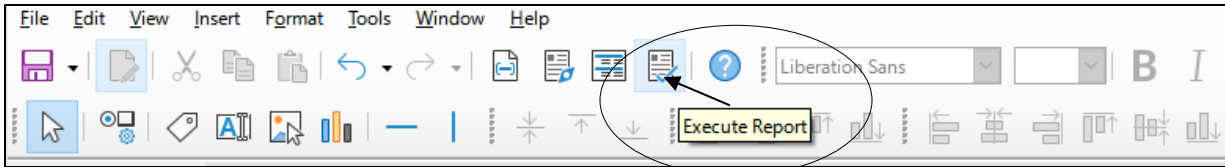


Fig. 8.47 The *Execute Report* tool on the Standard Formatting toolbar

Fig. 8.48 shows how the *Count* Column in the *Report_Count of Ducks* should now look

Common Name	Family	Date Sighted	Count
Redhead	Duck	01-Sep-93	6
Northern Shoveler	Duck	01-Sep-93	8
Ring-necked Duck	Duck	01-Sep-93	2
Mallard	Duck	08-Sep-93	4
Gadwall	Duck	08-Sep-93	10
Green-winged Teal	Duck	08-Sep-93	3
Pintail	Duck	08-Sep-93	15
Canada Goose	Duck	01-Oct-93	25
Hooded Merganser	Duck	16-Oct-94	3

Fig. 8.48 The *Count* data set *right aligned* under the *Count* column header

Close the **Execute Report** window (**File > Close**) then use what you just learned to slide the **Date Sighted** column header about $\frac{3}{4}$ " to the **right** and slide the **Date Sighted** Detail data box to the **right** till it is more or less **centered** under the **Date Sighted** column header (click on the **Execute Report** icon as you work to make sure things are looking the way you want)

Don't worry if it seems tricky aligning things up. It's really a matter of trial and error. Make adjustments till you get it right. Remember that text is *left justified* by default, so the data will align with the left side of the box.

Slide the **Family** column header about $\frac{3}{4}$ " to the **right** and then slide the data in the column to the **right** till it is **centered** under the **Family** column header (click on the **Execute Report** icon as you work to check that things are looking the way you want)

The *Common Name* column doesn't need to be adjusted at all.

Save **Report_Count of Ducks** (**Ctrl+s**), then check out your work by clicking on the **Execute Report** icon

When you are satisfied with the look of your report it should look something like Fig. 8.49.

Common Name	Family	Date Sighted	Count
Redhead	Duck	01-Sep-93	6
Northern Shoveler	Duck	01-Sep-93	8
Ring-necked Duck	Duck	01-Sep-93	2
Mallard	Duck	08-Sep-93	4
Gadwall	Duck	08-Sep-93	10
Green-winged Teal	Duck	08-Sep-93	3
Pintail	Duck	08-Sep-93	15
Canada Goose	Duck	01-Oct-93	25
Hooded Merganser	Duck	16-Oct-94	3

Fig. 8.49 Final look of the report's design

Click on **File > Close** to close the **Execute Report** window and go to **File > Save** to save the **Report_Count of Ducks** report

Creating a Report Header

The last task is to create the report header, where you are going to insert a report *Title* and the *Date* (scroll back to Fig. 8.41 on page 309). To insert a *Header* you're going to make a *copy* of the *Report_Count of Ducks* and give the copy a *new name*.

With the **Reports** object selected in the **Database frame** (on the **left** of the **Birds** window), **right click** on **Report_Count of Ducks** and, in the **Context Menu** that pops up, select **Copy**

Now **right click** in the white space below the **Report_Count of Ducks** and, in the **Context Menu**, select **Paste**

When you select **Paste** in the menu, a dialog box pops up (Fig. 8.50) which prompts you to **change** the report name; change it to **Report_Count of Ducks Header** then click on **OK**

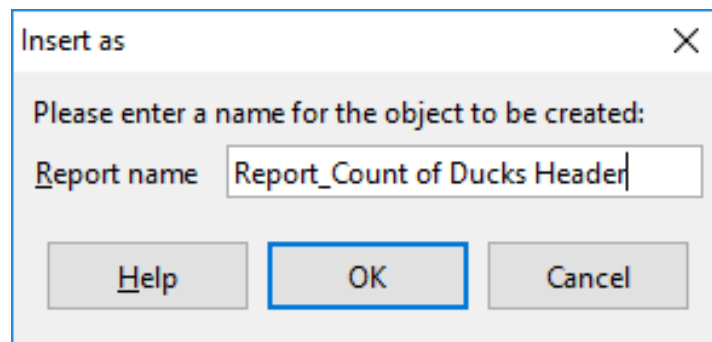


Fig. 8.50 Creating the new *Report_Count of Ducks Header* report

Go to **File > Save** to save the new report, then **right click** on **Report_Count of Ducks Header** report and, in the Context Menu (Fig. 8.51), select **Edit...**

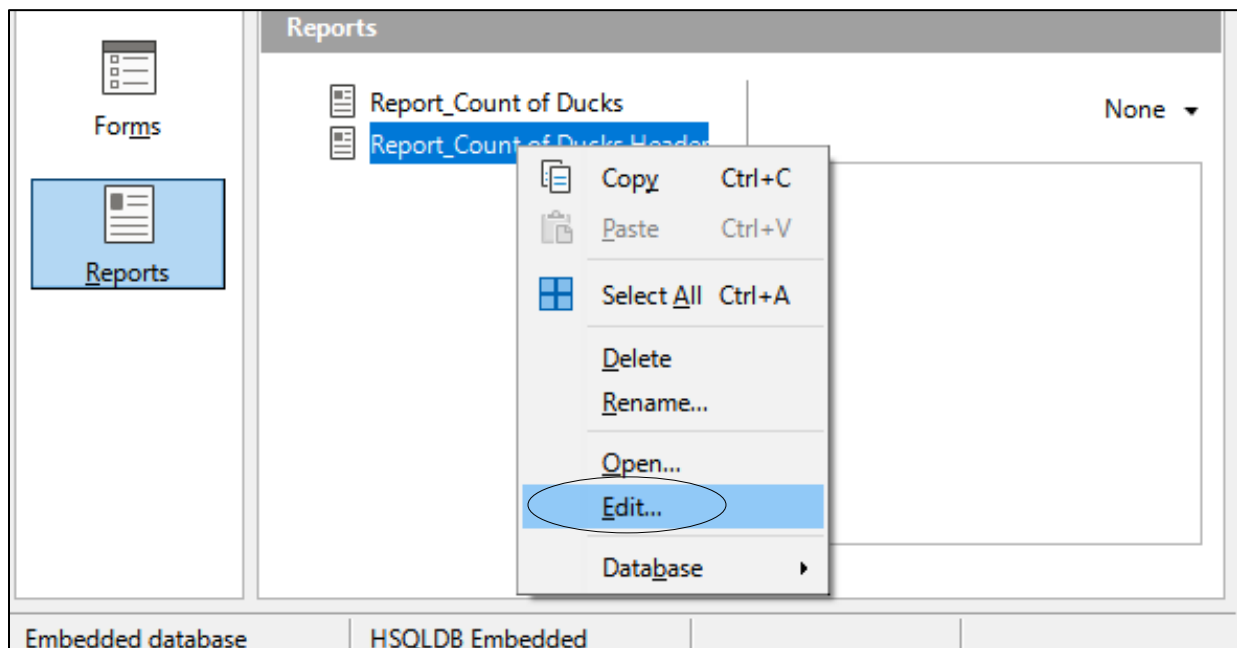


Fig. 8.51 Select **Edit...** in the *Report* Context menu

The *Report Builder* for *Report_Count of Ducks Header* opens for you to add the *Header* lines to the report. To do this you will use the *Label* tool (Fig. 8.52).

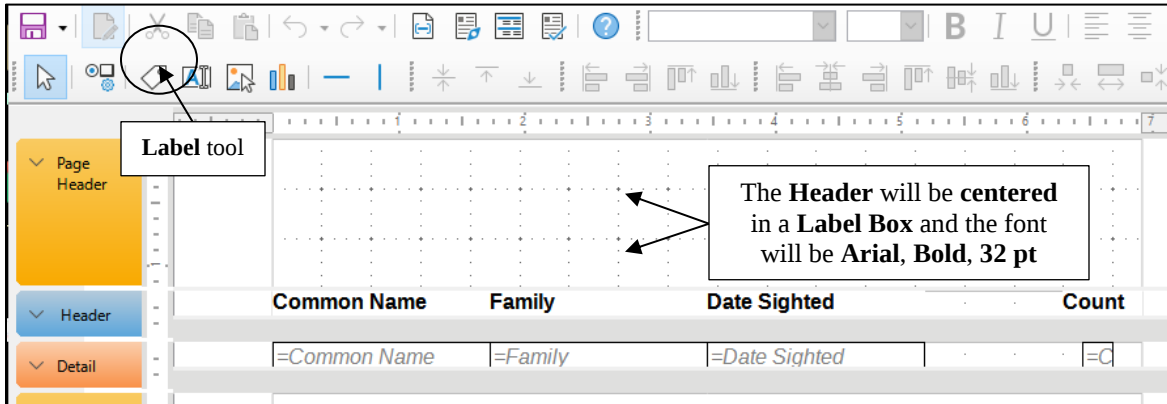


Fig. 8.52 The *Report Builder* waiting for you to add the header details

Click on the **Label** tool (see Fig. 8.52 above) and use the mouse to draw a **Label Box** centered in the **Page Header** area, spanning from the $\frac{3}{4}$ " hashmark on the ruler bar to the 6" hash mark (Fig. 8.53)

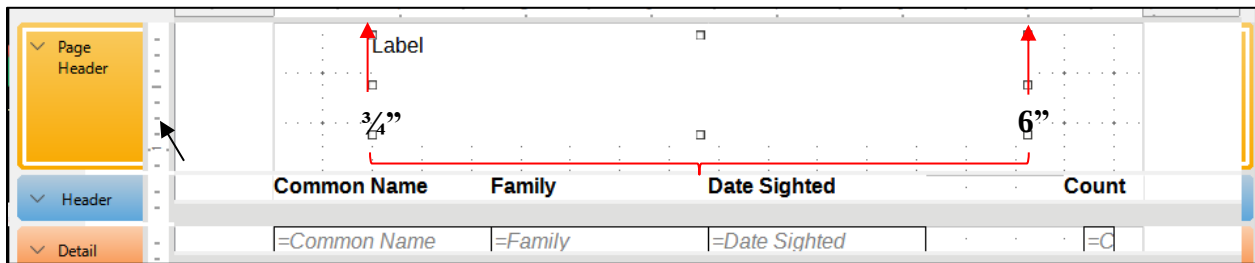


Fig. 8.53 Draw a *Label Box* in the *Page Header* area for the report Header

Double click inside the **Label Box** to bring up the **Properties** dialog box (Fig. 8.54)

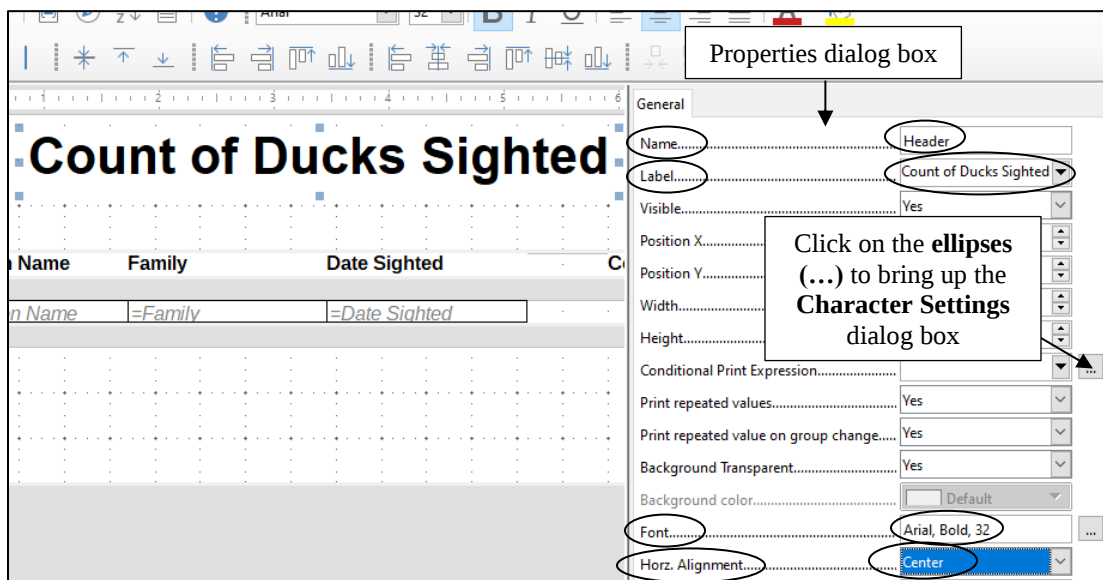


Fig. 8.54 Using the *Properties* dialog box to enter the text and format for the report Header

Refer to Fig. 8.54 above as you fill in the various items in the *Properties* dialog box.

In the **Name data box** type the name: **Header** (Fig. 8.54 above)

In the **Label data box** type the name: **Count of Ducks Sighted** (Fig. 8.54)

For the **Font** settings, click on the **ellipses (...)** to bring up the **Character Settings** dialog box (Fig. 8.55)

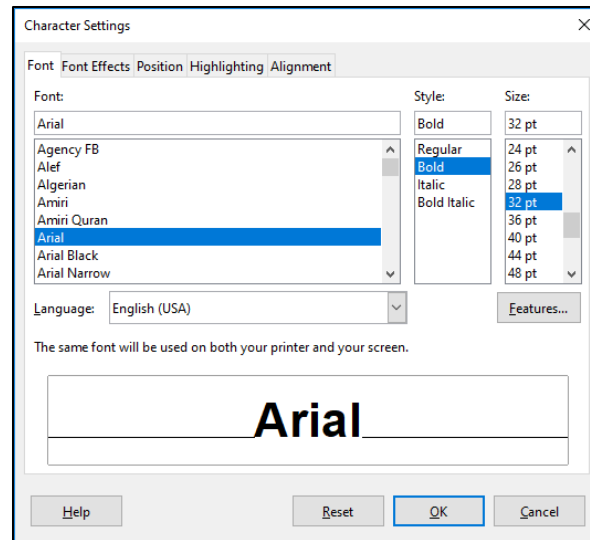


Fig. 8.55 The Character Settings dialog box

In the **Character Settings** dialog box, change the **Font** to **Arial**, the **Style** to **Bold** and the **Size** to **32 pt**, click on **OK** then **Save the Report_Count of Ducks Header**

Click on the **Execute Report** tool to see how the report looks at this stage

Inserting the Date into the Report Header

In the **Insert** menu select **Date and Time...** to bring up the **Date and Time** dialog box (Fig. 8.56)

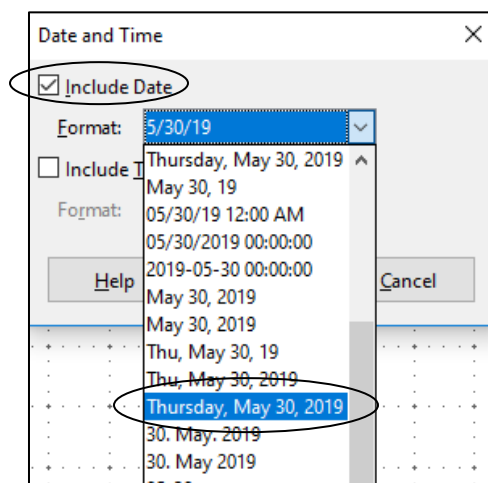


Fig. 8.56 The Date and Time dialog box

Click to put a **check mark/tick** inside the **Include Date** box and in the **Format:** column click on the date format that looks like **Monday, Oct 12, 2020**

More space needs to be allowed in the **Date box**, so grab one of the **handles** on the **right hand side** of the **Date box** and **slide** the mouse **to the right** to stretch the Date box **a couple of inches** to allow for longer dates

The Date also needs to be **centered**, so with the handles still around the **Date box**, in the **Formatting toolbar** click on the **Centered** icon

Click on the **Execute Report** icon to check out the look of the report after you are satisfied with your changes to these **Headers**

Save the report one more time, then **Save** the **Birds database**

If all went well, your report should now look much like that illustrated in Fig. 8.57.

Count of Ducks Sighted			
Tuesday, October 13, 2020			
Common Name	Family	Date Sighted	Count
Redhead	Duck	01-Sep-93	6
Northern Shoveler	Duck	01-Sep-93	8
Ring-necked Duck	Duck	01-Sep-93	2
Mallard	Duck	08-Sep-93	4
Gadwall	Duck	08-Sep-93	10
Green-winged Teal	Duck	08-Sep-93	3
Pintail	Duck	08-Sep-93	15
Canada Goose	Duck	01-Oct-93	25
Hooded Merganser	Duck	16-Oct-94	3

Fig. 8.57 The final version of the *Report_Count of Ducks Header* report

There are many more changes you could make to the report, such as adding graphics (maybe a picture of some ducks on a pond, for example) or background colors, and the like. If the report spanned several pages, you would almost certainly want to include page numbers (*Insert > Fields > Page Number*, which you learned about in Lesson 2).

This is just an introduction to the topic of creating queries and reports. It is now up to you to extend your skills beyond these tutorials. Practice makes perfect, as you know so well.

8.6 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 *LibreOffice*, whether you have been working in *Writer* or the *Calc*.

If you are able to print the report, go to **File > Print** to print the **Report_Count of Ducks Sighted Header** 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 *Base* 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 electronic databases are 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 *Base* 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 *Base* 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 LibreOffice > Data Files > Base Documents folder on your disk drive, open the Roster 2020 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 Work Files for LibreOffice > Base Files folder) 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