

INFORMATION AND COMMUNICATION TECHNOLOGY LAB

LAB MANUAL



DEPARTMENT OF COMPUTER SCIENCE

THE ISLAMIA UNIVERSITY, bwp, PAKISTAN



Lab : Exploring Advance Features of MS Access – Queries and Forms

Objective(s):

To learn the concept of Queries in order to extract information
To learn how to generate Reports

Introduction



The real power of an Access 2007 database lies 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 2007 will display your results in their 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.

Using queries

Queries retrieve information from one or more tables based on a set of search conditions 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 2007, 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 2007 query tools, it is important to plan out the query using a logical process. Otherwise, you may not get the results you expect.

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 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.

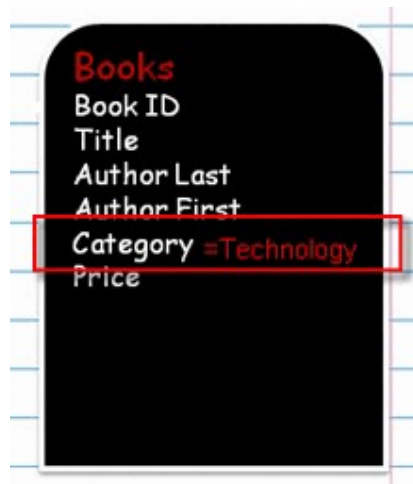
Planning: Which customers ordered technology books?

Let's think about this process for our bookstore database scenario. We have a new technology series coming out soon, and we want to send coupons to customers who 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?** For this query, we'll need:
 - Customers table—to get 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.



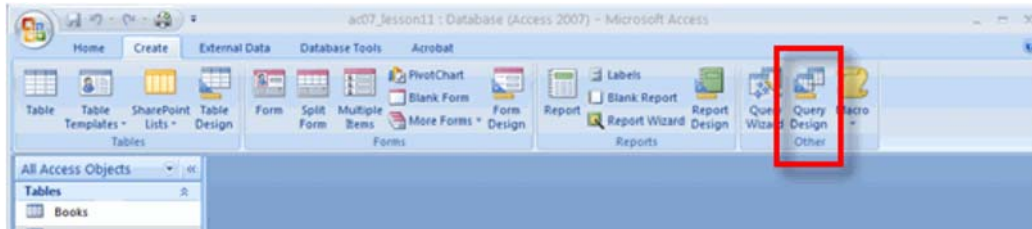
Using the Query Design command

Once you have planned out your query, you can build and run it using Access 2007's query tools.

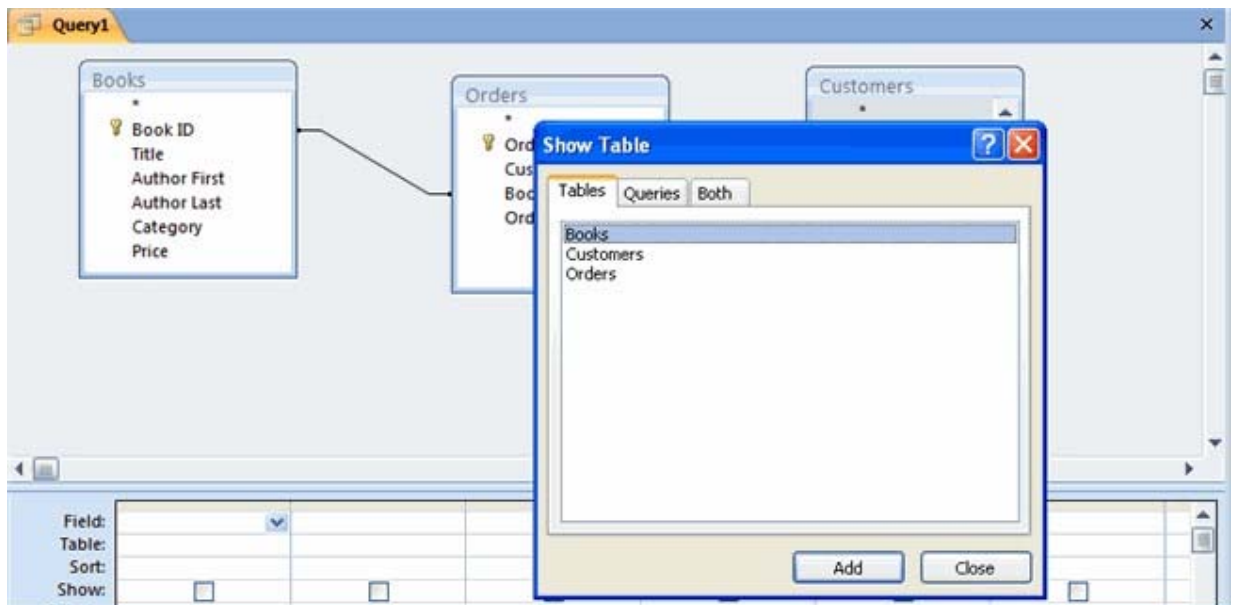
To build a query using the Query Design command

To build and run a query using the **Query Design** command:

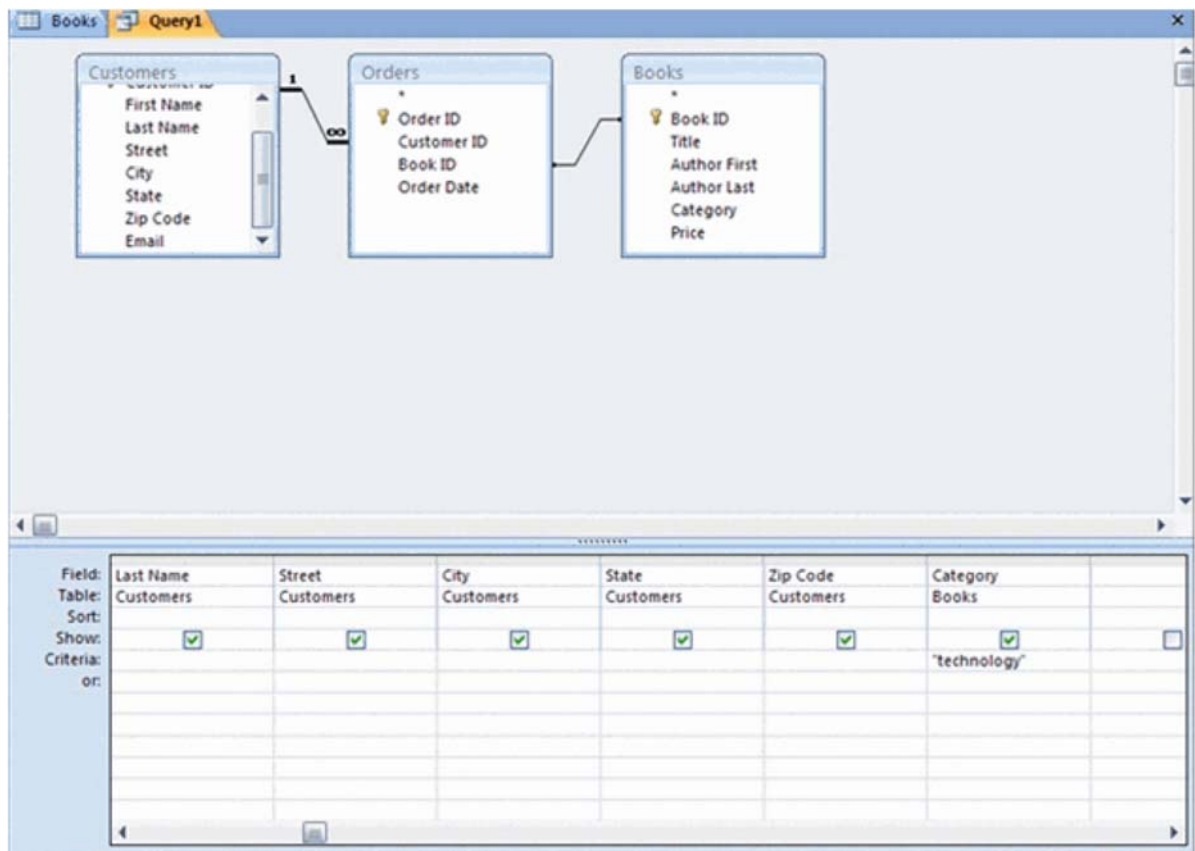
- Select the **Query Design** command from the **Create** tab on the Ribbon.



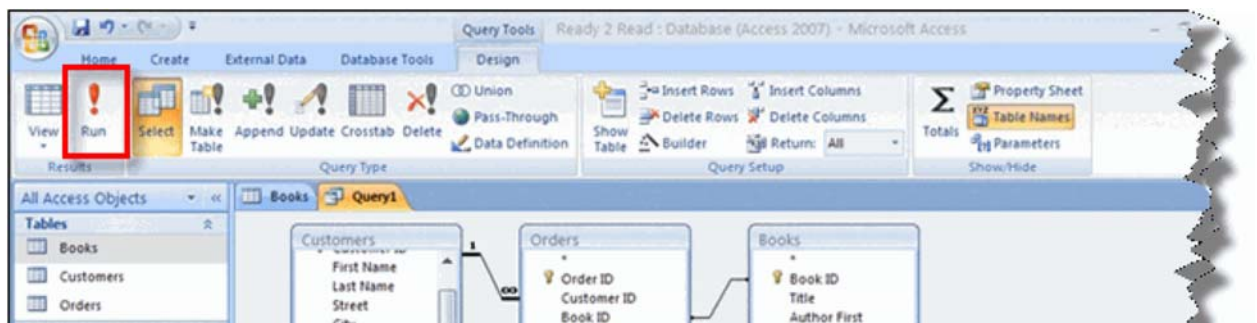
- Use the **Show Table** dialog box to select which tables (and/or queries) to include in the query. Our plan called for all three tables.



- Drag and drop the fields you want to see in your results to the bottom portion of the query design screen.



- 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 2007 puts quotation marks around the term to show that 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.

First Name	Last Name	Street	City	State	Zip Code	Category
Jimmy	Smith	123 Hill Top Dr.	Raleigh	NC	21110	Technology
Alex	Hinton	1011 Hodge Ln.	Durham	NC	21113	Technology
Cody	Hayes	65 North St.	Richmond	VA	21119	Technology
Sarah	Allen	12 Jupe Dr.	Phoenix	AZ	21114	Technology
Hillary	Clayton	2516 Newman Dr.	Garner	NC	21108	Technology
Cynthia	Love	7825 Venice Ct.	Topeka	KS	21117	Technology
Alex	Hinton	1011 Hodge Ln.	Durham	NC	21113	Technology
Sarah	Allen	12 Jupe Dr.	Phoenix	AZ	21114	Technology
Alleigh	Gibson	5 West St.	Smithfield	NC	21110	Technology

Hiding fields or other information in the results

Sometimes the results of a query will include information that is seemingly unnecessary to you. Access 2007 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, deselect the **Show** option by clicking on it.

Field:	Last Name	Street	City	State	Zip Code	Category
Table:	Customers	Customers	Customers	Customers	Customers	Books
Sort:						
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:						"technology"
or:						

- When you run your results, that field will be hidden, as seen below.

First Name	Last Name	Street	City	State	Zip Code
Jimmy	Smith	123 Hill Top Dr.	Raleigh	NC	21110
Alex	Hinton	1011 Hodge Ln.	Durham	NC	21113
Cody	Hayes	65 North St.	Richmond	VA	21119
Sarah	Allen	12 Jupe Dr.	Phoenix	AZ	21114
Hillary	Clayton	2516 Newman Dr.	Garner	NC	21108
Cynthia	Love	7825 Venice Ct.	Topeka	KS	21117
Alex	Hinton	1011 Hodge Ln.	Durham	NC	21113
Sarah	Allen	12 Jupe Dr.	Phoenix	AZ	21114
Alleigh	Gibson	5 West St.	Smithfield	NC	21110

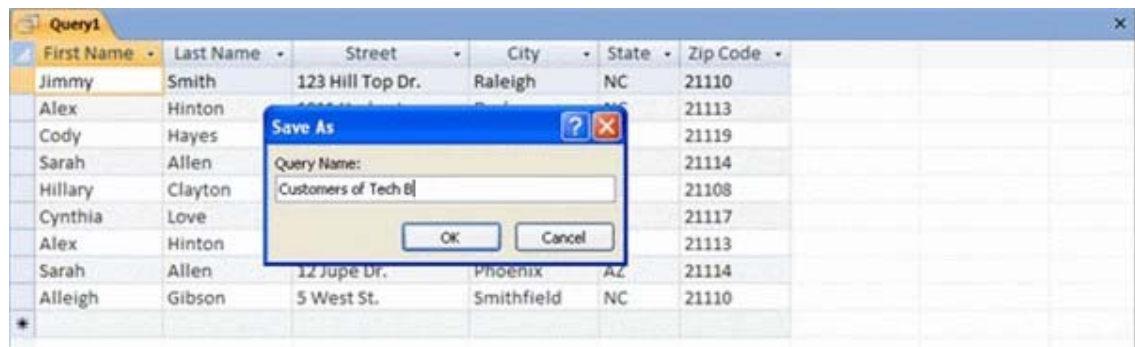
Saving the query

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 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.

Using totals in a query

Sometimes you may want to see your query results grouped or counted in some way. Access 2007 offers several options to make these functions possible. Perhaps the easiest of these is the **Totals** command, whose optional functions are similar to the functions used in Microsoft Excel. These functions include:

- **Sum**, which is used to add a column of numbers
- **Average**, which is used to find the average of a column of numbers
- **Maximum**, which returns the highest value in a field
- **Minimum**, which returns the lowest value in a field

- **Count**, which is used to count the number of same values in a query
- One of the most useful Totals functions to use in queries is the **Count** function.

Using Count and Group By in a query

When you use the **Totals** command in a query, Access will automatically group every field by the values in each field. This means that it will look for repeating values and group the like values together so they appear as one record rather than as many records. This is called the **Group By** function.

Take our bookstore database for example. If we run a query to see the information for every book that has been ordered, we'd get a list that looks like this:

Title	Author First	Author Last	Category	Price	Book ID
Best Kept Secrets	Jill	Jones	Fiction	\$16.00	1
Best Kept Secrets	Jill	Jones	Fiction	\$16.00	1
Italian Dishes	Marcy	Craig	Food	\$10.99	3
Italian Dishes	Marcy	Craig	Food	\$10.99	3
Italian Dishes	Marcy	Craig	Food	\$10.99	3
Italian Dishes	Marcy	Craig	Food	\$10.99	3
Computer Basics	Angeala	Gomez	Technology	\$17.00	5
Computer Basics	Angeala	Gomez	Technology	\$17.00	5
Computer Basics	Angeala	Gomez	Technology	\$17.00	5
Everyday Life: Microwave Meals	Bob	Cooper	Food	\$9.99	6
History of Graffiti Art	Laila	Newsome	History	\$25.00	7
History of Graffiti Art	Laila	Newsome	History	\$25.00	7
Benny Goes to Kindergarten	Naomi	Harris	Kids	\$8.00	8
Kitchen Makeovers in Minutes	Dillion	Ellerby	Home & Garden	\$49.95	9
Kitchen Makeovers in Minutes	Dillion	Ellerby	Home & Garden	\$49.95	9
50 Reasons to Visit North Carolina	Henry	Mills	Travel	\$14.99	10
The Counting Bears	Amy	Kendell	Kids	\$5.00	11
Healthy Cooking	Amy	George	Food	\$14.99	13
Baby's First Steps	Felicia	Nova	Non-Fiction	\$14.99	16
Baby's First Steps	Felicia	Nova	Non-Fiction	\$14.99	16
Baby's First Steps	Felicia	Nova	Non-Fiction	\$14.99	16
Baby's First Steps	Felicia	Nova	Non-Fiction	\$14.99	16
Baby's First Steps	Felicia	Nova	Non-Fiction	\$14.99	16
Computer Basics: Laptops	Nichole	Grey	Technology	\$25.00	17
Computer Basics: Laptops	Nichole	Grey	Technology	\$25.00	17
Computer Basics: Laptops	Nichole	Grey	Technology	\$25.00	17
Computer Basics: Laptops	Nichole	Grey	Technology	\$25.00	17

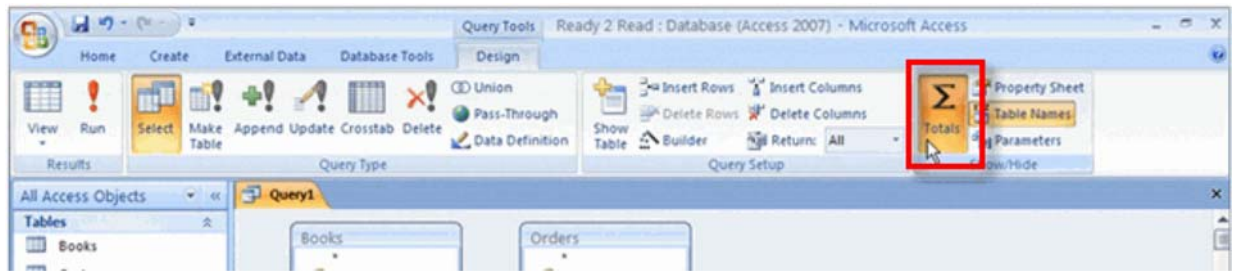
Notice that we get a record back for every order of each book that has been ordered.

In our bookstore example query, we want to see these titles grouped together so we see each ordered title only one time. To do this, we use the **Count** and **Group By** options.

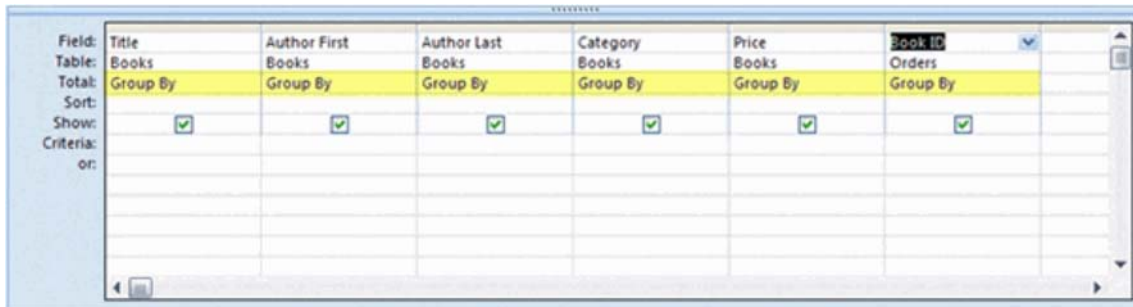
To use the Count and Group By options in a query

To include the **Group By** and the **Count** functions in a query:

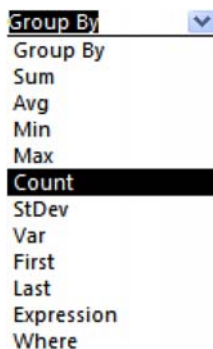
- Click on **Totals** in the **Show/Hide** group on the Ribbon.



The **Total** row will instantly appear in the bottom portion of the query design screen.



- Click in the Totals row for the field you wish to count. We want to count the number of times the same **Book ID** appears in the **Orders** table.
- From the list of optional Totals functions, select **Count**.



- Click **Run!** to see your results. Notice that each title, author, price, and category is now listed only one time for each book, with an extra column that indicates the number of times the Book ID appeared in the Orders table.

Title	Author First	Author Last	Category	Price	CountOfBoo
50 Reasons to Visit North Carolina	Henry	Mills	Travel	\$14.99	1
Baby's First Steps	Felicia	Nova	Non-Fiction	\$14.99	5
Benny Goes to Kindergarten	Naomi	Harris	Kids	\$8.00	1
Best Kept Secrets	Jill	Jones	Fiction	\$16.00	2
Buying the Right Computer	Amy	Lee	Technology	\$16.99	2
Computer Basics	Angeala	Gomez	Technology	\$17.00	3
Computer Basics: Laptops	Nichole	Grey	Technology	\$25.00	5
Everyday Life: Microwave Meals	Bob	Cooper	Food	\$9.99	1
Healthy Cooking	Amy	George	Food	\$14.99	1
History of Graffiti Art	Laila	Newsome	History	\$25.00	2
Italian Dishes	Marcy	Craig	Food	\$10.99	4
Keeping Your Computer Healthy	Joan	Hodge	Technology	\$24.99	2
Kitchen Makeovers in Minutes	Dillion	Ellerby	Home & Garden	\$49.95	2
Laptop Basics	Greg	Banks	Technology	\$14.99	1
The Counting Bears	Amy	Kendell	Kids	\$5.00	1
Using the Internet	Nia	King	Technology	\$17.99	1
What is a Network?	Cole	Smith	Technology	\$11.99	1
What Not to Take! Packing for Long	Hannah	Kidjoe	Travel	\$7.99	1
Who Were My Ancestors?	Dele'	Simon	History	\$26.99	1

Sorting and filtering query results

Once you have the results looking how you want them, you can sort and filter them to narrow your results down even further. This can be done using the methods of sorting and filtering covered in Lesson 10 and Lesson 11, or by applying the sort and filter in the query design itself.

To sort via the query design

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

- 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)

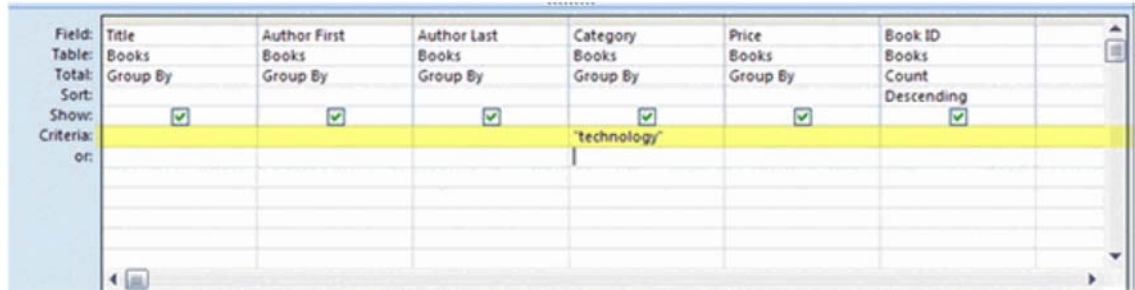
- Choose one of the options:
 - Ascending** will show the results sorted with the lowest numerical value or the text value closest to A first.
 - Descending** will show the results with the highest numerical value or the text value furthest from A first.
 - (not sorted)** will keep your records grouped but will not sort them.
- Click **Run!** to see the results.

To filter via the query design

To add a filter to your query design:

- Click the **Criteria** row in the query design.

- Add your filter criteria by typing the value in the cell, as we did in the following example:



- Click **Run!** to see the results.

Title	Author
Computer Basics	Ken Murd
Planet Rock: The History of Popular Music	Frankie D'Adda
Learn and Garden Art	Bill Reagan
Italian Style Cooking	Cookie Jones
Everyday Life	Quincy James
Bunny's First Day	Julie Meeks
Vegan Cooking	Matthew Dale
Greatest Women Poets	Mya Gills
State Parks	Jeff Jones
Good Cookin'	Neal Ramos
Quick Tips: Computer Shortcuts	Jenny Wu
American History	Heaven Wheat
Speakers Notes: Volume I	Carmen Withers

Using Reports to make Data meaningful

Now that you know how to use queries to analyze the data in a database, it's 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 how to 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 done in Word documents.

Access 2007 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 Layout View once the report is created. With these tools, you can create a report based on a table or query.

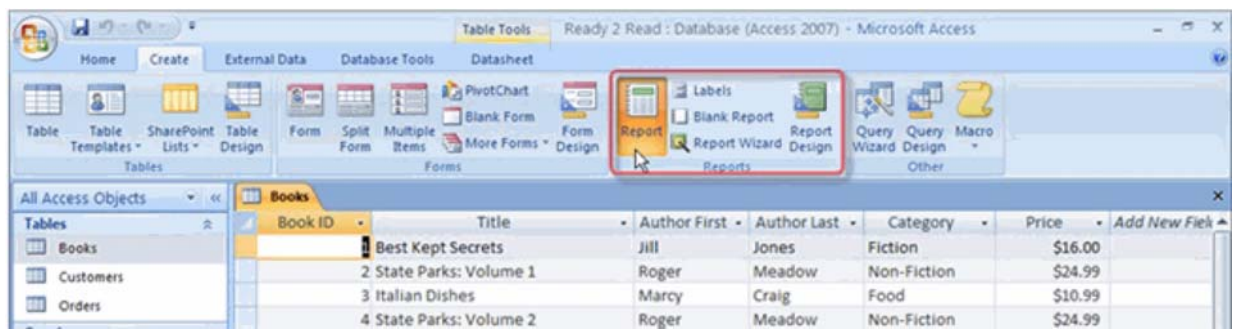
Creating a report based on a table

One of the easiest ways to create a report is using a table as the source of the report. For example, in our bookstore scenario we have a table that lists all of the books in our inventory. We want to create a Book Price List report that lists all of the details for each book in our store's inventory. The **Report** command makes this incredibly easy because it automatically includes every field in the source table in the report.

To create a report based on a table using the Report command

To create a report based on a table using the **Report** command:

- Choose the table you wish to use as the source of your report. To do that, you can either open the table or highlight the table name in the Navigation Pane. In our example, we used the open Books table to create the report.



- Select the **Report** command on the **Create** tab on the Ribbon, as seen above.
- The report is automatically generated and includes every field in the table in order of their appearance in the table. This can be seen in the example below, which was created from the table above.



The layout and formatting of the report can be manipulated in Layout View.

Creating a report based on a query

Access 2007 can also create a report using a query as the source. The process for creating a report based on a query is identical to the process for creating a report based on a table, which was outlined on the previous page. And just like when making a report from a table, every field and record that appears in the query results will appear on the report.

To limit the number of records in a report

It is possible to limit the number of records in a report, but only if the report was based on a query. The limit is set in the query itself, using the query design screen.

To limit the records returned in a query:

- Open the query in Design View.

- Use the **Return** option in the **Query Setup** command group to set the number of records you want to see in the query results and the final report.



- Click **Run!** to make sure the query results look like you want the report to look.
- Create the report using the **Report** command on the **Create** tab.
- Format the report as desired.

Grouping items on a report

Grouping items on a report can make it much more readable. Access 2007 offers a quick and easy way to add grouping to a report.

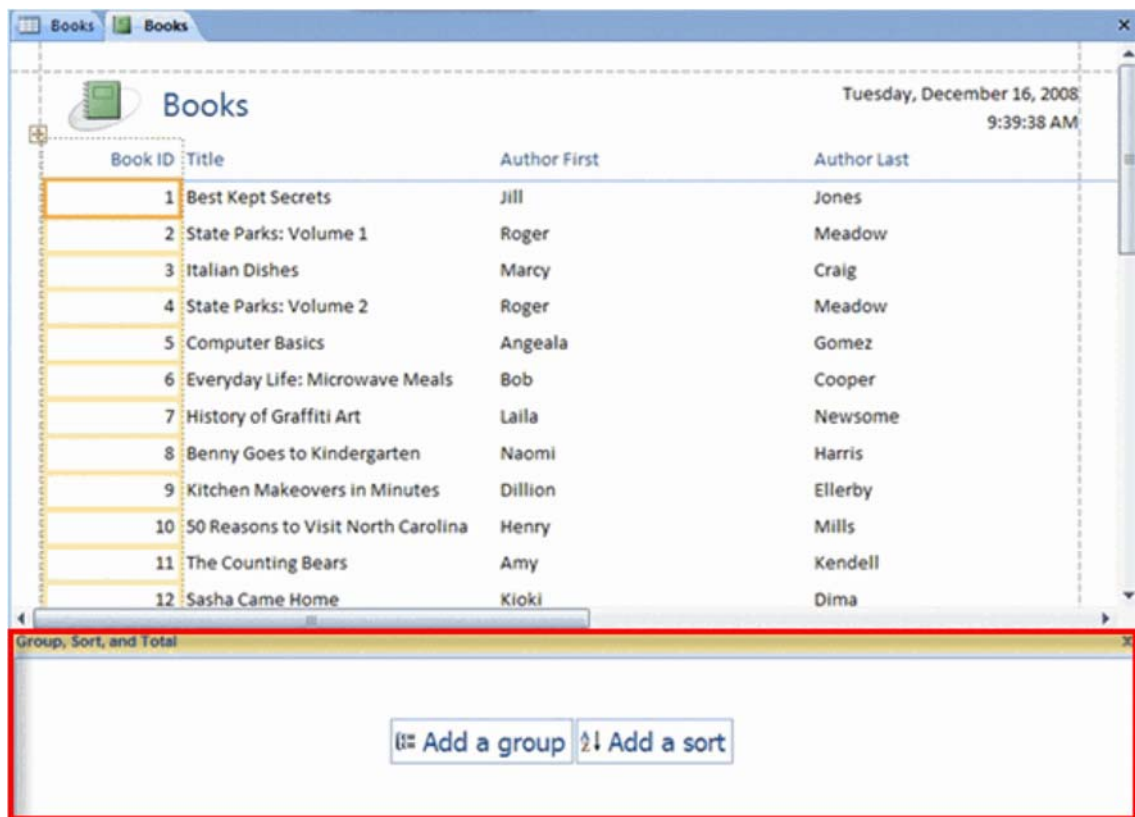
To add grouping to a report

To add a level of grouping to a report:

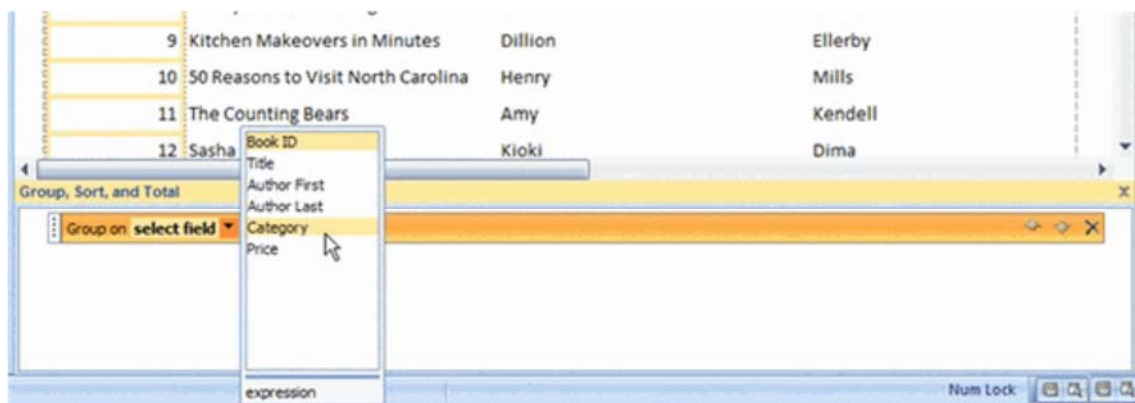
- With the report open, select the **Group & Sort** command from the **Grouping & Totals** command group on the **Format** tab on the Ribbon.



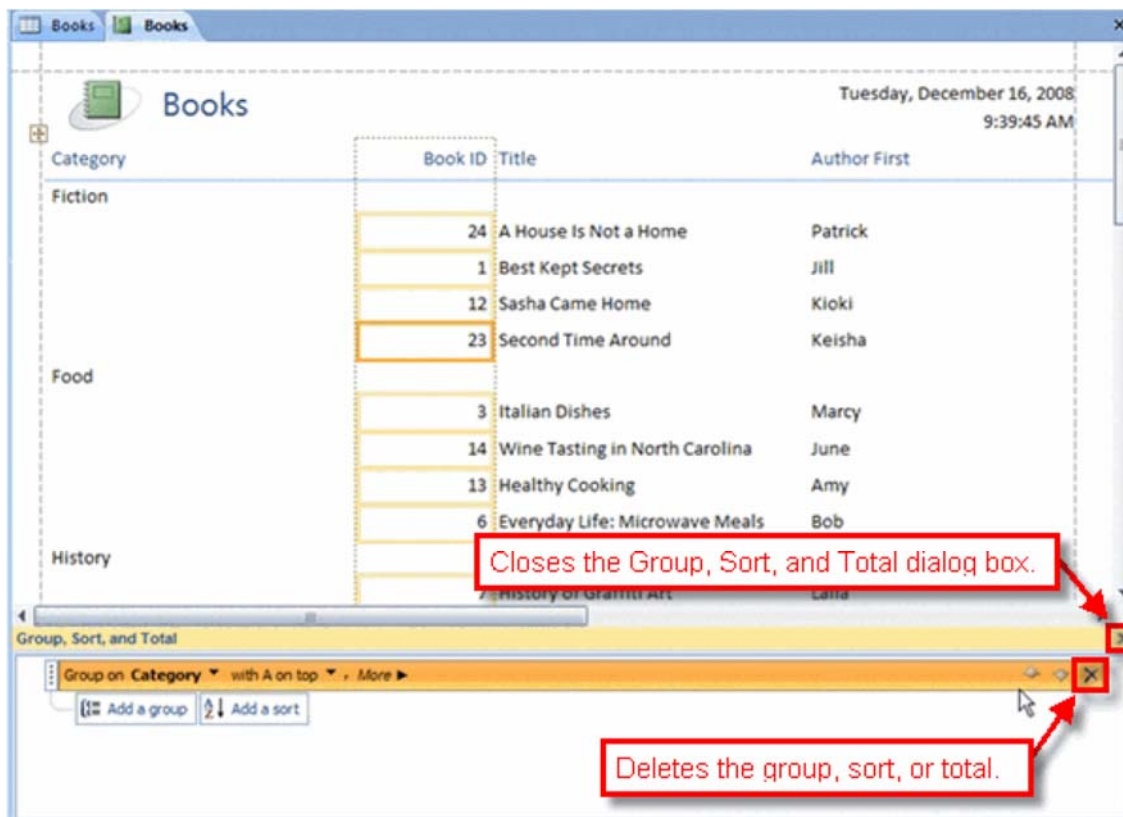
- This opens a **Group, Sort, and Total** dialog box in the lower portion of the window.



- In the **Group, Sort, and Total** dialog box, select **Add a group**.
- Select the field you wish to group by from the drop-down list. We chose to group our list by **Category**.



- When you release the mouse button, the report will now appear with items grouped. Our report is grouped on **Category** now, as seen below.



Formatting a report in Layout View

Access 2007 opens the created report in Layout View so you can easily make modifications. In Layout View, you can change the look of your report in many different ways, including:

- Deleting columns and other report elements
- Moving and resizing columns
- Adding a logo
- Changing the title and other text on the report headings
- Applying a report style with **AutoFormat**
- Modifying the page layout

To delete a column or other report element To

delete a column or other report element:

- Highlight the element by clicking on it.
- Hit the **Delete** button on your keyboard.

To move a column or other report element To

move a column or other report element:

- Highlight the element by clicking on it.
- Drag and drop the element to a new location on the report.

To resize a column or other report element To

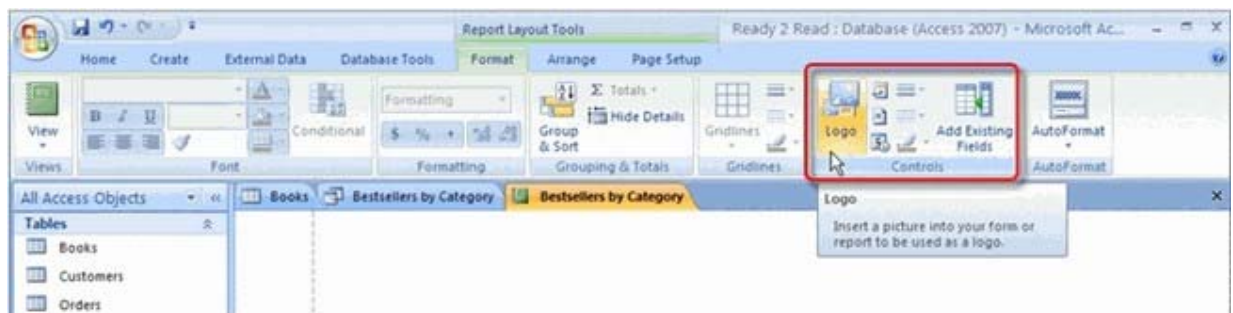
resize a column or other report element:

- Highlight the element by clicking on it.
- Drag and drop the edge of the element to the new size on the report.

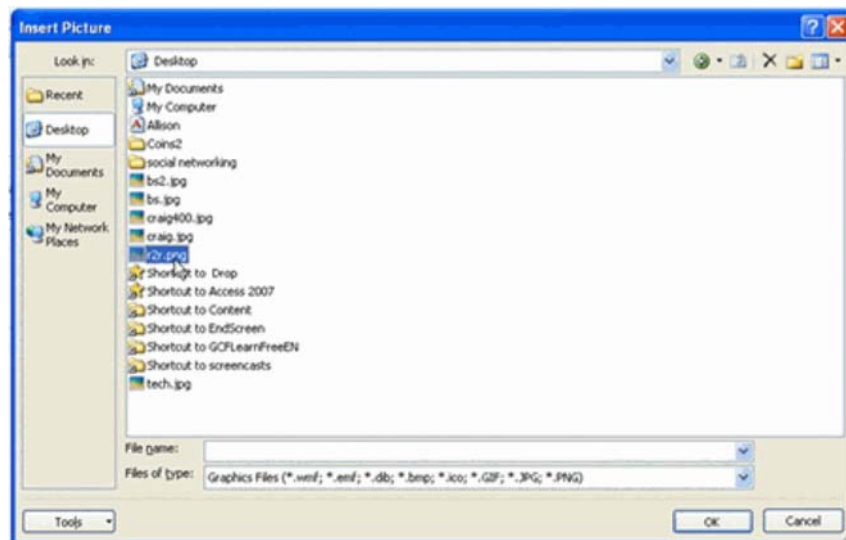
To add a logo to the report

To add a custom picture or company logo to a report:

- Click on the **Logo** command on the **Format** tab on the Ribbon.



- When the **Insert Picture** dialog box opens, find the picture file.

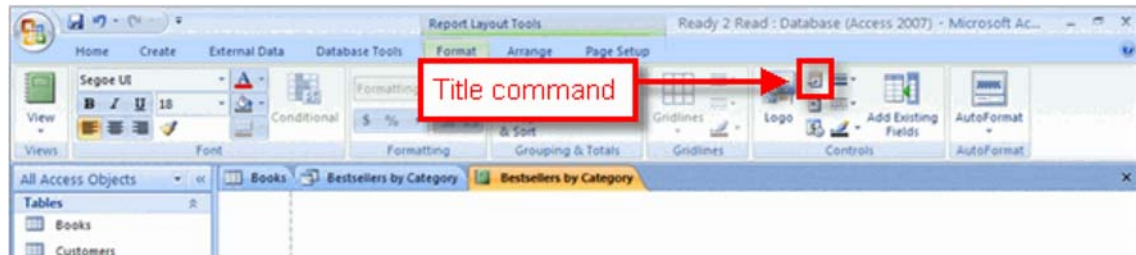


- Click **OK**.

To modify the title of a report

To modify the title of a report:

- Click on the **Title** command on the **Format** tab on the Ribbon.

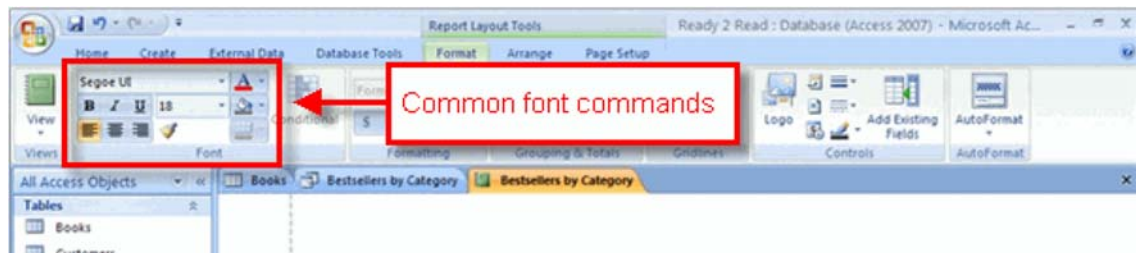


- When the highlight appears, type in the new title.

To modify text in report headings

If you don't like the standard font face and size Access used to create your report, you can modify them using common Microsoft Office text formatting commands. You can modify the size, font face, font color, alignment, and much more. They all work basically the same way. • Highlight the text you want to change.

- Select the formatting option you wish from the lists that appear when you click on a command.

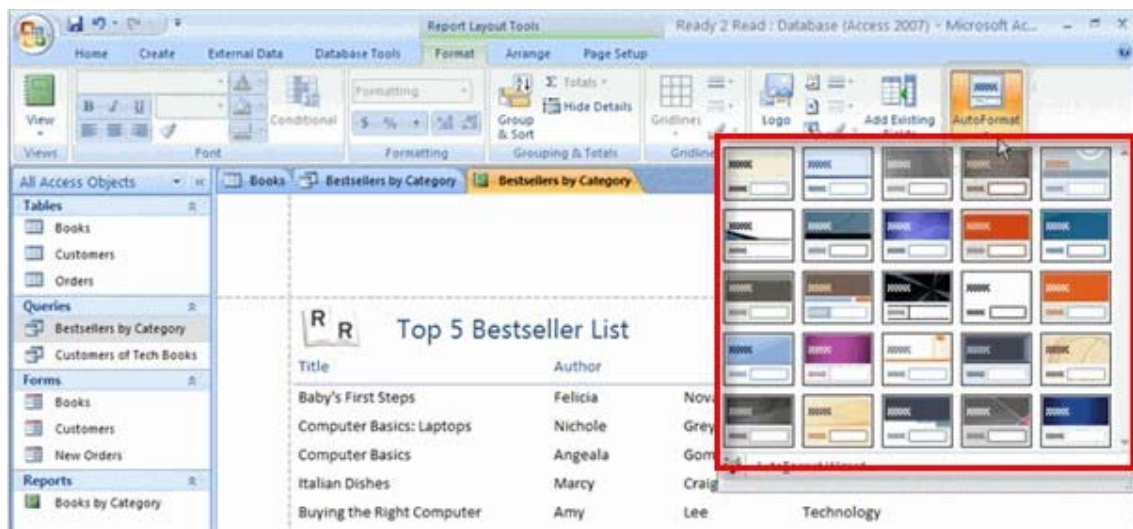


- The change appears when you release the mouse button.

To apply an AutoFormat style

Like with forms, Access 2007 offers a variety of report styles in the **AutoFormat** command. To apply a style:

- Click on the **AutoFormat** command on the Ribbon.



- Select a format from the drop-down list. The change is applied instantly.

To change the page layout

When a report is created, it opens in Layout View, like the one in the picture below. The dotted lines are showing where the edge of the page will be in Report View.

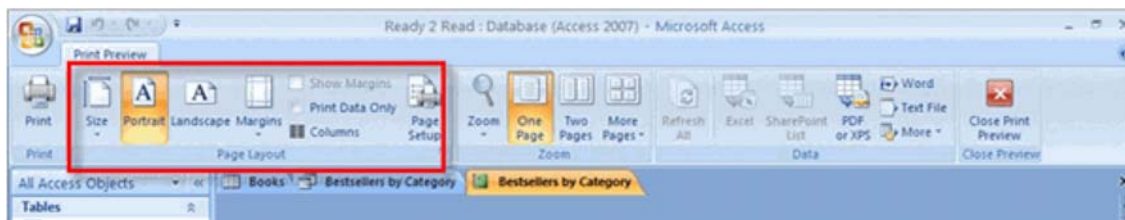


To change the page layout options:

- Switch to **Print Preview** using the **Views** command on the Ribbon.



- Select the layout option you wish to alter from the **Page Layout** command group on the Ribbon.



All of the standard Microsoft page layout options are available, including:

Page Layout Option	Description
Margins	To set the margins for narrow, wide, or normal
Orientation	To select either a Portrait or Landscape orientation
Size	To set the paper size

Saving a report

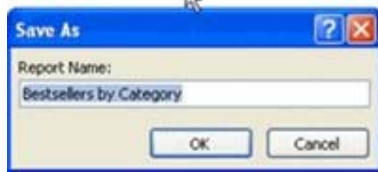
When you have created and modified a report and try to close it, Access 2007 will prompt you to name and save the report. If you do not need this report again, you do not need to save it. However, if you think you may want to publish it again, it is best to save.

To save a report

As with all Access objects, to save a report:

- Right-click on the report tab.

- Choose **Save** from the list that appears.
- When the **Save as** dialog box opens, give the report a name.



- **Click OK.**

Lab 06 Tasks

(Advance Features
of Microsoft

ACCESS –

Queries and Forms)

Exercises

Exercise 1

Using the table Student created in the previous lab; create a Query to extract information about Registration No, Name, City and Department of a Student where department is "CS".

- For Department create a new table Student_Dept of two columns, as showing below
- “Student_Reg” column values are being taken from the STUDENT table using Lookup Column technique

Exercise 2

Create the following of your table Student and Department Created in Last Lab.

- ✦ Form
- ✦ Split Form
- ✦ Multiple Item Form

Which enters the above mentioned information of a Student to the table. Attach the printed screen-shot of the form created.

Exercise 3

Generate a Report using Report Wizard which includes the complete S

tudent table.
