Content

Lesson 01: Introduction

Microsoft Office Access 2013

These Lessons will show you how to build a database from scratch, including how to:

- plan
- set up tables and fields
- create and use forms to enhance data integrity
- design
- run meaningful queries
- Create useful and attractive reports.

Lesson 02: What is a Database?

A database allows you to store information related to a specific topic in an organized way. In addition to storing data, you can also sort, extract, and summarize information related to the data. One of the software programs that allow you to do.

This is Microsoft Office Access 2013, which is a database creation and management program.

Exploring Databases

- ➢ Creating Database
- ➢ Open Access 2013
- ➢ Click Blank Desktop Database

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- Give name: Test
- Ok
- Click Create
- Note: the location you're saved by default is document

Environmental of Database (MS-Access Window)

- Ribbon
- Tabs (Home, Create, External Data, Database Tools, Field and Tables)
- Quick Access Toolbar
- Backstage View
- Navigation Pane
- Shutter Bar Button (to Close or Open Navigation Pane)
- Title bar
- Status bar
- View Option (Datasheet View and Design View)

Lesson 03: Objects

A database is made up of several components, or objects. These objects include:

- tables
- queries
- forms
- reports

Tables

A table is the database object that contains the basic information you wish to store. A blue and white icon represents the table in the Navigation Pane.

Table contains:

- ➢ Record (Row)
- ➢ Field (Column)

Queries

Another database object is called a query. A query allows you to retrieve information from one or more tables based on a set of search conditions you define using the table fields.

Forms

A third database object is the form. Forms are an Access tool that users can create to make data entry in database tables easier.

Entering data directly into a table can be difficult if there is a lot of information to enter. Like an Excel spreadsheet, an Access table is essentially a screen filled with blank rows where a user enters records. Forms, however, provide users with an

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easy-to-read interface where they can enter table data. Forms are especially useful for Access users that aren't comfortable working with databases.

Reports

The final database object is the report. A report is an effective way to analyze and present data using a specific layout. The text can be formatted in an Access report, just like it can be in Word documents.

Lesson 04: Thinking about Database Design The

first step in creating a database is to think about:

- ➢ Why you need it?
- ➢ What is its purpose?
- ➢ What kinds of information will it store?
- ➢ How will I have to break that information down?

Once you know that, you can begin designing your own database

Designing a Database

The Sahalsoftware Bookstore

The best way to learn about designing a database is to jump right into the process. Let's pretend we work for the Sahalsoftware bookstore and we need to build a database for the store to use. Let's think about what we might need the database to
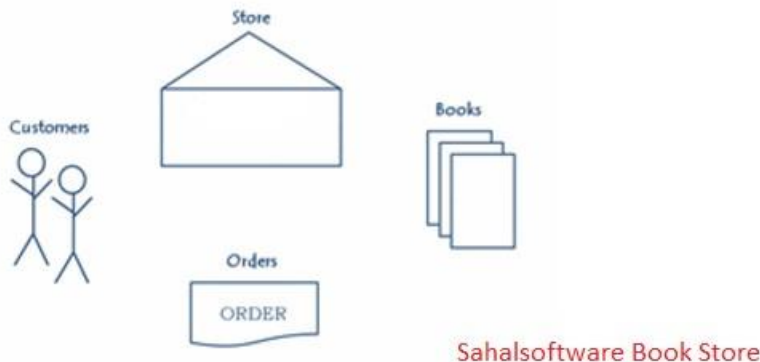
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do for us. The following diagram shows that we have customers, and we sell books via orders both in the store.

Sahalsoftware Book Store

The store needs a way to keep track of these things.

Determine the Purpose of the Database

The first step of designing a database is to determine the purpose of the database. What do we need it to do? At Sahalsoftware, our customers will place orders for books. we will want our database to track the books we sell, the customers we sell them to, and the date of each of the orders.

The database will also be able to tell us where our customers live when we need to send those books. Additionally, we can use it to track our sales or to make a bestseller list to post in the store.

Lesson 05: Plan Database Tables

Once you have established the purpose, you can begin brainstorming about how to break the information up into the tables that your database will need to store the data. Recall that a table is a collection of records and each record is broken up into the smallest pieces of needed information, called fields. Since we are planning a database to track our customers, the books we have, and the orders our

customers place, we will need a table for each one of these. **Sahalsoftware Tables**

- ➢ Customers
- ➢ Orders
- ➢ Books

Setting up Tables and Fields Creating a Table

First Create a Database Called Sahalsoftware

Click Save and give **Books**

Rename Table

- ➢ In the Navigation Pane select your Table
- ➢ Right-click
- ➢ Select Rename

Creating New Table

- ➢ Click Create Tab
- ➢ Click Table
- ➢ Save

Delete Table

- ➢ In the Navigation Pane select your Table
- ➢ Right-click
- ➢ Select Delete

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Finally, Create Sahalsoftware Tables

- ➢ Customers
- ➢ Orders
- ➢ Books

Lesson 06: Switching Views

To switch views, select the Views command group from either the Home tab or View Options.

Access 2013 lets you control how data can be entered in each table field within your database. This is done using Data Type. The default Data Type is **short text** for every field after the ID field, which was set to autonumber. You can change the Data Type setting:

- ➢ AutoNumber,
- ➢ Short Text
- ➢ Number
- ➢ Date/Time
- ➢ Yes/No
- ➢ etc

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Lesson 07: Designing Tables and Fields

Table Name: Customers

Fields	Data Type
CustomerID	Auto number
FirstName	Short Text
LastName	Short Text
Street	Short Text
City	Short Text
State	Short Text
Zip Code	Number
Email	Short Text

Table Name: Books

Fields	Data Type
BookID	Auto number
AuthorFirst	Short Text
AuthorLast	Short Text
Price	Currency
Category	Short Text

Table Name: Orders

Fields	Data Type
OrderID	Auto number
CustomerID	Number
BookID	Number
Date	Date/Time

Data Validation

Data Validation is a very important database concept. It is the process by which Access tests the data that is being entered into the database, to make sure it is in an acceptable, or valid, format. Imagine that one of your database users has entered an order date of **January 4, 2013** in the month/date/year format, as **01/04/2013**. Another user has entered an order placed on that same date in the day/month/year format, as **04/01/2013**. Now, if the database is tracking all sales for the month of January 2013, it may not show both orders as placed in January, even though both were placed on the same date. Access 2013 allows you to set **field properties** and **data validation rules**, to force the person entering data to follow a specific format.

Data Types and Validation Rules

Data Validation begins when data types are set during the process of building tables and fields. For example, if a field data type had been set to **Currency** and a text value is entered in that table field during data entry, Access will not accept an invalid format and will display a validation error.

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Setting Data Validation Rules

In Design View, highlight the field that requires a validation rule.

In the Field Properties section at the bottom half of the window, set your validation rule using the Expression Builder. The expression builder offers common syntax to set up a data validation rule.

In the design view (Book) select Category Field, then select Validation Rule Go

datasheet view and then **save**.

General Lookup	
Field Size	255
Format	
Input Mask	
Caption	
Default Value	
Validation Rule	"Study Skills"

Lesson 08: Validation Text

Validation Text is a specialized error message that you can set to have Access tell the person entering data the specific way you would like them to enter it. To set the Validation Text, enter the error message exactly as you want it to appear to your user in the row directly beneath the Validation Rule row in the Field Properties section of Design View. For the validation rule that we set for Category, you would set the validation text like this:

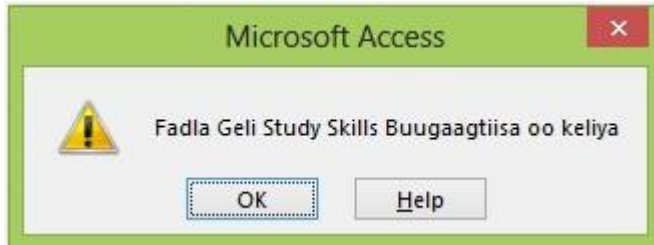| General Lookup	
Field Size	255
Format	
Input Mask	
Caption	
Default Value	
Validation Rule	"Study Skills"
Validation Text	Fadla Geli Study Skills Buugaagtiisa oo keliya

Microsoft Access

⚠ Fadla Geli Study Skills Buugaagtiisa oo keliya

OK | Help

Lesson 09: Using Field Properties to Ensure Data Integrity

Another way to ensure data integrity is by setting field properties such as Field Size, Format, and Required.

Field Size can be set to hold a specific number of characters, up to as many as 255 for text fields. If you were using a text field to hold the two letter state postal abbreviation, the field size could be set to 2 to ensure that no one enters a full state name into this field.

General	Lookup
Field Size	2
Format	
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Allow Zero Length	Yes
Indexed	No
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Text Align	General

The Format field property can be set to display text or numbers in a standardized way. For example, text can be set to show as all uppercase and numbers can be set to show scientific numbers, percentages, or decimals.

Date	Date/Time	

Field Properties

General | Lookup

Format	Short Date
Input Mask	
Caption	

Set the Required property to Yes if you want the person entering data to be required to enter something in the field. Choose No if the person entering data is allowed to leave the field blank.

Microsoft Access ✕

⚠ You must enter a value in the 'Books.Category' field.

OK   Help

These are just some ways Access helps you ensure that data being entered into your database is valid.

Lesson 10: Building Table Relationships

Table Relationships Diagram in Access

By now, you have set up the tables you need for your database, and created fields for those different tables. Relationships provide Access 2013 with the means to bring that information together for you when you need it. This lesson explains how to establish relationships between the tables in an Access 2013 database. You will learn how to read and manipulate the relationship map. You will also learn about Primary and Foreign Keys, relationship types, and about referential integrity.

Relationships

- ➢ First, Create Customer table, Order table, Books and their Fields.
- ➢ Click Database Tools
- ➢ Click Relationships
- ➢ Select each table and Add button
- ➢ Then click Close **To join tables:**

- ➢ Drag CustomerID Primary key and Release to tblOrdersCustomerID
- ➢ Dialog box will appear, check Enforce Referential Integrity

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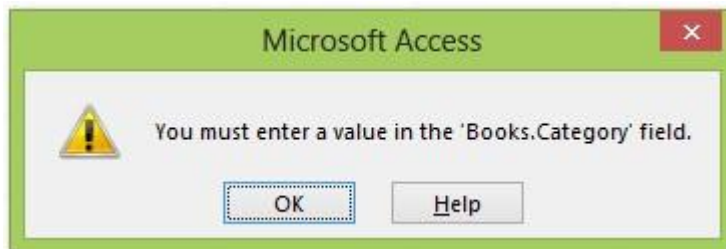Youtube:sahalsoftware.com - E-mail: support@sahalsoftware.com

➤ Then click create button
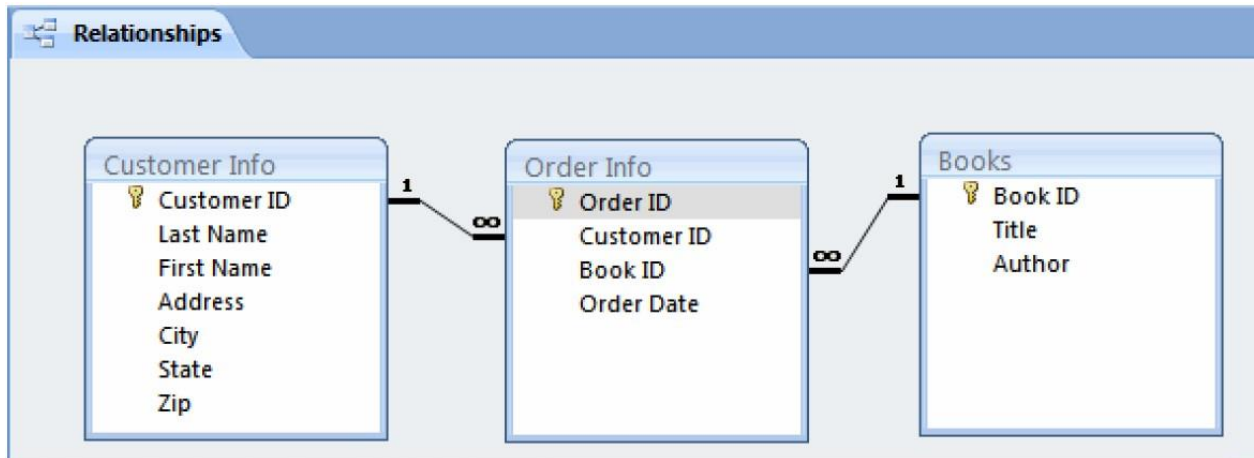➤ This relationship called one-to-many Relationship.
➤ Another Relationship between tblOrders and tblBooks
➤ To join tables, Drag BookID from tblOrders Primary key and Release to tblBooksBookID

Understanding the Relationship Map

The relationship map lists all of the tables that were selected to relate, and all of the fields that were set up for that table previously. Notice that the first field has a key icon next to it. This is the Primary Key for the table.

Primary and Foreign Keys

A Primary Key is the first field in each table of the database. You may recall that this field auto numbers by default, so that every record in the table has its own unique number to identify it. Access uses this number to quickly pull information together for you when you run queries or reports, which are covered later. In the example above, the primary key for the Customers table is Customer ID, the primary key for the Orders table is Order ID, and the primary key for the Books table is Book ID.

A Foreign Key is a field that is the Primary Field in its own table, but that shows up in another table. If you look closely at the Orders table, the fields Customer ID and Book ID appear there, as well as in their own respective tables. These fields are the primary key in their own tables, but in the Orders table, they are considered Foreign Keys.

Lesson 11: Understanding Types of Relationships

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Access 2013 allows for several different types of relationships. These include:

- ➢ One to One
- ➢ One to Many
- ➢ Many to Many

The relationship type you will come across most frequently, and the one created in our bookstore scenario, is the One to Many relationship. One to Many the One to Many relationship means that data for that field will show up a single time in one table, but many times in the related table. For example, let's look at one of the book titles in our bookstore. The Book ID for that book should appear only once in the Books table, because that table lists every title that we stock. But it will probably appear many times in the Orders table, because we hope that it gets ordered by many people many times.
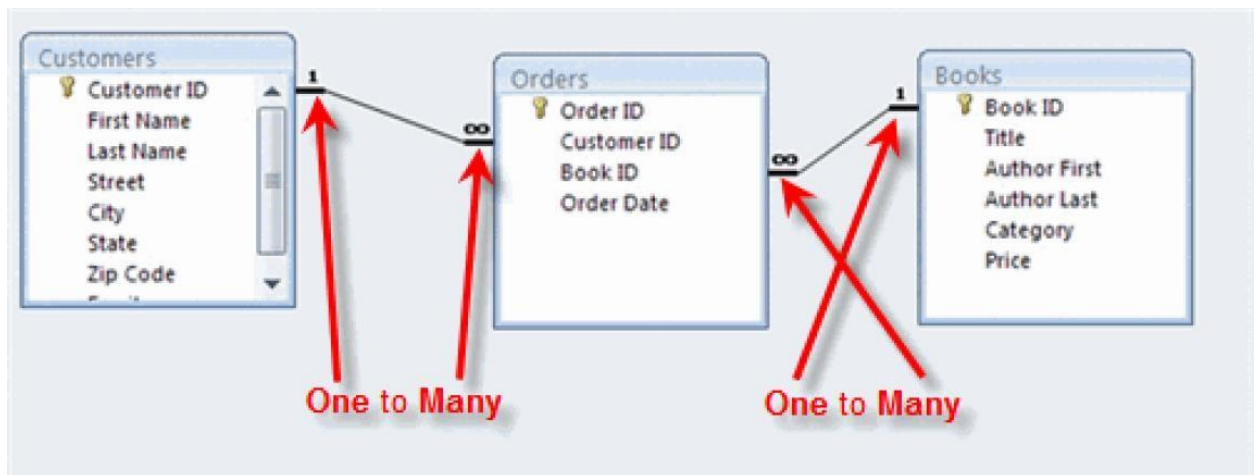
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Enforcing Referential Integrity

In the Edit Relationships dialog box, an option to Enforce Referential Integrity appears.

You should click Enforce Referential Integrity to make sure that we NEVER have an order for a book that doesn't appear in our Books table. Selecting this option tells Access to check for these things when someone is working with your data records.

Editing Existing Relationships

Access 2013 allows you to edit relationships that already exist. This is can be done using the Edit Relationships command on the Ribbon. However, a much simpler way is to simply double click on the link that appears in the relationship map. Either method brings up the Edit Relationships dialog box, where you can change your settings.

Lesson 12: Adding and Editing Data in Tables To

Add Records in the New Record Row:

➢ Click the record row with the asterisk that appears at the bottom of the table (empty row).
➢ Type the data into the appropriate fields.
➢ Hit Enter or the Tab key to move to the next field.

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Editing Records in Tables

Sometimes it is necessary to edit records in the database. Like with every other task in Access 2013, this can be done several different ways.

To Edit a Record Directly:

- ➢ Scroll through the records or use the Navigation Buttons in the navigation bar to find the record to edit.
- ➢ Click the cell that contains the information that must be edited. A pencil icon appears to indicate edit mode.
- ➢ Type the new information into the field.
- ➢ Click outside of the record row to apply the change

To Copy and Paste a Record:

- ➢ Select the record that you want to copy. Right click and select Copy.
- ➢ Select the new record row. Then right click and select Paste. The record information appears, with a new record ID number.

To Delete a Record:

Select the record that you want to delete. Then, right click and select Delete Record.

A dialog box appears, telling you the action cannot be undone and asking if you are sure you want to delete the record.

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Note: There may be other records that rely on the record you are trying to delete. DO NOT delete a record without knowing how it will impact the rest of your database.

When you delete a record, that record number is permanently deleted from the database table. If you delete the last record from a table, and then add a new record, your new record numbers will appear to be out of sequence.

Lesson 13: Test 2

GRAPHICAL USER INTERFACE (GUI)

Lesson 14: Forms

A third database object is the form. Forms are an Access tool that users can create to make data entry in database tables easier.

Entering data directly into a table can be difficult if there is a lot of information to enter. Like an Excel spreadsheet, an Access table is essentially a screen filled with blank rows where a user enters records. Forms, however, provide users with an easy-to-read interface where they can enter table data. Forms are especially useful for Access users that aren't comfortable working with databases.

Creating and Using Forms

Click Create tab, select Form wizard

- ➢ Select Books and all fields.
- ➢ Leave the default option
- ➢ Click next, and then Finish

Repeat these steps above and create Customers and Orders Form.

Populating a database is easy once you have a basic form in place. Record navigation works the same way for forms as it did for tables. The Navigation Bar is located in the bottom left of the object pane. The Navigation Buttons work the same way they did for the tables, also. The following picture shows the navigation buttons for a form.

To Add a Record using a Form

- ➢ To add a record to the database using a form:
- ➢ Navigate to a new record, either by using the New Record navigation button or the new command in the Records group on the Ribbon.
- ➢ Then, simply add the new data.
- ➢ Your data must be entered using an **acceptable format**. The acceptable formats were established when the **field properties were set**.
- ➢ Finally, you must save the record. by progressing to another record using the New (Blank) Record navigation button

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Lesson 15: Using Queries to Make Data Meaningful to You

The real power of an Access 2013 database is in the ability to pull data for quick analysis, which is what happens when you run a query. Queries allow you to retrieve information from one or more tables based on a set of search conditions you define. Access 2013 will display your results in their very own table that you can analyze and manipulate further. This lesson will explain how to plan a query using a three-question planning process. You will learn how to use the Query Design command to run the query, as well as how to modify the query to hide fields or other information in your query results. Finally, it will show you how to save the query for later use.

Queries retrieve information from one or more tables based on a set of search conditions that you set up and then combine that information in a way that is easy for you to analyze. If you have used an Advanced Filter in Access 2013, then you have already run a very basic query on only one table. If you want to pull data from more than one table, though, you will need to use either the Query Design command or the Query Wizard.

Before using the Access 2013 query tools, it is important to plan out the query using a logical process. Otherwise, you may not get the results you expect.

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Planning a Query

There are three questions you need to answer when you are planning a query:

- ➢ What do you want the results to look like? Identify every field or bit of information that you want included in the results.
- ➢ Where is the information stored in the database? List which tables (and/or queries) hold the information that you want to see.
- ➢ What conditions do you want the data to meet? This helps determine how to set the criteria so Access can search the records properly.

Planning: Which Customers Ordered Technology Books?

Let's think about this process for our bookstore database scenario. We have new technology series coming out soon, and we want to send coupons to customers that have ordered technology books from us in the past. A query can help us answer the question: which customers have ordered technology books from us already? Let's use the three-question process to plan this query.

What fields do we want to see in the results? We need a list of customer names and addresses in order to mail the coupons to our customers, so we'll need the results to show:

First Name
Last Name
Street
City
State
Zip Code

➢ In which tables is the information stored? Well, for this query we'll need:

➢ Customers table - to get the customers' names and addresses ➢ Books table - to know which books are technology books ➢ Orders table - to know which customers ordered those books.

➢ What is the condition we want the data to meet? We want Access to look for only the books where the book's category is technology.

Once you have planned out your query, you can build and run it using Access 2013's query tools.
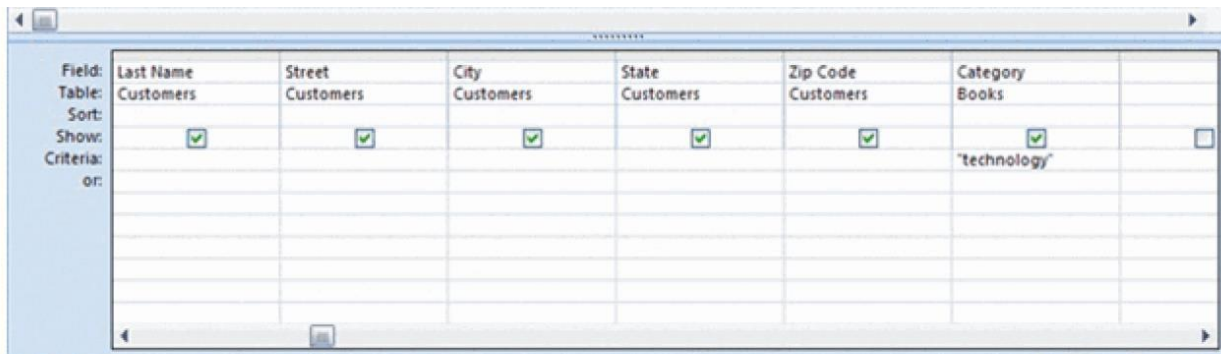
To Build a Query using the Query Design Command

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➢ To build and run a query using the Query Design command:
➢ Select the Query Design command from the Create tab on the Ribbon
➢ Use the Show Table dialog box to select which tables (and/or queries) to include in the query. Our plan called for all three tables
➢ Drag and drop the fields you want to see in your results to the bottom portion of the query design screen.

Field:	Last Name	Street	City	State	Zip Code	Category	
Table:	Customers	Customers	Customers	Customers	Customers	Books	
Sort:							
Show:	☑	☑	☑	☑	☑	☑	☐
Criteria:						"technology"	
or:							

Add Fields to Query Design Screen

Enter the condition in the Criteria row for the condition field. For our query, we typed Technology in the cell labeled Criteria for the Category field. As seen above, Access 2013 puts quotation marks around the term to show it is looking for exactly that term within the designated field.

Once the condition is set, click **Run**! in the Results group on the Ribbon.

Finally, view your results to determine if they match your desired results.

Hiding Fields or Other Information in the Results

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Sometimes the results of a query will include information that is seemingly unnecessary to you. Access 2013 allows you to easily hide these fields.

- ➢ To Hide Part of the Query Result
- ➢ To hide a field in your query results:
- ➢ In the query design window, de-select the Show option by clicking on it.

Now, when you run your results, that field will be hidden.

Saving the Query

Sometimes you will not need to save your results or your query design. Other times, you may want to keep it to run again later or to modify it slightly. Saving a query is very easy to do.

To Save a Query

- ➢ To save the query for later use:
- ➢ Right click on the query tab.
- ➢ When the Save As dialog box opens, give your query a meaningful name ➢ Click OK.

The query will now be listed in the object list on the left side of the Access window.

To Sort via the Query Design

- ➢ To add a Sort to any field in the query design:

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➢ Click on the Sort row for the field you wish to sort. A drop down list will appear:

Field:	Book ID
Table:	Orders
Total:	Count
Sort:	
Show:	Ascending
Criteria:	Descending
or:	(not sorted)

Lesson 16: Using Reports to Make Data Meaningful to Others

Now that you know how to use queries to analyze the data in a database, it is time to find out how to create a report that will make the data meaningful to someone else. This lesson will show you how to create a report using the Report command. It will also show you how to use grouping options and query limits to make the report easier to read, as well as identify several report formatting and layout options that can be set in Layout View. Finally, you will see how to use Print Preview and how to save the report.

As you know, queries make the data in a database meaningful to you. Sometimes, though, you need to share that data with someone else. A report is an effective way to present your data using an attractive layout. The text can be formatted in an Access report like it can be in Word documents. Microsoft Access 2013 offers tools that allow you to create and format a report. The Report Wizard walks you through the steps of creating a report. The Report command, however, is much easier to use, and all of the formatting options are still available to you in

To Create Report

- ➢ Create tab/report wizard
- ➢ Read steps

Lesson 17: Test 3

END ACCESS 2013