Advanced Microsoft Access

with examples and
hands-on exercises

WEBUCATOR

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Class Files

Download the class files used in this manual at https://static.webucator.com/media/public/materials/classfiles/ACC201-1.2.0.zip.

Errata

Corrections to errors in the manual can be found at https://www.webucator.com/books/errata/.

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LESSON 1
Relationships

Topics Covered

☑ Referential integrity.

☑ Relationships between tables.

Introduction

In this lesson, you will learn about referential integrity and about how to establish relationships between tables.

1.1. Review

In the introductory course, we defined a *relational database* as a collection of data sets organized in multiple tables. We went on to say that each table in a relational database has well-defined relationships with one or more other tables in the database.

We showed how to normalize data in preparation for establishing these relationships. Open `Relationships/Demos/Demo - My Music Collection.accdb` to begin.

For example, suppose we start with the following unnormalized data:

Title	Artist	Format	Format Description
Right On	Count Basie and His Orchestra	78	78 RPM vinyl record
I Got a Name	Jim Croce	8-tr	8-track tape
Smetana: Moldau, Overtures	Cleveland Orchestra	33	33 1/3 RPM vinyl record
A Hard Day's Night	Beatles	33	33 1/3 RPM vinyl record
The White Album	Beatles	CD	Compact disc
I Remember Yesterday	Donna Summer	Cass	Cassette tape
Rachmaninov Piano Concerto 1 & 3	Cleveland Orchestra	CD	Compact disc
Just a Dream	Carrie Underwood	MP3	MP3 file
Music of the Night	Alfie Boe	MP3	MP3 file
King of Swing!	Count Basie and His Orchestra	CD	Compact disc
Pirates of Penzance	D'oyly Carte Opera Company	33	33 1/3 RPM vinyl record
Skyfall	Adele	MP3	MP3 file

To achieve First Normal Form, we eliminate repeating groups of data by creating separate tables for each related group of data and assigning a primary key field to each table. In our example, we have no repeating groups, so we simply need to assign a primary key, Recording_ID, to the Recordings table.

Recording_ID	Title	Artist	Format	Format Description
1	Right On	Count Basie and His Orchestra	78	78 RPM vinyl record
2	I Got a Name	Jim Croce	8-tr	8-track tape
3	Smetana: Moldau, Overtures	Cleveland Orchestra	33	33 1/3 RPM vinyl record
4	A Hard Day's Night	Beatles	33	33 1/3 RPM vinyl record
5	The White Album	Beatles	CD	Compact disc
6	I Remember Yesterday	Donna Summer	Cass	Cassette tape
7	Rachmaninov Piano Concerto 1 & 3	Cleveland Orchestra	CD	Compact disc
8	Just a Dream	Carrie Underwood	MP3	MP3 file
9	Music of the Night	Alfie Boe	MP3	MP3 file
10	King of Swing!	Count Basie and His Orchestra	CD	Compact disc
11	Pirates of Penzance	D'oyly Carte Opera Company	33	33 1/3 RPM vinyl record
12	Skyfall	Adele	MP3	MP3 file

To achieve Second Normal Form, we eliminate redundant data by separating it into new tables. Notice that in our example, the artist and format data repeats. We need to separate these tables from the original Recordings table and assign a primary key to each table.

Artist_ID	Artist
1	Count Basie and His Orchestra
2	Jim Croce
3	Cleveland Orchestra
4	Beatles
5	Donna Summer
6	Carrie Underwood
7	Alfie Boe
8	D'Oyly Carte Opera Company
9	Adele

Format_ID	Format	Description
1	ACE	Acetate disc
2	78	78 RPM vinyl record
3	45	45 RPM vinyl record
4	33	33 1/3 RPM vinyl record
5	Cass	Cassette tape
6	8-tr	8-track tape
7	CD	Compact disc
8	MP3	MP3 file

Now that the redundant data is separated out,we replace the data in the Recordings table with foreign keys (the primary keys from the Artists and Formats).

Recording_ID	Title	Artist_ID	Format_ID
1	Right On	1	2
2	I Got a Name	2	6
3	Smetana: Moldau, Overtures	3	4
4	A Hard Day's Night	4	4
5	The White Album	4	7
6	I Remember Yesterday	5	5
7	Rachmaninov Piano Concerto 1 & 3	3	7
8	Just a Dream	6	8
9	Music of the Night	7	8
10	King of Swing!	1	7
11	Pirates of Penzance	8	4
12	Skyfall	9	8

To achieve Third Normal Form, we remove columns in tables that don't depend directly on the table's primary key. In our relatively simple data set, we don't have any such columns, so we can consider our data normalized to Third Normal Form.

In brief, each table in a database should have a single focus. When you notice that secondary items in the table are repeating, it's a signal to break the repeating topic into a table of its own and assign it its own primary key. This primary key becomes the source for a foreign key field in the original table. For the sake of good organization, though optional, the primary key and foreign key should share the same name and must be of similar data type.

After normalization, we discussed the three relationships possible between tables.

- *One-to-many*. Table A has a one-to-many relationship with Table B if a record in Table A can match one or more records in Table B but each record in Table B must match only one record in Table A.
- *Many-to-many*. Table A has a many-to-many relationship with Table B if Table A can have one or more matches in Table B and Table B can have one or more matches in Table A.
- *One-to-one*. Table A has a one-to-one relationship with Table B if Table A can have no more than one matching record in Table B and Table B can have no more than one matching record in Table A.

To ensure data integrity it is not enough to simply acknowledge the types of relationships that exist between tables, it is essential that we define the relationships so that they can be enforced.

1.2. Referential Integrity

Let's consider the recording tables again. Suppose I delete a record from the Artists table.

Artist_ID	Artist
1	Count Basie and His Orchestra
2	Jim Croce
3	~~Cleveland Orchestra~~
4	Beatles
5	Donna Summer
6	Carrie Underwood
7	Alfie Boe
8	D'Oyly Carte Opera Company
9	Adele

Artist_ID	Artist
1	Count Basie and His Orchestra
2	Jim Croce
4	Beatles
5	Donna Summer
6	Carrie Underwood
7	Alfie Boe
8	D'Oyly Carte Opera Company
9	Adele

The result is that there are records in the Recordings table that refer to an artist record that no longer exists. We call this sort of record an *orphaned record*.

Recording_ID	Title	Artist_ID	Format_ID
1	Right On	1	2
2	I Got a Name	2	6
3	Smetana: Moldau, Overtures	3	4
4	A Hard Day's Night	4	4
5	The White Album	4	7
6	I Remember Yesterday	5	5
7	Rachmaninov Piano Concerto 1 & 3	3	7
8	Just a Dream	6	8
9	Music of the Night	7	8
10	King of Swing!	1	7
11	Pirates of Penzance	8	4
12	Skyfall	9	8

Suppose instead of deleting a record from the Artists table, I change a record:

Artist_ID	Artist
1	Count Basie and His Orchestra
2	Jim Croce
3	Cleveland Orchestra
4	Beatles
5	Donna Summer
6	Carrie Underwood
7	Alfie Boe
8	D'Oyly Carte Opera Company
9	Adele

Artist_ID	Artist
1	Count Basie and His Orchestra
2	Jim Croce
3	Cleveland Orchestra
4	Monkees
5	Donna Summer
6	Carrie Underwood
7	Alfie Boe
8	D'Oyly Carte Opera Company
9	Adele

The result this time is not orphaned records, but incorrect records.

Recording_ID	Title	Artist_ID	Format_ID
1	Right On	1	2
2	I Got a Name	2	6
3	Smetana: Moldau, Overtures	3	4
4	A Hard Day's Night	4	4
5	The White Album	4	7
6	I Remember Yesterday	5	5
7	Rachmaninov Piano Concerto 1 & 3	3	7
8	Just a Dream	6	8
9	Music of the Night	7	8
10	King of Swing!	1	7
11	Pirates of Penzance	8	4
12	Skyfall	9	8

Referential integrity ensures that orphaned records are not created and that references are not changed arbitrarily. We can turn on referential integrity when we create relationships between tables. When referential integrity is turned on, Access refuses to allow actions that would compromise the integrity of the relationship.

There may be valid reasons for allowing changes to or deletions of primary keys. For these cases, Access provides **Cascade Update Related Fields** and **Cascade Delete Related Records** options when you enable referential integrity. **Cascade Update Related Fields** updates all records that reference the affected primary key. **Cascade Delete Related Records** deletes all records that reference the affected primary key.

1.3. Relationships

Access provides a tool for formalizing the relationships among tables. The relationships themselves are intrinsic to the structure of the database tables. The fact that we have added a foreign key column to one table with data that matches (or is compatible with) the data type of the primary key field of another table is sufficient to establish the relationship. Access, however, provides a tool to formalize this relationship and help us keep that relationship in mind as we work with the database.

❖ 1.3.1. Data Types and Relationships

When you formalize the relationship by connecting a pair of fields in two tables, you must ensure that the fields have the same data type or compatible data types. For example, if one field stores its data as numbers and the other stores its data as text, you cannot use the fields in a relationship.

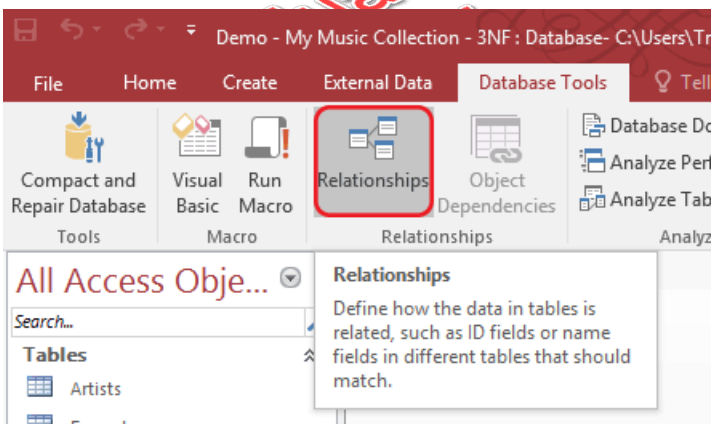
Significantly, autonumber fields and number fields may be compatible provided that the field size of the number field is "long integer". For instance, consider the My Music Collection database. Assuming that the primary key of the Artists table, Artist_ID, is an autonumber field, we could associate it to the

Artist_ID field in the Recordings table as a foreign key provided that the Artist_ID in the Recordings table is a long integer number field. The same would be true for the Format_ID fields.

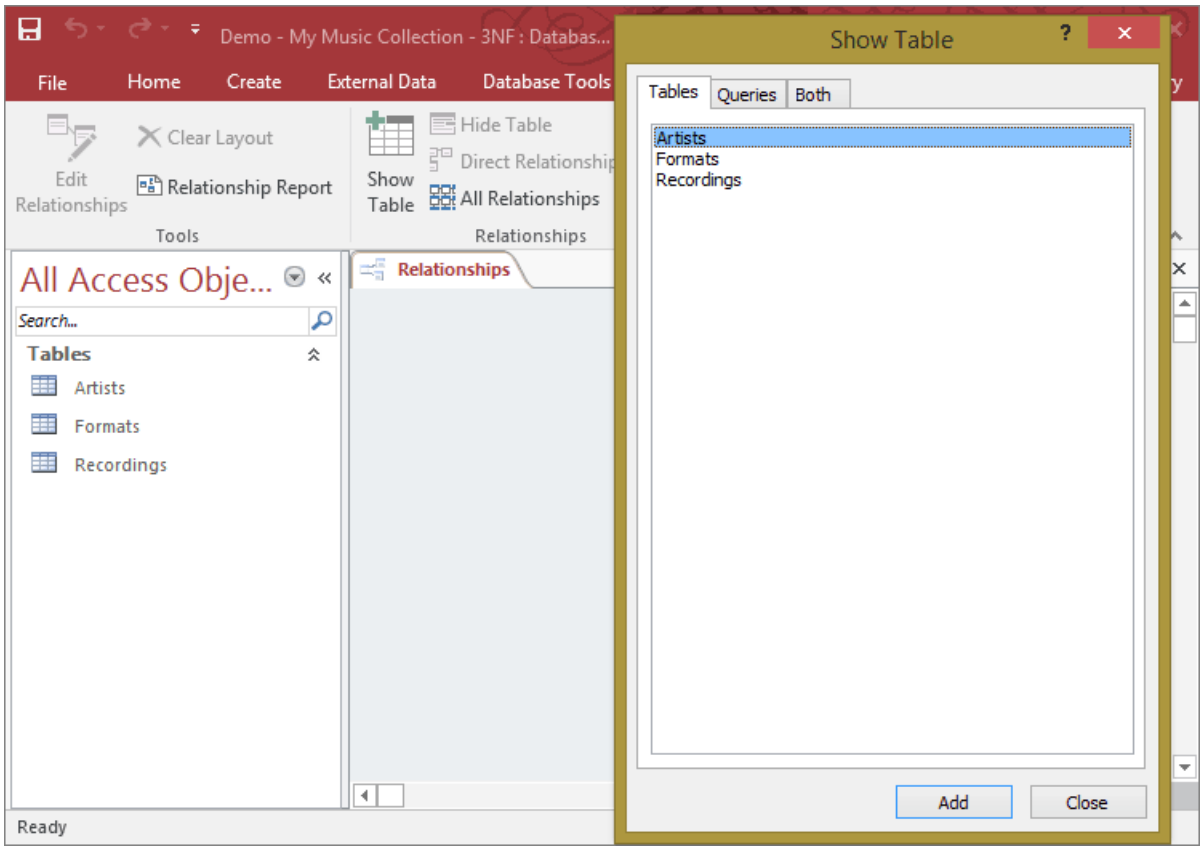
❖ 1.3.2. Formalize the Relationship Between Tables

To formalize the relationship between two tables: Open `Relationships/Demos/Demo - My Music Collection - 3NF.accdb` to begin.

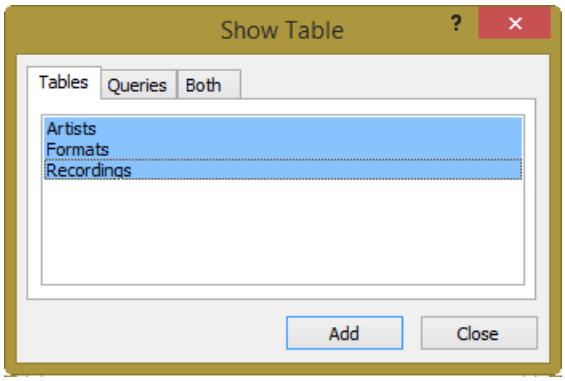
1. Open the database. (For this demonstration, we'll use the Demo - My Music Collection - 3NF database.)
2. On the **Database Tools** tab, click **Relationships**.



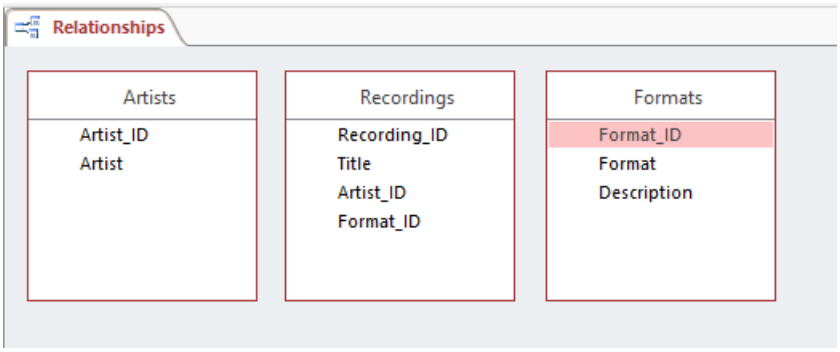
3. The **Show Table** dialog box opens.



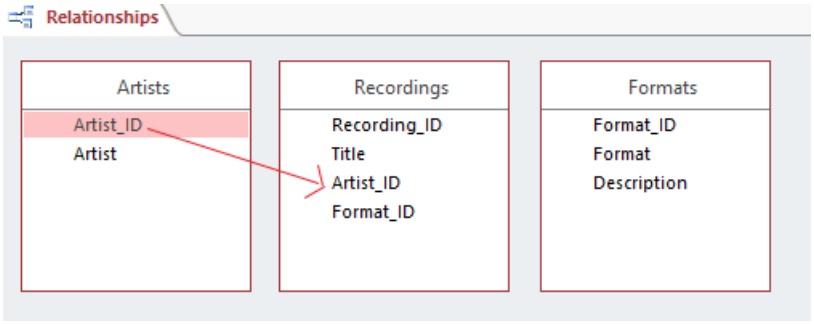
4. On the **Tables** tab, highlight the tables you want to establish relationships between, then click **Add**.



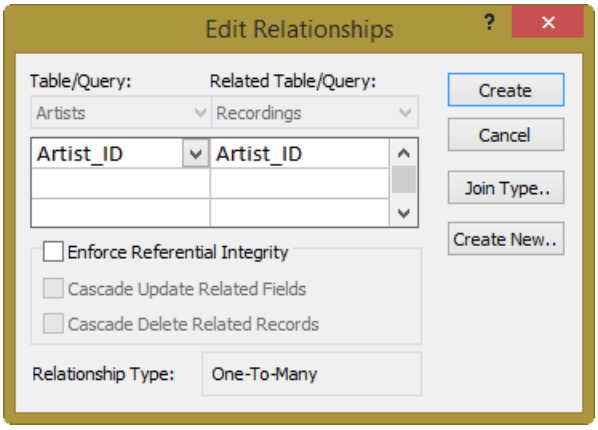
5. Click **Close**. Representations of the tables are added to the **Relationships** tab in the workspace.



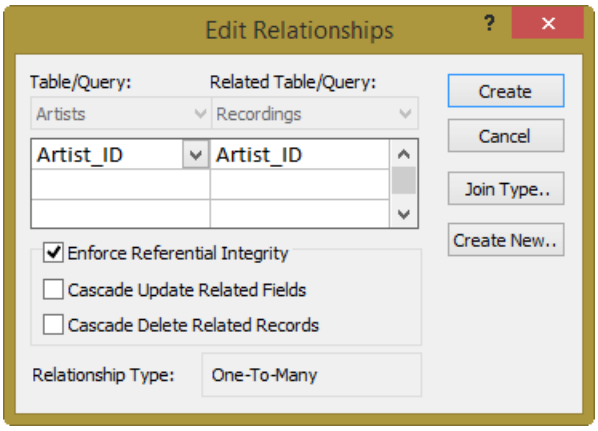
6. To establish a one-to-many relationship, highlight the key field from the "one" side of the relationship and drag and drop it onto the corresponding field in the table on the "many" side of the relationship.



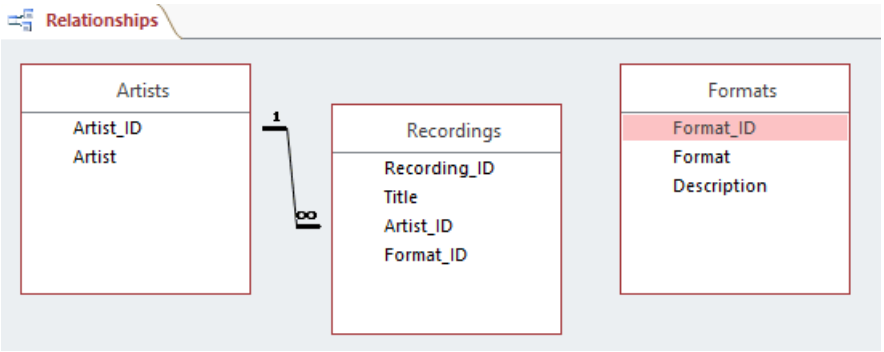
The **Edit Relationships** dialog box opens.



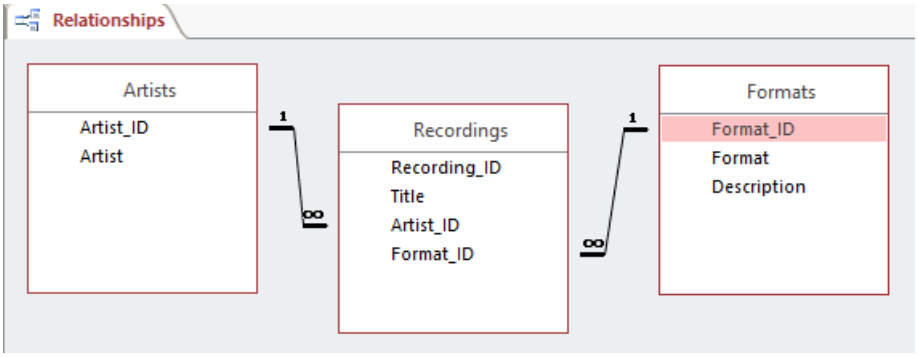
7. Mark the **Enforce Referential Integrity** check box. We'll leave the **Cascade Update Related Fields** and **Cascade Delete Related Records** check boxes cleared.



8. Click **Create**. A connector is added between the tables.



9. Repeat steps 5-7 to relate the Format_ID field in the Formats to the Format_ID field in the Recordings table.



10. Click **Save**.

1.4. A Few Words about Naming Conventions

In this course we will not impose a structure on the names of our database objects. This will make it more natural to refer to database objects in context. However, for larger or more complex databases you will want to consider using a naming convention to help you distinguish among objects. Using a naming convention is particularly helpful if other people may maintain your application.

A commonly used convention for Access databases is the Leszynski/Reddick naming convention. Briefly, this convention adds a tag in lower case letters before the object name and omits all spaces.

Object Type	Tag	Example
Table	tbl	tblRecordings
Table Lookup	tlkp	tlkpFormats
Query	qry	qryCDRecordings
Action Query	• qapp (append) • qxtb (crosstab) • qdel (delete) • qmak (make table) • qry or qsel (select) • qupd (update)	qappRecordings
Form	frm	frmRecordingEntry
Subform	sfrm	sfrmCompilations
Report	rpt	rptMusicList
Subreport	srpt	srptCompilations
Macro	mcr	mcrAddRecordings
Command	cmd	cmdOpenRecordingsForm

A variant of the Leszynski/Reddick convention includes an underscore between the tag name and the object name: tbl_Recordings.

A similar naming convention has the advantage of making it easy to distinguish among object types like the Leszynski/Reddick convention does, but has the added benefit of being easier to search. By

this convention we append a tag in upper case letters to the end of the object name while omitting all spaces.

Object Type	Tag	Example
Table	TBL	RecordingsTBL
Table Lookup	LKUP	FormatsLKUP
Query	QRY	CDRecordingsQRY
Action Query	• APPEND_ObjectNameQRY • XTAB_ObjectNameQRY • DELETE_ObjectNameQRY • MAKE_ObjectNameQRY • SELECT_ObjectNameQRY • UPDATE_ObjectNameQRY	APPEND_RecordingsQRY
Form	FRM	RecordingEntryFRM
Subform	SFRM	CompilationsSFRM
Report	RPT	MusicListRPT
Subreport	SRPT	CompilationsSRPT
Macro	MCR	AddRecordingsMCR
Command	CMD	OpenRecordingsCMD

Whichever convention you choose, it is important to use it consistently across your application.

Exercise 1: Creating Relationships

15 to 45 minutes

In this exercise, you will add an Accounts table to the Bank Register database, add a field for the foreign key to the Transactions table, and formalize the relationship between the Accounts table and the Transactions table. Open `Relationships/Exercises/Bank Register.accdb` to begin.

The Accounts table will store the following information:

Account_ID	RoutingNumber	AccountNumber	AccountName
1	112500749	006400315678	Checking
2	112500749	006400267891	Savings

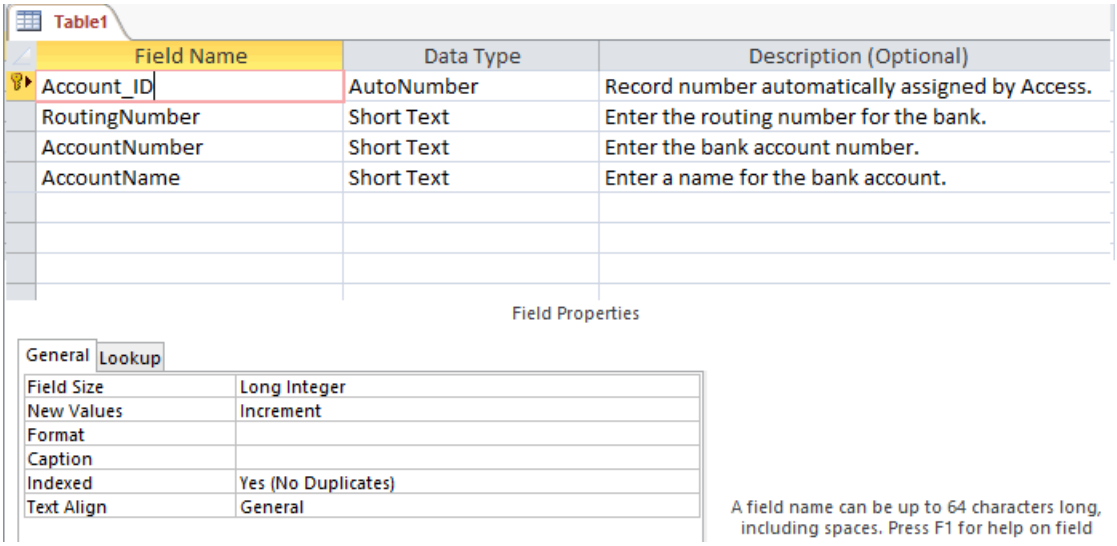
All the transactions entered thus far in the database are for the checking account.

Solution

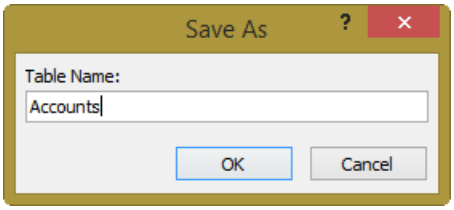
To add the table to the database:

1. Open the database.
2. On the **Create** tab in the **Tables** group, click **Table Design**. A new table opens in Design view.
3. In the **Field Name** column in the first row, type "Account_ID".
4. In the **Data Type** column, select "AutoNumber".
5. In the **Description** field, type "Record number automatically assigned by Access."
6. In the **Field Properties** area on the **General** tab, in the **Caption** field, type "Account_ID".
7. From the **Indexed** drop-down list, select "Yes (No Duplicates)".
8. In the next row of the field definition area, enter the following information for the Routing Number field:
    - **Field Name**: RoutingNumber
    - **Data Type**: Short Text
    - **Description**: Enter the routing number for the bank.
9. In the **Field Properties** area on the **General** tab, enter values for the following properties:
    - **Field Size**: 9
    - **Caption**: Routing Number
    - **Required**: Yes
    - **Indexed**: Yes (Duplicates OK)
10. In the next row of the field definition area, enter the following information for the Account Number field:
    - **Field Name**: AccountNumber
    - **Data Type**: Short Text
    - **Description**: Enter the bank account number.
11. In the **Field Properties** area on the **General** tab, enter values for the following properties:
    - **Field Size**: 12
    - **Caption**: Account Number
    - **Required**: Yes
    - **Indexed**: Yes (Duplicates OK)

12. In the next row of the field definition area, enter the following information for the Account Name field:
    - **Field Name**: AccountName
    - **Data Type**: Short Text
    - **Description**: Enter a name for the bank account.
13. In the **Field Properties** area on the **General** tab, enter values for the following properties:
    - **Field Size**: 40
    - **Caption**: Account Name
14. In the field definition area, highlight the Account_ID row.
15. On the **Table Tools: Design** tab in the **Tools** group, click **Primary Key**.



16. Click **Save**. The **Save As** dialog box opens.
17. In the **Table Name** field, type "Accounts".

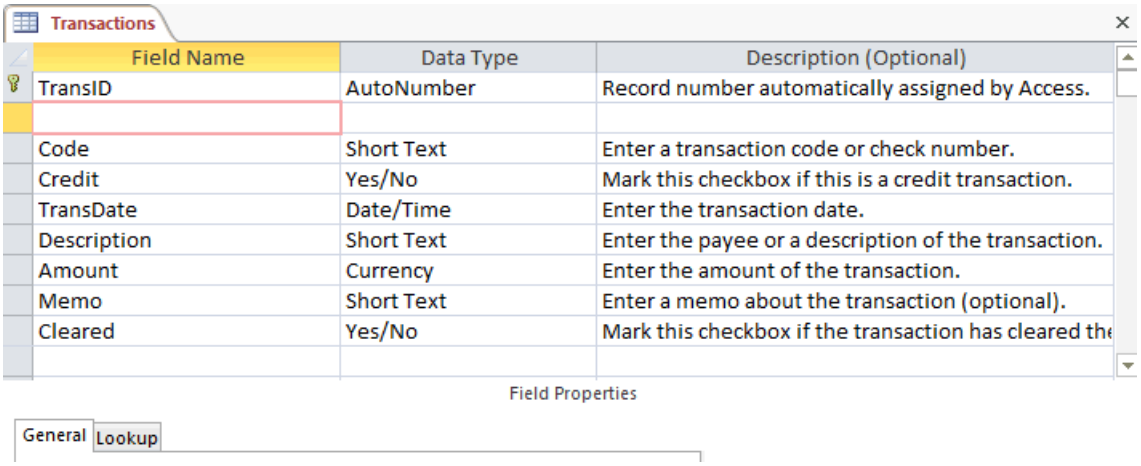


18. Click **OK**.
19. Switch to Datasheet view and add the records specified above.

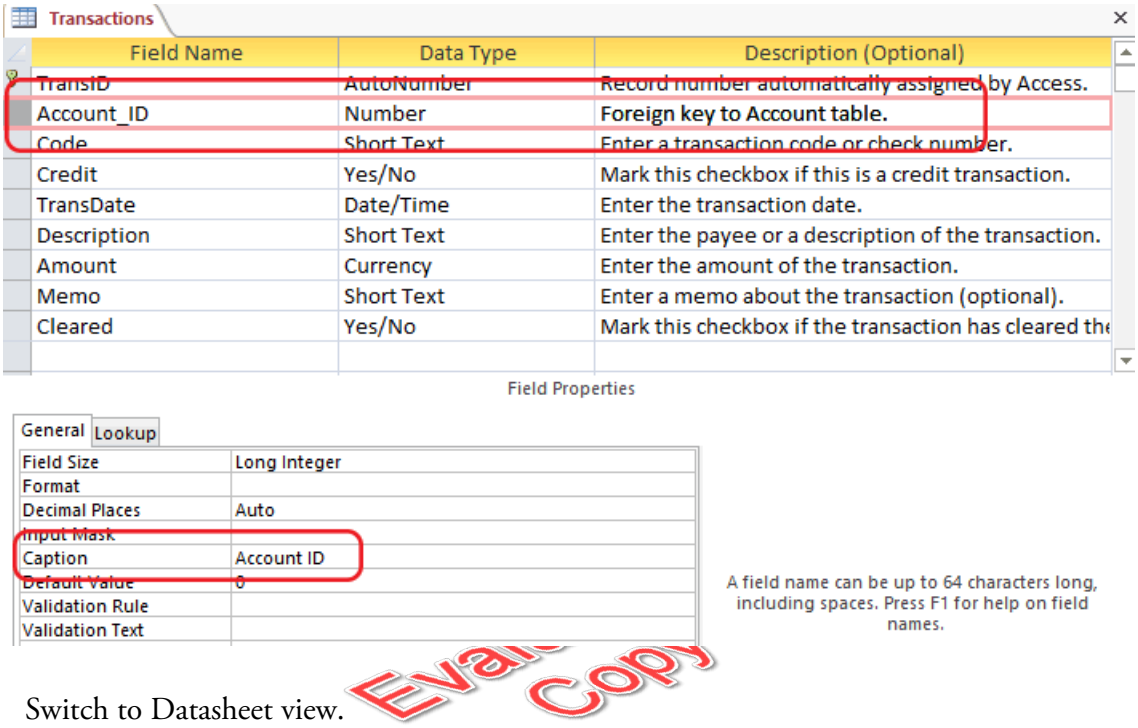
20. When you finish, close the table.

To add a foreign key field to the Transactions table:

1. Open the Transactions table in Design view.
2. In the field definition area, highlight the Code row and on the **Table Tools: Design** tab in the **Tools** group, click **Insert Rows**.

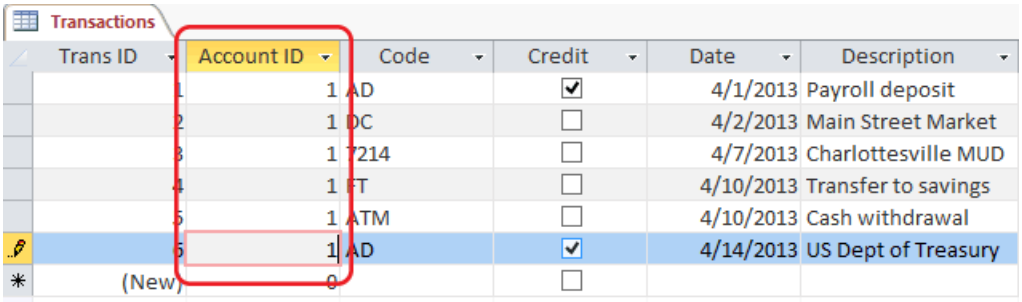


3. In the row you just inserted in the **Field Name** field, type "Account_ID".
4. In the **Data Type** field, select "Number".
5. In the **Description** field, type "Foreign key to Accounts table."
6. In the **Field Properties** area on the **General** tab, enter a value for the following property:
   - **Caption**: Account ID
7. Click **Save**.



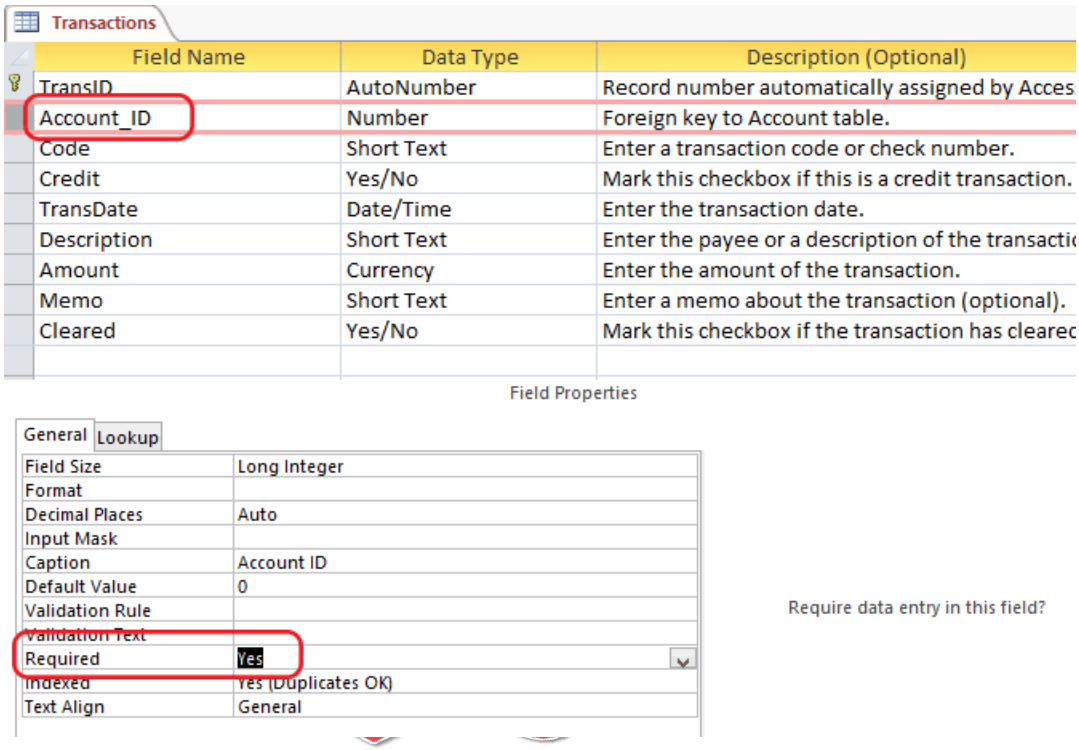
8. Switch to Datasheet view.

9. In the Account_ID column, fill in each row with "1".

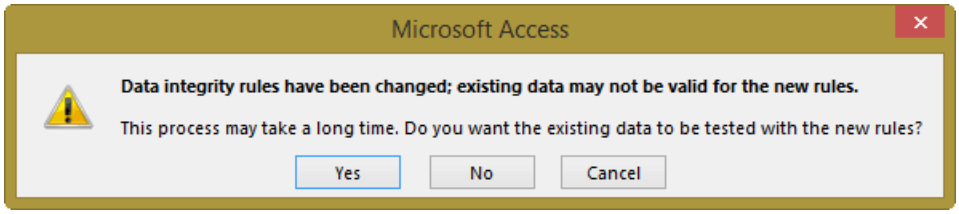


10. Switch to Design view.

11. With the Account_ID row selected in the field definition area, go to the **Field Properties** area on the **General** tab and change the **Required** value to "Yes".



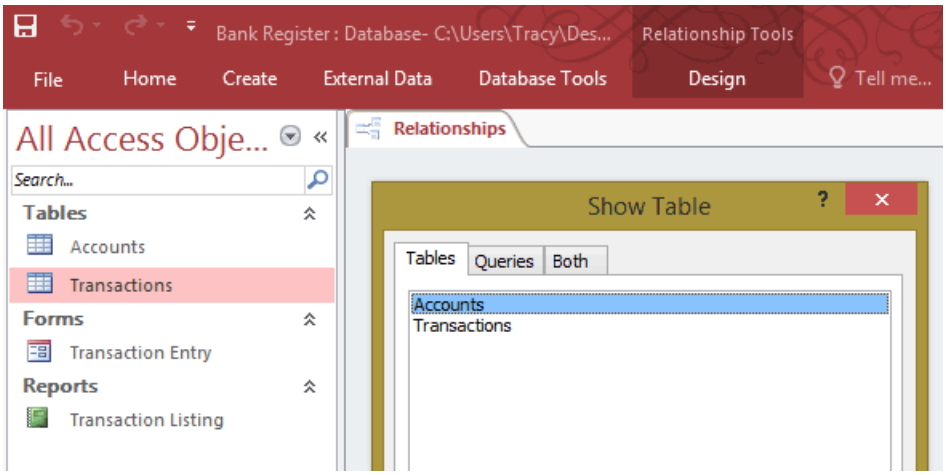
12. Click **Save**. You are prompted about data integrity issues.



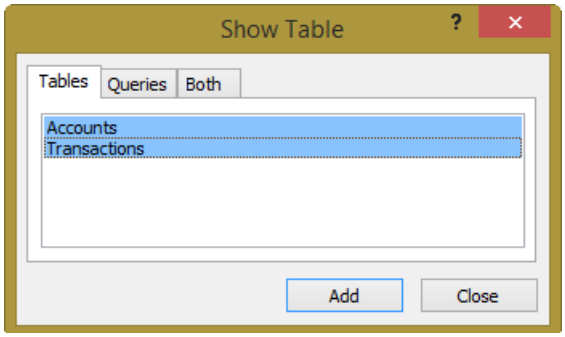
13. Click **Yes**.
14. Close the Transactions table.

To formalize the relationship between the Accounts table and the Transactions table:

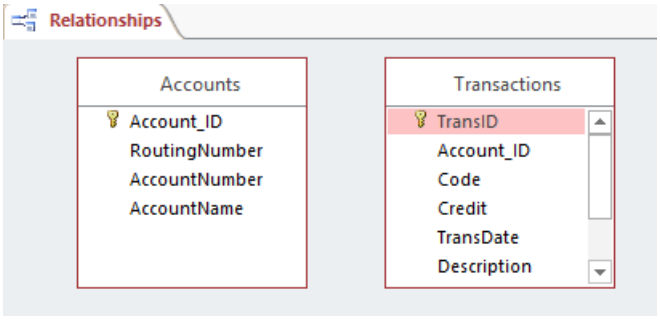
1. On the **Database Tools** tab, click **Relationships**. The **Show Table** dialog box opens.



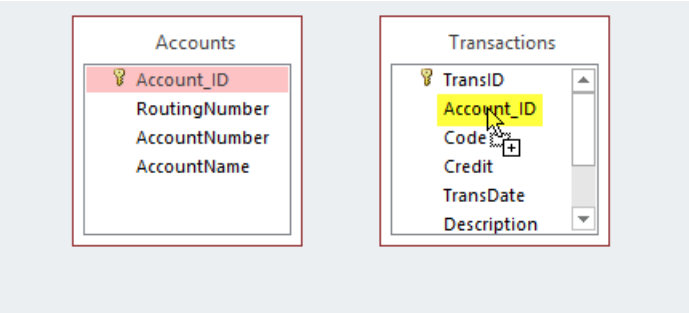
2. On the **Tables** tab, highlight the Accounts and Transactions tables, then click **Add**.



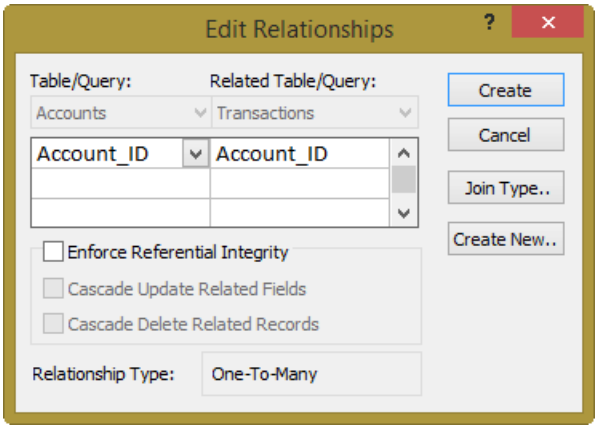
3. Click **Close**. Representations of the tables are added to the **Relationships** tab in the workspace.



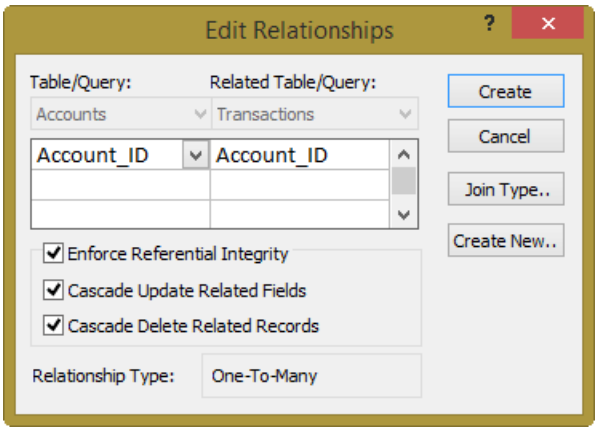
4. Highlight the **Account_ID** field in the Accounts table and drag and drop it onto the **Account_ID** field in the Transactions table.



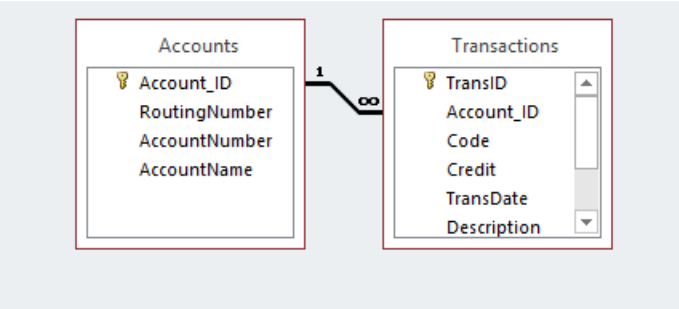
The **Edit Relationships** dialog box opens.



5. Mark the **Enforce Referential Integrity** check box. Also mark the **Cascade Update Related fields** and the **Cascade Delete Related Records** check boxes.



6. Click **Create**. A connector is added between the tables.



7. Click **Save**.

Conclusion

In this lesson, you learned:

- About referential integrity.
- How to establish relationships between tables.

LESSON 2
Queries

Topics Covered

☑ More on Query Design view.

☑ Select and parameter queries.

☑ Logical operators.

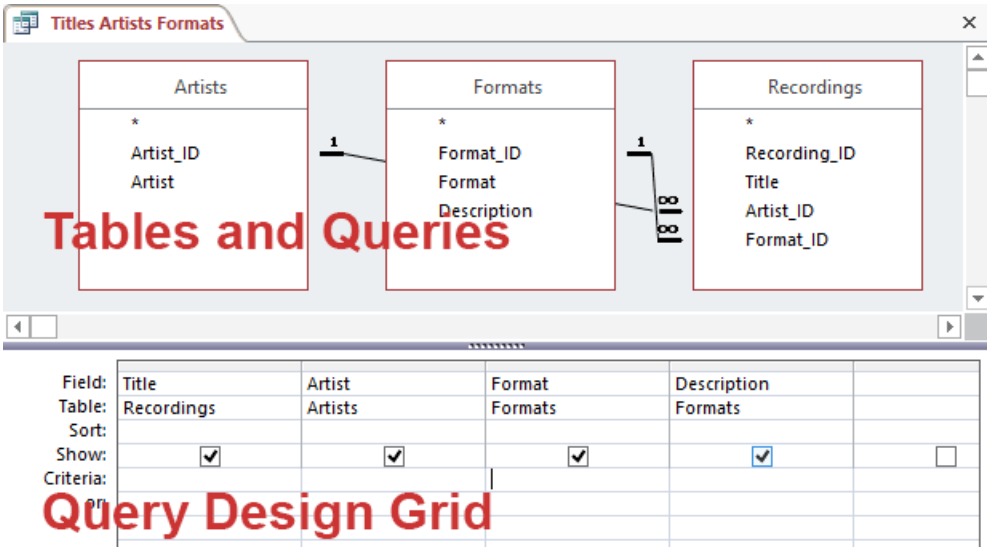
☑ Action queries.

Introduction

Recall that queries are the means to describe the data that you want Access to return or to act on. Queries help us manage data through viewing, adding, updating, and deleting. Queries can also be used to perform calculations on data, to summarize data, and to automate common tasks.

2.1. Query Design View

Before we examine the types of queries, let's take a closer look at the query design interface. Open `Queries/Demos/Demo - My Music Collection - sample.accdb` to begin. We are using **Titles Artists Formats** Query.



The Query Design view contains two main sections. The top of the view contains the tables and queries that you add as data sources for the query. Notice that if we previously formalized the relationships among the tables, the relationships are indicated here too. The bottom section is the query design grid where you add fields to the query and specify how to select and sort the query results.

Tables in Queries

When we refer to "tables" in the context of queries, we are referring to the items added to the top of the Query Design view. While depicted two different ways, both the familiar row and column layout and this more compact list of fields represent the same objects.

To add fields to the query design grid, do one of the following:

- Locate the field you want to add and double-click it.
- Drag and drop the field onto the query design grid.
- Highlight the field and press **Enter**.

The query design grid has five main rows:

Field - This row shows the names of the fields you have added to the query.

Table - This row shows the names of the tables that contain the fields you have added to the query.

Sort - This row indicates which field(s) you are sorting on and whether the sort is "Ascending" or "Descending".

Show - This row contains a check box. If the check box is marked, the field appears in your results. If the check box is cleared, the field will not appear in your results. You might want to clear the check box if you are using a field to specify selection criteria for the query but don't need to see the field in the result set.

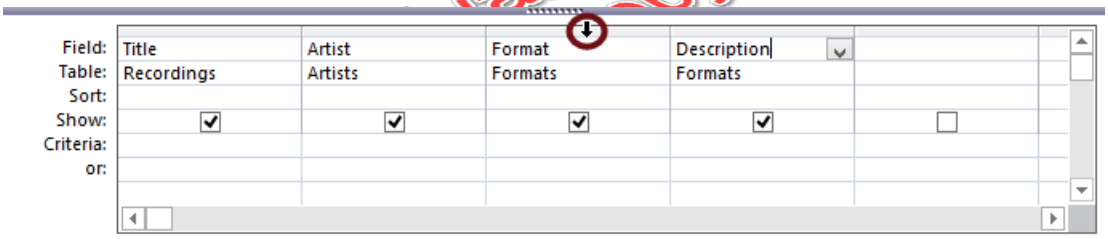
Criteria - This row is for specifying selection criteria so that you can filter the result set. All records that satisfy all your criteria will appear in the results. Criteria can be simple values or expressions. The operators and expressions that are valid depend on the data type of the field. Use the **or** row and the rows below it if you need to specify additional criteria.

Note
Depending on the type of query you are creating, other rows may appear in the grid.

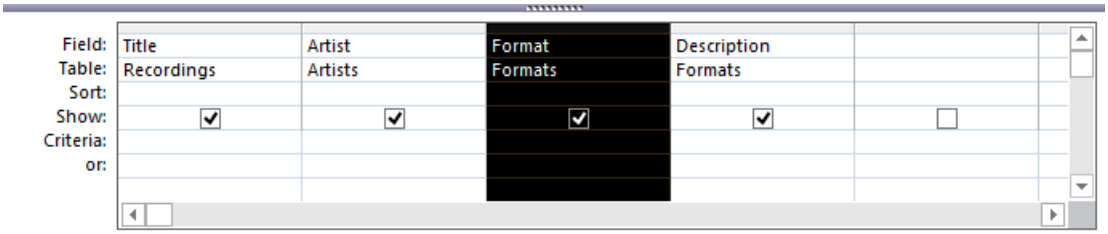
You can move fields in the query grid to rearrange them.

To move a field:

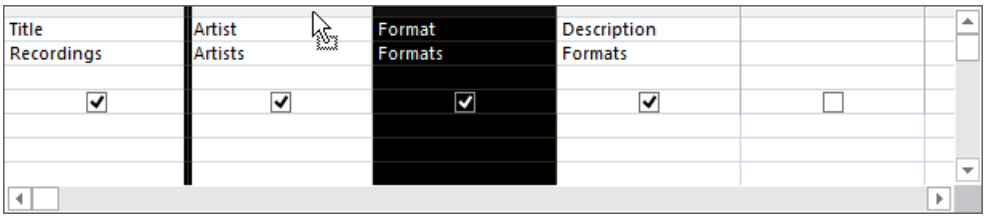
1. Hover your mouse over the field you want to move until the cursor changes to ⬇.



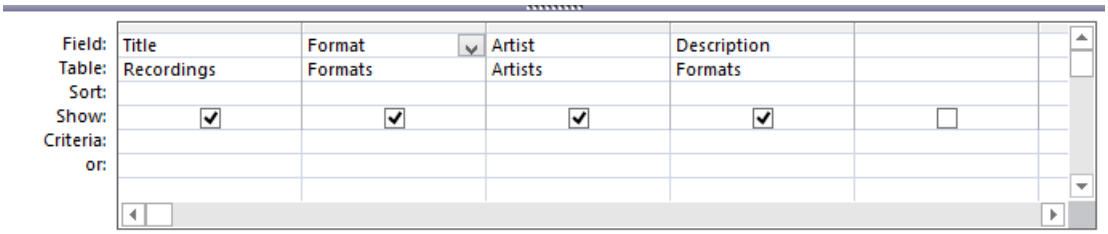
2. Click to select the field.



3. Click and drag the field to its new location. A bold separator indicates the positions where you can place the field.



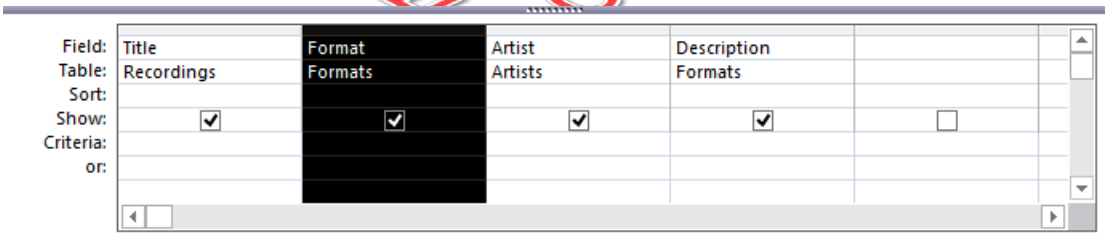
4. When you reach the desired position, release the mouse button.



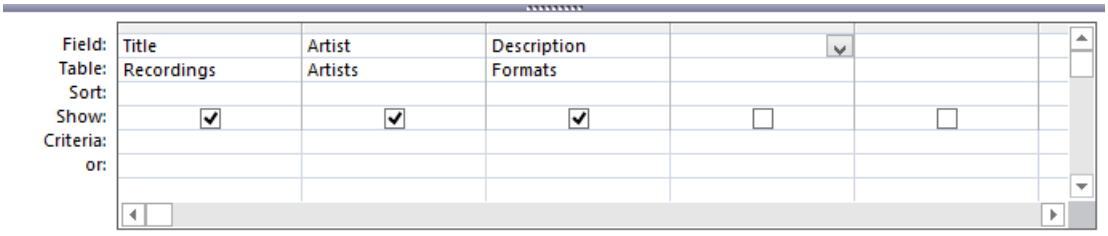
If you add a field by mistake or find that you don't need a field that you've added to the query design grid, you can delete the field.

To delete a field from the grid:

1. Select the field you want to delete.

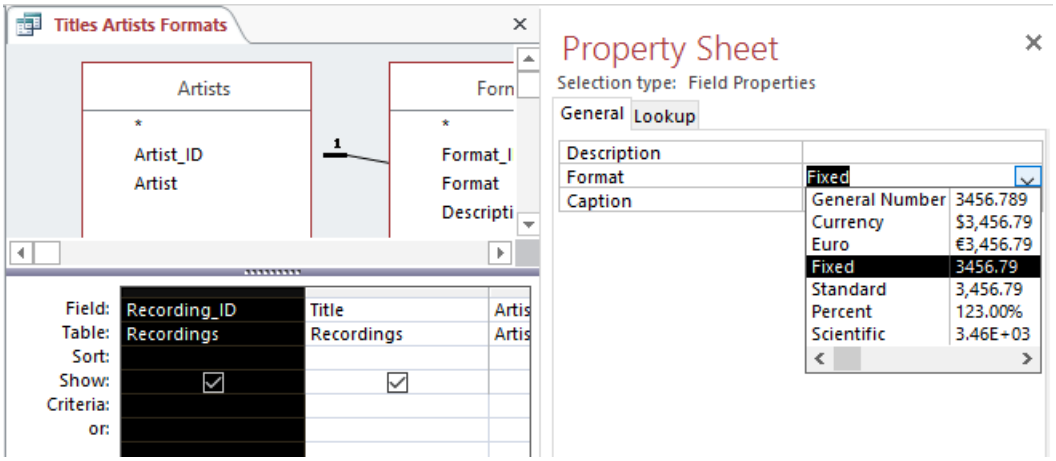


2. Press **Delete** or click **Delete Columns**.

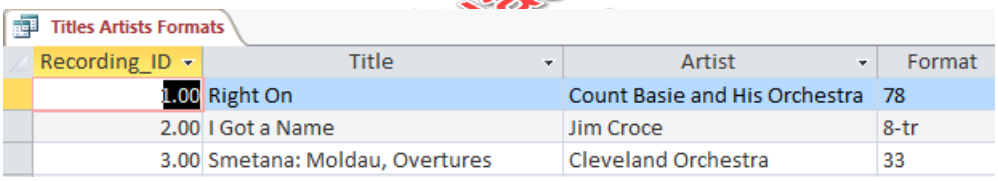


To format a field from the properties:

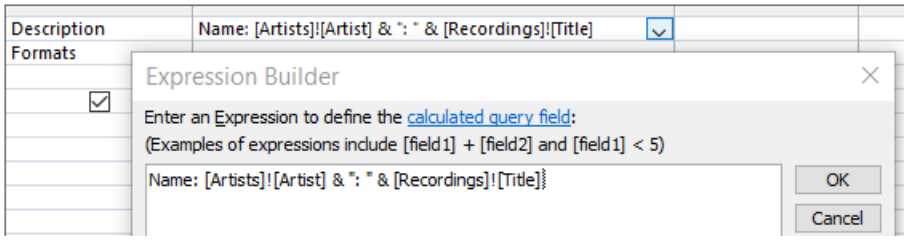
1. Select the field you want to format. **General > Format** is based on type of data. You may not have any choices available in the format area



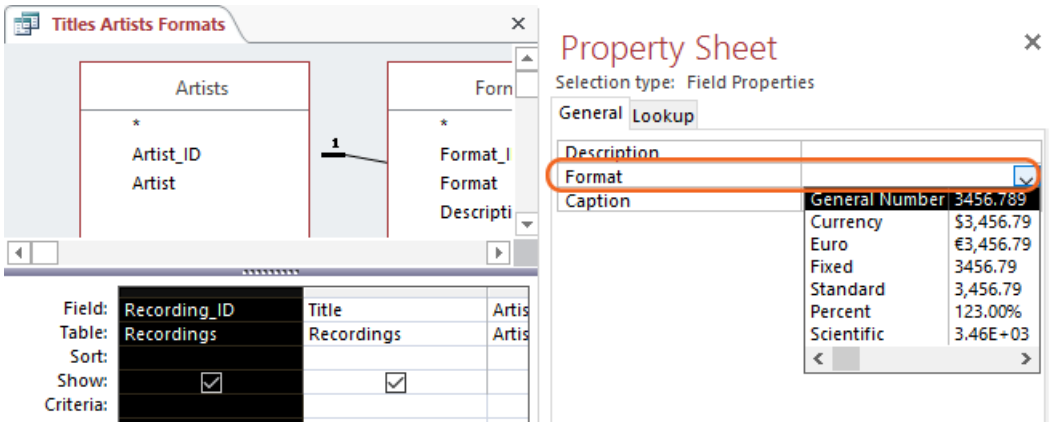
2. When the results appear, your new format is shown.



Calculated fields may be typed into the Field area. Make sure to use the proper syntax **NAME OF NEW FIELD: formula.** See example below:



Formatting in the Properties Sheet will be helpful when the data is stored one way, and yet, you need to show it with a different number format.



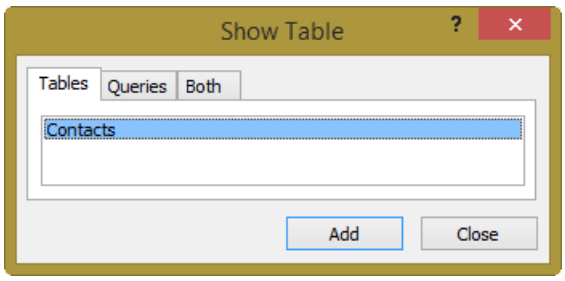
2.2. Review of Select Queries

At the heart of every kind of query is a select query.

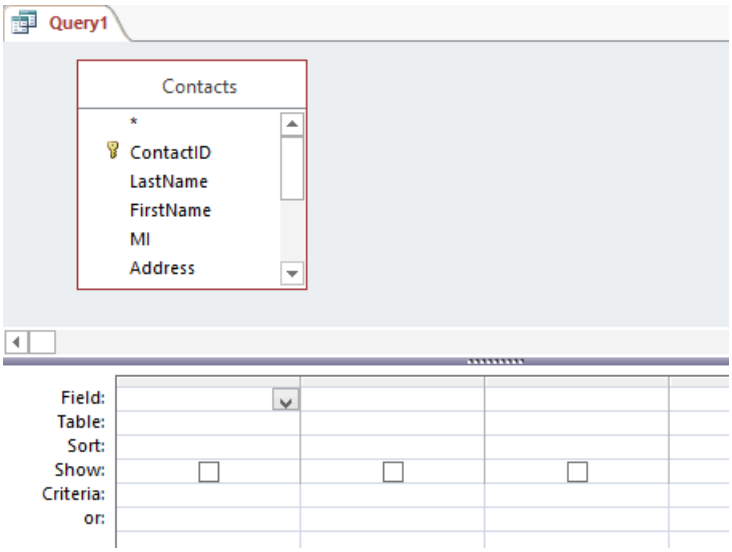
Select queries can return a subset of fields from a single table or can aggregate data from multiple tables.

To create a simple select query showing data from a single table: Open `Queries/Demos/My New Database - Start.accdb` to begin.

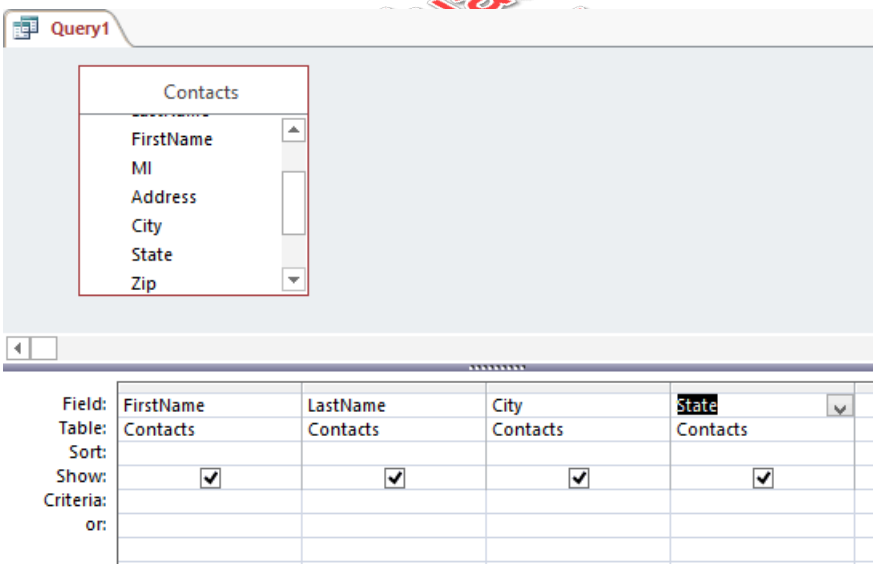
1. Open the database.
2. On the **Create** tab in the **Queries** group, click **Query Design**. The **Show Table** dialog box opens.
3. Highlight the table to perform the query on and click **Add**.



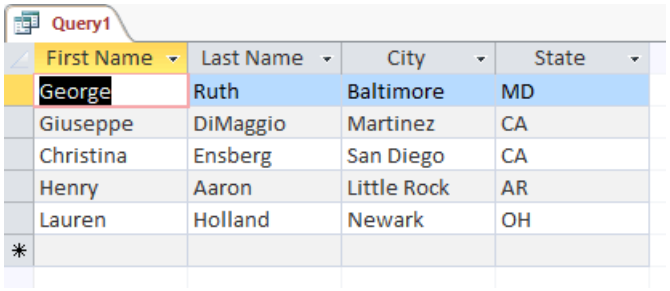
4. Click **Close**.



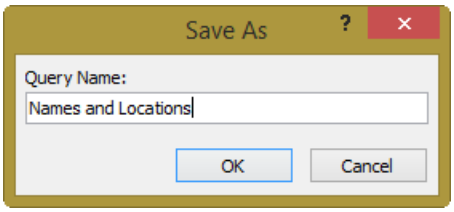
5. In the table, double-click the field names you want to add to the query grid.



6. On the **Query Tools: Design** tab in the **Results** group, click **Run**. The results display in a datasheet.

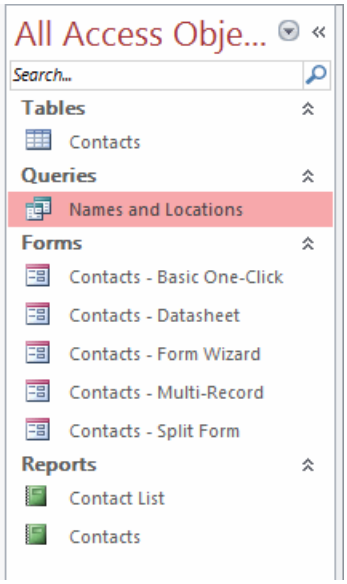


7. Click **Save**.
8. In the **Save As** dialog box, type a name for the query and click **OK**.

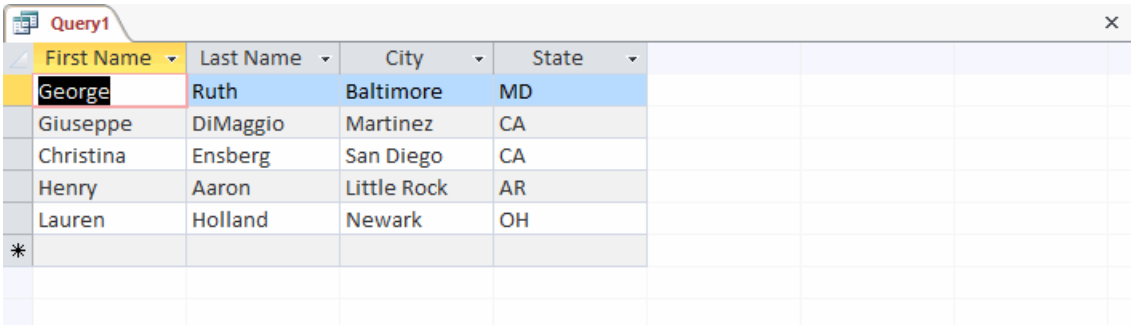


To run a query after you've saved it:

1. Locate the name of the query in the **Navigation** pane.

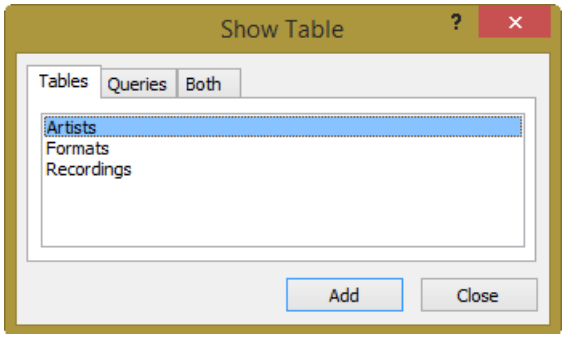


2. Double-click the query name.

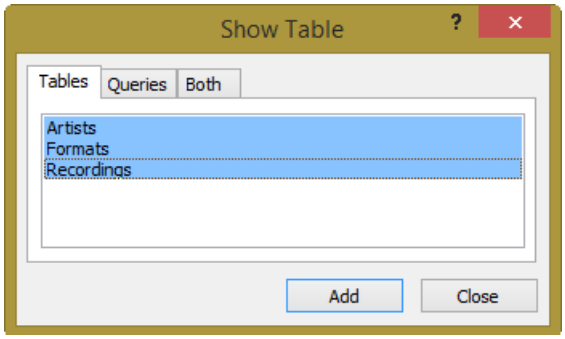


To write a select query to pull together data from multiple tables: Open `Queries/Demos/Demo - My Music Collection - Start.accdb` to begin.

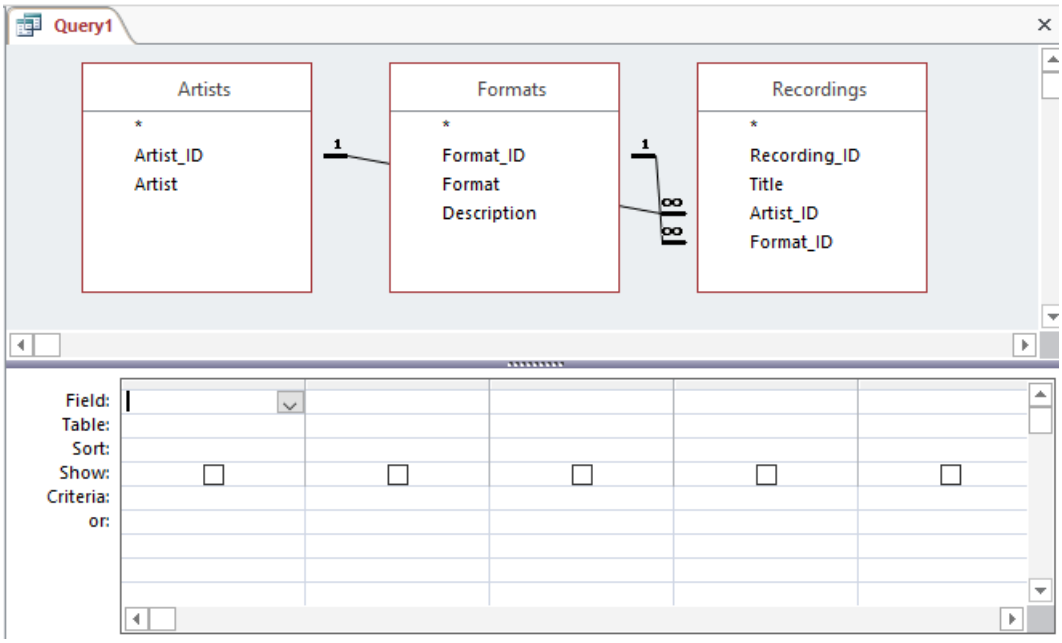
1. Open the database.
2. On the **Create** tab in the **Queries** group, click **Query Design**. The **Show Table** dialog box opens.



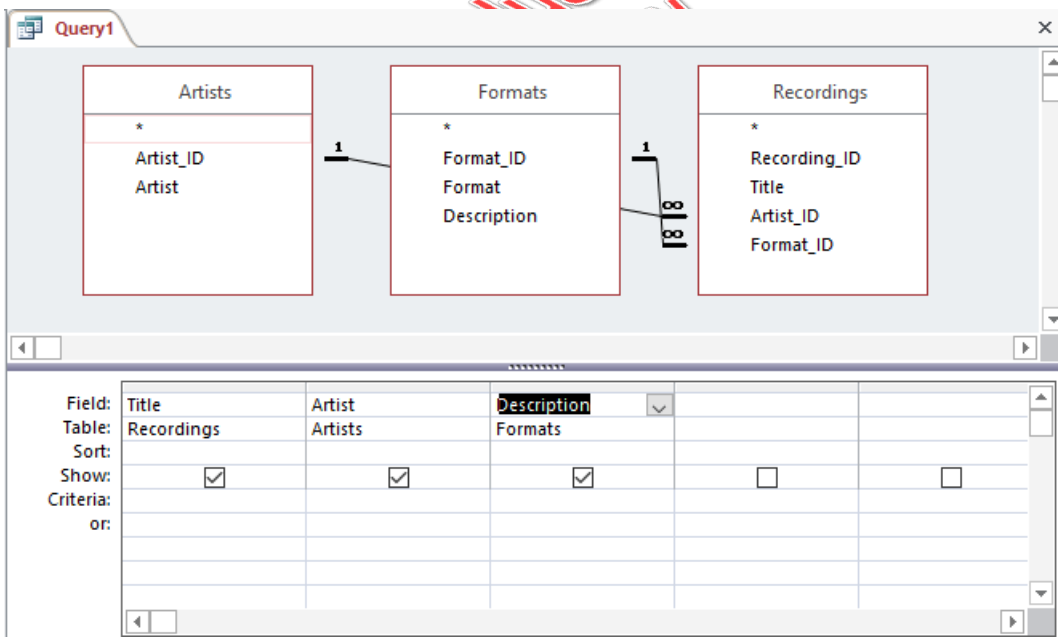
3. Highlight the tables to add to the query and click **Add**.



4. Click **Close**.



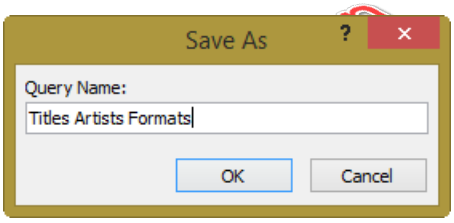
5. In the tables, double-click the field names you want to add to the query grid.



6. On the **Query Tools: Design** tab in the **Results** group, click **Run**. The results display in a datasheet.

Title	Artist	Description
Skyfall	Adele	MP3 file
Right On	Count Basie and His Orchestra	78 RPM vinyl record
I Got a Name	Jim Croce	8-track tape
Smetana: Moldau, Overtures	Cleveland Orchestra	33 1/3 RPM vinyl record
A Hard Day's Night	Beatles	33 1/3 RPM vinyl record
The White Album	Beatles	Compact disc
I Remember Yesterday	Donna Summer	Cassette tape
Rachmaninov Piano Concerto 1 & 3	Count Basie and His Orchestra	Compact disc
Just a Dream	Carrie Underwood	MP3 file
Music of the Night	Alfie Boe	MP3 file
King of Swing!	Count Basie and His Orchestra	Compact disc
Pirates of Penzance	D'Oyly Carte Opera Company	33 1/3 RPM vinyl record

7. Click **Save**.
8. In the **Save As** dialog box, type a name for the query and click **OK**.

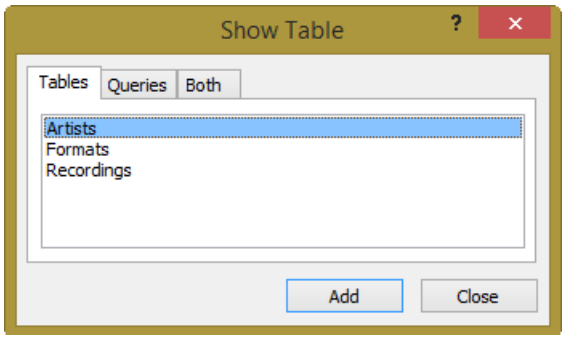


2.3. Review of Select Queries with Criteria

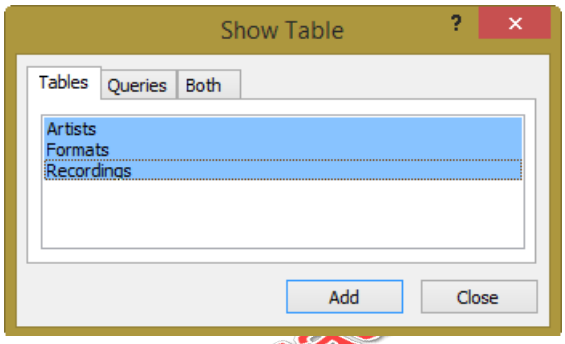
You can select very precise result sets by applying selection criteria to a select query. Selection criteria let you include or exclude data based on the requirements you specify.

To create a select query with selection criteria: Open `Queries/Demos/Demo - My Music Collection - Simple Select from Multiple Tables.accdb` to begin.

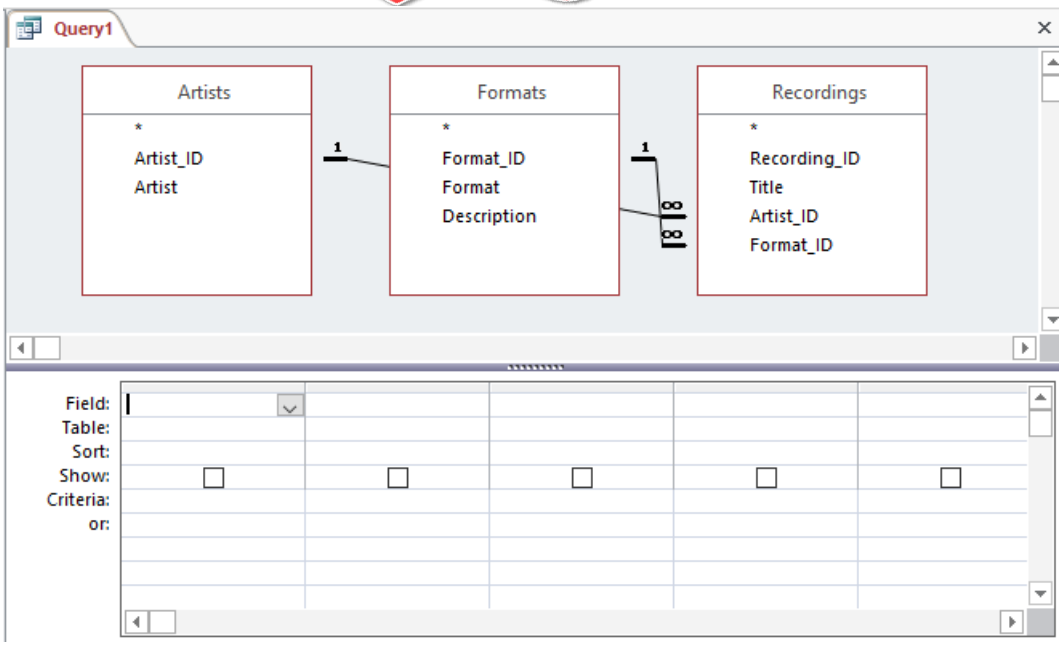
1. Open the database.
2. On the **Create** tab in the **Queries** group, click **Query Design**. The **Show Table** dialog box opens.



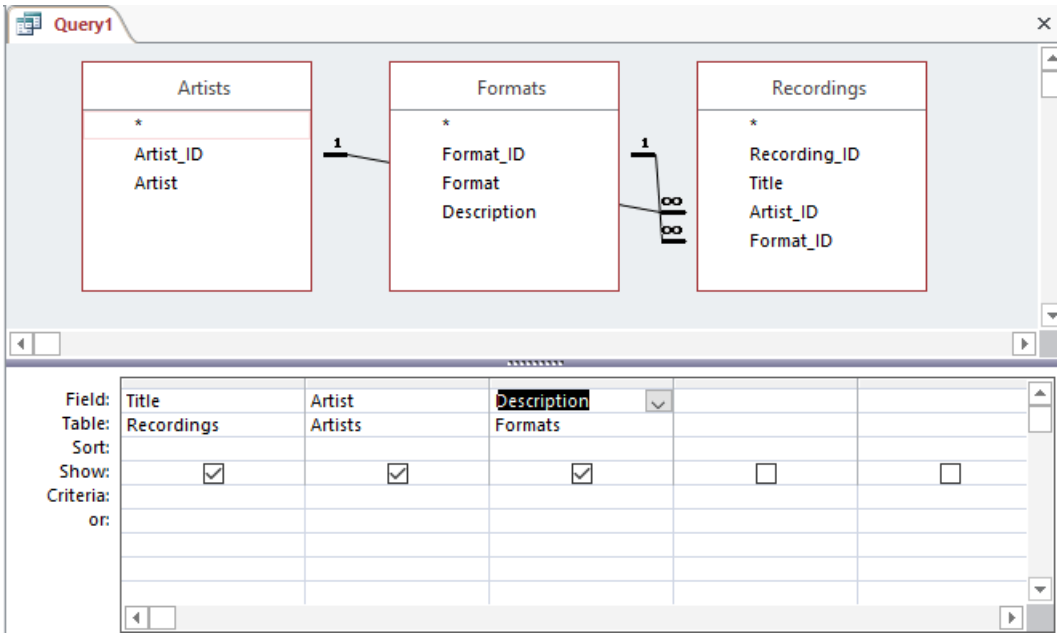
3. Highlight the tables to add to the query and click **Add**.



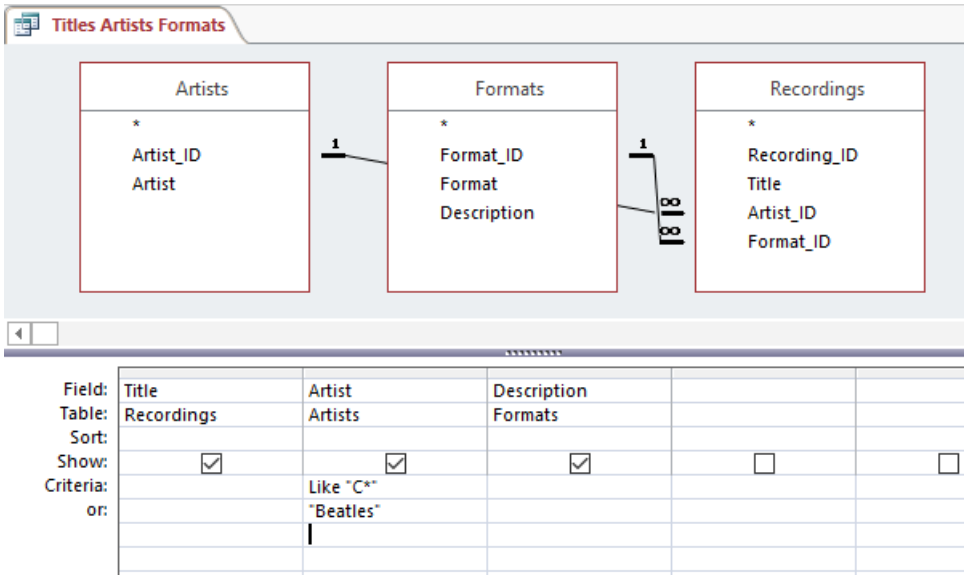
4. Click **Close**.



5. In the tables, double-click the field names you want to add to the query design grid.



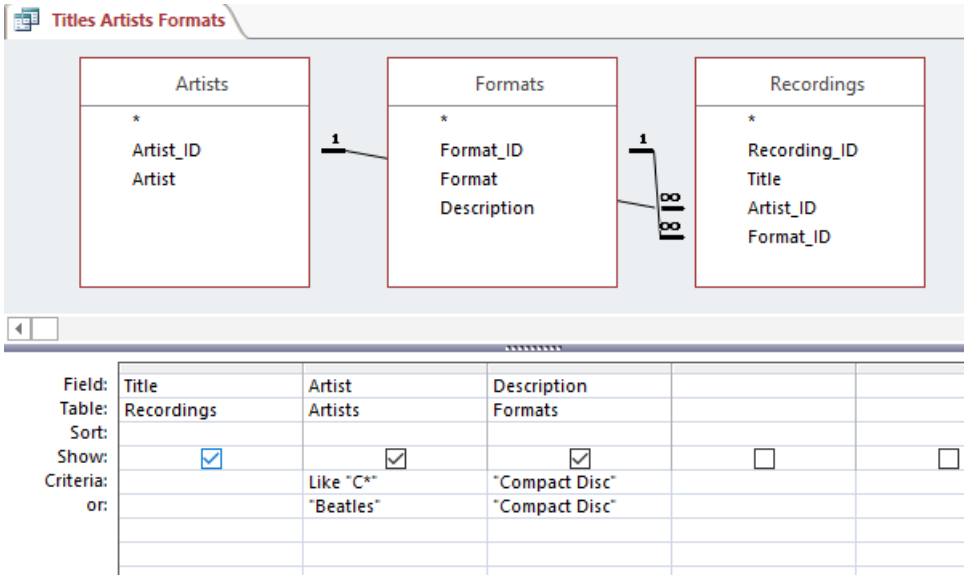
6. In a column for a field you want to limit results by, enter a value or expression in the **Criteria** row. To enter more criteria for a single field, use the **or** rows below the **Criteria** row. For examples of acceptable criteria, search Access help for "examples of query criteria" and see the section on logical operators that follows this section.



Result Set

The result set will include records that satisfy at least one of the criteria specified for a field. In our example, the result set will include records where the artist name starts with "C" OR where the artist name is "Beatles".

7. Enter criteria for other fields as desired.



Result Set

The result set will include only the records that satisfy all the columns. In our example, the result set will include records where the artist name starts with "C" AND the format is "Compact disc" OR records where the artist name is "Beatles" AND the format is "Compact disc".

8. On the **Query Tools: Design** tab in the **Results** group, click **Run**. The results display in a datasheet.

Title	Artist	Description
The White Album	Beatles	Compact disc
Rachmaninov Piano Concerto 1 & 3	Cleveland Orchestra	Compact disc
King of Swing!	Count Basie and His Orchestra	Compact disc

9. Click **Save**.
10. In the **Save As** dialog box, type a name for the query and click **OK**.

2.4. Logical Operators

When specifying selection criteria, it's not always convenient (or possible) to list all the acceptable criteria values. Usually it's better to write logical expressions to describe the criteria. This is where logical operators come in. Logical operators describe how we want our criteria evaluated. In conjunction with operators, we can use wildcard characters, symbols such as asterisk (*) that substitute for other characters or strings of characters.

The following table lists common logical operators with examples and explains their use.

Operator	Example	Returns
Like	Like C*	Items that start with "C".
	Like *C	Items that end with "C".
	Like *C*	Items that contain "C".
Not Like	Not Like C*	All items except those that start with "C".
	Not Like *C	All items except those that end with "C".
	Not Like *C*	All items except those that contain "C".
Is Null	Is Null	Items that are blank.
Is Not Null	Is Not Null	All items that are not blank.
In	In (Arizona, New Mexico, Texas, Oklahoma)	Items that match one of the values in the list.
Not In	Not In (Arizona, New Mexico, Texas, Oklahoma)	Items that don't match one of the values in the list.
Between and	Between 200 and 400	Items that fall between 200 and 400.
Not Between and	Not Between 200 and 400	All items that don't fall between 200 and 400.
<	< 200	Items that are less than 200.
<=	<= 200	Items that are less than or equal to 200.
>	> 400	Items that are greater than 400.
>=	>= 400	Items that are greater than or equal to 400.

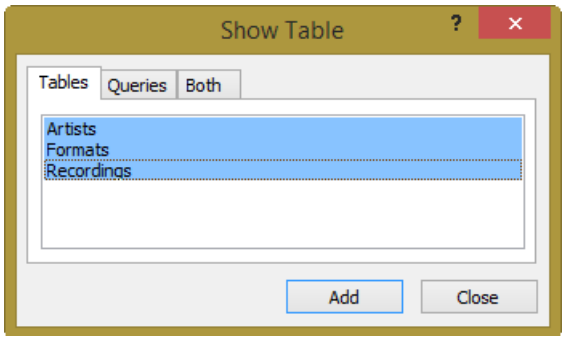
You can create very specific selection criteria by combining logical expressions.

2.5. Parameter Queries

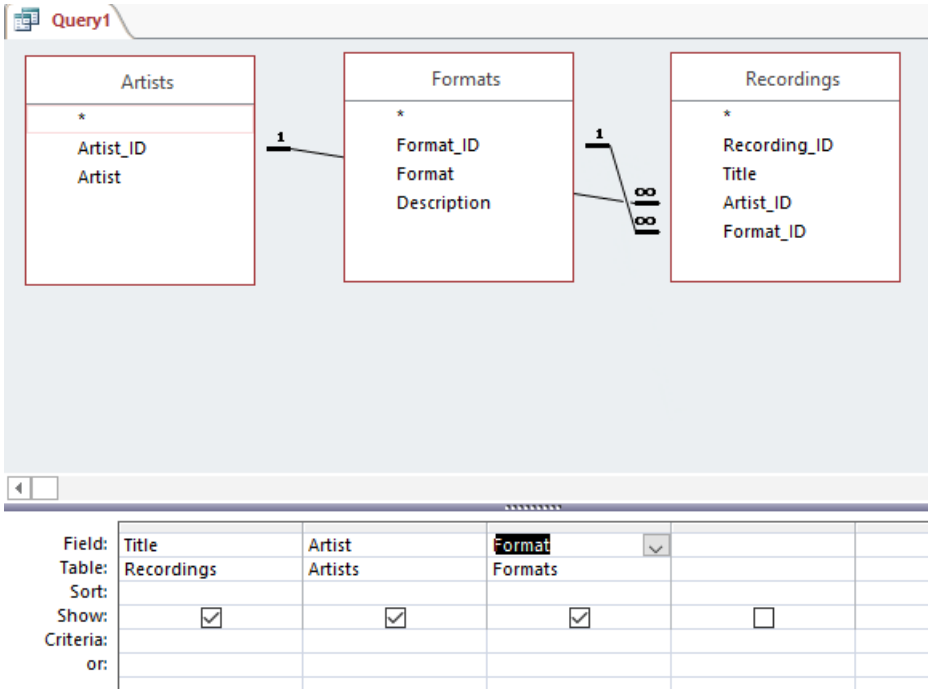
Suppose we want to query the recordings database by format. So, for instance, we might want to know which recordings are MP3s or which recordings are 33s. We can accomplish this using a parameter query. A parameter query returns the same type of information each time, but prompts us for a particular value each time so that it knows exactly which records to return.

To create a parameter query: Open `Queries/Demos/Demo - My Music Collection - Select Query with Criteria.accdb` to begin.

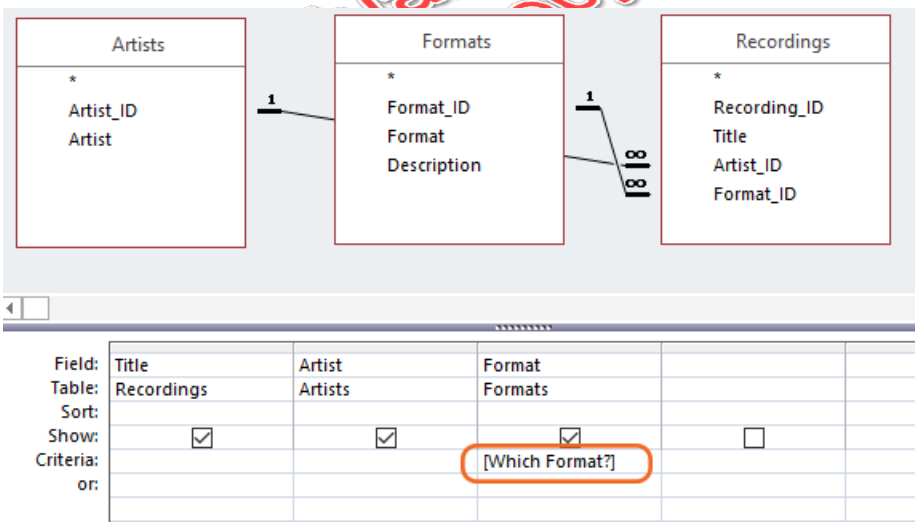
1. Open the database.
2. On the **Create** tab in the **Queries** group, click **Query Design**. The **Show Table** dialog box opens.
3. Highlight the tables to add to the query and click **Add**.



4. Click **Close**.
5. In the tables, double-click the field names you want to add to the query grid.



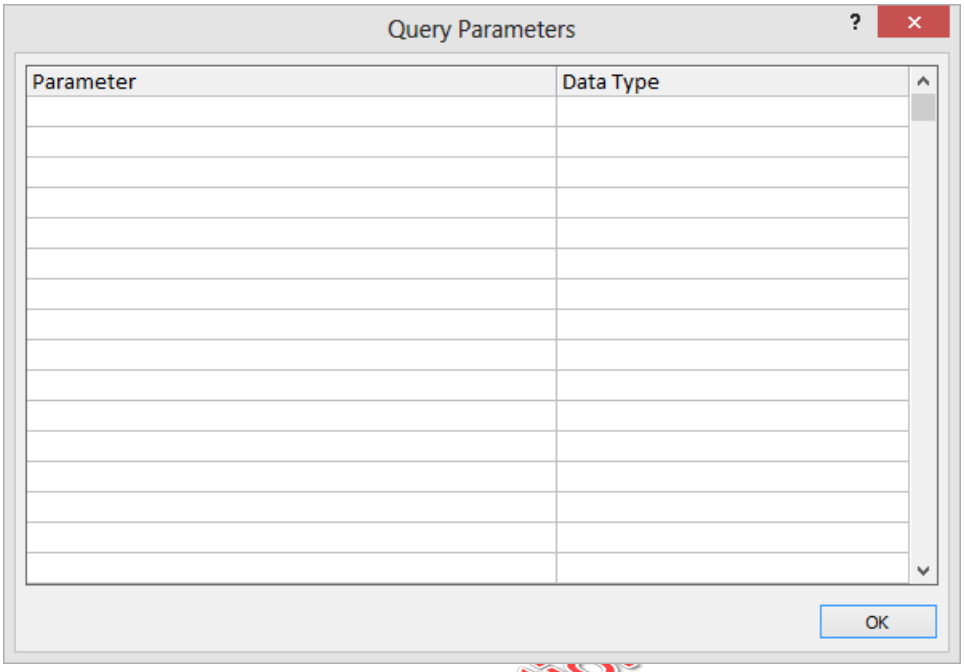
6. In the **Criteria** row of the field you want to prompt for, type prompt text enclosed in brackets ([]).



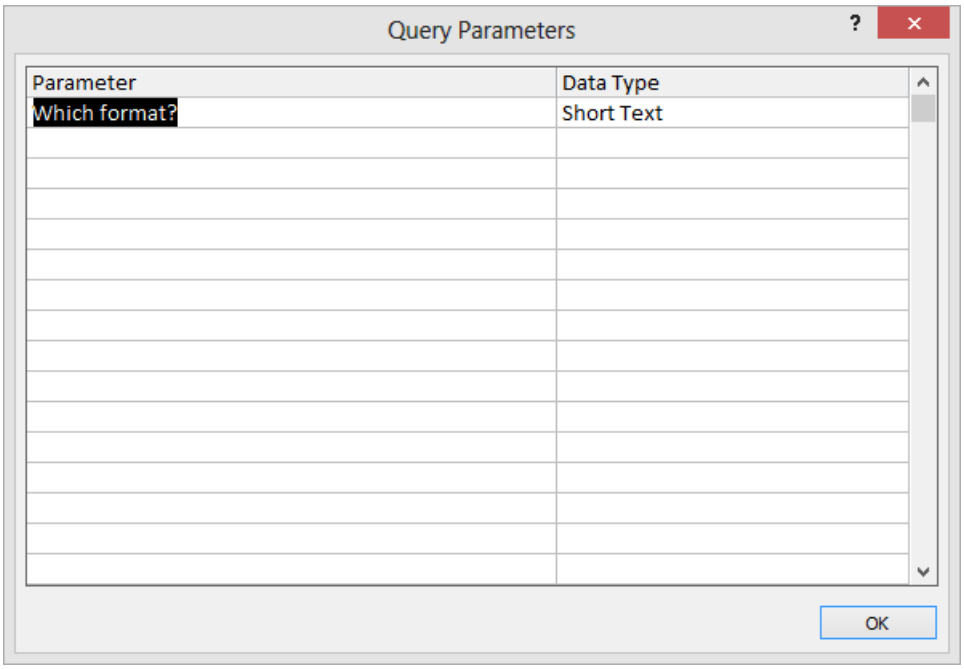
Note

Periods (.) and exclamation marks (!) cannot be used in prompting text.

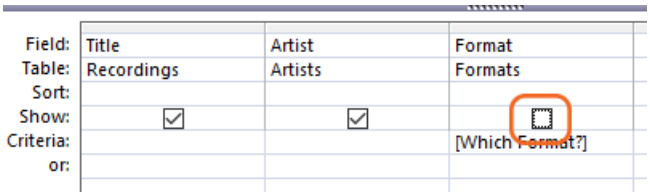
7. On the **Query Tools: Design** tab in the **Show/Hide** group, click **Parameters**. The **Query Parameters** dialog box opens.



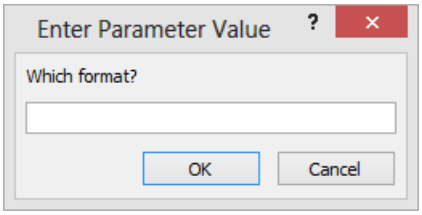
8. In the **Parameter** column, type the prompting phrase you used in the query design grid *without* the brackets.
9. From the **Data Type** drop-down list, select the type of data to accept in the prompting field.



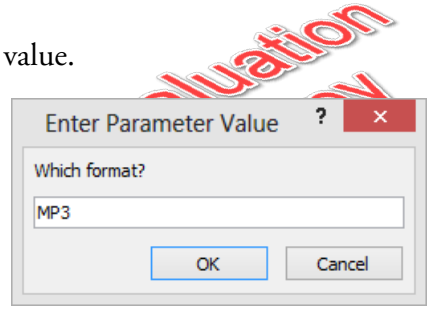
10. Click **OK**.
11. If you want to hide the prompting field from the result set, clear the corresponding **Show** check box.



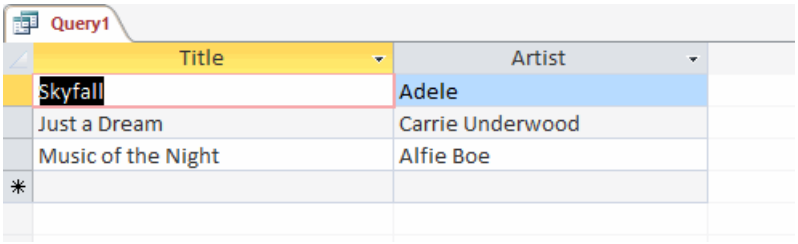
12. On the **Query Tools: Design** tab in the **Results** group, click **Run**. You are prompted to supply a parameter.



13. Enter a valid parameter value.



14. Click **OK**. The results display in a datasheet.



15. Click **Save**.
16. In the **Save As** dialog box, type a name for the query and click **OK**.

2.6. Action Queries

Select queries are useful for pulling out subsets of data from one or more tables. Action queries go a step further. Action queries let us *do* something with our data: make a new table from it, append data from one table or query to another, update the data in a table, or delete data from a table.

It is important to remember that an action query cannot be directly undone. For this reason, it's critical that you're aware of the effects of an action query before you run it. In fact, it's a good practice to preview the results of your query in Datasheet view before actually running your query to ensure that the results are what you intend. Datasheet view shows the results without committing the action. In the demonstrations that follow, we will not include the preview step, but anytime you're instructed to run a query, it's a good idea to preview it first.

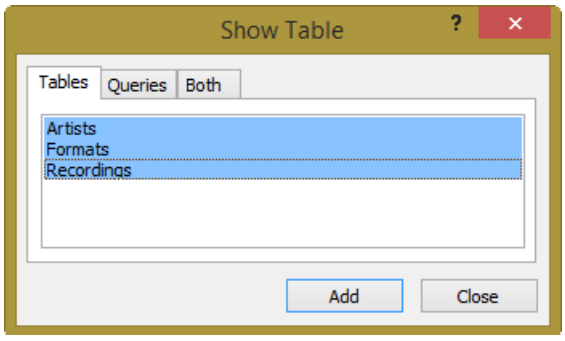
It's also important to know that action queries do not warn you if you've already run them. This is especially good to know when you're running append and update queries. This is another excellent reason for previewing in Datasheet view until you're ready to perform the query action.

❖ 2.6.1. Make Table Queries

A make table query is useful when you need to make a copy of part of your data or when you need to archive data. A make table query starts with a select query.

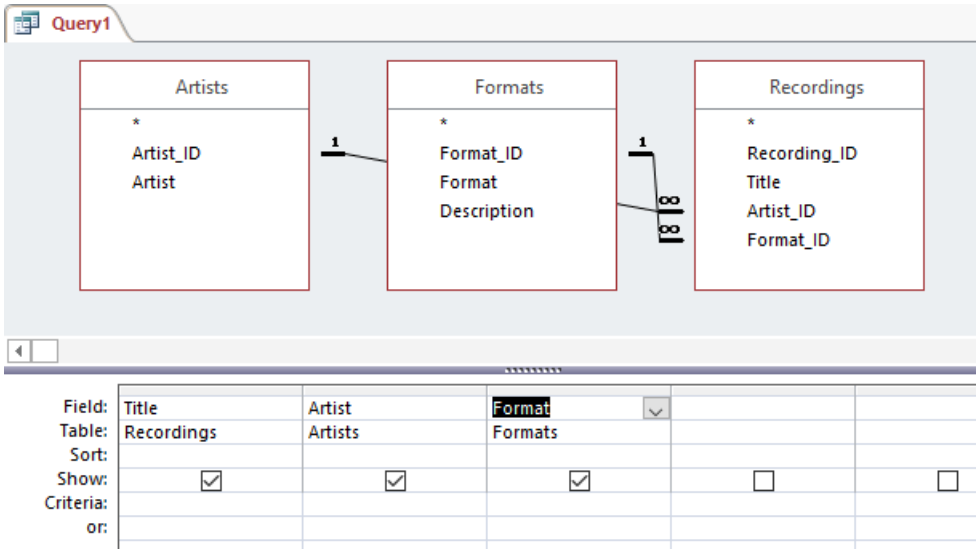
To create a make table query: Open `Queries/Demos/Demo - My Music Collection - Parameter Query.accdb` to begin.

1. Open the database.
2. On the **Create** tab in the **Queries** group, click **Query Design**. The **Show Table** dialog box opens.
3. Highlight the tables to add to the query and click **Add**.

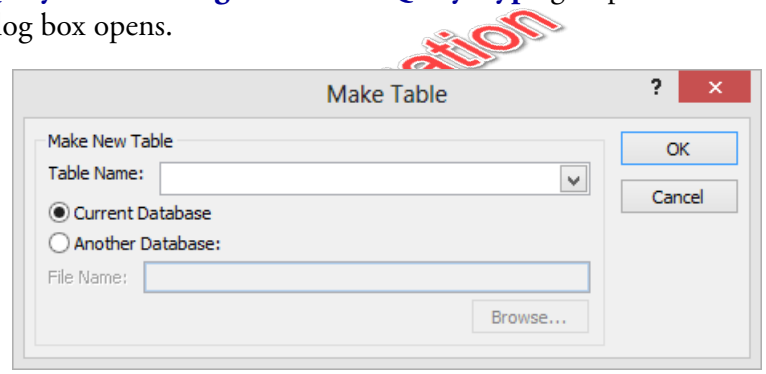


4. Click **Close**.

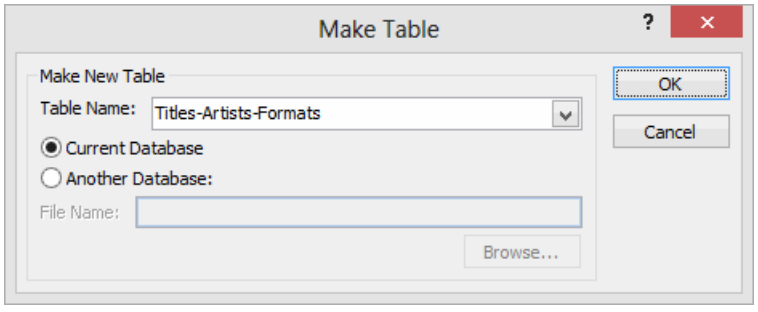
5. In the tables, double-click the field names you want to add to the query grid.



6. On the **Query Tools: Design** tab in the **Query Type** group, click **Make Table**. The **Make Table** dialog box opens.

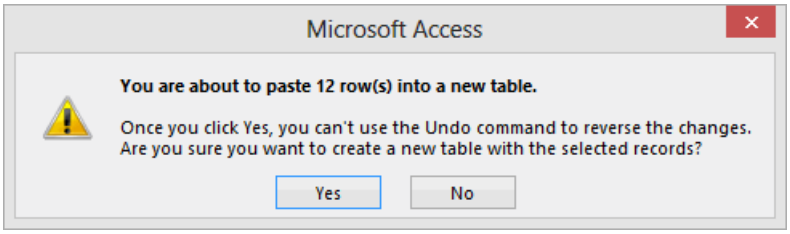


7. In the **Table Name** field, type a name for the table you are creating.

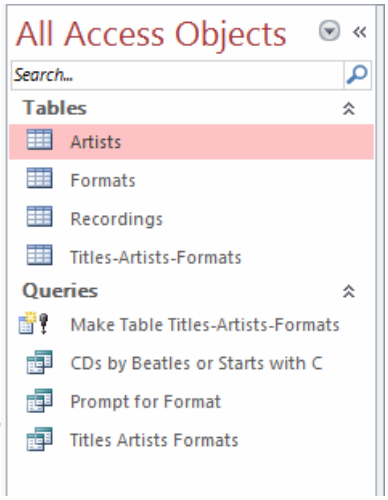


8. Click **OK**.

9. In the **Results** group, click **Run**. Access prompts you to confirm that you want to create the table.



10. Click **Yes**. The table is added to the list of tables in the **Navigation** pane.



Title	Artist	Format
Skyfall	Adele	MP3
Right On	Count Basie and His Orchestra	78
I Got a Name	Jim Croce	8-tr
Smetana: Moldau, Overtures	Cleveland Orchestra	33
A Hard Day's Night	Beatles	33
The White Album	Beatles	CD
I Remember Yesterday	Donna Summer	Cass
Rachmaninov Piano Concerto 1 & 3	Count Basie and His Orchestra	CD
Just a Dream	Carrie Underwood	MP3
Music of the Night	Alfie Boe	MP3
King of Swing!	Count Basie and His Orchestra	CD
Pirates of Penzance	D'Oyly Carte Opera Company	33

11. Click **Save**.
12. In the **Save As** dialog box, type a name for the query and click **OK**.

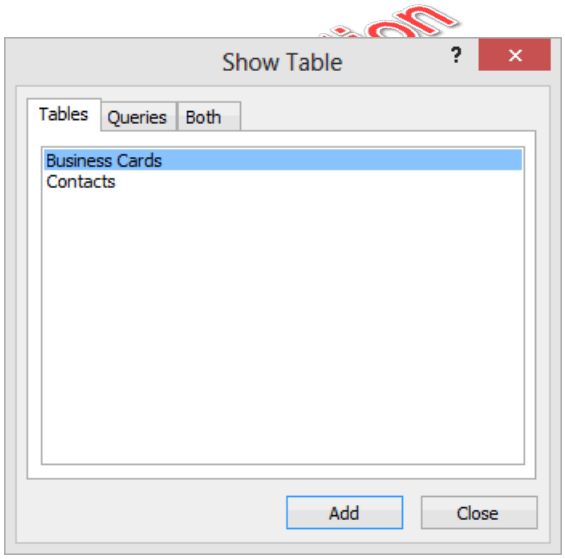
❖ 2.6.2. Append Queries

An append query is useful when you need to add records from one table to another table.

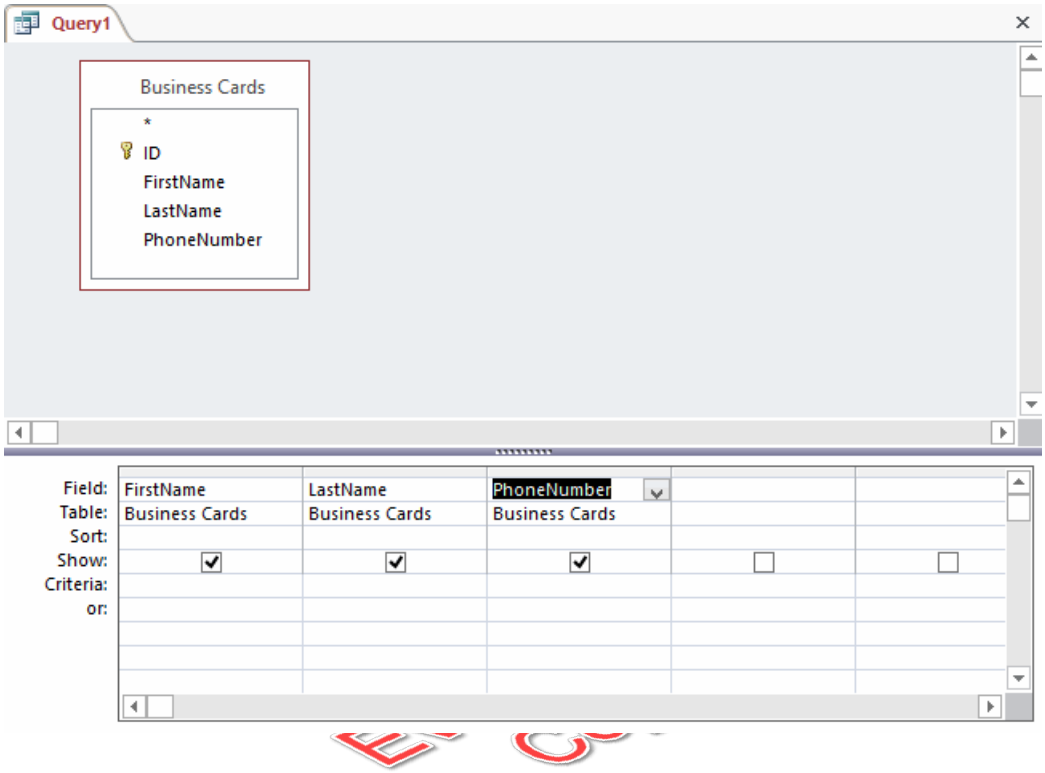
Remember that append queries, like other action queries, don't warn you when you try to run them a second time. Running an append query twice would append the same data to a table twice. To avoid the database cleanup this would necessitate, remember that you can always preview the data in Datasheet view until you are ready to actually perform the action.

To create an append query: Open `Queries/Demos/My New Database - Append Query - Start.accdb` to begin.

1. Open the database.
2. On the **Create** tab in the **Queries** group, click **Query Design**. The **Show Table** dialog box opens.



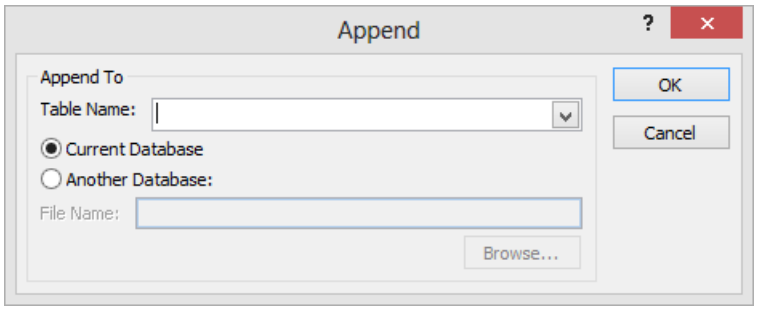
3. Highlight the table with the records you want to append to another table and click **Add**.
4. Click **Close**.
5. Double-click the fields you want to add to the query.



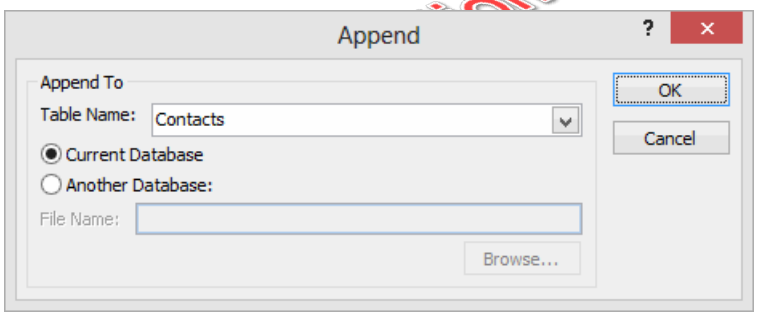
6. On the **Query Tools: Design** tab in the **Results** group, click **Run**.

FirstName	LastName	PhoneNumber
Adam	Addams	806-555-9494
Joseph	Blakeney	806-555-1314
Leah	Langston	806-555-4466

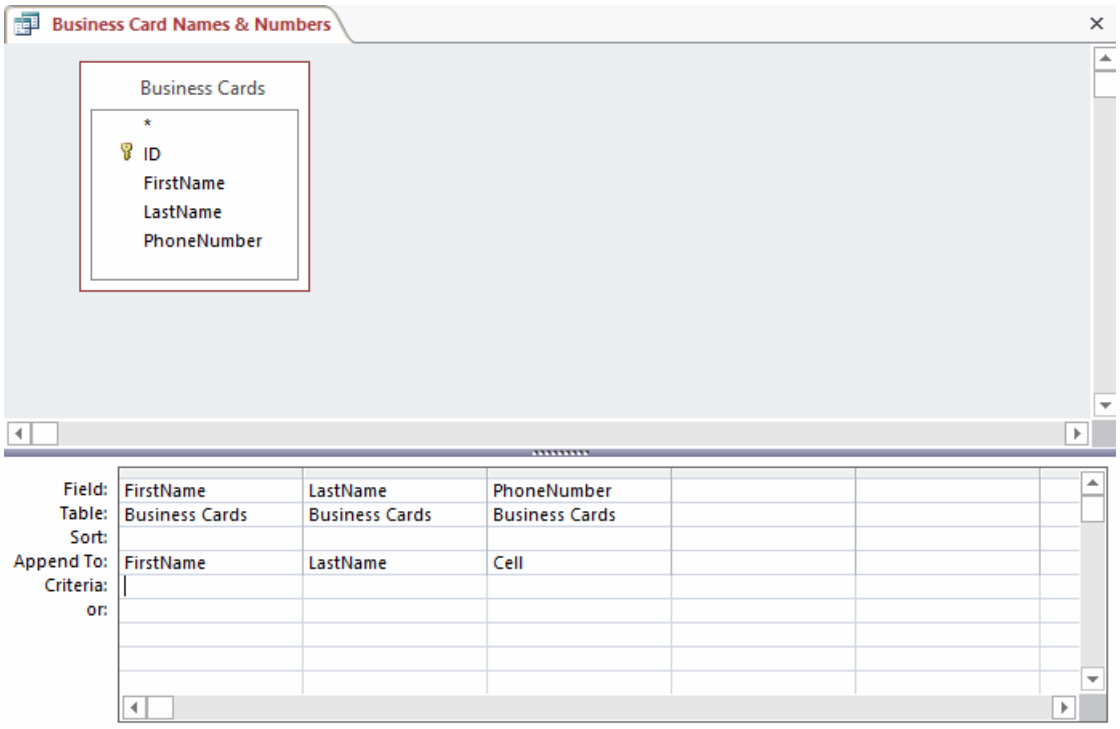
7. Inspect the results to ensure that the records returned are the records you intend to append.
8. Click **Save**.
9. In the **Save As** dialog box, type a name for the query and click **OK**.
10. Switch to Design view.
11. On the **Query Tools: Design** tab in the **Query Type** group, click **Append**. The **Append** dialog box opens.



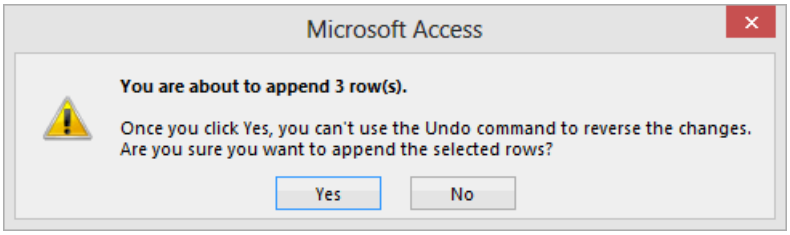
12. From the **Table Name** drop-down list, select the table to append the records to.



13. Click **OK**. You are returned to the query window in Design view. Notice that the **Show** row has been replaced with the **Append To** row.
14. In the **Append To** row for each field, select the field in the destination table that corresponds to the field in the query. Access tries to match up similarly named fields for you if it can.



15. When you finish, click **Run**. Access prompts you to confirm that you want to append the rows to the table.



Reminder

This is a good place to preview in Datasheet view until you are confident that the query will yield the results that you expect.

16. Click **Yes**. Be careful to run an append query only once. Running the query multiple times will result in the same records being appended multiple times.
17. Open the table that you appended the records to and view your results.

Contact ID	Last Name	First Name	MI	Address	City	State	Zip	Cell	Birthdate
1	Ruth	George	H	1895 26th Ave	Baltimore	MD	21212-	(410) 555-5981	2/6/19
2	DiMaggio	Giuseppe	P	1914 Clipper St	Martinez	CA	94553-	(925) 555-4197	11/25/19
3	Ensberg	Christina	A	14 Houston Pkv	San Diego	CA	92067-	(619) 555-2114	8/26/19
4	Aaron	Henry	L	44 Hammer Ln	Little Rock	AR	72207-	(501) 555-4444	5/2/19
5	Holland	Lauren	R	4545 Kaline Blv	Newark	OH	43058-	(740) 555-2013	10/9/19
6	Addams	Adam						806-555-94	
7	Blakeney	Joseph						806-555-13	
8	Langston	Leah						806-555-44	
(New)									

18. Switch back to the query and click **Save**.

Notice that the records we added do not have all the fields that the Contacts table has. As long as there are no required fields, this does not usually pose a problem.

Notice also the contents of the Cell column did not come through as we would have hoped. The Contacts table has a mask on the Cell field and a 10-character limit. In general, before we append records we should ensure the compatibility of the fields we match up.

Find Duplicates Queries

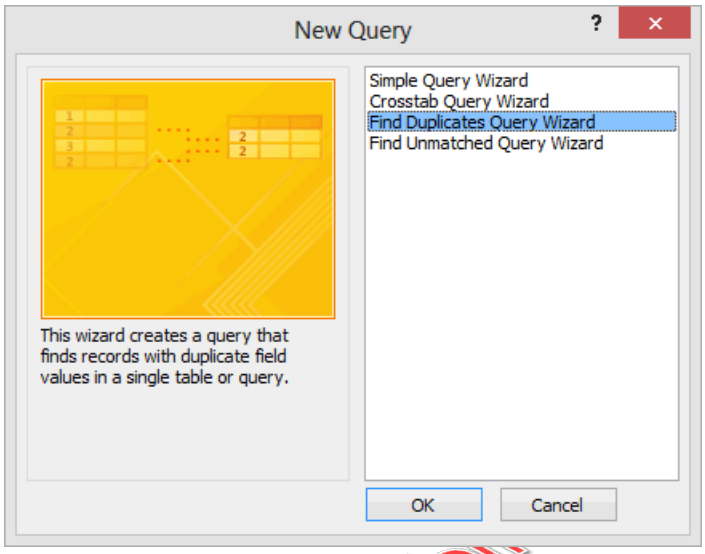
Suppose another user entered data in our database and inadvertently entered several duplicate records in the TitlesWithArtistsAndFormats table. We can use a find duplicates query to locate the extra records and clean them up.

Titles-Artists-Formats

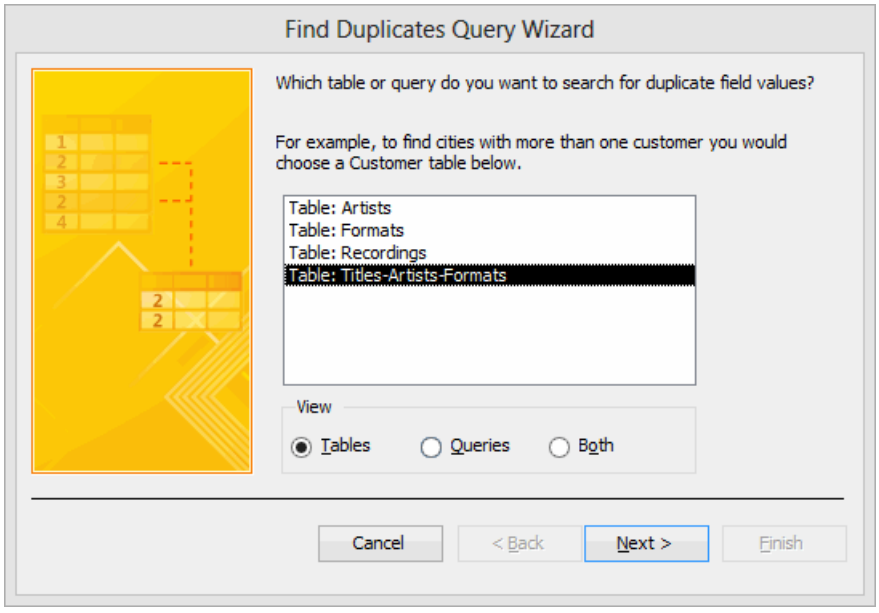
Title	Artist	Format
Right On	Count Basie and His Orchestra	78
I Got a Name	Jim Croce	8-tr
Smetana: Moldau, Overtures	Cleveland Orchestra	33
A Hard Day's Night	Beatles	33
The White Album	Beatles	CD
I Remember Yesterday	Donna Summer	Cass
Rachmaninov Piano Concerto 1 & 3	Cleveland Orchestra	CD
Just a Dream	Carrie Underwood	MP3
Music of the Night	Alfie Boe	MP3
King of Swing!	Count Basie and His Orchestra	CD
Pirates of Penzance	D'Oyly Carte Opera Company	33
Skyfall	Adele	MP3
The White Album	Beatles	CD
Just a Dream	Carrie Underwood	MP3
Skyfall	Adele	MP3

To create a find duplicates query: Open `Queries/Demos/Demo - My Music Collection - Find Duplicates Query - Start.accdb` to begin.

1. Open the database.
2. On the **Create** tab in the **Queries** group, click **Query Wizard**. The **Query Wizard** starts.
3. In the list box, select "Find Duplicates Query Wizard".

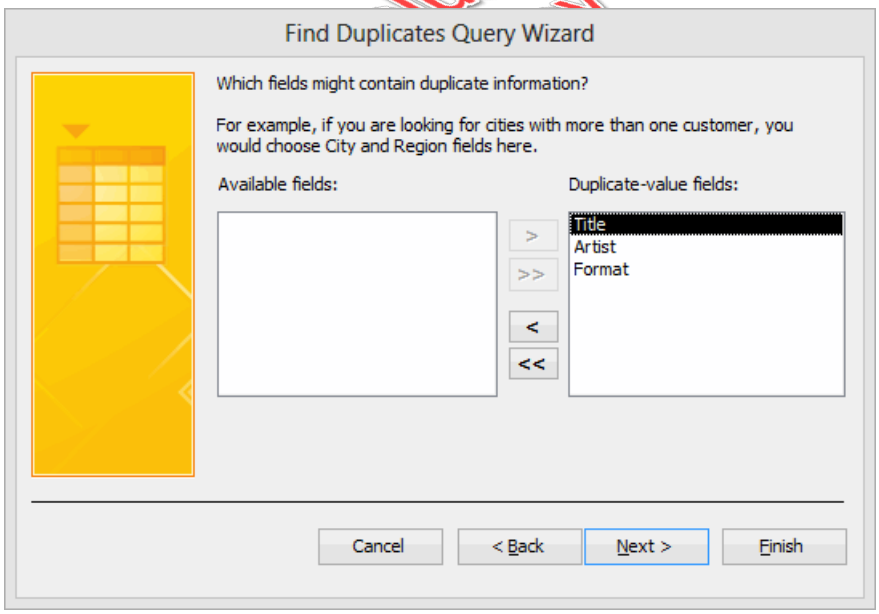


4. Click **OK**. The **Find Duplicates Query Wizard** starts.
5. In the list box, select "Table: Titles-Artists-Formats".

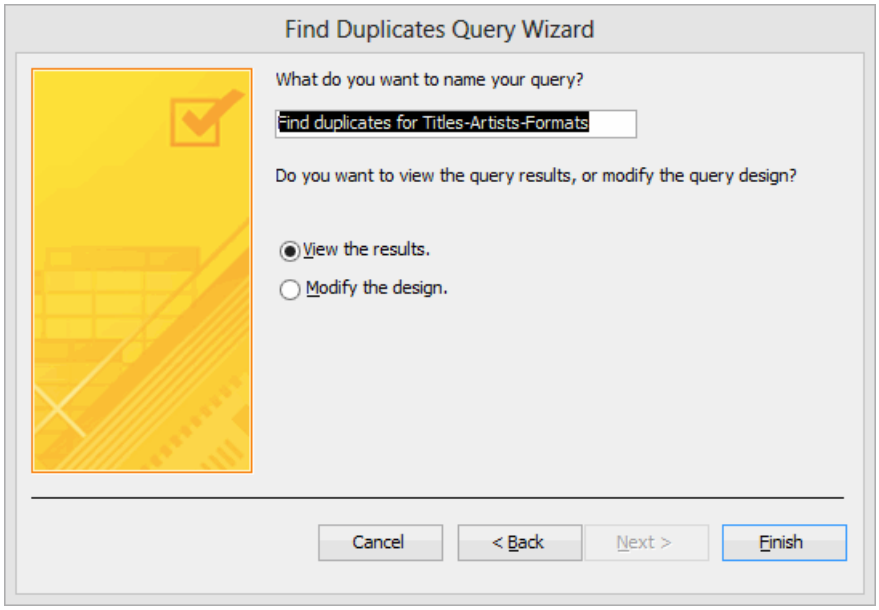


6. Click **Next >**.

7. Click **>>** to move all fields from the **Available fields** list box to the **Duplicate-value fields** list box.



8. Click **Next >**.
9. Name the query.



10. Click **Finish**. The duplicated records load in Datasheet view.

Find duplicates for Titles-Artists-Formats

Title Field	Format Field	Artist Field	NumberOfDups
Just a Dream	MP3	Carrie Underwood	2
Skyfall	MP3	Adele	2
The White Album	CD	Beatles	2

11. Use the information from the table to determine which records need to be deleted from the original table.

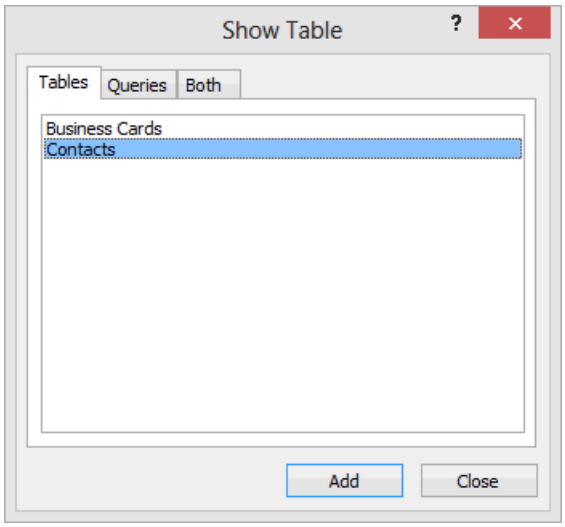
❖ 2.6.3. Update Queries

An update query provides a quick way to change the data in existing records. It's similar to the **Find and Replace** feature except it doesn't require (or allow) your intervention.

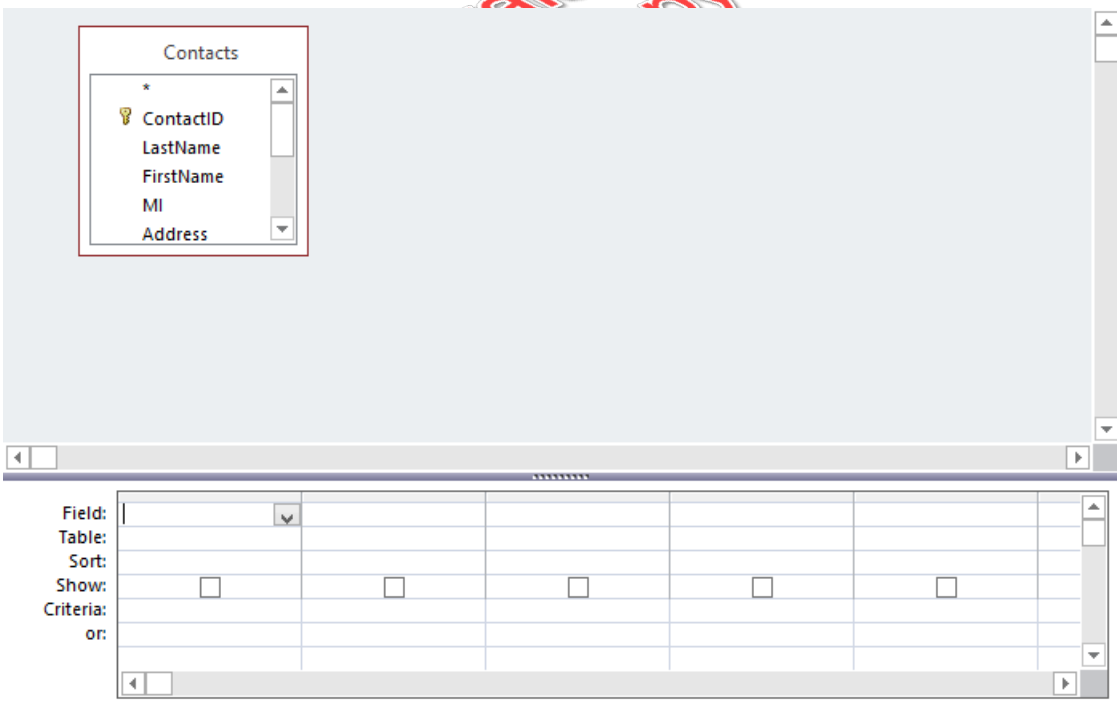
Remember that update queries, like other action queries, don't warn you when you try to run them a second time. Running an update query twice could have unintended consequences. For example, if you're updating a numeric field to increase all values by 20%, running the update twice would result in an increase of more than 40%. To avoid the database cleanup this would necessitate, remember that you can always preview the data in Datasheet view until you are ready to actually perform the action.

To create an update query: Open `Queries/Demos/My New Database - Update Query - Start.accdb` to begin.

1. Open the database.
2. On the **Create** tab in the **Queries** group, click **Query Design**. The **Show Table** dialog box opens.

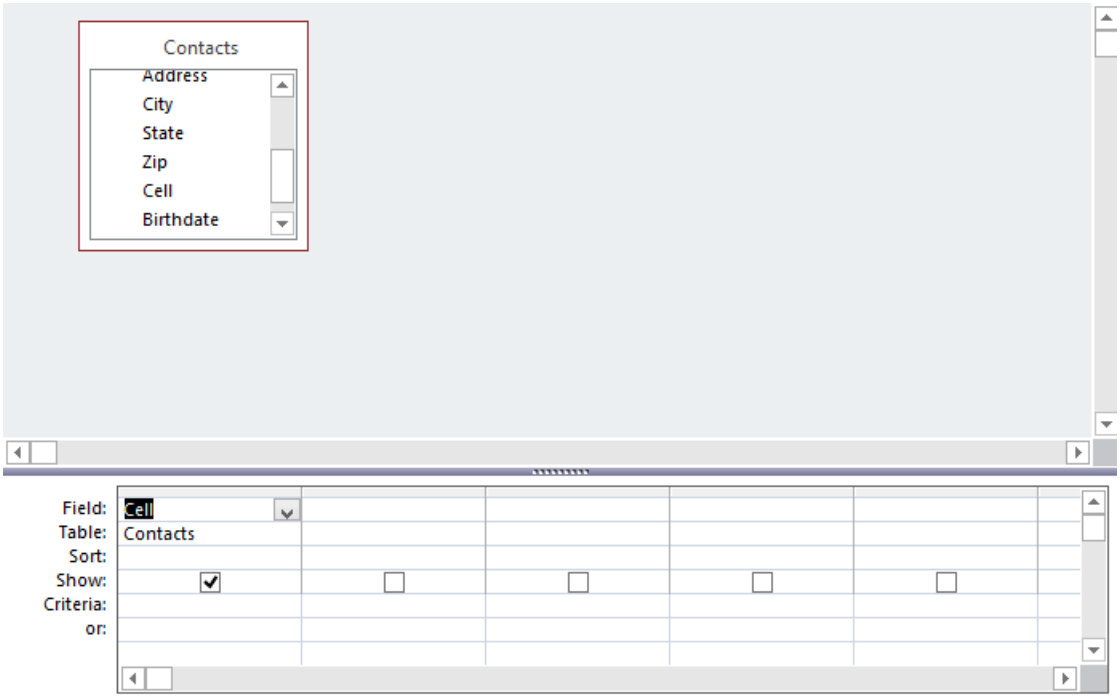


3. Highlight the table to add to the query.
4. Click **Add**.

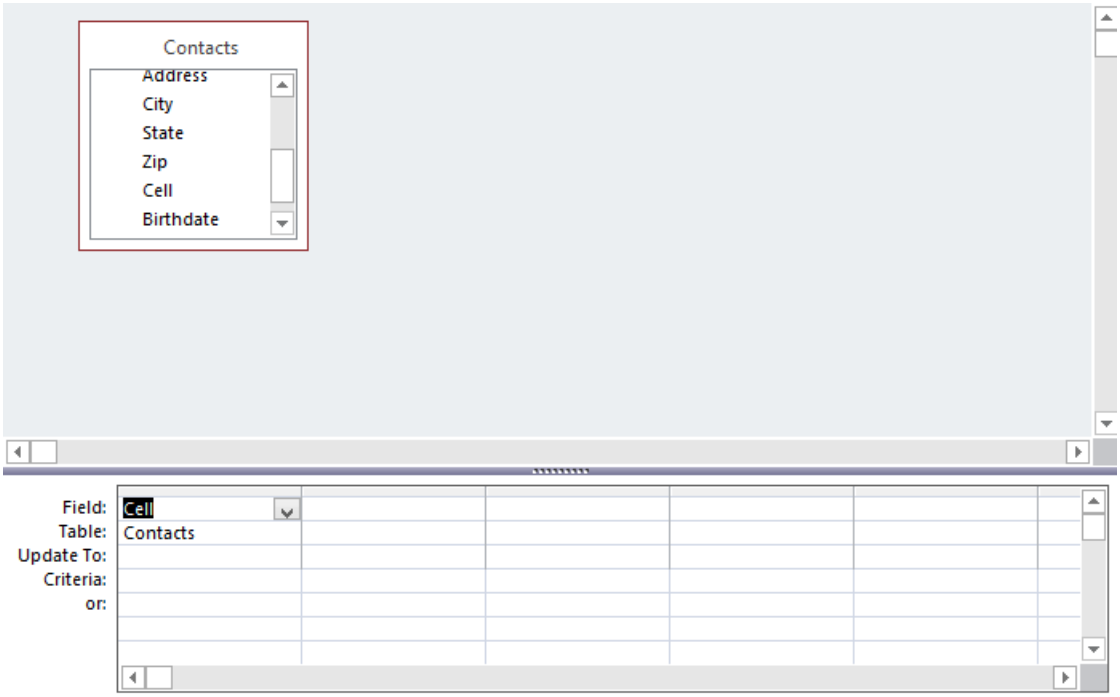


5. Click **Close**.

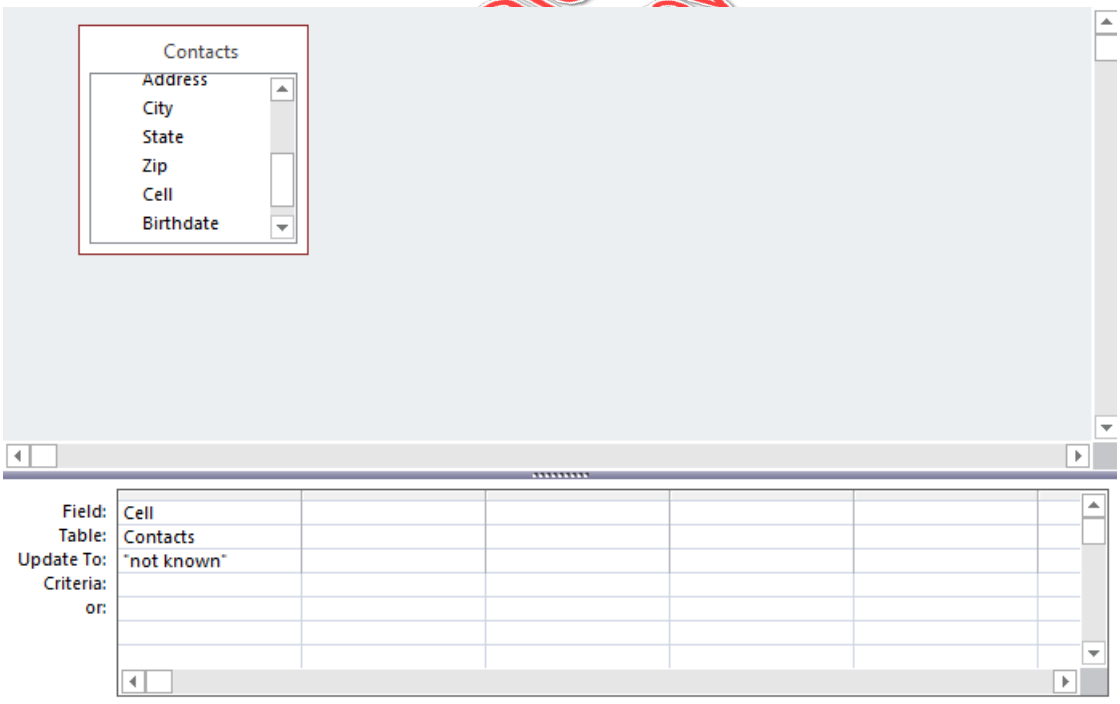
6. Double-click the field(s) you want to update to add them to the query design grid.



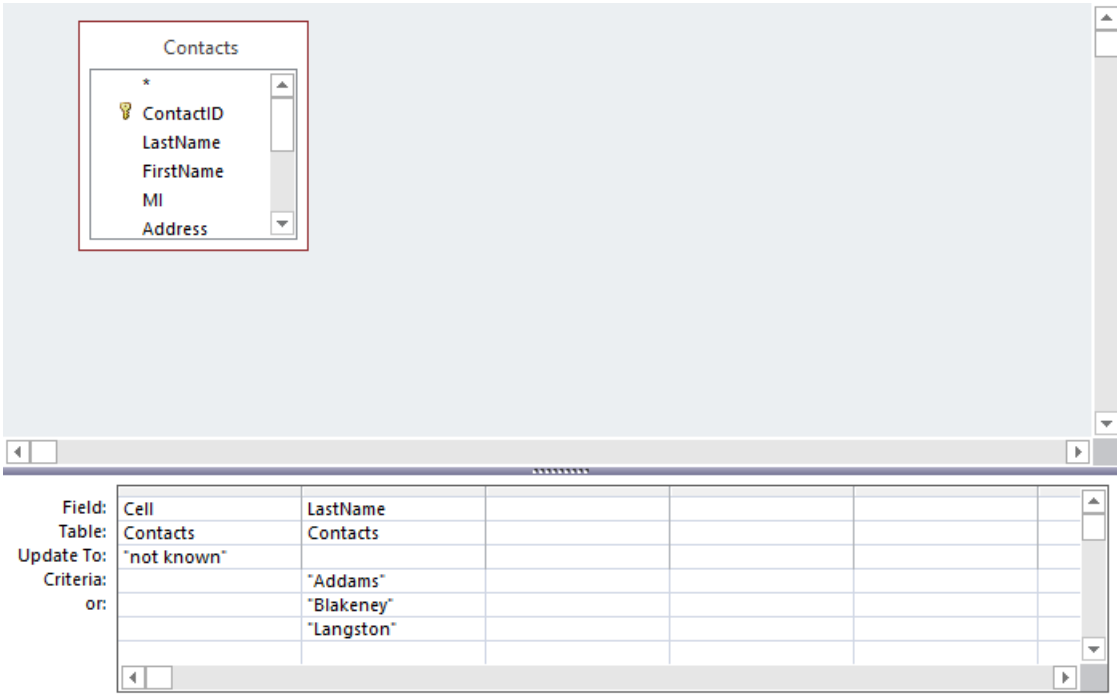
7. On the **Query Tools: Design** tab in the **Query Type** group, click **Update**. Notice that the **Show** row is removed and replaced by an **Update To** row.



8. In the **Update To** row, for each field you need to change, type the new value.



9. Specify criteria for which records to change if you do not want to change all records.

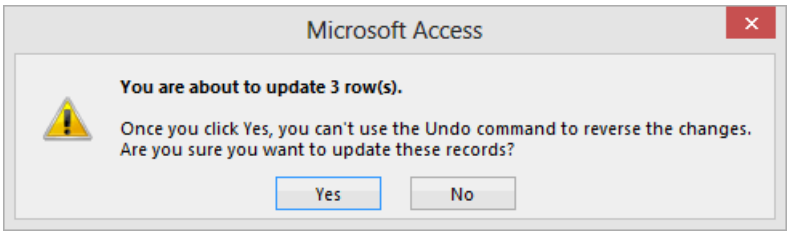


10. Click **Save**.
11. In the **Save As** dialog box, type a name for the query and click **OK**.

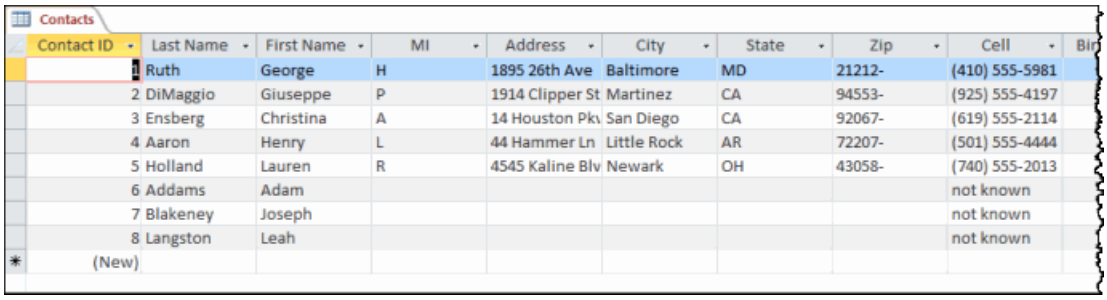
Tip

If you are creating the update query for one-time use only, it is not necessary to save it.

12. On the **Query Tools: Design** tab in the **Results** group, click **Run**. You are prompted to confirm that you want to update the records.



13. Click **Yes**.
14. Open the table you updated records for and confirm the updates.



Contacts

Contact ID	Last Name	First Name	MI	Address	City	State	Zip	Cell	Bir
1	Ruth	George	H	1895 26th Ave	Baltimore	MD	21212-	(410) 555-5981	
2	DiMaggio	Giuseppe	P	1914 Clipper St	Martinez	CA	94553-	(925) 555-4197	
3	Ensberg	Christina	A	14 Houston Pkv	San Diego	CA	92067-	(619) 555-2114	
4	Aaron	Henry	L	44 Hammer Ln	Little Rock	AR	72207-	(501) 555-4444	
5	Holland	Lauren	R	4545 Kaline Blv	Newark	OH	43058-	(740) 555-2013	
6	Addams	Adam						not known	
7	Blakeney	Joseph						not known	
8	Langston	Leah						not known	
(New)									

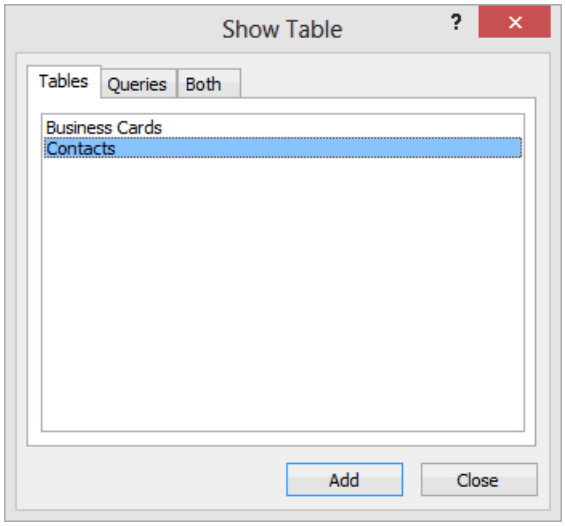
❖ 2.6.4. Delete Queries

A delete query lets you remove records from a table. If you have any doubt about the effects of running a delete query, it's a good idea to back up your database before proceeding.

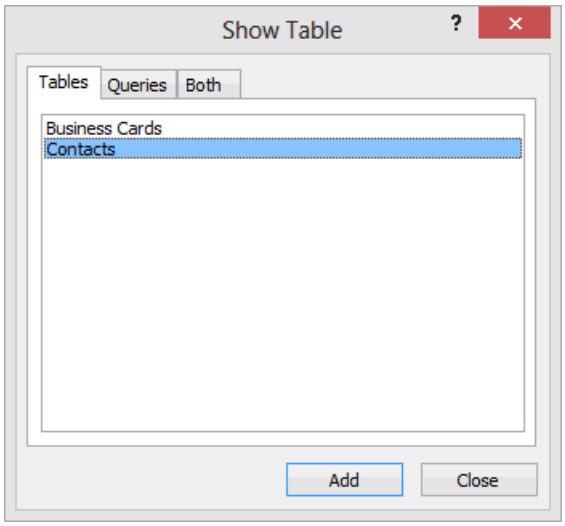
Let's use a delete query to remove the records we appended to the Contacts table.

To create a delete query: Open `Queries/Demos/My New Database - Delete Query - Start.accdb` to begin.

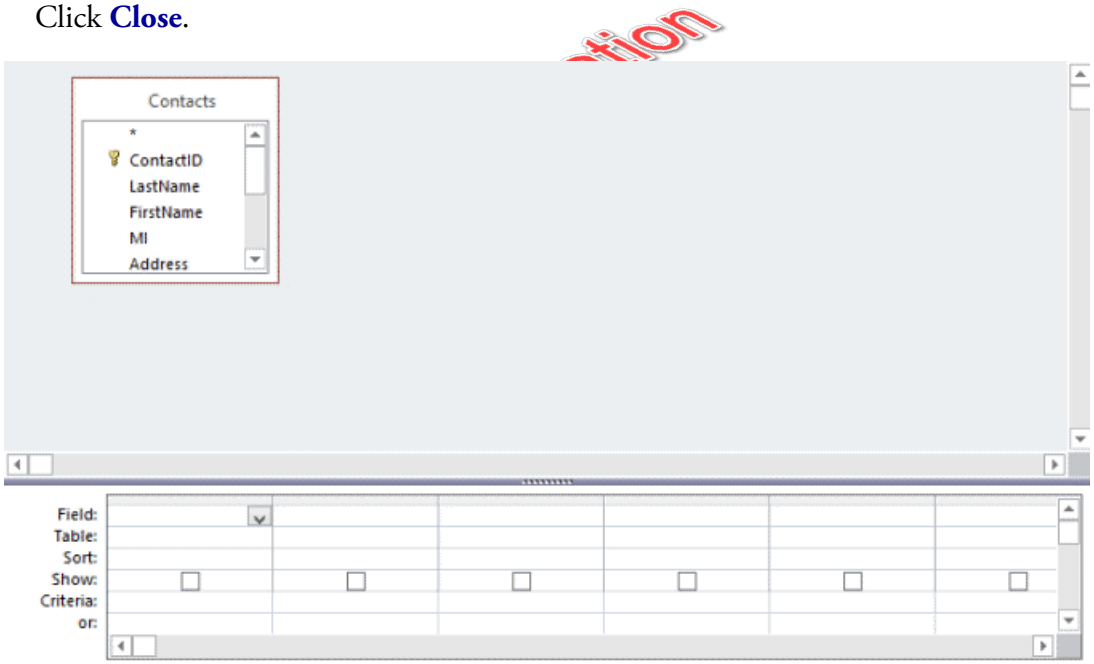
1. Open the database.
2. On the **Create** tab in the **Queries** group, click **Query Design**. The **Show Table** dialog box opens.



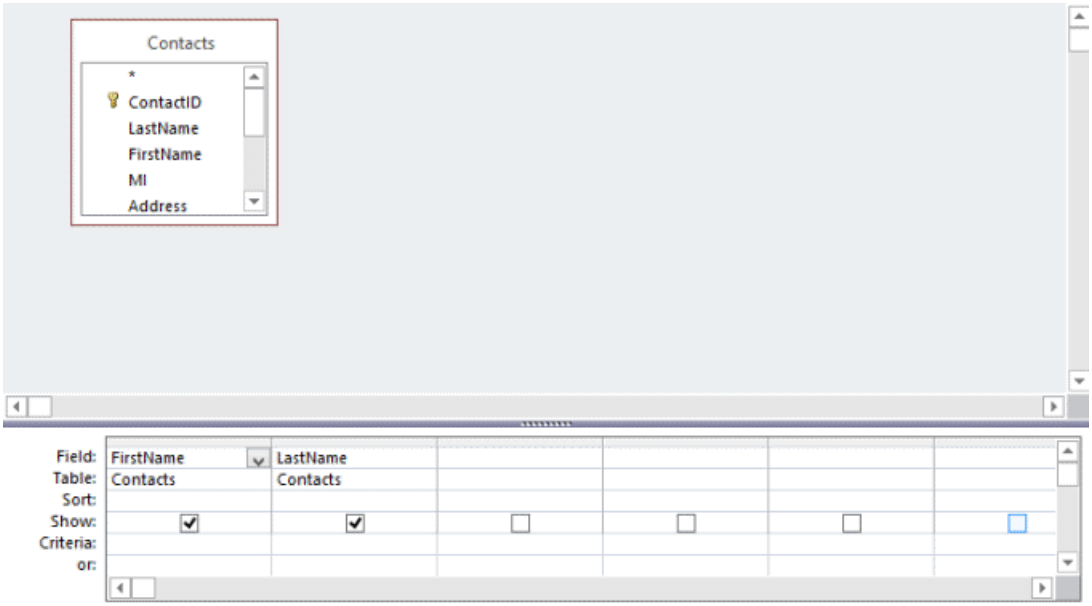
3. Highlight the table(s) to add to the query.



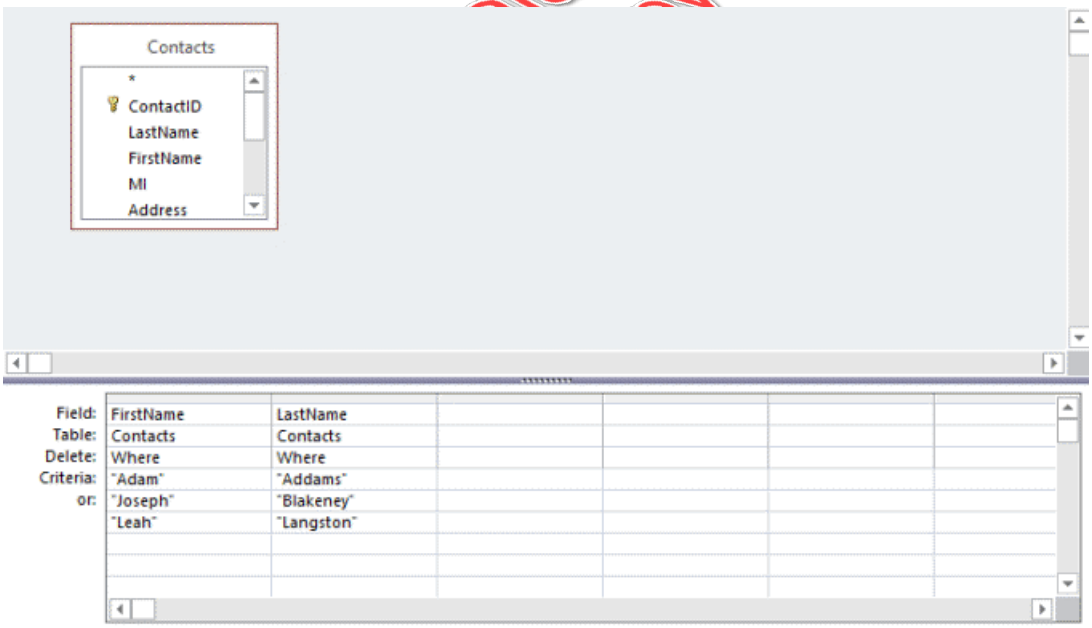
4. Click **Add**.
5. Click **Close**.



6. In the table, double-click the field(s) you want to use as criteria for choosing the records to delete.



7. On the **Query Tools: Design** tab in the **Query Type** group, click **Delete**.
8. In the **Criteria** row in the query design grid, type the values you want to delete.

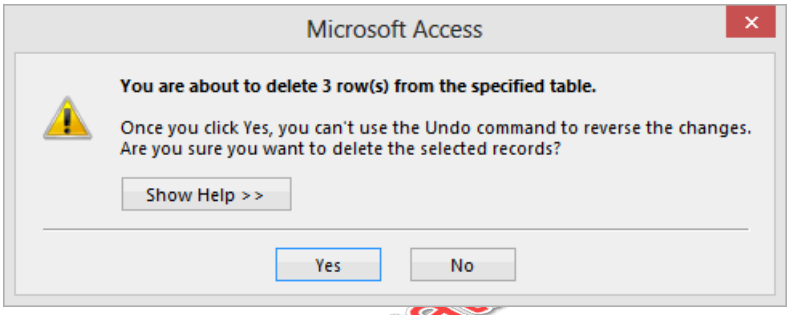


9. Click **Save**.
10. In the **Save As** dialog box, type a name for the query and click **OK**.

Tip

If you are creating the delete query for one-time use only, it is not necessary to save it.

11. On the **Query Tools: Design** tab in the **Results** group, click **Run**. Access prompts you to confirm your action and warns you that it cannot be undone.

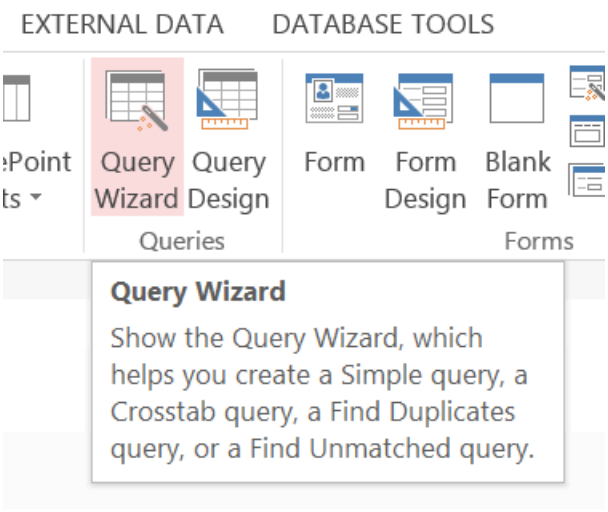


12. Click **Yes**.
13. Open the table you deleted records from and confirm the deletion.

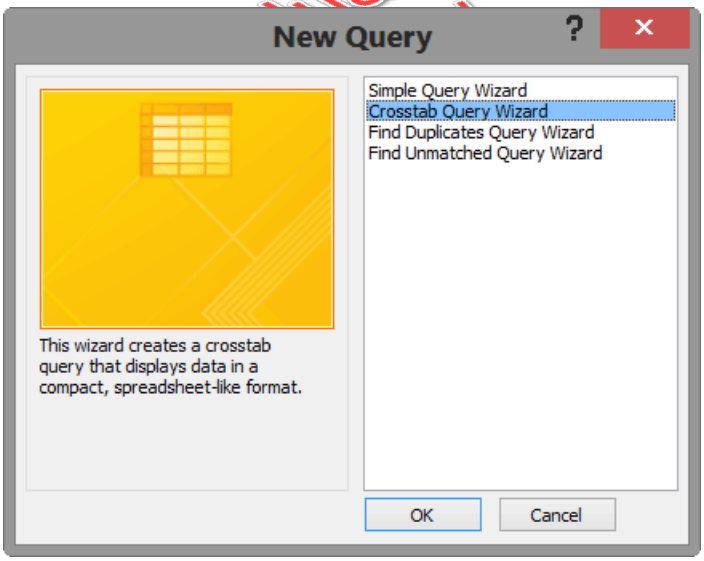
Contact ID	Last Name	First Name	MI	Address	City	State	Zip
1	Ruth	George	H	1895 26th Ave	Baltimore	MD	21212-
2	DiMaggio	Giuseppe	P	1914 Clipper St	Martinez	CA	94553-
3	Ensberg	Christina	A	14 Houston Pkv	San Diego	CA	92067-
4	Aaron	Henry	L	44 Hammer Ln	Little Rock	AR	72207-
5	Holland	Lauren	R	4545 Kaline Blv	Newark	OH	43058-
(New)							

❖ 2.6.5. Creating Crosstab Queries

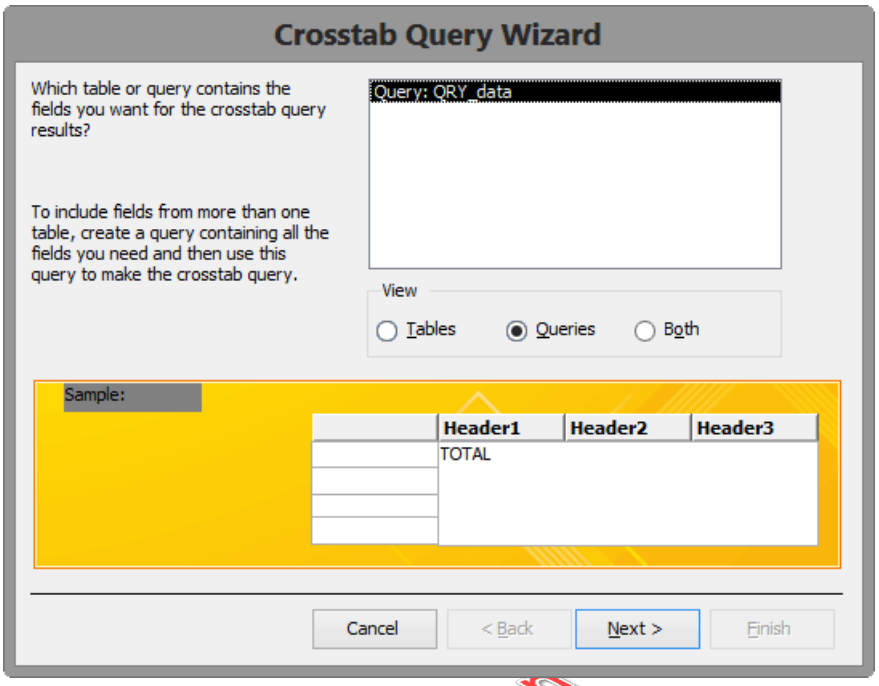
To analyze data, summarizing by column and row in order to make sense of large amounts of information. Open `Queries/Demos/Demo - My Music Collection - Start.accdb` to begin.

1. 

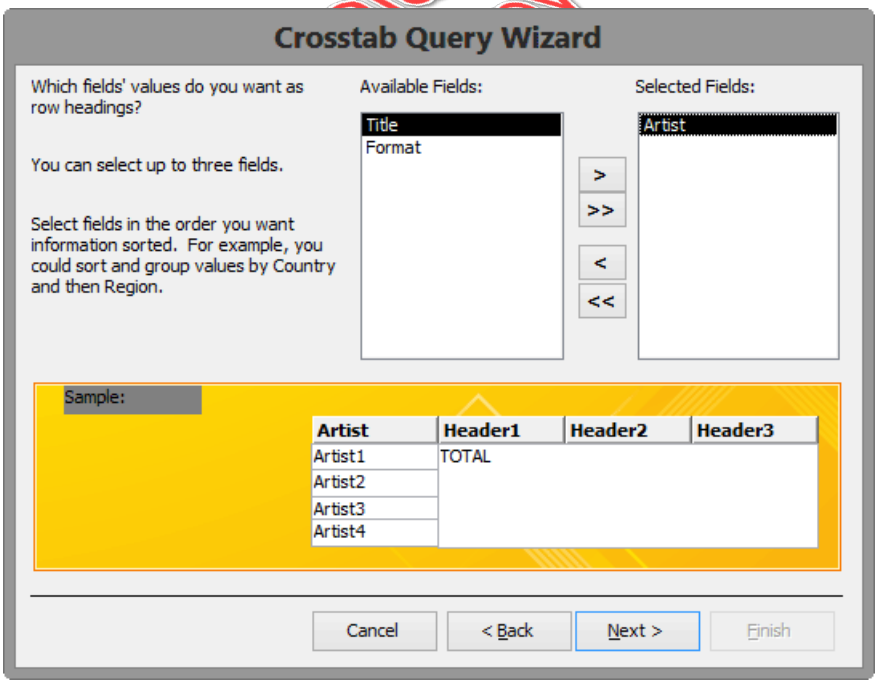
Create Tab > **Query Wizard**.

2. 

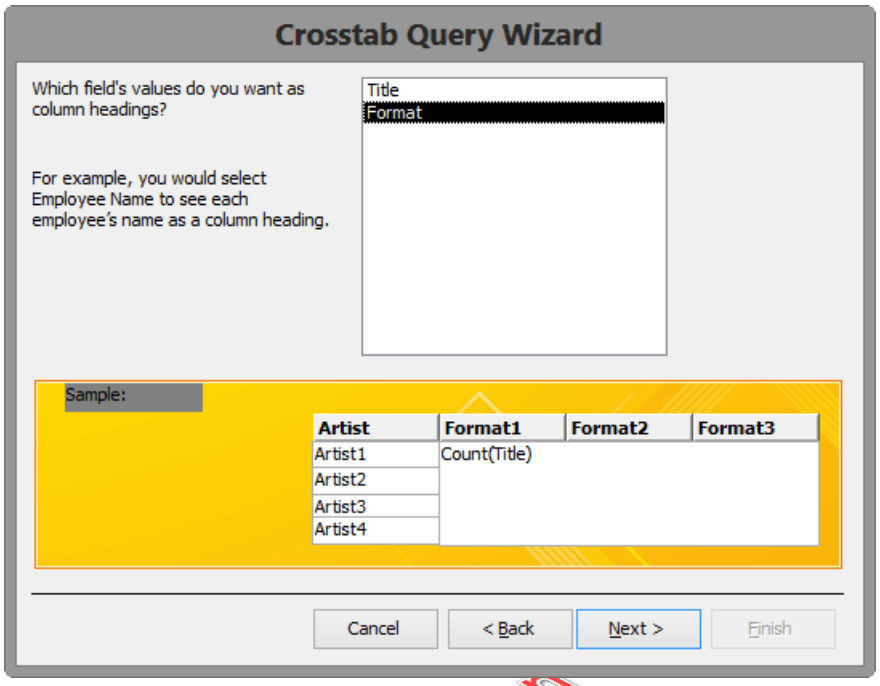
Choose **Crosstab Query Wizard** to start the process. Click **OK**.

3. 

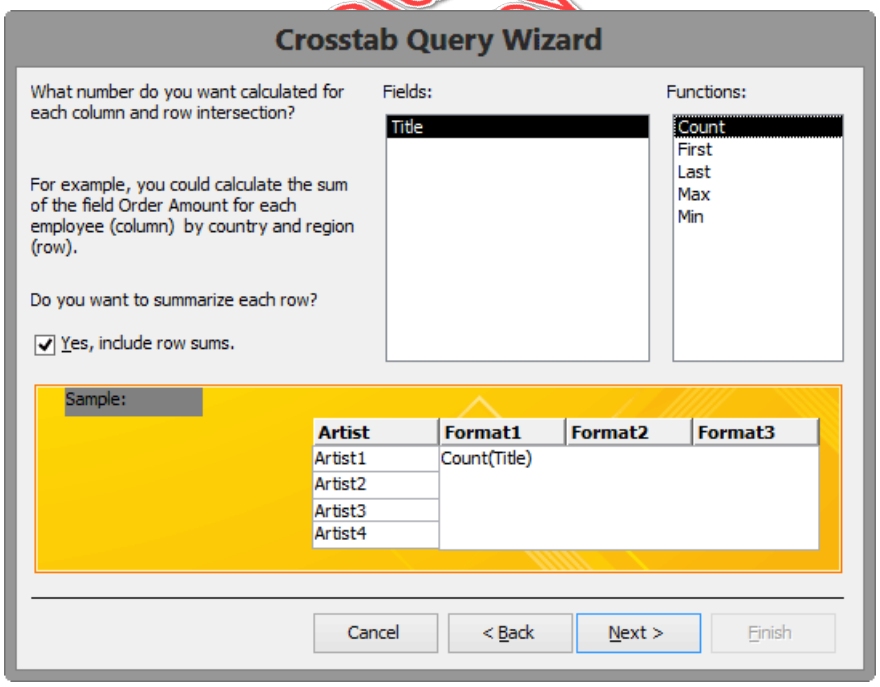
Choose the **Query** or **Table** to use as the source. Click **Next**.

4. 

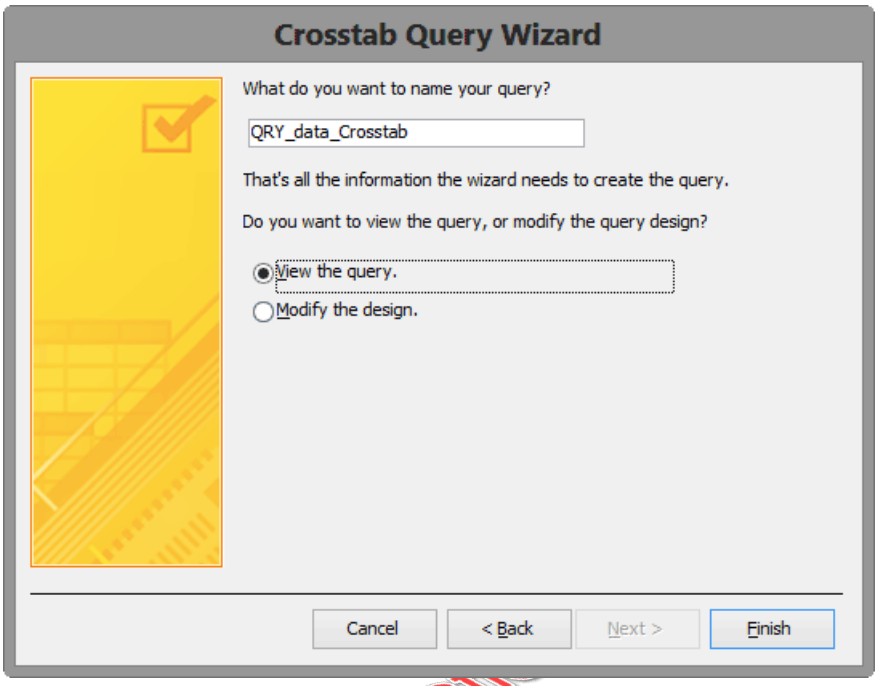
Choose the row headings field source. Click **Next**.

5. 

Choose the column headings field source. Click **Next**.

6. 

Choose the calculated field and the function to use. Click **Next**.

7. 

Name the crosstab query. Choose to view or modify the query. Click **Finish**.

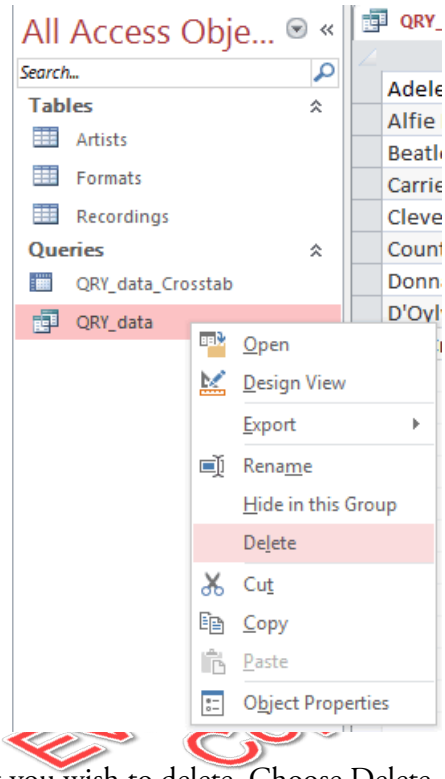
8. QRY_data_Crosstab

Artist	Total Of Title	33	78	8-tr	Cass	CD	MP3
Adele	1						1
Alfie Boe	1						1
Beatles	2	1				1	
Carrie Underwood	1						1
Cleveland Orchestra	2	1				1	
Count Basie and His Orchestra	2		1			1	
Donna Summer	1				1		
D'Oyly Carte Opera Company	1	1					
Jim Croce	1			1			

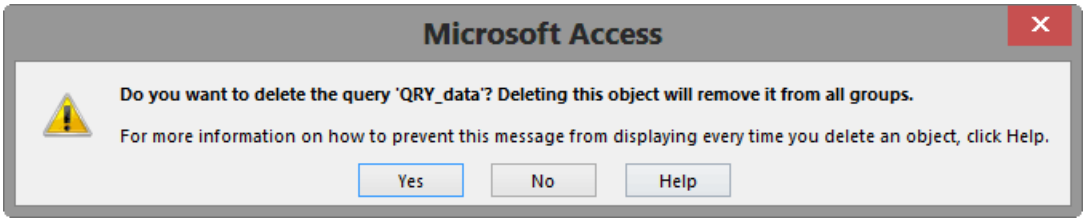
Your query results will look similar to the above example.

❖ 2.6.6. Delete a Query

Once a query has served its purpose, you may want to delete the query. Do make sure that you confirm that the query is no longer being used, or you may damage the database.

1. 

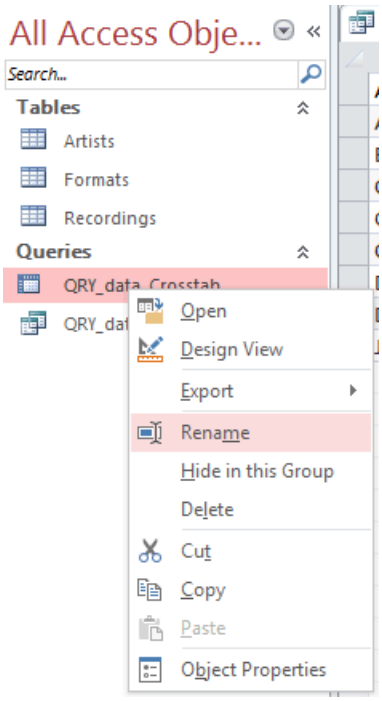
Right-click the query that you wish to delete. Choose Delete.

2. 

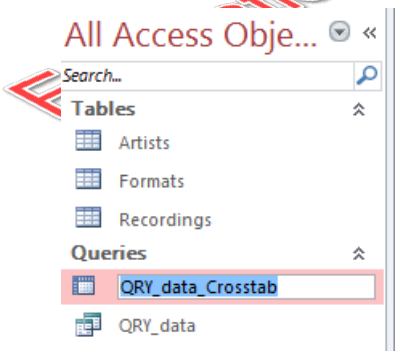
The warning above will need to be confirmed in order to complete the process. Once you do confirm the message, there will be no way to recover the lost data.

❖ 2.6.7. Rename a Query

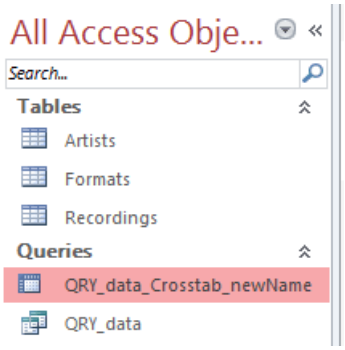
Queries may be renamed by right mouse clicking upon an existing query. Be cautious when renaming the query because objects that had required it may then not respond and this will cause an error.

1. 

Right-click upon the query you want to rename.

2. 

Type the new name. Hit the **Enter** key.

3. 

The new name is now available.

Exercise 2: Creating Select and Action Queries

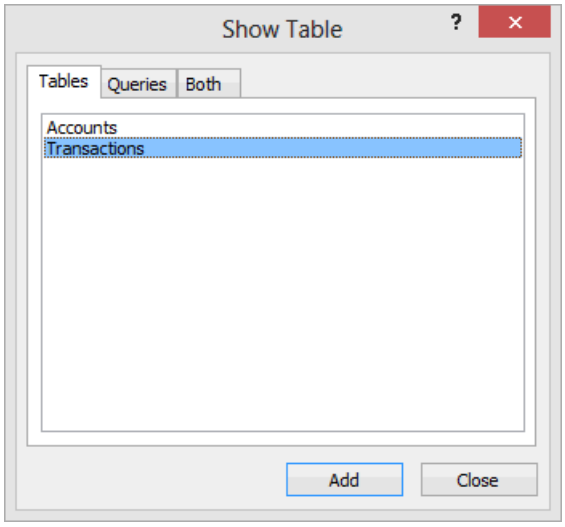
15 to 25 minutes

In this exercise, you will create a table of uncleared transactions (using an Action Query) for the Bank Register database from the `ClassFiles\Queries\Exercises` folder. Name the new table "Uncleared Transactions".

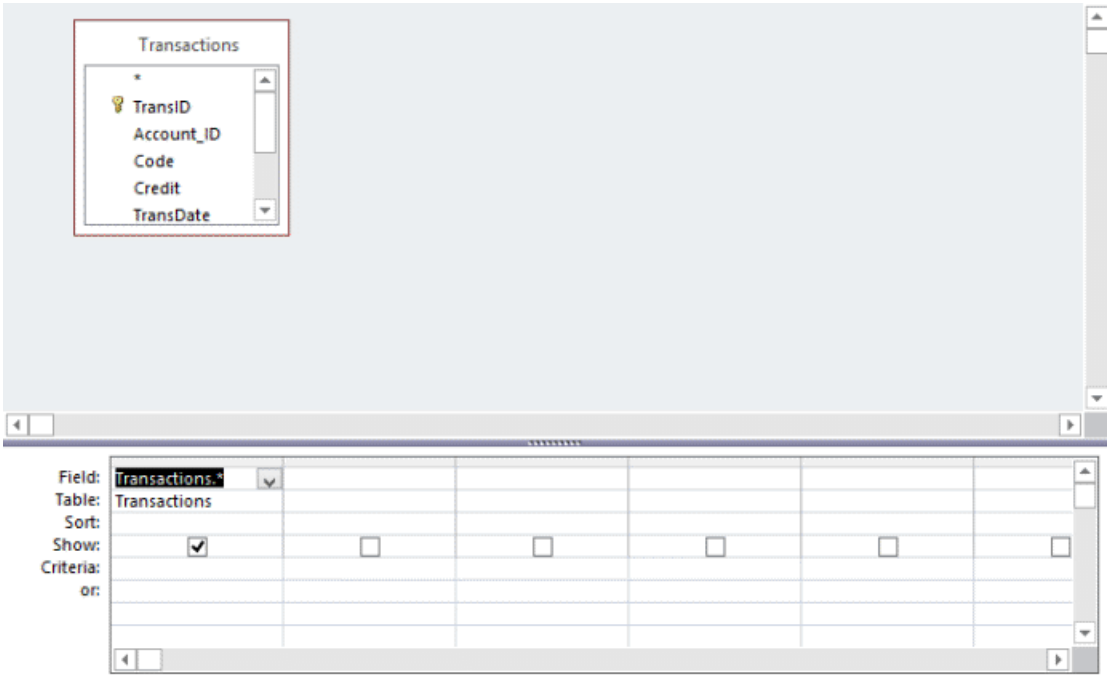
Solution

First, we will create a select query to select the uncleared transactions and then we'll change it to a make table query.

1. Open the database.
2. On the **Create** tab in the **Queries** group, click **Query Design**.
3. In the **Show Table** dialog box, highlight "Transactions".

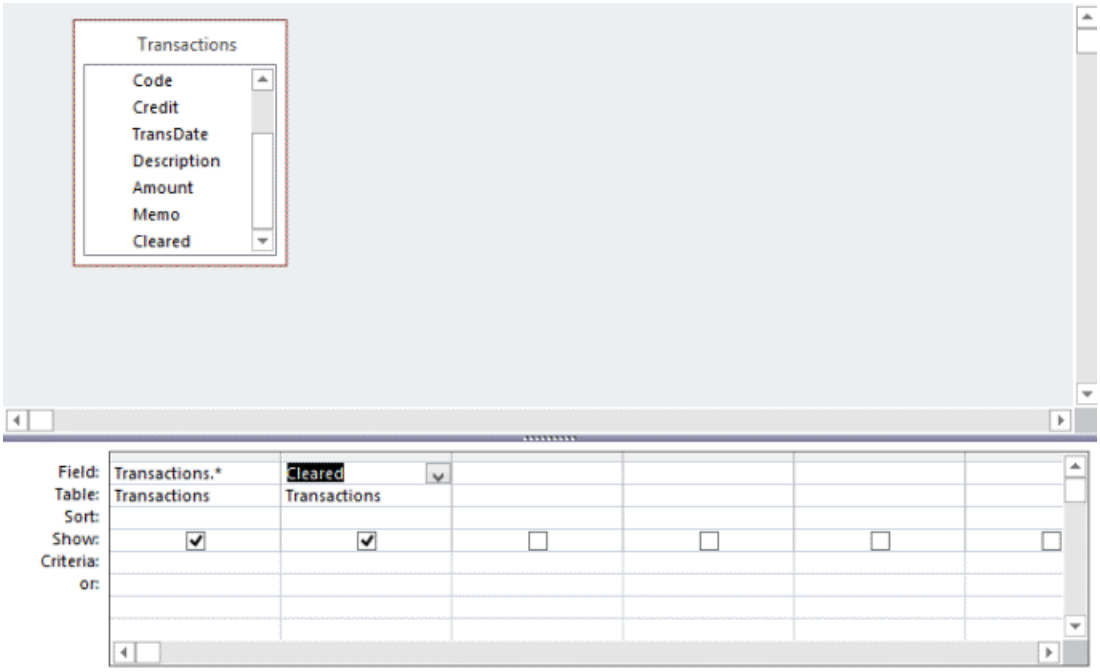


4. Click **Add**.
5. Click **Close**.
6. In the table, double-click * to add all fields in the table to the query.

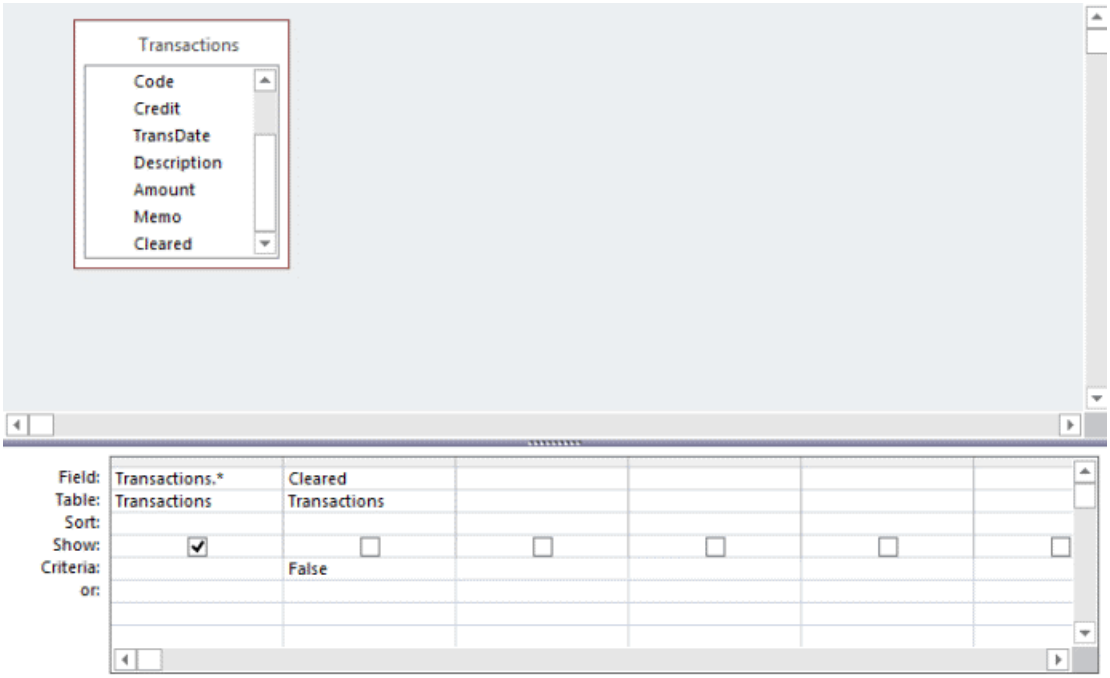


Hint: Double-clicking * is a quick way to add all the fields in a table to your query. You can still add a field from the table to use as selection criteria, just make sure to clear the field's **Show** check box so that the field doesn't appear twice in your results.

7. In the table, locate and double-click the Cleared field to add it to the query design grid.



8. Clear the check box in the **Show** row for the Cleared field. (We don't want the Cleared field to appear twice in our table.)
9. In the **Criteria** row for the Cleared field, type "False". (We want the table to show only transactions that are not cleared.)



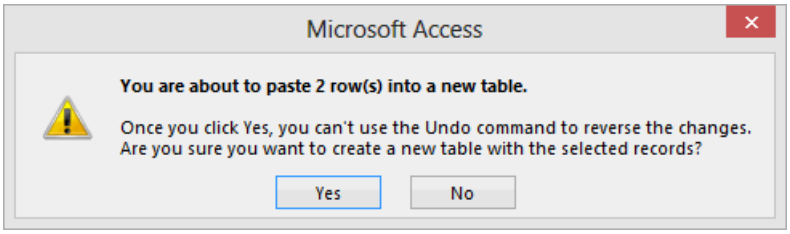
10. On the **Query Tools: Design** tab in the **Results** group, click **Run**.
11. View your results.

Trans ID	Account ID	Code	Credit	Date	Description	Amount	Memo	Cleared
5	1	7214	☐	4/7/2013	Charlottesville MUD	$74.19	Water bill	☐
6	1	AD	☑	4/14/2013	US Dept of Treasury	$372.96	Tax refund	☐
(New)			☐			$0.00		☐

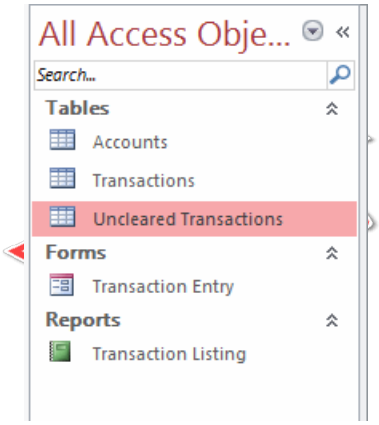
12. Switch back to Design view.
13. On the **Query Tools: Design** tab in the **Query Type** group, click **Make Table**.
14. In the **Make Table** dialog box in the **Table Name** field, type "Uncleared Transactions".

15. Click **OK**.

16. On the **Query Tools: Design** tab in the **Results** group, click **Run**. Access prompts you to confirm your action.



17. Click **Yes**. The table is added to the list in the **Navigation** pane.



18. Open the table and view your results.

TransID	Account_ID	Code	Credit	TransDate	Description	Amount	Memo	Cleared
5	1	7214	0	4/7/2013	Charlottesville	$74.19	Water bill	0
6	1	AD	-1	4/14/2013	US Dept of Tre	$372.96	Tax refund	0
(New)								

19. Return to the query and click **Save**.
20. In the **Save As** dialog box, type a name for the query and click **OK**.

Exercise 3: Creating a Parameter Query

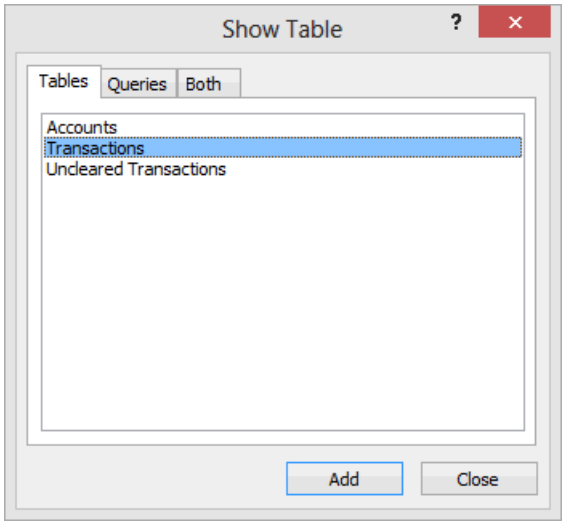
20 to 45 minutes

In this exercise, you will create a parameter query on the Transactions table that prompts for a range of transaction dates. Return all transaction details. Use the Between and logical operator. Continue using the Bank Register database from the `ClassFiles\Queries\Exercises` folder.

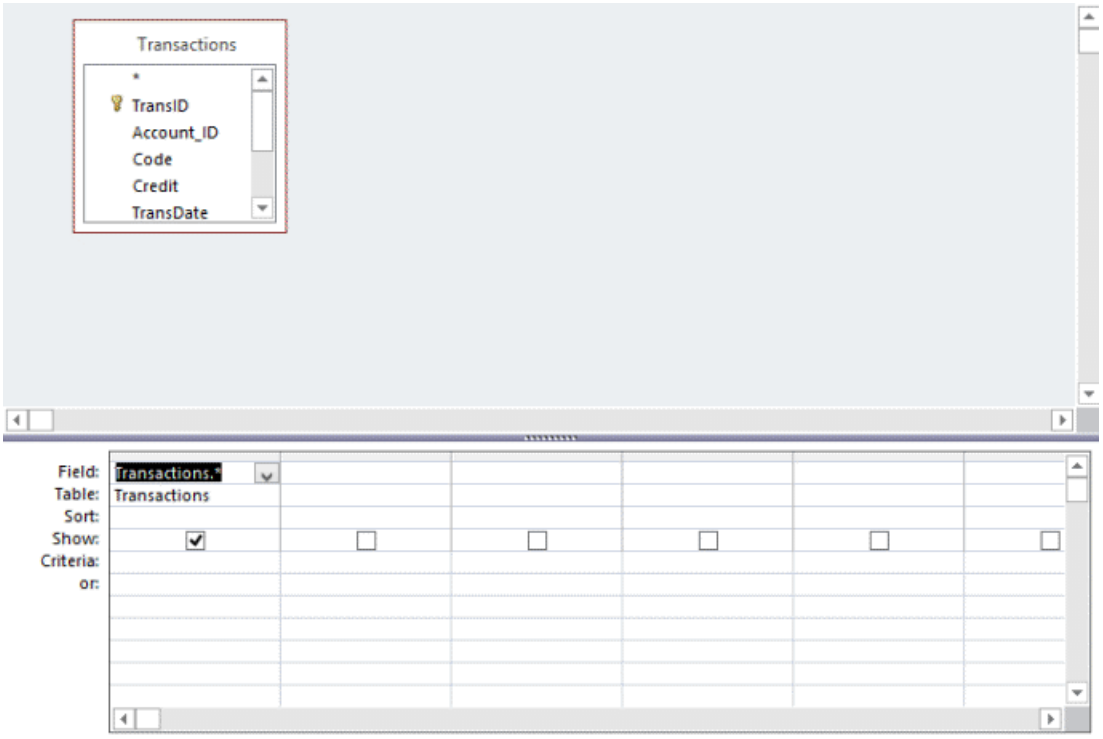
Solution

To create the parameter query:

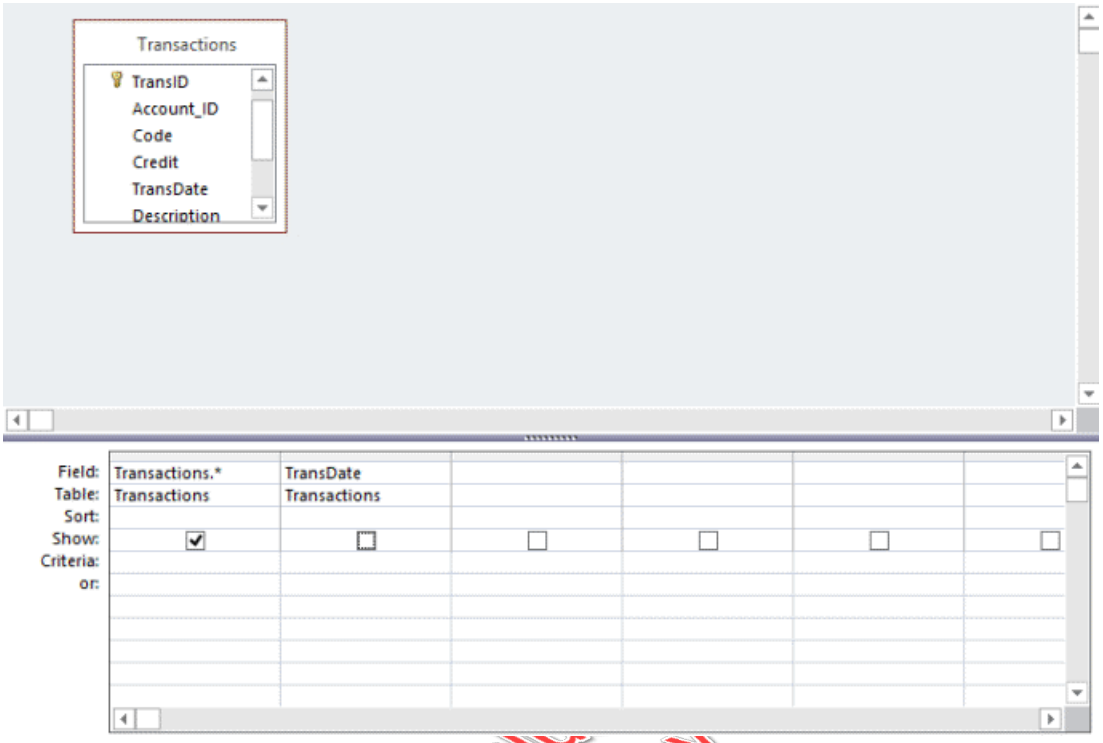
1. Open the database.
2. On the **Create** tab in the **Queries** group, click **Query Design**.
3. In the **Show Table** dialog box, highlight "Transactions".



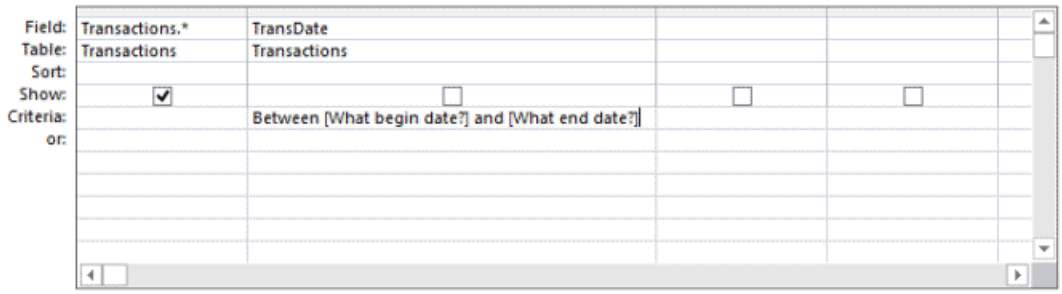
4. Click **Add**.
5. Click **Close**.
6. In the Transactions table, double-click * to add all fields in the table to the query.



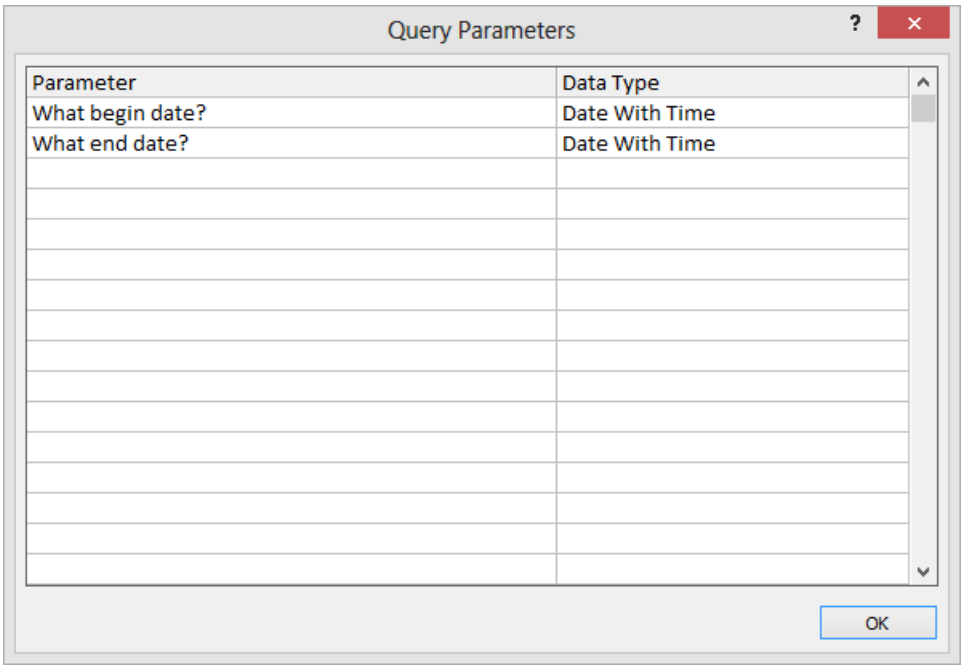
7. In the Transactions table, locate and double-click the TransDate field to add it to the query design grid.
8. Clear the **Show** check box for the TransDate field.



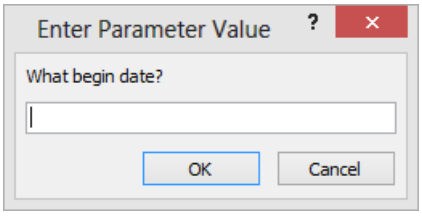
9. In the **Criteria** row of the TransDate field, type "Between [What begin date?] and [What end date?]" (don't include the quotes).



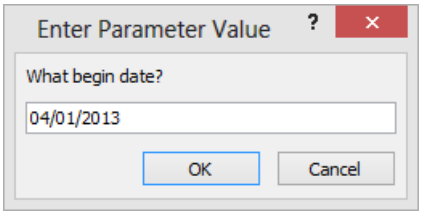
10. On the **Query Tools: Design** tab in the **Show/Hide** group, click **Parameters**.
11. In the first row in the **Parameter** field, type "What begin date?".
12. From the **Data Type** drop-down list, select "Date With Time".
13. In the second row in the **Parameter** field, type "What end date?".
14. From the **Data Type** drop-down list, select "Date With Time".



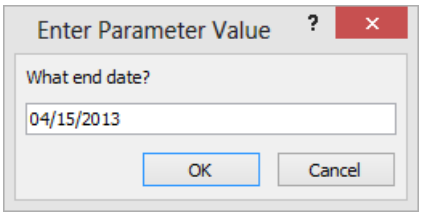
15. Click **OK**.
16. On the **Query Tools: Design** tab in the **Results** group, click **Run**. You are prompted to supply a parameter.



17. Enter a date.



18. Click **OK**. You are prompted to supply a second parameter.
19. Enter a date.



20. Click **OK**. The results display in a datasheet.

Trans ID	Account ID	Code	Credit	Date	Description	Amount	Memo
1	1	AD	☑	4/1/2013	Payroll deposit	$1,095.62	
2	1	DC	☐	4/2/2013	Main Street Market	$117.34	Groceries
3	1	7214	☐	4/7/2013	Charlottesville MUD	$74.19	Water bill
4	1	FT	☐	4/10/2013	Transfer to savings	$500.00	
5	1	ATM	☐	4/10/2013	Cash withdrawal	$120.00	
6	1	AD	☑	4/14/2013	US Dept of Treasury	$372.96	Tax refund
(New)			☐			$0.00	

21. Click **Save**.
22. In the **Save As** dialog box, type a name for the query and click **OK**.

Conclusion

In this lesson, you learned:

- About select and action queries.
- About logical operators.
- How to create and run select, parameter, make table, append, update, and delete queries.

LESSON 3
Table Functions

Topics Covered

☑ Importing from Excel.

☑ Exporting to Excel.

Introduction

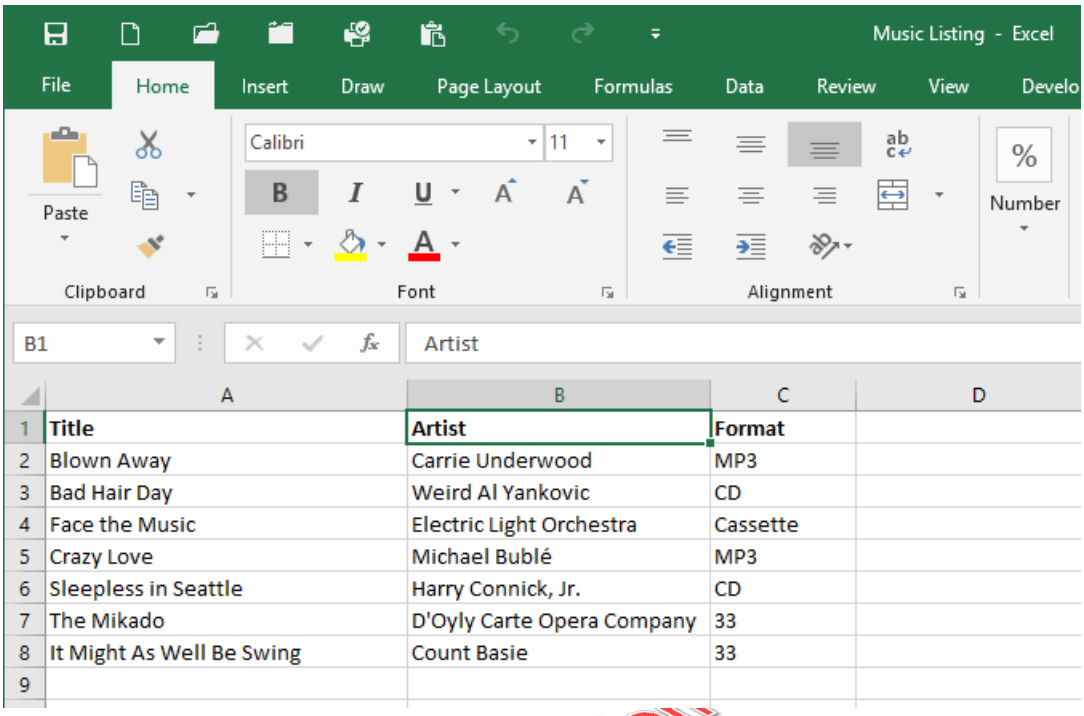
In this lesson, you will learn how to import data from an Excel spreadsheet into an Access database, and how to export data from an Access database to an Excel spreadsheet.

3.1. Importing Data

Suppose you have data in a spreadsheet that you want to add to a table in your database. How can you add it to your database without re-keying it? Well, as long as you can put the data into a form that Access can understand, you can import the data into your database. In particular, you can import data from another Access database, from Excel, from SQL Server, from a text file, or from XML.

In this lesson, we'll look at how to import data from an Excel spreadsheet. Files are found in `Tables_Advanced/Demos/` folder.

For this example, we'll import data from an Excel file called **Music Listing.xlsx**. The content of this file looks like this:



	A	B	C	D
1	**Title**	**Artist**	**Format**	
2	Blown Away	Carrie Underwood	MP3	
3	Bad Hair Day	Weird Al Yankovic	CD	
4	Face the Music	Electric Light Orchestra	Cassette	
5	Crazy Love	Michael Bublé	MP3	
6	Sleepless in Seattle	Harry Connick, Jr.	CD	
7	The Mikado	D'Oyly Carte Opera Company	33	
8	It Might As Well Be Swing	Count Basie	33	
9				

We'll append the records to the **Titles-Artists-Formats** table.

Titles-Artists-Formats

Title	Artist	Format
Right On	Count Basie and His Orchestra	78
I Got a Name	Jim Croce	8-tr
Smetana: Moldau, Overtures	Cleveland Orchestra	33
A Hard Day's Night	Beatles	33
The White Album	Beatles	CD
I Remember Yesterday	Donna Summer	Cass
Rachmaninov Piano Concerto 1 & 3	Cleveland Orchestra	CD
Just a Dream	Carrie Underwood	MP3
Music of the Night	Alfie Boe	MP3
King of Swing!	Count Basie and His Orchestra	CD
Pirates of Penzance	D'Oyly Carte Opera Company	33
Skyfall	Adele	MP3

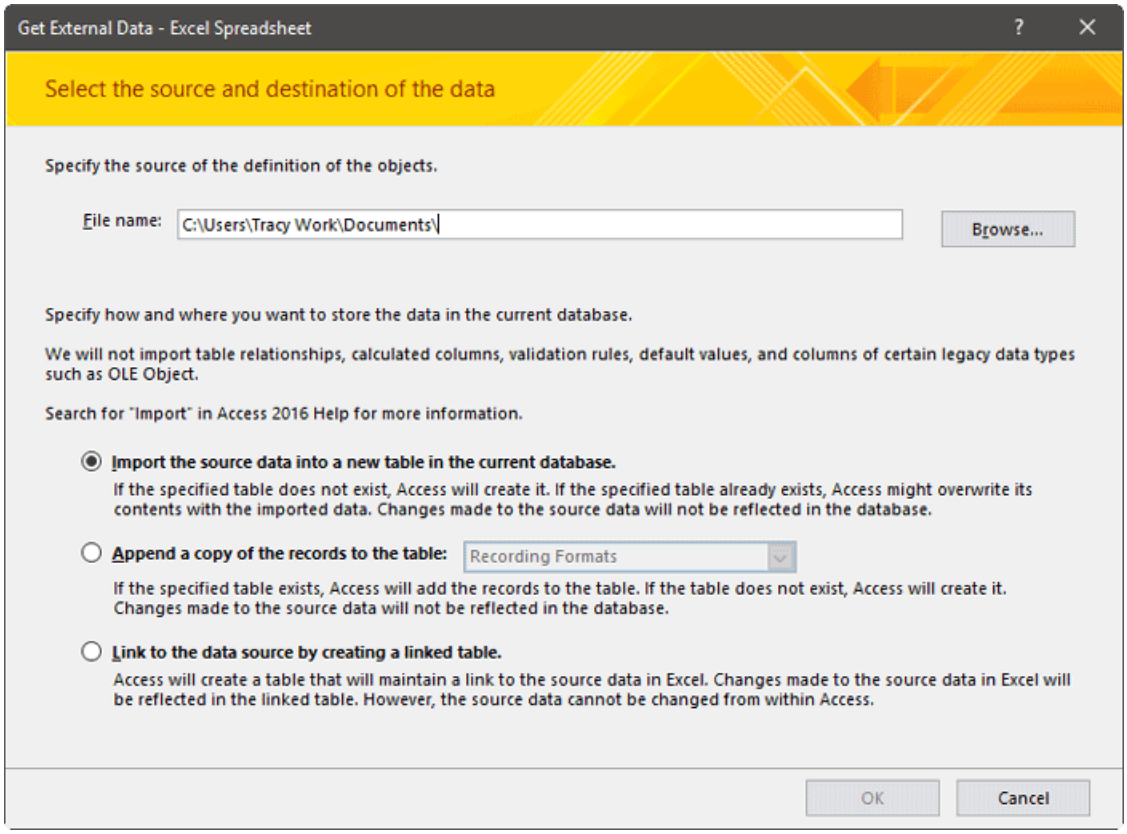
Before we import the data, we need to ensure that the table we're importing from is set up appropriately. Here are a few things to keep in mind:

1. Access cannot skip rows and columns during import, so we need to eliminate any rows and columns that we don't want to import or that don't exist in the destination table.

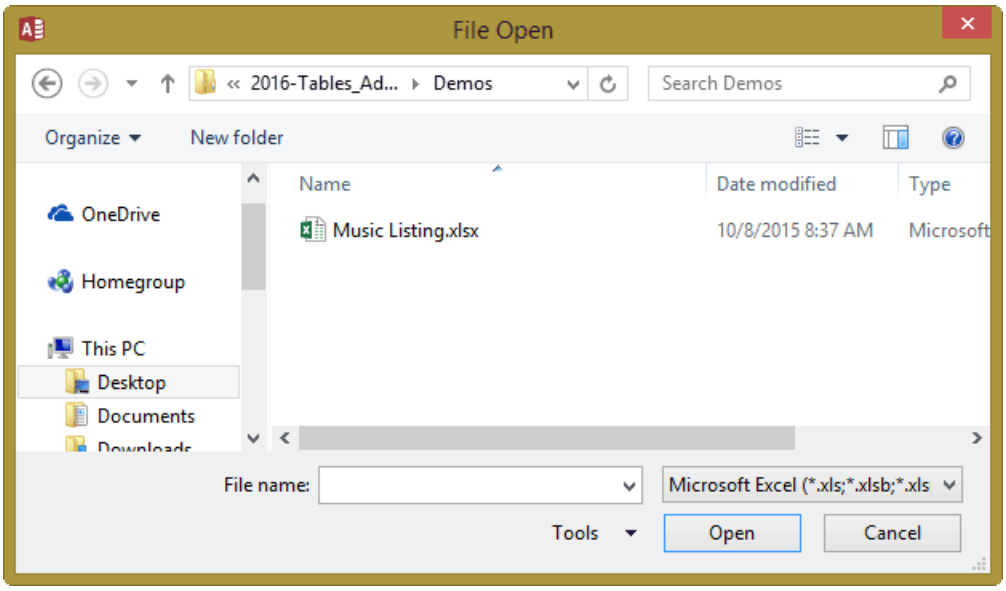
2. Make sure there are no blank cells in the table, or if there are, that the destination table accepts null values (missing or unknown values) in the corresponding field(s). A field can accept null values if it is not a required field and its validation rules do not prohibit null values.
3. Make sure there are no error values (**#NUM** and **#DIV**) in the import table.
4. Ensure that the fields in the import table are compatible with the fields in the destination table. For example, importing text into a number field is not advised if there are any non-numeric entries in the import field.
5. The table should be closed before importing it.

Once your source data is ready, you can import the records to the Access table. To do so: Files are found in `Tables_Advanced/Demos/Demo - My Music Collection - Start.accdb` folder.

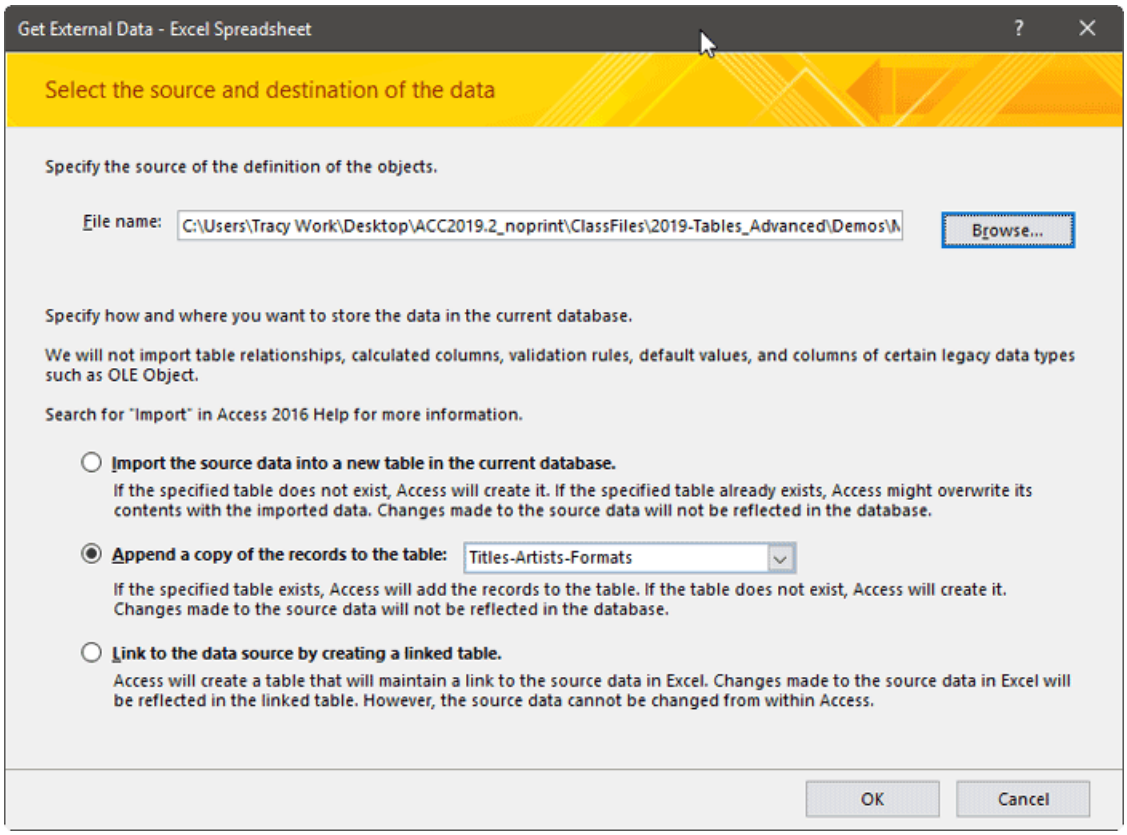
1. Open the database.
2. On the **External Data** tab in the **Import & Link** group, click **New Data Source > From File > Excel**. The **Get External Data - Excel Spreadsheet** wizard starts.



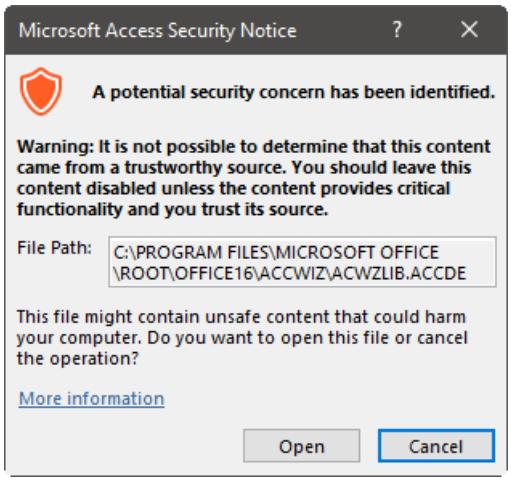
3. Click **Browse** and navigate to the location of the file that contains the items you want to import.



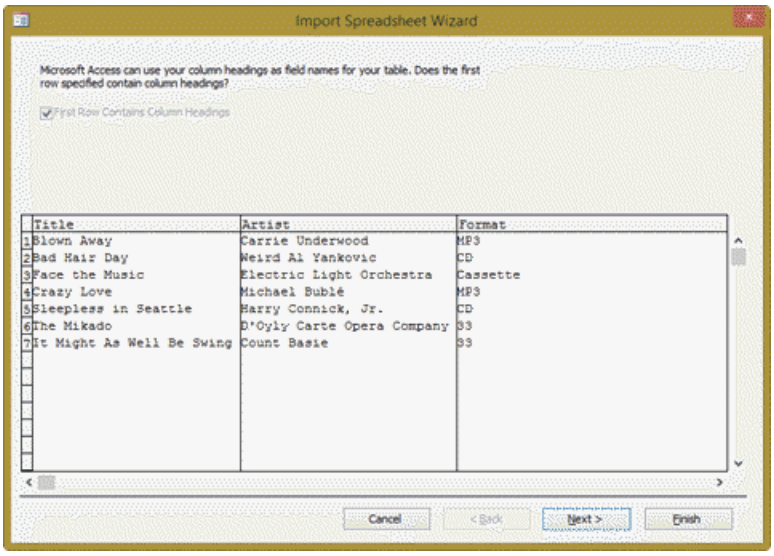
4. Highlight the file name and click **Open**.
5. At the **Specify how and where you want to store the data in the current database** prompt, select **Append a copy of the records to the table**.
6. From the drop-down list, select the table to append the records to.



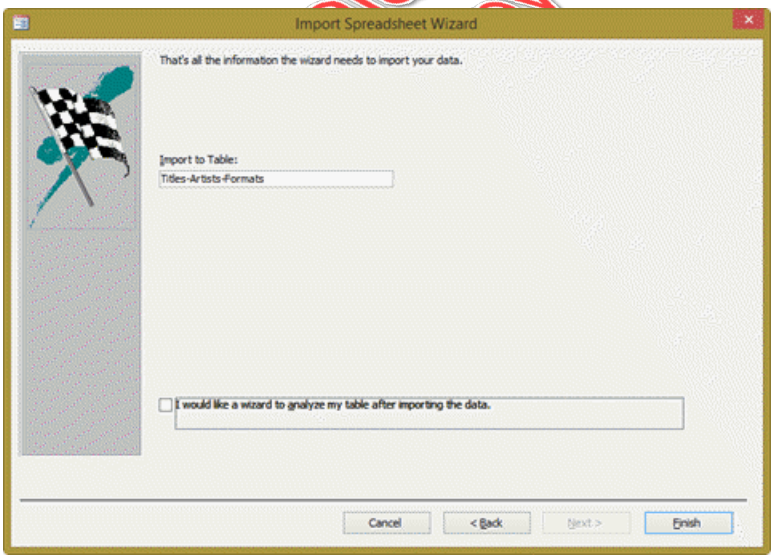
7. Click **OK**. You may get a warning. Click **Open**.



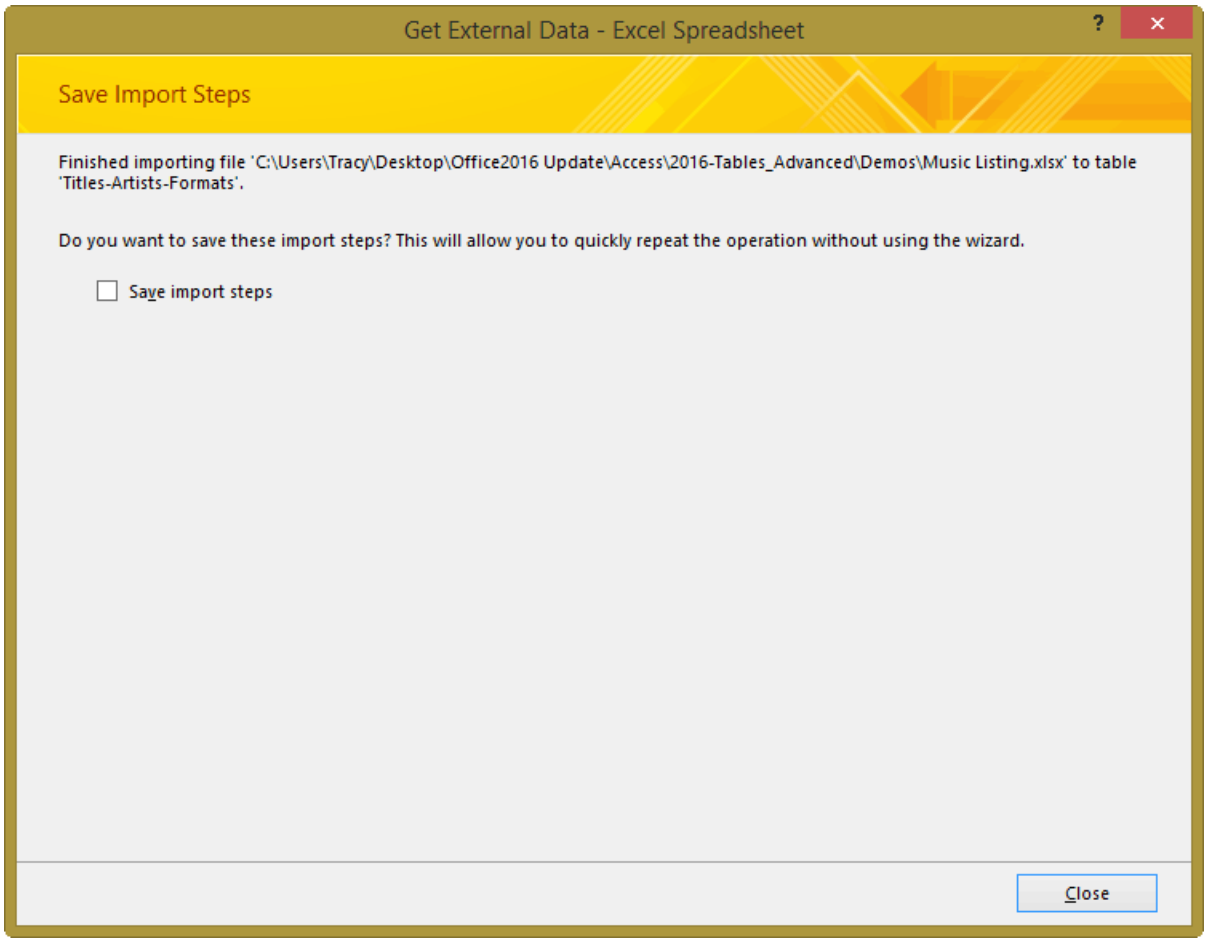
8. The **Import Spreadsheet Wizard** starts.



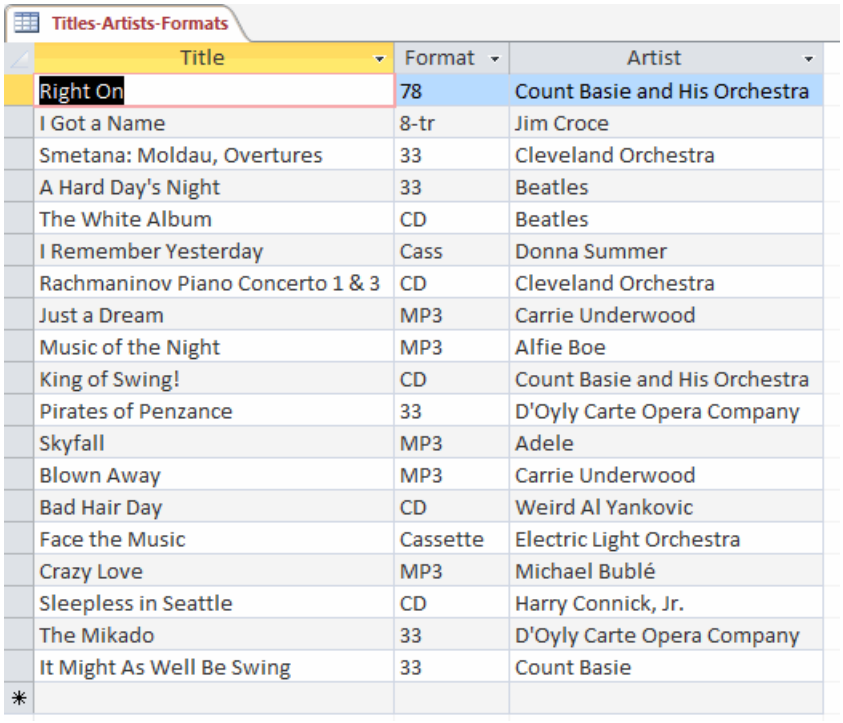
9. Click **Next >**.



10. Click **Finish**. You are prompted whether to save the import steps for reuse.



11. Click **Close**.
12. Open the table you imported the records into to see your results.

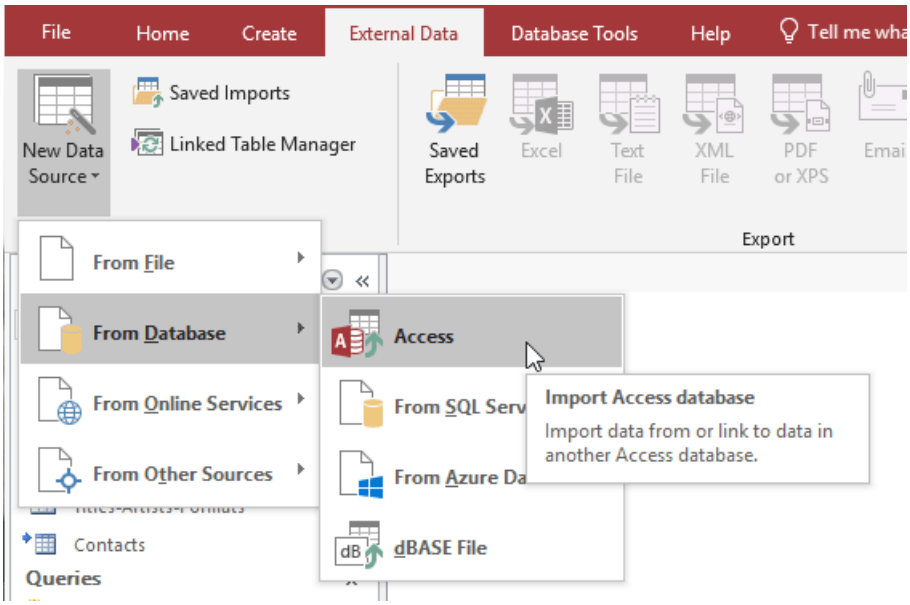


Titles-Artists-Formats

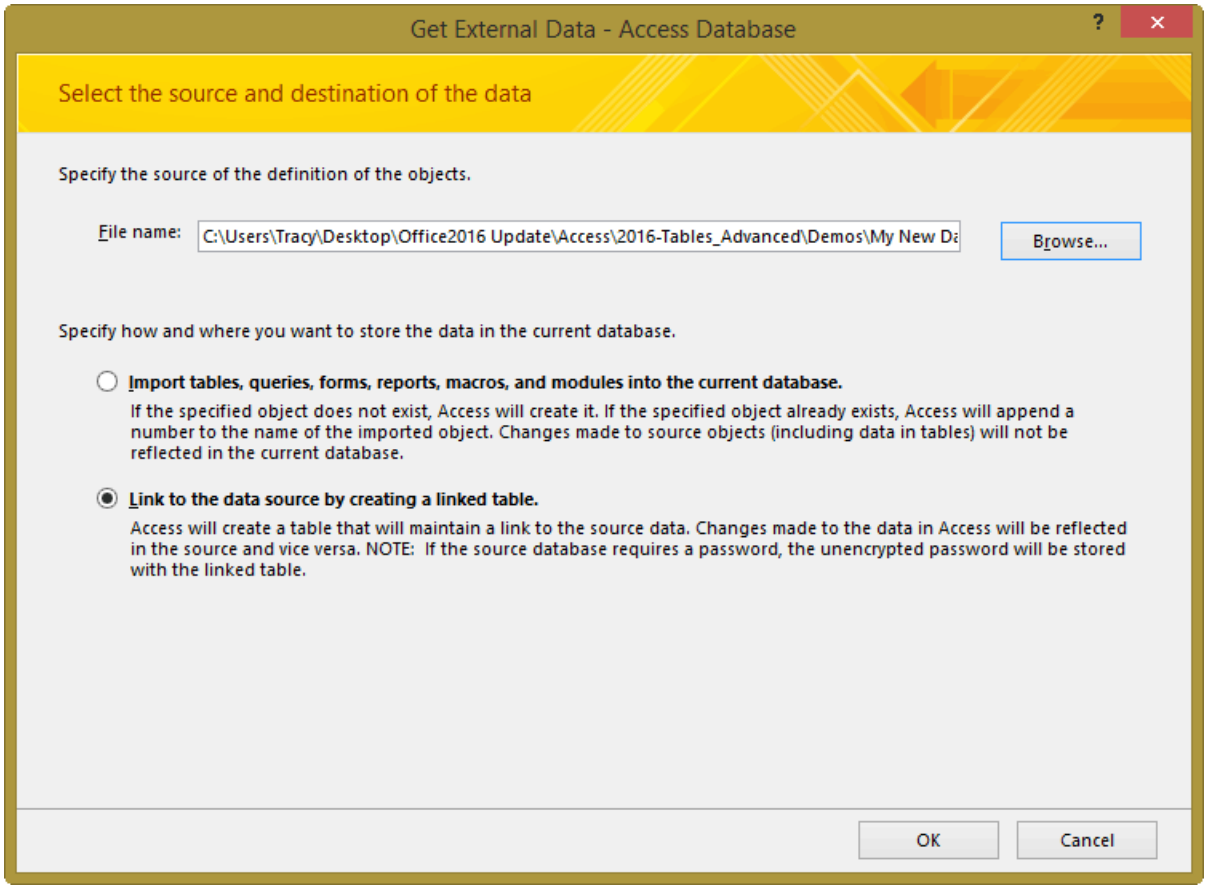
Title	Format	Artist
Right On	78	Count Basie and His Orchestra
I Got a Name	8-tr	Jim Croce
Smetana: Moldau, Overtures	33	Cleveland Orchestra
A Hard Day's Night	33	Beatles
The White Album	CD	Beatles
I Remember Yesterday	Cass	Donna Summer
Rachmaninov Piano Concerto 1 & 3	CD	Cleveland Orchestra
Just a Dream	MP3	Carrie Underwood
Music of the Night	MP3	Alfie Boe
King of Swing!	CD	Count Basie and His Orchestra
Pirates of Penzance	33	D'Oyly Carte Opera Company
Skyfall	MP3	Adele
Blown Away	MP3	Carrie Underwood
Bad Hair Day	CD	Weird Al Yankovic
Face the Music	Cassette	Electric Light Orchestra
Crazy Love	MP3	Michael Bublé
Sleepless in Seattle	CD	Harry Connick, Jr.
The Mikado	33	D'Oyly Carte Opera Company
It Might As Well Be Swing	33	Count Basie

3.2. Linking Tables from External Sources

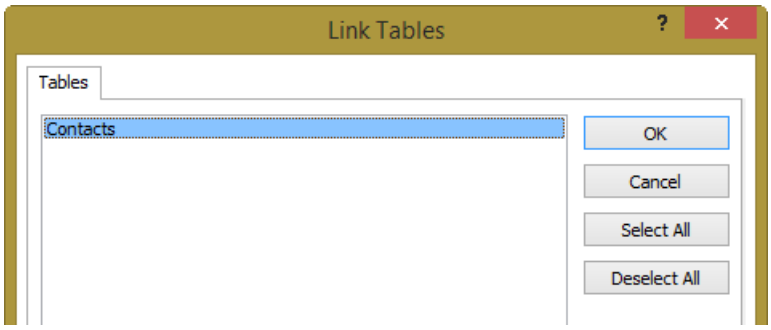
Using **External Data > Import & Link > New Data Source > From Database > Access** you may link tables from an external location making it easy to tie databases together, saving you the time and possible errors in double entry. The goal should always be enter the data once, and link/reuse whenever possible. Continue using the existing database, new files are found in `Tables_Advanced/Demos/My New Database - Simple Select.accdb`.



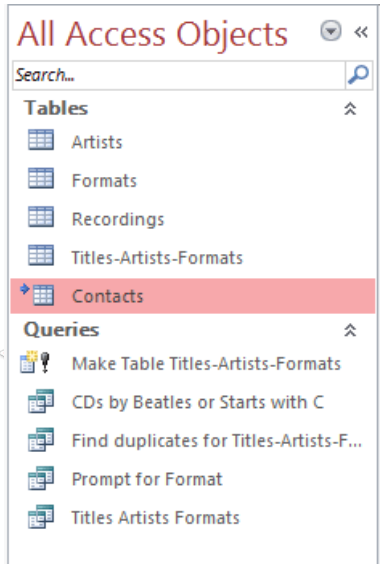
Link table wizard



Choose the items you wish to link, and click **OK**.



You will be prompted as to the status, if there were errors, go back and double check you choices.

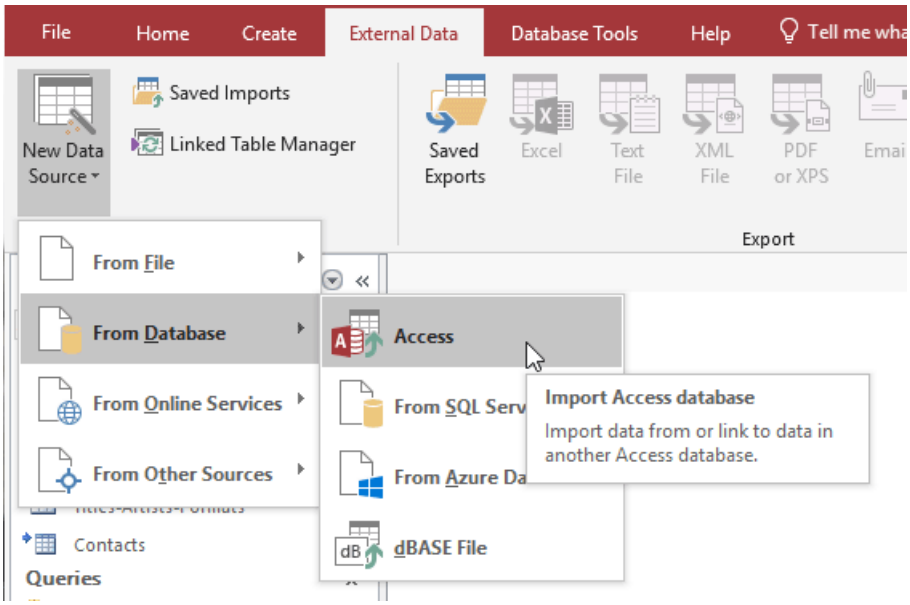


Note

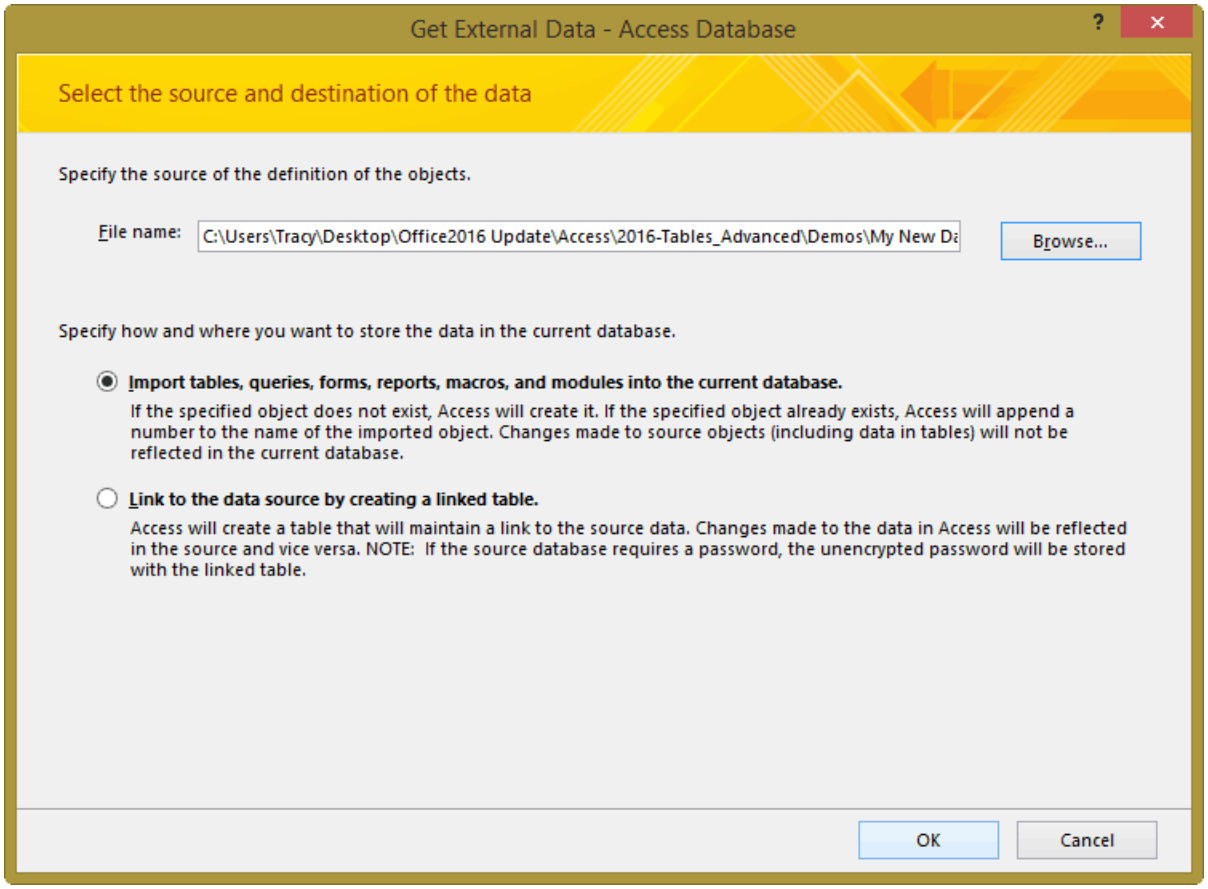
When the original table data is updated, your linked copies will also update.

3.3. Import Tables from other Databases

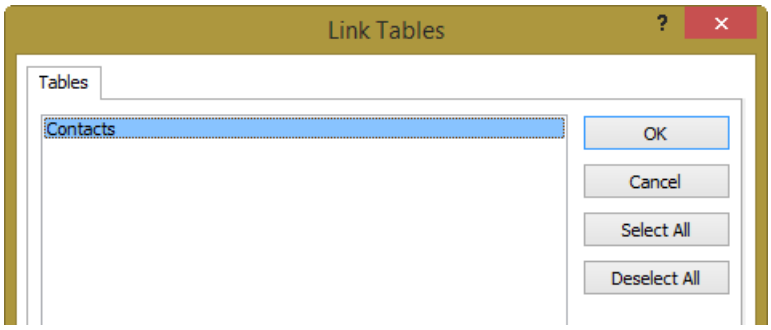
When you need to move an entire copy of the table, and not have it look back and update from the original, you should choose to Import.



Import table wizard



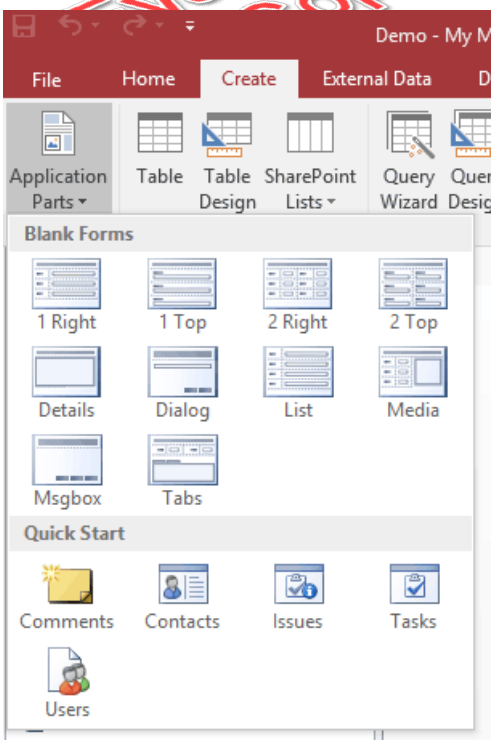
Choose the items you wish to import, and click **OK**.



You will be prompted as to the status, if there were errors, go back and double check you choices.

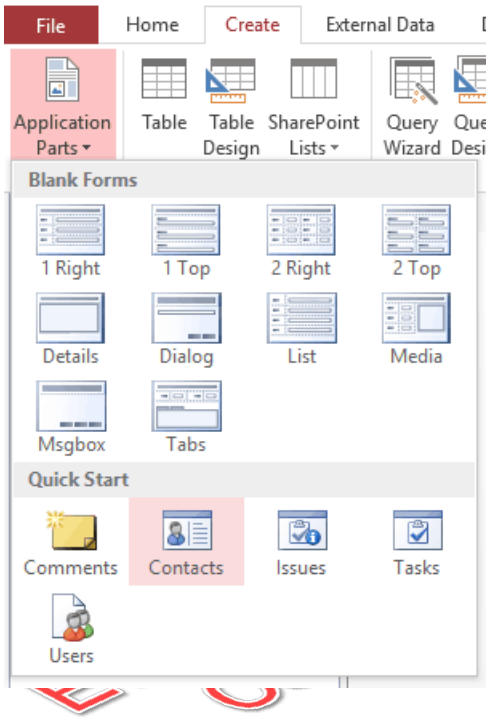
3.4. Tables from Templates and Application Parts

Creation of new tables does not always have to start from scratch, or an import from an existing Access database. We can use Templates or whole databases, and Application Parts for form and table objects. Your choices will differ as to what has been made available to you by your installation. Below are some of the basic choices that are normally available.

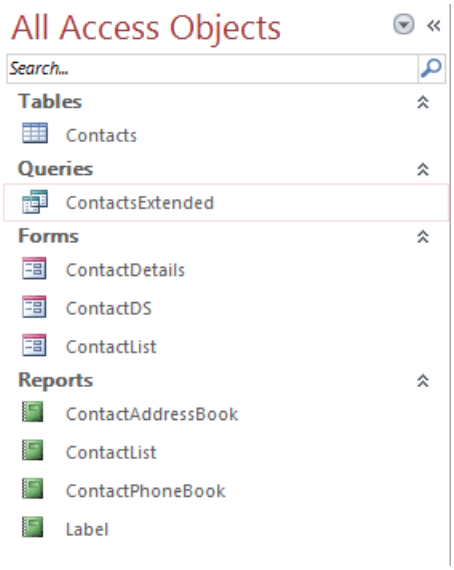


These items may be customized and formatted as per usual. They just give you a head start.

1. Open the database that needs a new table.
2. **Create > Application Parts > Contacts**.



3. The appropriate Tables, Queries, Forms and Reports have now been added. Saving you the time of creating each one. They may be opened in Design View and edited individually.



Exercise 4: Importing Data from Excel

15 to 25 minutes

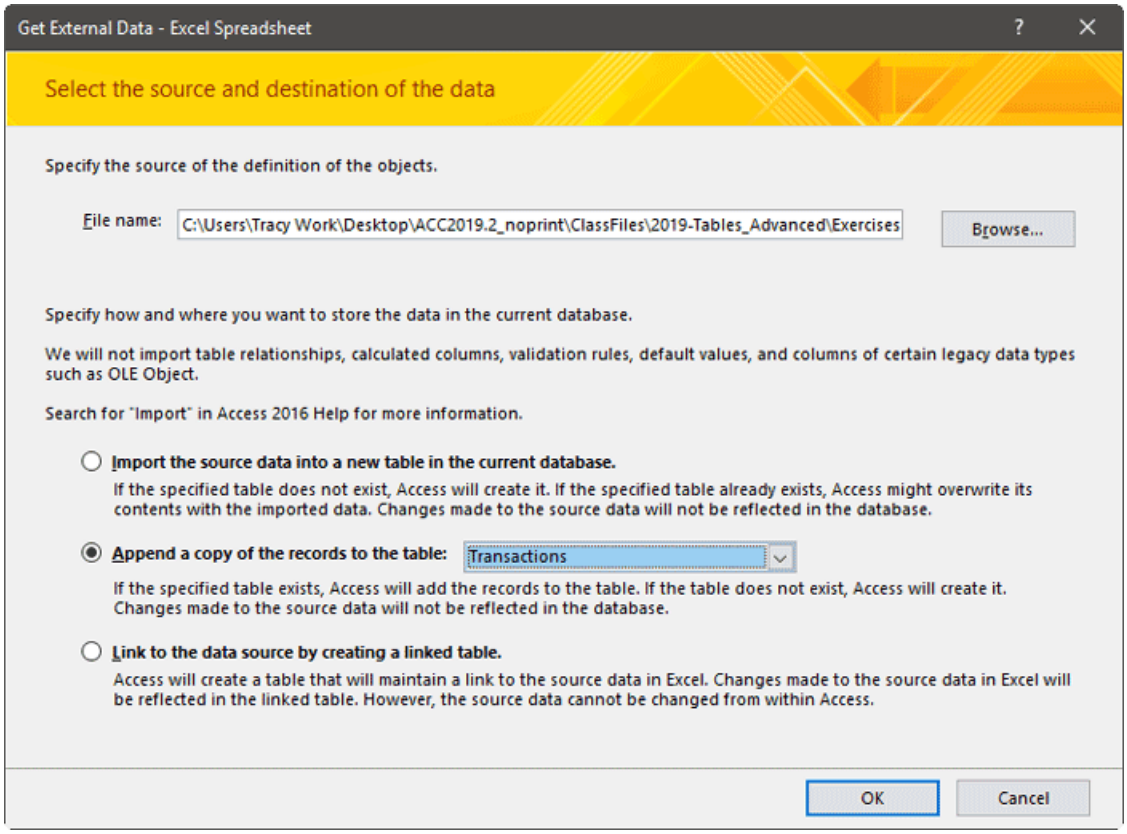
In this exercise, you will import transactions from a spreadsheet called Checking Transactions.xlsx into the Transactions table of the Bank Register database found in the `ClassFiles/Tables_Advanced/Exercises` folder. Files are found in `Tables_Advanced/Exercises/Bank Register.accdb`.

The spreadsheet contains the following records: Files are found in `Tables_Advanced/Exercises/Checking Transactions.accdb`.

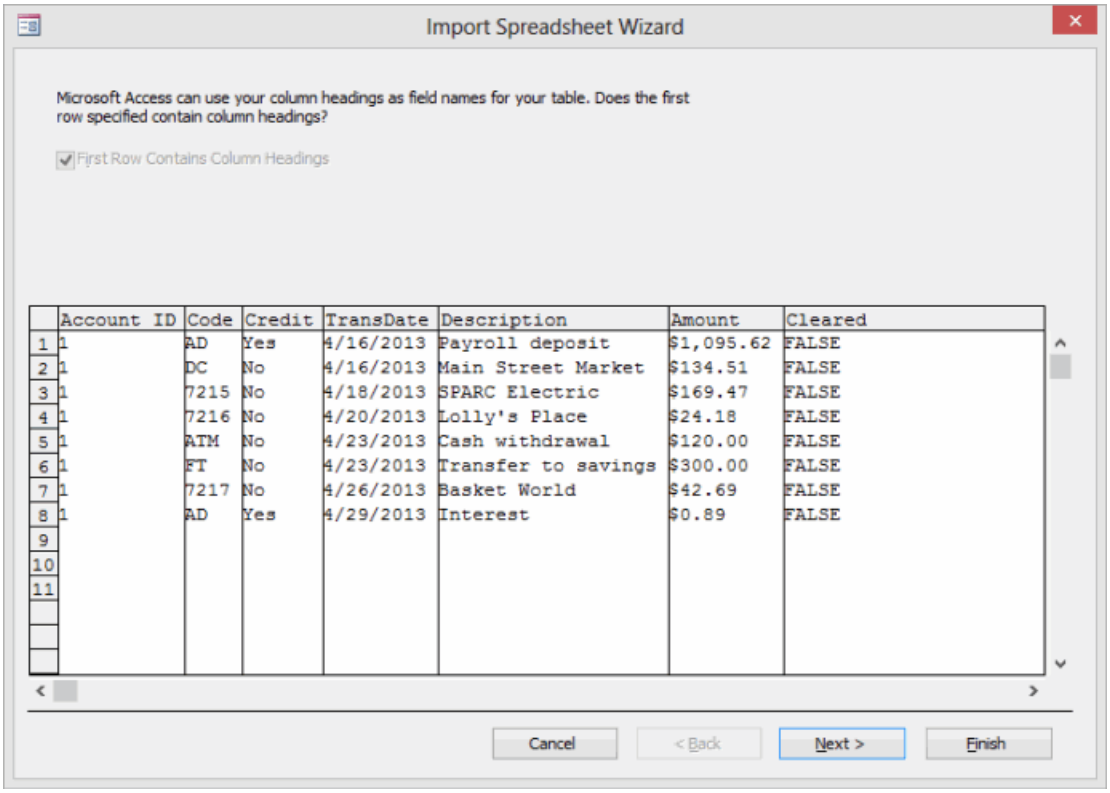
	A	B	C	D	E	F	G
1	Account_ID	Code	Credit	TransDate	Description	Amount	Cleared
2	1	AD	TRUE	4/16/2013	Payroll deposit	$1,095.62	FALSE
3	1	DC	FALSE	4/16/2013	Main Street Market	$134.51	FALSE
4	1	7215	FALSE	4/18/2013	SPARC Electric	$169.47	FALSE
5	1	7216	FALSE	4/20/2013	Lolly's Place	$24.18	FALSE
6	1	ATM	FALSE	4/23/2013	Cash withdrawal	$120.00	FALSE
7	1	FT	FALSE	4/23/2013	Transfer to savings	$300.00	FALSE
8	1	7217	FALSE	4/26/2013	Basket World	$42.69	FALSE
9	1	AD	TRUE	4/29/2013	Interest	$0.89	FALSE
10							

Solution

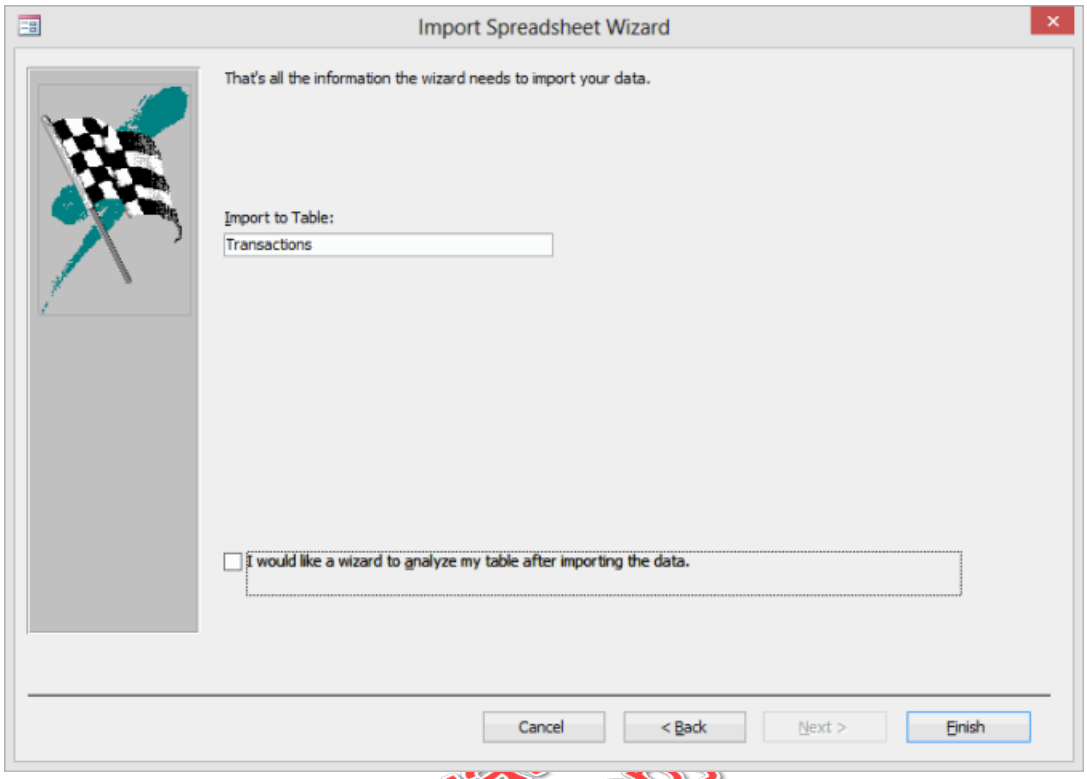
1. Ensure that Checking Transactions.xlsx is closed.
2. Open the database.
3. On the **Import & Link** group, click **New Data Source > From File > Excel**.
4. Click **Browse** and navigate to the location of Checking Transactions.xlsx.
5. Highlight the file name and click **Open**.
6. Select **Append a copy of the records to the table** and then select "Transactions" from the drop-down list.



7. Click **OK**.


Import Spreadsheet Wizard
Microsoft Access can use your column headings as field names for your table. Does the first row specified contain column headings?
First Row Contains Column Headings
Account ID Code Credit TransDate Description Amount Cleared
1 1 AD Yes 4/16/2013 Payroll deposit $1,095.62 FALSE
2 1 DC No 4/16/2013 Main Street Market $134.51 FALSE
3 1 7215 No 4/18/2013 SPARC Electric $169.47 FALSE
4 1 7216 No 4/20/2013 Lolly's Place $24.18 FALSE
5 1 ATM No 4/23/2013 Cash withdrawal $120.00 FALSE
6 1 FT No 4/23/2013 Transfer to savings $300.00 FALSE
7 1 7217 No 4/26/2013 Basket World $42.69 FALSE
8 1 AD Yes 4/29/2013 Interest $0.89 FALSE
9
10
11
Cancel
< Back
Next >
Finish

8. Click **Next >**.



9. Click **Finish**. You are prompted whether to save the import steps for reuse.
10. Click **Close**.
11. Open the Transactions table to see your results.

Transactions

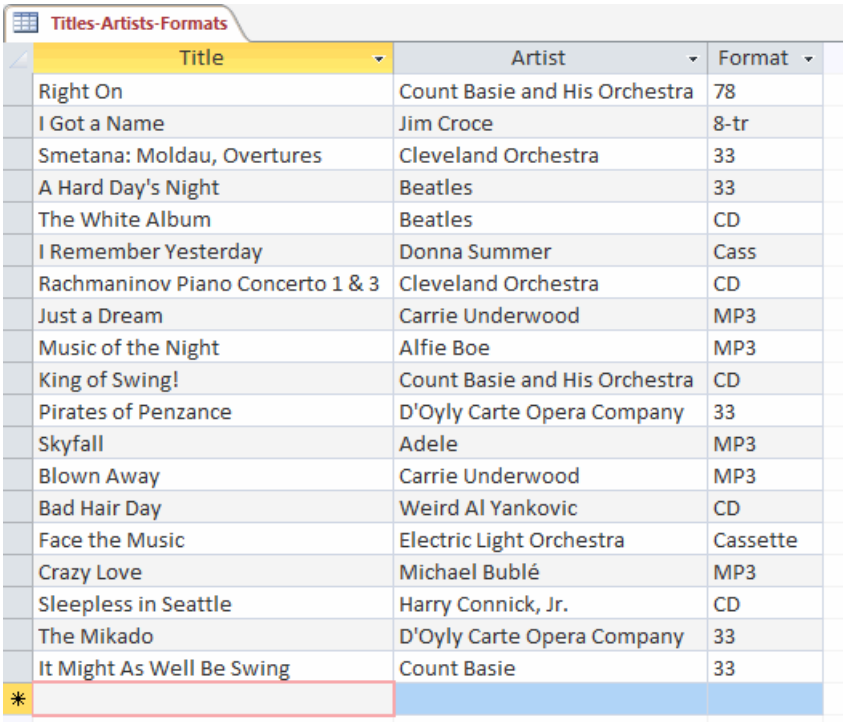
Trans ID	Account ID	Code	Credit	Date	Description	Amount	Memo	Cleared
1	1	AD	☑	4/1/2013	Payroll deposit	$1,095.62		☑
2	1	DC	☐	4/2/2013	Main Street Market	$117.34	Groceries	☑
3	1	7214	☐	4/7/2013	Charlottesville MUD	$74.19	Water bill	☐
4	1	FT	☐	4/10/2013	Transfer to savings	$500.00		☑
5	1	ATM	☐	4/10/2013	Cash withdrawal	$120.00		☑
6	1	AD	☑	4/14/2013	US Dept of Treasury	$372.96	Tax refund	☐
35	1	AD	☑	4/16/2013	Payroll deposit	$1,095.62		☐
36	1	DC	☐	4/16/2013	Main Street Market	$134.51		☐
37	1	7215	☐	4/18/2013	SPARC Electric	$169.47		☐
38	1	7216	☐	4/20/2013	Lolly's Place	$24.18		☐
39	1	ATM	☐	4/23/2013	Cash withdrawal	$120.00		☐
40	1	FT	☐	4/23/2013	Transfer to savings	$300.00		☐
41	1	7217	☐	4/26/2013	Basket World	$42.69		☐
42	1	AD	☑	4/29/2013	Interest	$0.89		☐
(New)			☐			$0.00		☐

3.5. Exporting Data

In the introductory course, we mentioned that an advantage of Excel over Access is Excel's rich reporting and charting capabilities. Access's export feature lets us take advantage of this feature by making it easy to put our data in Excel format.

To export data from an Access table or query to an Excel worksheet: Files are found in `Tables_Advanced/Demos/Demo - My Music Collection - Exporting Data.accdb` folder.

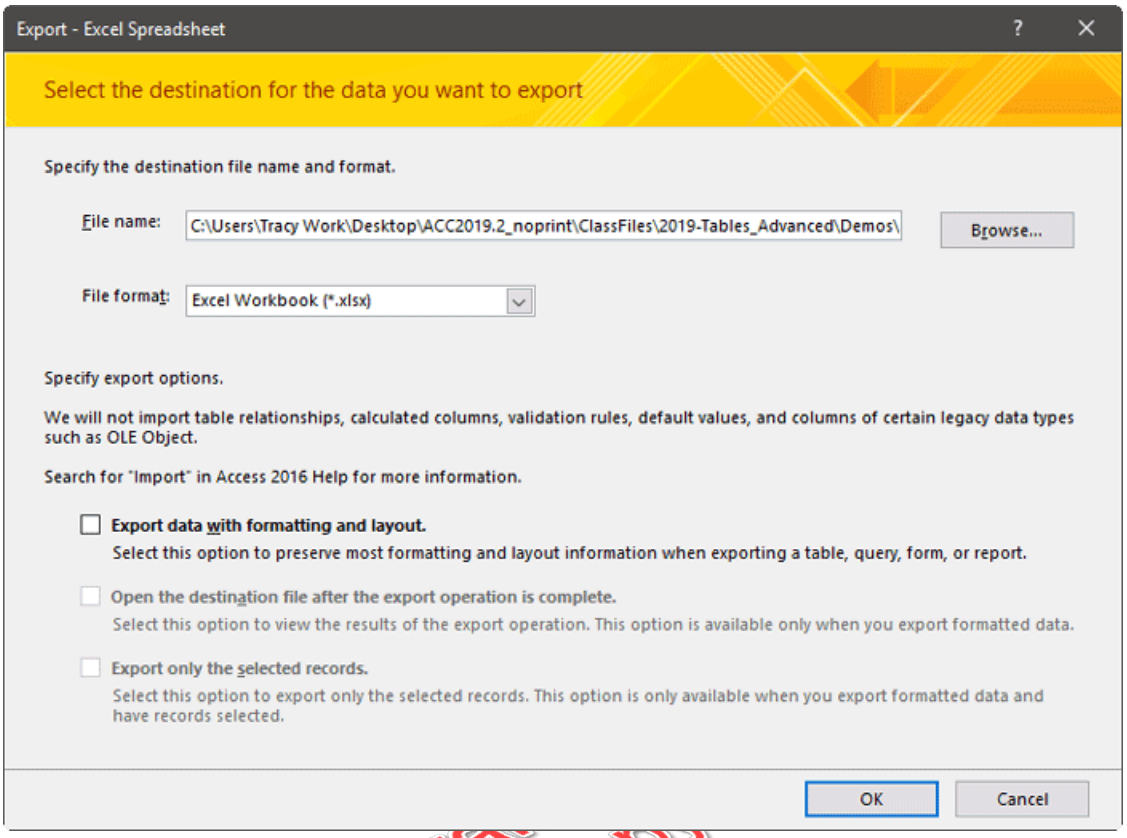
1. Open the database.
2. Open the table or query with the data you want to export.



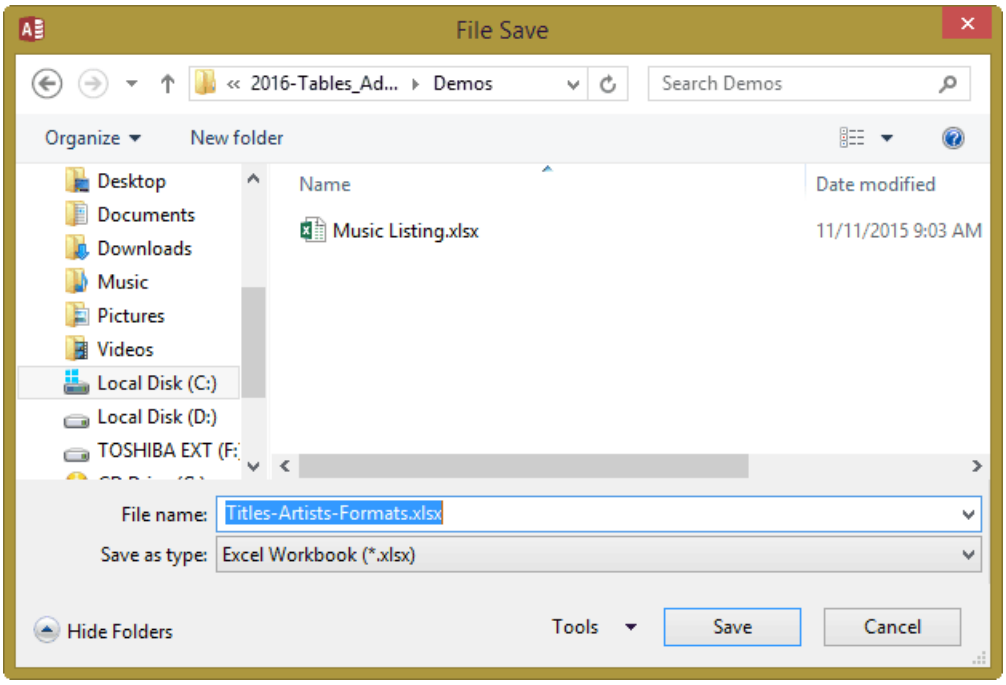
Titles-Artists-Formats

Title	Artist	Format
Right On	Count Basie and His Orchestra	78
I Got a Name	Jim Croce	8-tr
Smetana: Moldau, Overtures	Cleveland Orchestra	33
A Hard Day's Night	Beatles	33
The White Album	Beatles	CD
I Remember Yesterday	Donna Summer	Cass
Rachmaninov Piano Concerto 1 & 3	Cleveland Orchestra	CD
Just a Dream	Carrie Underwood	MP3
Music of the Night	Alfie Boe	MP3
King of Swing!	Count Basie and His Orchestra	CD
Pirates of Penzance	D'Oyly Carte Opera Company	33
Skyfall	Adele	MP3
Blown Away	Carrie Underwood	MP3
Bad Hair Day	Weird Al Yankovic	CD
Face the Music	Electric Light Orchestra	Cassette
Crazy Love	Michael Bublé	MP3
Sleepless in Seattle	Harry Connick, Jr.	CD
The Mikado	D'Oyly Carte Opera Company	33
It Might As Well Be Swing	Count Basie	33

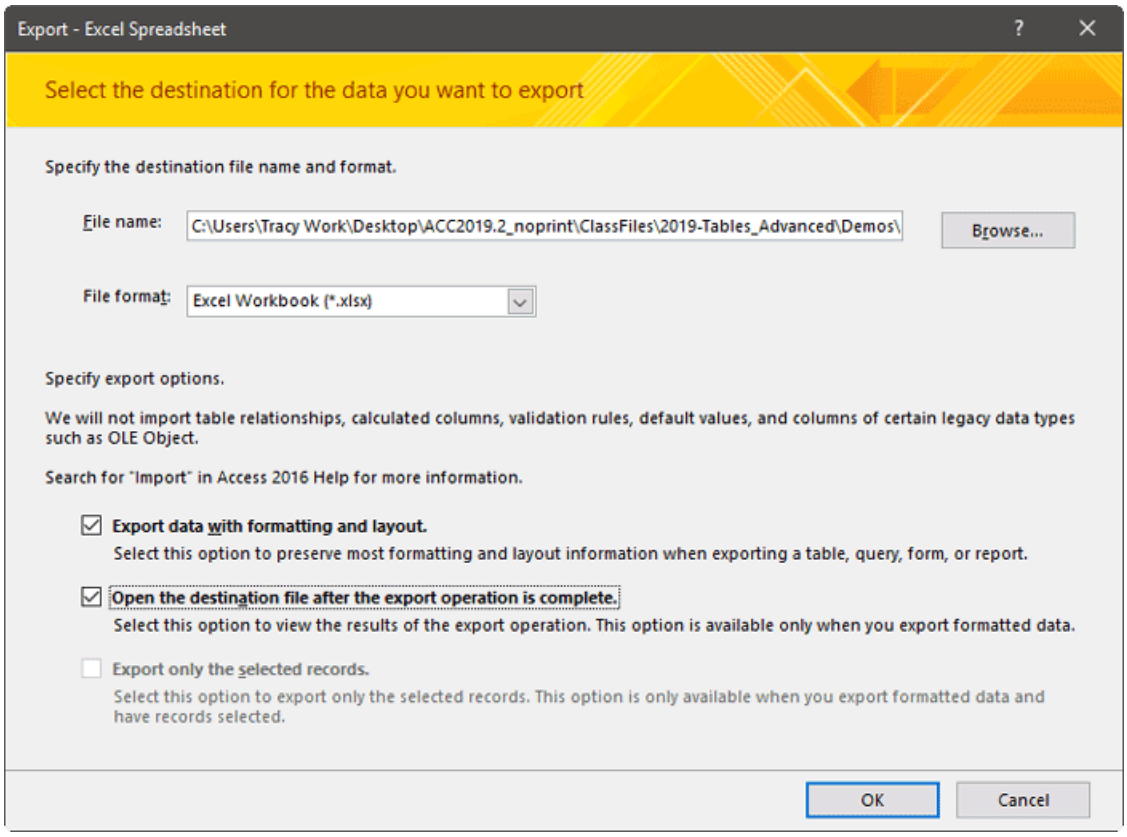
3. On the **External Data** tab in the **Export** group, click **Excel**. The **Export - Excel Spreadsheet** wizard starts.



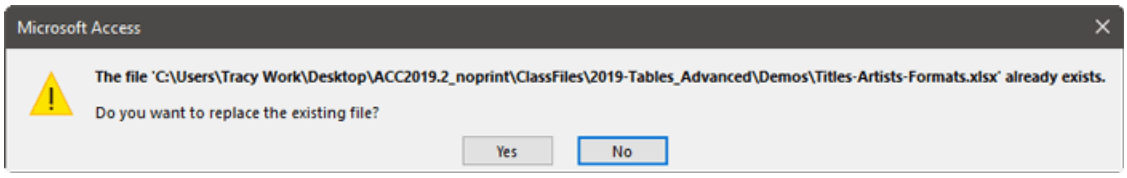
4. If you need to change the saving location, click **Browse**. The **File Save** dialog opens.



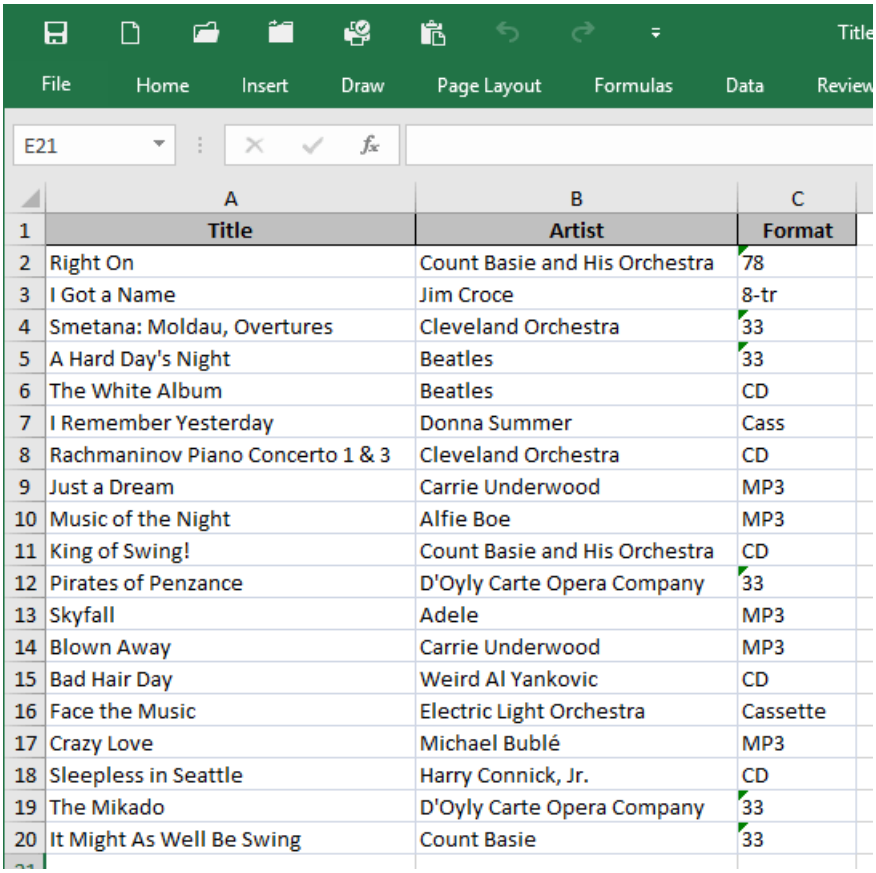
5. Navigate to the location where you want to save the file, enter a name in the **File name** field, and click **Save**.
6. If you want to save in a different format than the default, select the format from the **File format** drop-down list.
7. Mark the **Export data with formatting and layout** check box.
8. Mark the **Open the destination file after the export operation is complete** check box.



9. If you choose a name already used, you may receive an additional step. If so , click Yes to overwrite file, or No to get a chance to rename.



10. Click **OK**. The new workbook opens.



	A	B	C
1	Title	Artist	Format
2	Right On	Count Basie and His Orchestra	78
3	I Got a Name	Jim Croce	8-tr
4	Smetana: Moldau, Overtures	Cleveland Orchestra	33
5	A Hard Day's Night	Beatles	33
6	The White Album	Beatles	CD
7	I Remember Yesterday	Donna Summer	Cass
8	Rachmaninov Piano Concerto 1 & 3	Cleveland Orchestra	CD
9	Just a Dream	Carrie Underwood	MP3
10	Music of the Night	Alfie Boe	MP3
11	King of Swing!	Count Basie and His Orchestra	CD
12	Pirates of Penzance	D'Oyly Carte Opera Company	33
13	Skyfall	Adele	MP3
14	Blown Away	Carrie Underwood	MP3
15	Bad Hair Day	Weird Al Yankovic	CD
16	Face the Music	Electric Light Orchestra	Cassette
17	Crazy Love	Michael Bublé	MP3
18	Sleepless in Seattle	Harry Connick, Jr.	CD
19	The Mikado	D'Oyly Carte Opera Company	33
20	It Might As Well Be Swing	Count Basie	33

11. Back in Access, you are prompted whether to save the export steps.
12. Click **Close**.

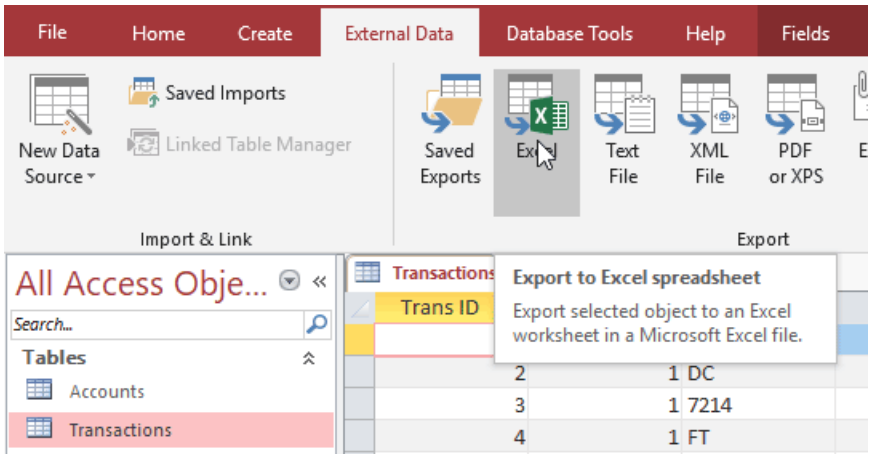
Exercise 5: Exporting Data to Excel

10 to 20 minutes

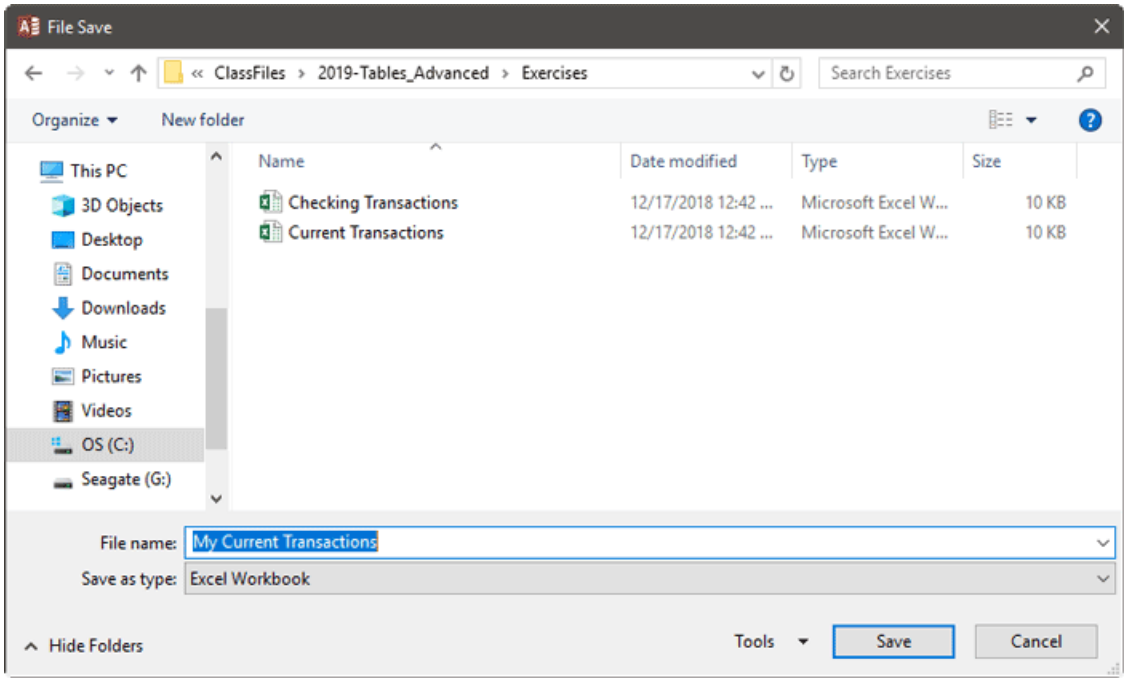
In this exercise, you will export the data in the Transactions table of the Bank Register database found in the `ClassFiles/Tables_Advanced/Exercises` folder to an Excel file named Current Transactions.xlsx.

Solution

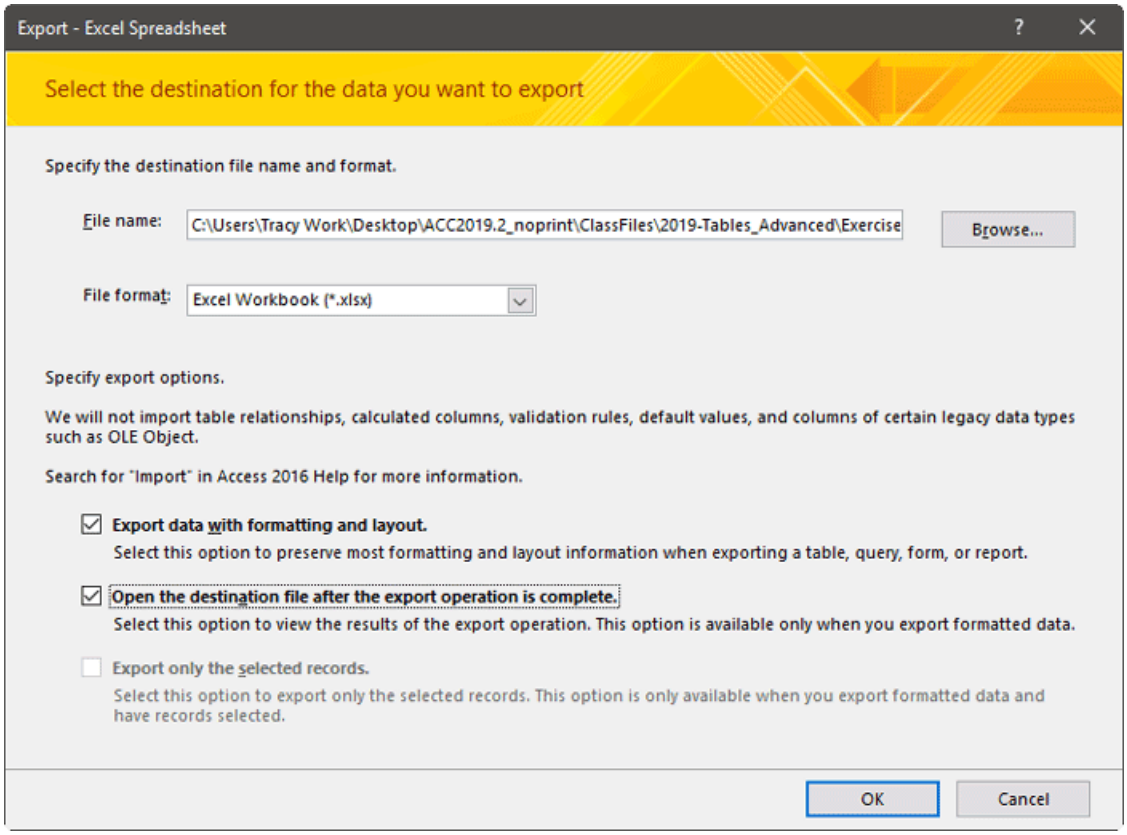
1. Open the database.
2. Open the Transactions table in Datasheet view. On the **External Data** tab in the **Export** group, click **Excel**.



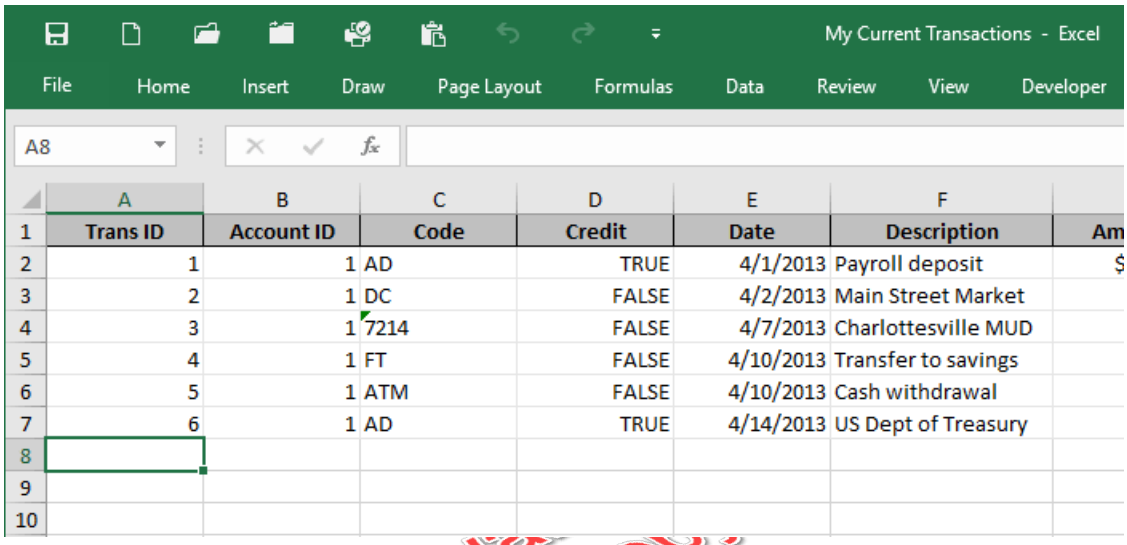
3. Click **Browse**.
4. Navigate to your `ClassFiles/Tables_Advanced/Exercises` folder.
5. In the **File name** field, type "My Current Transactions.xlsx".



6. Click **Save**.
7. In the **File format** field, ensure that "Excel Workbook (*.xlsx)" is selected.
8. Mark the **Export data with formatting and layout** check box.
9. Mark the **Open the destination file after the export operation is complete** check box.



10. Click **OK**. The new workbook opens.



	A	B	C	D	E	F	
1	Trans ID	Account ID	Code	Credit	Date	Description	Am
2	1	1	AD	TRUE	4/1/2013	Payroll deposit	$
3	2	1	DC	FALSE	4/2/2013	Main Street Market	
4	3	1	7214	FALSE	4/7/2013	Charlottesville MUD	
5	4	1	FT	FALSE	4/10/2013	Transfer to savings	
6	5	1	ATM	FALSE	4/10/2013	Cash withdrawal	
7	6	1	AD	TRUE	4/14/2013	US Dept of Treasury	
8							
9							
10							

11. Back in Access, you are prompted whether to save the export steps.
12. Click **Close**.

Conclusion

In this lesson, you learned:

- How to import data from Excel.
- How to export data to Excel.

LESSON 4
Forms

Topics Covered

☑ Parts of a form.

☑ Adding a logo and title to a form.

☑ Form fields.

☑ Form controls.

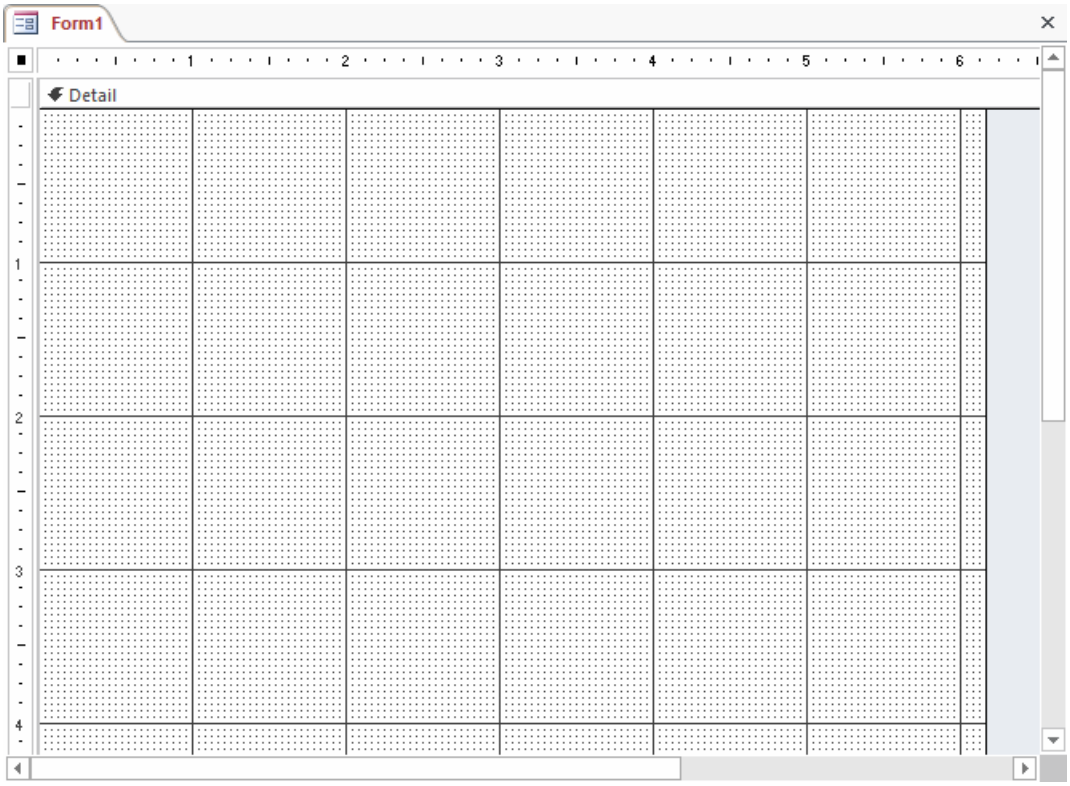
Introduction

In this lesson, you will learn about the parts of a form, how to add a logo and title to a form, to work with form fields, and about the different controls that are available for forms.

4.1. Design View

Creating a form in Design view gives you maximum control over your form's presentation and behavior. In this lesson, we will start with a blank slate. Start by opening `Forms_Advanced/Demos/Demo - My Music Collection - Start.accdb`.

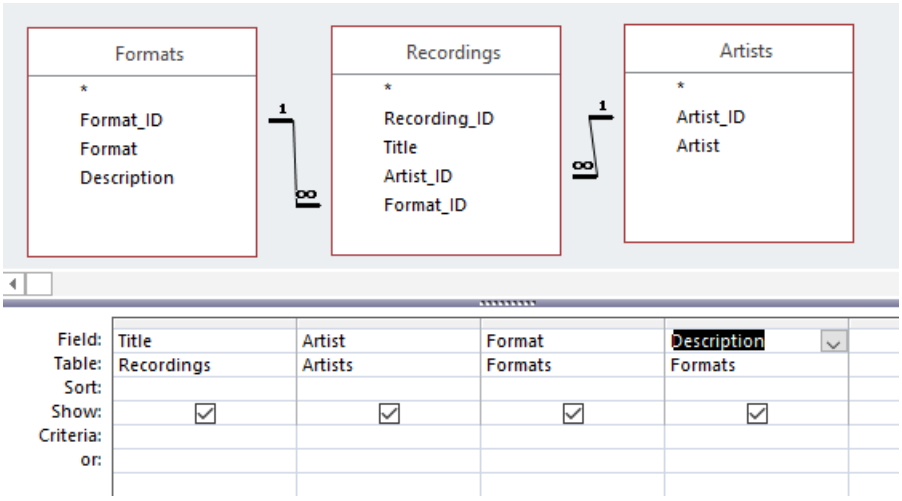
To start a form in Design view, go to the **Create** tab in the **Forms** group and click **Form Design**. A blank form design tab opens on the work surface.



Name and save the form. For our demo database, we'll name the form "Music Collection".

Next, we need to give our form a record source. To do this, we'll create a query.

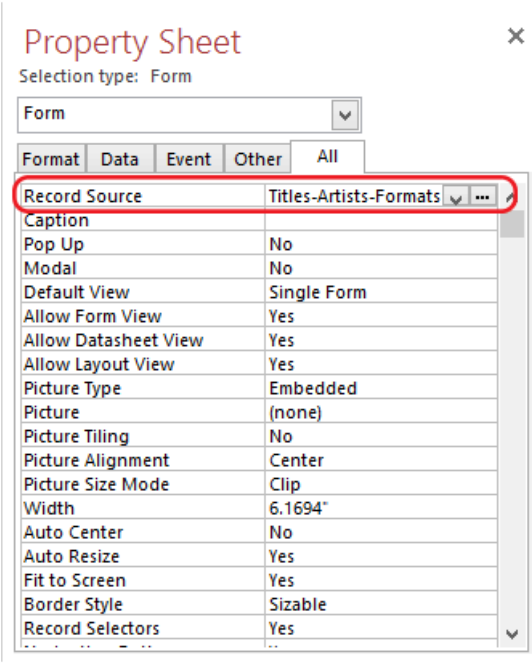
1. On the **Create** tab in the **Queries** group, click **Query Design**.
2. In the **Show Table** dialog box, add the Recording Formats, Artists, and Recordings and then click **Close**.
3. In the Recordings table, double-click "Title".
4. In the Artists table, double-click "Artist".
5. In the Recording Formats, double-click "Format" and "Description".



6. Run the query.

Title	Artist	Format	Description
Skyfall	Adele	MP3	MP3 file
Right On	Count Basie and His Orchestra	78	78 RPM vinyl record
I Got a Name	Jim Croce	8-tr	8-track tape
Smetana: Moldau, Overtures	Cleveland Orchestra	33	33 1/3 RPM vinyl record
A Hard Day's Night	Beatles	33	33 1/3 RPM vinyl record
The White Album	Beatles	CD	Compact disc
I Remember Yesterday	Donna Summer	Cass	Cassette tape
Rachmaninov Piano Concerto 1 & 3	Count Basie and His Orchestra	CD	Compact disc
Just a Dream	Carrie Underwood	MP3	MP3 file
Music of the Night	Alfie Boe	MP3	MP3 file
King of Swing!	Count Basie and His Orchestra	CD	Compact disc
Pirates of Penzance	D'Oyly Carte Opera Company	33	33 1/3 RPM vinyl record

7. Save the query as “Recording Details”.
8. Return to the form in Design view.
9. To associate the query with the form, right-click in the design surface and select **Form Properties** from the shortcut menu.
10. On the **All** tab from the **Record Source** drop-down list, select “Recording Details” or you may use a query we created named “Titles-Artist-Formats”.



11. Close the property sheet.

❖ 4.1.1. Form Sections

Forms have three main sections: header, detail, and footer. Only the detail section is required to create a form.

Header

If you include the optional header section, it is visible for every record. The header section is often used to add a logo or title to the form. The header and footer are paired, so when you add one to the form, you add them both.

Detail

The detail section contains the data entry controls of the form. The values in the detail section change as you move from record to record.

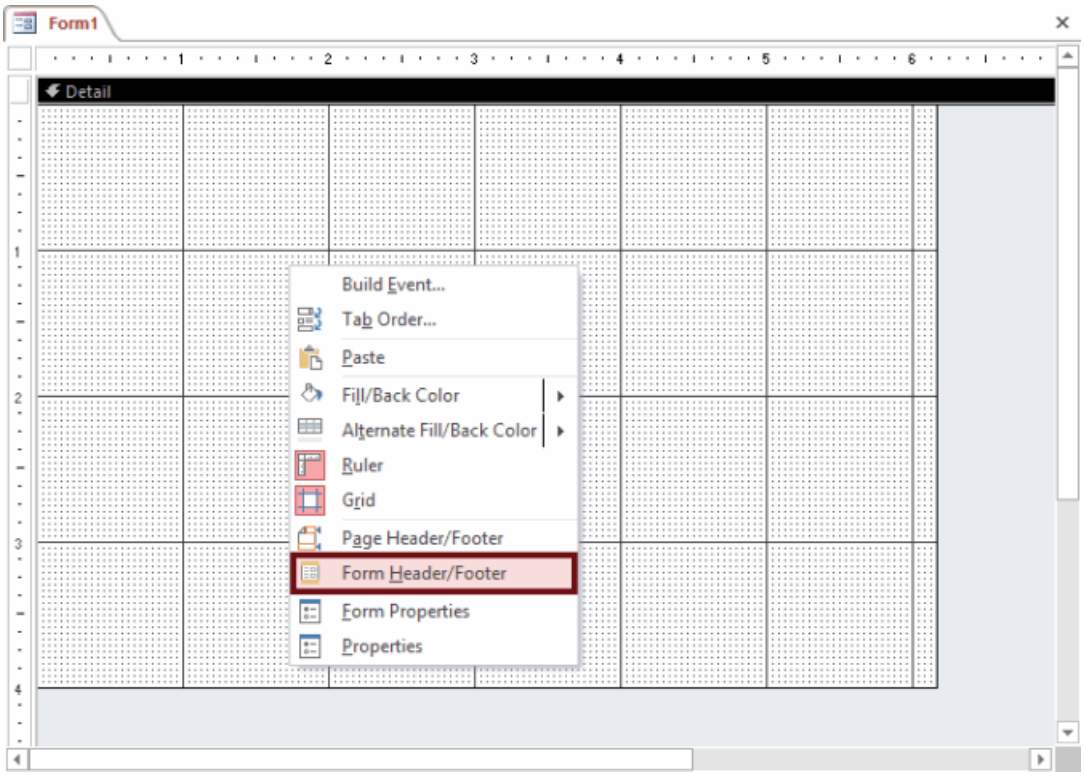
Footer

If you include the optional footer section, it is visible for every record.

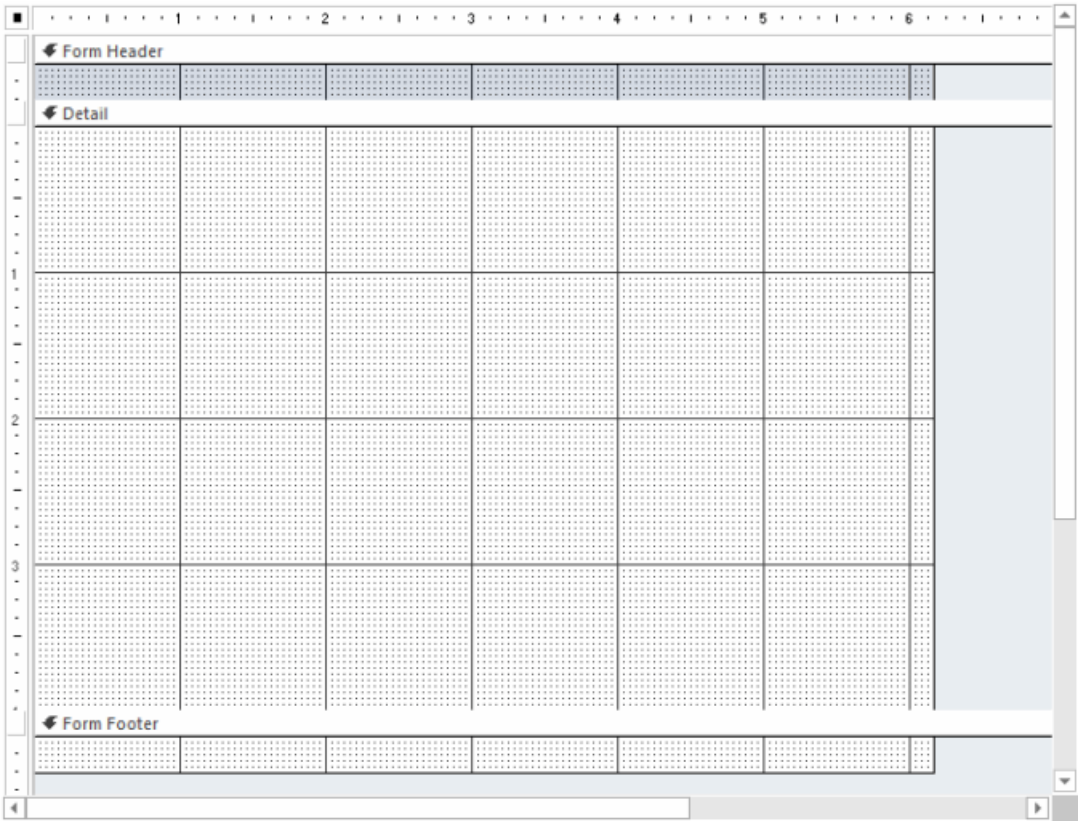
❖ 4.1.2. Adding a Header and Footer

To add header and footer sections to a form:

1. Display the form in Design view.
2. Right-click the design surface and select **Form Header/Footer** from the shortcut menu.



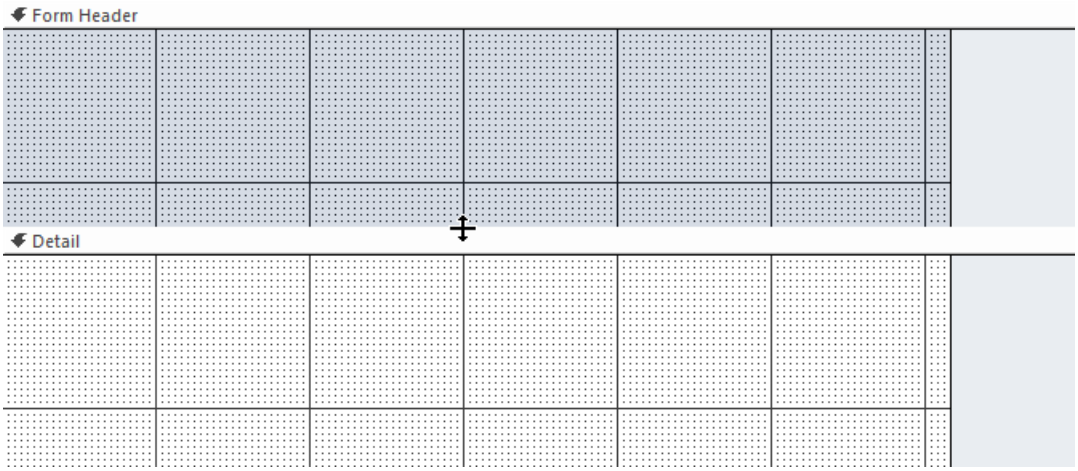
The header and footer sections are added to the design surface.



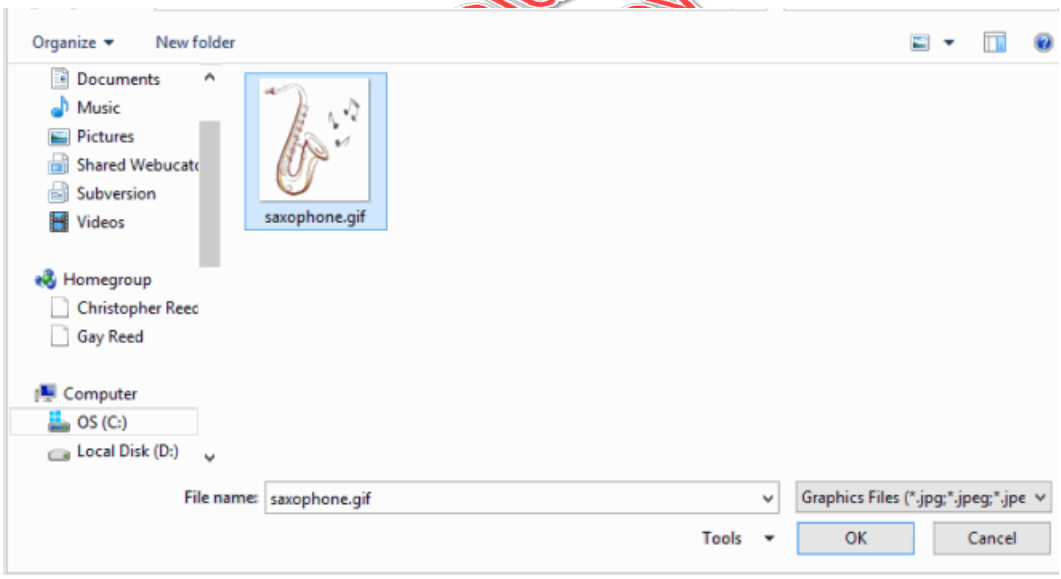
❖ 4.1.3. Adding a Logo to the Header

To add a logo to the header of the form:

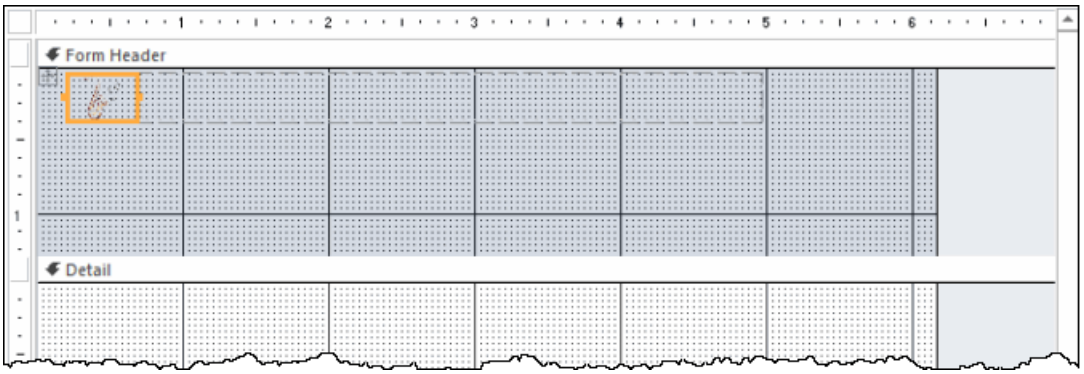
1. Resize the header section as needed to accommodate the logo. To do so, hover your mouse over the lower edge of the header section until the cursor changes to ↕. Click and drag until the header is an appropriate size and then release the mouse button.



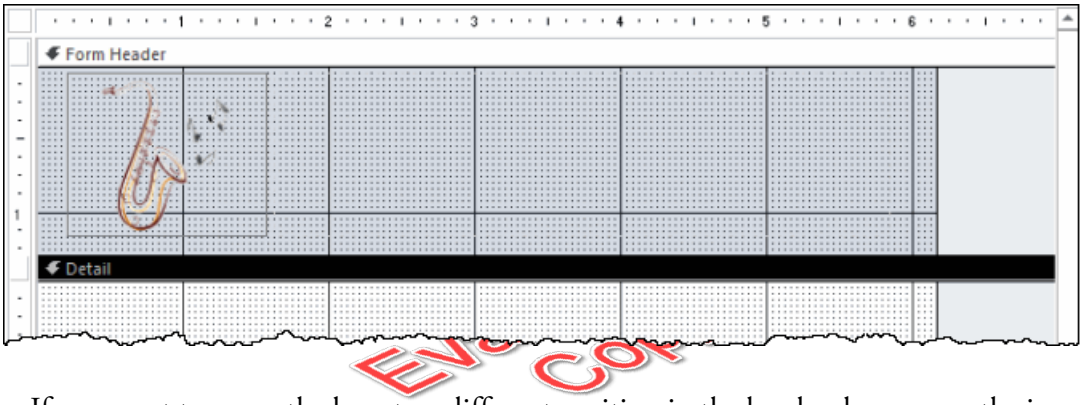
2. On the **Form Design Tools: Design** tab in the **Header/Footer** group, click **Logo**. The **Insert Picture** dialog box opens.
3. Navigate to and select the logo file.



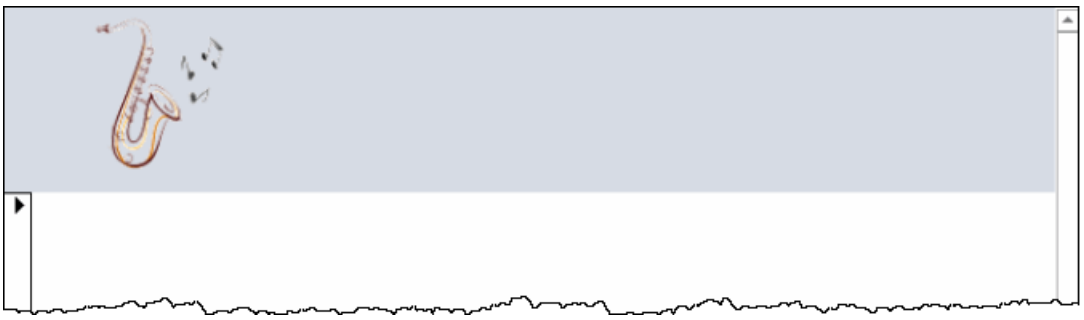
4. Click **OK**. The logo is added to the header area.



5. If necessary, click and drag the lower-right corner of the image container to resize the logo.



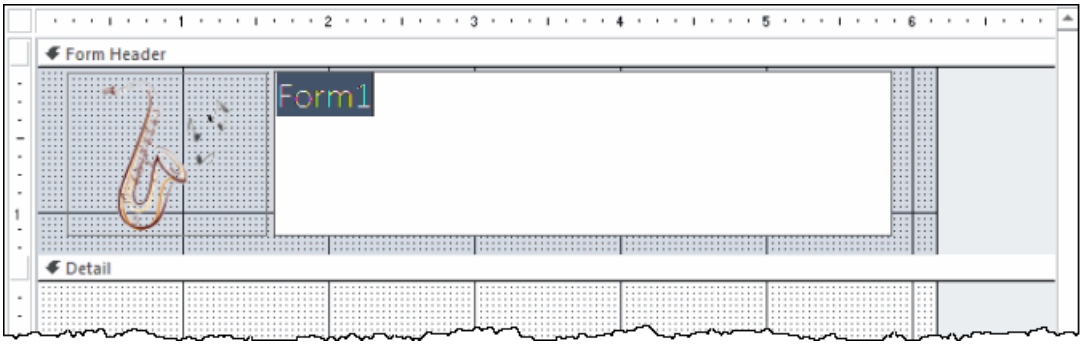
6. If you want to move the logo to a different position in the header, hover over the image until the cursor changes to and then click and drag the logo to its new position.
7. To preview the logo, switch to Form view.



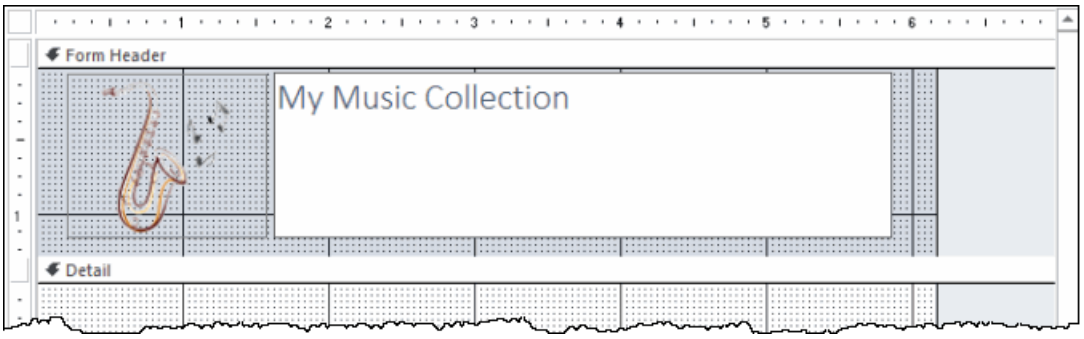
❖ 4.1.4. Adding a Title to the Header

To add a title to the header:

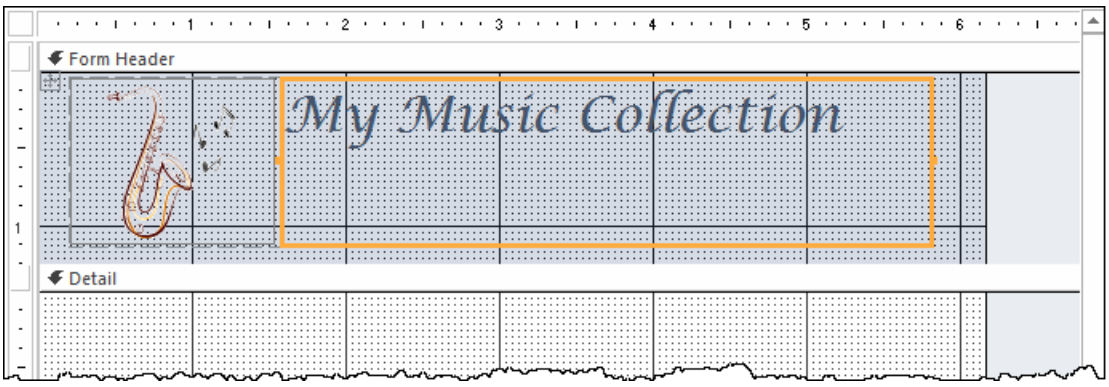
1. In Design view, on the **Form Design Tools: Design** tab in the **Header/Footer** group, click **Title**. A text box is added to the header section.



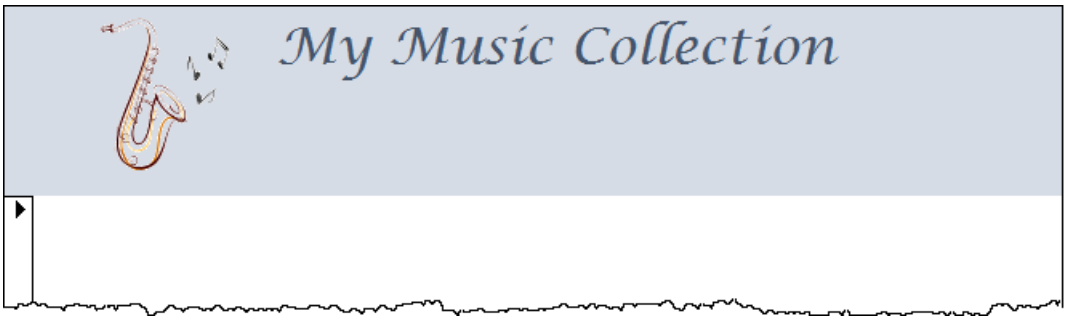
2. Type the title for the form.



3. If you want to change the font, font size, font color, etc., of the title, select the **Form Design Tools: Format** tab and make your selections.



4. Return to the **Form Design Tools: Design** tab and then switch to Form view to preview your results.

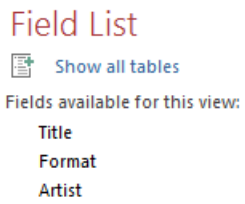


❖ 4.1.5. Adding Fields to a Form

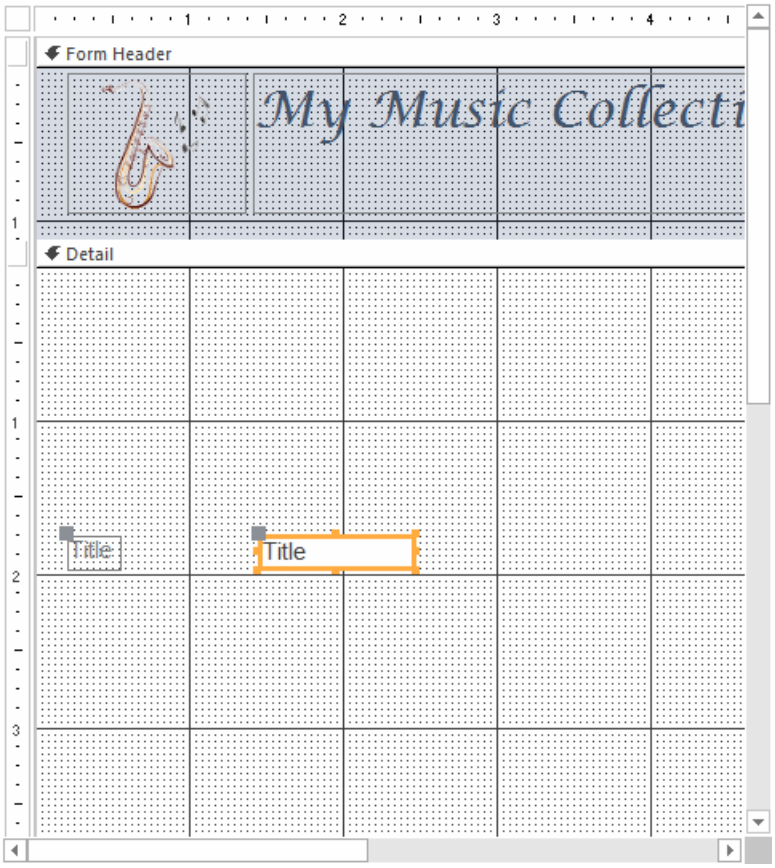
Next, we'll add fields to the design surface. We will add only the fields that our users need to interact with or need to view as they input data.

To add fields to the form:

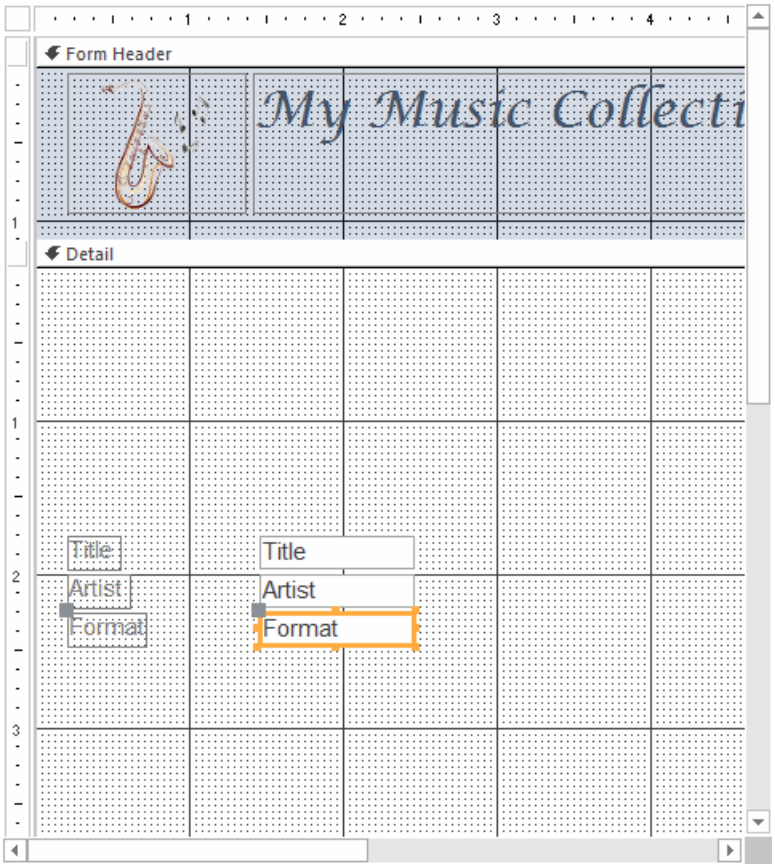
1. Switch to Design view.
2. On the **Form Design Tools: Design** tab in the **Tools** group, click **Add Existing Fields**. The **Field List** pane opens.



3. Double-click a field name to add the field to the design surface. Notice that both a field label and a data entry field are added to the design surface.



4. Repeat step 3 for all the fields you need to add to the form.

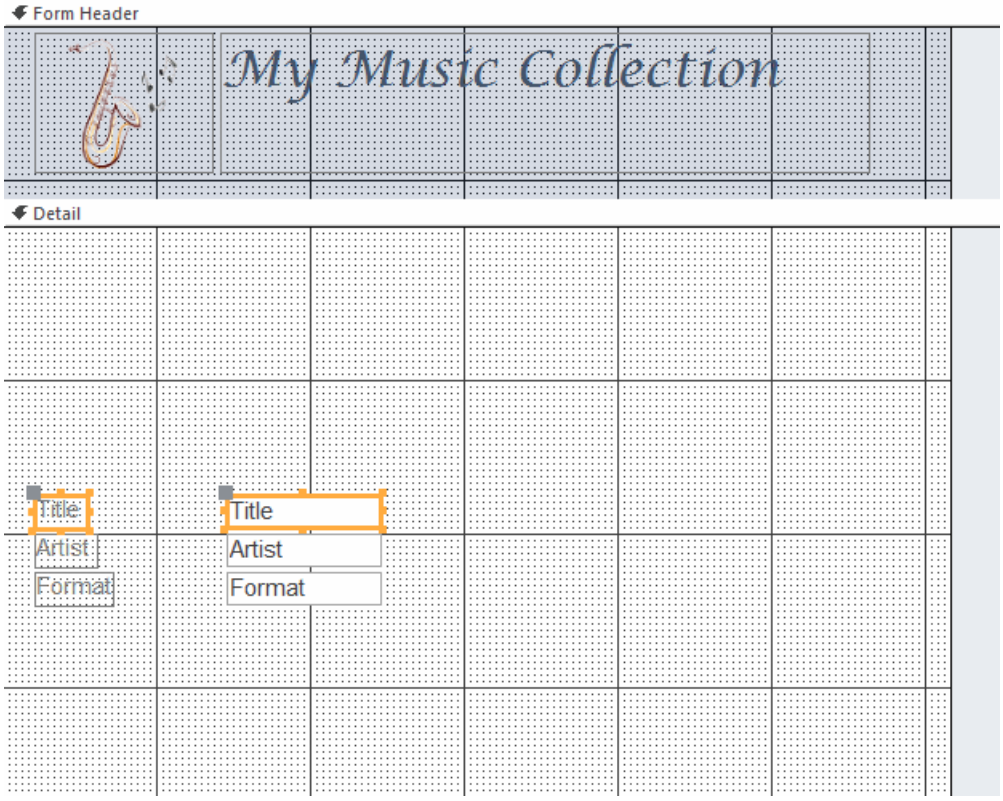


❖ 4.1.6. Arranging Fields on a Form

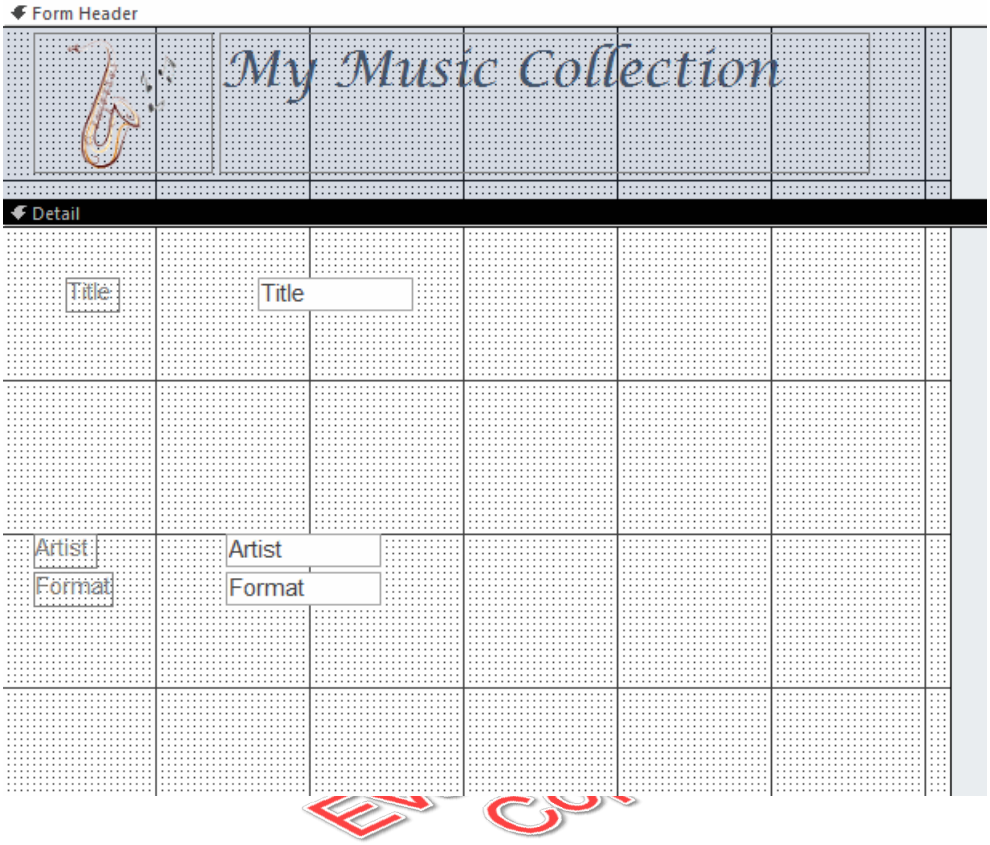
As you can tell, Access adds the fields in the order you selected them and stacks them. Presumably you want your form to have a little more visual appeal, so you'll want to move the fields about and resize them.

To move a field and its label together:

1. Click the label and then press **Ctrl** and click the field. Both the label and field will be outlined in orange.

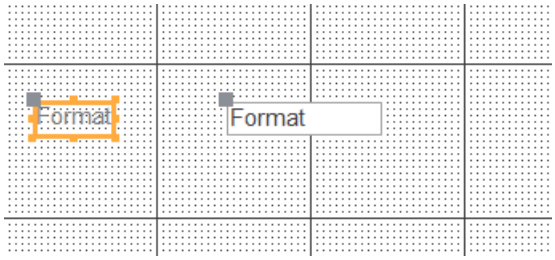


2. Hover your mouse pointer over either of the objects until the cursor changes to and then click and drag the objects to their new location and release the mouse button.



To move objects separately:

1. Click the object you want to move.

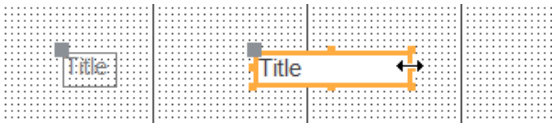


2. Hover over the handle in the object's upper left corner until the cursor changes to and then click and drag the object to its new position.

To resize objects independently:

1. Click the object you want to resize to select it.

2. Hover over the object at one of the sizing handles until the icon changes to ↔. There are sizing handles (the squares on the orange outline of the object) on all four sides and on three of the corners.

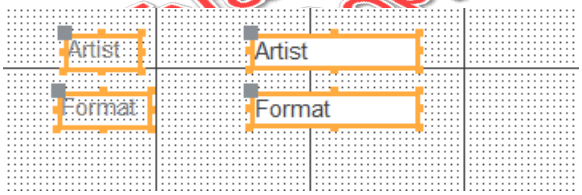


3. Click and drag to the desired size.

You can also resize multiple objects simultaneously, either fields and their labels, multiple fields, multiple labels, or multiple fields and labels.

To resize multiple objects:

1. Select the objects to resize by pressing and holding **Ctrl** while clicking each object.



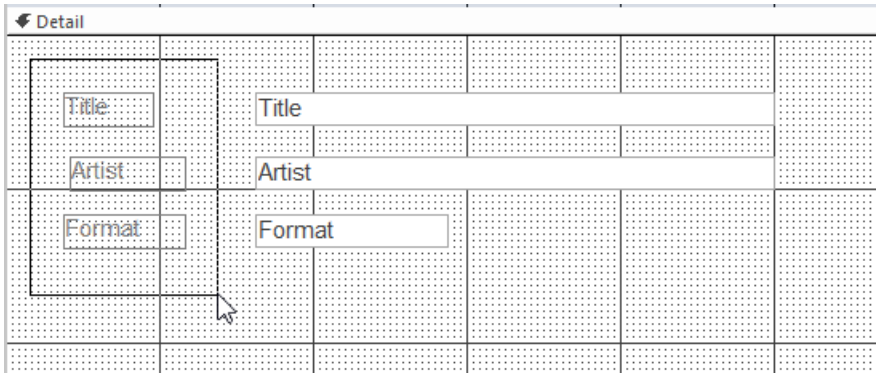
2. Hover over a sizing handle on any one of the objects until the icon changes to ↔.
3. Click and drag to the desired size.

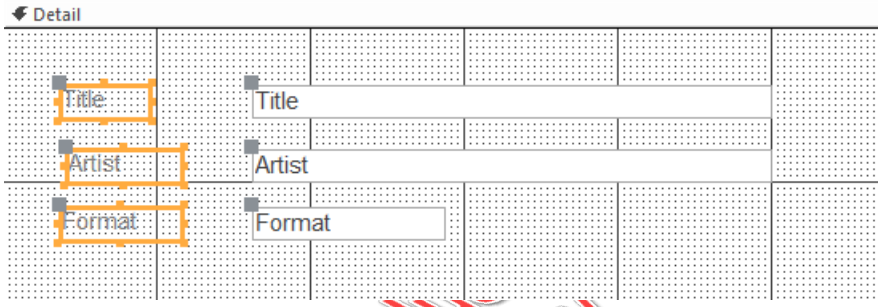
❖ 4.1.7. Spacing Objects on a Form

You can control the alignment and spacing between objects on a form to give the form balance and a professional polish.

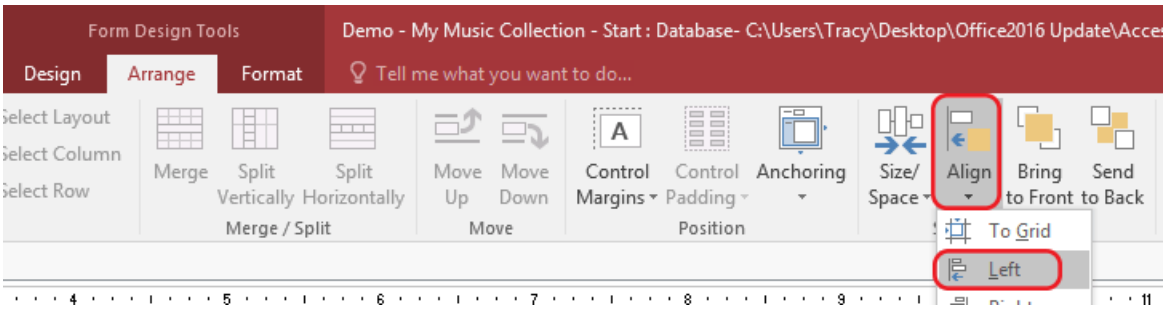
To align objects on a form:

1. Select the objects you want to align. You can **Ctrl+click** to select objects or, if the objects are contiguous, you can click and drag a rectangle around the objects.





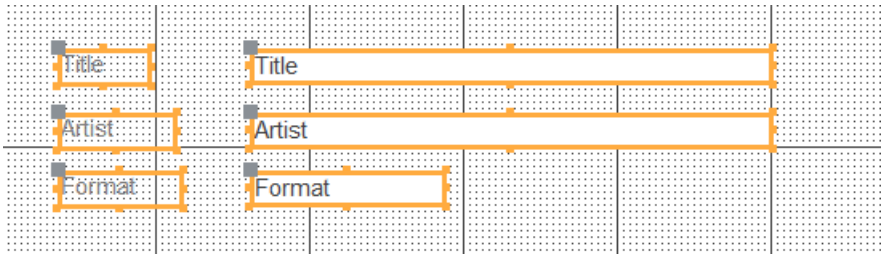
2. Select the **Form Design Tools: Arrange** tab.
3. In the **Sizing & Ordering** group, click **Align**.
4. From the drop-down menu, select the appropriate alignment.



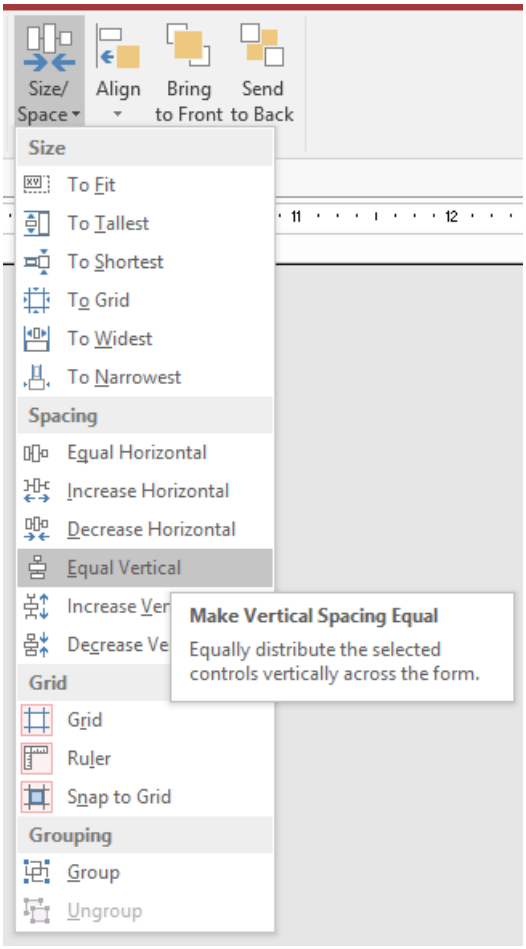
The fields align according to the orientation you selected.

To space the controls evenly on the form:

1. Select the controls you want to evenly space.



2. In the **Sizing & Ordering** group, click **Size/Space**.
3. From the drop-down menu, select an appropriate option in the **Spacing** section of the menu.

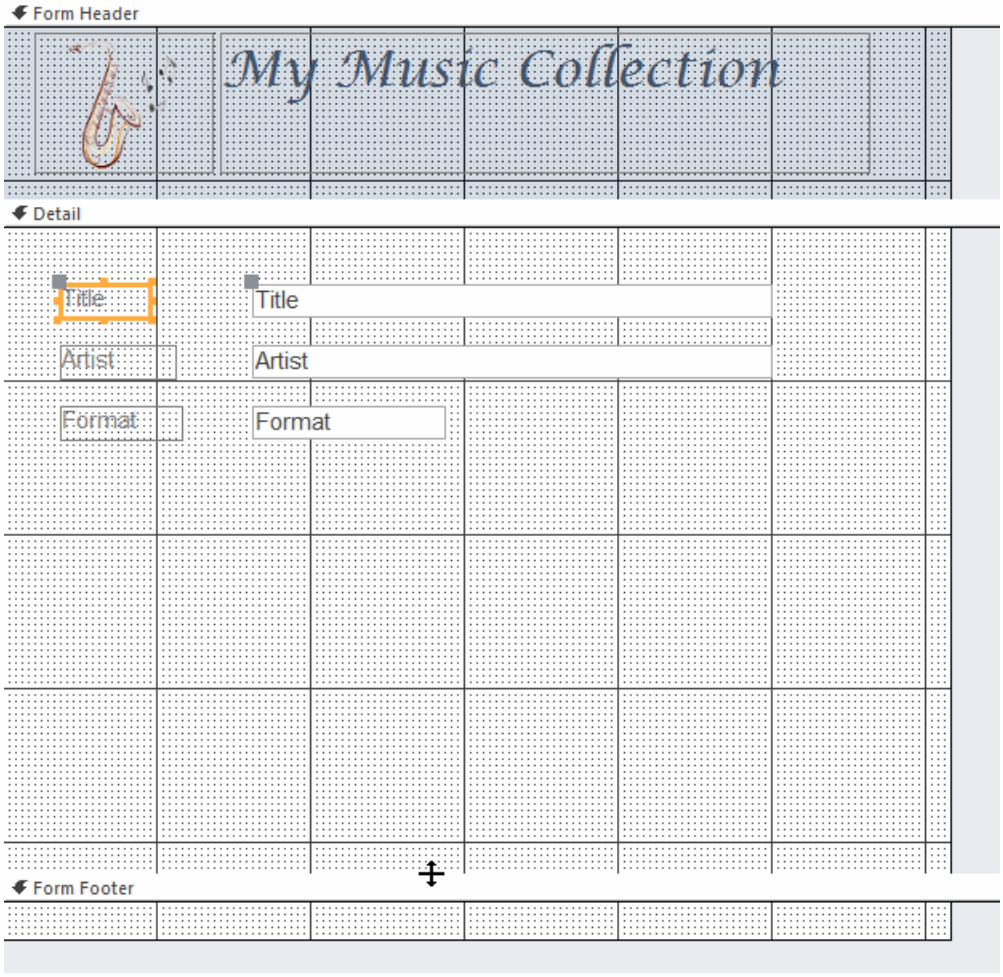


The space between the selected objects adjusts according to your selection.

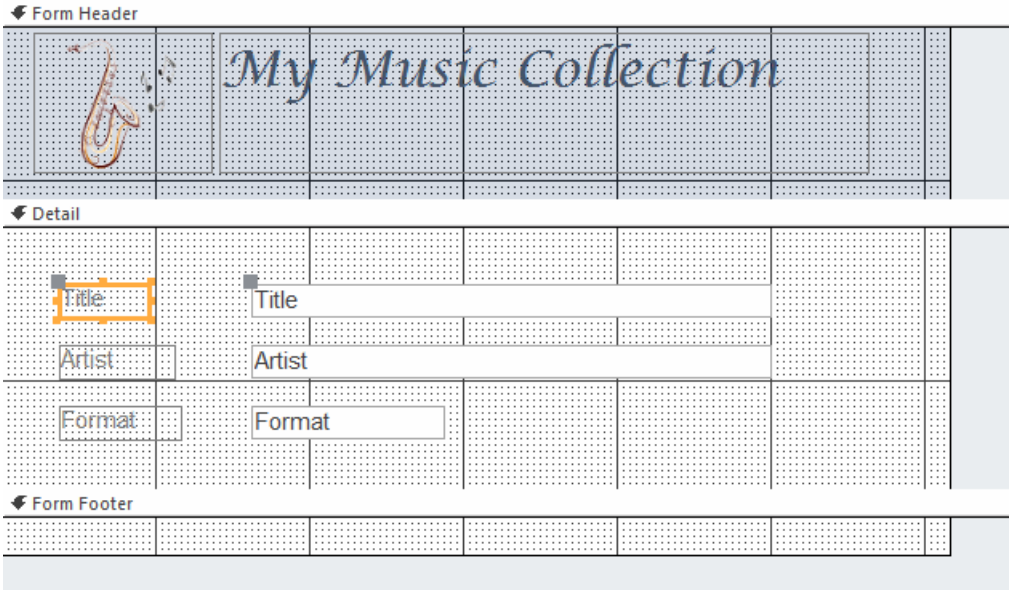
You can also resize the form itself if it is too large or too small for its objects.

To make the form shorter or longer:

1. Hover over the lower edge of the detail section until the cursor changes to ↕.

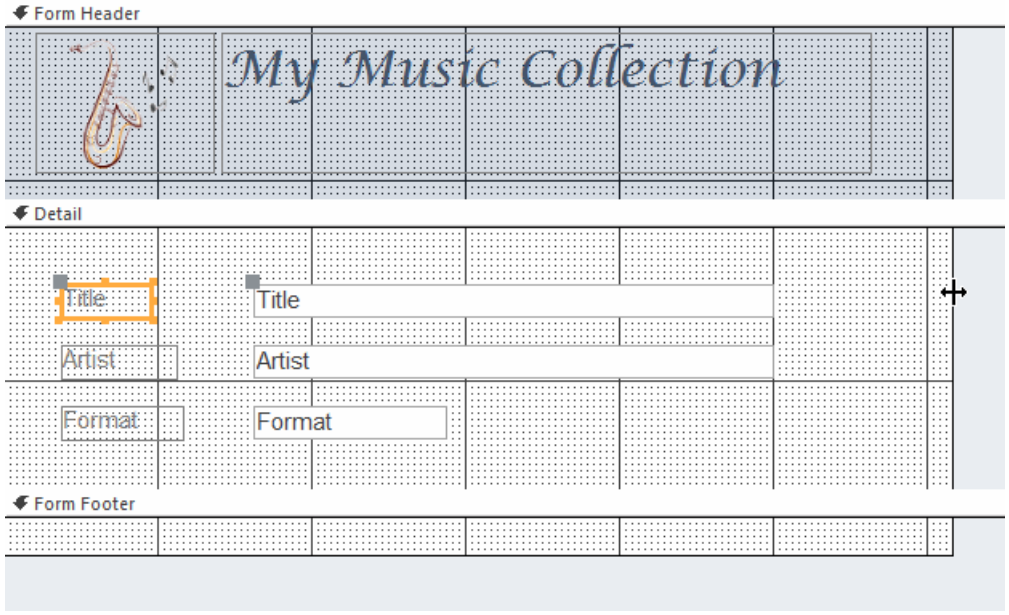


2. Click and drag the edge up or down to resize the form vertically.

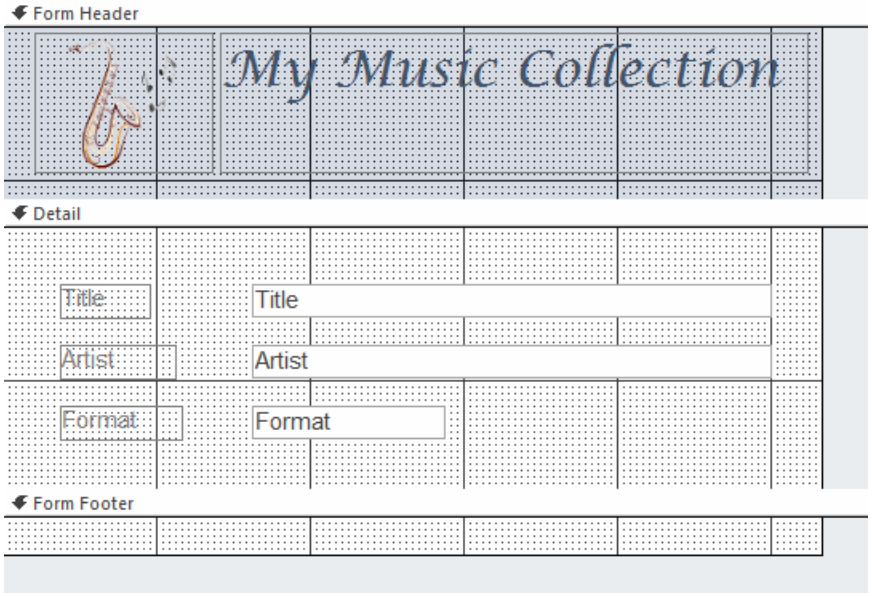


To make the form narrower or wider:

1. Hover over the right edge of the form (any section will do) until the cursor changes to ↔



2. Click and drag the edge to the left or right to resize the form horizontally.



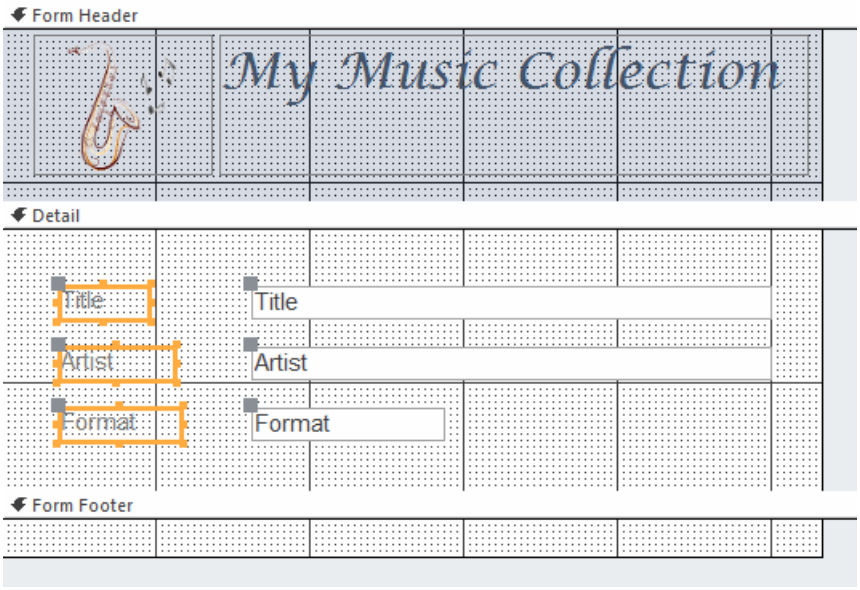
You cannot resize the form narrower than the right end of its rightmost object. If an object is preventing you from resizing to the desired width, resize that object first.

4.2. Formatting

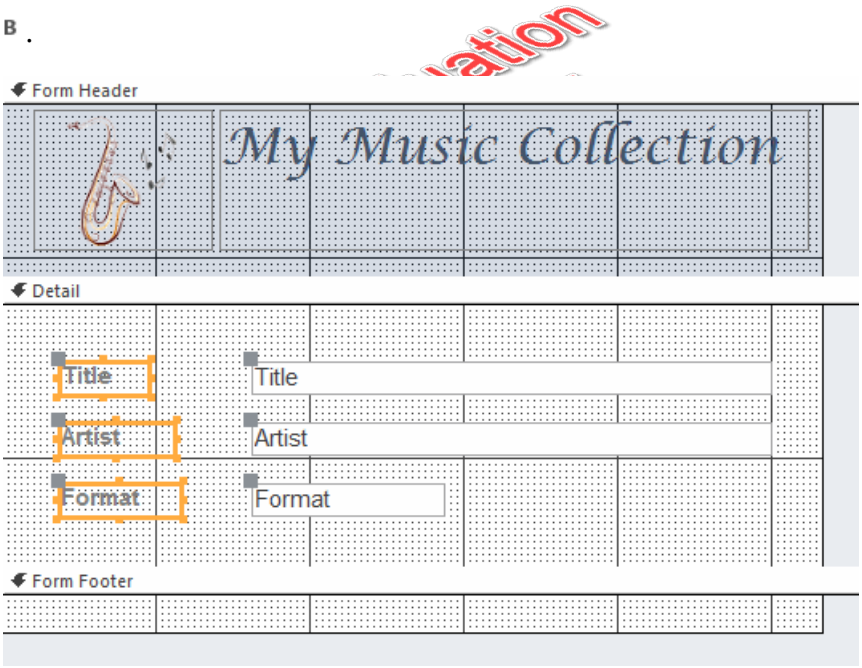
You can apply formatting such as font styles, background colors, and text justification to objects on the form. Formatting options are found on the **Form Design Tools: Format** tab. To apply formatting, select the objects that you want to apply a particular type of formatting to and select the formatting from the ribbon.

For example, to make the labels on a form bold:

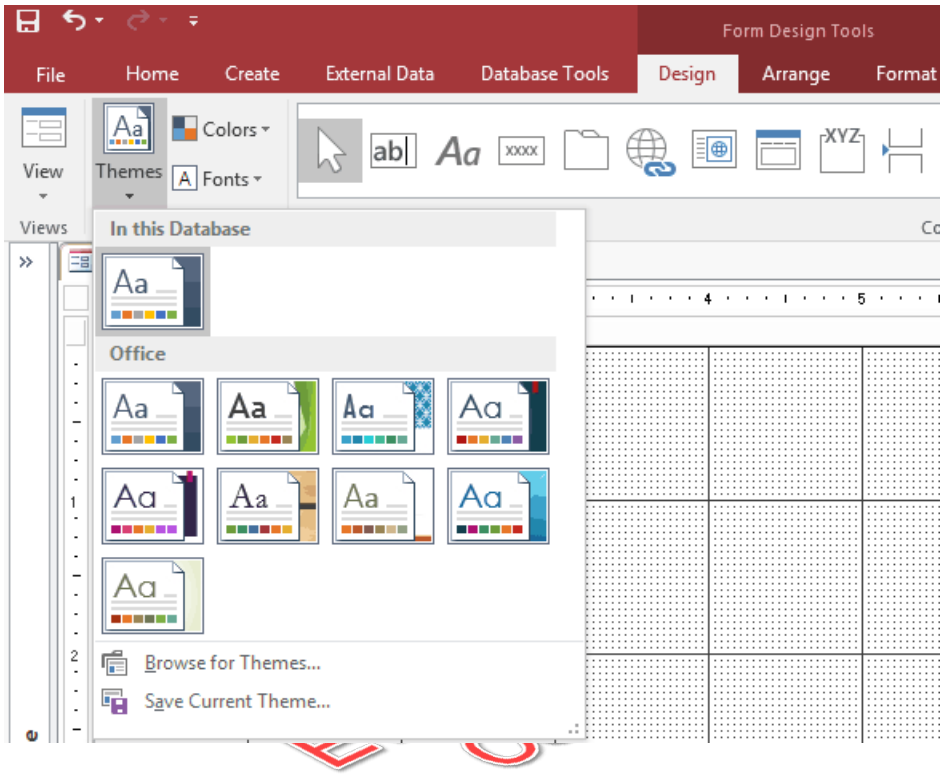
1. Select the labels.



2. Click B.



Instead of formatting each item individually, you may apply a Theme. A Theme includes the overall design, colors, and fonts. They may be created, saved and therefore reused.

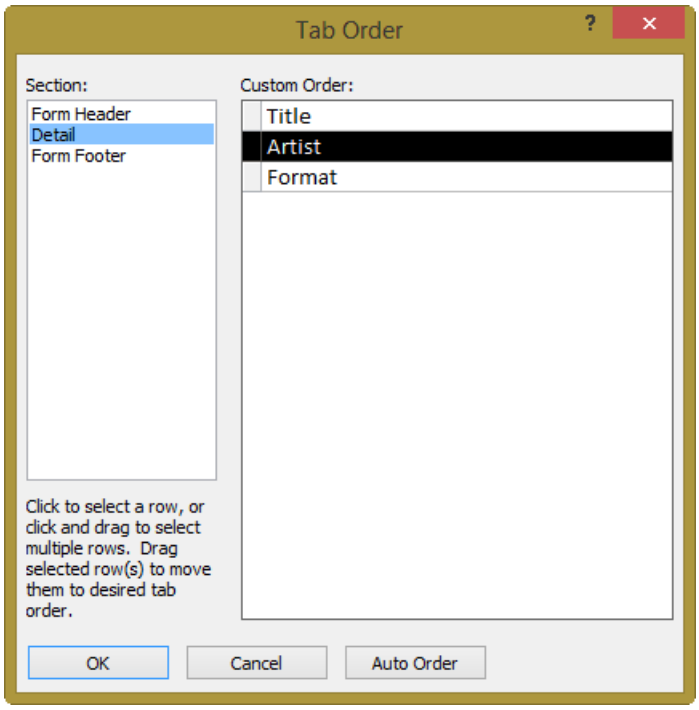


4.3. Tab Order and Properties

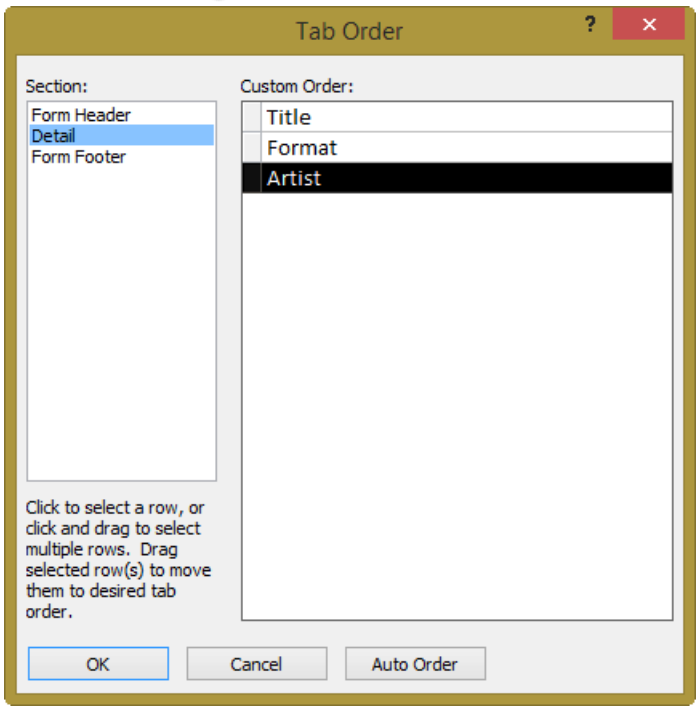
As a courtesy to your users (and yourself), it's important to set the tab order on your form so that users progress through the screen in a logical way. Access does its best to guess the tab order and also provides an **Auto Order** feature that sets the order for you.

To set the tab order on a form:

1. On the **Form Design Tools: Design** tab in the **Tools** group, click **Tab Order**. The **Tab Order** dialog box opens.
2. In the **Section** list box, select the section of the form that you need to set the tab order on.
3. In the **Custom Order** list box, highlight a field in a position that you need to change.



4. Click the selector to the left of the selected field and drag the field to its new position in the tab order.
5. Release the mouse button.

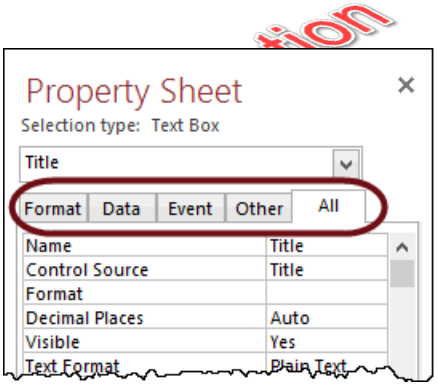


6. Repeat steps 3-5 until you achieve the desired order.
7. When you finish, click **OK**.

❖ 4.3.1. Setting Properties on a Form

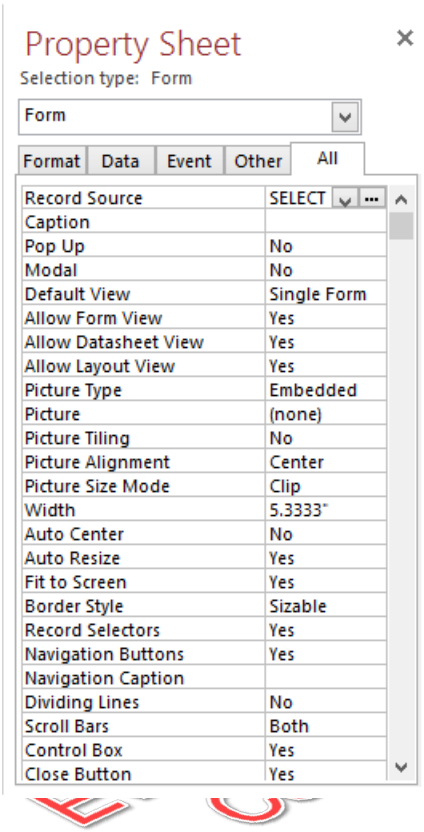
We've barely scratched the surface of the items that can be managed on a form. To see all the properties that we can work with, we need to refer to the property sheets for the form, for the sections of the form, and for every object on a form.

The property sheets present all the available properties on one tab and also divide the properties up by category.

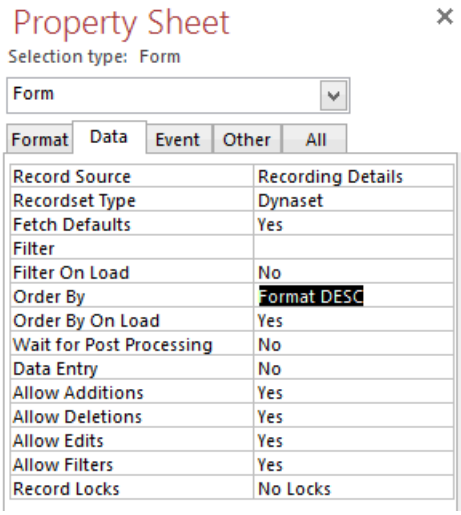


Form Property Sheet

To view the property sheet for the form, right-click anywhere in the form and select **Form Properties** from the shortcut menu.

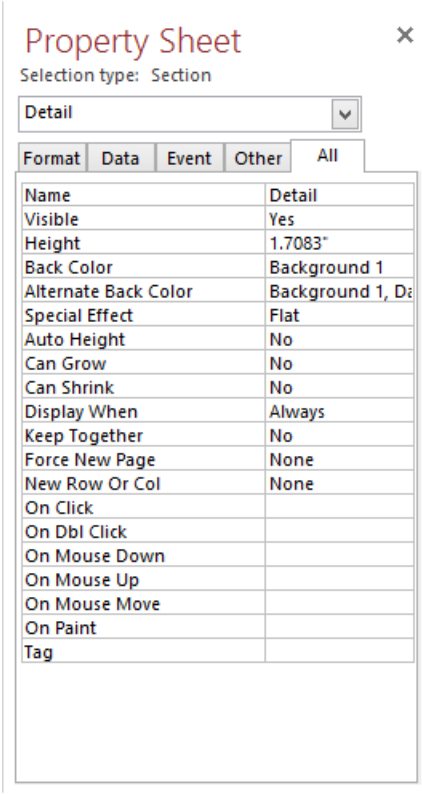


To set a special order upon the form loading, use the **Order By** property. Type the field name then use **ASC** or **DESC** to set the order.



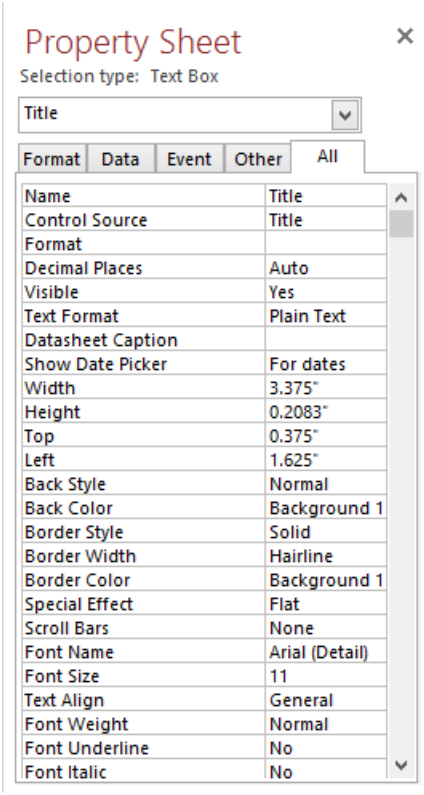
Section Property Sheet

To view the property sheet for a particular section of a form, right-click in that section and select **Properties** from the shortcut menu.



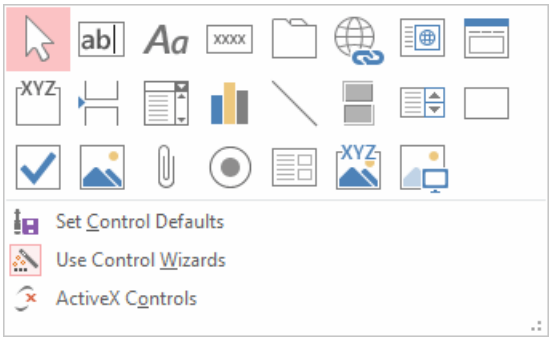
Object Property Sheet

To view the property sheet for any object on the form, right-click the object and select **Properties** from the shortcut menu.



❖ 4.3.2. Controls

Access provides a variety of controls that you can use to customize your form. To view the list of available controls, on the **Form Design Tools: Design** tab in the **Controls** group, click the drop-down arrow to reveal the full list.

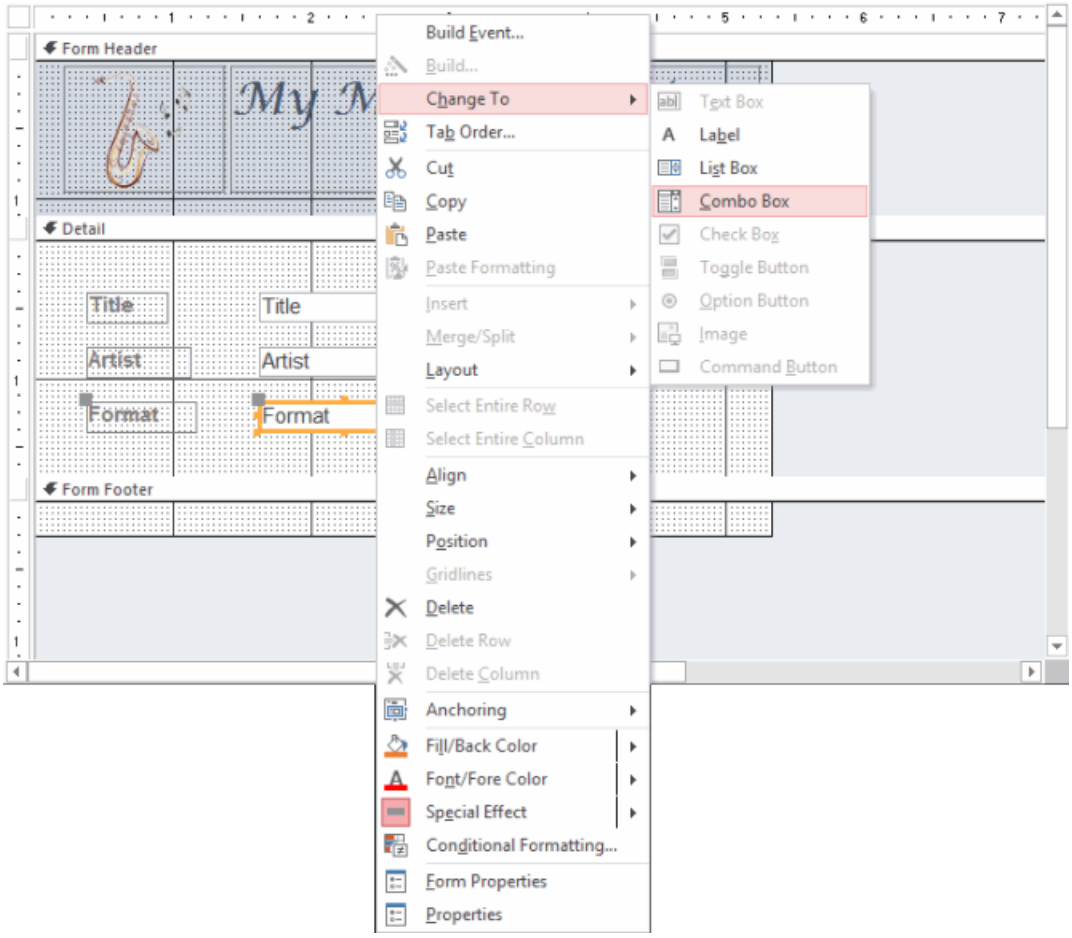


Control	Description
	Text box
	Label
	Button
	Tab control
	Hyperlink
	Web browser control
	Navigation control
	Option group
	Insert page break
	Combo box
	Chart
	Line
	Toggle button
	List box
	Rectangle
	Check box

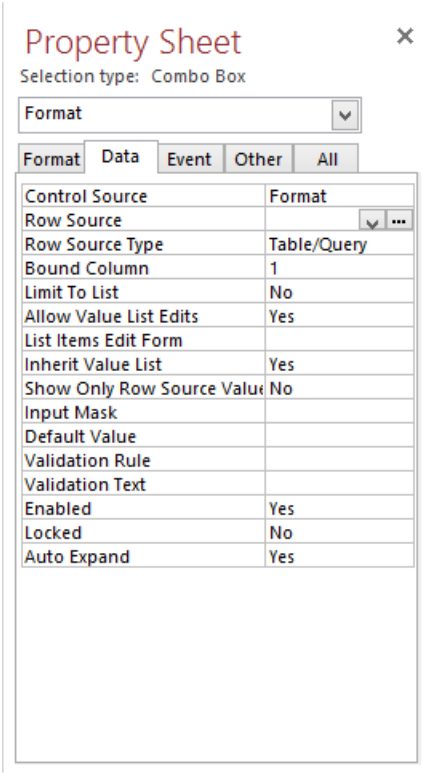
Control	Description
	Unbound object frame
	Attachment
	Option button
	Subform/subreport
	Bound object frame
	Image
	Chart

Let's change a text box on our form to a combo box. This will allow users to select an item from a list of items or to enter a new item.

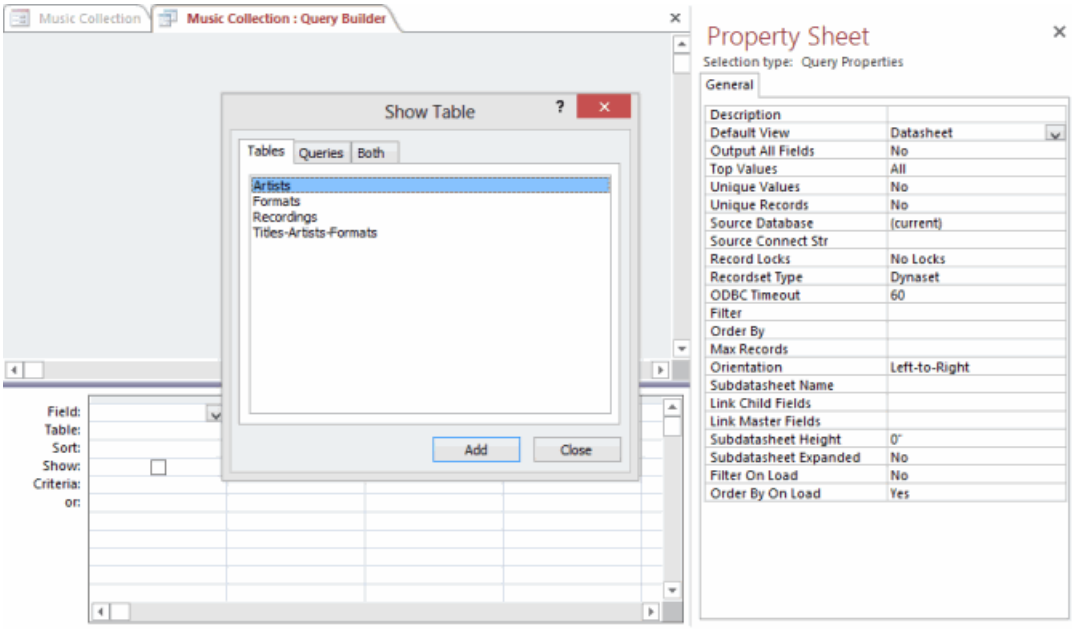
1. Open the form in Design view.
2. Select the text box you want to change to a combo box.
3. Right-click and select **Change To > Combo Box** from the shortcut menu.



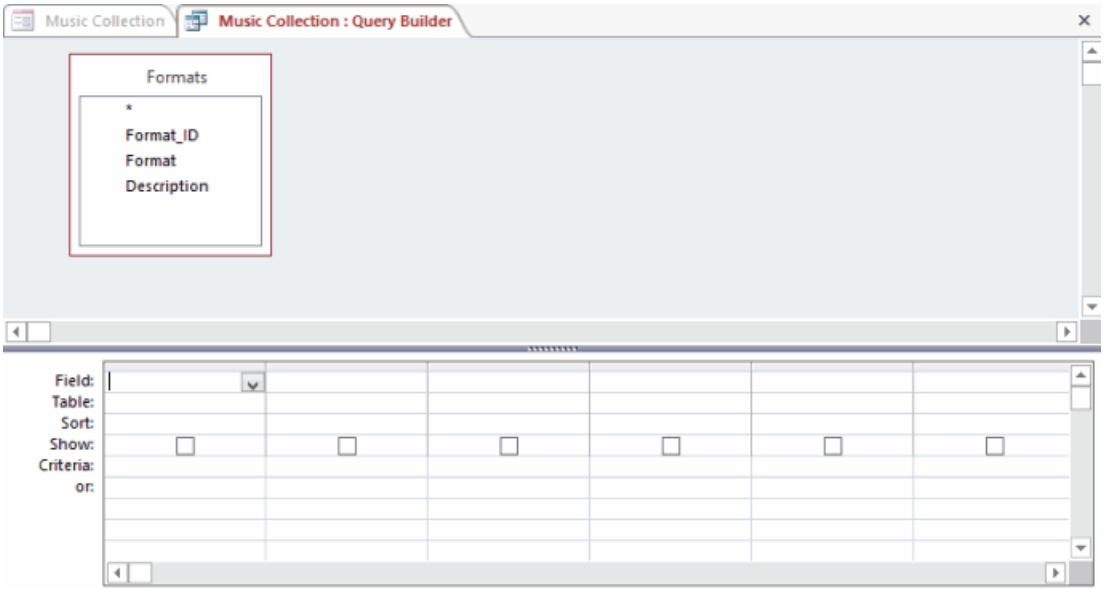
4. If the property sheet for the Format field is not showing, right-click in the Format field and select **Properties** from the shortcut menu.
5. Select the **Data** tab on the property sheet.



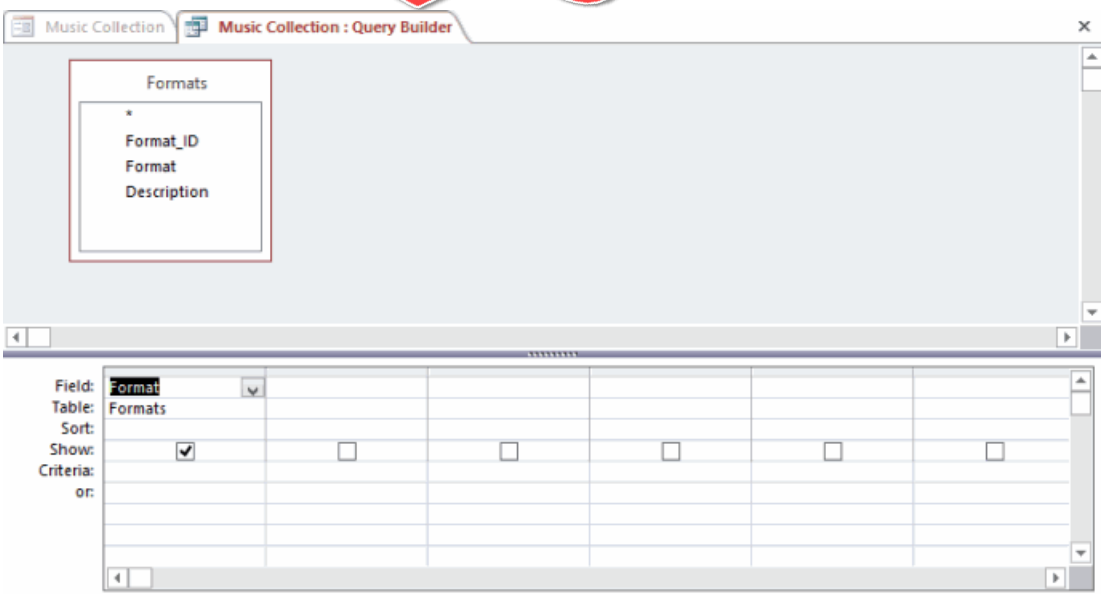
6. In the **Row Source** field, click ... . The **Query Builder** starts.



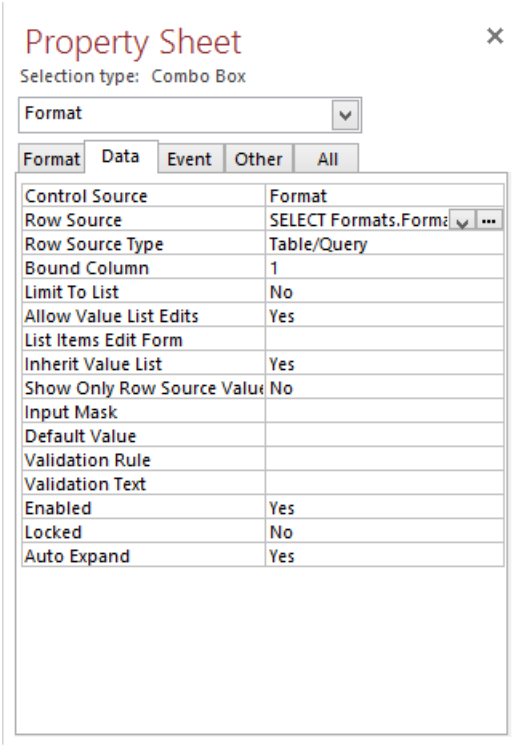
7. In the **Show Table** dialog box, select the table that will serve as the source of the data in the field and click **Add**.



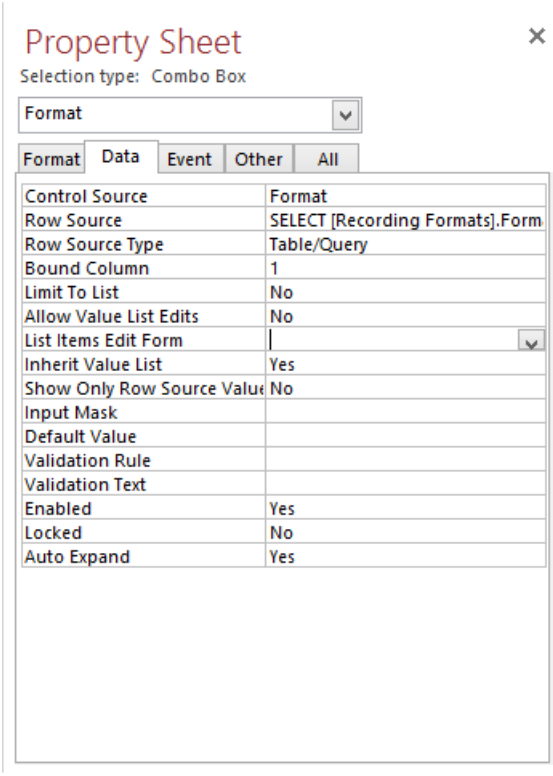
8. Click **Close**.
9. Add the field that you want to use to provide the data for the field you are editing by double-clicking it.



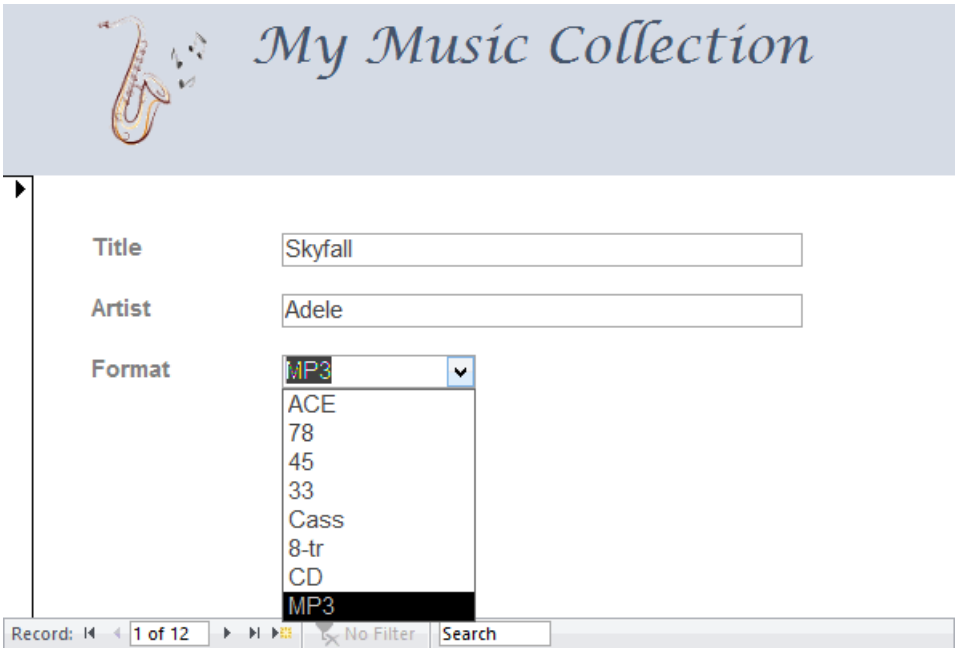
10. Save the query.
11. Click **Close**. Notice that a SQL SELECT statement is added to the **Row Source** field.



12. In the **Limit to List** field, select "No". This will allow users to select from the list but still be able to enter their own value if they do not find an appropriate value in the list.
13. In the **Allow Value List Edits** field, select "No". This will prevent users from changing the values already in the list.



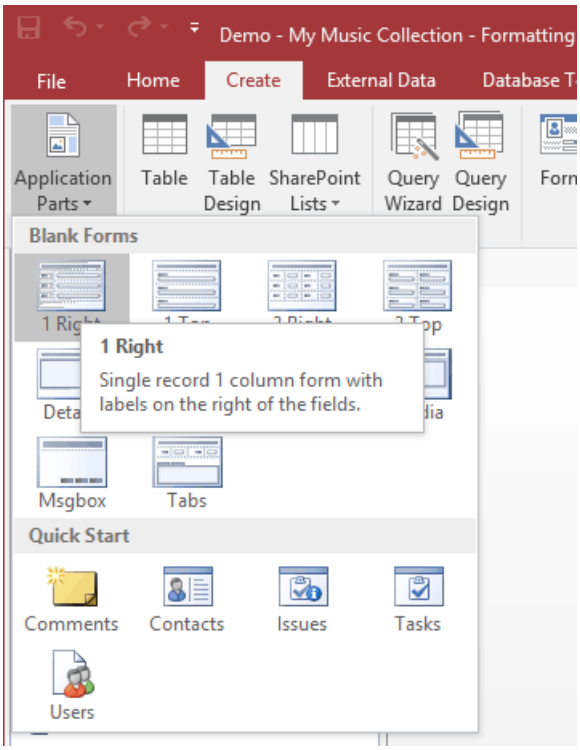
14. Preview your form in Form view. Notice when you click the drop-down list you just created, that the values appear in the list.



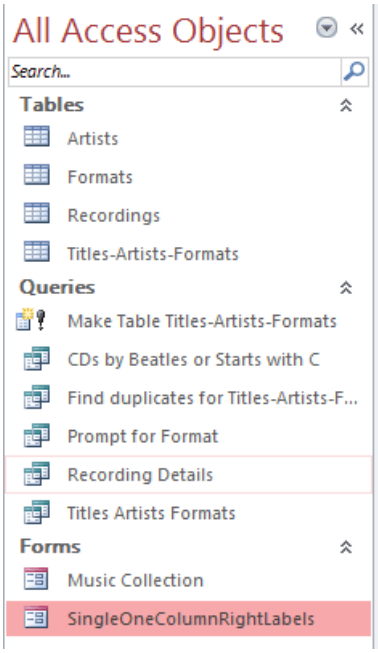
Creation of new forms does not always have to start from scratch, or an import from an existing Access database. We can use Application Parts for form objects. Your choices will differ as to what has been made available to you by your installation. Below are some of the basic choices that are normally available. These items may be customized and formatted as per usual. They just give you a head start.

4.4. Create Forms with Application Parts

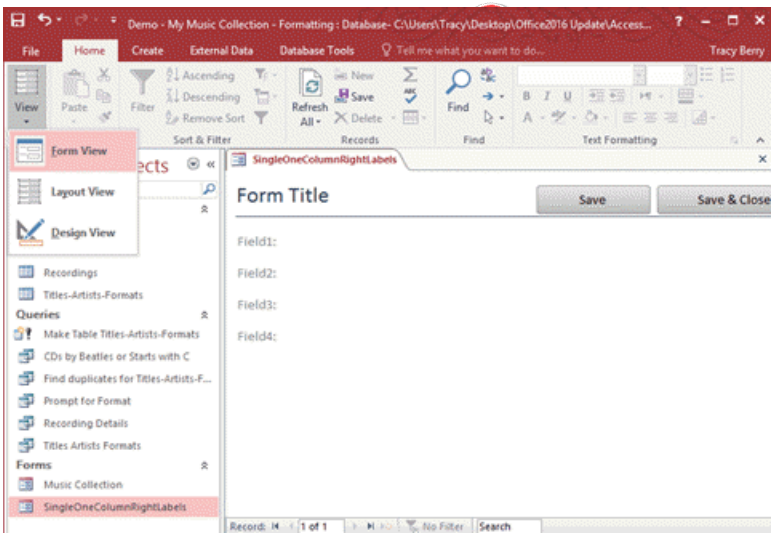
Application Parts provide quick starts to basic forms. Customization is still available with no limits.

1. 

Create > Application Parts > Choose a part.

2. 

   Double-click the new form object to open it.

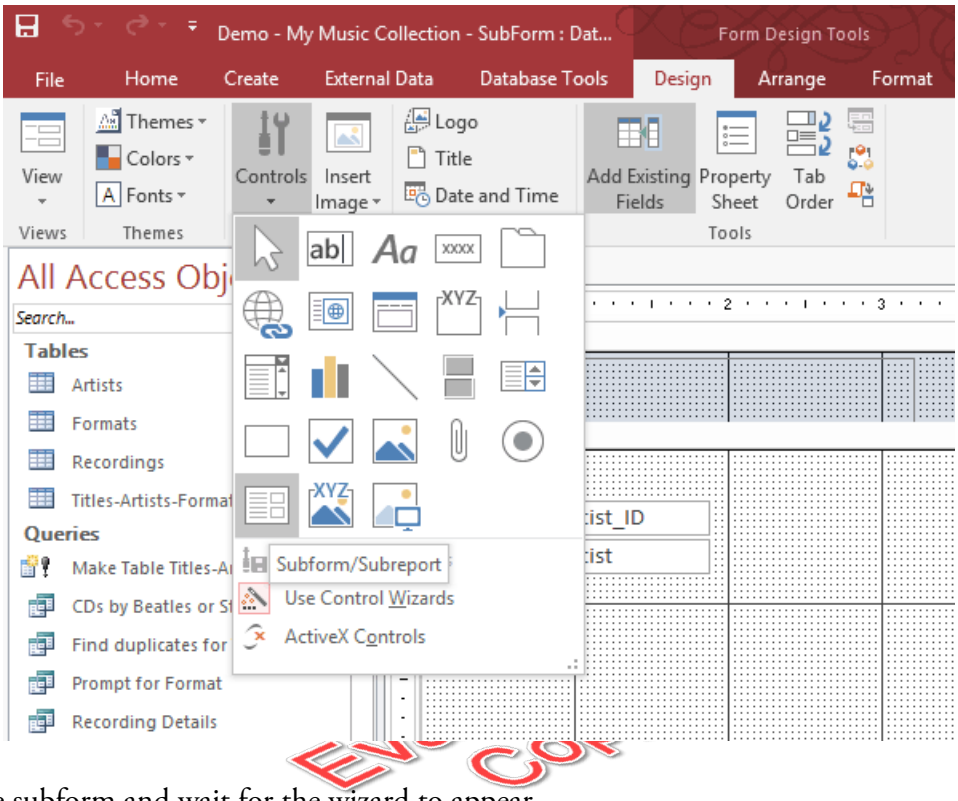
3. 

   You may now use the form or edit any aspects.

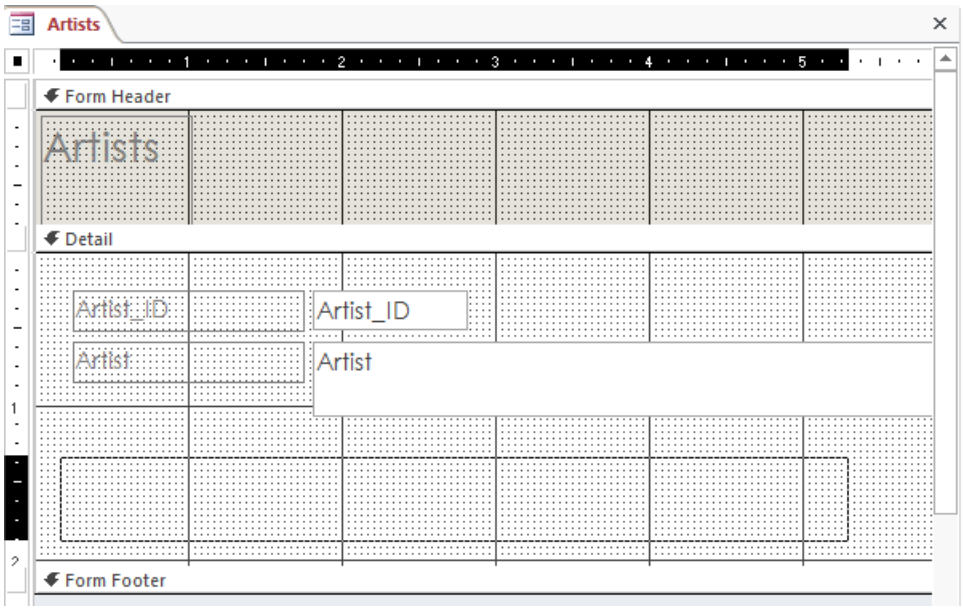
4.5. Creating a Subform

When you want to show a One-to-Many type of data, you may use a Subform to represent the Many side of the Main forms topic. Start by working in **Design View**, and choose **Controls >**

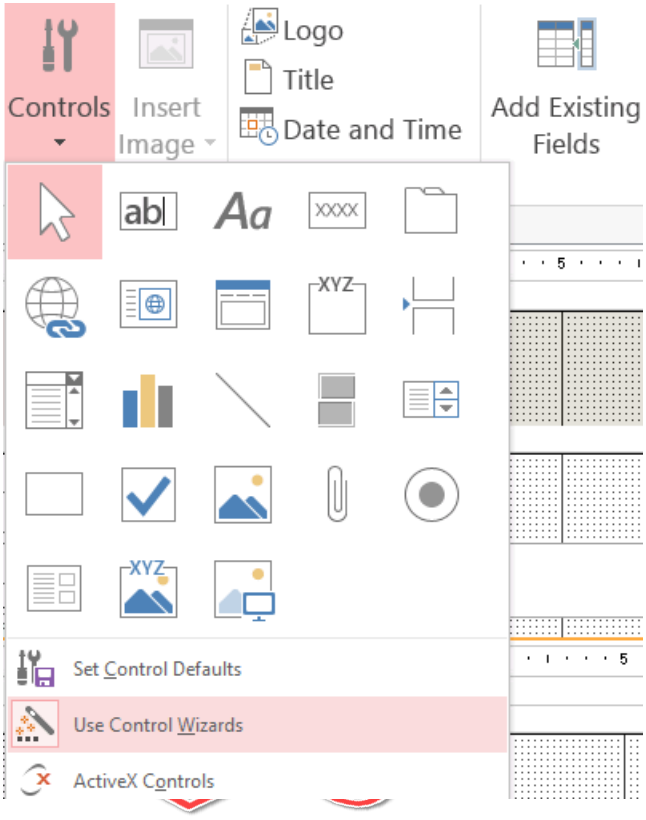
Subform/Subreport from the **Controls** group on the **Design** tab. Open `Forms_Advanced/Demos/Demo - My Music Collection - SubForm.accdb`.



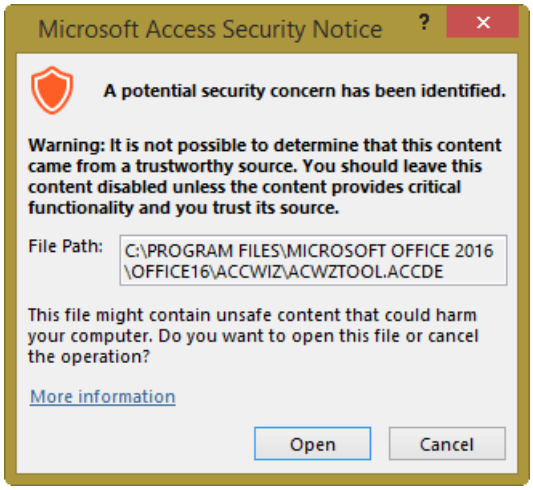
Draw in the subform and wait for the wizard to appear.



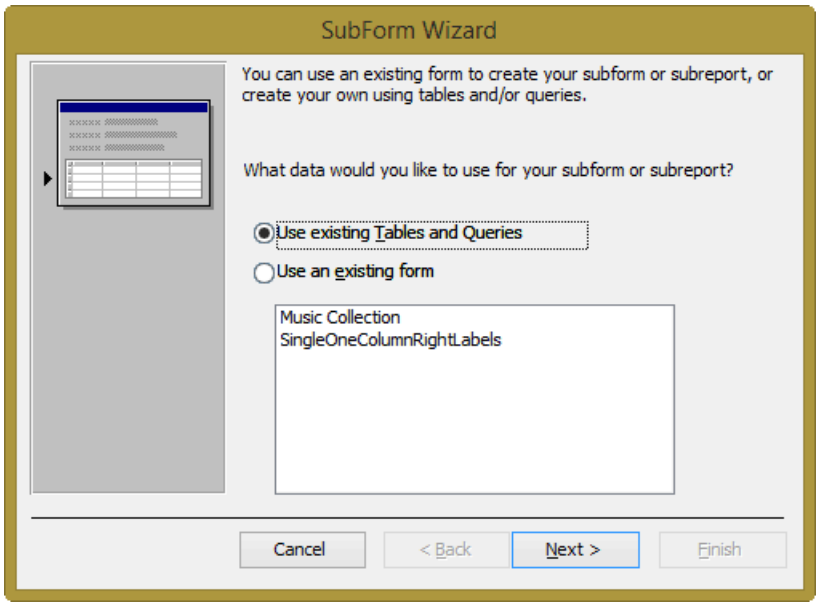
If you do not get a wizard, you may need to make sure it is active.



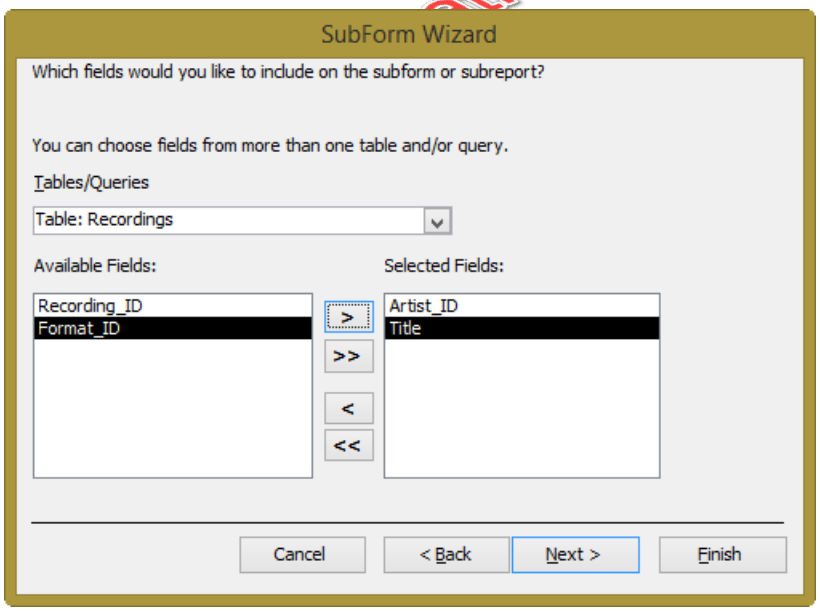
If you get a warning, Click **Open**.



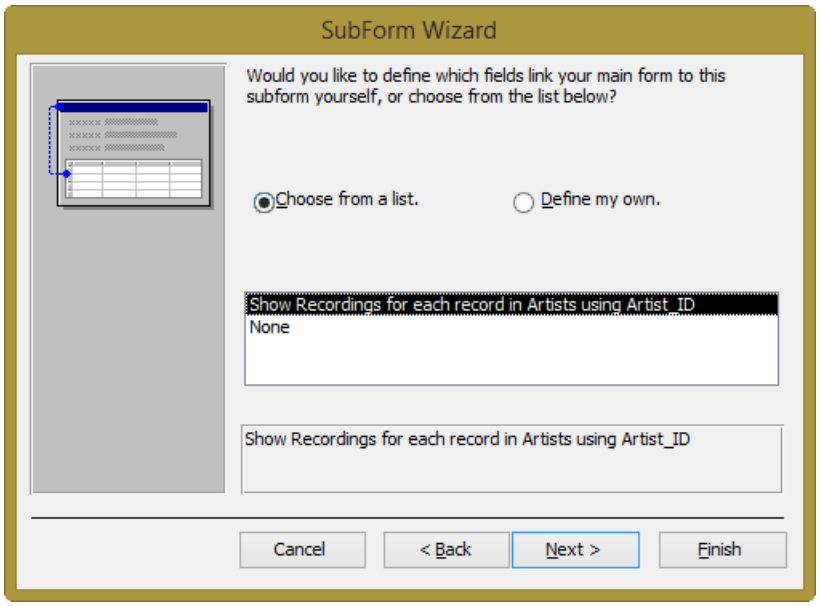
Choose to use an existing object. Click **Next**.



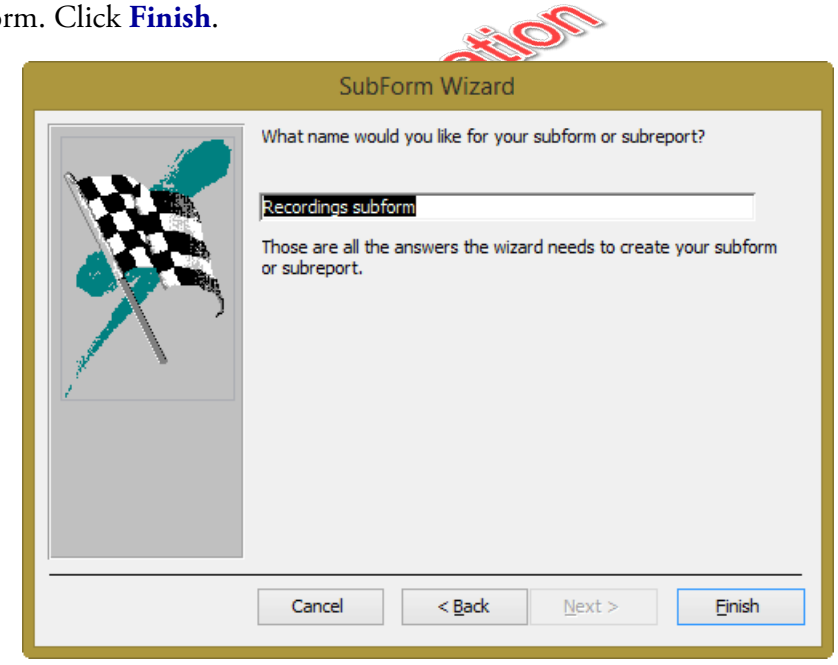
Choose the object and the individual fields from that object. Click **Next**.



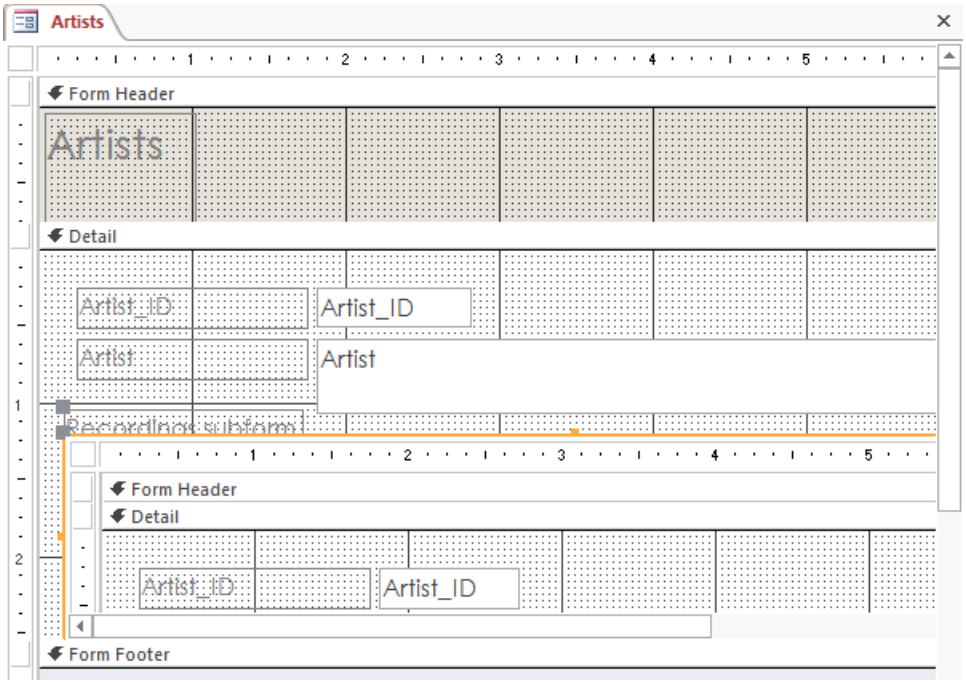
Choose the connection to use as the link between records. If you do not have a connection, note that Access may either have an error, or show all the the subform source for each record. It is best to have a link on order to maintain the One-to-Many relationship. Click **Next**.



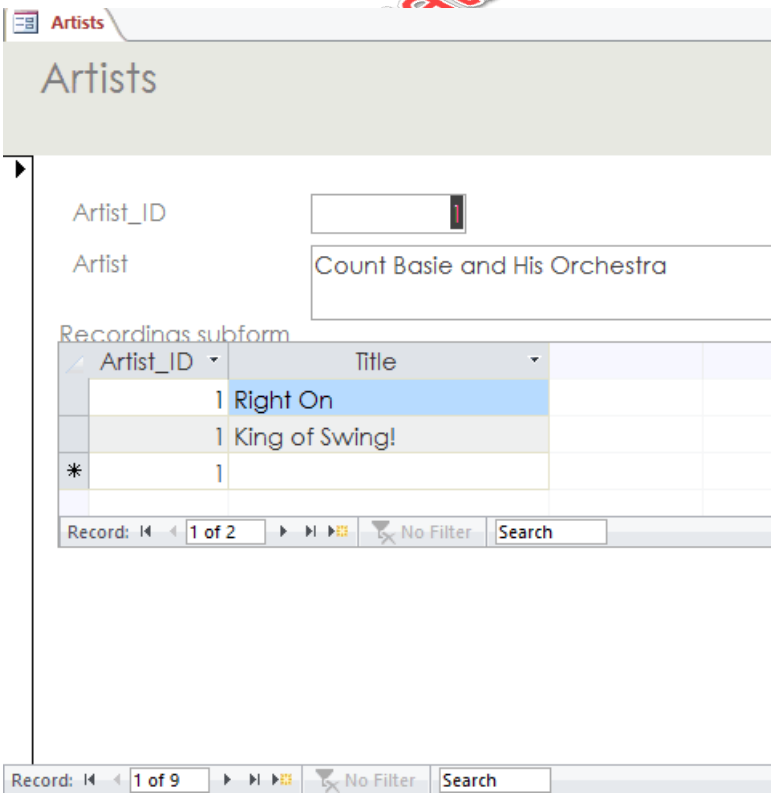
Name the subform. Click **Finish**.



Your subform is now ready to format, edit, adjust upon the main form. They are easy to customize and adjust as any other form. The main difference is that it pulls related data into the main form for display.



This is how your form may look. Notice that we see only the titles related to artist number 1.



Exercise 6: Creating Forms

25 to 60 minutes

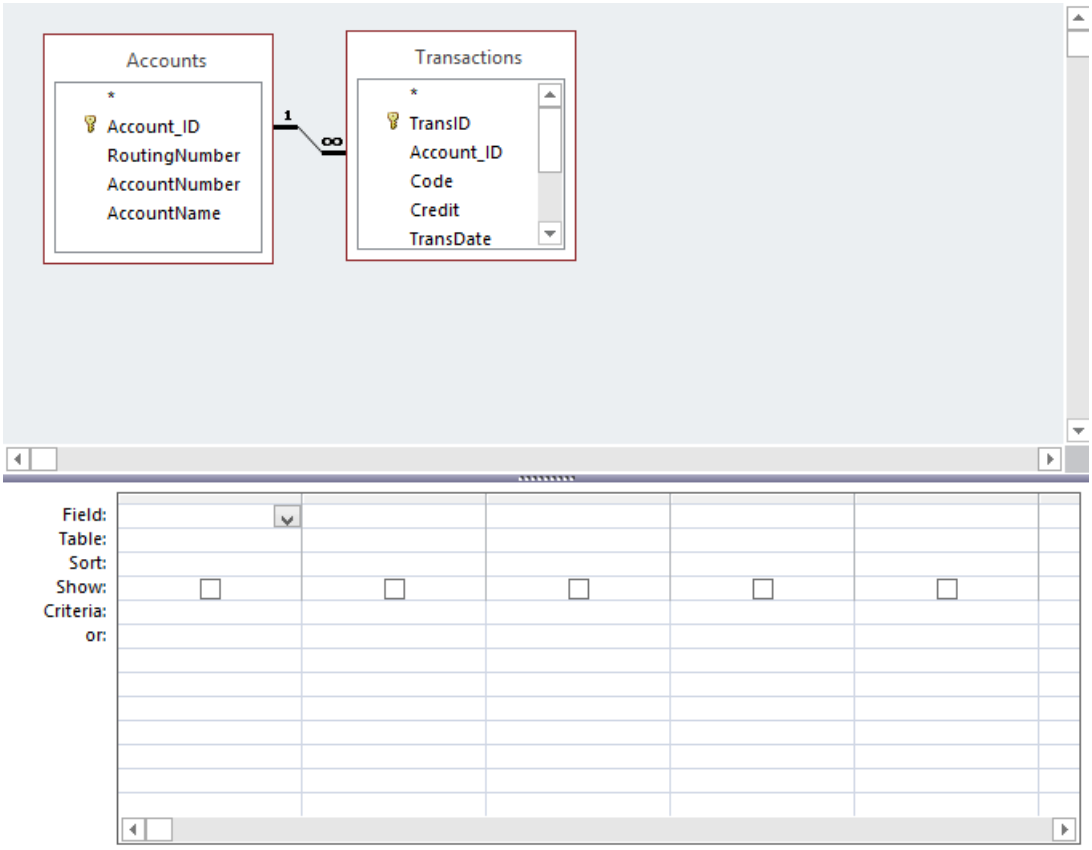
In this exercise, you will create a form called "Enter Transactions" from the Transactions table of the Bank Register database. You can find the database in the `ClassFiles\Forms_Advanced\Exercises` folder.

1. Create a query with the following fields: Credit, Account_ID, Code, TransDate, Description, Amount, Memo, Cleared, and AccountNumber. Name the query "Bank Transactions".
2. Change the background color of the form.
3. Inasmuch as possible, lay out the form like a check. Resize the fields as needed.
4. Change the font on all objects to Arial 10.
5. Change the labels to bold.
6. Change the label on the Description field to "Payee or Description". Change the label on the Code field to "ID".
7. Replace the Account ID field with the AccountNumber field from the Accounts table.
8. Change the Account field to a combo box with the account numbers in the drop-down list. Limit the list to the account numbers already in the list and default to the checking account number.
9. Change the Code field to a combo box with a lookup.
10. Set the tab order.

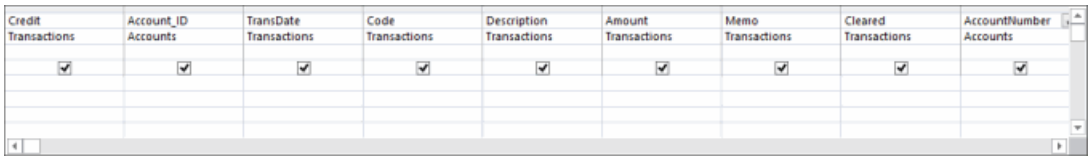
Solution

To create the query:

1. Open the database.
2. On the **Create** tab in the **Queries** group, click **Query Design**.
3. In the **Show Table** dialog box, double-click "Transactions" and "Accounts" and then click **Add**.
4. Click **Close**.



5. In the Transactions table, double-click to add the **Credit**, **Account_ID**, **Code**, **TransDate**, **Description**, **Amount**, **Memo**, and **Cleared fields** to the query design grid.
6. In the Accounts table, double-click to add the **AccountNumber** field to the query design grid.



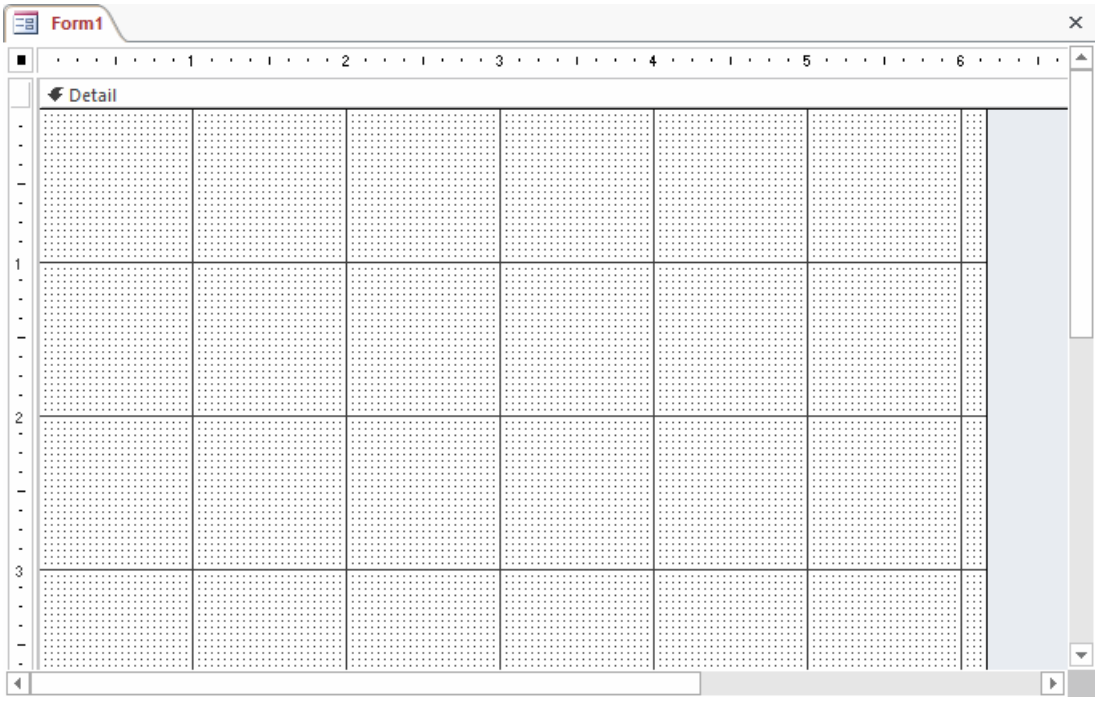
7. Run the query.

Credit	Account ID	Date	Code	Description	Amount	Memo	Cleared	Account Nur
☑	1	4/1/2013	AD	Payroll deposit	$1,095.62		☑	006400315678
☐	1	4/2/2013	DC	Main Street Market	$117.34	Groceries	☑	006400315678
☐	1	4/7/2013	7214	Charlottesville MUD	$74.19	Water bill	☐	006400315678
☐	1	4/10/2013	FT	Transfer to savings	$500.00		☑	006400315678
☐	1	4/10/2013	ATM	Cash withdrawal	$120.00		☑	006400315678
☑	1	4/14/2013	AD	US Dept of Treasury	$372.96	Tax refund	☐	006400315678
☑	1	4/16/2013	AD	Payroll deposit	$1,095.62		☐	006400315678
☐	1	4/16/2013	DC	Main Street Market	$134.51		☐	006400315678
☐	1	4/18/2013	7215	SPARC Electric	$169.47		☐	006400315678
☐	1	4/20/2013	7216	Lolly's Place	$24.18		☐	006400315678
☐	1	4/23/2013	ATM	Cash withdrawal	$120.00		☐	006400315678
☐	1	4/23/2013	FT	Transfer to savings	$300.00		☐	006400315678
☐	1	4/26/2013	7217	Basket World	$42.69		☐	006400315678
☑	1	4/29/2013	AD	Interest	$0.89		☐	006400315678
☐	(New)						☐	

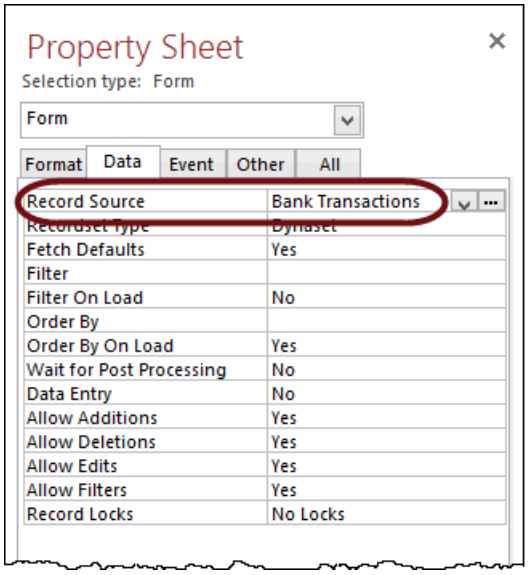
8. Save the query as "**Bank Transactions**".
9. **Close** the query.

To create the form:

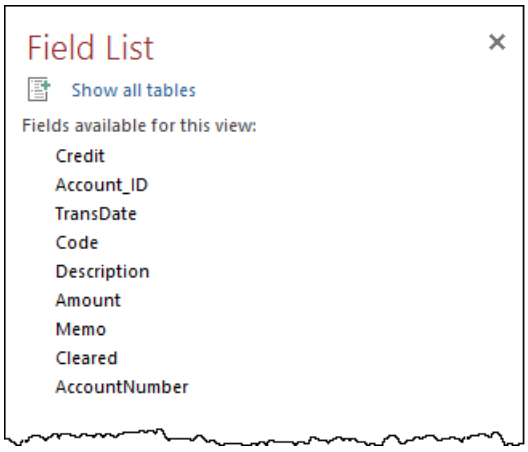
1. On the **Create** tab in the **Forms** group, click **Form Design**.



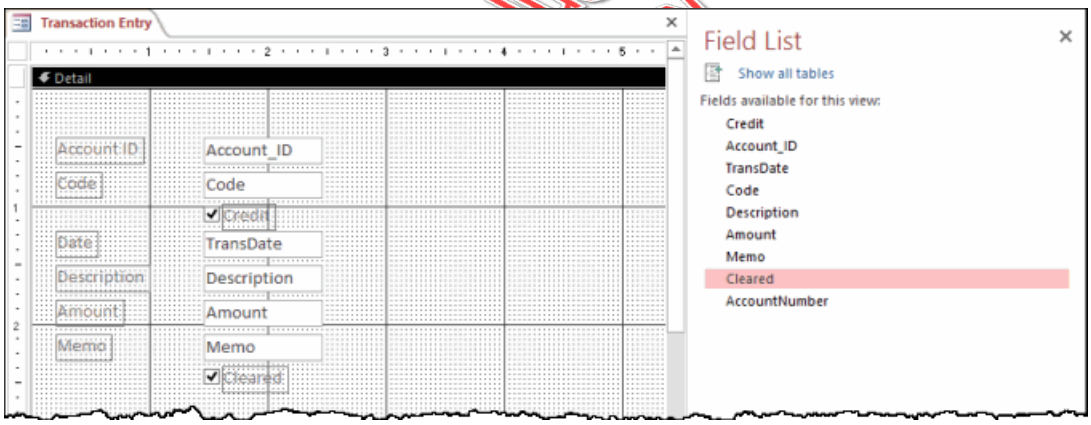
2. Save the form as "**Enter Transactions**".
3. Right-click the design surface and select **Form Properties**.
4. From the **Record Source** drop-down list, select the Bank Transactions query.



5. Close the property sheet.
6. On the **Form Design Tools: Design** tab in the **Tools** group, click **Add Existing Fields**.

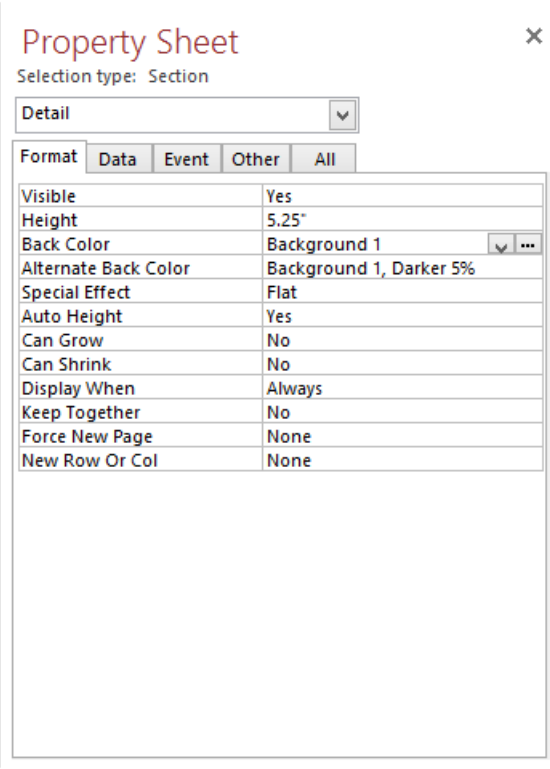


7. Double-click "**Account_ID**“, ”**Code**“, ”**Credit**“, ”**TransDate**“, ”**Description**“, ”**Amount**“, ”**Memo**“, and ”**Cleared**" to add the fields to the form design surface.

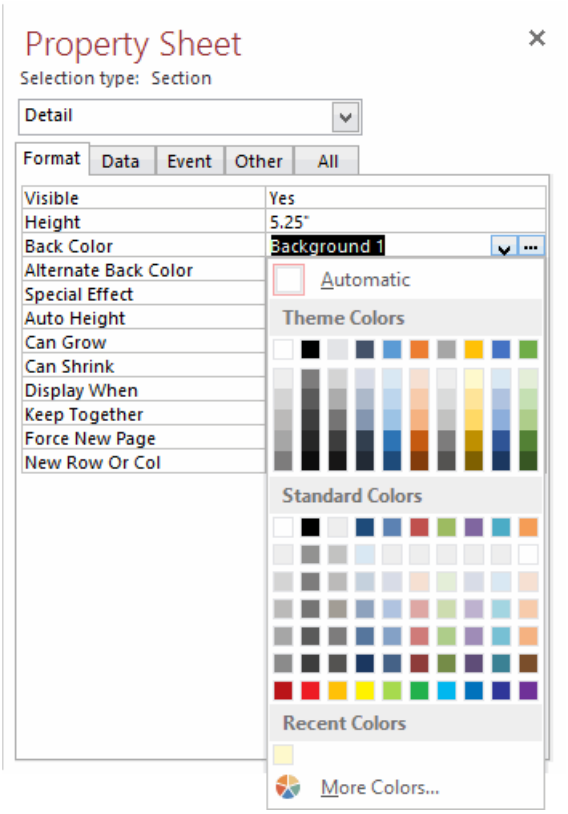


8. Close the field list.

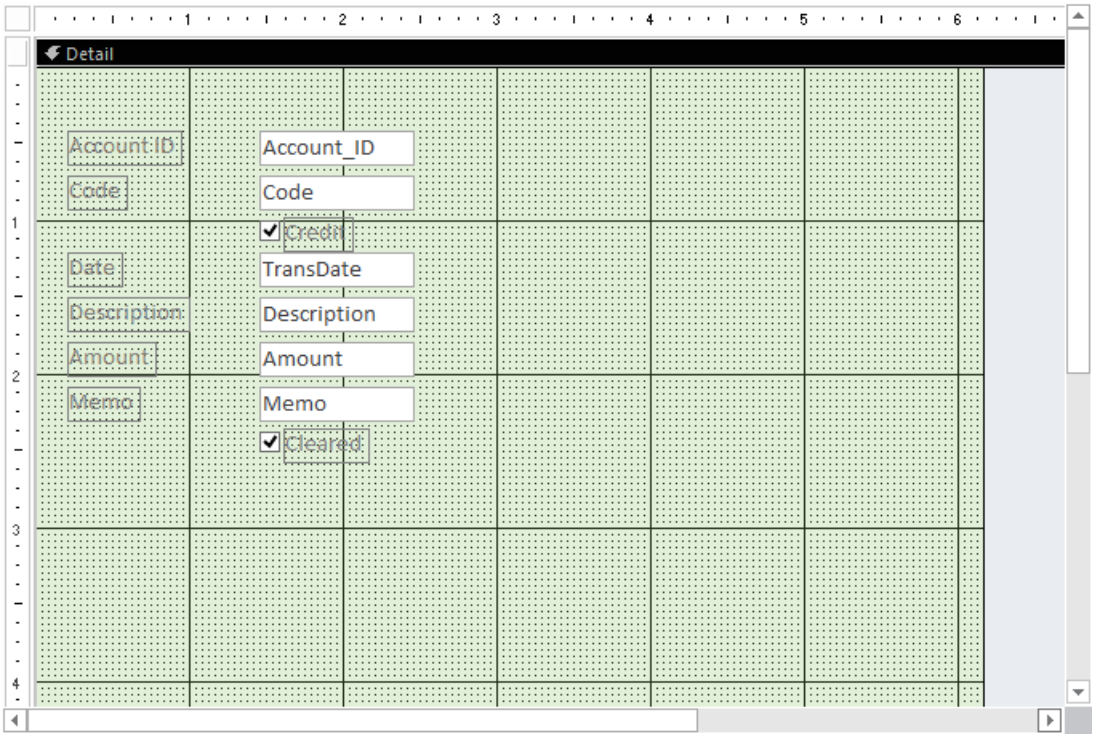
9. To change the background color of the detail section, right-click in the Detail section and select **Properties** from the drop-down menu.



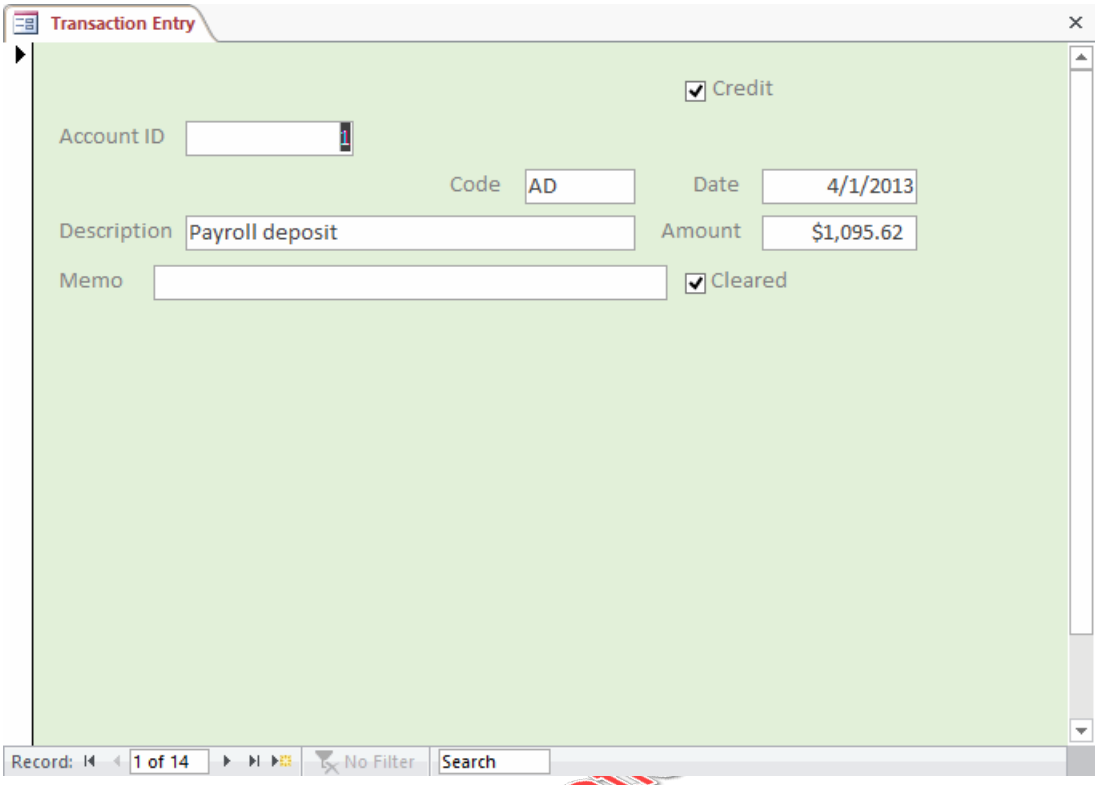
10. In the **Back Color** field, click ... . The color palette opens.



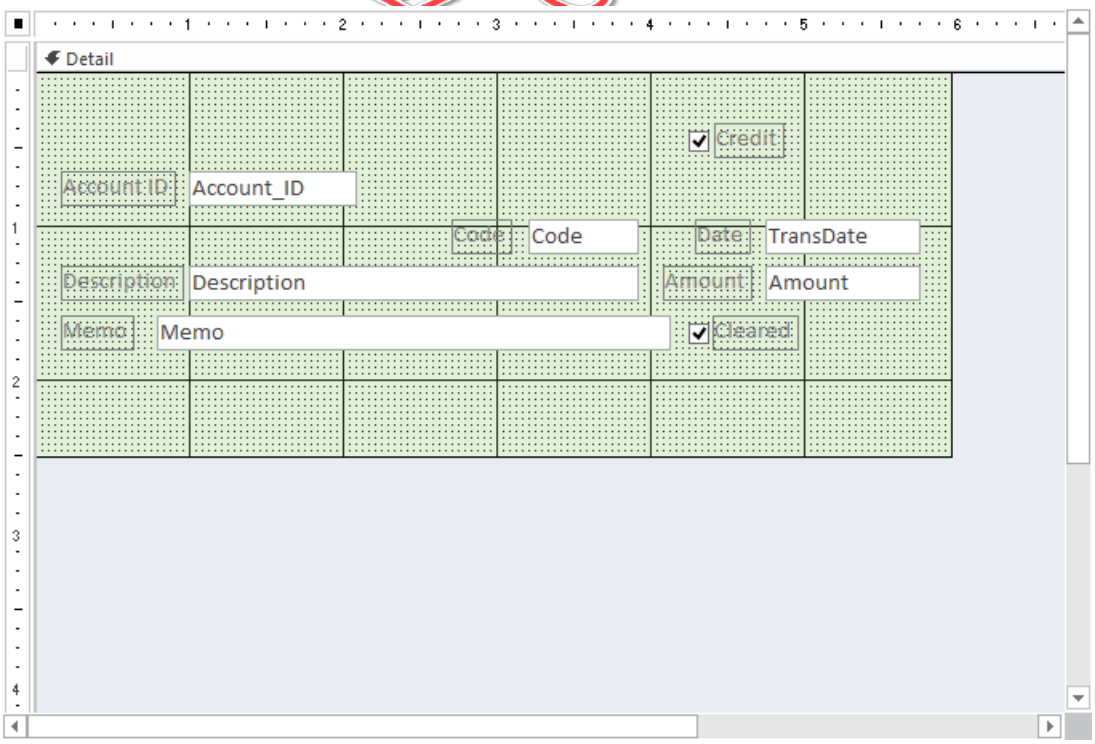
11. Select a color for the background.
12. Close the property sheet.



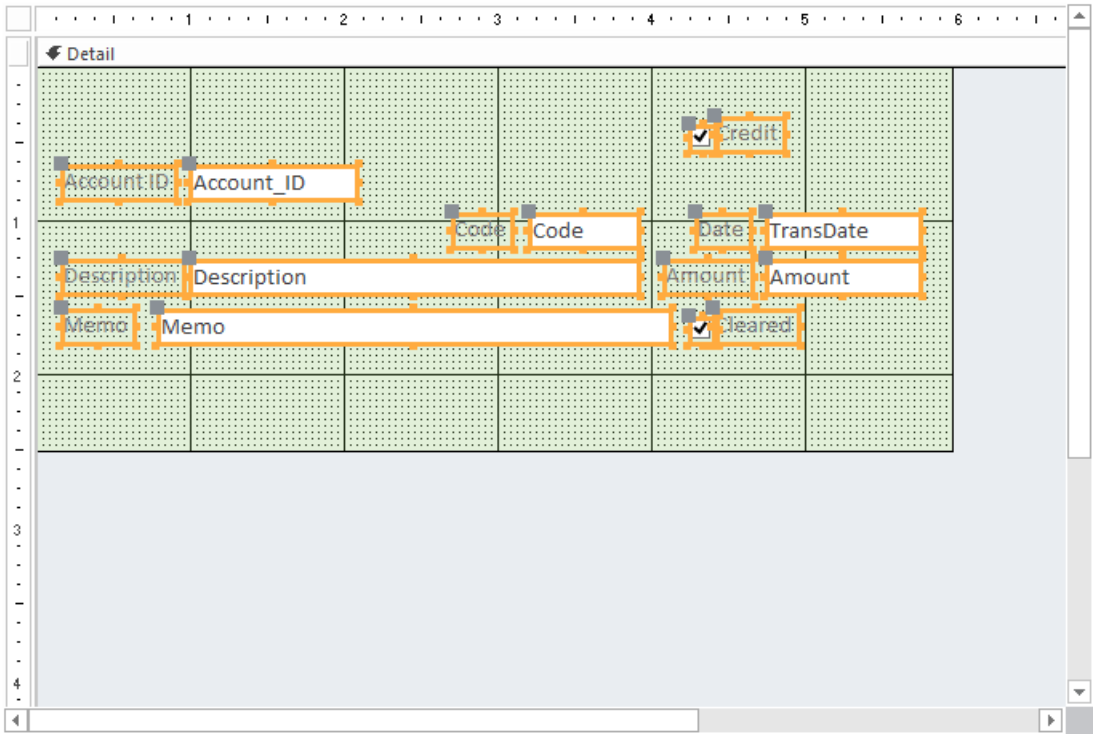
13. Drag the fields to the desired positions on the form.
14. Consider moving the labels closer to the data entry fields.
15. Lengthen and shorten fields as needed.
16. Use the alignment tools as needed.
17. Preview the form in Form view occasionally to admire your results. (Your results may vary from the example.)



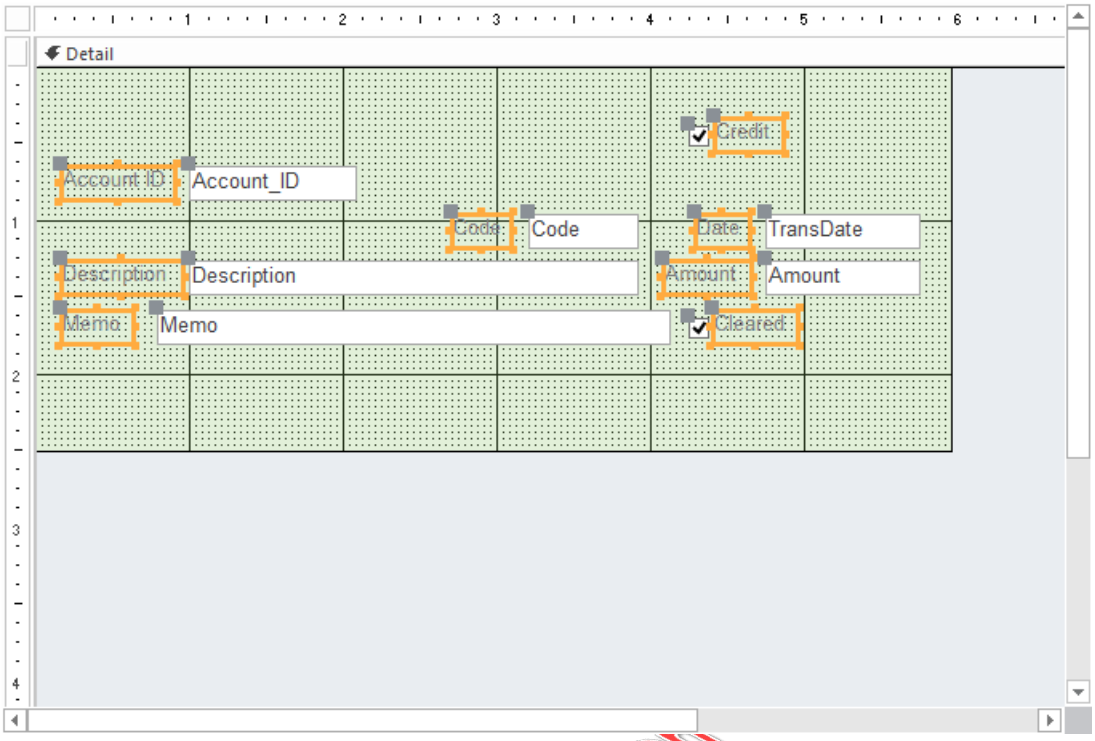
18. In **Design view**, click and drag the bottom and right sides of the form to resize it.



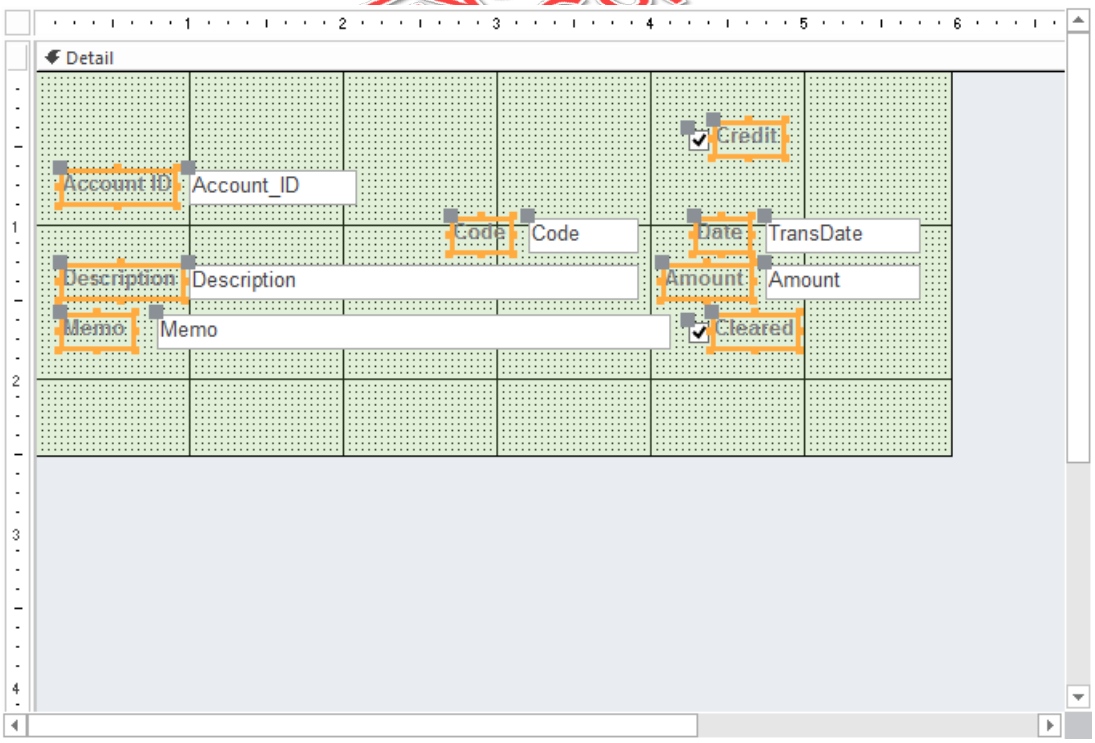
19. To set the font and font size, select all the objects in the form. (You can use **Ctrl+A** to do this.)



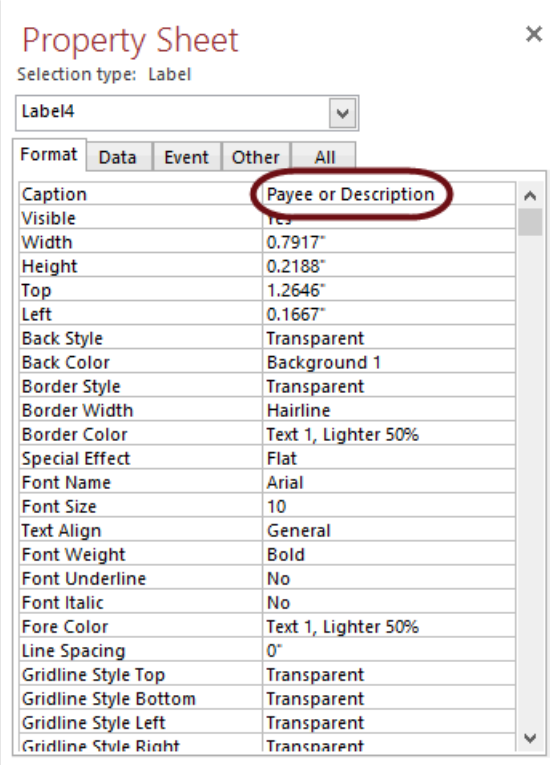
20. On the **Form Design Tools: Format** tab in the **Font** group, select "Arial" and "10".
21. Select each of the labels. You will probably need to use **Ctrl+click** to select them all.



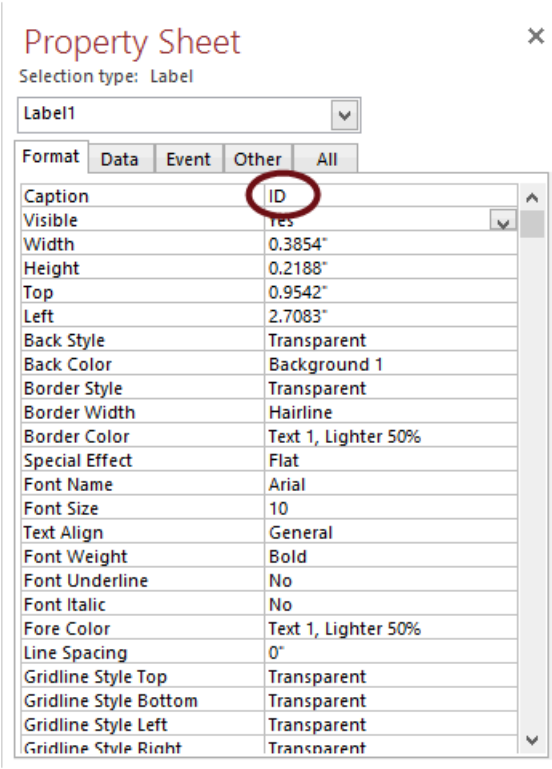
22. In the **Font** group, click B.



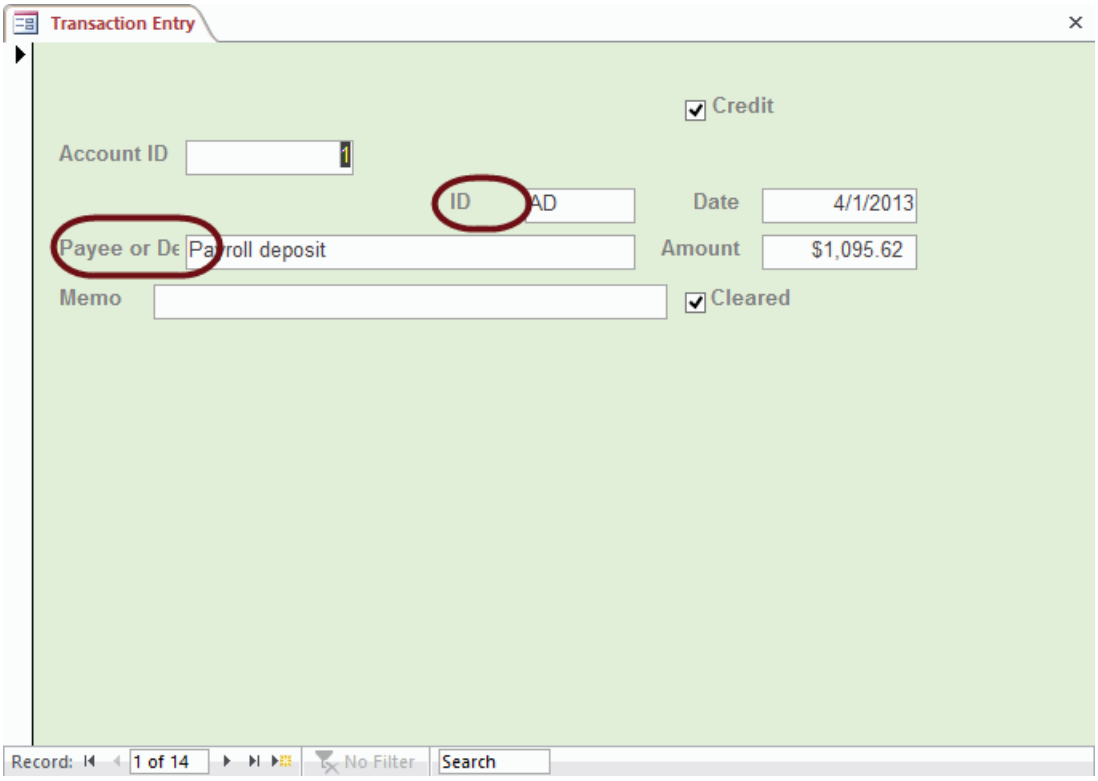
23. To change the label on the Description field, right-click the label and select **Properties** from the shortcut menu.
24. On the **Format** tab in the **Caption** field, type "Payee or Description".



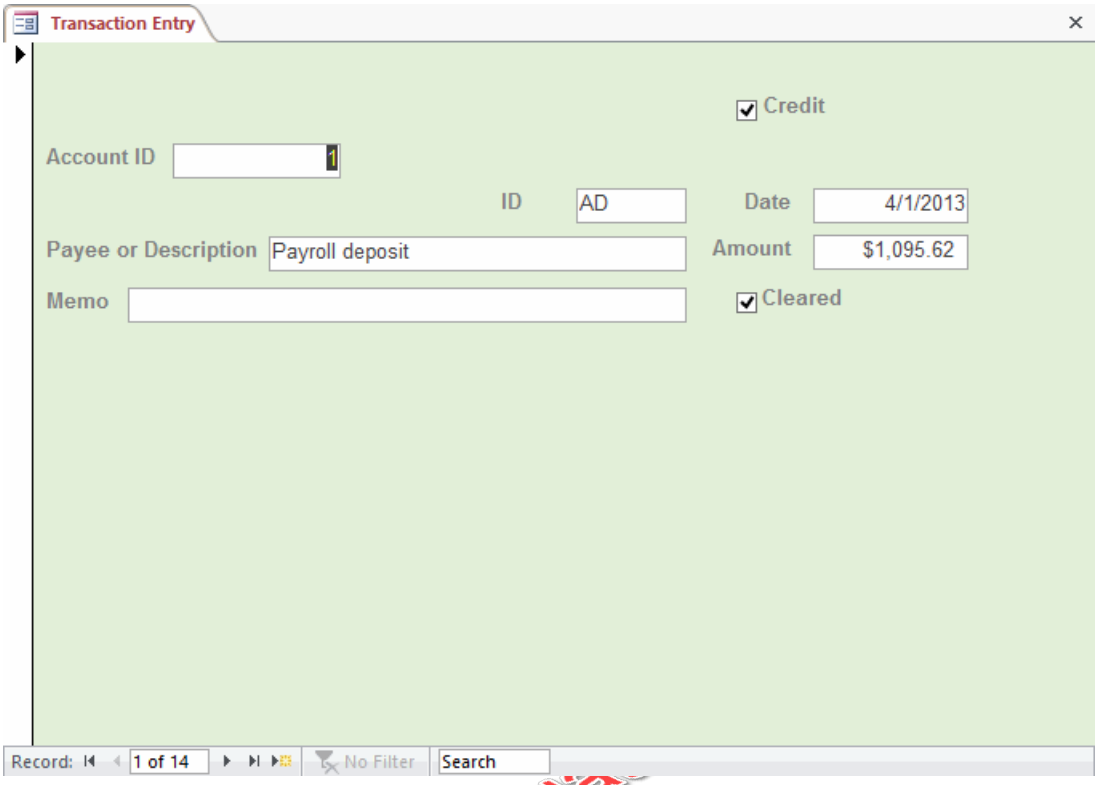
25. Select the Code label on the design surface. Notice that the property sheet changes to the sheet for the Code label.
26. In the **Caption** field, type "ID".



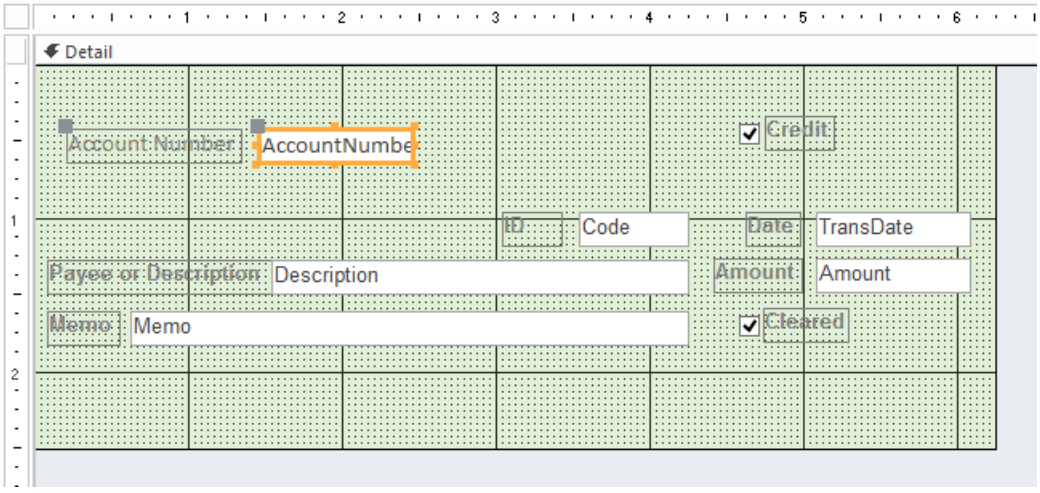
27. Close the property sheet.
28. Preview your form in Form view. Notice that the entire "Payee or Description" label does not show and there's a bigger gap now between the ID label and its field object.



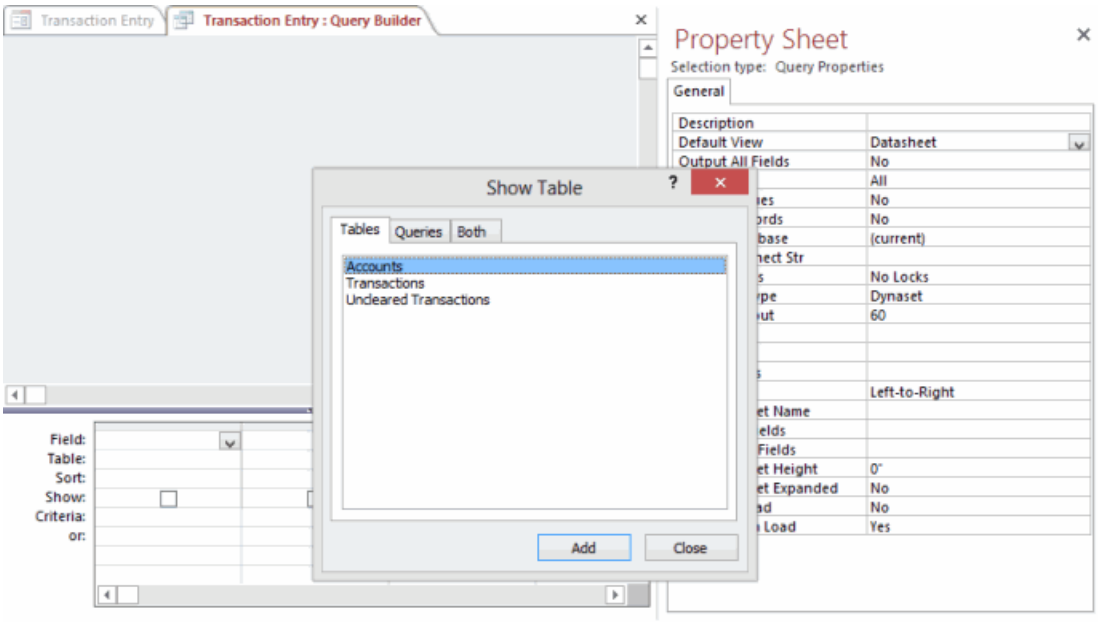
29. Tweak the layout to show the complete labels and to improve spacing.



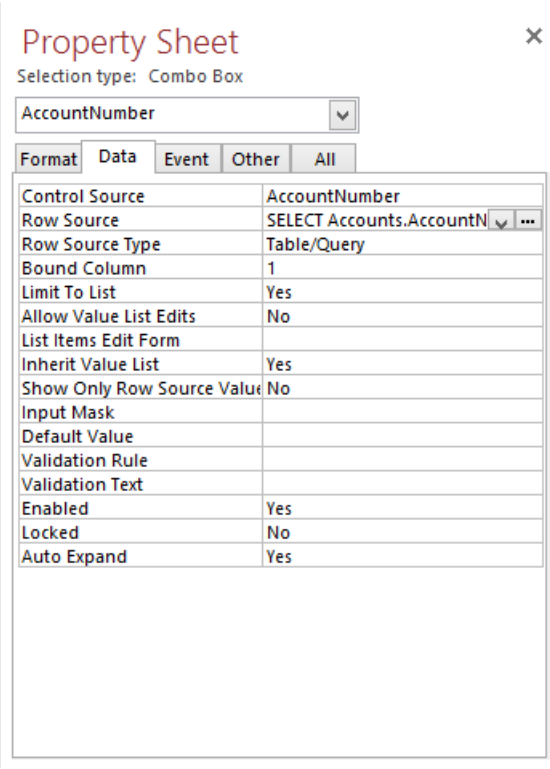
30. To remove the **Account_ID** field, select the label and field objects and press **Delete**.
31. To add the AccountNumber field, on the **Form Design Tools: Design** tab in the **Tools** group, click **Add Existing Fields**.
32. In the **Field List**, double-click AccountNumber. The field is added on the design surface.
33. Close the field list.



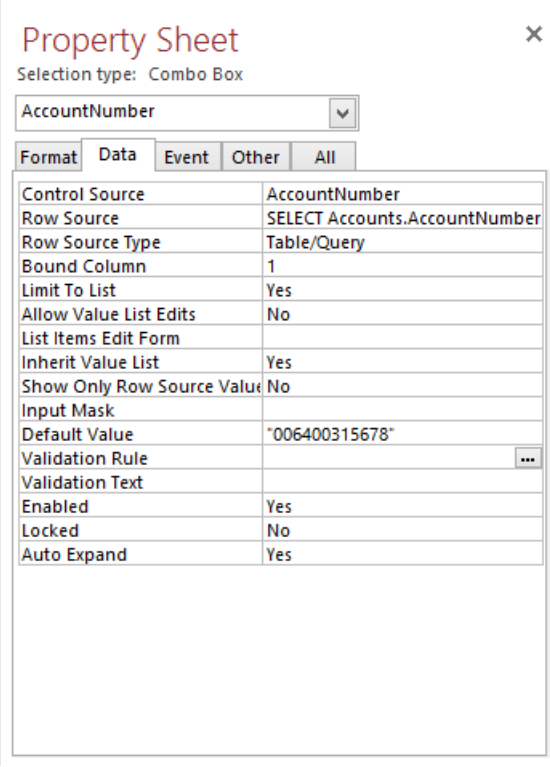
34. Move the AccountNumber field to the desired location and tweak as needed. (Don't forget to make the label bold.)
35. To change the AccountNumber field to a combo box, in Design view select the AccountNumber field object, right-click, and select **Change To > Combo Box** from the shortcut menu.
36. With the AccountNumber field object still selected, click **Property Sheet**.
37. Select the **Data** tab.
38. In the **Row Source** field, click ... . The **Query Builder** opens.



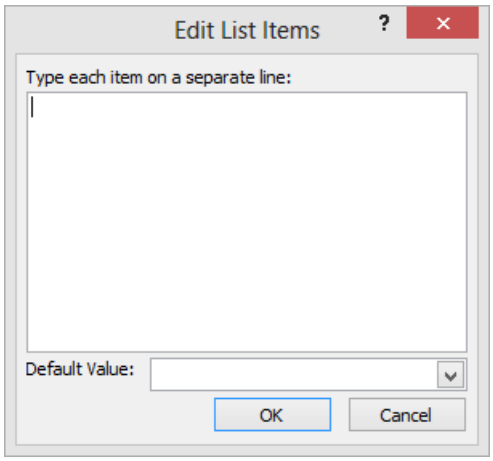
39. Highlight "**Accounts**" in the **Show Table** dialog box and click **Add**.
40. Click **Close**.
41. In the table, double-click AccountNumber to add the field to the query.
42. Click **Close > Close**.
43. In the property sheet, in the **Limit to List** field, select "Yes".
44. In the **Allow Value List Edits** field, select "No".



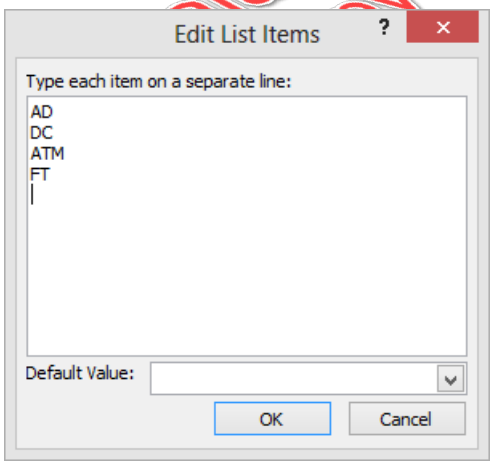
45. In the **Default Value** field, type "006400315678". (This is not a very robust way to handle the default value. Account numbers can change, so it would be better to make the default value depend on the Account ID which should never change.)



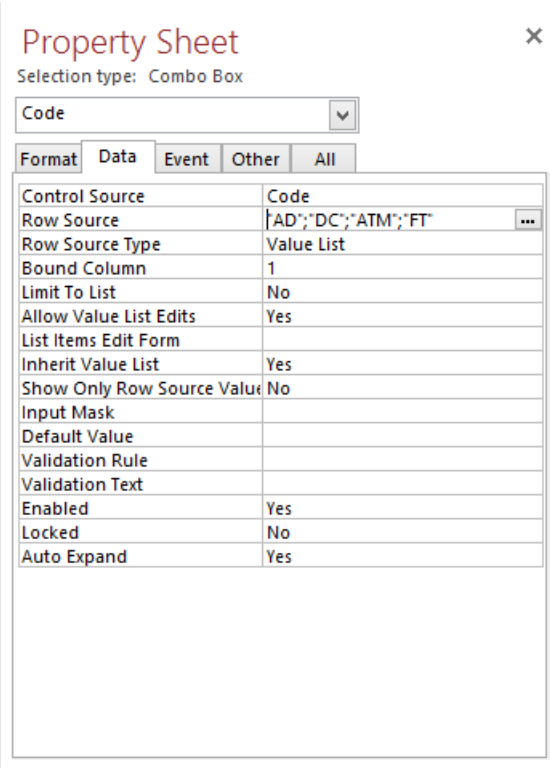
46. Close the property sheet.
47. Right-click the Code field object and select **Change To > Combo Box**.
48. In the ribbon, click **Property Sheet**.
49. This time, we'll create a value list for users to select from. We'll make the list available to users, but give them the ability to enter other values. From the **Row Source Type** drop-down list, select "Value List".
50. In the **Row Source** field, click ... . The **Edit List Items** dialog box opens.



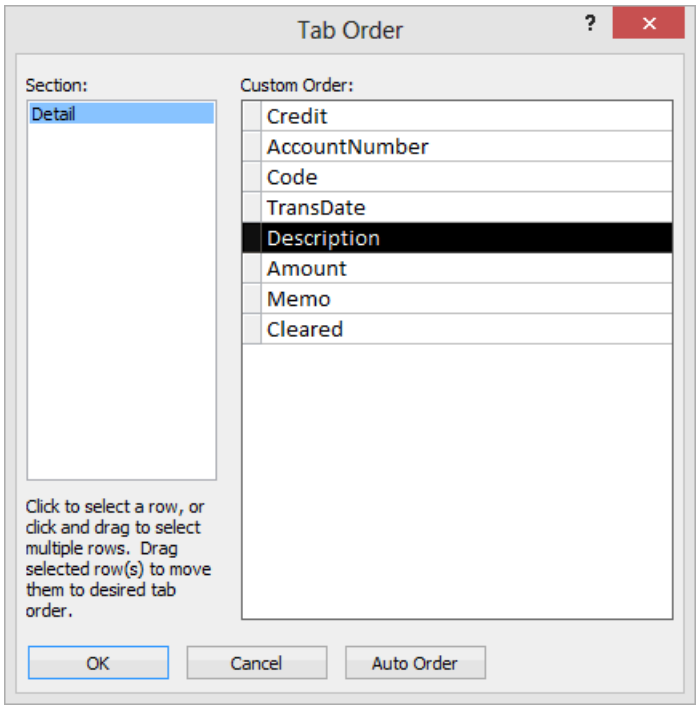
51. Type values in the dialog box, putting each entry on a separate line.



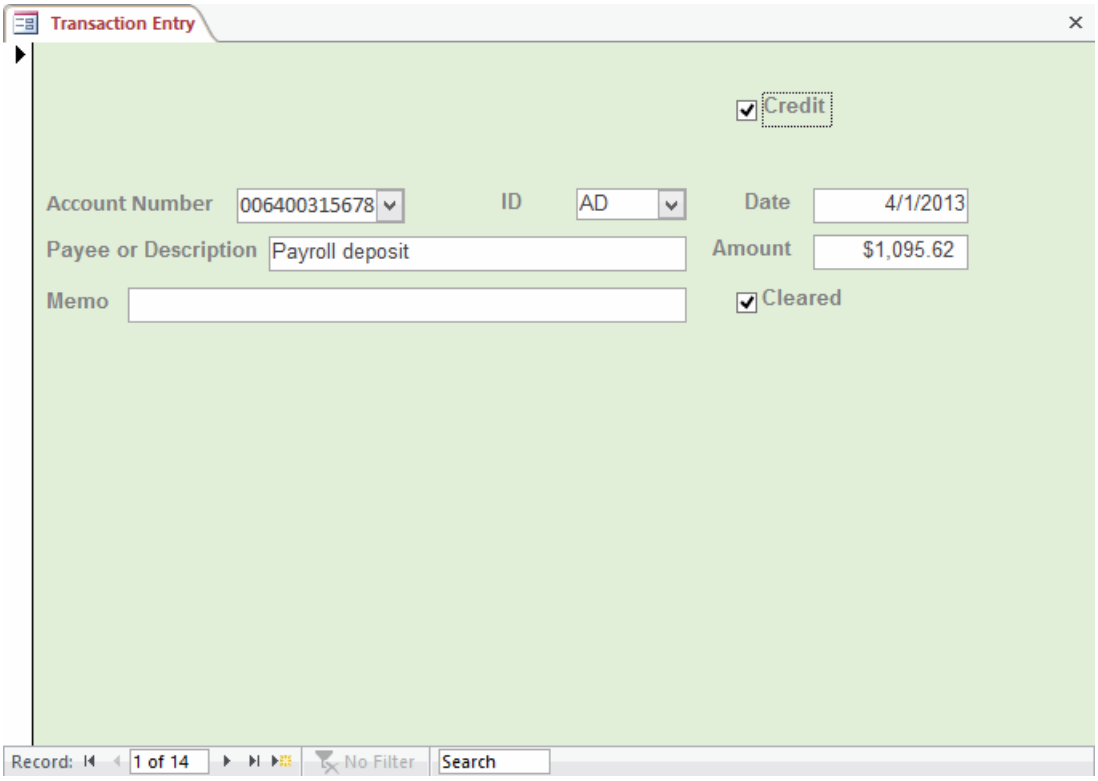
52. When you finish, click **OK**.



53. Close the property sheet.
54. On the **Form Design Tools: Design** tab in the **Tools** group, click **Tab Order**.
55. Drag the items in the tab order to the desired positions.



56. When you finish, click **OK**.
57. Preview your form in Form view.

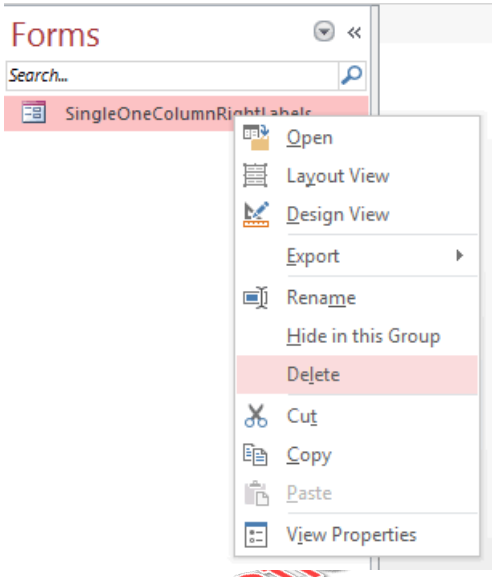


4.6. Alter a Form

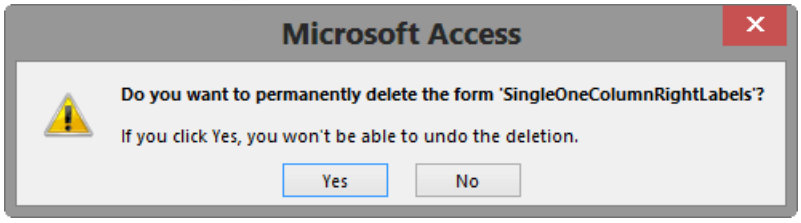
Forms may be altered in a variety of ways that can help you to customize any process.

❖ 4.6.1. Delete Forms

Once a form has served its purpose, you will want to delete it in order to keep your database efficient.

1. 

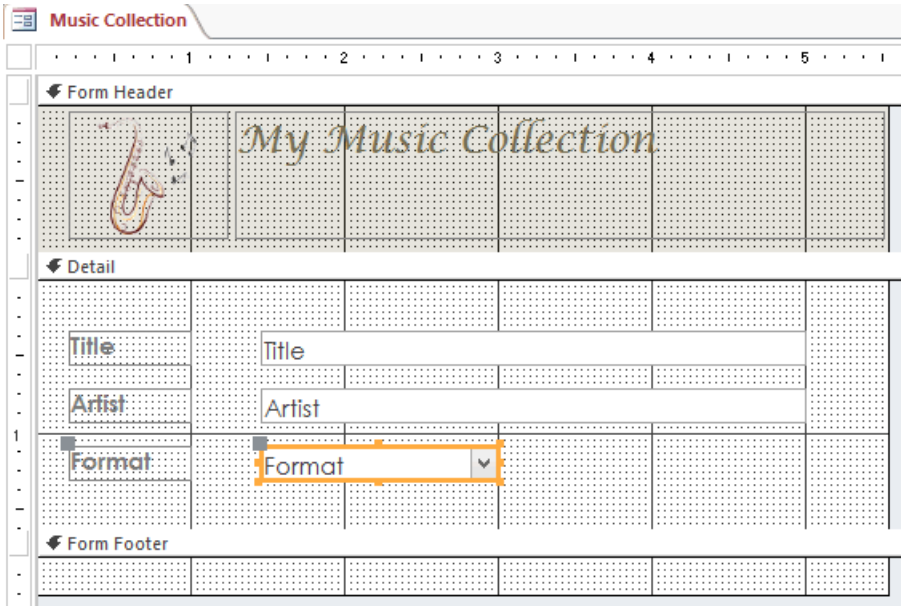
   Right-click the form you want to delete, be aware that if the form is being used by other objects, the deletion process may cause issues.

2. 

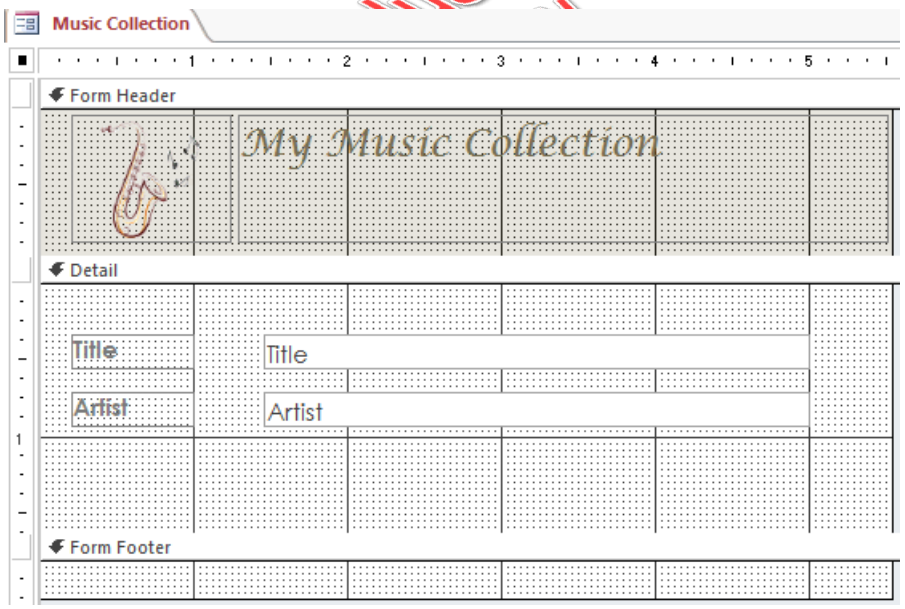
   Confirm the action.

❖ 4.6.2. Remove Form Controls

Controls may need to be removed from the various sections of the form. When doing this, the data will not be affected, and the control may be added back at any time.

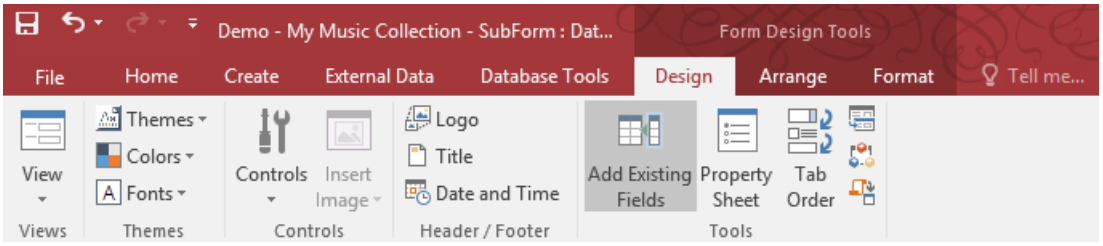
1. 

Select the control to remove. Tap the Delete key.

2. 

The control is removed.

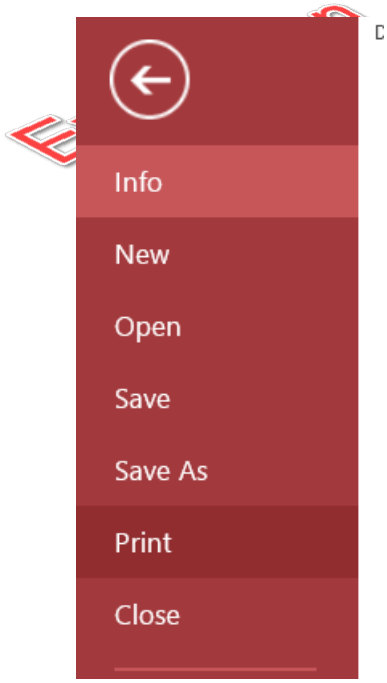
❖ 4.6.3. Format a Form



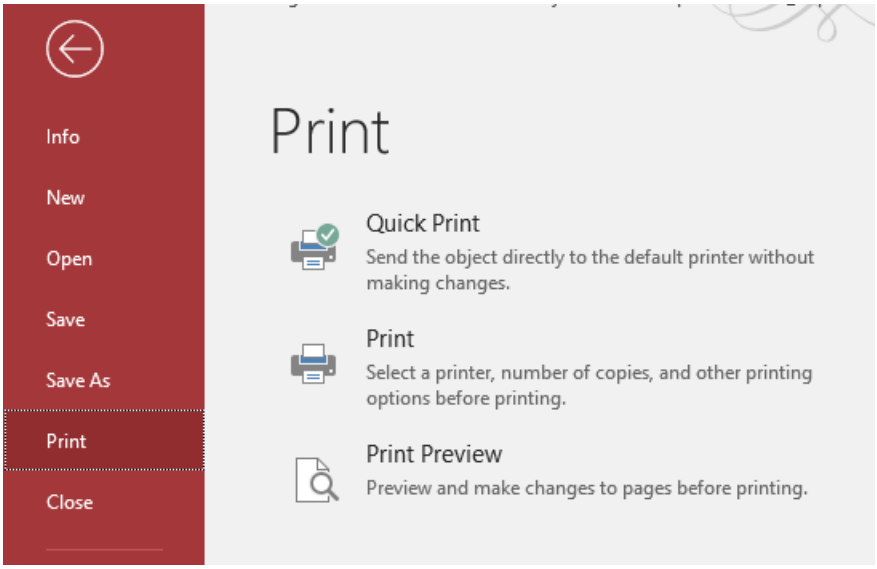
There are many options available on the three tabs.

Format Print Layouts

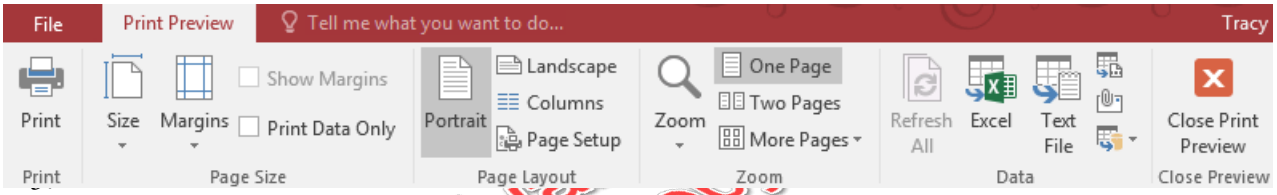
Forms may be printed at anytime. To view and adjust the layout, choose File > Print.



1. **File > Print**.

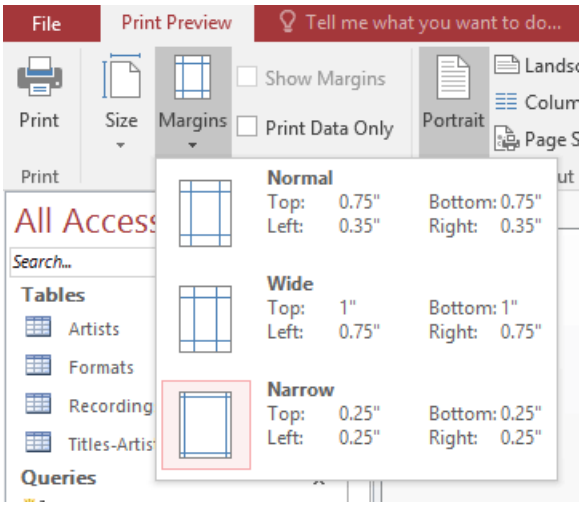
2. 

Print Preview.



The **Print Preview** Ribbon provides many choices in how the form will be printed.

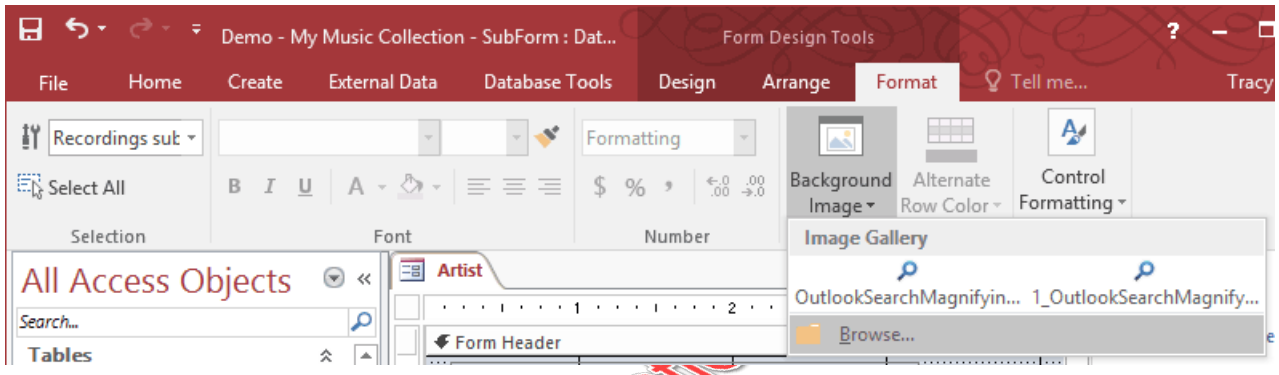
Change Margins



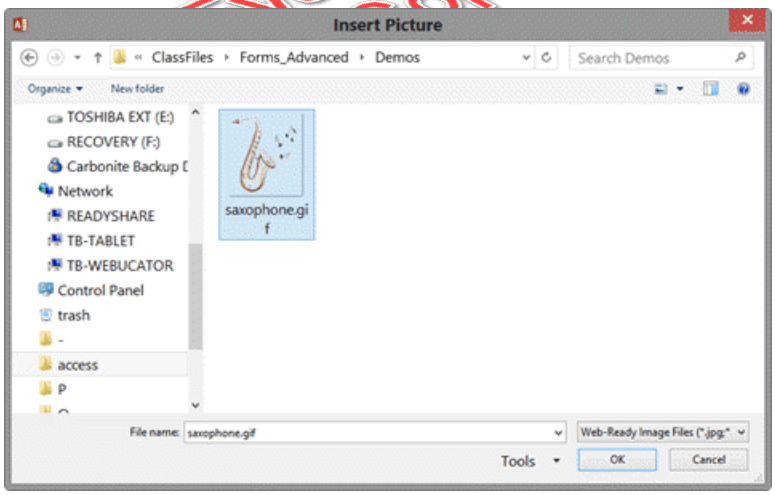
Margins can affect how much of the form will fit on a single page.

Insert Backgrounds and Images

Images may help convey a message. By branding a set of forms with a logo or image will help to categorize and maintain a uniform look.



Format > Background Image >Browse...

2. 

Choose the proper image.

3. 

The image is now placed in the center of the form.

Conclusion

In this lesson, you learned:

- About the parts of a form.
- How to add objects to a form.
- How to add, move, format, and order fields on a form.
- About the controls available for forms.
- To work with form properties, section properties, and object properties.

LESSON 5
Reports

Topics Covered

☑ Creating reports in Design view.

☑ Report sections.

☑ Report fields.

☑ Moving, resizing, and formatting report objects.

☑ Manipulating headers and footers.

☑ Grouping and sorting report records.

☑ Property sheets.

Introduction

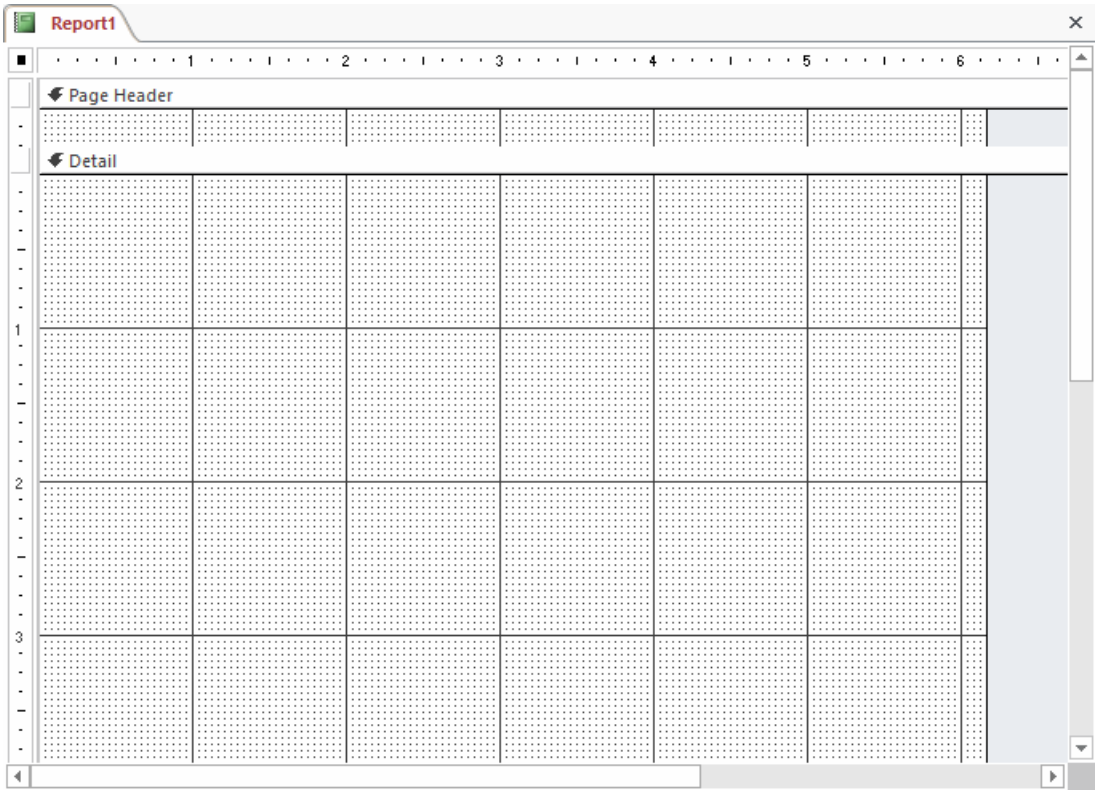
In this lesson, you will learn to create reports in Design view. In doing so, you will learn about the sections of a report, to add fields to a report, to move, resize, and format the objects on a report, to manipulate the page header/footer, the report header/footer, and group headers/footers, to group and sort records, and to work with report, section, and object property sheets.

5.1. Design View

Many of the techniques we learned in the forms lesson will apply as we learn to design reports. In particular, the methods for moving, resizing, and formatting objects are identical.

As with forms, Design view gives you the maximum control over the aesthetics and performance of your reports. Files are located `Reports_Advanced/Demos/Demo - My Music Collection - Start.accdb`.

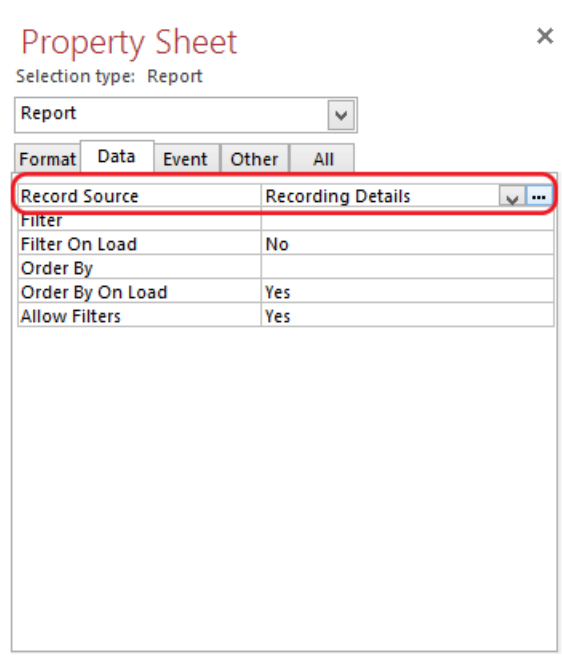
To start a report in Design view, go to the **Create** tab in the **Reports** group and click **Report Design**. A blank design tab opens on the work surface.



Name and save the form. (We'll name the report "Music List".)

Next, we need to give our report a record source. To do this we'll use the "Record Details" query that we created in the forms lesson.

1. To associate the query with the report, right-click in the design surface and select **Report Properties** from the shortcut menu.
2. From the **Record Source** drop-down list, select "Recording Details".



3. Close the property sheet.

Note

You may make a copy of a report that you have made, assuming you like the layout and formatting and then change the source as a shortcut way to reuse existing reports. If you have different field names, those will need to be added, modified, or deleted in the report to match the new source.

5.2. Report Sections

Reports have three standard sections: page header, detail, and page footer. In addition, you can add group header/footer and report header/footer sections.

❖ 5.2.1. Report Header

If you include the optional report header section, it is visible on the first page of the report only. You can use it for report information that only needs to appear once on the report such as a logo, title, and date. The report header and footer are paired, so when you add one to the form, you add them both.

❖ 5.2.2. Page Header

The page header section appears at the top of each page of the report. For a tabular report, the page header is a good place for column headings.

❖ 5.2.3. Group Header

If you group the data in your report, Access adds a group header section that is visible before each new grouping on the report. You can use it to print the group name for each grouping on the report. There can be multiple group headers on the report depending on how many grouping levels you include.

❖ 5.2.4. Detail

The detail section contains one record for each row in the record set. This is the main section of the report.

❖ 5.2.5. Group Footer

If you include group totals on a report, the group footer section appears at the end of each grouping on the report. The group footer typically shows summary information for each group. There can be multiple group footers on a report depending on how many grouping levels you include.

❖ 5.2.6. Page Footer

The page footer appears at the bottom of each page of a report. The page footer usually contains page numbers.

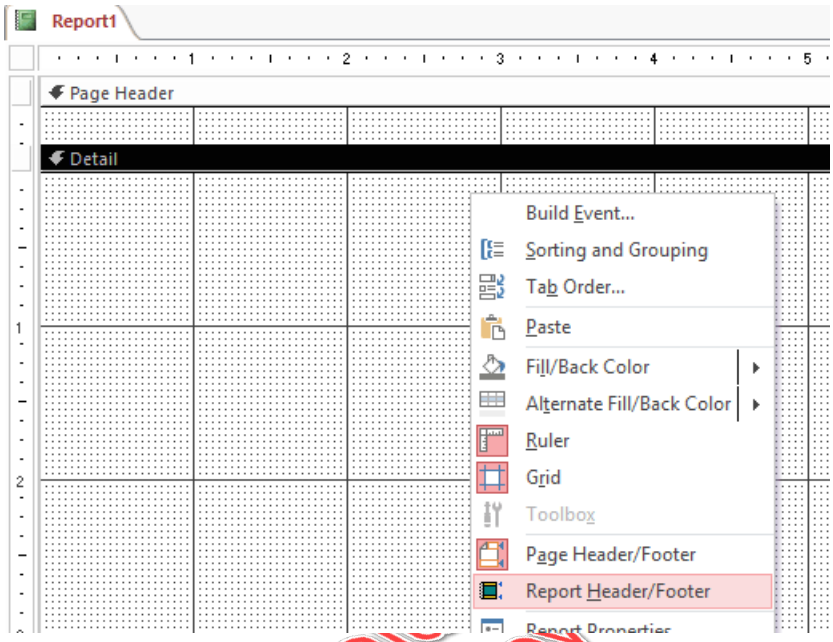
❖ 5.2.7. Report Footer

If you include the optional report footer section, it appears once at the end of the report. The report footer contains summary information for the entire report. For example, the report footer might be used to show report grand totals.

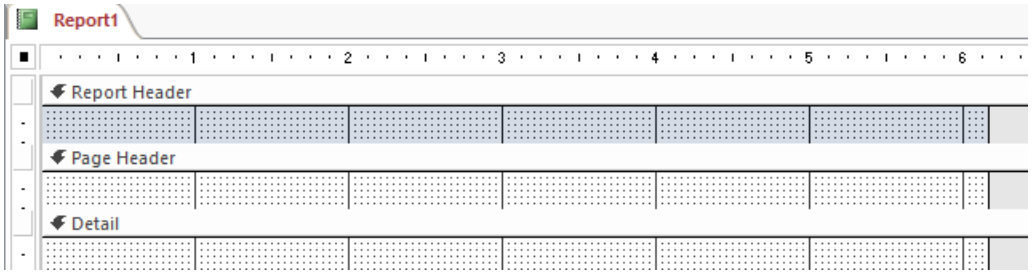
❖ 5.2.8. Adding a Report Header/Footer

To add report header/footer sections to a report:

1. Display the report in Design view.
2. Right-click the design surface and select **Report Header/Footer** from the shortcut menu.



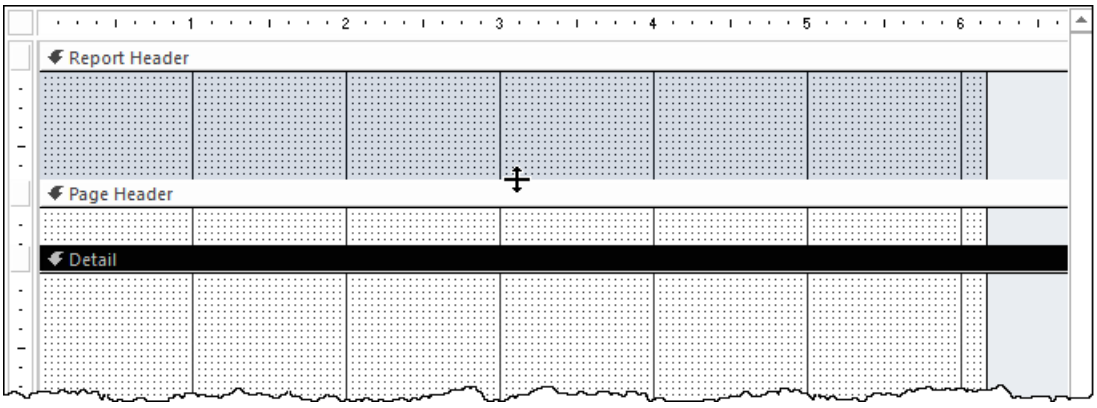
The report header and footer are added to the design surface.



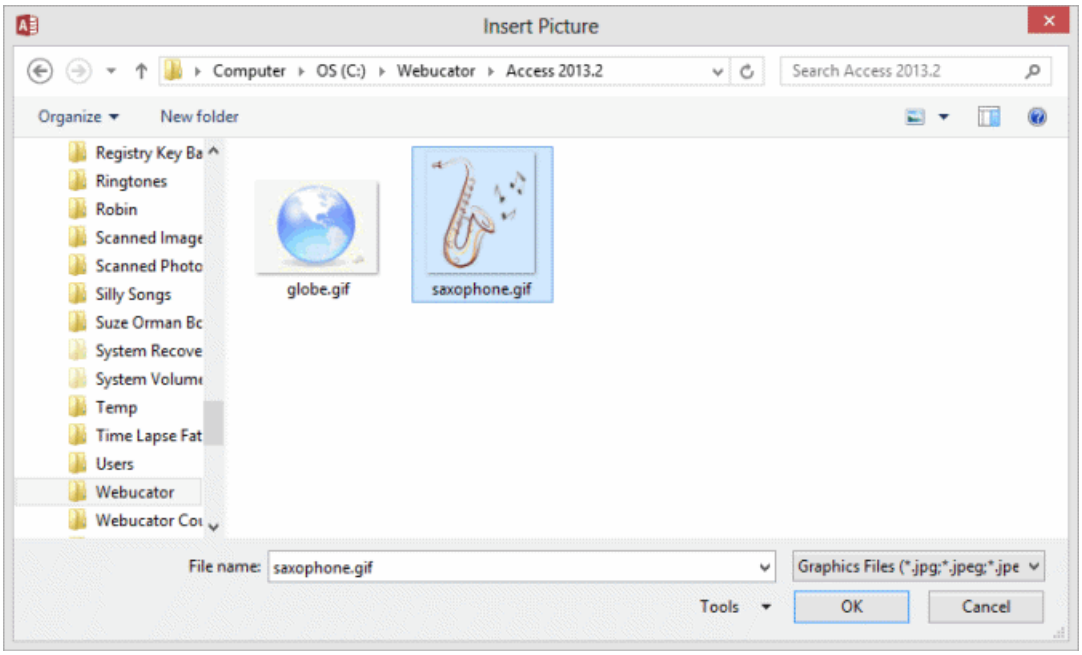
❖ 5.2.9. Adding a Logo to the Report Header

To add a logo to the report header:

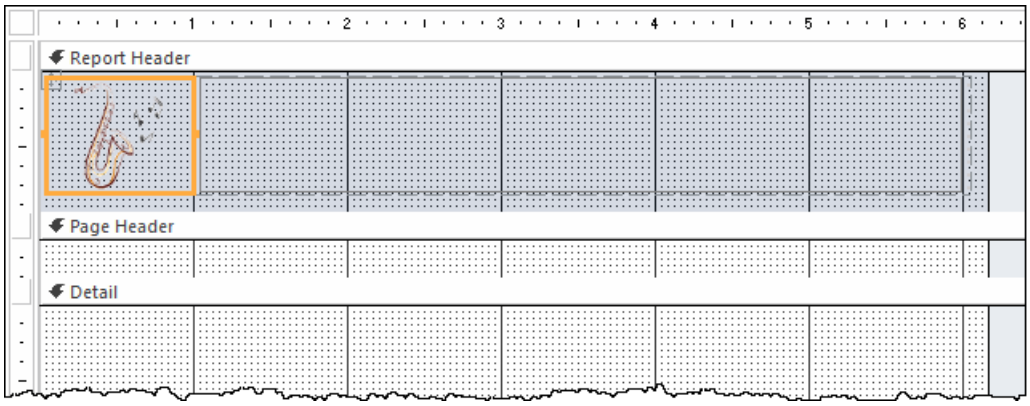
1. Resize the header section as needed to accommodate the logo.



2. On the **Report Design Tools: Design** tab in the **Header/Footer** group, click **Logo**.
3. Navigate to and select the logo file.



4. Click **OK**. The logo is added to the report header area.
5. Move and resize the logo as needed.



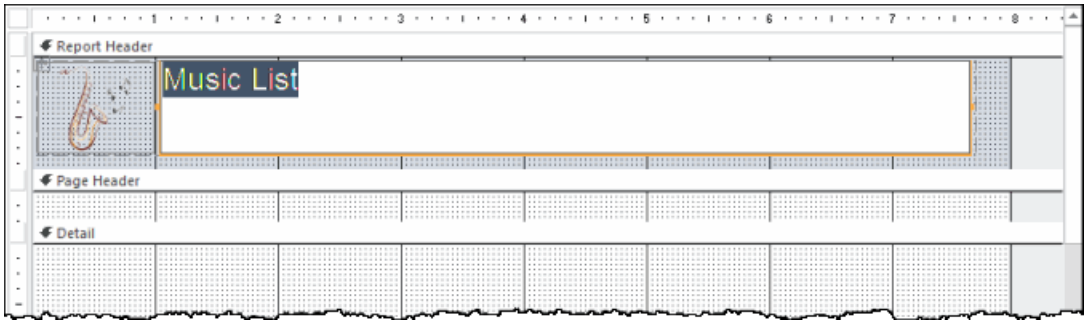
6. Switch to Print Preview to preview the logo.

7. When you finish, click **Close Print Preview**.

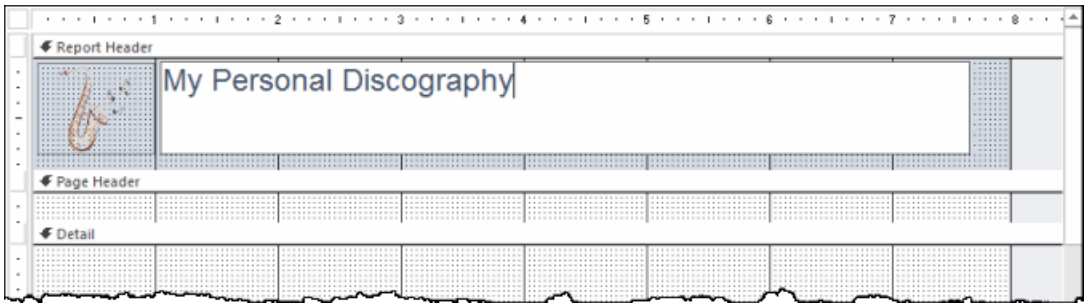
❖ 5.2.10. Adding a Title to the Report Header

To add a title to the report header:

1. In Design view, on the **Report Design Tools: Design** tab in the **Header/Footer** group, click **Title**.

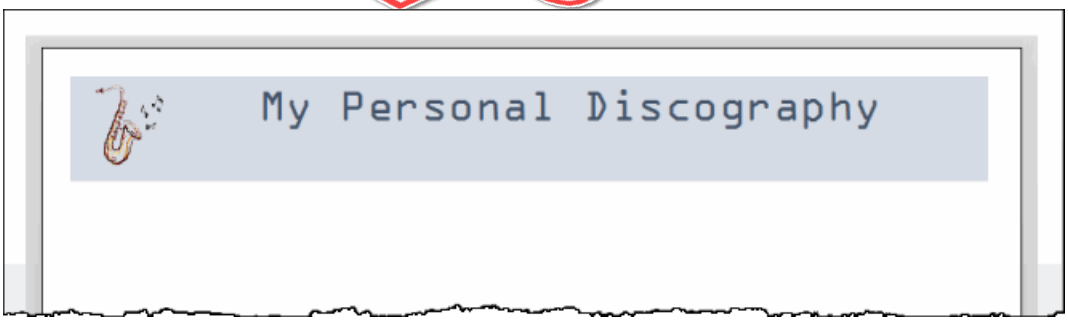


2. Type the title for the report.



3. Go to the **Report Design Tools: Format** tab and make any formatting changes you want.

4. Return to the **Report Deesign Tools: Design** tab, then switch to Print Preview to preview the report.



5. When you finish previewing the report, click **Close Print Preview**.

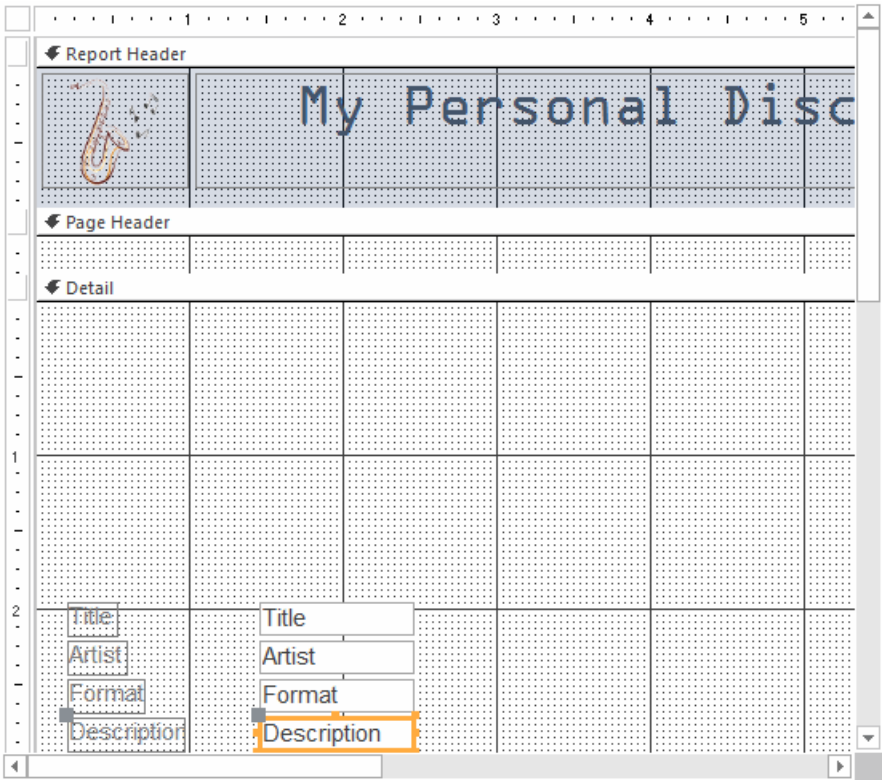
❖ 5.2.11. Adding Fields to a Report

Next, we'll add some content to the report by adding fields to the design surface.

To add fields to the report:

1. On the **Report Design Tools: Design** tab in the **Tools** group, click **Add Existing Fields**.

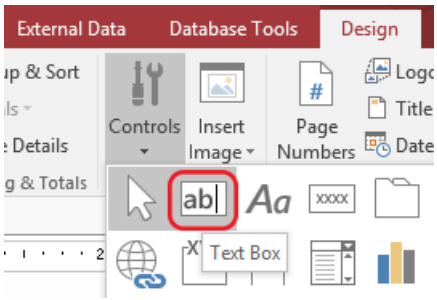
2. In the **Field List** pane, double-click the field names you need to add them to the design surface.



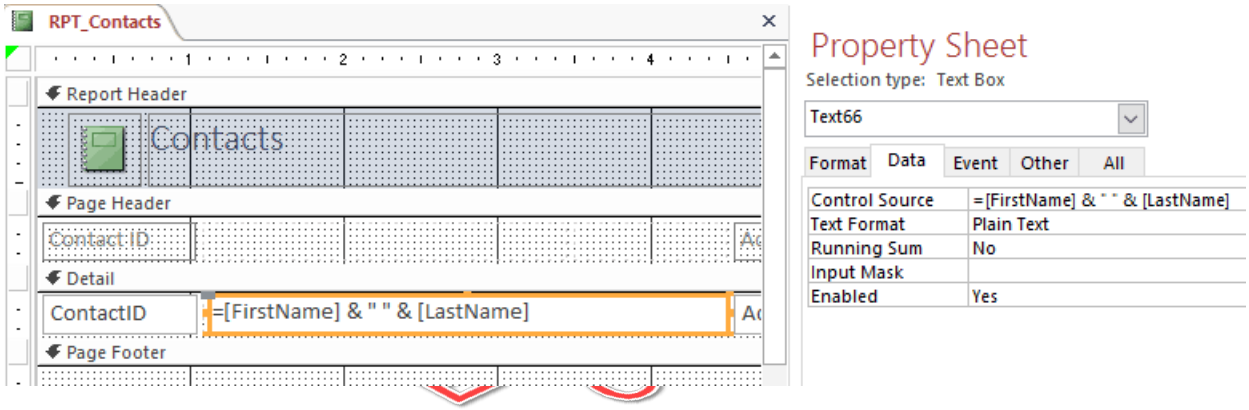
❖ 5.2.12. Add Calculated Fields

When the data you need is not directly available in the field list, then you must create a calculated field (formula) to display the data wanted. Continue using the file `Reports_Advanced/Demos/Demo - My Music Collection - Start.accdb`.

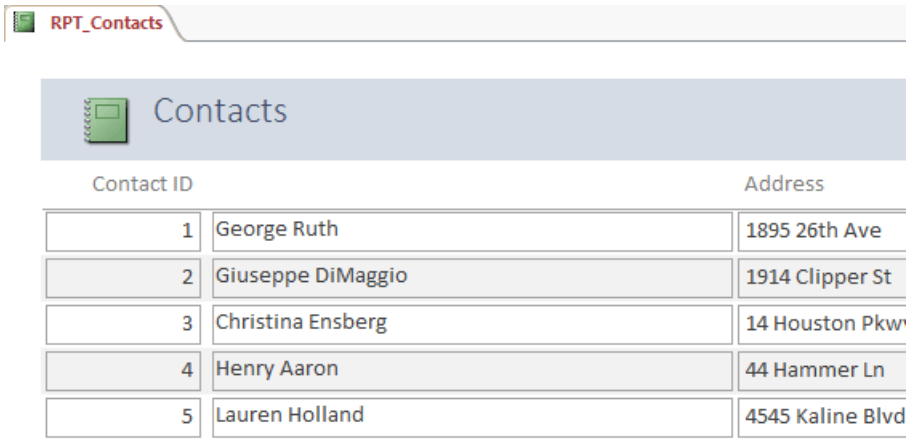
1. Open **RPT_Contacts** in Design View. Insert a Text Box for the Calculated Field. **Design > Controls > Text Box.**



2. Enter the formula into the **Data Tab > Control Source** area.



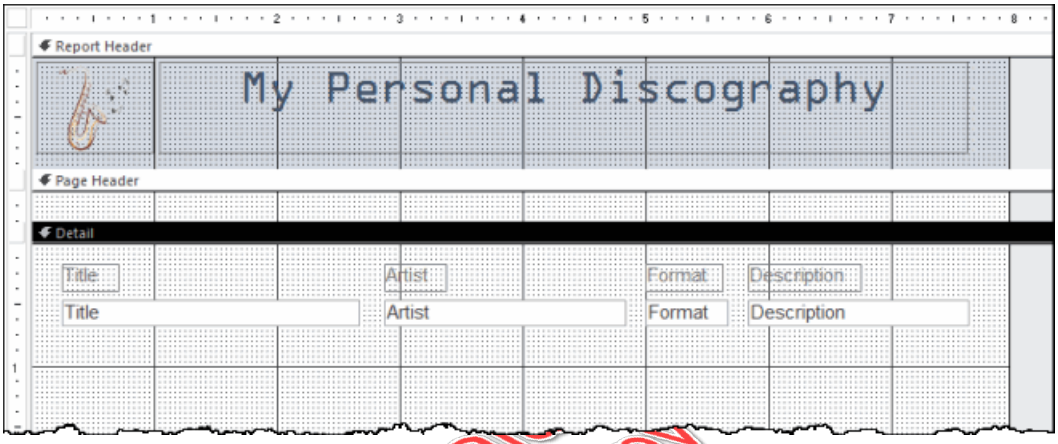
3. The finished report may look similar to this.



5.3. Arranging Fields on a Report

As with forms, Access adds the fields in the order you selected them and stacks them. For this report, we want a tabular layout, so we'll adjust the layout accordingly.

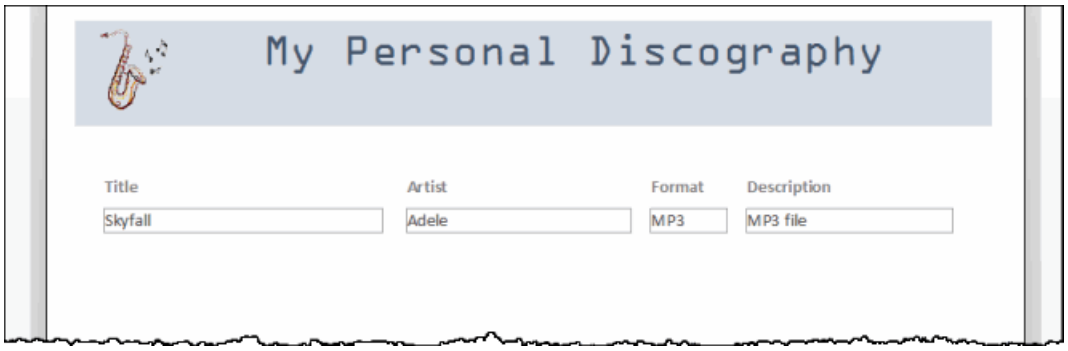
The same techniques for moving and resizing fields on a form apply to reports. This time, however, we're going to stack the labels on top of their corresponding fields.



If needed, remember to use the **Report Design Tools: Arrange** tab to apply alignment and spacing to the report objects.

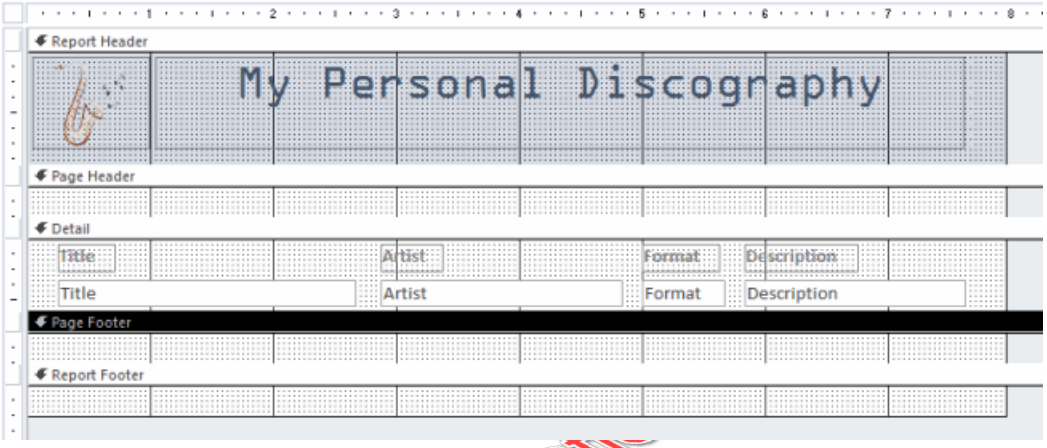
Use the **Report Design Tools: Format** tab to apply formatting to the report objects.

Preview your work as necessary to ensure you are achieving the results you want.



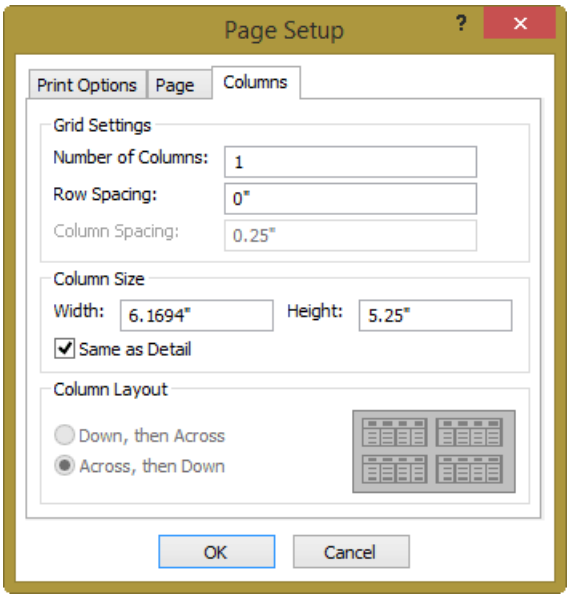
5.4. Resizing the Detail Section

When you previewed the report, you may have noticed that the report is displaying one record per page. The Detail section needs to be only as tall as the height of one record plus any spacing you want to allow between records. For this reason, we need to resize the height of the Detail section.



When we preview the report now, we see that there are multiple records per page.

To create multiple columns in a report, you may choose **Page Setup > Page Layout > Columns**. Choose the proper settings, and click **OK**.



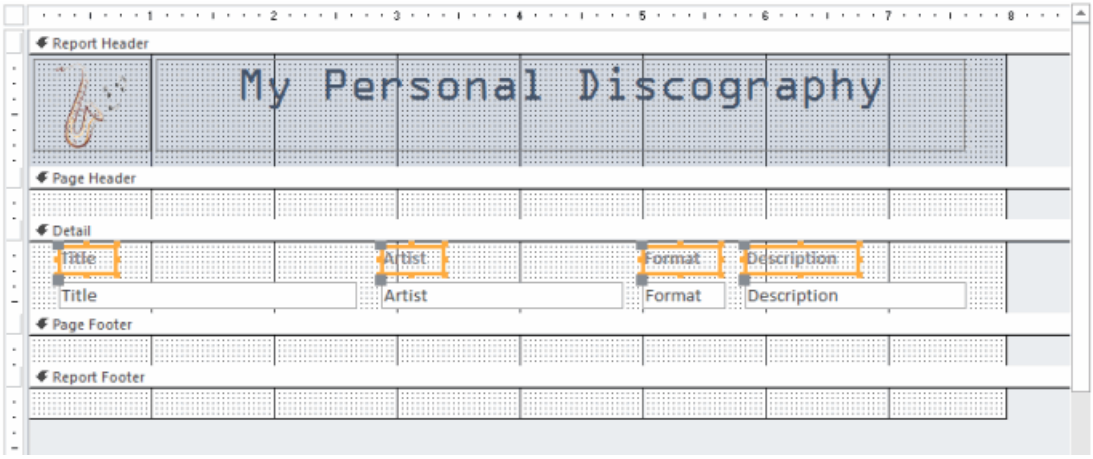
❖ 5.4.1. Eliminating Repeating Headings

You may have noticed that the labels in our example repeat for every record. That's because the labels are included in the Detail section of the report.

We can move the labels to the Page Header if we want them to print just once at the top of every page of detail.

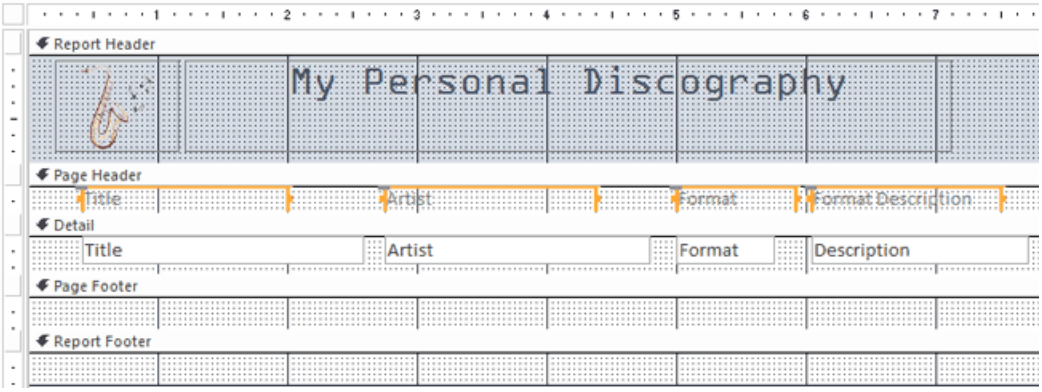
To do so:

1. In **Design view,** select all the labels.

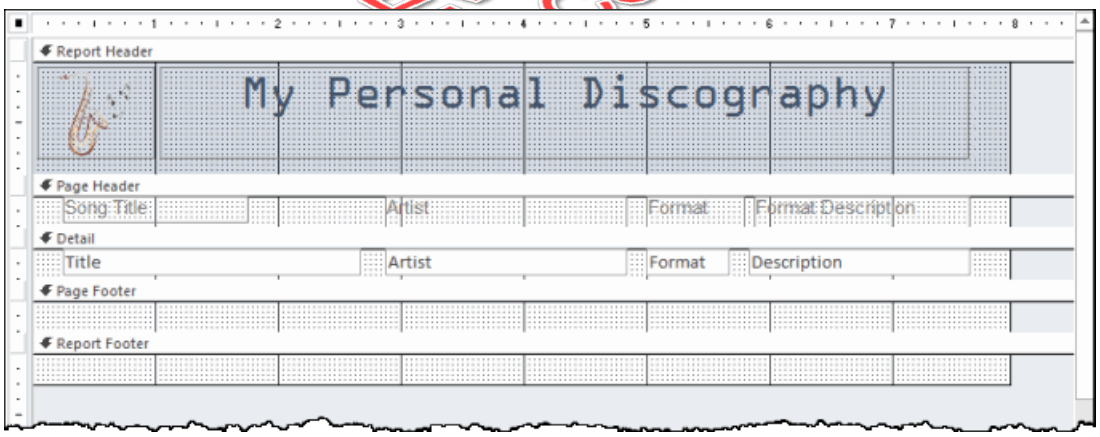


2. Press **CTRL + X** (Cut).

3. Paste **CTRL + V** the fields in the Page Header and resize the Detail section to account for the extra space caused by deleting the labels. Double-Click Title lable and type “Song Title”.



4. To add a new item - On the **Report Design Tools: Design** tab in the **Controls** group, click Aa. The cursor changes to $^{+}\mathrm{A}$.
5. In the Page Header, click and drag a rectangle above the first field to create a label.
6. In the label, type the text you want to appear above the corresponding detail column.
7. Keep in mind the Cut and Paste method is much faster!.

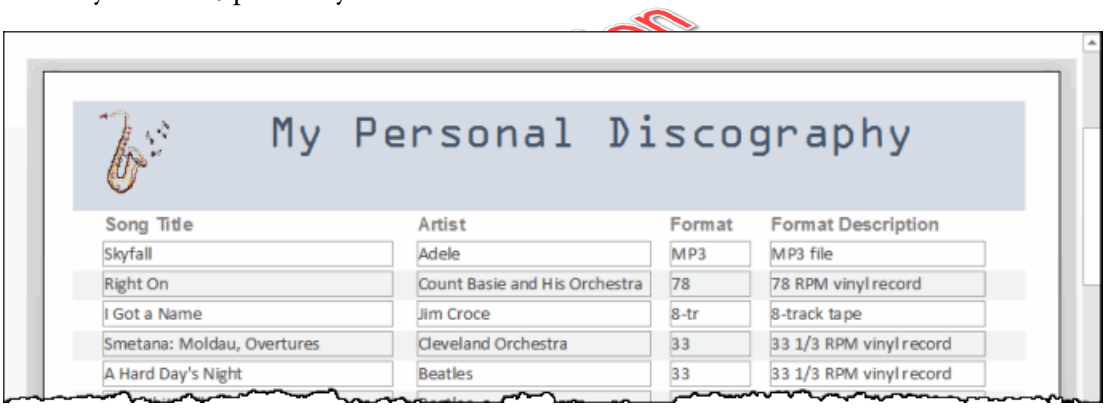


8. After you add the labels you need, tweak the sizing and placement as needed.

Some Tips
1. You can *move* selected objects by small increments by pressing **Ctrl** and the arrow on your keyboard that corresponds to the direction you want to move.

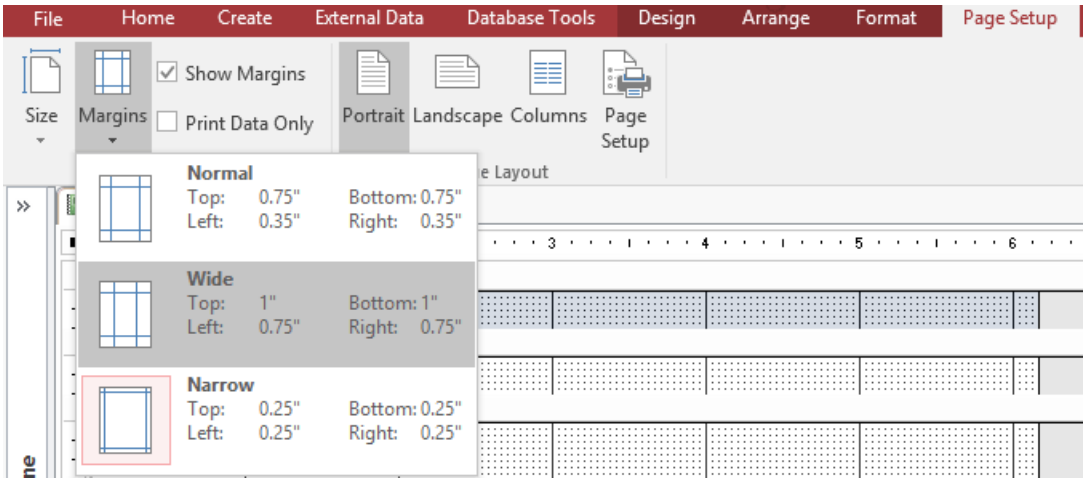
2. You can *resize* selected objects by small increments by pressing **Shift** and the arrow on your keyboard that corresponds to the direction in which you want to resize.
3. You can use the **Size/Space** options on the **REPORT DESIGN TOOLS: ARRANGE** tab to quickly equalize the size of several objects. For instance, if you want to make all the labels the same height as the shortest label, you would select **Size/Space > To Shortest** from the menu.

9. Perform any formatting changes you want to make to the labels.
10. When you finish, preview your results.



❖ 5.4.2. Set Margins

Margins will affect the amount of information that will be displayed in the printed page. **Page Setup > Page Size > Margins**.

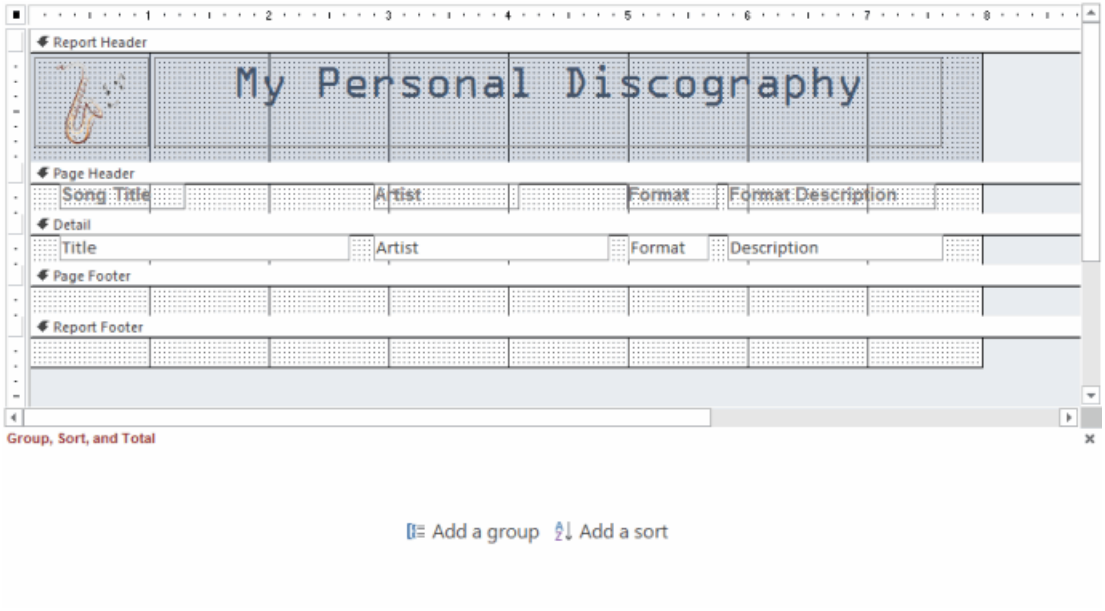


5.5. Grouping and Sorting

You can control how the information on the report is grouped and how data within those groups is sorted.

First, you can sort without grouping. To do so:

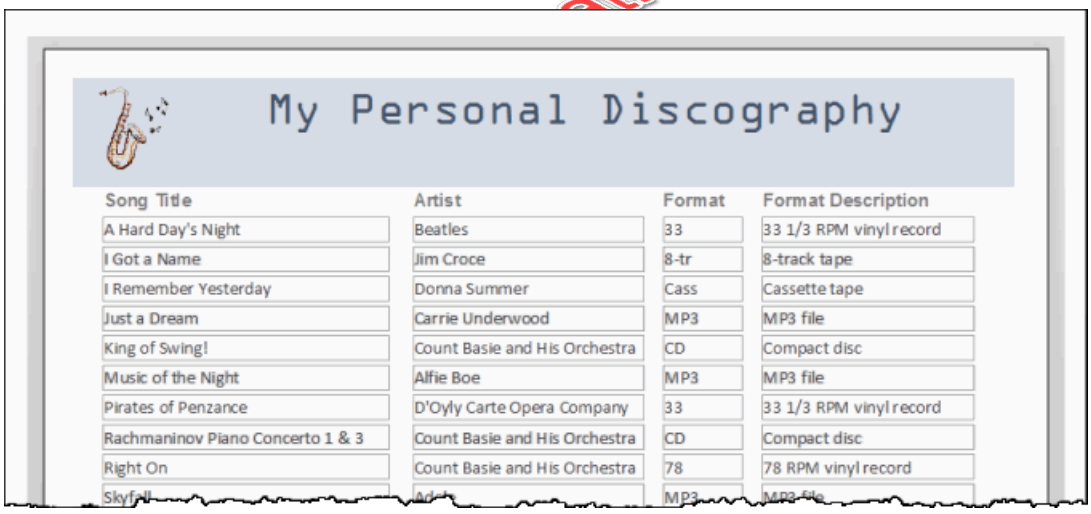
1. On the **Report Design Tools: Design** tab in the **Grouping & Totals** group, click **Group & Sort**. The **Group, Sort, and Total** pane appears at the bottom of the window.



2. Click **Add a sort**. A list of fields you can sort by displays.

3. Select a field to sort by.

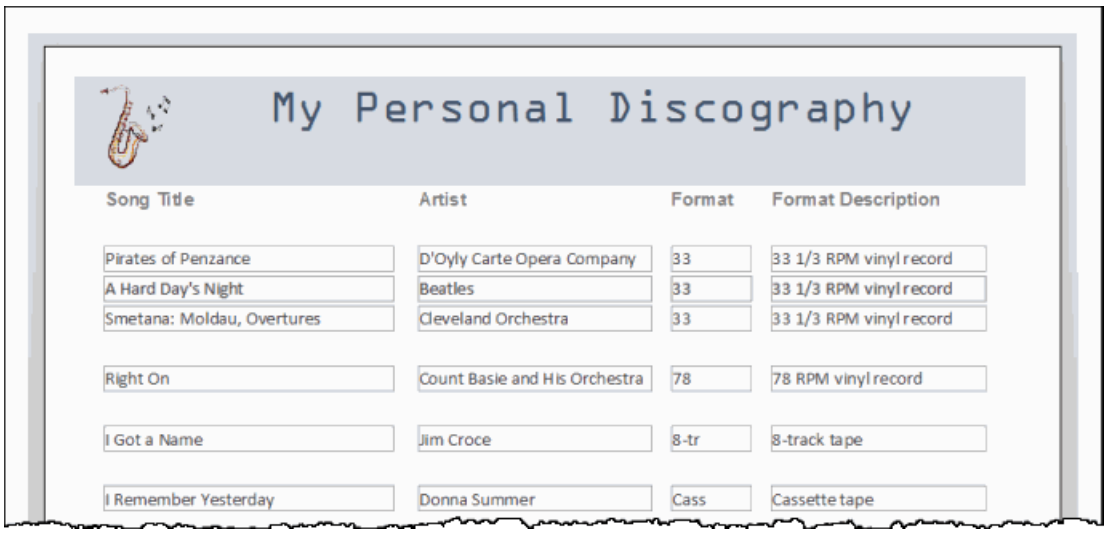
4. Preview the report. Notice that the report is sorted alphabetically by the column you selected.



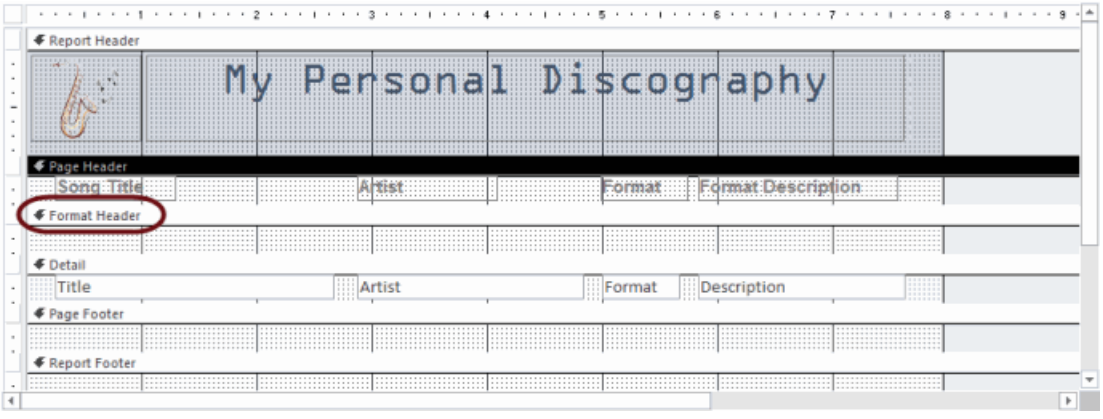
To group and sort the report:

1. In Design view, clear the sorting you just applied by clicking ✕ at the end of the **Sort by** line in the **Group, Sort, and Total** pane.
2. Click **Add a group**.
3. From the drop-down list, select the field to group by.

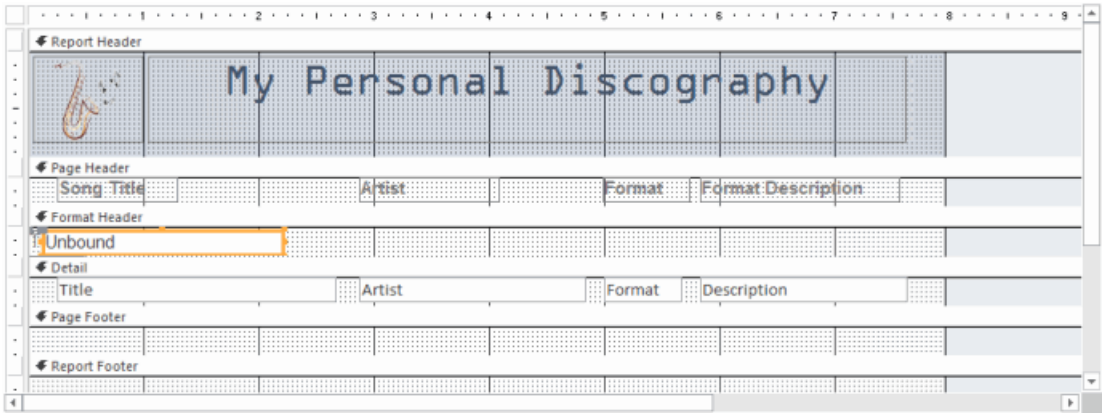
4. Preview the report. Notice how the report is grouped.



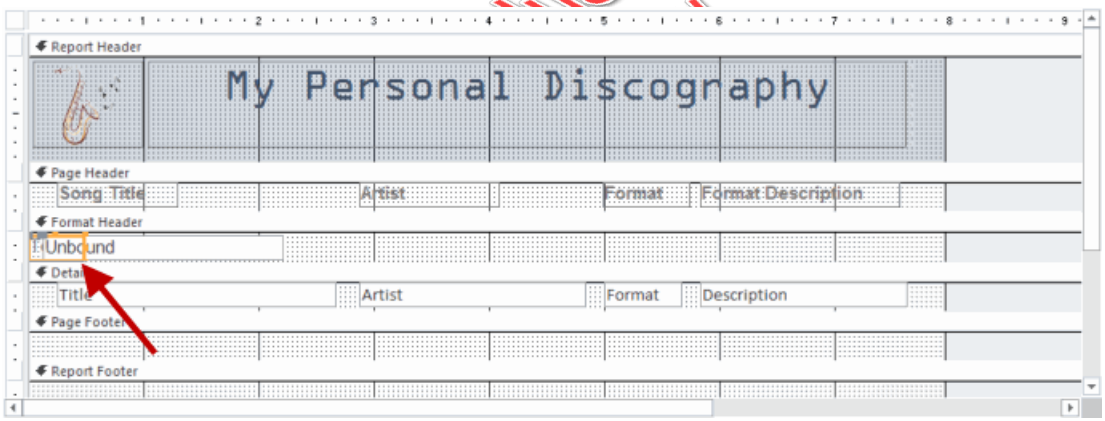
5. Back in Design view, notice that Access has added a group header section (called "Format Header" in our example). This is causing gaps between the groupings in the report. If we don't want to include a group heading, we can resize the group header so that it doesn't take up any space. However, let's add a label that shows the group name instead.



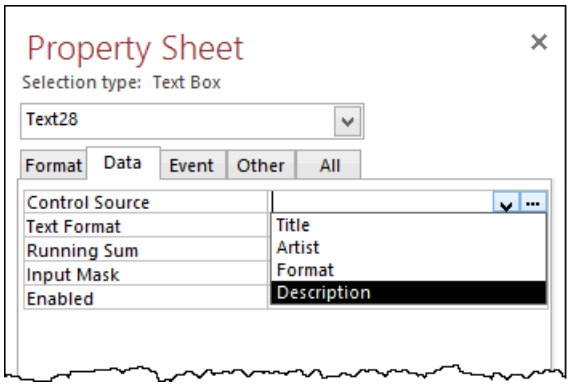
6. On the **Report Design Tools: Design** tab in the **Controls** group, click ab. The cursor changes to +ab.
7. Click and drag a rectangle in the group header section. This is the text box we will use to add the group names.



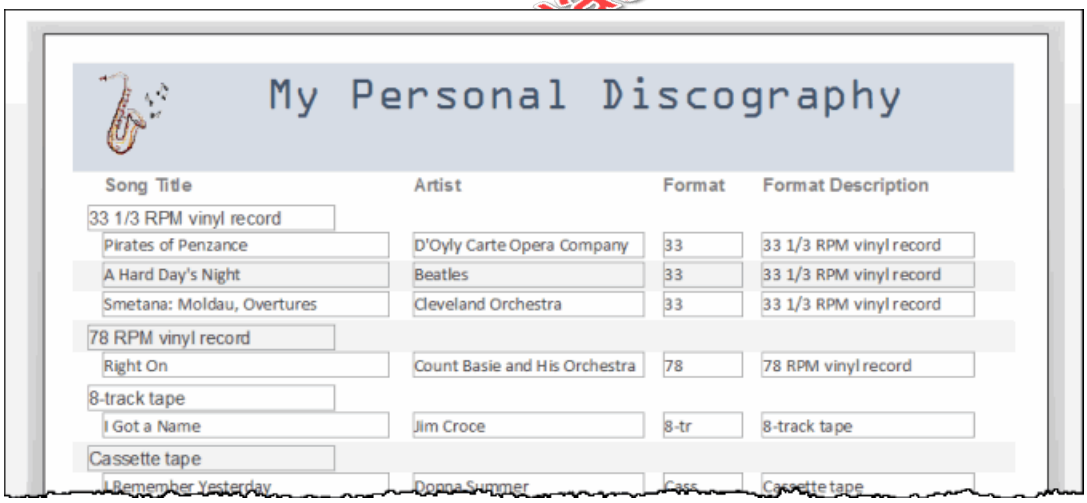
8. The text box has a label with it that we will not need. Click the left side of the text box to select it. (It may be a bit difficult to find.)



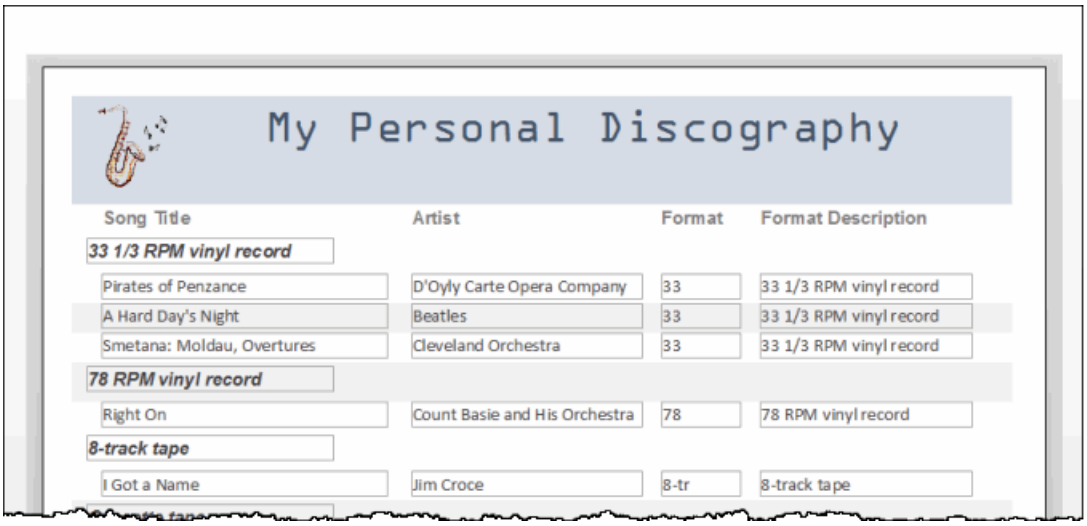
9. Press **Delete**.
10. Notice that the text box is labeled "Unbound". This means there is no data tied to the text box at this time. For our example, we want to bind the text box to the Format Description field.
11. Right-click the text box and select **Properties** from the shortcut menu. The property sheet for the text box opens.
12. On the **Data** tab, from the **Control Source** drop-down list, select the field to bind to the text box.



13. Close the property sheet.
14. Preview the report. Notice that each group now starts with a group name.

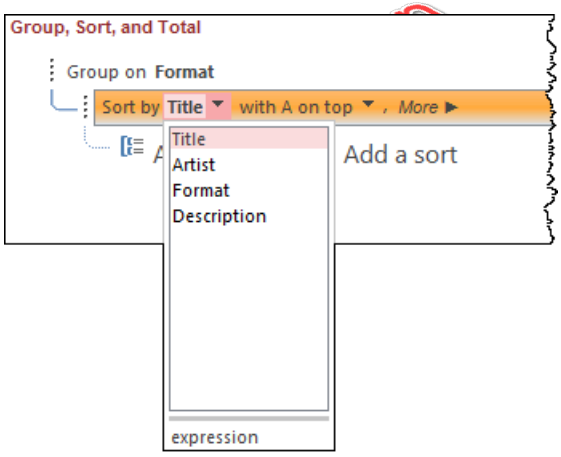


15. Format the text box and resize the group header section to achieve the look you desire.



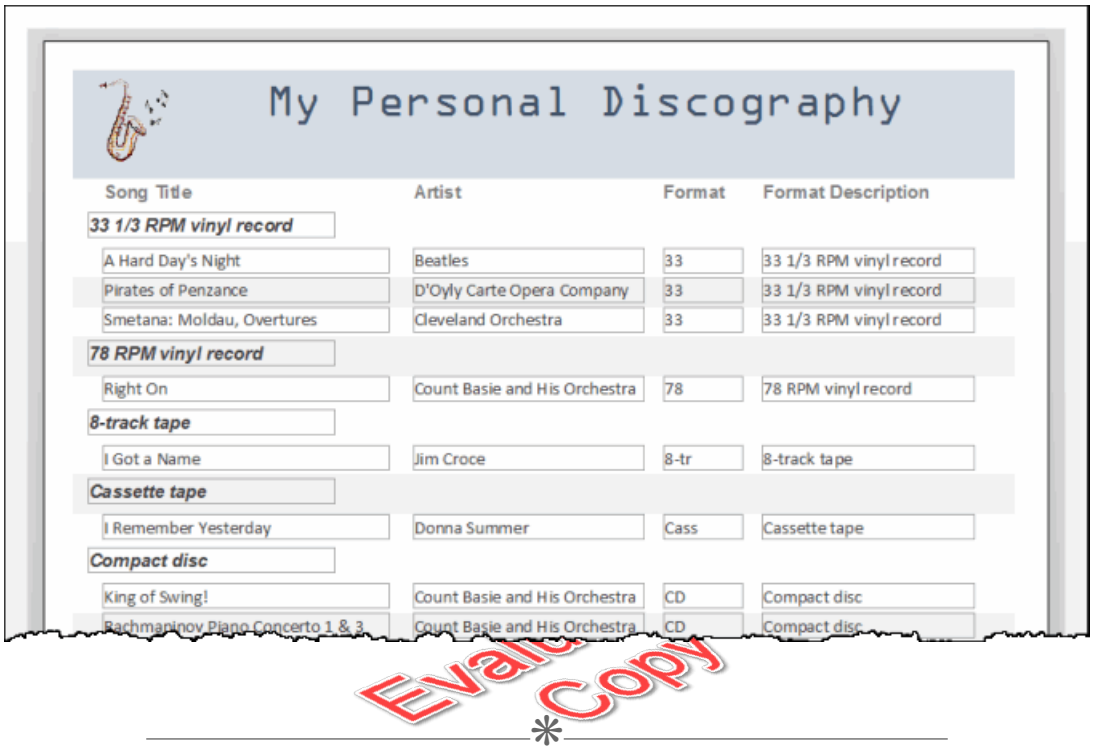
16. Now, to sort the data within each group, go to the **Group, Sort, and Total** pane and click **Add a sort**.

17. From the drop-down list, select the field to sort by.



18. If you want to sort by a second field, click **Add a sort** again and select another field.

19. Preview your report. Notice the grouping and sorting.



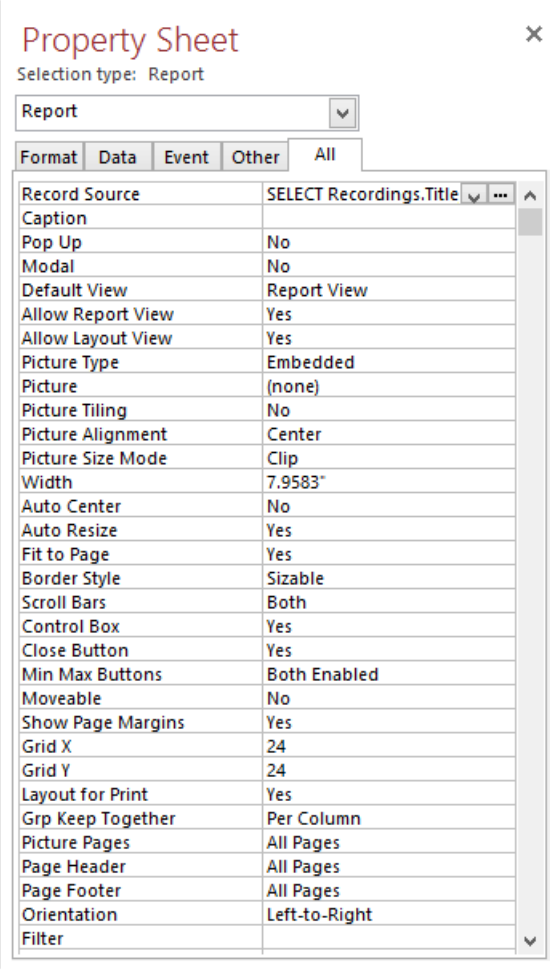
5.6. Setting Properties on a Report

As with forms, we've hardly made a dent in the number of items that can be managed on a report. To see all the available properties, we can refer to the property sheets for the report, the report sections, and the individual objects on the report.

The property sheets for reports are laid out the same as those for forms.

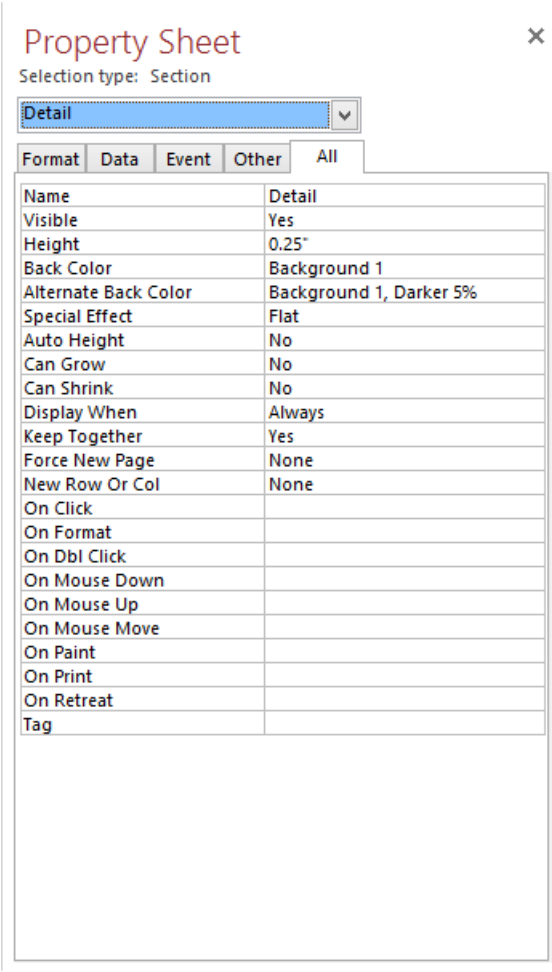
❖ 5.6.1. Report Property Sheet

To view the property sheet for the report, right-click anywhere in the report design surface and select **Report Properties** from the shortcut menu.



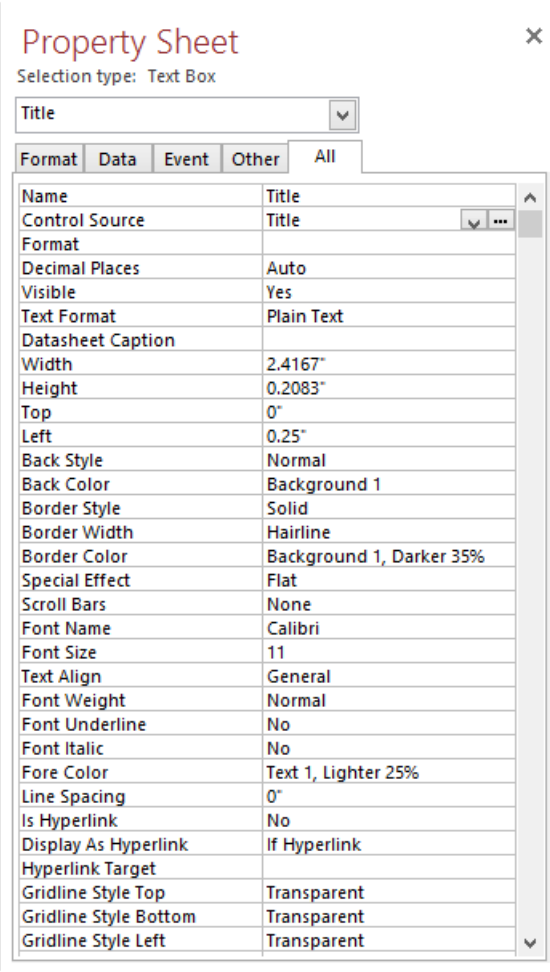
❖ 5.6.2. Section Property Sheet

To view the property sheet for a particular section of a report, right-click in that section and select **Properties** from the shortcut menu.



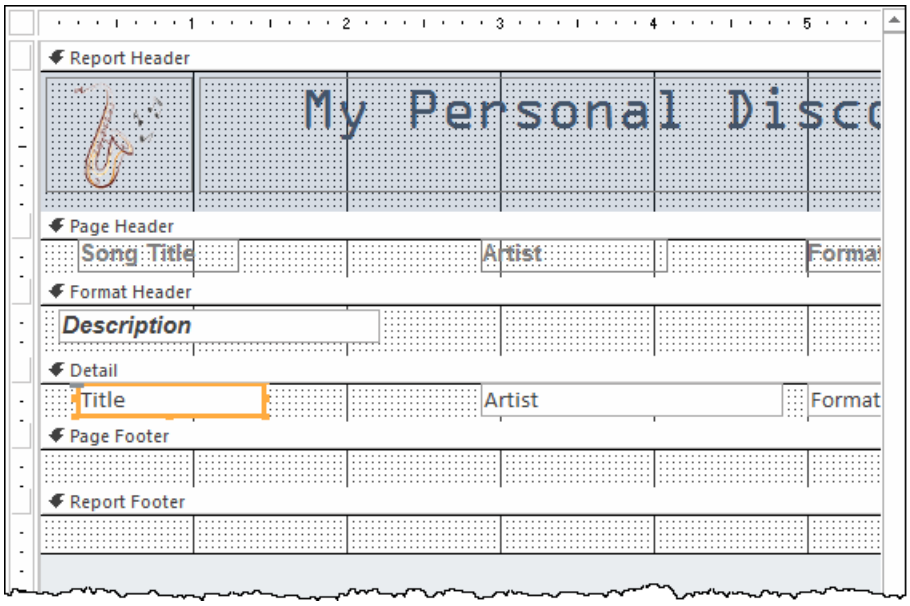
❖ 5.6.3. Object Property Sheet

To view the property sheet for any object on the report, right-click the object and select **Properties** from the shortcut menu.



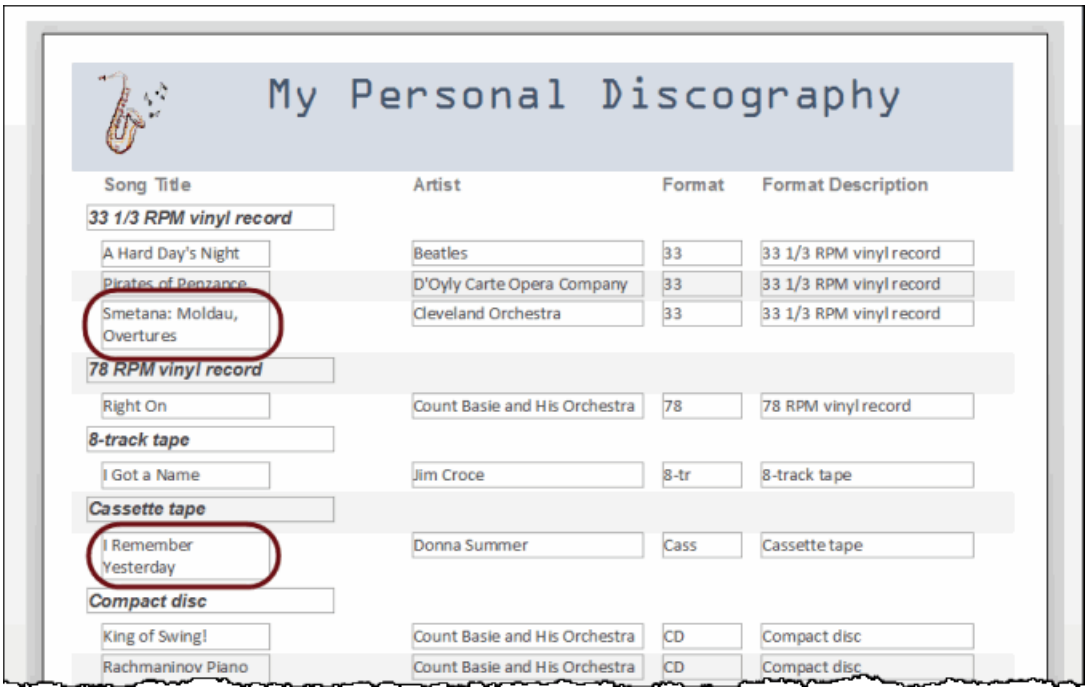
One property that you may find useful on reports is the **Can Grow** property. When applied to a text object that represents a field with values of variable length, Can Grow expands the vertical space that a value displays in if it would otherwise be cut off.

To demonstrate the Can Grow property, we'll temporarily shorten the Title field object.



To apply the Can Grow property:

1. In Design view, select the field object you want to apply the **Can Grow** property to.
2. If it's not currently showing, open the property sheet for the field object.
3. Select the **Format** tab.
4. If necessary, scroll down to find the **Can Grow** field and select "Yes" from the drop-down list.
5. Preview the report.

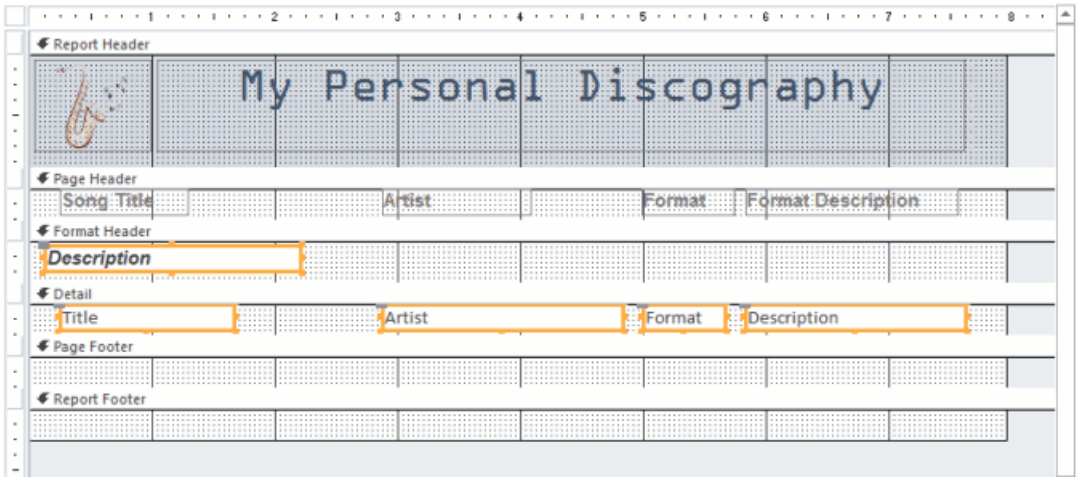


A helpful characteristic of property sheets is the ability to select multiple objects and then to view and change the properties that the objects have in common.

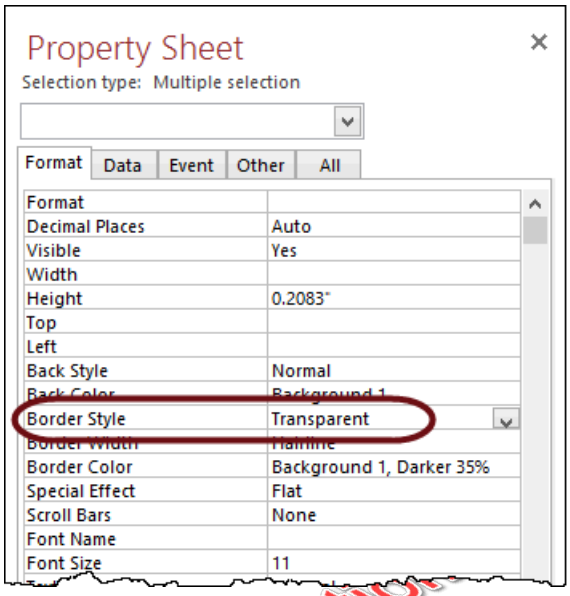
To demonstrate how to use the multiple selection property sheets, let's remove the borders around the data on the report.

To do so:

1. In Design view, select the objects you want to remove the borders from.



2. On the **Report Design Tools: Design** tab in the **Tools** group, click **Property Sheet**.
3. Select the **Format** tab.
4. From the **Border Style** drop-down list, select "Transparent".



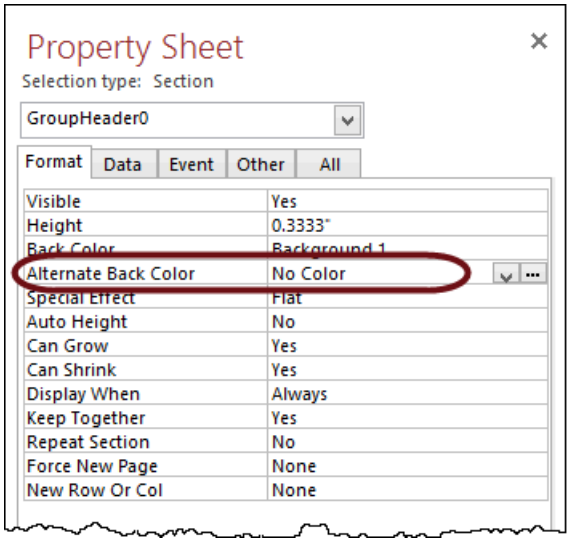
5. Preview your report.

While we're at it, let's remove the shading too.

The shading in our example occurs in two places, the group header section and the detail section.

To remove the shading:

1. Select the group header and open its property sheet.
2. Select the **Format** tab.
3. From the **Alternate Back Color** drop-down list, select "No Color".



4. Repeat this procedure for the Detail section.
5. When you finish, preview the report.

My Personal Discography

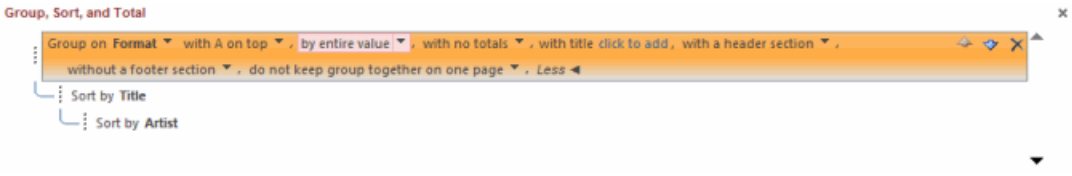
Song Title	Artist	Format	Format Description
33 1/3 RPM vinyl record			
A Hard Day's Night	Beatles	33	33 1/3 RPM vinyl record
Pirates of Penzance	D'Oyly Carte Opera Company	33	33 1/3 RPM vinyl record
Smetana: Moldau, Overtures	Cleveland Orchestra	33	33 1/3 RPM vinyl record
78 RPM vinyl record			
Right On	Count Basie and His Orchestra	78	78 RPM vinyl record
8-track tape			
I Got a Name	Jim Croce	8-tr	8-track tape
Cassette tape			
I Remember Yesterday	Donna Summer	Cass	Cassette tape
Compact disc			

❖ 5.6.4. Adding Record Counts

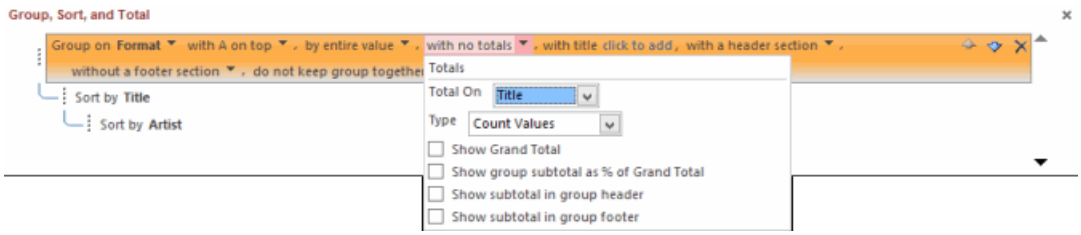
Access can show us the number of records in a group and the total number of records on our report. To accomplish this, we use the Totals feature.

To show record counts on the report:

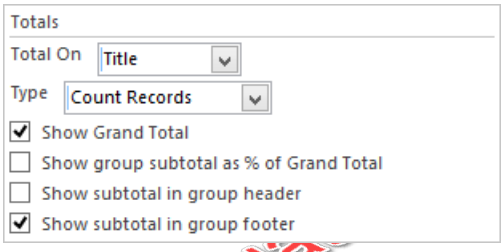
1. In Design view, on the **Report Design Tools: Design** tab in the **Grouping & Totals** group, click **Group & Sort** to open the **Group, Sort, and Total** pane.
2. In the **Group on** line, click **More**.



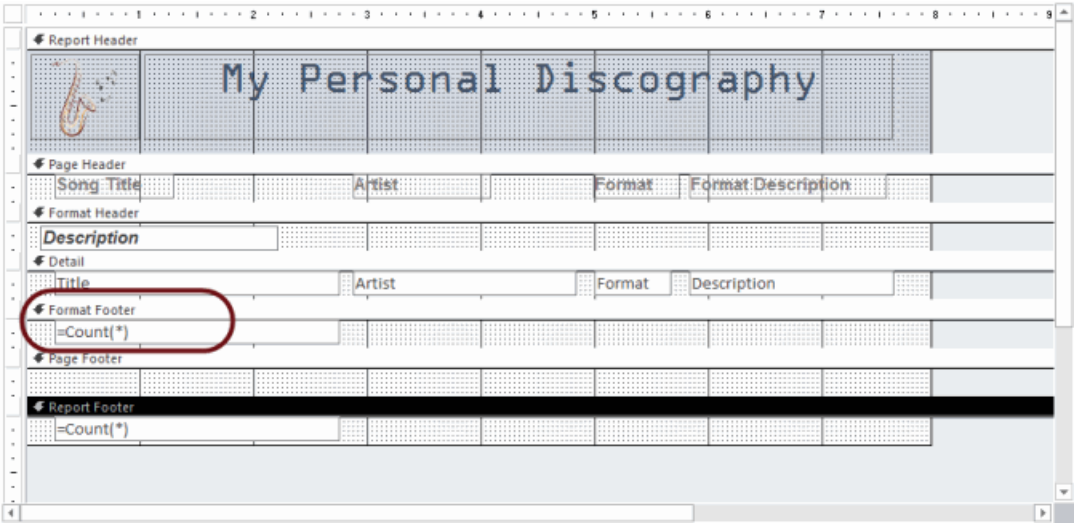
3. Click the **with no totals** drop-down list.



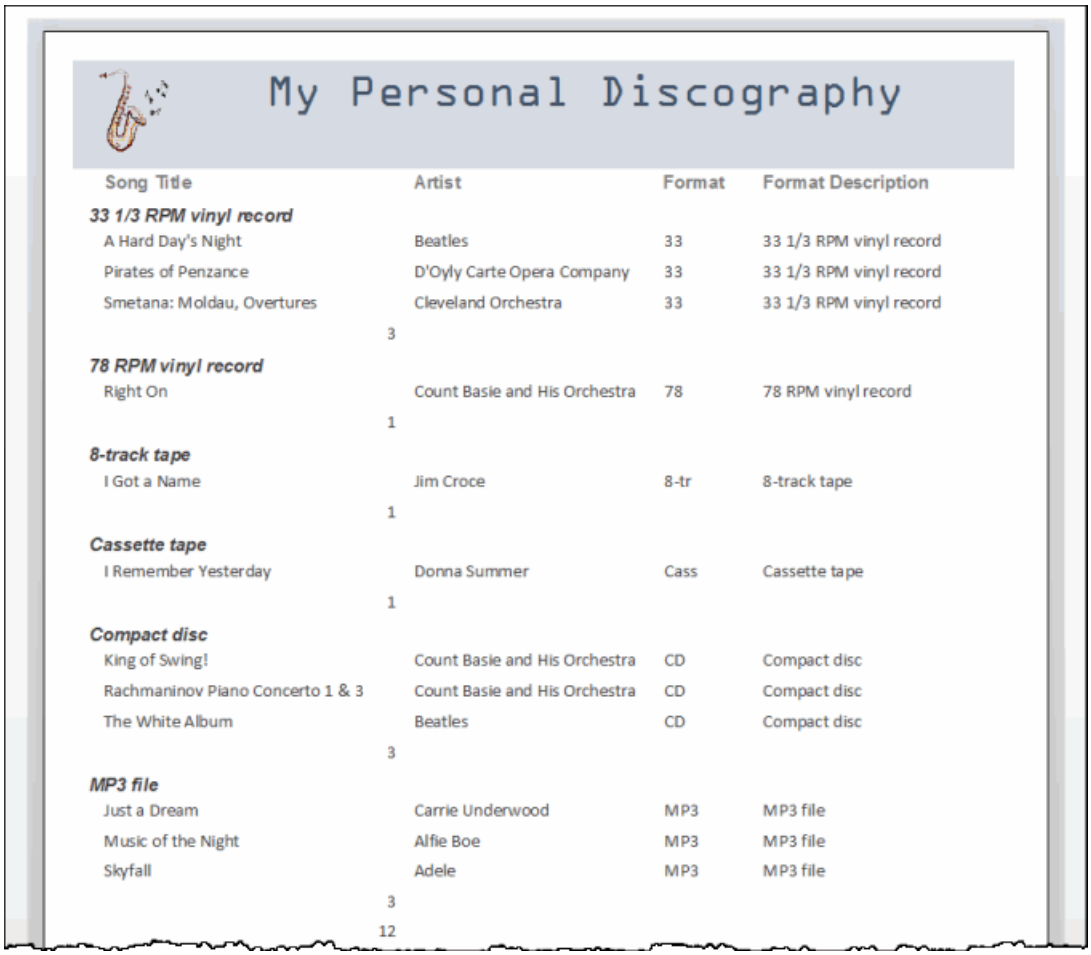
4. From the **Type** drop-down list, select "Count Records".
5. Mark the **Show Grand Total** check box.
6. Mark the **Show subtotal in group footer** check box.



Notice that a group footer is added to the report design and that Count fields have been added in the group footer and report footer.



7. Preview the report.



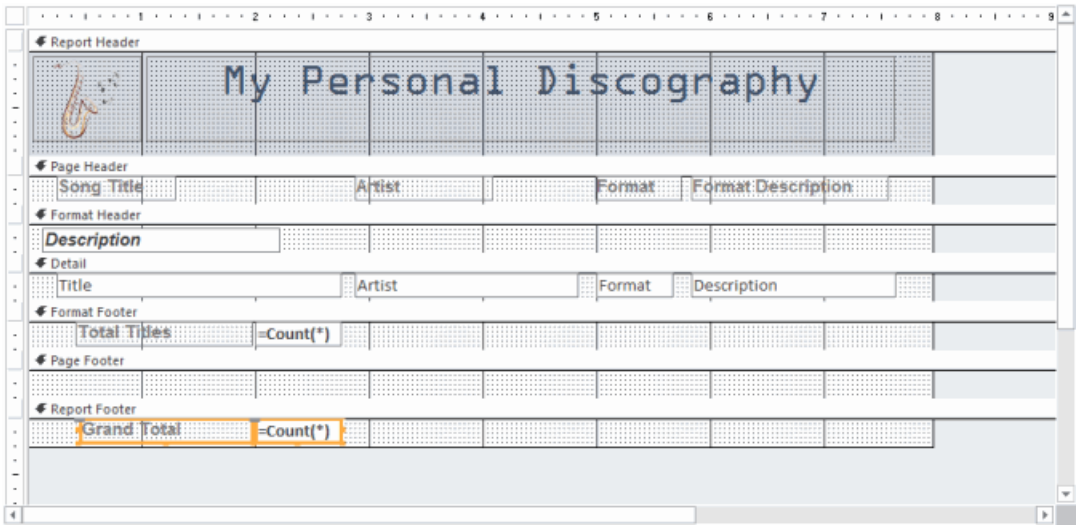
My Personal Discography

Song Title	Artist	Format	Format Description
33 1/3 RPM vinyl record			
A Hard Day's Night	Beatles	33	33 1/3 RPM vinyl record
Pirates of Penzance	D'Oyly Carte Opera Company	33	33 1/3 RPM vinyl record
Smetana: Moldau, Overtures	Cleveland Orchestra	33	33 1/3 RPM vinyl record
3			
78 RPM vinyl record			
Right On	Count Basie and His Orchestra	78	78 RPM vinyl record
1			
8-track tape			
I Got a Name	Jim Croce	8-tr	8-track tape
1			
Cassette tape			
I Remember Yesterday	Donna Summer	Cass	Cassette tape
1			
Compact disc			
King of Swing!	Count Basie and His Orchestra	CD	Compact disc
Rachmaninov Piano Concerto 1 & 3	Count Basie and His Orchestra	CD	Compact disc
The White Album	Beatles	CD	Compact disc
3			
MP3 file			
Just a Dream	Carrie Underwood	MP3	MP3 file
Music of the Night	Alfie Boe	MP3	MP3 file
Skyfall	Adele	MP3	MP3 file
3			
12			

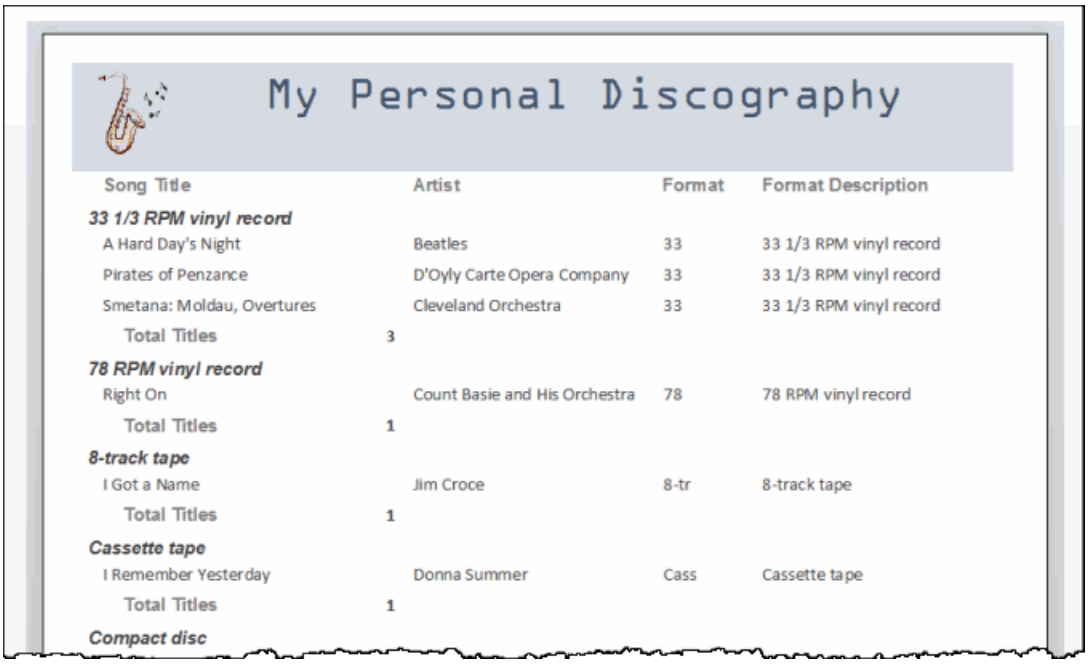
We have totals now, but they look a little stark without labels to identify them. We'll go ahead and add labels and tweak the formatting.

To add labels to the Count fields:

1. Right-click the Count field and select **Set Caption** from the shortcut menu.
2. Resize the label as needed.
3. Change the label text to describe the totals.



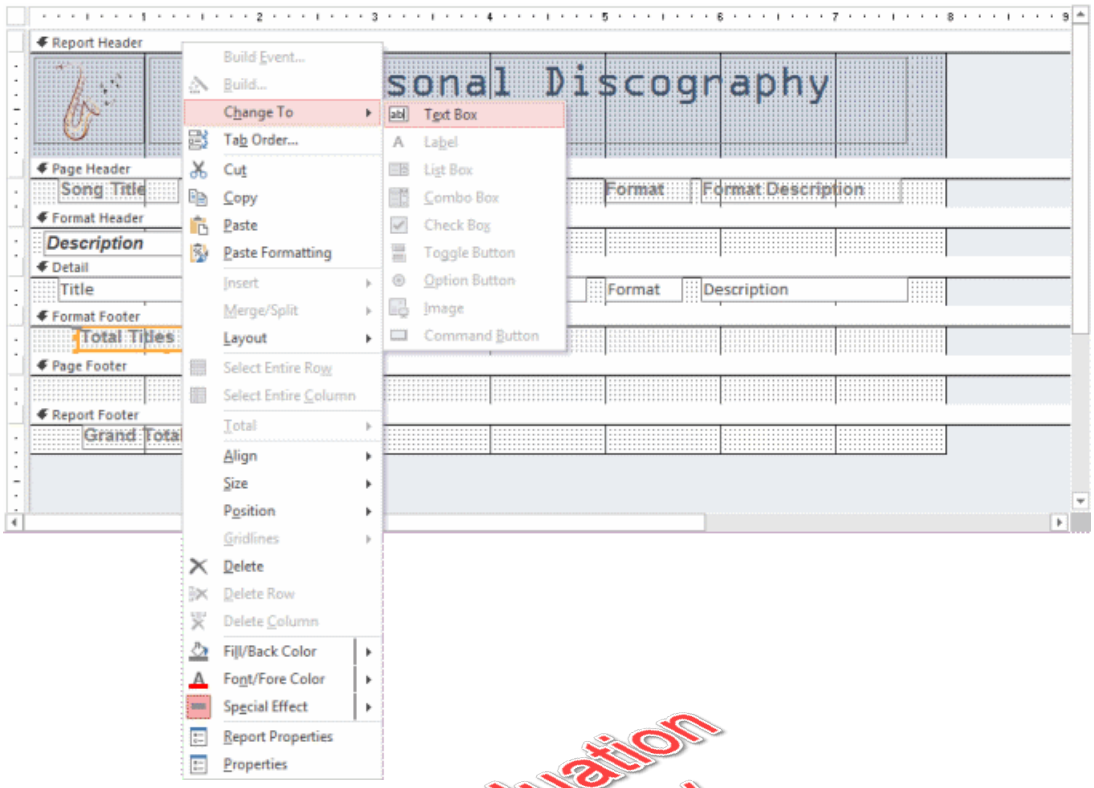
4. Preview the report.



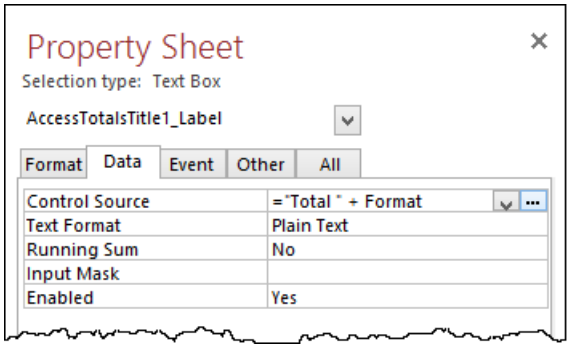
Suppose we want to customize our group total labels to indicate what is in each group. We can do that using a text box and a simple expression.

To customize the group label:

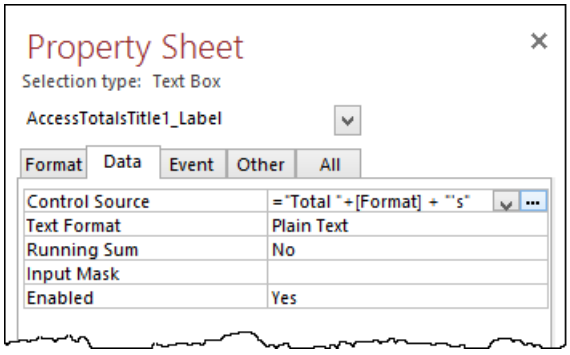
1. Select the label in the group footer, right-click, and select **Change To > Text Box** from the shortcut menu.



2. In the ribbon, click **Property Sheet**.
3. In the property sheet, select the **Data** tab.
4. From the **Control Source** drop-down list, select the field with the values you want to build the label around.
5. Move the cursor in front of the field name in the **Control Source** field and type "=", then in quotes type any text you want to precede the field name. If you need to include a space after, you can enclose that in the same quotes.
6. Type a "+".



7. Move the cursor after the field name, type "+" and then type any text you need to follow the field name. Put quotes around the text you type and include spaces inside the quotes as needed.



We have created a simple expression that concatenates (combines) text and a field to make a custom label.

8. Preview your report.

9. Notice that the new labels are enclosed in those pesky borders, so clean those up if desired and make any other tweaks you want to the formatting.

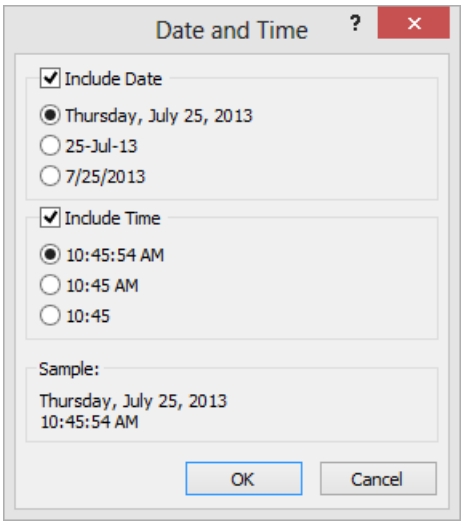
5.7. Special Report Fields

Access includes a couple of built-in report fields for standard report formatting: dates and page numbering.

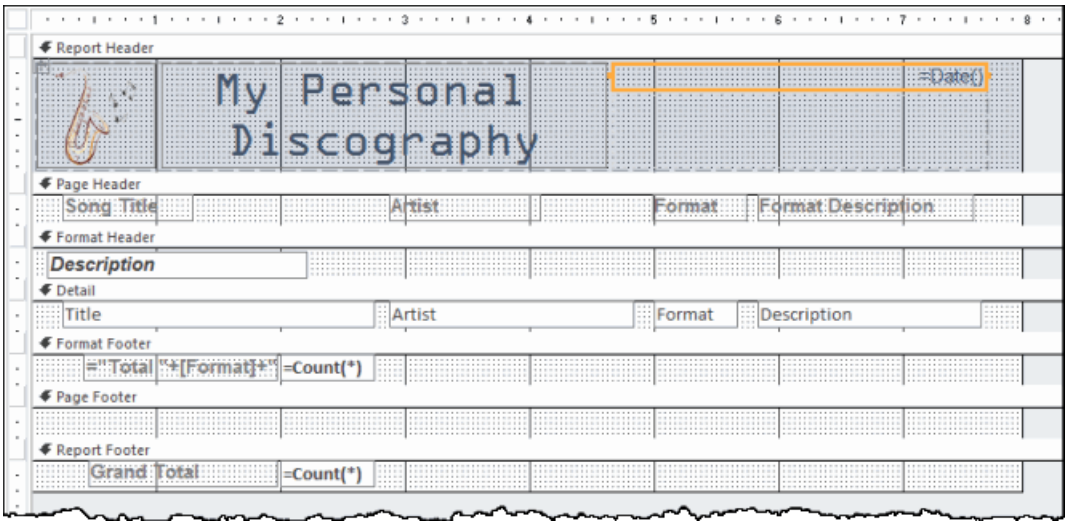
❖ 5.7.1. Dates

To insert a date in your report to indicate when the report was produced:

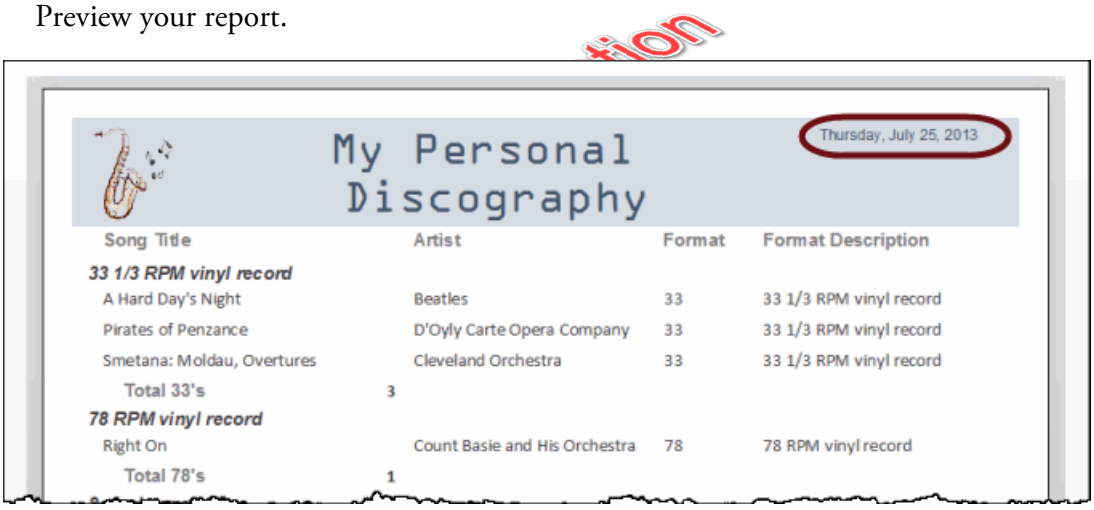
1. In Design view, on the **Report Design Tools: Design** tab in the **Header/Footer** group, click **Date and Time**. The **Date and Time** dialog box opens.



2. Select the date style you want, decide if you want to include the time and, if so, the style you want, and click **OK**. The date field is inserted in the header of your report.



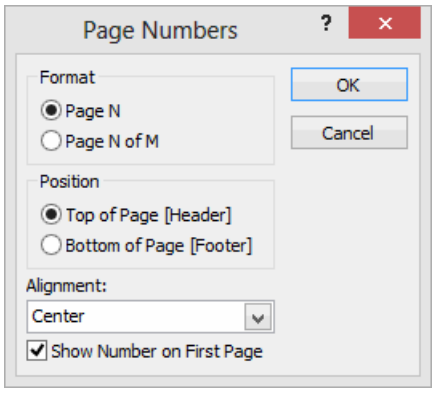
3. Move, resize, and format the date field and other fields as desired.
4. Preview your report.



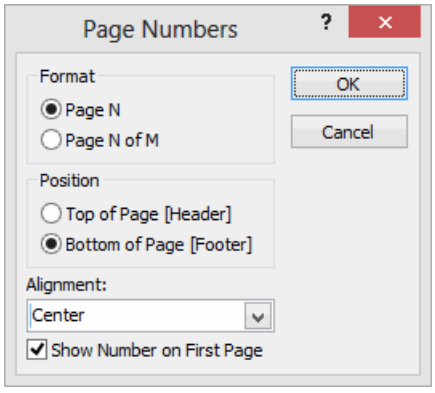
❖ 5.7.2. Page Numbering

To insert page numbers in the page header or footer of your report:

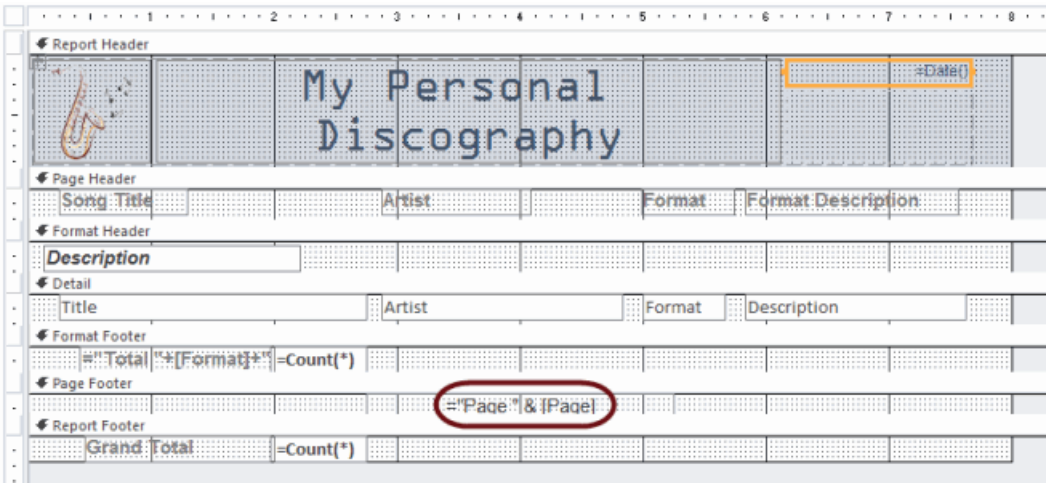
1. In Design view, on the **Report Design Tools: Design** tab in the **Header/Footer** group, click **Page Numbers**. The **Page Numbers** dialog box opens.



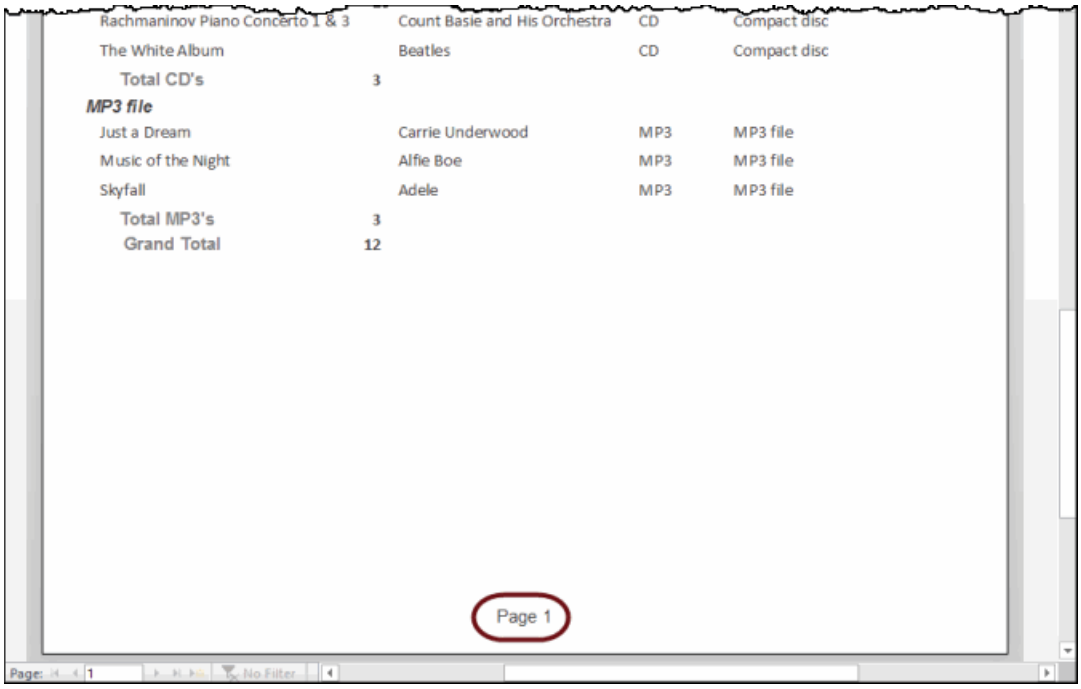
2. Select the format, position, and alignment of page numbers for your report. If you don't want to see the page number on the first page of the report, clear the **Show Number on First Page** check box.



3. Click **OK**. The page number is inserted into the page at the position you selected.



4. Preview the report.



5. Move, resize, and format the page number as desired.

5.8. Controls

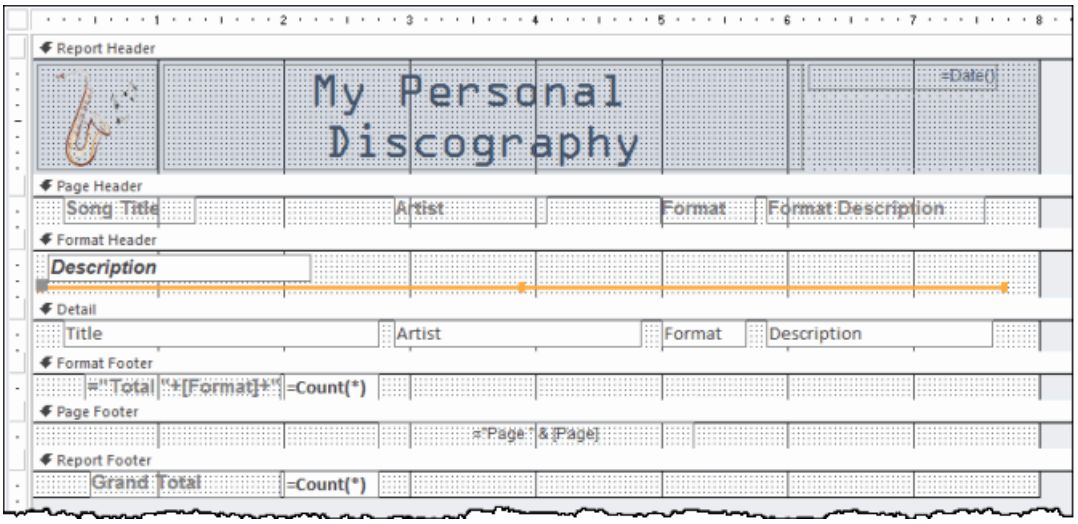
The controls available on a report are the same as those available for forms minus the Web Browser Control and the Navigation Control.

We'll demonstrate using a couple of these controls in our report. First, we'll add a line to improve the layout of our report, then we'll insert a page break.

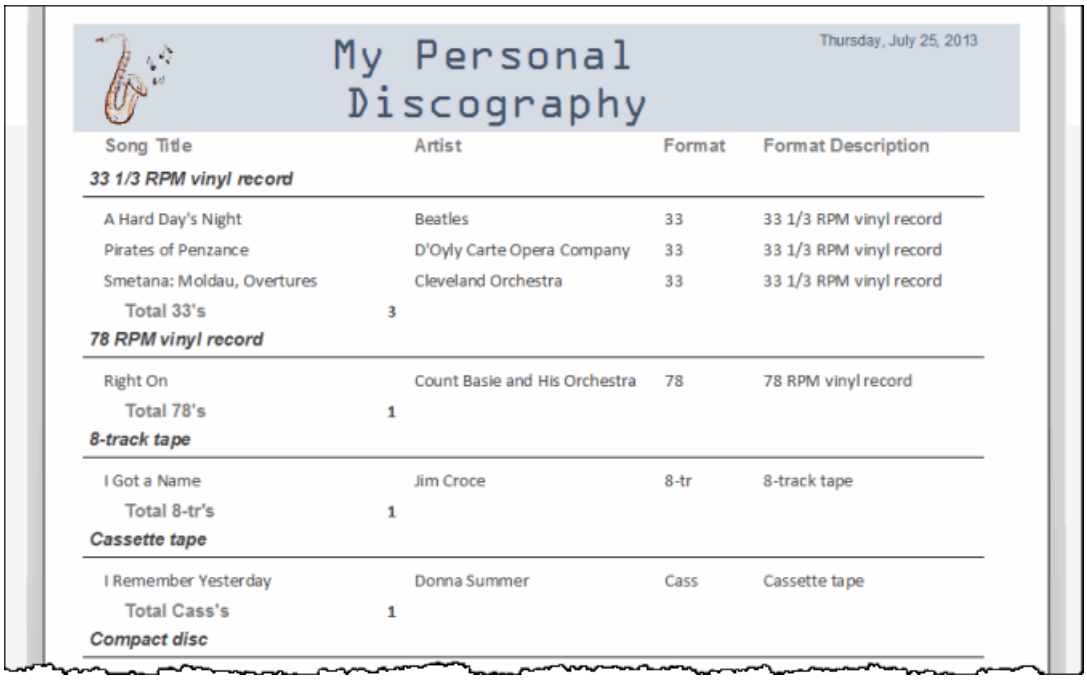
Let's add a line below the group header to set off each of the groups in the report.

To add a line:

1. In Design view, enlarge the group header section a bit.
2. On the **Report Design Tools: Design** tab in the **Controls** group, open the drop-down list and click ╲. The cursor changes to +╲.
3. Click and drag a line below the group label from near the left edge of the report to near the right edge. You can press **Shift** while you're drawing the line to ensure that it is straight.



4. Preview the report.

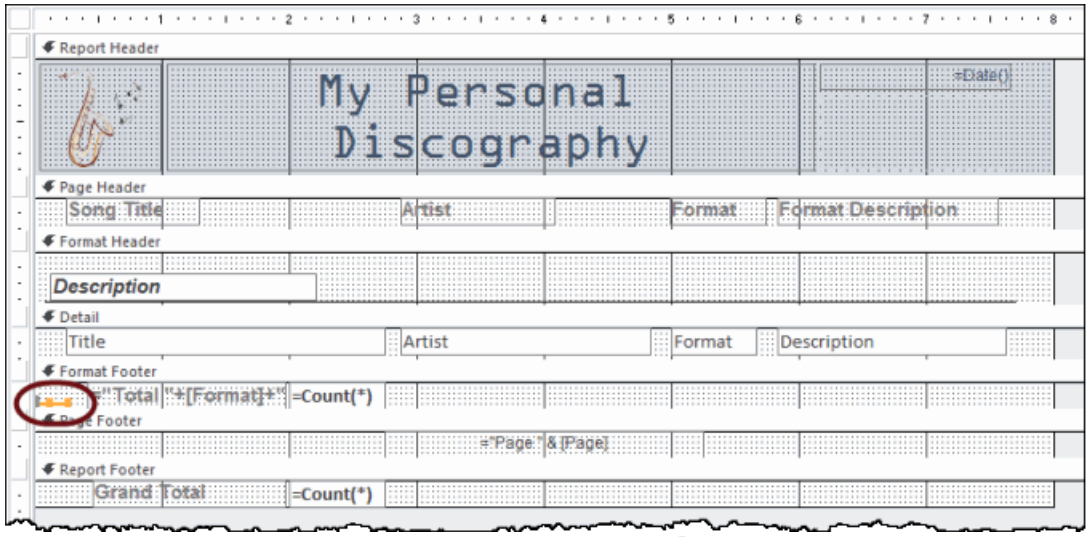


5. Tweak the size of the group header and the position of the group header label to achieve the desired effect.

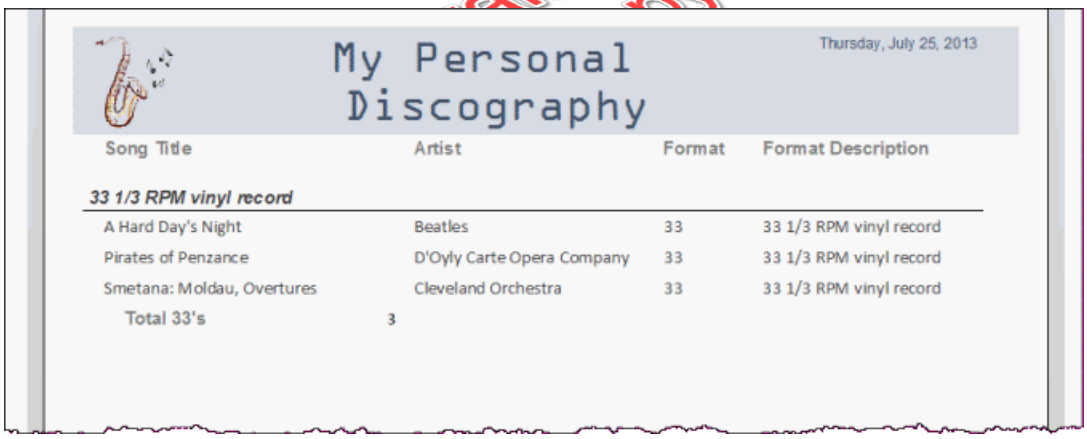
Suppose we want the report to start a new page each time a new group section starts. To do that, we can insert a page break in the group footer.

To insert a page break:

1. In Design view, on the **Report Design Tools: Design** tab in the **Controls** group, click . The icon changes to .
2. Click in the group footer below the Count field. A page break marker is added on the left.



3. Preview the report.



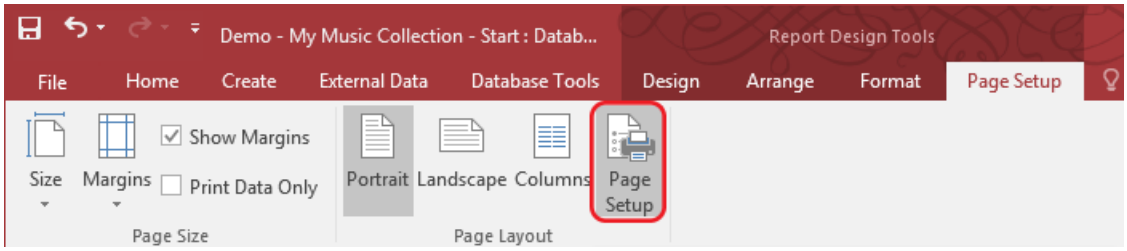
Due to the short length of our report, we'll remove the page breaks for now. To do so, return to Design view, highlight the page break marker, and press **Delete**.

❖ 5.8.1. Printing a Report

After we've got our report with the information we want on it, in the format we want, we can print it. To prepare for printing, we need to ensure that the printable page is set up to our satisfaction.

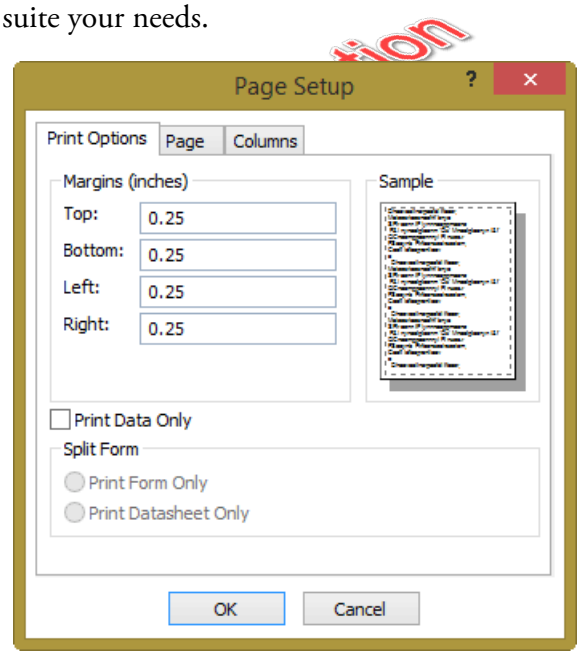
Setting Page Layout

To access page setup options, go to the **Report Design Tools: Page Setup** tab.

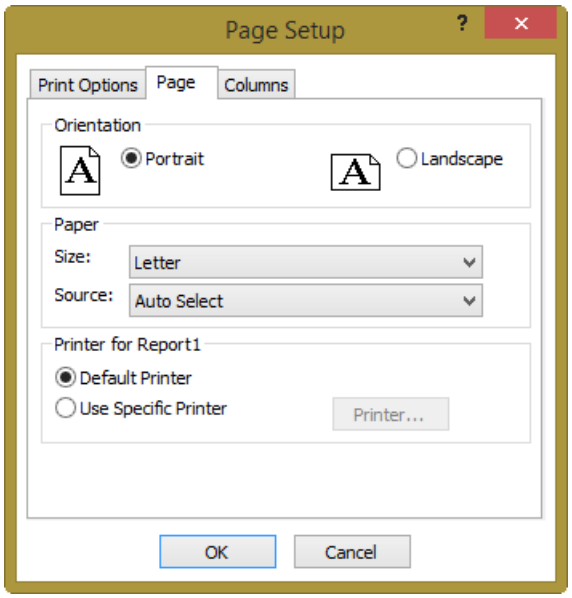


The ribbon presents most of the page setup options individually, but if we click **Page Setup**, we'll find all the options collected in one place.

Margins may be altered to suite your needs.

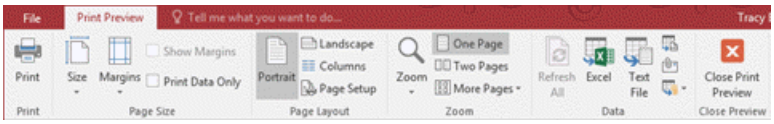


You can also choose Page Orientation and general paper size. These settings remain with the report.



Since these settings should be familiar to you, we'll not discuss them at length here.

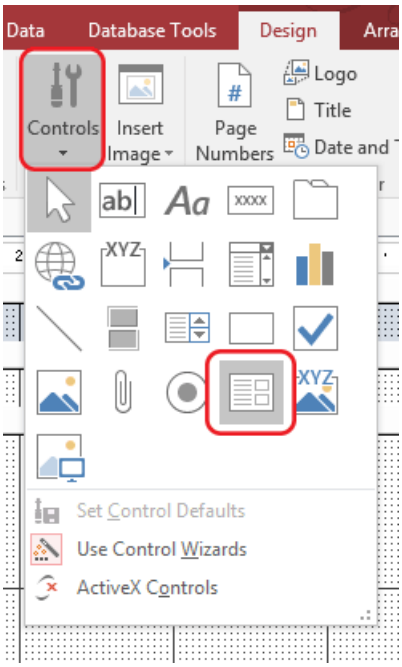
After you have the page set up as desired, preview the report in Print Preview mode, then on the **Print Preview** tab, click **Print**.



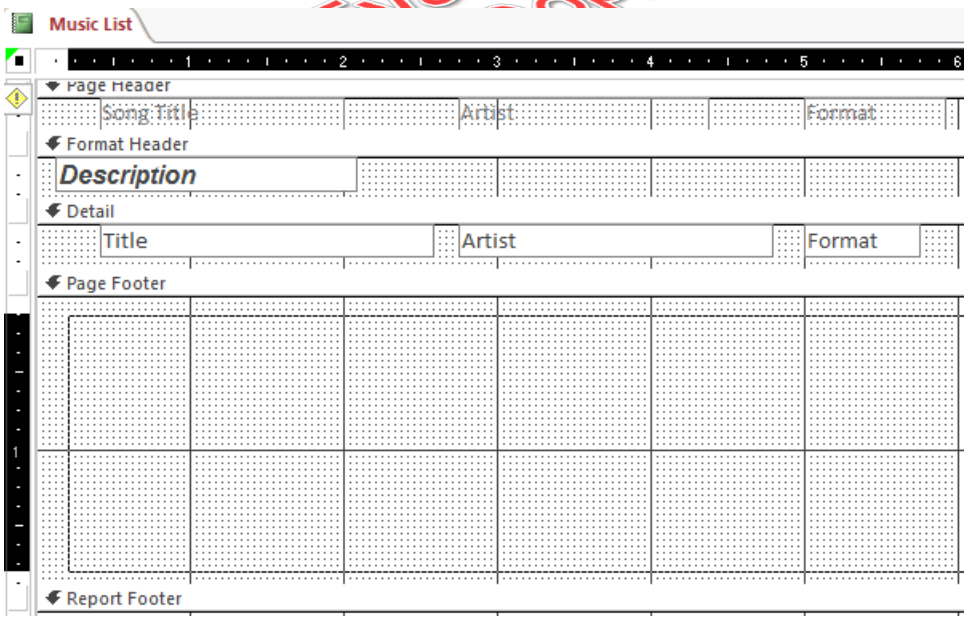
Notice on the **Print Preview** tab that you can also output your report to a variety of other formats including .xls, .txt, .pdf, .xps, .rtf, .html, and email.

5.9. Subreports

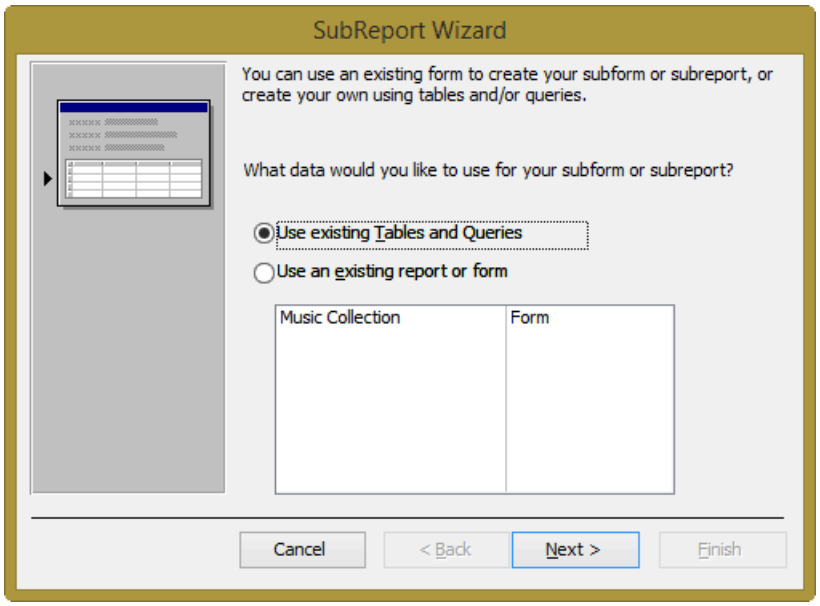
Many times it would be helpful to show a table of data that is either related to or not related to the main report. Files are located `Reports_Advanced/Demos/Demo - My Music Collection - Grouping and Sorting.accdb`. We may use a subreport to achieve this. **Design > Controls > Controls > Subform/Subreport**.



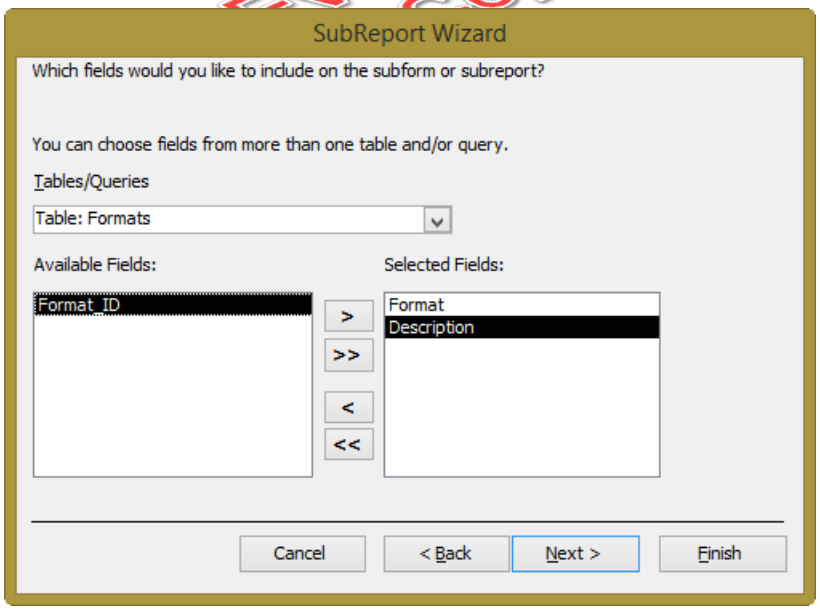
Draw the report object in the proper section. For example, if we want the subreport at the bottom of each page, use the **Page Footer** area.



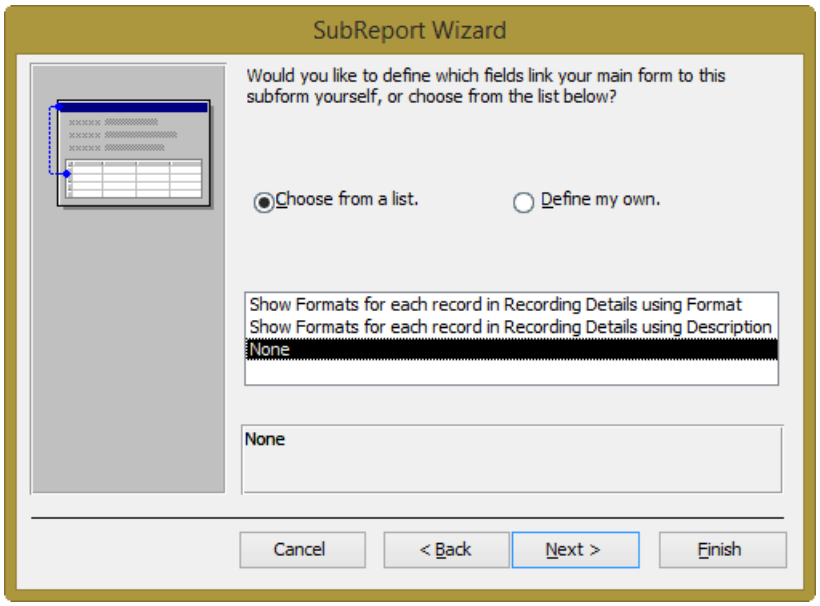
A wizard should present itself, assuming they are activated, to lead you through the remaining choices. Choose to use an existing object. Click **Next**.



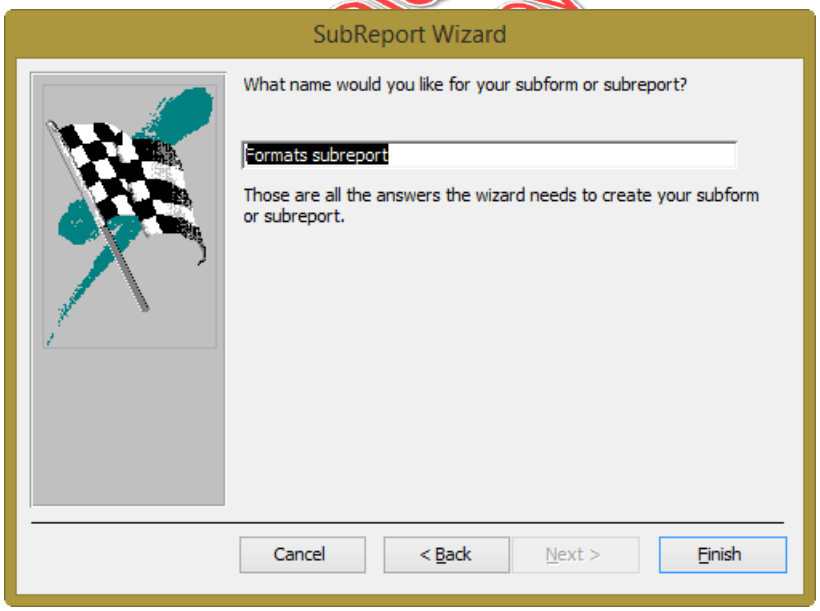
Choose the fields from the source you wish to show. Keep in mind if it will be related, you should be aware of your table relationships such as the Primary and Foreign keys which connect the data. Click **Next**.



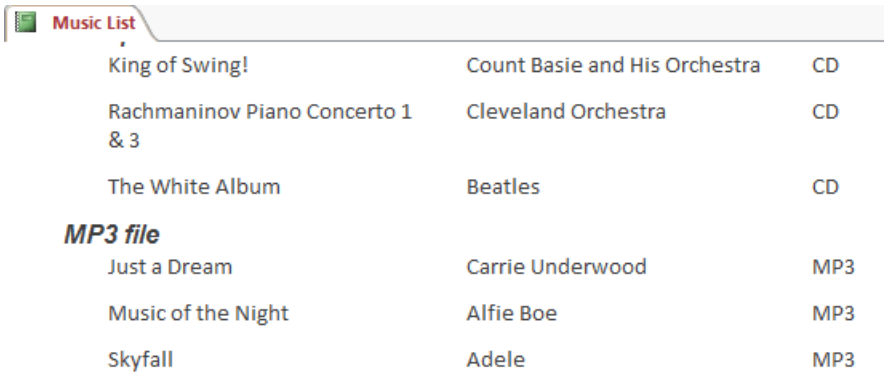
Choose a connection, if you want to show all of the data, then choose **None**. Click **OK**.



Name your subreport. Click **OK**.



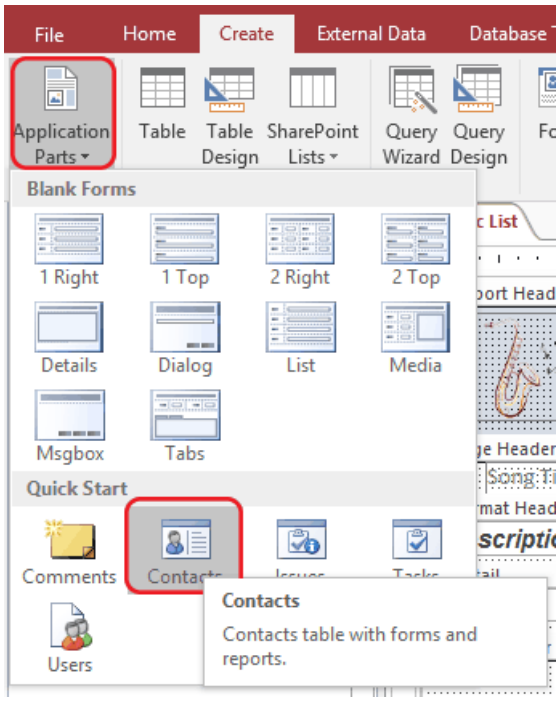
Your report may look like this.



Format	
ACE	Acetate disc
78	78 RPM vinyl record
45	45 RPM vinyl record
33	33 1/3 RPM vinyl record
Cass	Cassette tape
8-tr	8-track tape

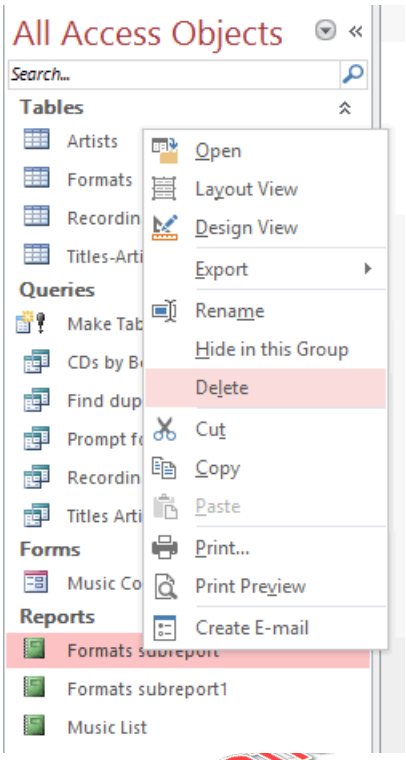
5.10. Application Parts

Creation of reports may be started by using any existing reports in the Application Parts. Many of the reports are bundled with other objects such as tables to store the data, and forms to enter the data. These may be customized and changed as needed once they are created.



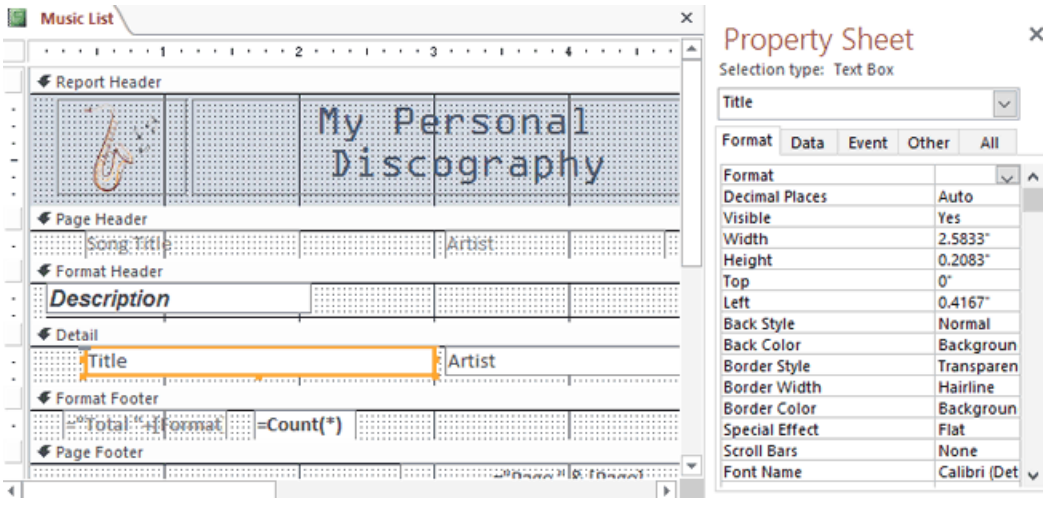
5.11. Deleting a Report

When a report is no longer needed, you may delete it by right mouse clicking a report name and choosing **Delete**.



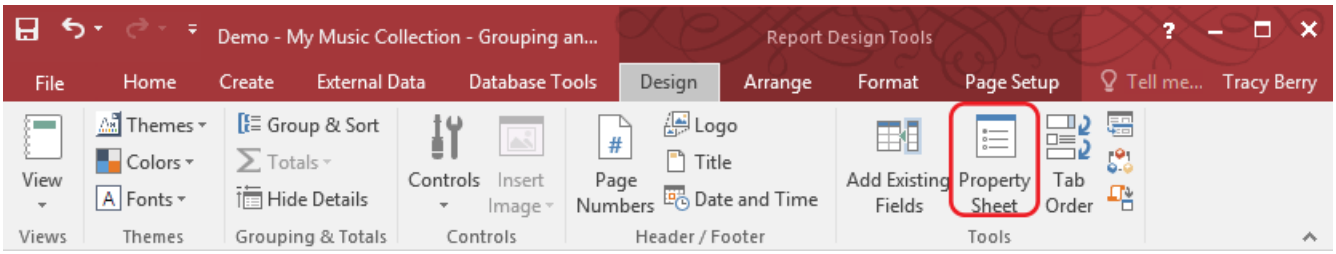
5.12. Formatting a Report

Using the Ribbon, or the Property Sheet, most aspects of the report can be altered.

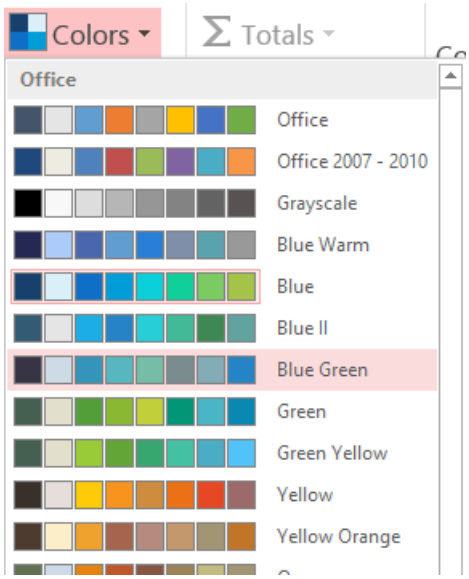


❖ 5.12.1. Adding a Background and Images and Applying a Theme

Themes allow an efficient way to develop a consistent color through out the report.

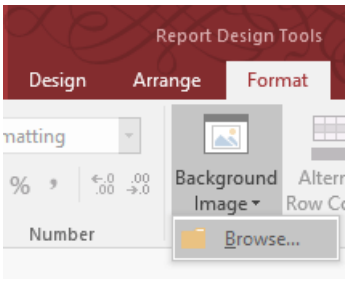


1. Click **Design > Themes > Colors**.
2. Choose a theme that you wish to use. Click it to apply.

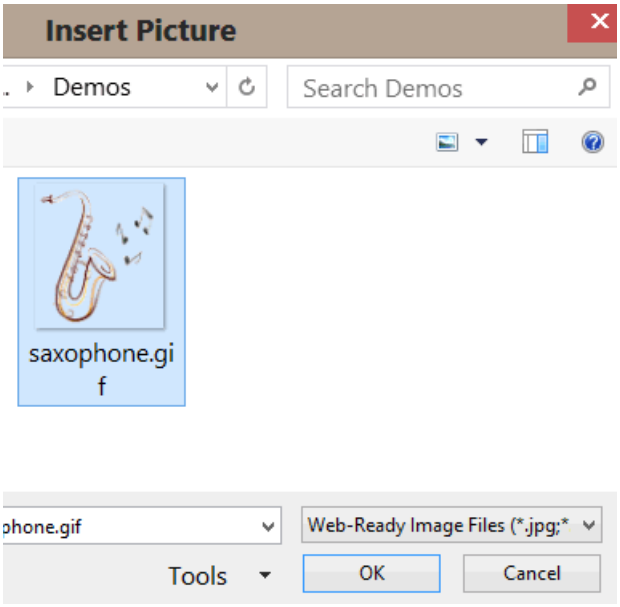


Images create an easy way to brand a set of reports to a corporate identity.

1. Click **Format > Background > Background Image > Browse**.



2. Choose the proper picture. Click **OK**.



3. The picture is now placed behind the report objects as a background.

Exercise 7: Creating Reports

25 to 45 minutes

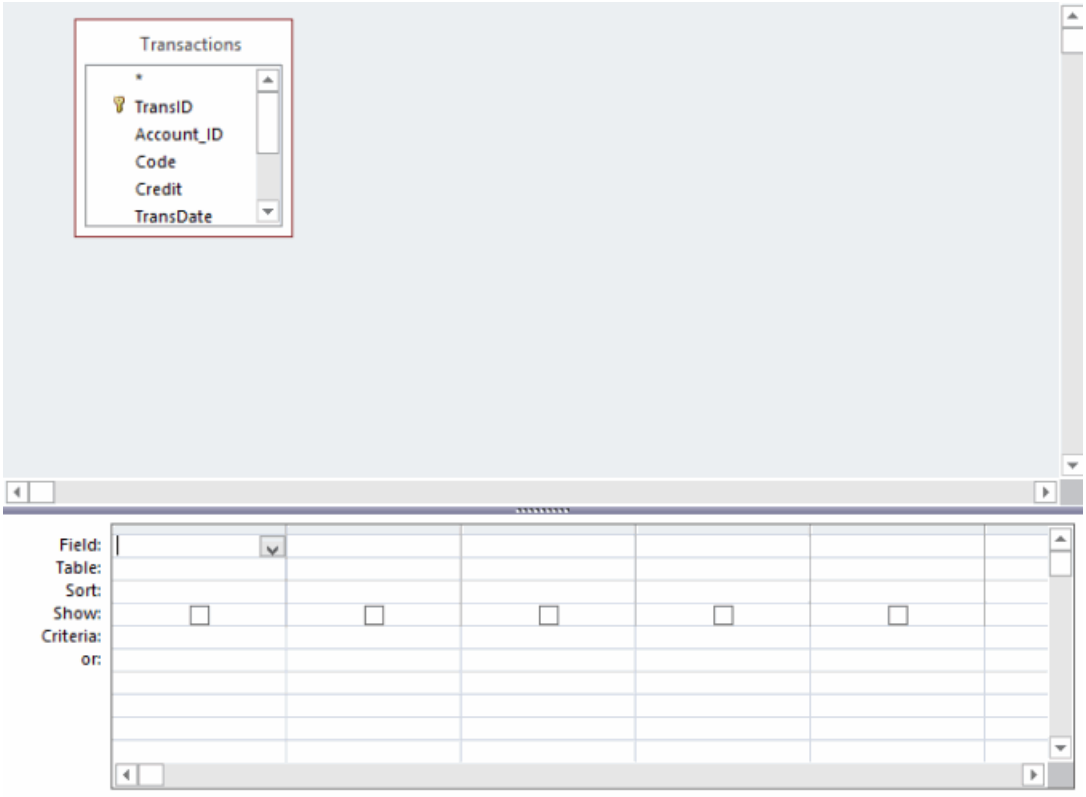
In this exercise, you will create a report of transactions from the Bank Register database. Use the database found in the `ClassFiles/Reports_Advanced/Exercises` folder as a starting point.

1. Create a query based on the Transactions table that shows uncleared checking account transactions. Name the query "Uncleared Checking Transactions".
2. Create a tabular report based on the Uncleared Checking Transactions query. The report should have the following characteristics:
    A. Add the following title to the report: "Uncleared Bank Transactions". Add a date field in the report header.
    B. Show the following fields: TransDate, Code, Description, and Amount.
    C. Group the records on the report by credits and debits and sort them first by date, then by description.
    D. Label the credits group "Credits" and the debits group "Debits". (This will require you to build an expression. Hint: Research the "IIf" function.) Put a line under the group labels.
    E. Show a subtotal for each group. Label the subtotals "Total Credits" and "Total Debits".
    F. Show a report total. Label the total "Grand Total". Add a line above the label.
    G. Add page numbers at the bottom right.
    H. Tweak the formatting as you like.

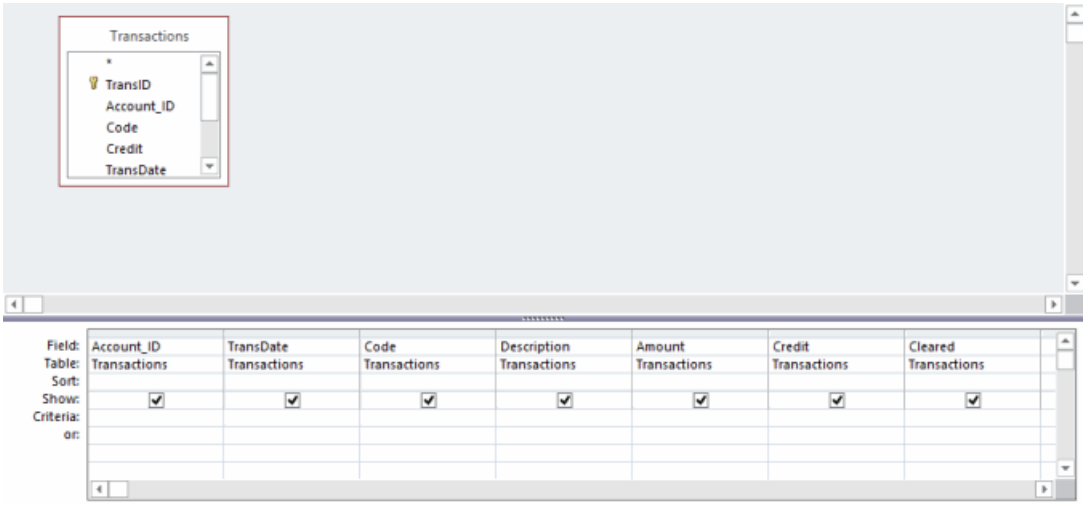
Solution

To create the query:

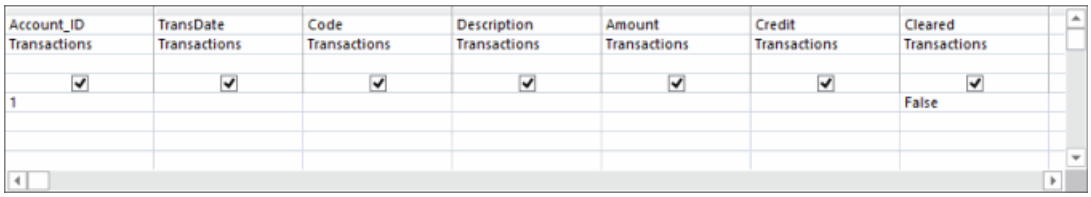
1. On the **Create** tab in the **Queries** group, click **Query Design**.
2. In the **Show Table** dialog box, select "Transactions" and click **Add**.
3. Click **Close**.



4. In the Transactions table, double-click to add the Account_ID, TransDate, Code, Description, Amount, Credit, and Cleared fields to the query design grid.



5. In the Account_ID column in the **Criteria** row, type "1". (The checking account's record ID is "1".)
6. In the Cleared column in the **Criteria** row, type "False".



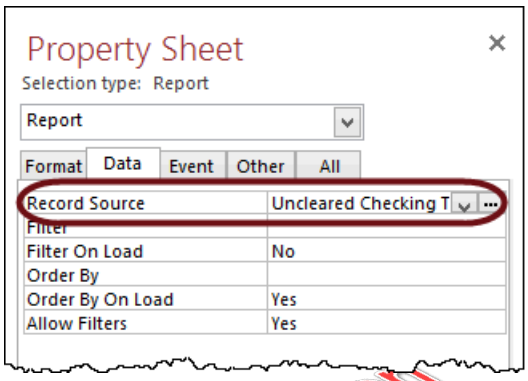
7. Run the query.

Account ID	Date	Code	Description	Amount	Credit	Cleared
1	4/7/2013	7214	Charlottesville MUD	$74.19	☐	☐
1	4/14/2013	AD	US Dept of Treasury	$372.96	☑	☐
1	4/16/2013	AD	Payroll deposit	$1,095.62	☑	☐
1	4/16/2013	DC	Main Street Market	$134.51	☐	☐
1	4/18/2013	7215	SPARC Electric	$169.47	☐	☐
1	4/20/2013	7216	Lolly's Place	$24.18	☐	☐
1	4/23/2013	ATM	Cash withdrawal	$120.00	☐	☐
1	4/23/2013	FT	Transfer to savings	$300.00	☐	☐
1	4/26/2013	7217	Basket World	$42.69	☐	☐
1	4/29/2013	AD	Interest	$0.89	☑	☐
*				$0.00	☐	☐

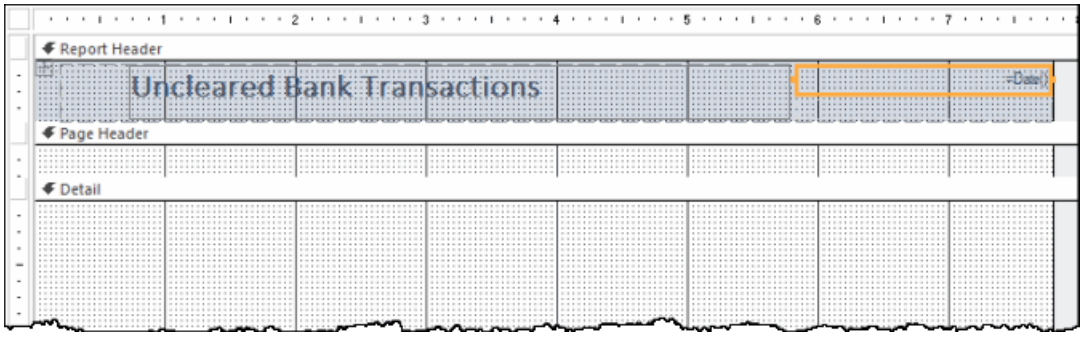
8. Save the query as "Uncleared Checking Transactions".
9. Close the query.

To create the report:

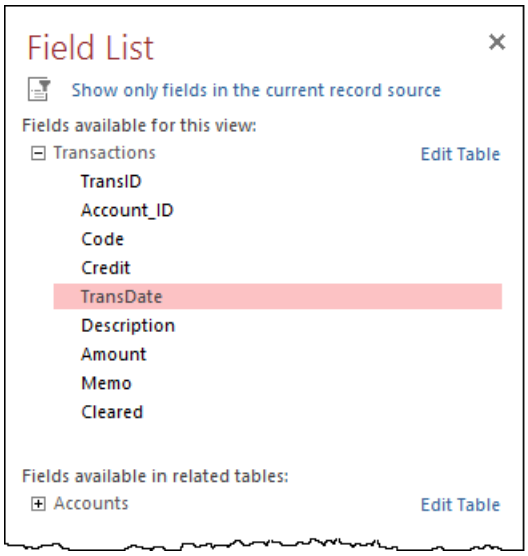
1. On the **Create** tab in the **Reports** group, click **Blank Report**.
2. Switch to Design view.
3. Right-click in the design surface and select **Report Properties**.
4. Select the **Data** tab.
5. From the **Record Source** drop-down list, select the Uncleared Checking Transactions query.



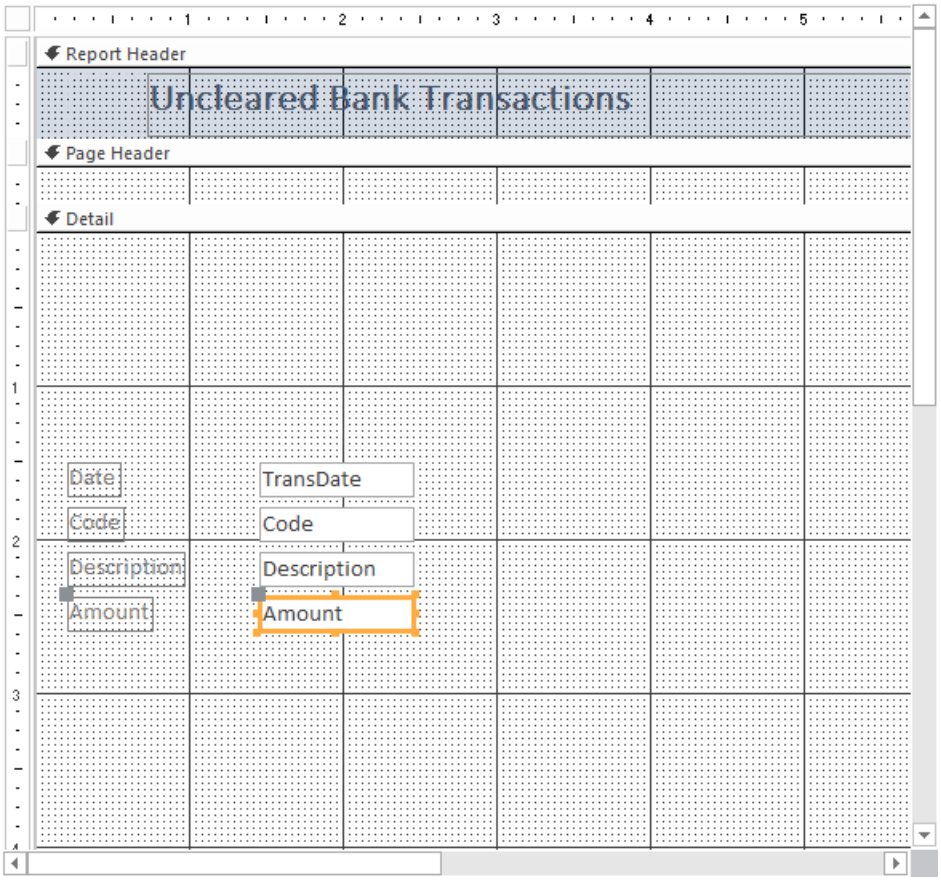
6. Close the property sheet.
7. On the **Report Design Tools: Design** tab in the **Header/Footer** group, click **Title**.
8. Type the title for the report: "Uncleared Bank Transactions".
9. In the **Header/Footer** group, click **Date and Time**.
10. In the **Date and Time** dialog box, select options for the date and time, then click **OK**.
11. Format the title and date as desired.



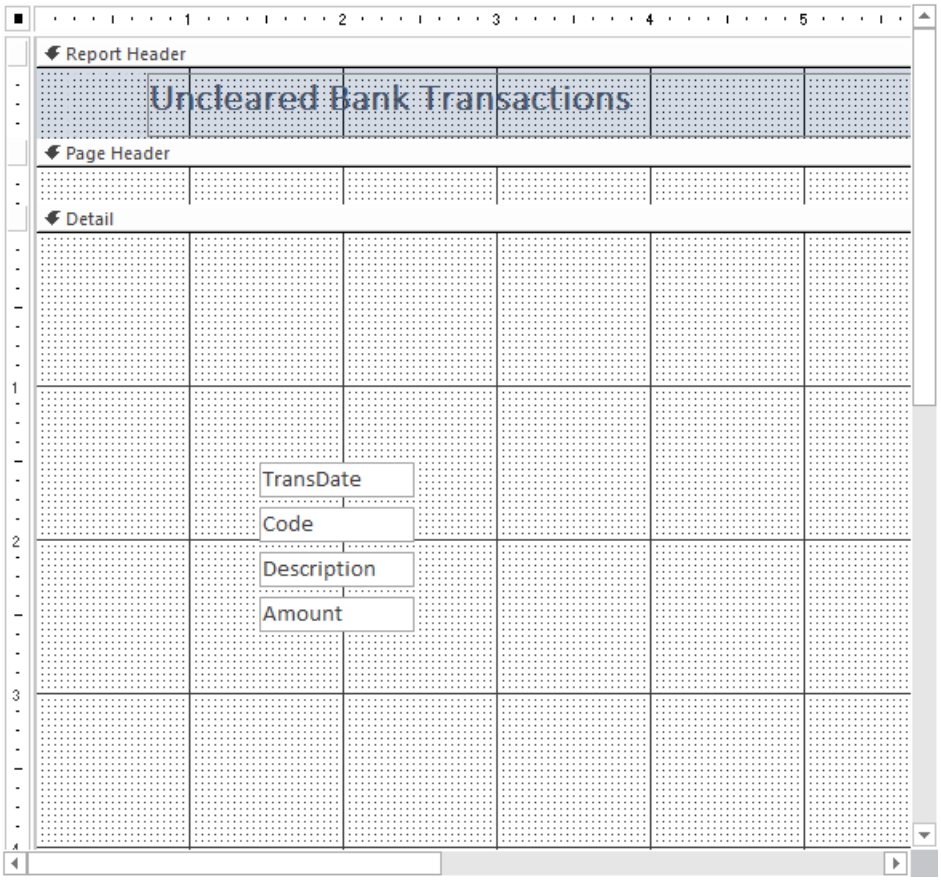
12. On the **Report Design Tools: Design** tab in the **Tools** group, click **Add Existing Fields**.



13. In the **Field List** pane, in the Transactions list, double-click "TransDate", "Code", "Description", and "Amount".

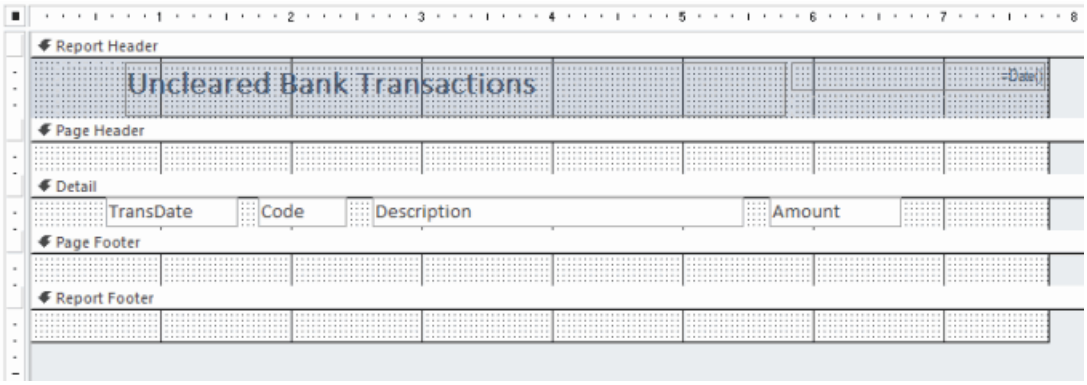


14. Select all the field labels and press **Delete**. **Note: You may also use the shortcut of Cut and Paste.**

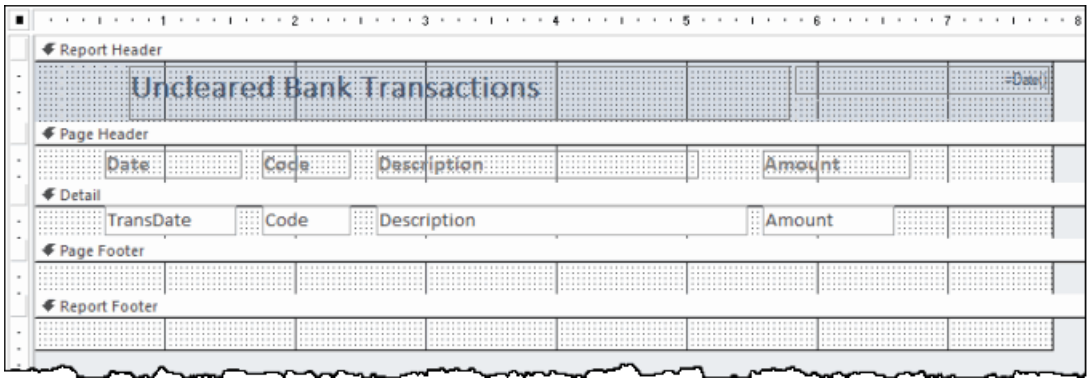


15. Arrange the fields across the top of the detail section. Resize the fields relative to the data that each contains.

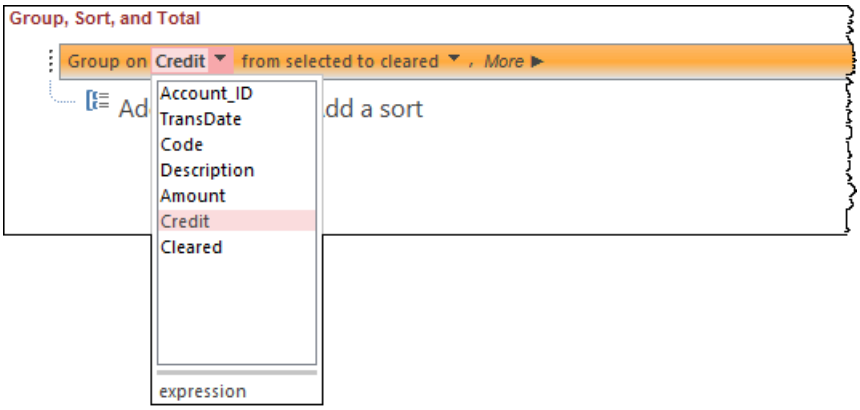
16. Reduce the height of the detail section.



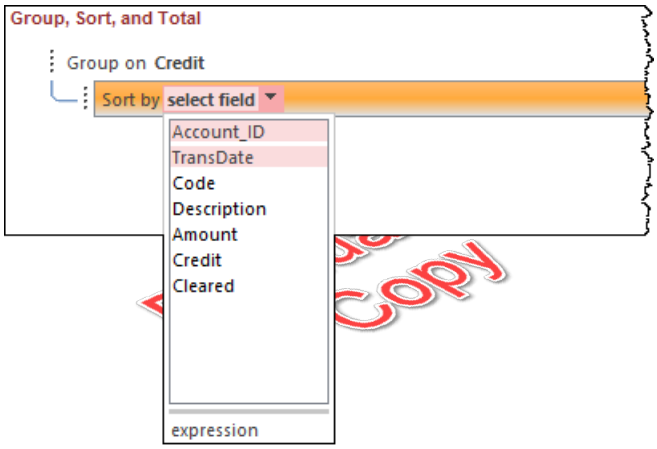
17. Add labels for each of the fields in the Page Header section using the label control.
18. Resize, align, and format the labels.



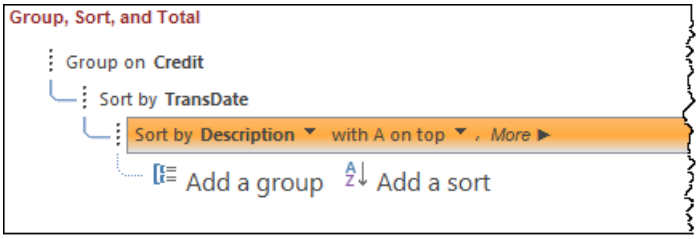
19. While we're tweaking the formatting, remove the field borders and the alternate row shading. To do so:
    A. Select the labels in the page header and the fields in the detail section.
    B. Open the property sheet.
    C. Select the **Format** tab.
    D. From the **Border Style** drop-down list, select "Transparent".
    E. Click in the Credit Header section.
    F. In the property sheet, on the **Format** tab, from the **Alternate Back Color** drop-down list, select "No Color".
    G. Click in the Detail section (but not on a field object).
    H. From the **Alternate Back Color** drop-down list, select "No Color".
    I. Close the property sheet.
20. On the **Report Design Tools: Design** tab in the **Grouping & Totals** group, click **Group & Sort**.
21. In the **Group, Sort, and Total** pane, click **Add a group**.
22. From the **select field** drop-down list, select "Credit".



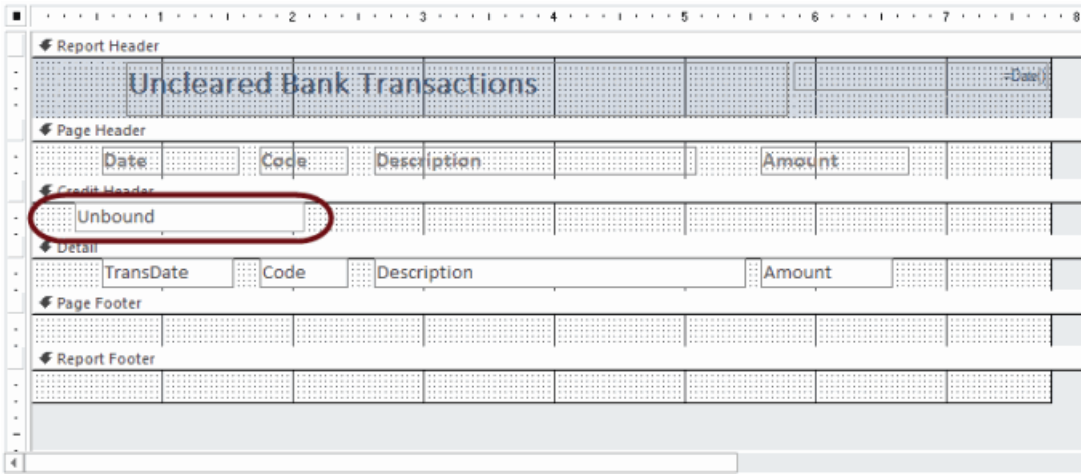
23. Click **Add a sort** and select "TransDate" from the drop-down list.



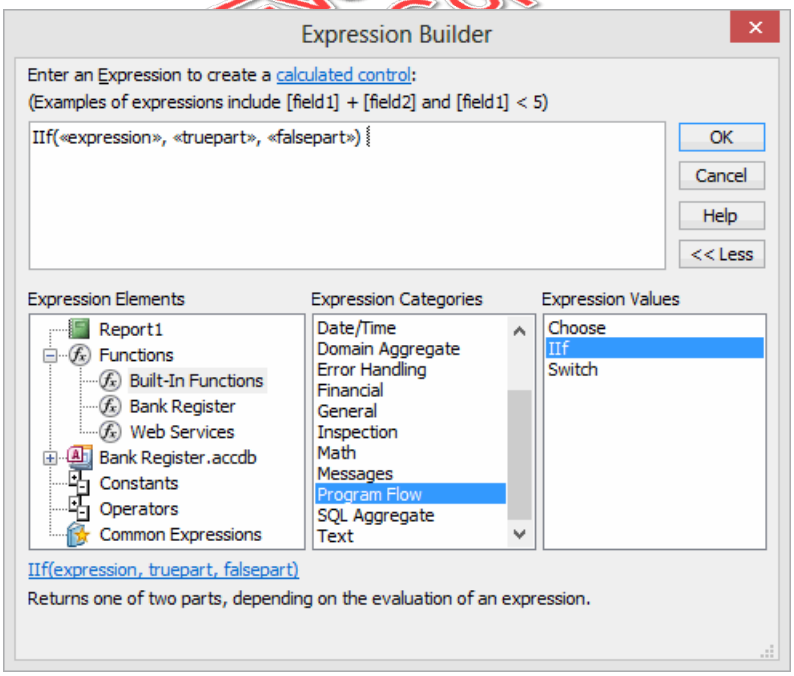
24. Click **Add a sort** again and select "Description".



25. In the property sheet, on the **Format** tab, from the **Alternate Back Color** drop-down list, select "No Color".
26. In the Credit Header section, add a text box to show the group header label.
27. Delete the label from the text box you just added.

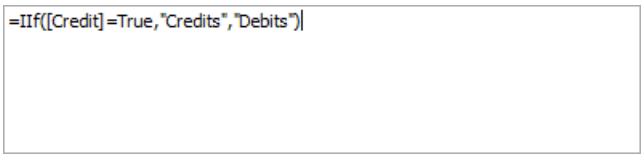


28. Select the text box, open the property sheet, and select the **Data** tab.
29. On the **Control Source** field, click ... . The **Expression Builder** opens.
30. In the **Expression Elements** list box, expand the **Functions** list and select **Built-In Functions**.
31. In the **Expression Categories** list box, select "Program Flow".
32. In the **Expression Values** list box, double-click "IIf". The expression you've built displays in the expression window.

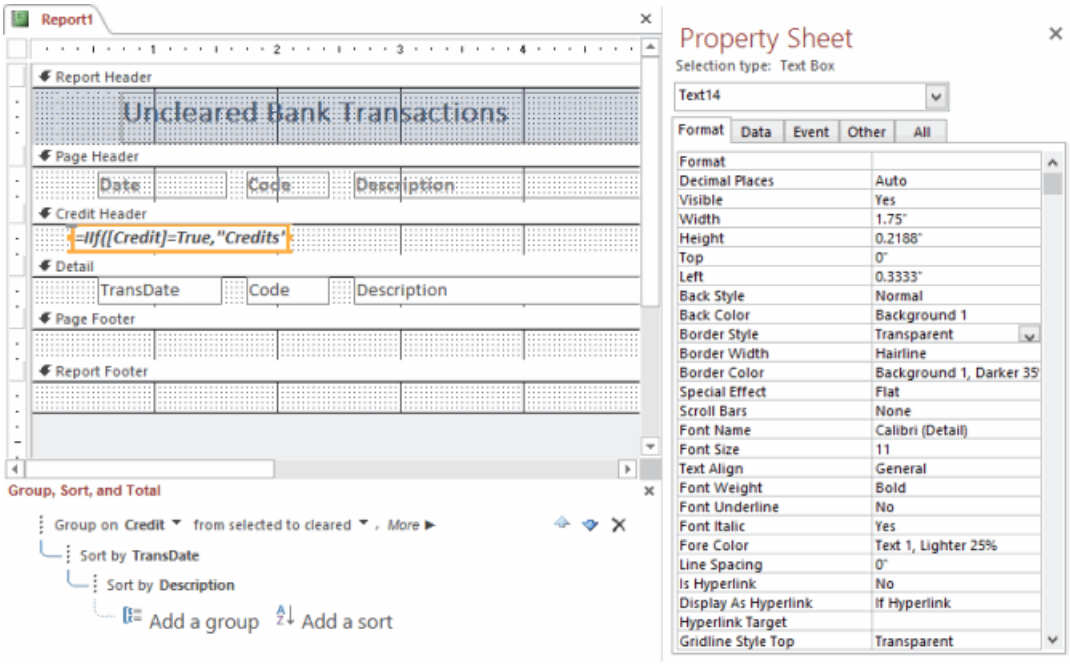


33. Replace the <<expression>> placeholder with "[Credit]=True".

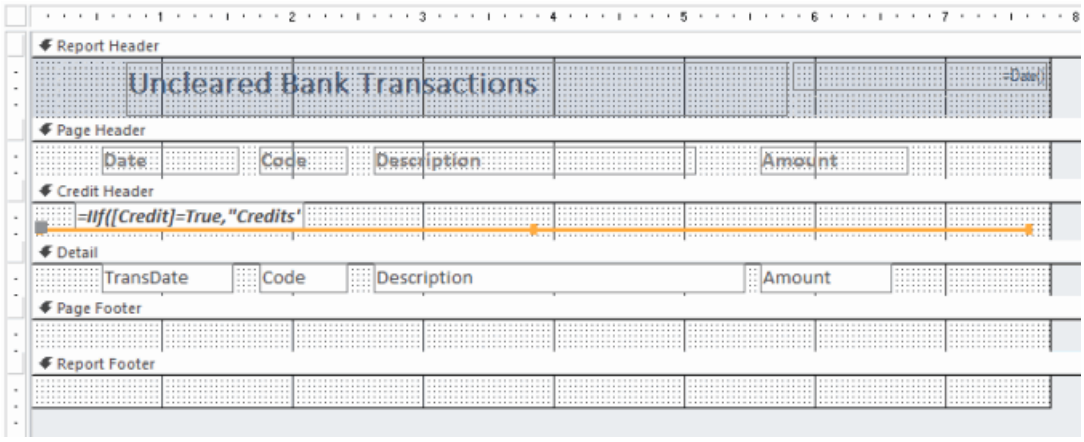
34. Replace the <<truepart>> placeholder with “Credits” (enclosed in quotes).
35. Replace the <<falsepart>> placeholder with “Debits” (enclosed in quotes).



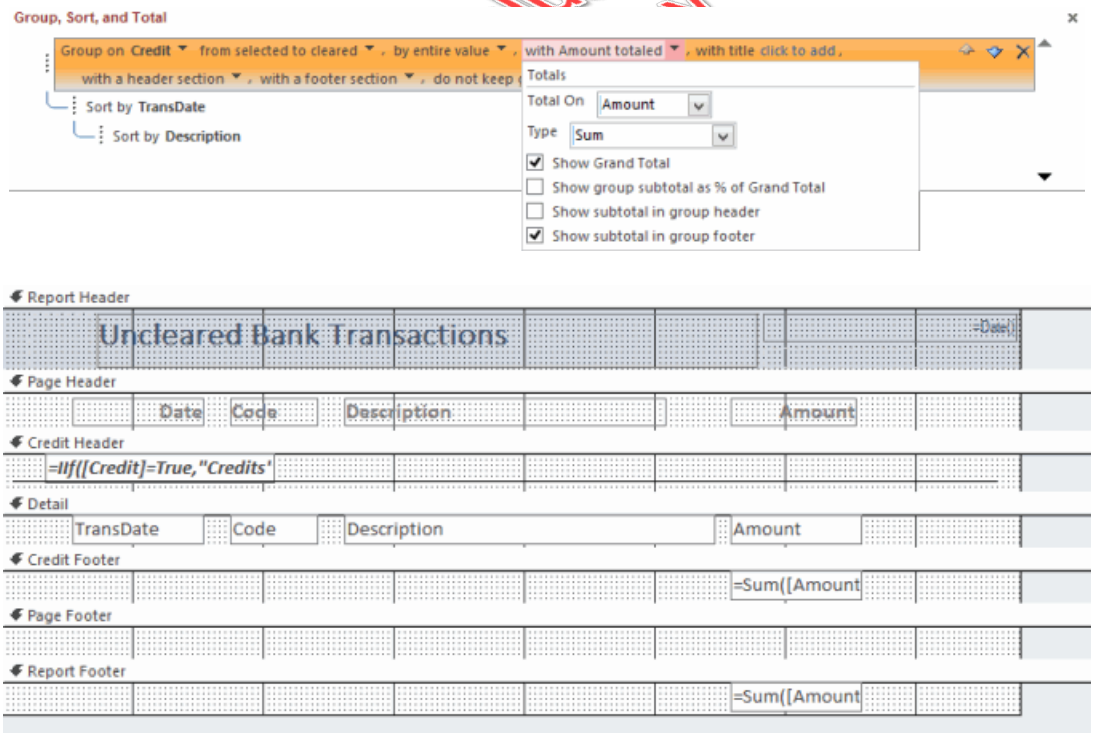
36. Click **OK**.
37. In the property sheet, remove the borders from the label by selecting “Transparent” from the **Border Style** drop-down list.
38. Format the group header label as desired.



39. Close the property sheet.
40. Enlarge the Credit Header to make room to add a line below the label.
41. On the **Report Design Tools: Design** tab in the **Controls** group, click ╲.
42. Click and drag to draw a line from near the left edge of the Credit Header to near the right edge of the Credit Header.

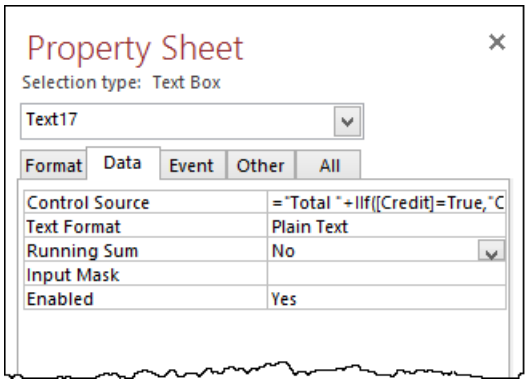


43. In the **Group, Sort, and Total** pane in the **Group on** row, click **More**.
44. From the **with no totals** drop-down list, select "Totals".
45. From the **Total On** drop-down list, select "Amount".
46. From the **Type** drop-down list, select "Sum".
47. Mark the **Show Grand Total** check box.
48. Mark the **Show subtotal in group footer** check box.

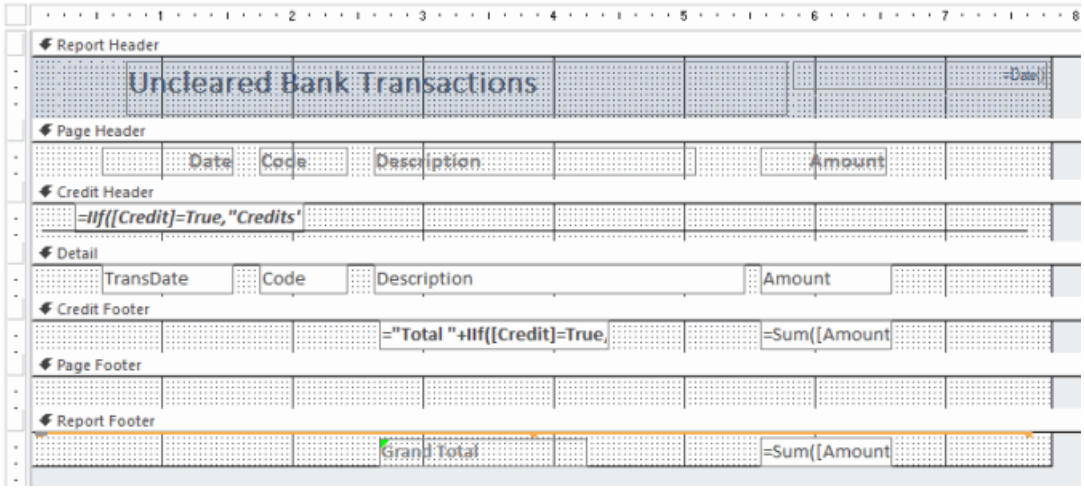


49. In the Credit Header, select the label, right-click, and select **Copy**.

50. In the Credit Footer, right-click and select **Paste**.
51. Open the property sheet for the Credit Footer text box and select the **Data** tab.
52. In the **Control Source** field, place your cursor immediately after the "=" sign and type "Total " followed by "+".

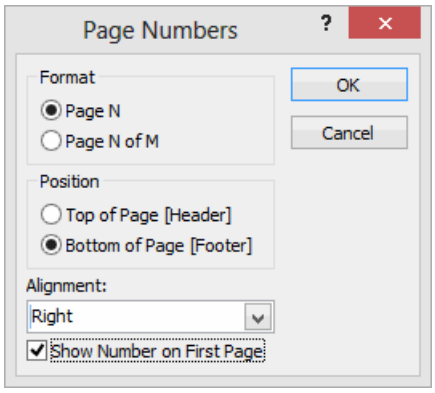


53. Move and format the label as desired.
54. Remove the alternate formatting on the group footer.
55. In the Report Footer, add a label for the report totals.
56. In the label, type "Grand Total".
57. Above the label, add a line from near the left edge to near the right edge.

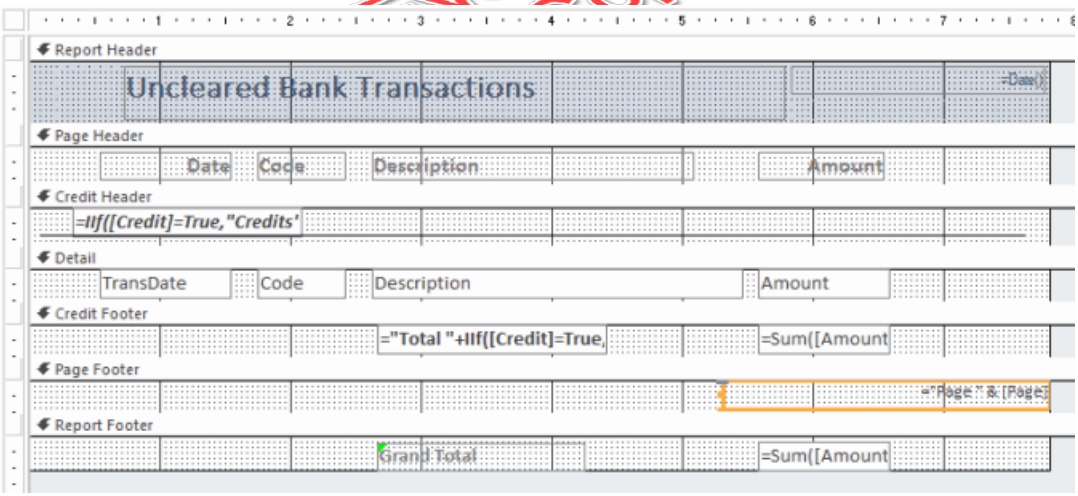


58. On the **Report Design Tools: Design** tab in the **Header/Footer** group, click **Page Numbers**.
59. In the **Page Numbers** dialog box, in the **Format** field, select "Page N".
60. In the **Position** field, select "Bottom of Page [Footer]".

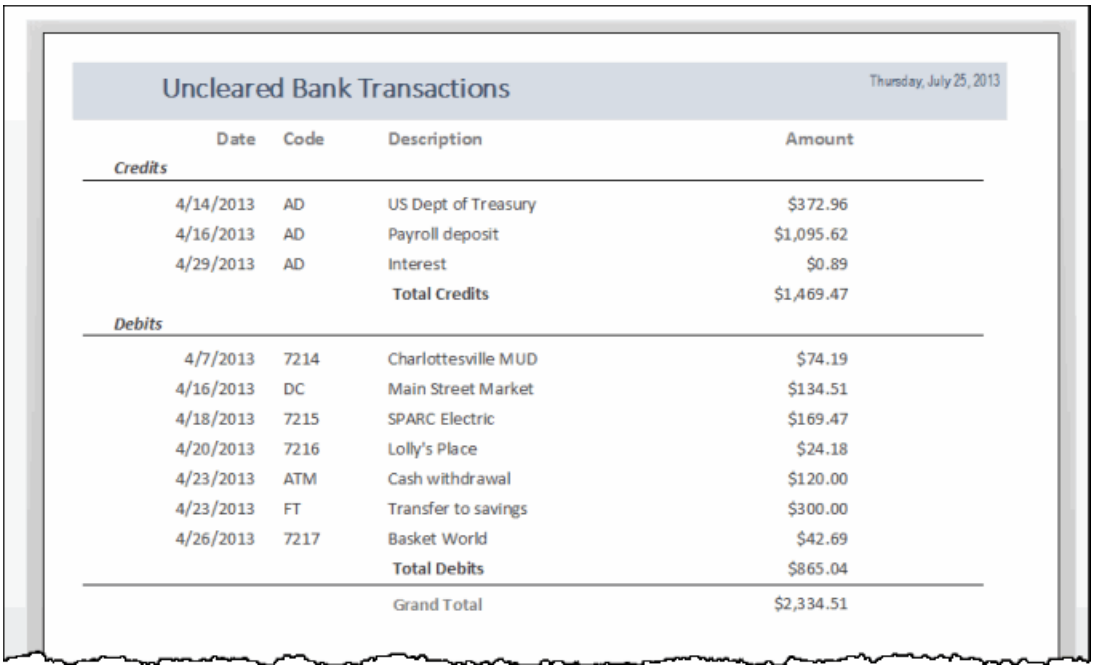
61. In the **Alignment** field, select “Right”.
62. Mark or clear the **Show Number on First Page** check box as you prefer.



63. Click **OK**.
64. Format the page number as desired.



65. Preview the report.



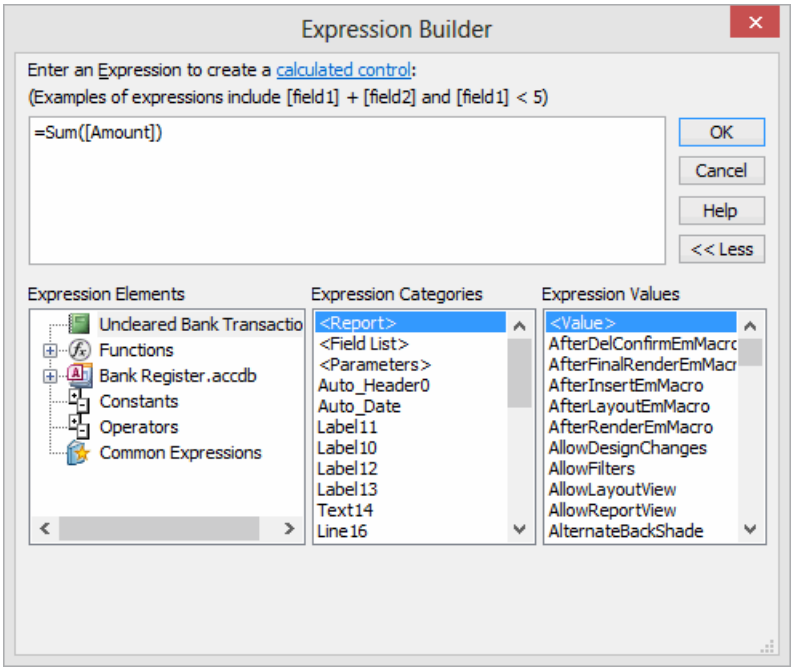
Uncleared Bank Transactions — Thursday, July 25, 2013

Date	Code	Description	Amount
Credits			
4/14/2013	AD	US Dept of Treasury	$372.96
4/16/2013	AD	Payroll deposit	$1,095.62
4/29/2013	AD	Interest	$0.89
		Total Credits	$1,469.47
Debits			
4/7/2013	7214	Charlottesville MUD	$74.19
4/16/2013	DC	Main Street Market	$134.51
4/18/2013	7215	SPARC Electric	$169.47
4/20/2013	7216	Lolly's Place	$24.18
4/23/2013	ATM	Cash withdrawal	$120.00
4/23/2013	FT	Transfer to savings	$300.00
4/26/2013	7217	Basket World	$42.69
		Total Debits	$865.04
		Grand Total	$2,334.51

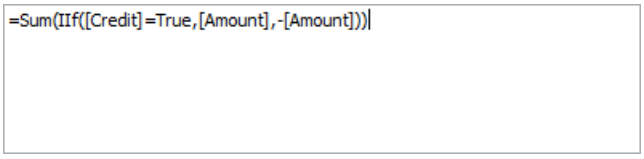
66. Notice that the grand total is incorrect. That's because we treated credits and debits both as positive numbers and simply added them up. To fix this, first select the total field in the report footer.

67. Open the property sheet and select the **Data** tab.

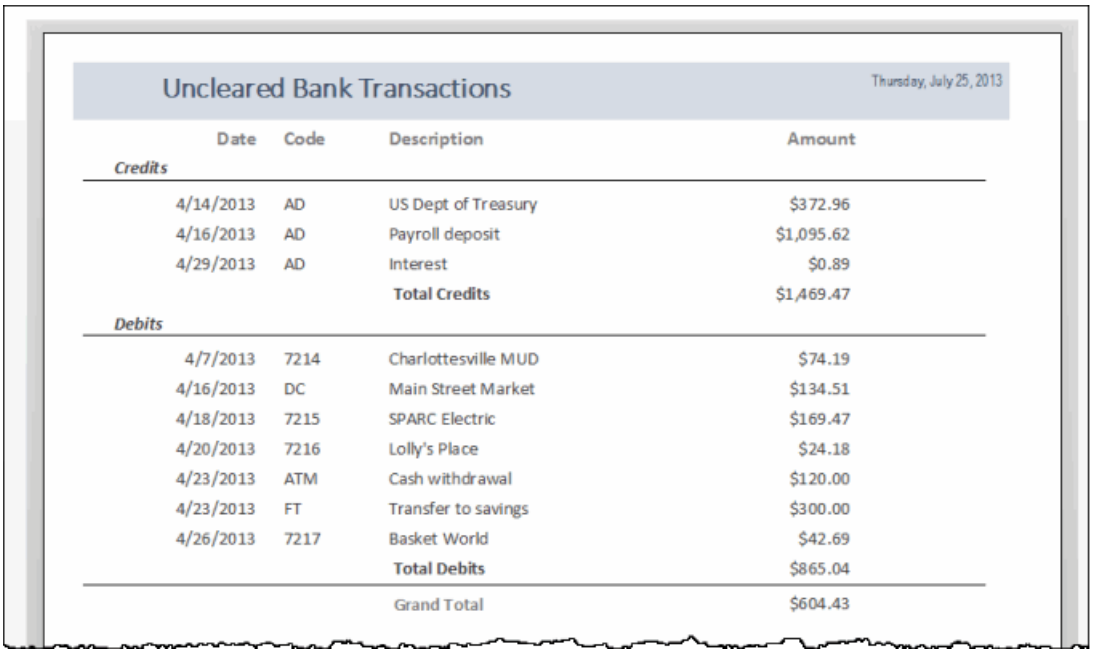
68. In the **Control Source** field, click ....



69. In the expression pane, we need to replace the expression with an expression that will add the credits and add the negative of the debits. To do this, type "=Sum(IIf([Credit]=True,[Amount],-[Amount]))".



70. Click **OK**.
71. Preview the report.



Uncleared Bank Transactions — Thursday, July 25, 2013

Date	Code	Description	Amount
Credits			
4/14/2013	AD	US Dept of Treasury	$372.96
4/16/2013	AD	Payroll deposit	$1,095.62
4/29/2013	AD	Interest	$0.89
		Total Credits	$1,469.47
Debits			
4/7/2013	7214	Charlottesville MUD	$74.19
4/16/2013	DC	Main Street Market	$134.51
4/18/2013	7215	SPARC Electric	$169.47
4/20/2013	7216	Lolly's Place	$24.18
4/23/2013	ATM	Cash withdrawal	$120.00
4/23/2013	FT	Transfer to savings	$300.00
4/26/2013	7217	Basket World	$42.69
		Total Debits	$865.04
		Grand Total	$604.43

72. Tweak the report as desired.
73. Save the report and name it "Uncleared Bank Transactions".

Conclusion

In this lesson, you learned:

- To create and format Access reports.
- To work with the various sections of a report.
- To group, sort, and add totals for records on a report.

- To work with the **Expression Builder**.
- To work with property sheets.

LESSON 6
Macros

Topics Covered

☑ Creating macros.

☑ Running macros.

Introduction

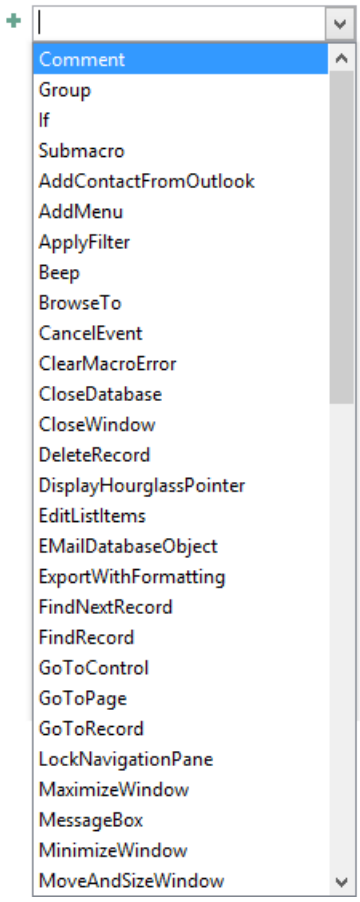
In this lesson, you will learn how to create some simple macros and several ways to run a macro.

6.1. Macro Basics

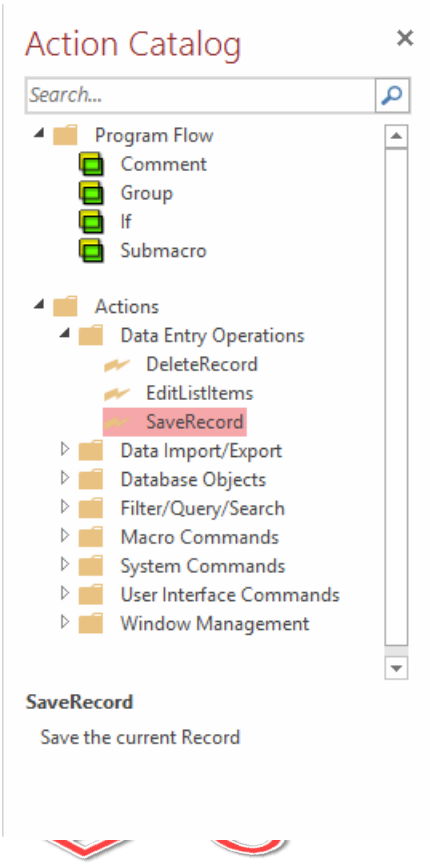
Macros allow you to automate actions for your database. You can perform simple actions such as opening a form or printing a report. You can also string together actions to build macros that perform complex automation operations. In this lesson, we'll focus on some simple macros.

Access makes it relatively easy to create macros. For the simplest macros, you simply select an action and specify parameter values. In Design view, Access provides two ways to select the actions for your macros. You can select from an alphabetized drop-down list.

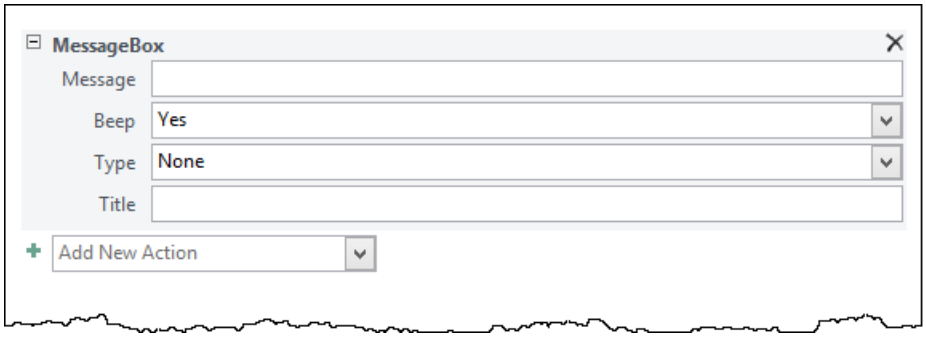
Open `/Macros/Demo/Demo - My Music Collection - Start.accdb`



You can also select from a searchable grouping of actions called the **Action Catalog**.



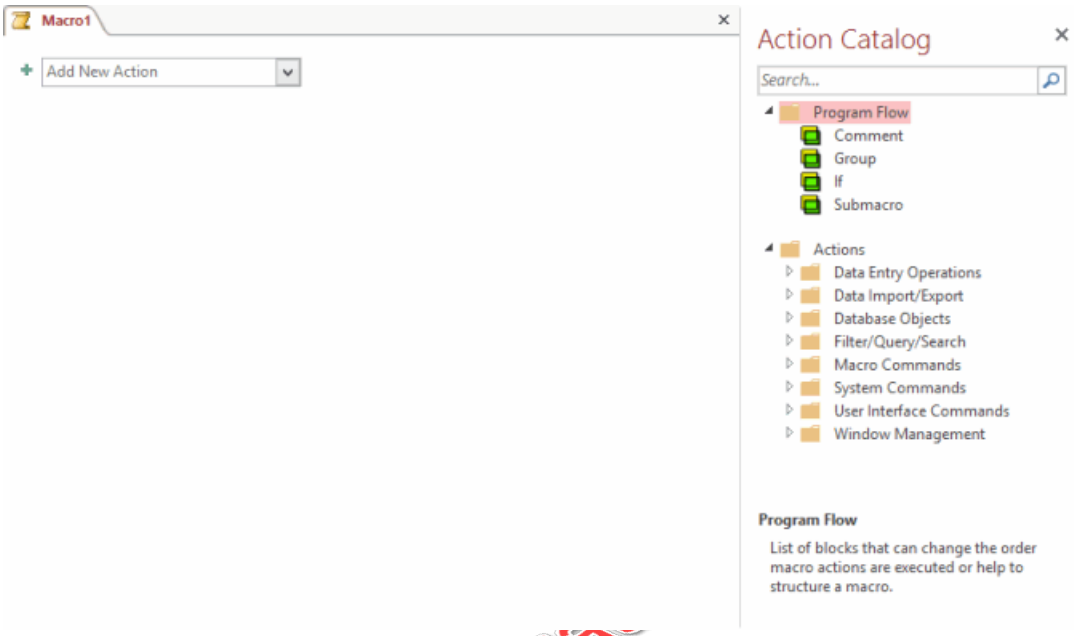
After you select an action, you are prompted for any necessary parameter values.



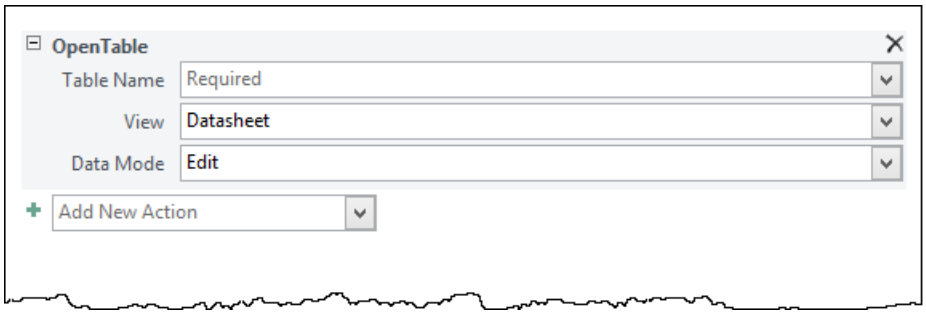
❖ 6.1.1. Open a Table, Form, and Report

To create a macro that opens a table:

1. On the **Create** tab in the **Macros & Code** group, click **Macro**. A blank macro tab is added on the work surface along with the **Action Catalog**.

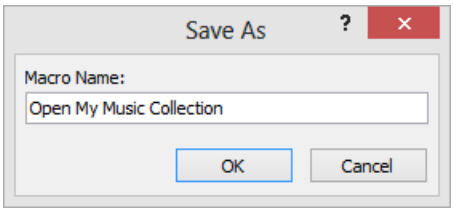


2. From the **Add New Action** drop-down list, select "OpenTable". The **OpenTable** prompts load in the macro tab.



3. From the **Table Name** drop-down list, select the table you want to open.
4. From the **View** drop-down list, select the view you want the table to open in.
5. From the **Data Mode** drop-down list, select the mode you want the table to open in. Your options are "Add", "Edit", and "Read Only".

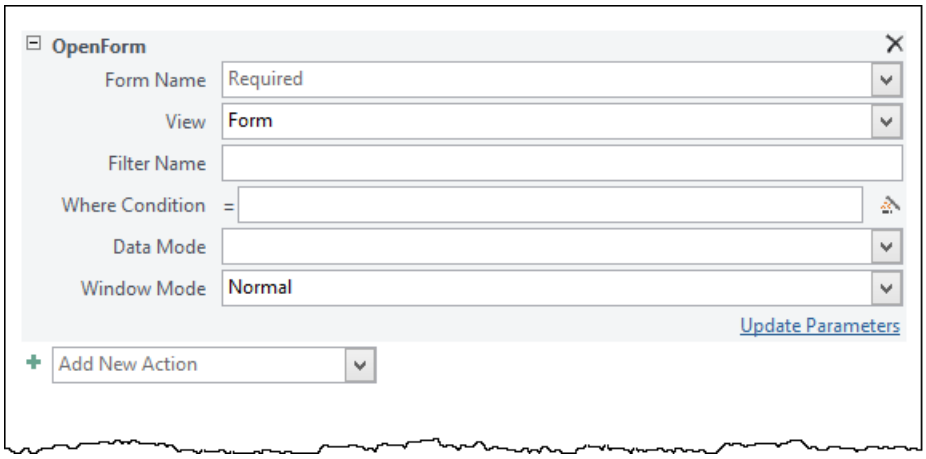
6. Click **Save**. The **Save As** dialog box opens.
7. In the **Macro Name** field, type a name for the macro.



8. Click **OK**.

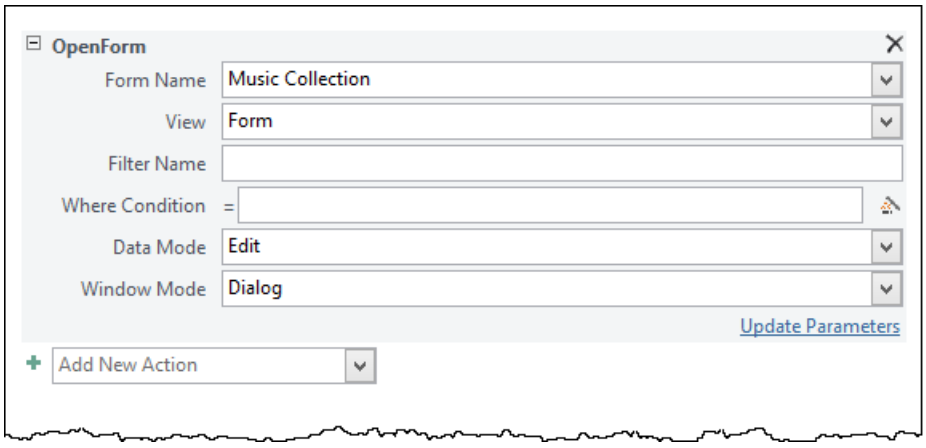
To create a macro that opens a form:

1. On the **Create** tab in the **Macros & Code** group, click **Macro**.
2. From the **Add New Action** drop-down list, select "OpenForm".



3. From the **Form Name** drop-down list, select the form you want to open.
4. From the **View** drop-down list, select the view to open the form in.

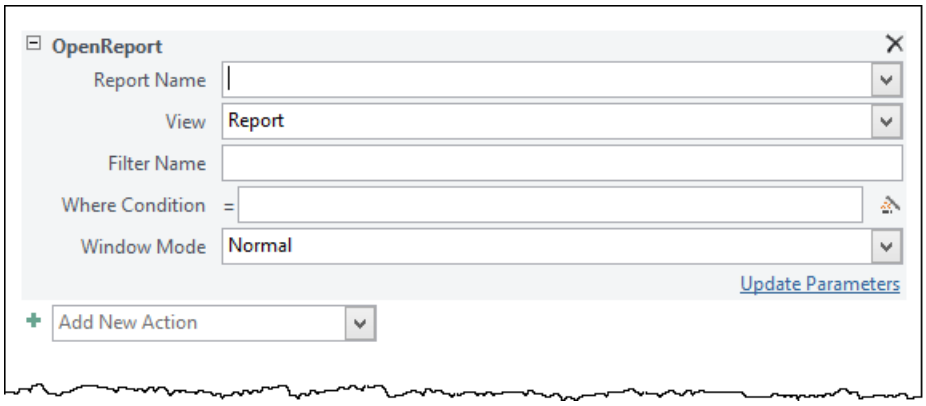
5. From the **Data Mode** drop-down list, select the mode to open the form in. Your options are "Add", "Edit", and "Read Only".
6. From the **Window Mode** drop-down list, select the type of window you want the form to open in. Your options are "Normal", "Hidden", "Icon", and "Dialog".



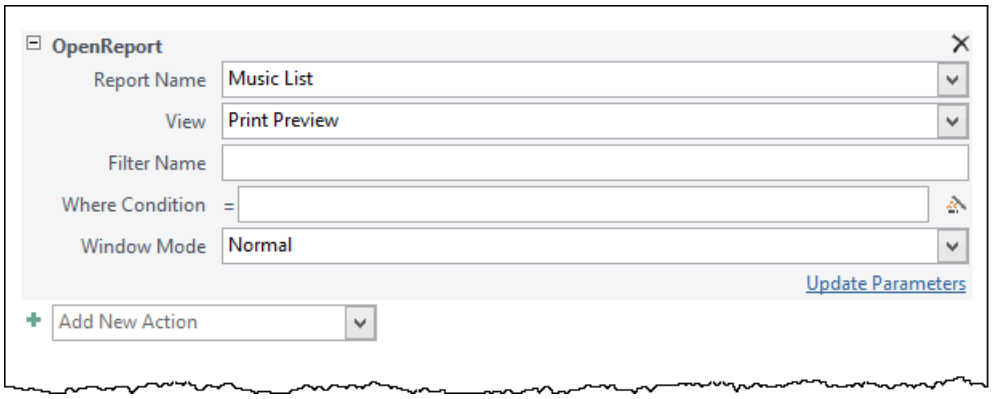
7. Save the macro.

To create a macro to open a report:

1. On the **Create** tab in the **Macros & Code** group, click **Macro**.
2. From the **Add New Action** drop-down list, select "OpenReport".



3. From the **Report Name** drop-down list, select the report you want to open.
4. From the **View** drop-down list, select the view to open the report in.
5. From the **Window Mode** drop-down list, select the type of window you want the report to open in. Your options are "Normal", "Hidden", "Icon", and "Dialog".

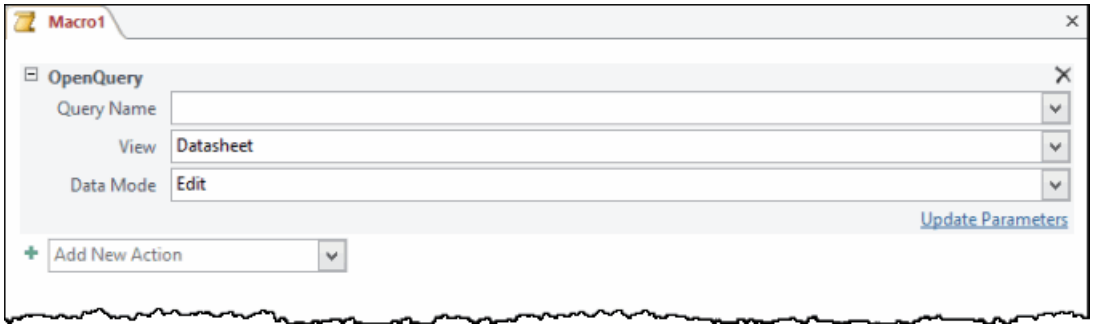


6. Save the macro.

❖ 6.1.2. Run a Query

To create a macro that runs a query:

1. On the **Create** tab in the **Macros & Code** group, click **Macro**.
2. From the **Add New Action** drop-down list, select "OpenQuery".



3. From the **Query Name** drop-down list, select the query you want to run.
4. In the **View** drop-down list, ensure that "Datasheet" is selected.
5. From the **Data Mode** drop-down list, select "Edit".

6. Save and name the macro.
7. On the **Macro Tools: Design** tab in the **Tools** group, click **Run**.

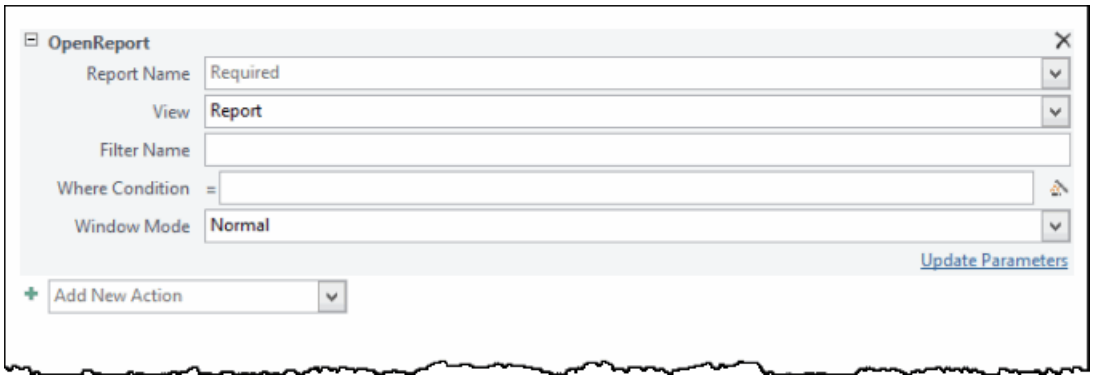
Open Titles Artists Formats Query | Titles Artists Formats

Title	Artist	Description
Right On	Count Basie and His Orchestra	78 RPM vinyl record
I Got a Name	Jim Croce	8-track tape
Smetana: Moldau, Overtures	Cleveland Orchestra	33 1/3 RPM vinyl record
A Hard Day's Night	Beatles	33 1/3 RPM vinyl record
The White Album	Beatles	Compact disc
I Remember Yesterday	Donna Summer	Cassette tape
Rachmaninov Piano Concerto 1 & 3	Cleveland Orchestra	Compact disc
Just a Dream	Carrie Underwood	MP3 file
Music of the Night	Alfie Boe	MP3 file
King of Swing!	Count Basie and His Orchestra	Compact disc
Pirates of Penzance	D'Oyly Carte Opera Company	33 1/3 RPM vinyl record
Skyfall	Adele	MP3 file

❖ 6.1.3. Print a Report

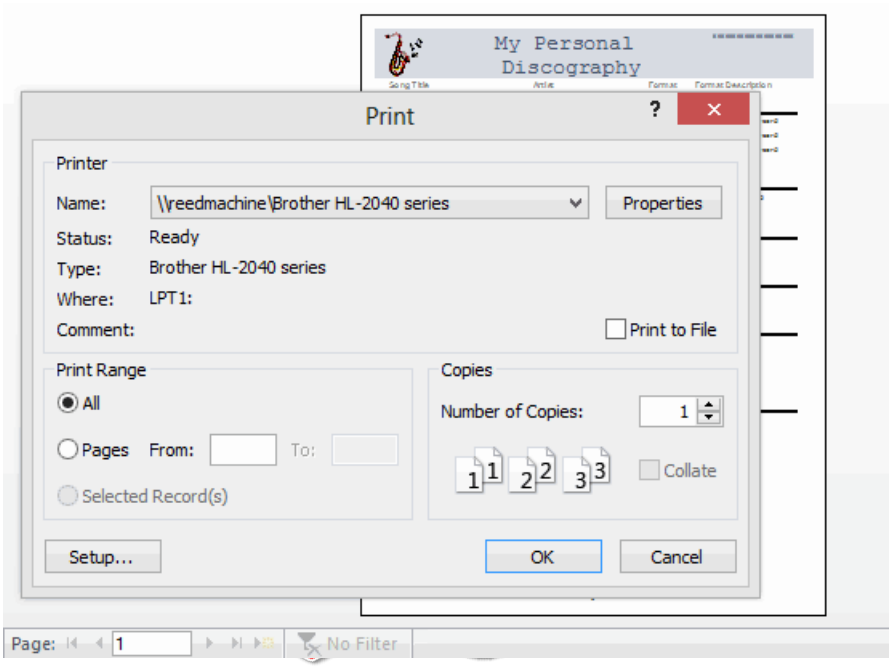
To create a macro that prints a report:

1. On the **Create** tab in the **Macros & Code** group, click **Macro**.
2. From the **Add New Action** drop-down list, select "OpenReport".



3. From the **Report Name** drop-down list, select the report to print.
4. From the **View** drop-down list, select "Print Preview".
5. From the **Add New Action** drop-down list, select "PrintObject".

6. Save and name the macro.
7. On the **Macro Tools: Design** tab in the **Tools** group, click **Run**. Notice that the requested report opens in the background and the **Print** prompt opens so that you can print the report.

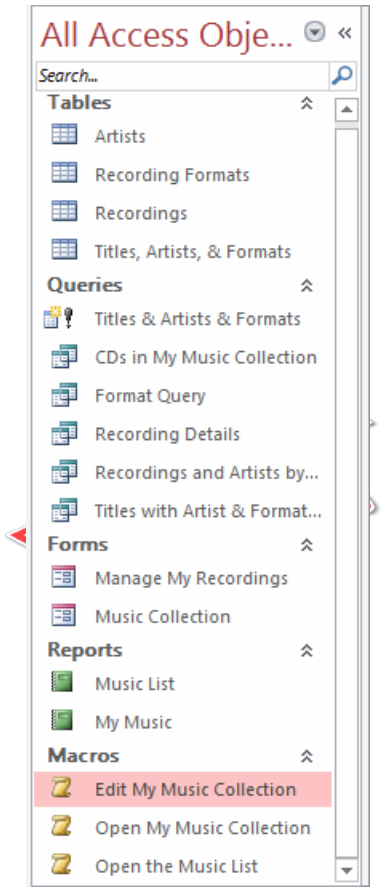


6.2. Running a Macro

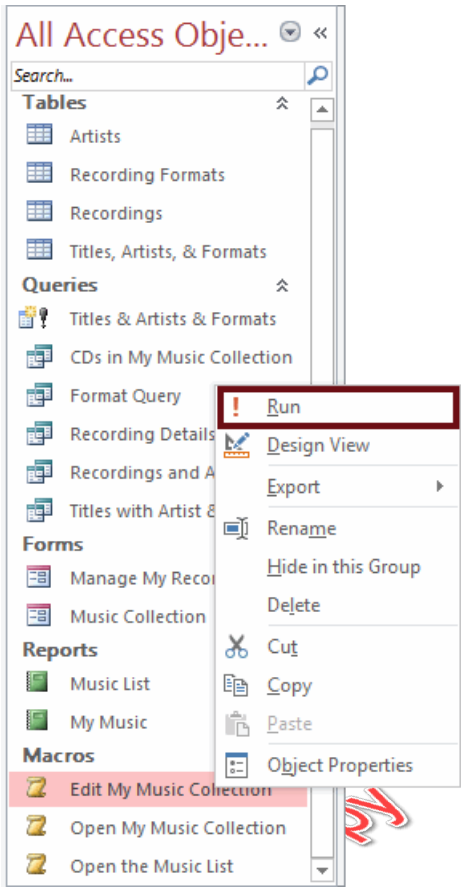
As we've shown, we can run a macro from Design view by clicking **Run** on the **Macro Tools: Design** tab. Once we've saved a macro, we can run it from the **Navigation Pane**, from the **Database Tools** tab, or we can bind the macro to a control and use the control to launch the macro.

To run a macro from the **Navigation Pane**:

1. Locate the macro in the **Navigation Pane**.

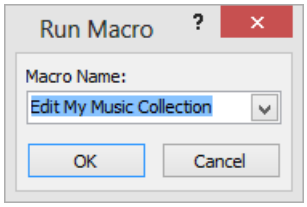


2. Double-click the macro name or right-click and select **Run** from the shortcut menu.



To run the macro from the **Database Tools** tab:

1. On the **Database Tools** tab in the **Macro** group, click **Run Macro**. The **Run Macro** dialog box opens.



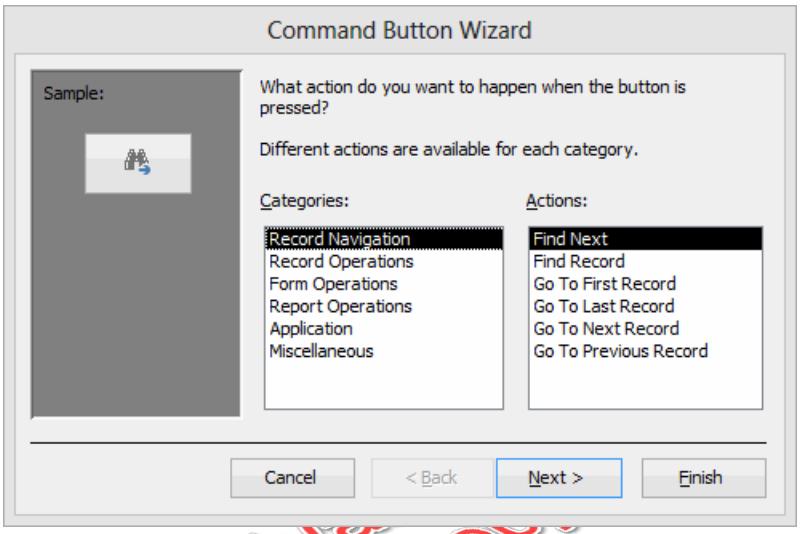
2. From the **Macro Name** drop-down list, select the macro to run.
3. Click **OK**.

To demonstrate how to bind a macro to a control, we'll create a simple form and add a button that opens another form.

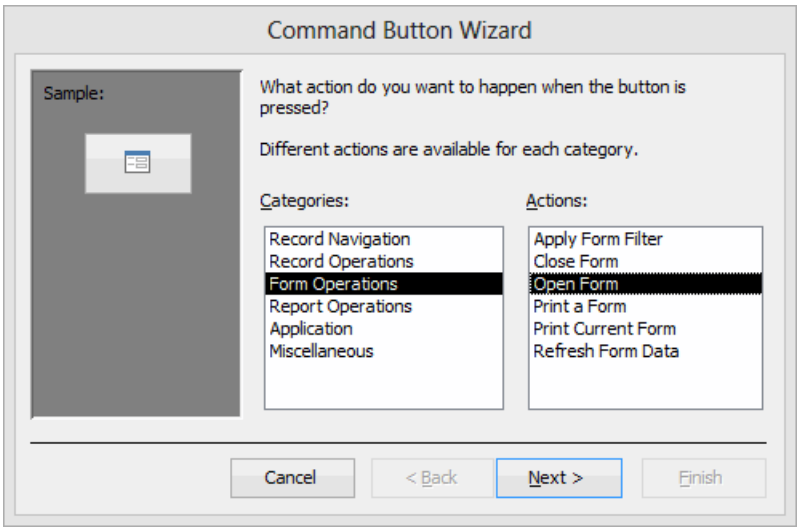
To bind a macro to a control and run it:

1. On the **Create** tab in the **Forms** group, click **Form Design**.

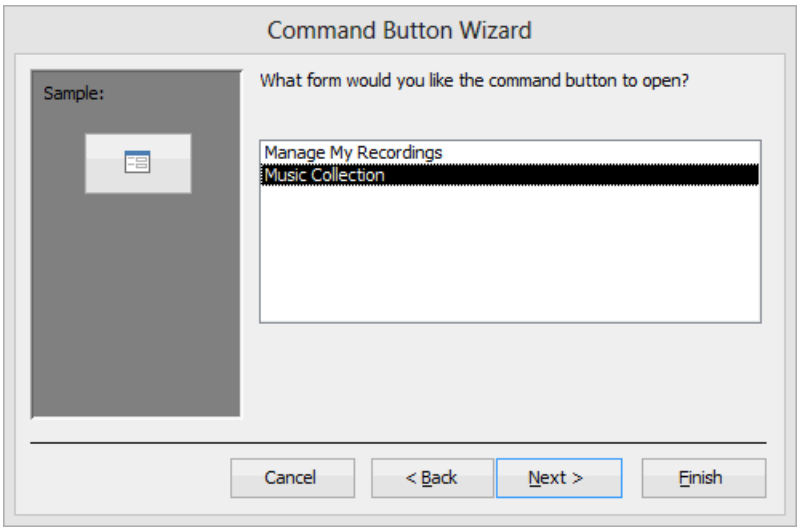
2. On the **Form Design Tools: Design** tab in the **Controls** group, click  , then click and drag on the form design surface to draw a button. When you release the mouse button, the **Command Button Wizard** starts.



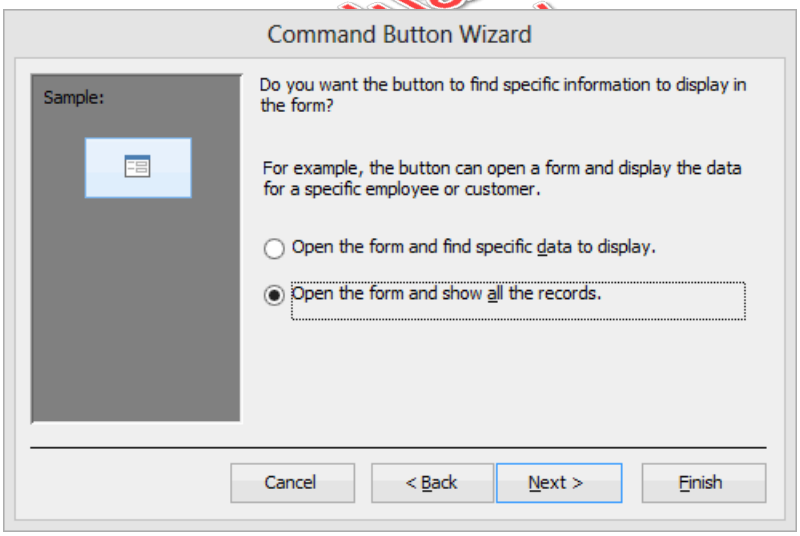
3. In the **Categories** list box, select the type of action you want the button to perform.
4. In the **Actions** list box, select the action you want the button to perform.



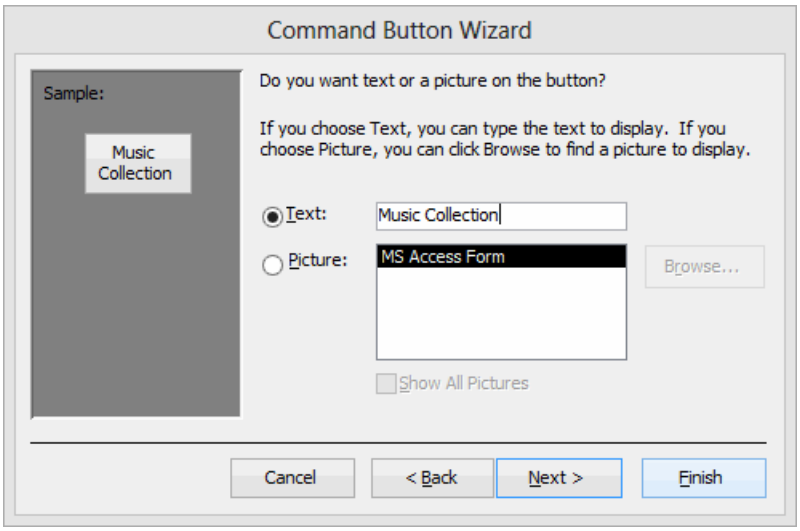
5. Click **Next >**. In this example, you are prompted for the form to open.



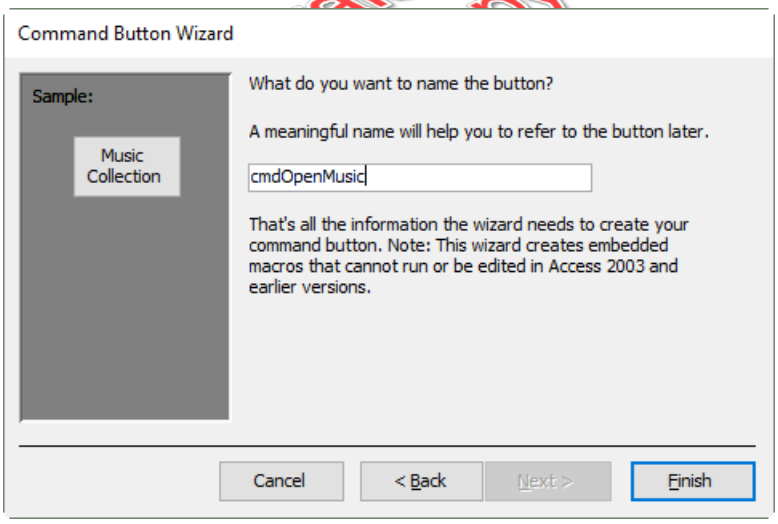
6. Select a form and click **Next >**. You are prompted for which information to display.



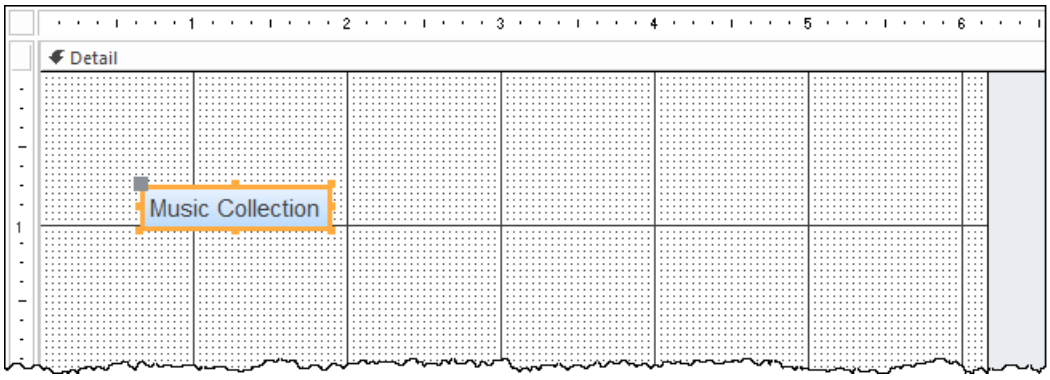
7. Make a selection and click **Next >**. You are prompted whether to have a text label or picture on the button.



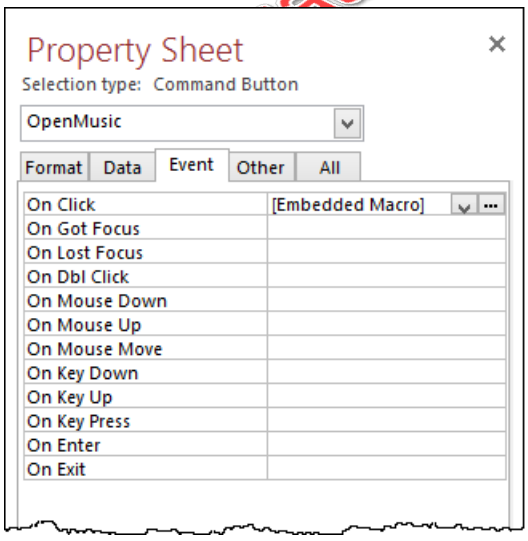
8. Provide a text label or select a picture for the button and then click **Next >**. You are prompted to name the button.



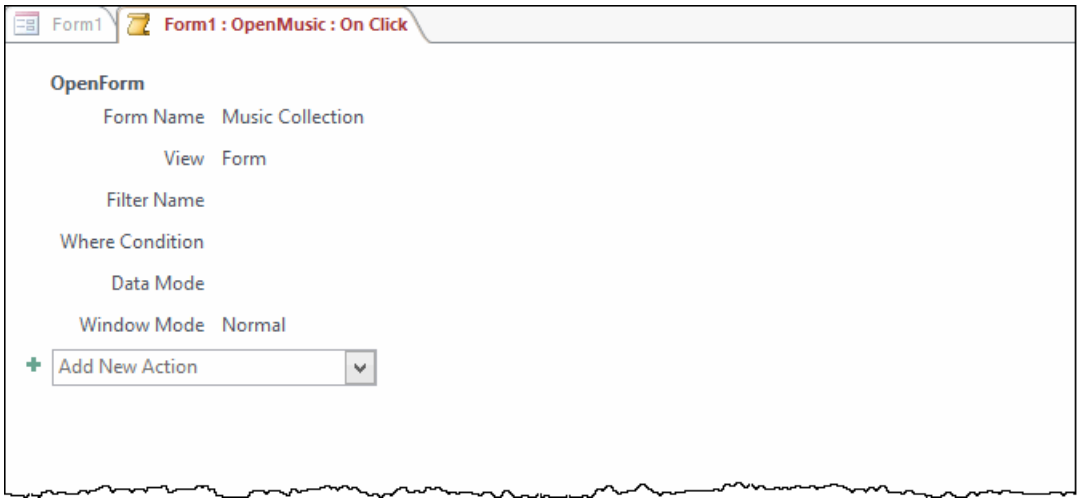
9. Type a name for the button "cmdOpenMusic" and click **Finish**. The button is added to the form design surface.



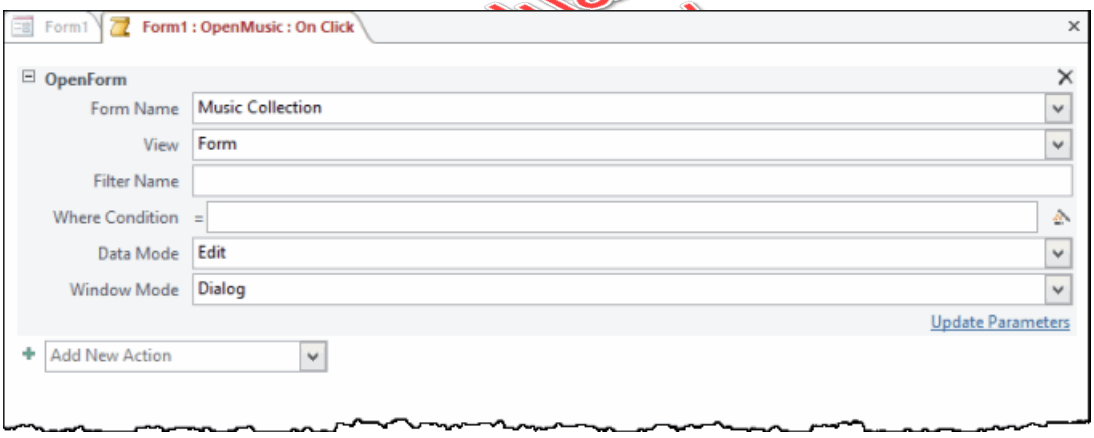
10. Right-click the button and select **Properties** from the shortcut menu.
11. In the property sheet, select the **Event** tab. Notice that the **On Click** field indicates "[Embedded Macro]".



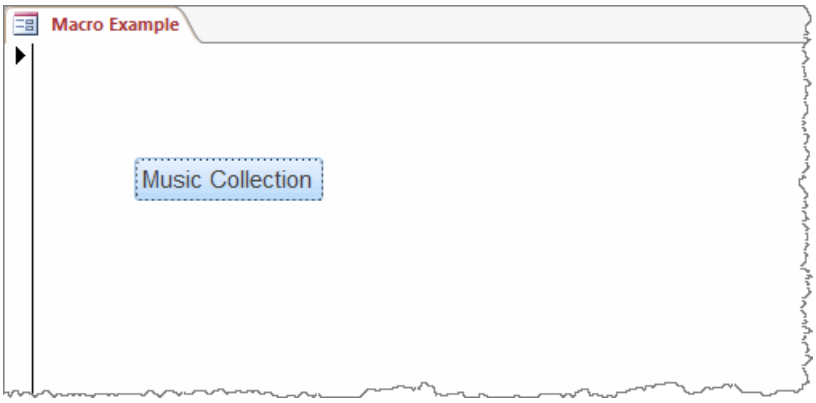
12. In the **On Click** field, click ... . The macro opens on the macro design surface.



13. Click inside the macro. Set additional options for the macro as desired.



14. Save and close the macro.
15. Save and name the form.
16. Switch to Form view.



17. Click the macro button to execute its function.

Exercise 8: Creating Simple Macros

20 to 45 minutes

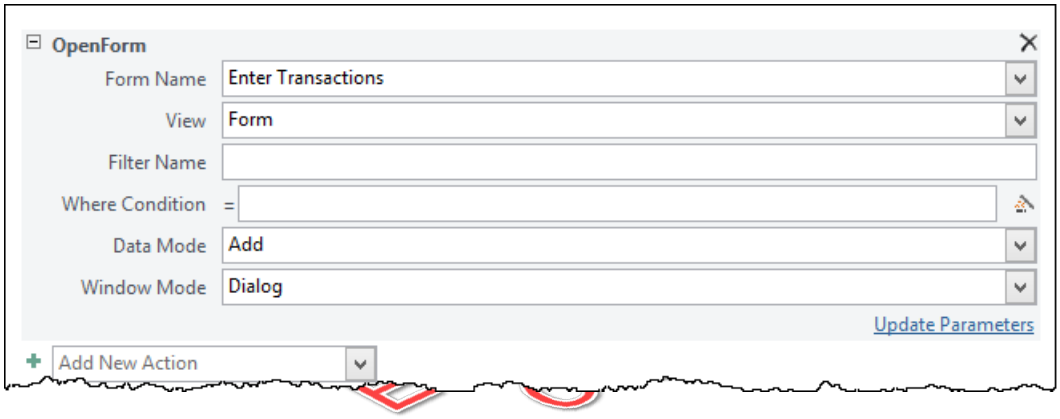
In this exercise, you will create the following macros in the `.../ClassFiles/Macros/Exercises/Bank Register.accdb` database:

1. A macro that opens the Enter Transactions form in add mode so that you can enter new transactions in the database. Name the macro "Add Transactions".
2. A macro that opens the Enter Transactions form in edit mode so that you can review transactions. Name the macro "Review Transactions".
3. A macro that opens the Uncleared Checking Transactions query in Datasheet view so that you can mark cleared transactions. Name the macro "Mark Cleared Transactions".
4. A macro that closes the database. Name the macro "Close Database".

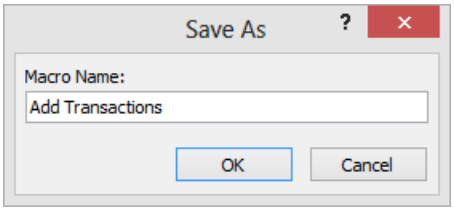
Solution

To create a macro that opens the Enter Transactions form in add mode:

1. On the **Create** tab in the **Macros & Code** group, click **Macro**.
2. From the **Add New Action** drop-down list, select "OpenForm".
3. From the **Form Name** drop-down list, select "Enter Transactions".
4. In the **View** drop-down list, accept "Form".
5. From the **Data Mode** drop-down list, select "Add".
6. From the **Window Mode** drop-down list, select "Dialog" or "Normal".



7. Click **Save**.
8. In the **Save As** dialog box in the **Macro Name** field, type "Add Transactions".

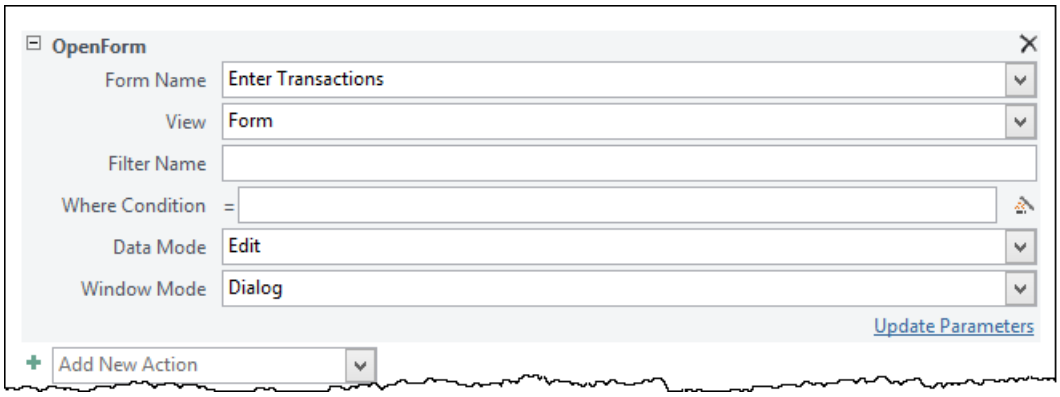


9. Click **OK**.

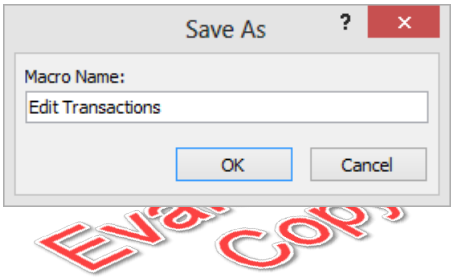
To create a macro that opens the Enter Transactions form in edit mode:

1. From the **Add New Action** drop-down list, select "OpenForm".
2. From the **Form Name** drop-down list, select "Enter Transactions".
3. In the **View** drop-down list, accept "Form".
4. From the **Data Mode** drop-down list, select "Edit".

5. From the **Window Mode** drop-down list, select "Dialog" or "Normal".



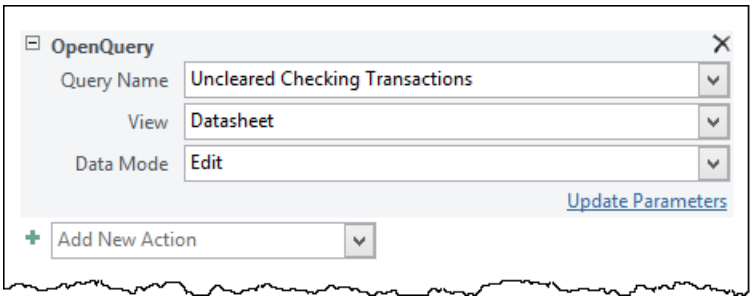
6. Click **Save**.
7. In the **Save As** dialog box in the **Macro Name** field, type "Edit Transactions".



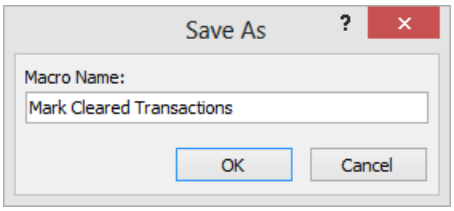
8. Click **OK**.

To create a macro that opens the Uncleared Checking Transactions query in Datasheet view:

1. On the **Create** tab in the **Macros & Code** group, click **Macro**.
2. From the **Add New Action** drop-down list, select "OpenQuery".
3. From the **Query Name** drop-down list, select "Uncleared Checking Transactions".
4. In the **View** drop-down list, accept "Datasheet".
5. In the **Data Mode** drop-down list, accept "Edit".



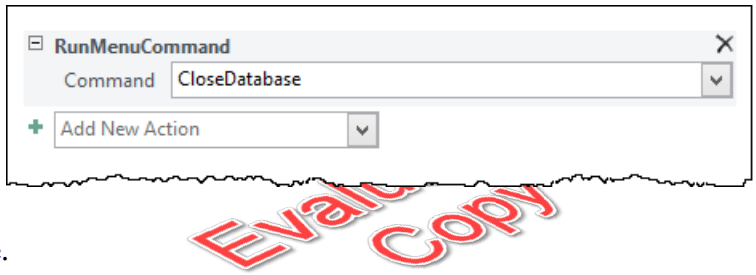
6. Click **Save**.
7. In the **Save As** dialog box in the **Macro Name** field, type “Mark Cleared Transactions”.



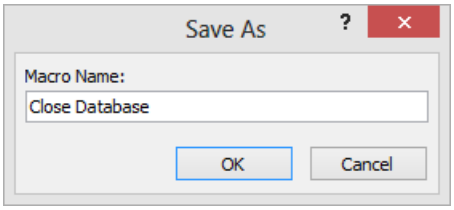
8. Click **OK**.

To create a macro that closes the database:

1. On the **Create** tab in the **Macros & Code** group, click **Macro**.
2. From the **Add New Action** drop-down list, select “CloseDatabase”.



3. Click **Save**.
4. In the **Save As** dialog box in the **Macro Name** field, type “Close Database”.



5. Click **OK**.

Conclusion

In this lesson, you learned:

- To create several simple macros.
- To run macros.

LESSON 7

Completing the Desktop Application

Topics Covered

☑ Creating and implementing a navigation form.

☑ User access to your database application.

Introduction

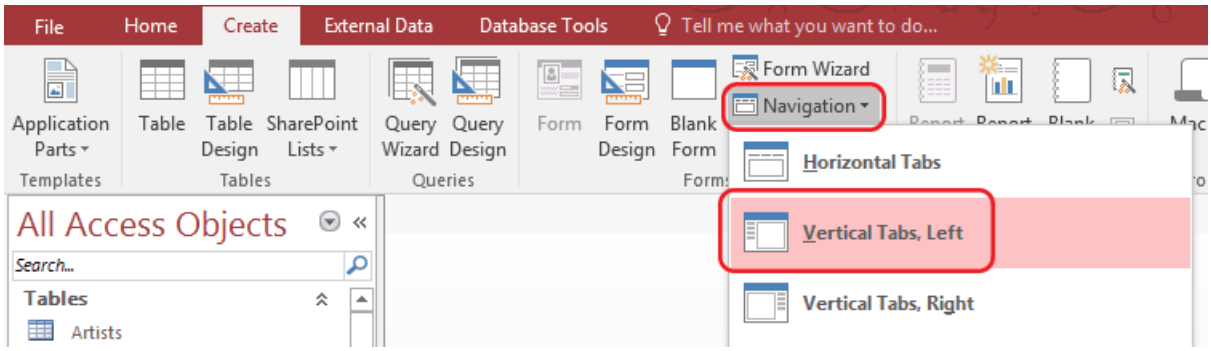
In this course and in the introductory course, we learned to create the main components of a database. In this lesson, we'll learn how to tie the components together in a cohesive package and distribute it to your end users.

7.1. The Navigation Form

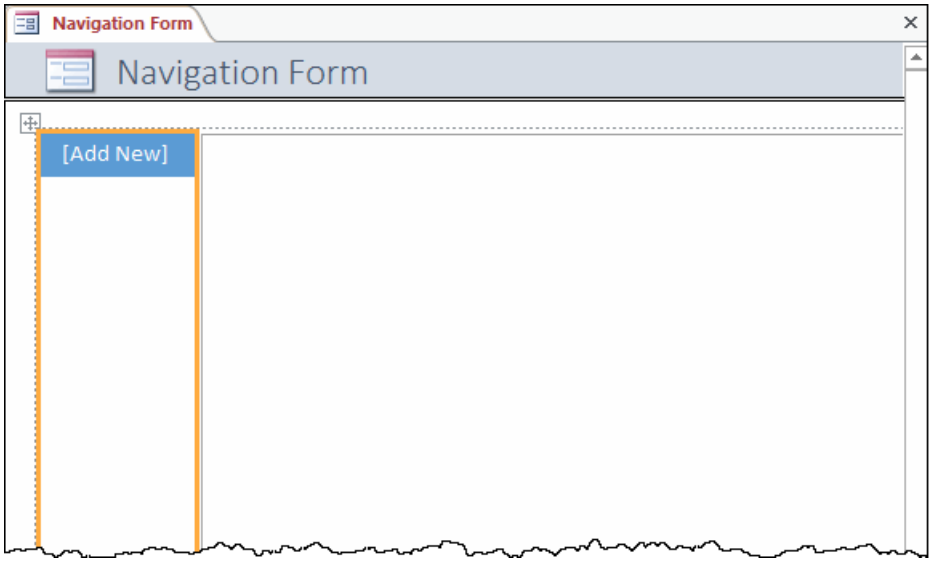
We want to make our users' experience with our application as streamlined as possible. For this reason, we'll create a navigation form that presents the main functions of our database in a straightforward and logical way.

To create a navigation form:

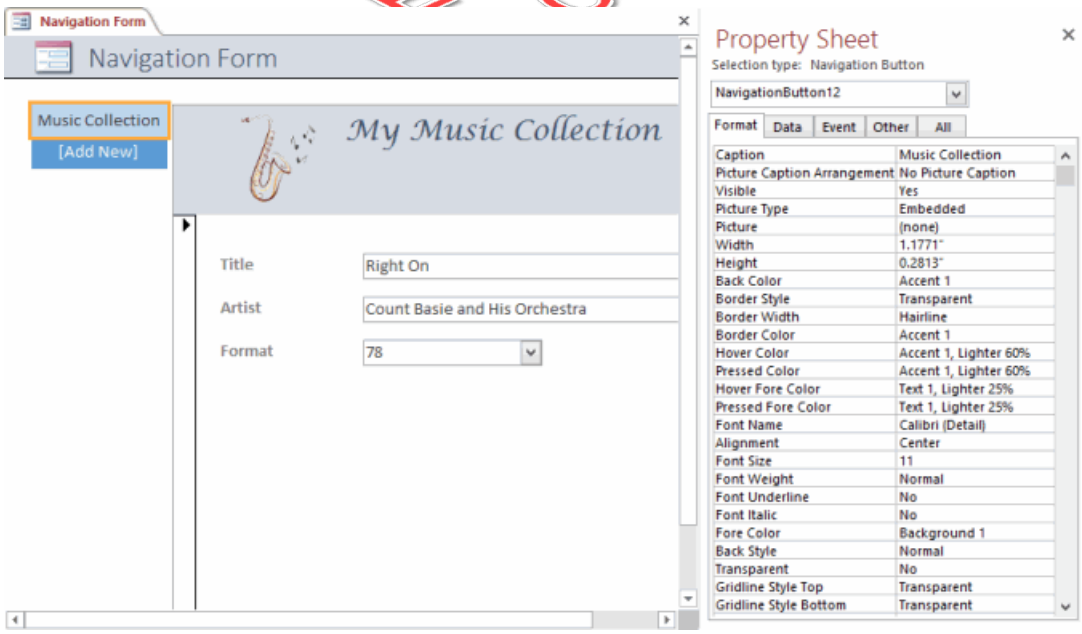
1. Open the database.
2. On the **Create** tab in the **Forms** group, click **Navigation**.



3. Select the layout you prefer from the drop-down list. For this example, we'll select "Vertical Tabs, Left". The form is added to the work surface in Layout view.

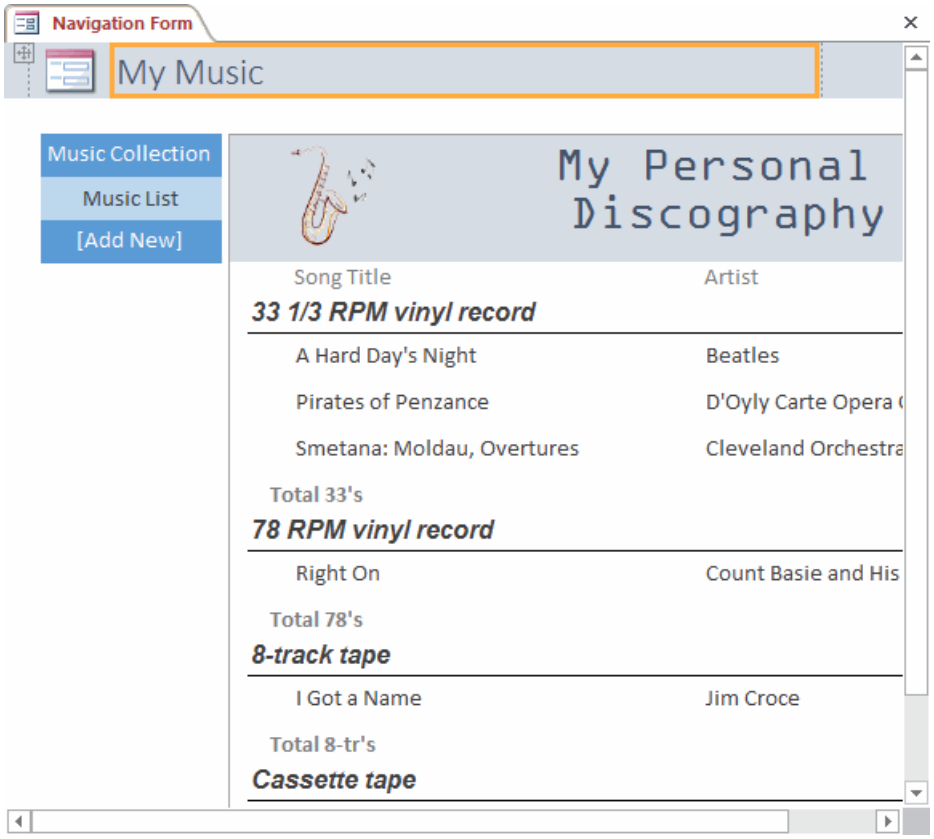


4. Staying in Layout mode, drag and drop a form or report from the **Navigation Pane** onto the **[Add New]** button. A navigation button is added and the report or form loads in the view area of the form.

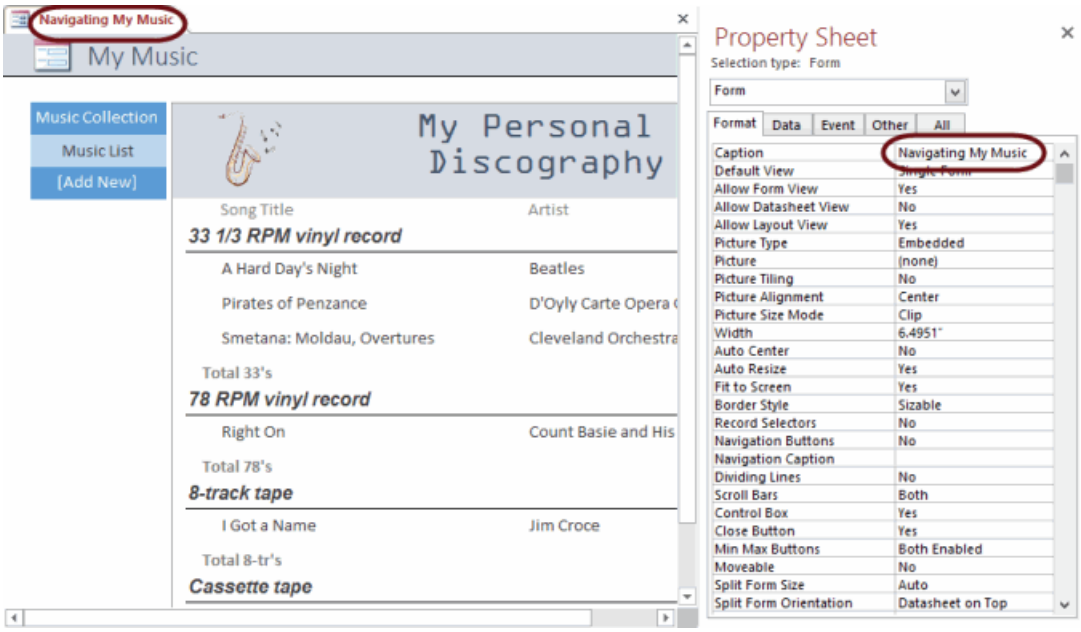


5. Repeat the last step for each form or report you want to access from the navigation form.

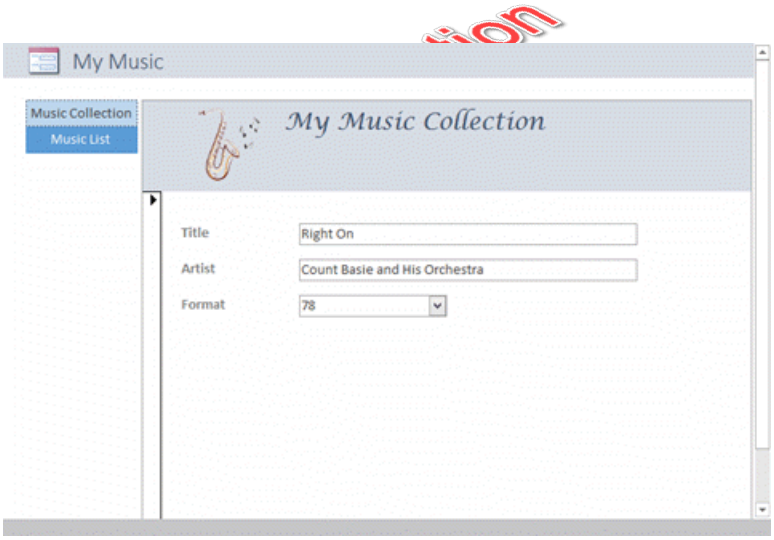
6. Change the caption at the top of the form by double-clicking in the text area, selecting the current text, and overwriting it.



7. Change the caption on the form tab by right-clicking in the heading area and selecting **Form Properties** from the shortcut menu. On the **Property Sheet** in the **Caption** field, type a new caption.



8. Preview the form in Form view. Notice how clicking the buttons changes the contents of the view area.

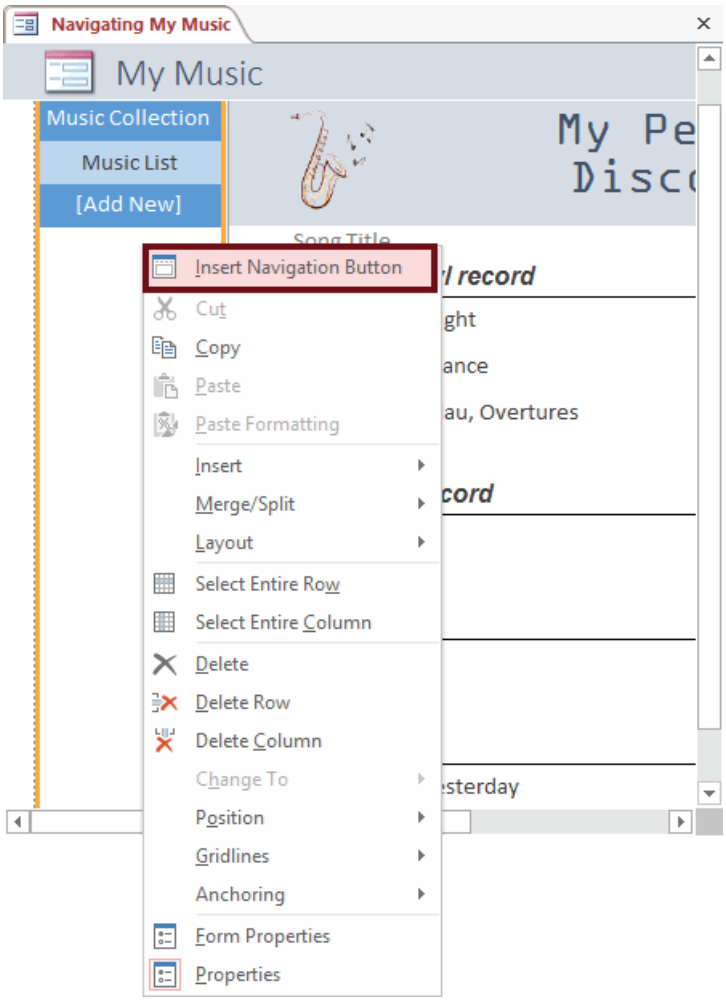


7.2. Running Macros from a Navigation Form

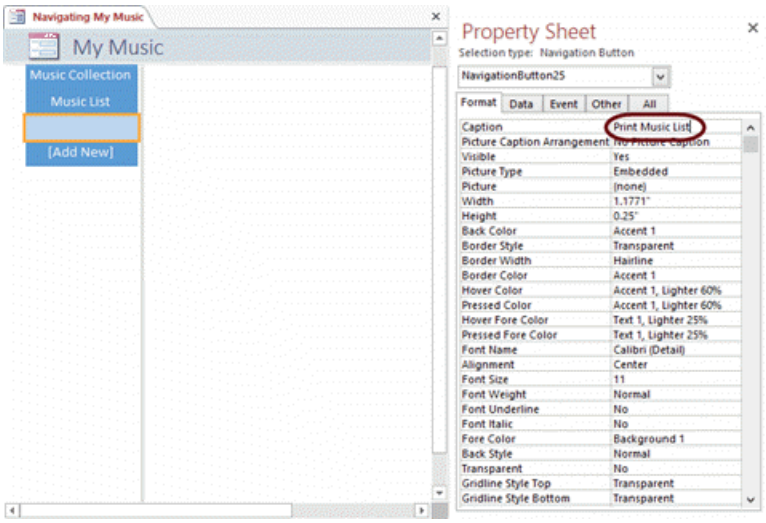
You're not limited to running forms and reports from the navigation form. You can use navigation buttons to run macros as well, thus opening the range of functionality to any process you can write a macro or module for.

To run a macro from a navigation button:

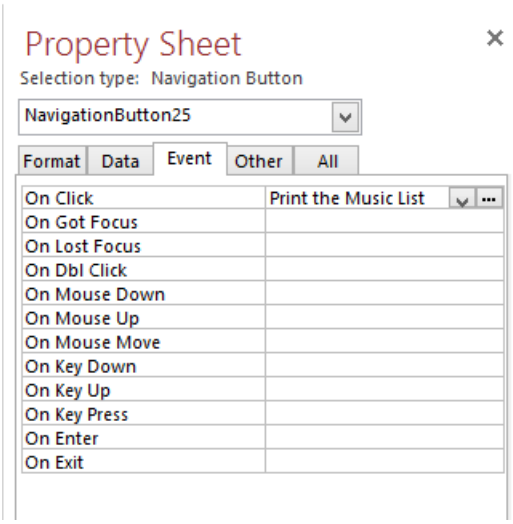
1. Open the navigation form in Layout view.
2. In the button area, right-click and select **Insert Navigation Button** from the shortcut menu. A new navigation button is added.



3. With the new navigation button selected, go to the **Property Sheet** and on the **Format** tab in the **Caption** field, type a label for the button.



4. Select the **Event** tab.
5. In the **On Click** field, select the macro you want to run from the drop-down list or click ... to build a macro.



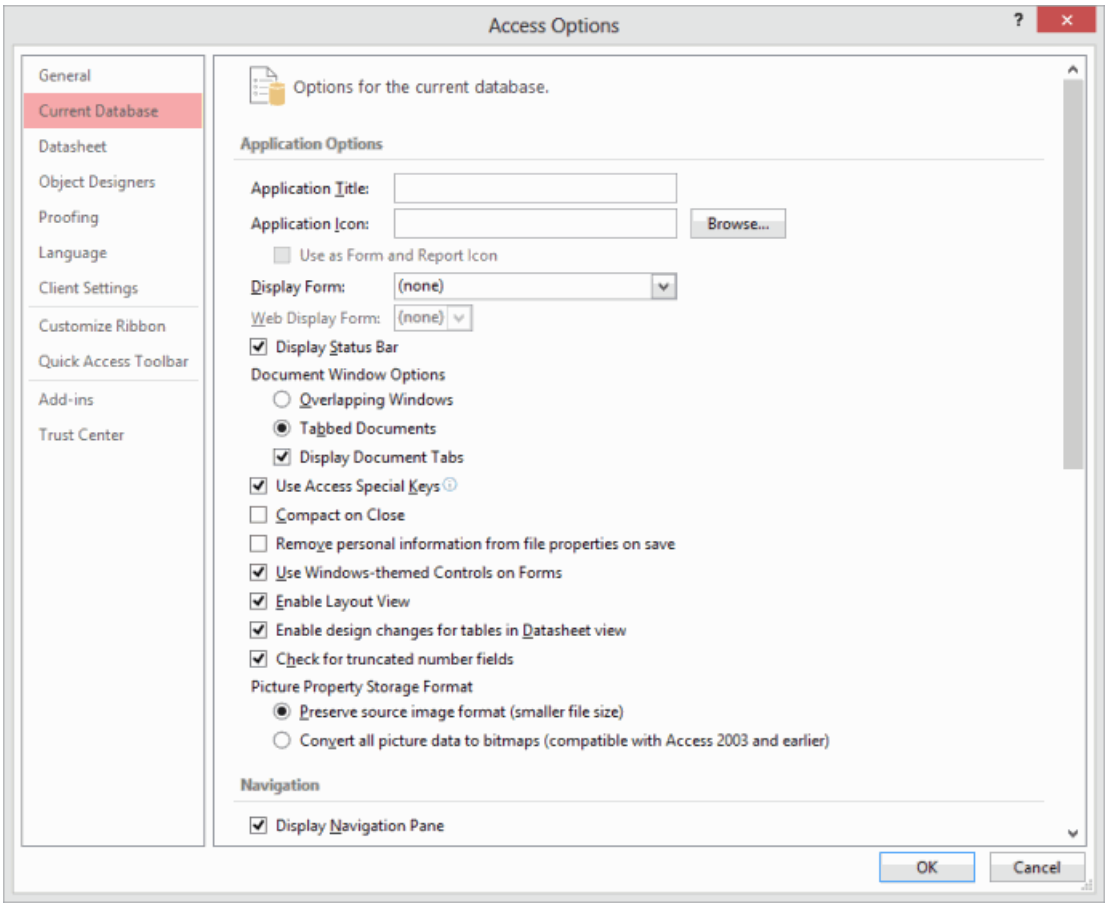
6. Preview the navigation form in Form view and click the new button to test the macro.

7.3. Setting the Navigation Form as the Default Form

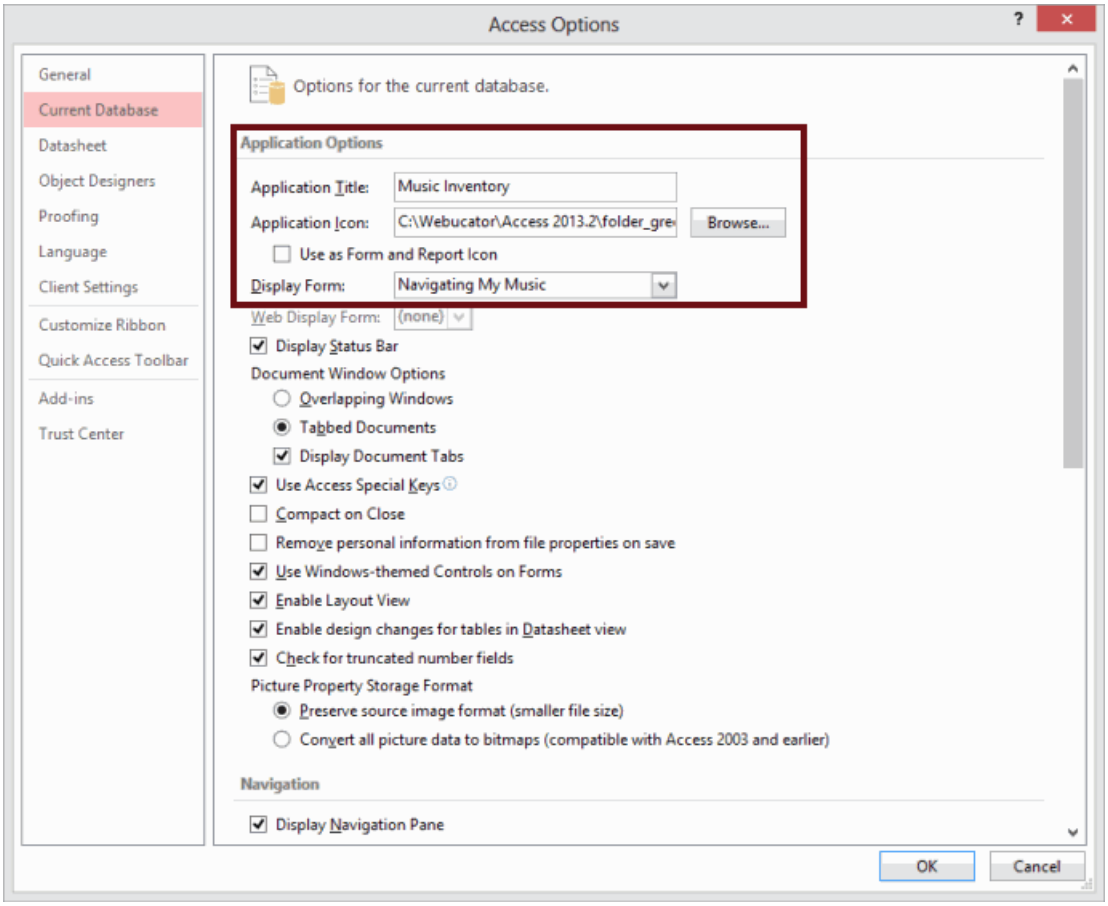
You can set the navigation form as the default form that displays when a user opens your application. In addition, we can give our application an official name and an icon to display for forms and reports.

To do so:

1. Open the database.
2. Select the **File** tab.
3. Click **Options**. The **Access Options** dialog box opens.
4. Select the **Current Database** tab.



5. In the **Application Title** field, type the name of your application.
6. In the **Application Icon** field, click **Browse** and navigate to and select the icon file to use.
7. If you want to use the icon as both the form and report icon, mark the **Use as Form and Report Icon** check box.
8. From the **Display Form** drop-down list, select the navigation form to use as the default display form.



9. Click **OK**. You are notified that you must close and reopen the database for the change to take effect.
10. Click **OK**.

Exercise 9: Creating a Navigation Form

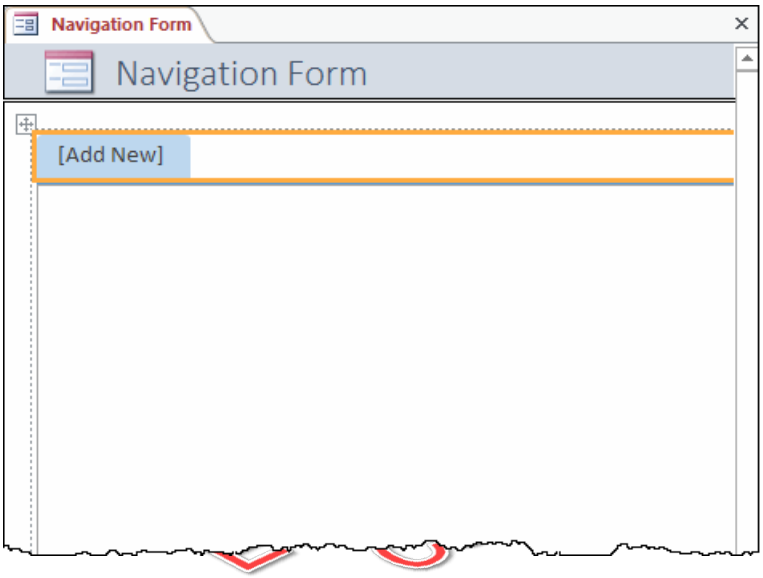
15 to 35 minutes

In this exercise, you will create a navigation form for the Bank Register database using the database in the `ClassFiles\CompletingDesktopApp\Exercises` folder. Include buttons to launch the Add Transactions macro, the Edit Transactions macro, the Mark Cleared Transactions macro, the Uncleared Bank Transactions report, and the Close Database macro. Make the navigation form the default form for your application and assign the icon "Piggy Bank.ico" to the application.

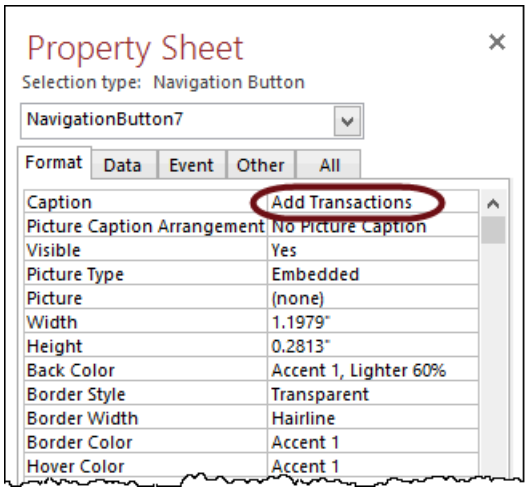
Solution

To create the navigation form:

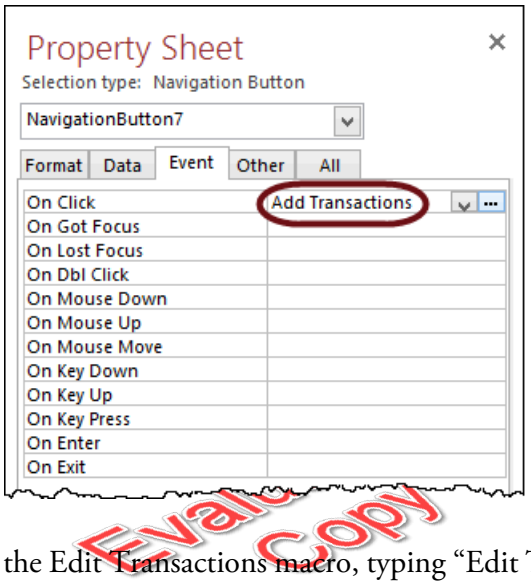
1. Open the database.
2. On the **Create** tab in the **Forms** group, click **Navigation** and select a layout for the navigation form from the drop-down list.



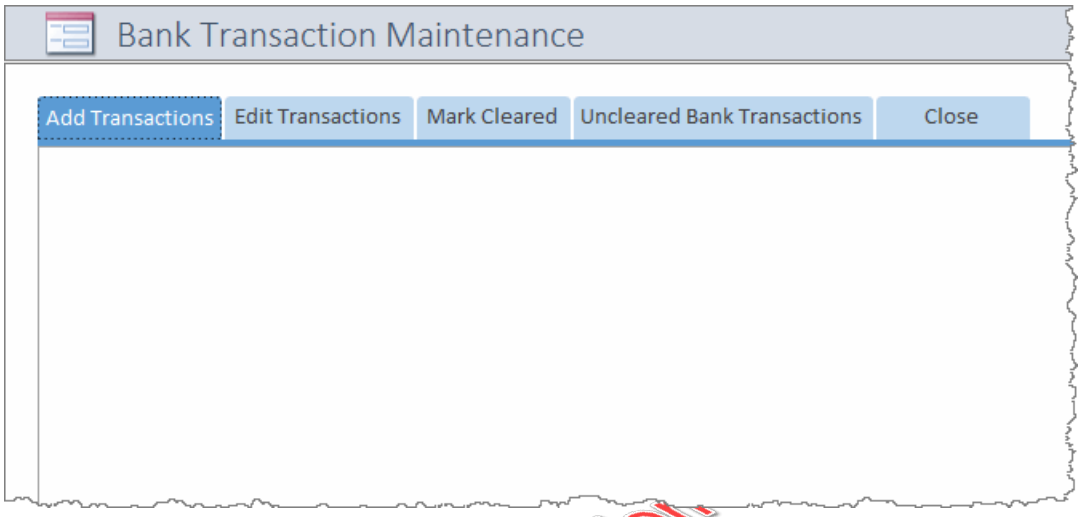
3. Right-click in the button area and select **Insert Navigation Button** from the shortcut menu.
4. Open the **Property Sheet** for the new button.
5. On the **Format** tab in the **Caption** field, type "Add Transactions".



6. On the **Event** tab in the **On Click** field, select "Add Transactions" from the drop-down list.



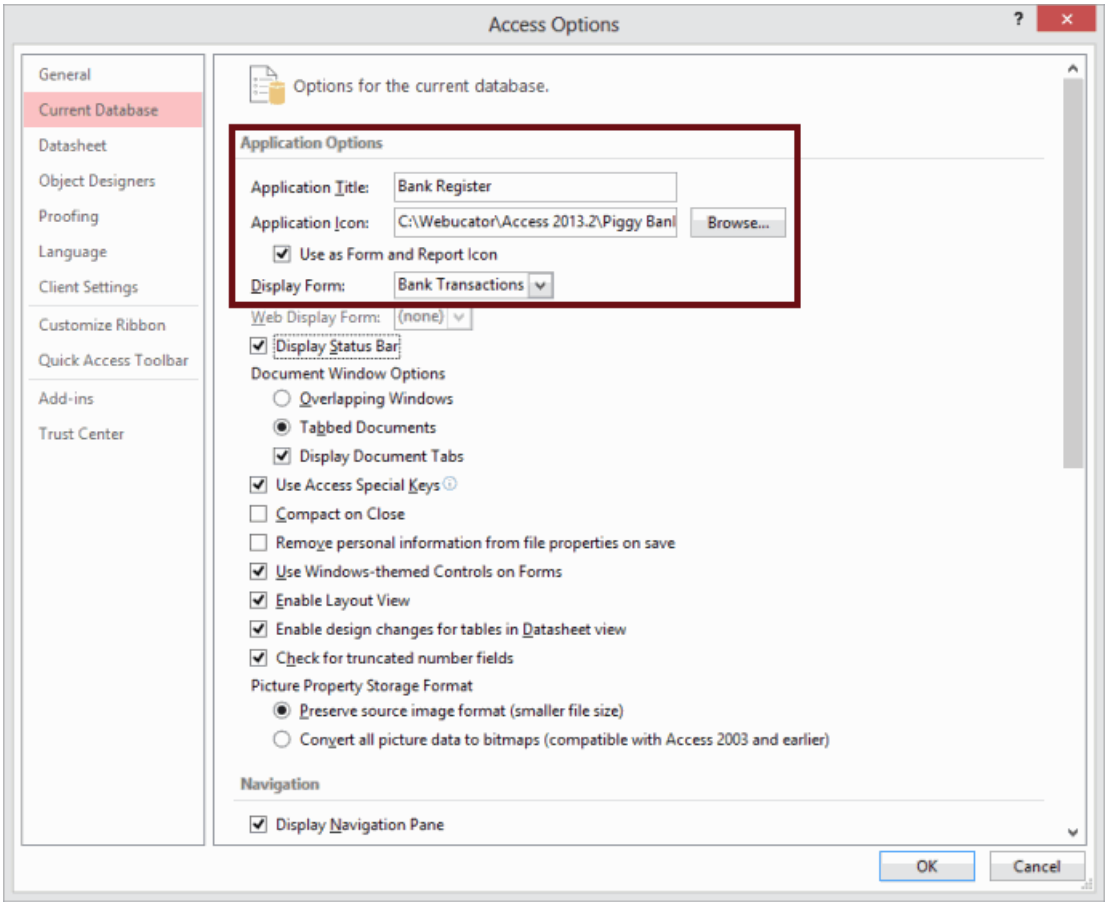
7. Repeat steps 3-6 for the Edit Transactions macro, typing "Edit Transactions" in the **Caption** field and selecting "Edit Transactions" from the **On Click** drop-down list.
8. Repeat steps 3-6 for the Mark Cleared Transactions macro, typing "Mark Cleared" in the **Caption** field and selecting "Mark Cleared Transactions" from the **On Click** drop-down list.
9. Drag and drop the Uncleared Bank Transactions report from the **Navigation Pane** to the **[Add New]** button.
10. Repeat steps 3-6 for the Close Database macro, typing "Close" in the **Caption** field and selecting "Close Database" from the **On Click** drop-down list.
11. Double-click in the heading and replace "Navigation Form" with "Bank Transaction Maintenance".
12. Preview the navigation form in Form view.



13. Close the navigation form. You are prompted for a name.
14. Type a name for the form (we'll use "Bank Transactions") and click **OK**.

To set the form as the default and assign an icon to it:

1. With the database open, select the **File** tab.
2. Click **Options**.
3. Select the **Current Database** tab.
4. In the **Application Title** field, type "Bank Register".
5. In the **Application Icon** field, click **Browse** and navigate to and select the "Piggy Bank.ico" file.
6. Mark the **Use as Form and Report Icon** check box.
7. From the **Display Form** drop-down list, select the navigation form name.



8. Click **OK**. Access advises you that you'll need to close and reopen the application to see the changes.
9. Click **OK**.

7.4. Splitting the Database

If you will share your database over a network, you will want to consider *splitting* the database. Splitting the database means separating the database objects such as forms, reports, and queries from the data tables. The database objects comprise the *front-end database* and the data tables comprise the *back-end database*. You distribute the front-end to your users so that they can interact with the database. The back-end database is stored at a location on your network. End users access the data through linked tables.

Splitting the database improves performance and lessens the chance of data corruption. It also allows individual users to add their own queries, forms, and reports without affecting other users.

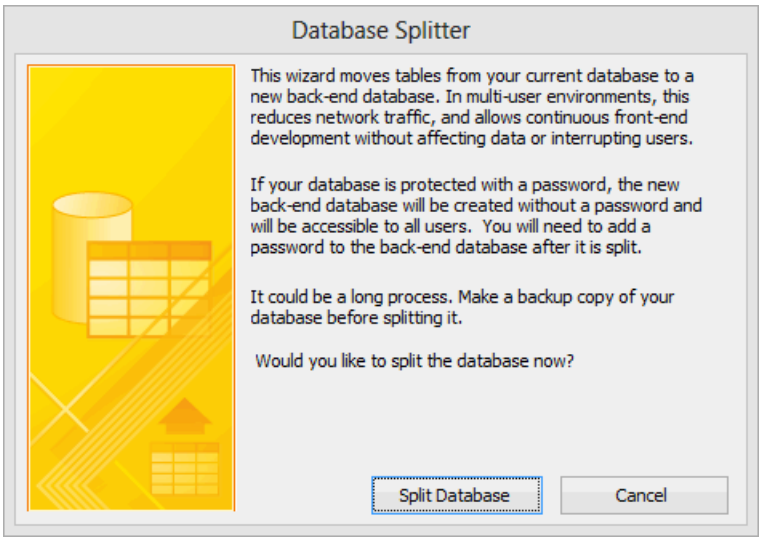
Users sharing a split database must all have versions of Access that are compatible with the back-end database. So, for example, if the back-end database is .accdb format, users with Access 2003 or earlier will not be able to use the database.

Before You Split

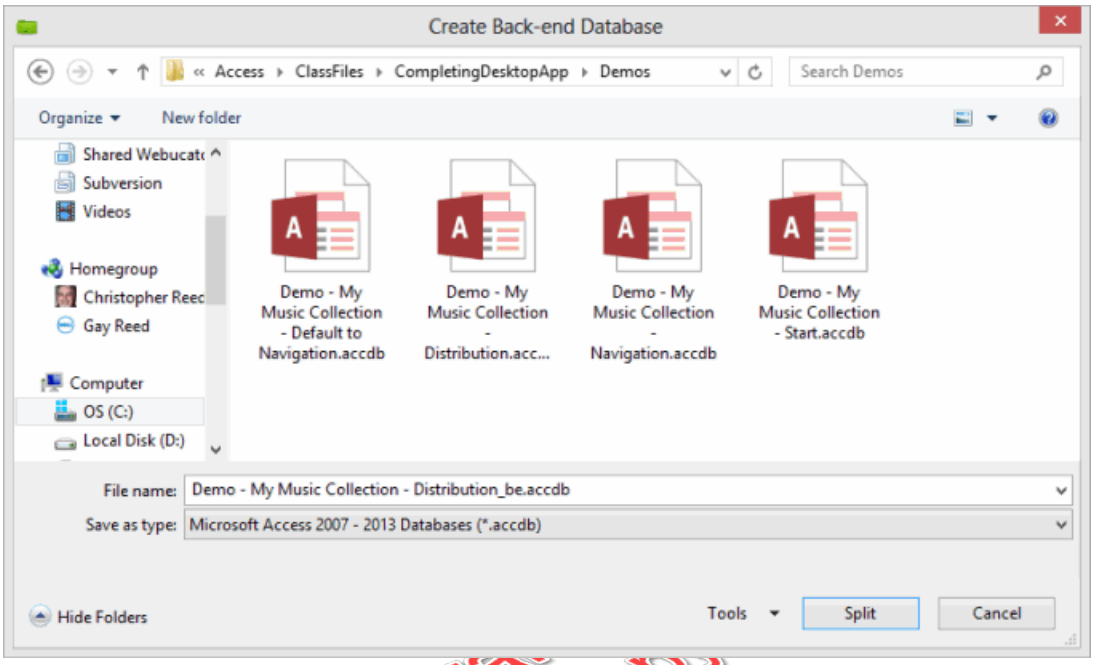
Before you split a database, always create a backup copy so that if you later have regrets you can restore the database from the copy.

To split a database:

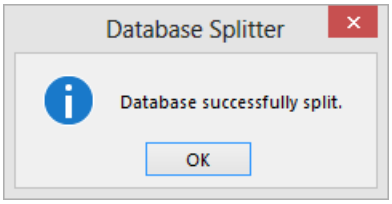
1. Make a copy of the database on your local hard drive.
2. Open the database from your local drive.
3. Close any open database objects.
4. On the **Database Tools** tab in the **Move Data** group, click **Access Database**. The **Database Splitter** wizard starts.



5. Click **Split Database**. You are prompted for a saving location and name for the back-end database.

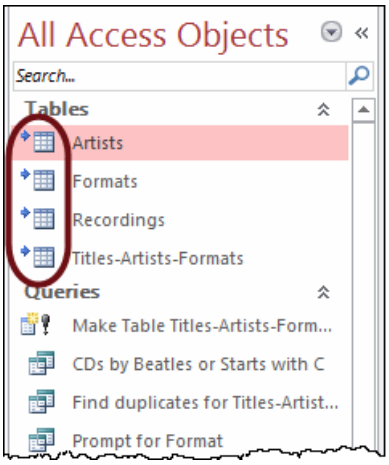


6. In the **Create Back-end Database** dialog box, navigate to and select the location where you want to save the back-end database. This needs to be a location that every user has access to, typically on a network.
7. Click **Split**. When the process finishes, Access notifies you that the database has been split.



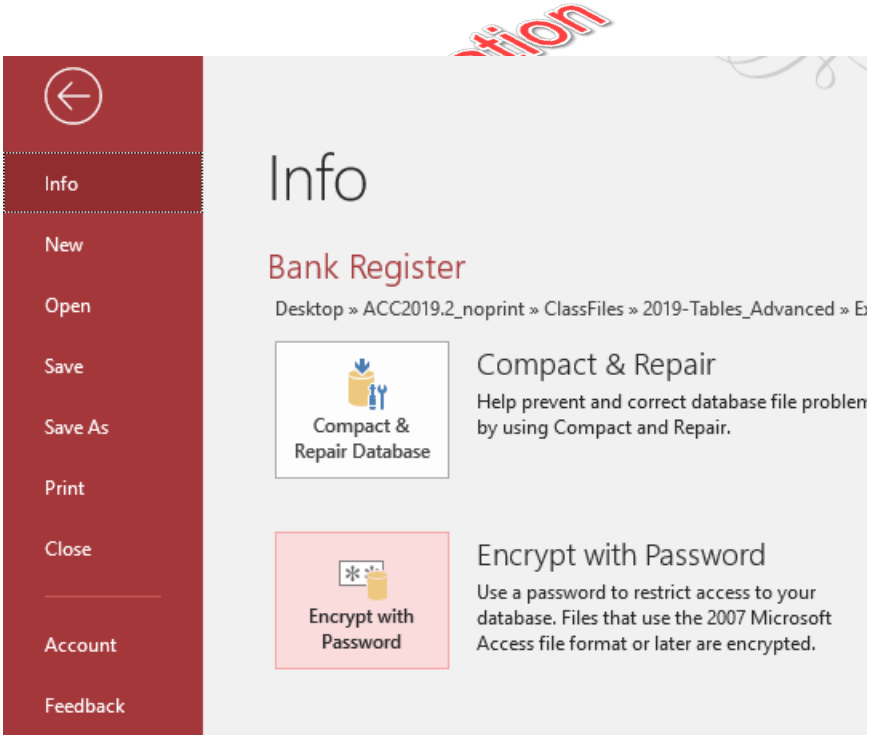
8. Click **OK**.

The database that remains open is the front-end database. Notice in the **Navigation Pane** that the table icons have changed to indicate that the tables are linked tables.

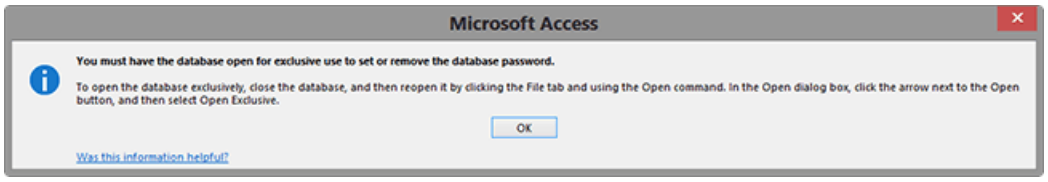


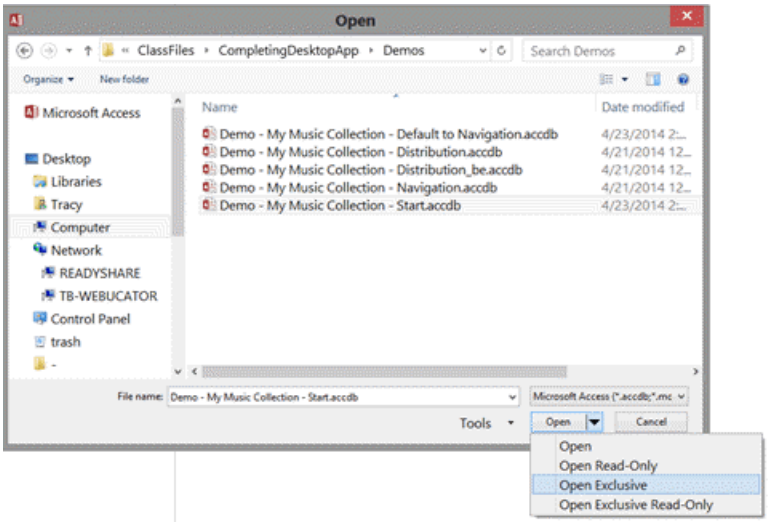
❖ 7.4.1. Encrypt with a Password

Many times you may want to password protect your database in order to protect it form unwanted changes.



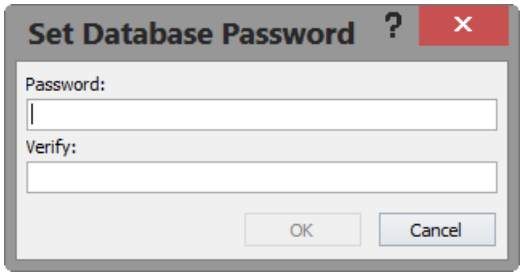
You may get an error if you do not have the database open in exclusive mode.





File > Open > Open Exclusive

Enter the password, you will be prompted to reenter the password. The next time you open the database, the password will be required.



7.5. Distributing the Front-End Database

Before Distributing

Before distributing the front-end database, you may want to hide the **Navigation Pane**. To do so, open the **Access Options** dialog box, select the **Current Database** tab, clear the **Display Navigation Pane** check box, and click **OK**.

To distribute the front-end database, do one of the following:

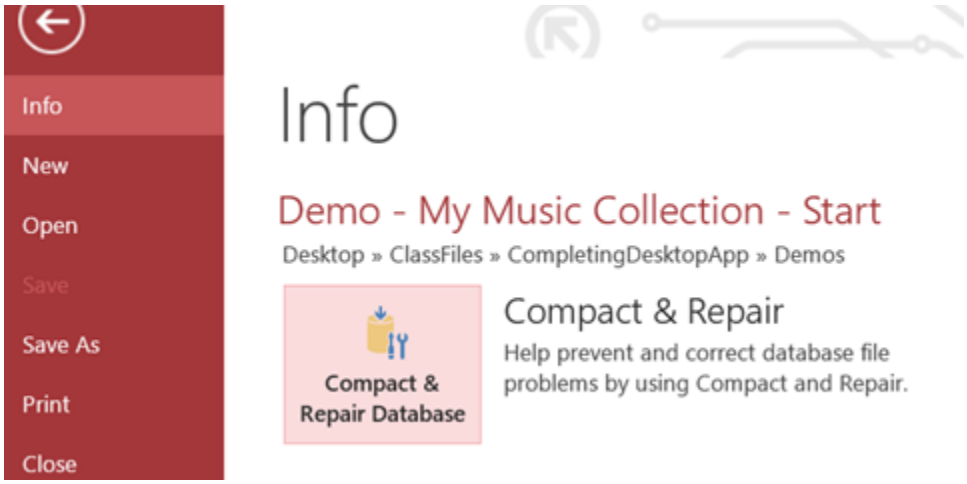
- Attach the front-end database to an email and send it to your users.
- Save the front-end database to a network location and notify your users where to find it.
- Save the front-end database to removable media (CD-ROM or USB thumb drive) and distribute to your users.

7.6. Database Maintenance

As a database is used, it may benefit from general maintenance.

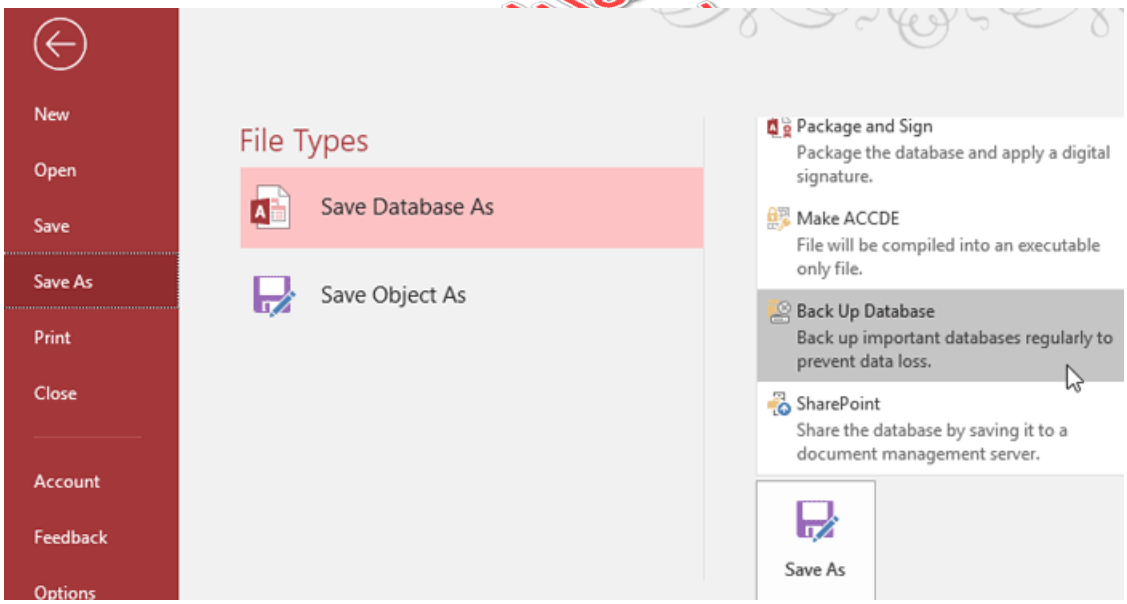
❖ 7.6.1. Compact and Repair

When you share your files with others, or alter it's structure, it may become corrupt. Often a Compact and Repair can fix the issues by recompiling the database and removing unused space. If objects and data are unable to be fixed, a log of sorts will be kept in a table for your review.



❖ 7.6.2. Backup a database

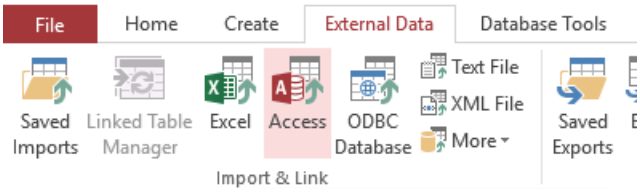
Backing up your data is very important as files can become so corrupt that they cannot be repaired. Having a recent back up is helpful for restoration. If you need your backup file, simply open it and work with any data you need. Try to set a schedule and backup often. By default, the date will be added at the end of your backup file name.



❖ 7.6.3. Recover a database

When and if a database has an issue, you should have a recent backup for restoration. If you need your entire database, simply open the backup file and work with any data you need. You may also just need

a few objects such as a table. If that is the case, use **External Data > Import & Link > Access** in the original database to import in any missing objects.



❖ 7.6.4. Maintain Backward Compatibility

In order to maintain backward compatibility with other users, you may save your database as 2000 or 2002-2003.

Be warned that features special to .accdb will not be available in the .mdb file type. As well a few features form the .mdb file type are not available in the newer .accdb file type.

Conclusion

In this lesson, you learned:

- To create navigation forms.
- To split an Access database into front-end and back-end databases.
- How to distribute an Access database front end to your users.