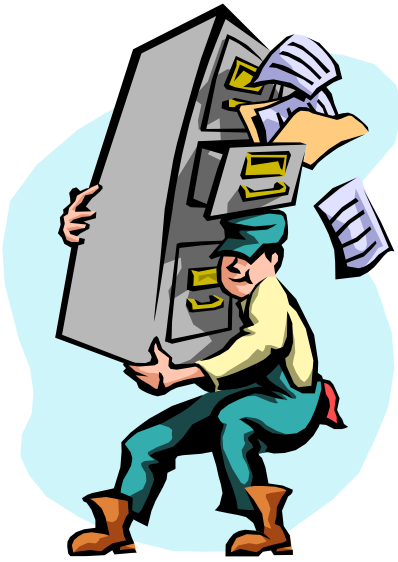
Welcome to *Teach Yourself:* Introduction to Microsoft Access

This *Teach Yourself* tutorial explains the basic operations and terminology of Microsoft Access 2003, a database management program. Microsoft Access is a very complicated program; this tutorial provides only an introduction. This is the same tutorial we use in our Microsoft Access class, but it has been adjusted so you can take the course on your own. If you would like to attend Microsoft Access or any other class offered by LFPL, just go to the LFPL website www.lfp.org and click on 'Events' on the left side of the screen to find when and where the next class meets.



Introduction to Microsoft Access

Class learning objectives

- **Learn about Microsoft Access**
- **Understand Key Terms**
- **Designing a Database**
- **Open Microsoft Access**
- **Open an Existing Database**
- **Create a Table**
- **Create a Form**
- **Create a Query**
- **Create a Report**

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THE JOB SHOP

What is Access?

Access is a database management program and part of the Microsoft Office suite, a collection of programs that can be used to perform various every day office functions. Imagine Microsoft Access as a computerized filing cabinet that allows you to

1. Create tables of information.
2. Link related tables of information.
3. Create forms for data entry and easy viewing.
4. Create queries to easily search the information for answers.
5. Produce reports and summaries.

Key Terms

Microsoft Access is not as easy to grasp as some other Office components. Before you begin creating databases, you need to understand some terminology. These keywords will be used and repeated throughout the class to help you learn them.

Data: the information you enter, organize, and manipulate in Access. Data types include text, dates, numbers, yes/no indicators, currency, and more.
Example: Smith (text), July 4, 2004 (date), $42.05 (currency), 580 (number)

Field: a category of information.
Example: LastName, Price, BillingDate

Record: a collection of fields relating to a given person, product, or event.
Example: John Smith's CustomerID, FirstName, LastName, PhoneNumber, StreetAddress, City, State, Zipcode

Table: a collection of records that describe similar data.
Example: a collection of customer contact information labeled Customers

Relational Database: a collection of tables linked by a common field or theme.
Example: a Customers table linked to an Orders table by the CustomerID

Primary Key: a unique identifier field in a table that ensures records are unique.
Example: the CustomerID in the Customers table

Foreign Key: a common field used to link tables together.
Example: CustomerID linking a Customers table and an Orders table

Form: an interface you can create to enter and/or view data.

Query: a question formed in a way that Access can understand. It allows Access to search information in tables and other queries and report the results.

Report: a way of publishing information in a professional looking format.

Designing a Database

Before creating a database in Microsoft Access, construct your database on paper.

Step 1: Determine which fields you will use in your database.

- What fields do you want to include?
- Is your information broken down into the smallest units possible? (name → title, firstname, middlename, lastname, namesuffix)
- What data type (text, number, yes/no, date, etc.) will be in each field?
- Consider existing and potential information needs.

Step 2: Group related fields into records and tables.

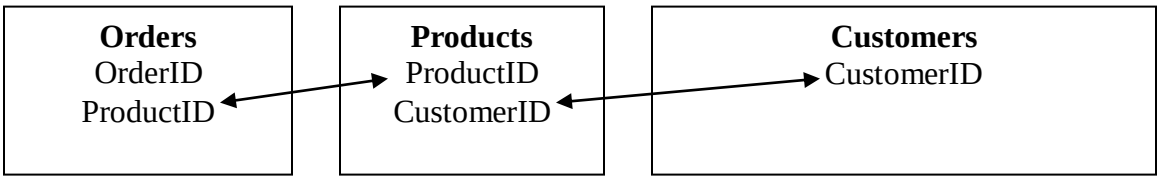
- What fields are associated with a particular person, product or event?
- Customer Contact Information → firstname, lastname, street address, city, state, zipcode, telephonenumber, emailaddress
- Product Details → name, description, weight, height, width, depth, wholesaleprice, publicprice, vendorID
- Order Details → customerID, productID, quantity, totalproductprice, totaltax, totalcharge, paymentID, datereceived, datefilled, deliveryID

Step 3: Uniquely identify records in tables/Set the primary key.

- What field will be used to uniquely identify a record? Autonumbers are frequently used because they are unique and automatically assigned. Preprinted receipt numbers and other unique identifiers can also be used.
- Customer Contact Information → customerID
- Product Details → productID
- Order Details → orderID

Step 4: Create relationships between tables.

- How can you reduce redundancy, by sharing information between tables?
- What are the common fields/foreign keys?
- Instead of putting all the customer contact information and the product information in the order table, link the Order Details table to the Customer Contact Information table and the Product Details table through common fields.
- The primary key of one table may be a foreign key on another table.



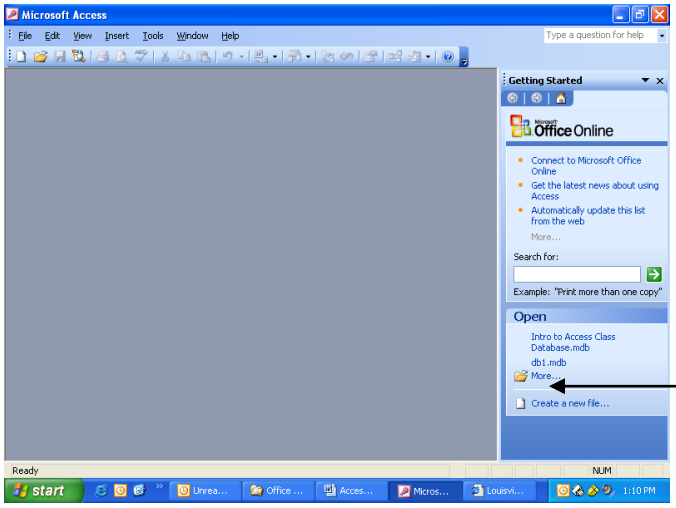
Opening Microsoft Access

- Double click on the Microsoft Access shortcut on the desktop.

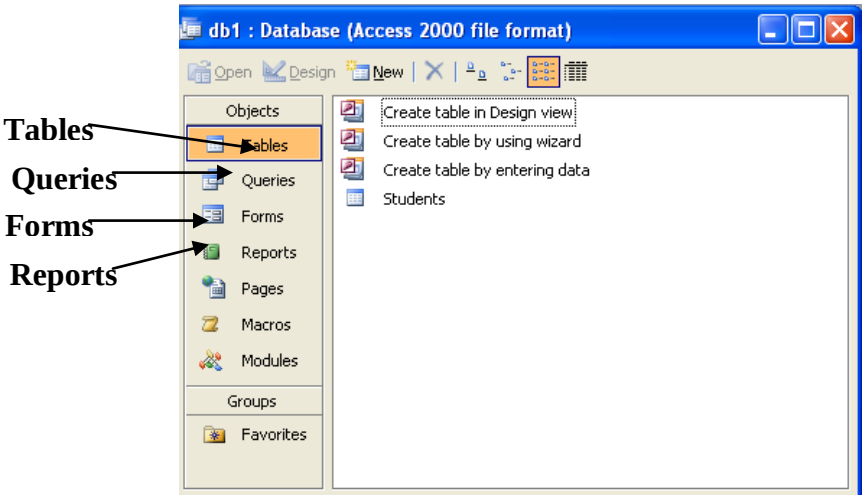
- OR, Click on **Start**, **Programs**, and **Microsoft Access**.

What To Do First

Upon opening Access you will see a mostly grey screen with a light blue pane along the right side. Here you can create a new file or open an existing one. For this class we will begin with a partially constructed database, so we will open an existing file. The file is not a recently opened file, so click **More.** An **Open** dialog box will appear. Navigate to **3 /12 Floppy A**: if necessary, click on **Intro to Access Class Database**, and click **Open**. If you get a notice asking if you want to block unsafe expressions, click **No,** and click **Open.**



The following window should appear showing your database:

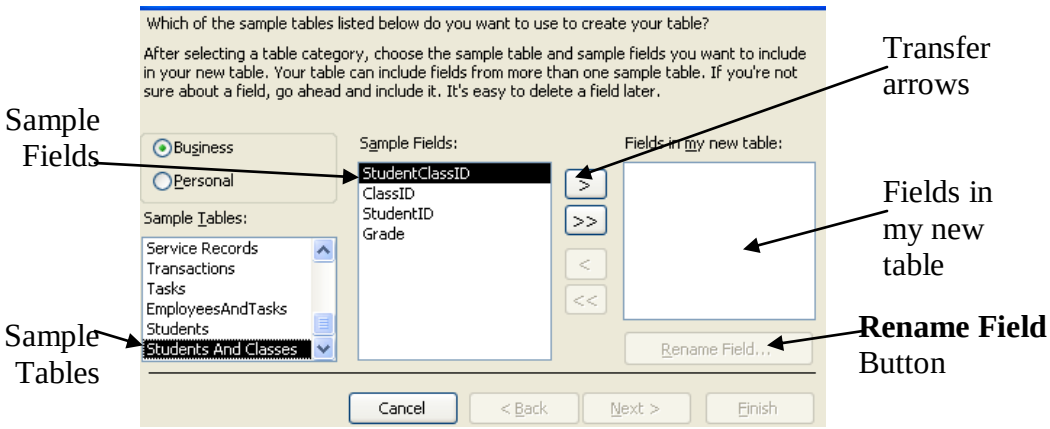


On the left side of the window is a list of objects you can include in your database. The ones we are concerned with are the tables, queries, forms and reports. By clicking on these objects you will be presented with different methods of creating them on the right side of the window. As you create tables, queries, forms and reports, they will also be listed on the right hand side of the window. You can see one table called **Students** already created for you. Today we will be using wizards to create another table, a form, a query, and a report.

Creating Tables

Click on **Tables** and double-click on "**Create table by using wizard**." The wizard will take you through four steps: choosing the fields for your table, naming your table and choosing whether to let the wizard set the primary key, relating your table to existing tables, and choosing how to begin entering your data.

1. For the first step, the following window should appear:



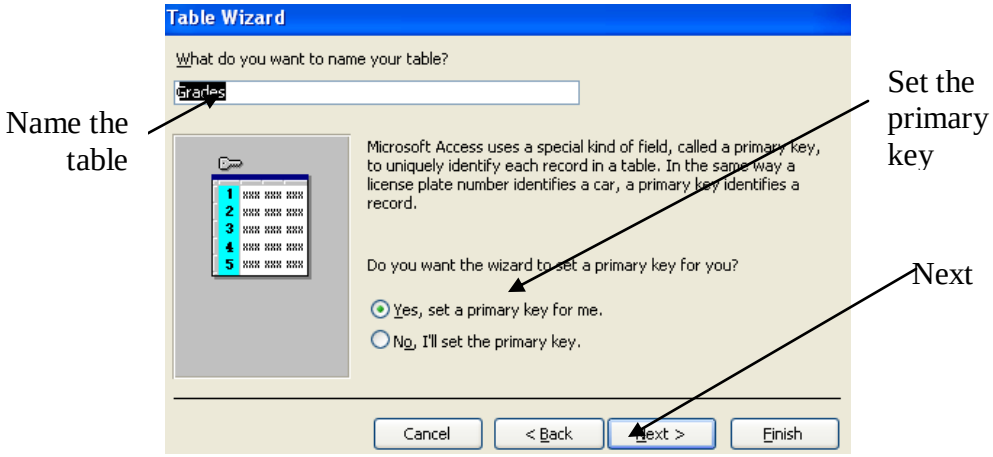
The wizard presents you with **Sample Tables** with **Sample Fields**. These are readymade tables and fields.

- To select a table from the sample tables, click on the name of the table. For today, click on the **StudentsAndClasses** sample table.
- To select a field from the sample fields, click on the name of the field and click on the transfer arrow
  > moves the individually selected field over to your new table
  >> moves all of the sample fields over to your new table
  The fields should appear in the **Fields in my new table** box. For today add the **StudentID and Grade** fields to your table.
- To remove fields mistakenly added to your table, click on the name of the field and click on the transfer arrow
  < removes the individually selected field from your new table
  << removes all of the fields from your new table
- To rename fields added to your table, click on the name of the field, click on the **Rename Field** button, type the new field name into the field provided, and click on **OK**.

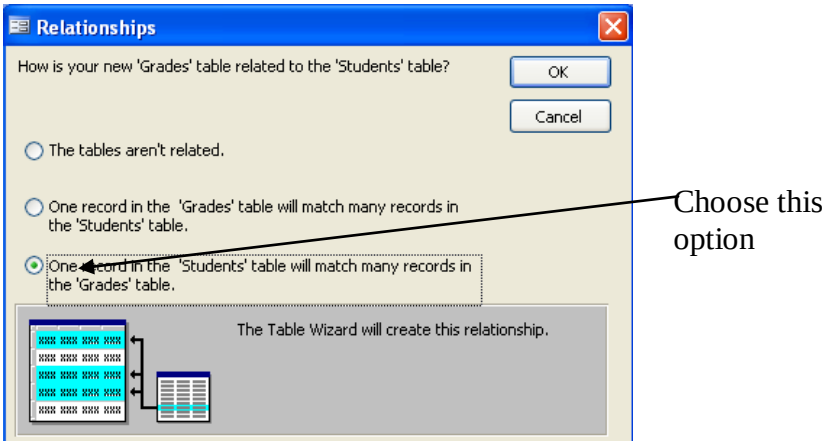
- Click on **Next** to advance to the next step of the wizard.

2. For the second step, name the new table by typing the name of the table into the space provided. Let's use the name **Grades**

   The wizard also asks whether or not you want the wizard to set a primary key for you. Select **Yes, set a primary key for me** and click on **Next**. The primary key is a unique field that identifies each record. It helps eliminate duplication and confusion between records. The wizard will select the **ClassID** field as the primary key.



3. Because you are creating a table to accompany other existing tables, the table wizard will now ask you if the Classes table is related to the Students table. Click **related to Students**, and then make sure you have selected the third radio button on the ensuing screen. We choose this option because each student could have any number of grades. This join type is also the most common option. Click **Next** to continue.



4. The final step of the wizard asks what you want to do after the table is created, or basically how you want to begin entering data. Select the default **Enter data directly into the table,** and click on **Finish**.

The finished table should appear. It will look somewhat like an Excel spreadsheet. This is **Datasheet** view, which is one way to enter data. However, if Access has an advantage in that related data are stored in discrete tables, we need a way to enter data into multiple tables at once. Click the **X** to close the table.

Other Table Relationships

Let's take a quick look at our overall table relationships. Click on **Tables** in the **Objects** menu, and then click the relationships button on the standard toolbar (most of the way to the right)  . Here you can see how each of the tables are related. You can click and drag the table names to see better the lines connecting the tables. The lines connect the primary keys (bold) in one table to their corresponding foreign keys (not bold) in another table. Go ahead now and the **X** to close the relationship box. Access will ask if you wish to save, and you should click **No**.

Entering Data

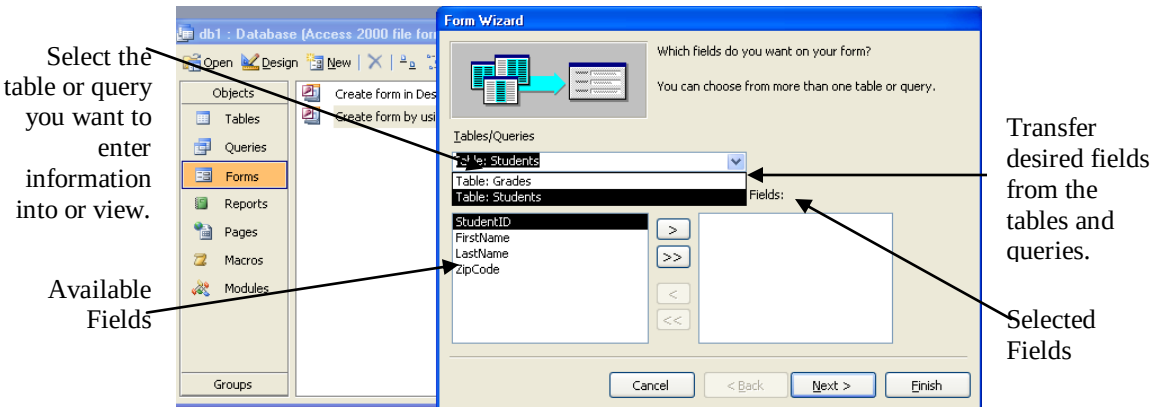
There are two ways of entering data into tables. One way is to directly enter the information while viewing the table in the datasheet view (the spreadsheet that appears at the end of the wizard). A much better way is to create a form to enter information.

Using a form to enter records

To begin creating a form, click on **Forms** in the **Object** list. Double click on **Create form by using wizard**.

1. In the first step of the wizard you will choose which fields will appear on your form. Notice that the **Grades** table is listed in the top dropdown menu. Clicking on the dropdown menu will show you that you can select any created table from which to choose fields to add to your form. The **Available Fields** of the selected table or query are listed in the left box. To add an available field to your form, click on the name of the field and click on the transfer arrow. The transfer arrows work as they did in the table wizard.

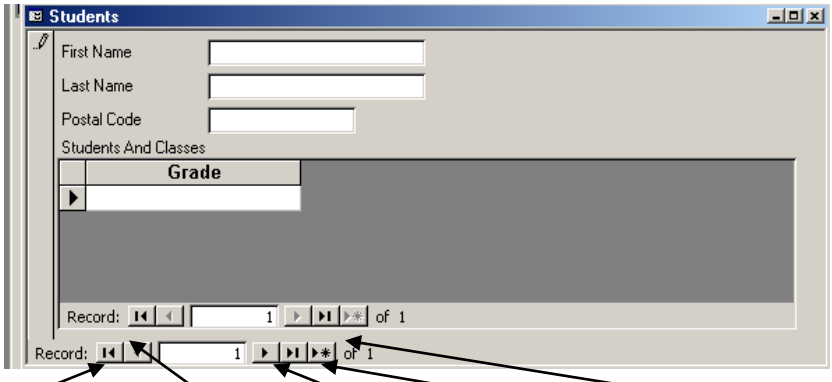
   From the **Students** table add **FirstName**, **LastName**, and **ZipCode** to your form. Then click the dropdown arrow to select the **Grades** table. Add **Grade**. Finally, click on **Next**.



2. The next step of the form wizard asks you to choose how you wish to view your data. Keep the subform selection and click **Next**.
3. In the third step, click **Next** to accept the datasheet layouts.
4. In the next step of the wizard, choose a style for your form background and font. Click on the different options to preview and select them. Click **Next** to continue.
5. Finally, accept the default form and subform names, and keep the default selection to **Open the form to view or enter information**. Click on **Finish** and the form should appear.

Now you may view records and enter data using the form.

- To navigate between records, click on the arrows at the bottom of the form.
  |< takes you to the first record
  < takes you back one record
  > takes you to the next record
  >| takes you to the last record
  >* allows you to add a new record
  The number between the arrows tells you which record you are viewing. The number after the arrows tells you how many records are in the table.



- Click on >*, click in a field, type your entry data, and press **Tab** to advance to the next field.

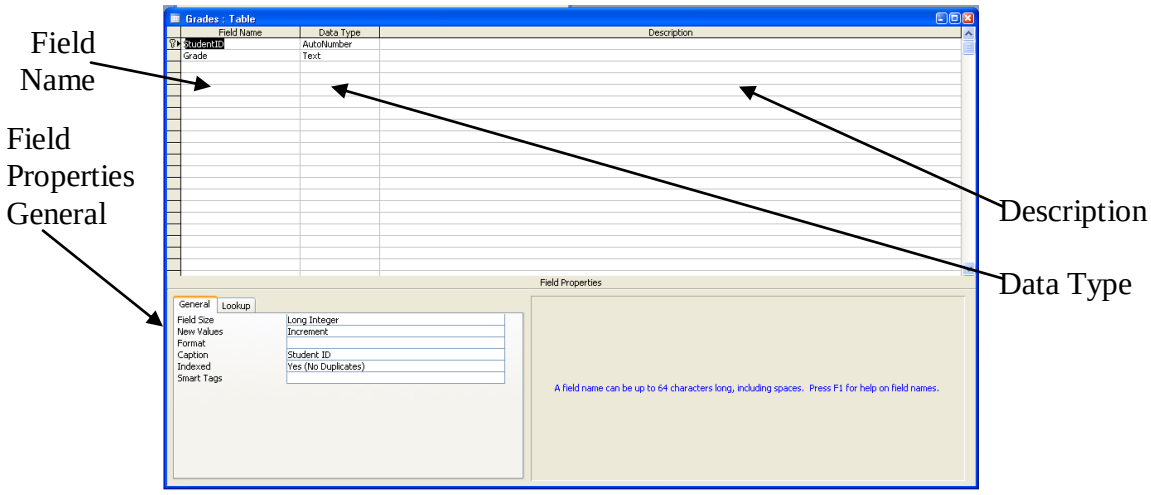
- Create the following records:

Homer	Simpson	B
Ned	Flanders	C
Daffy	Duck	A
Maggie	Simpson	A

Adding & Editing Fields in Tables

Sometimes you need to add fields to tables or edit data types and form properties.

- To edit a table, click on **Tables** in the Objects list, and open the table you want to redesign by double-clicking on it.
- Switch to design view by clicking on **View** and **Design View**.
- Each row is a field, to add a field, click on a blank row under **Field Name** and type the name of the new field.
- Click on the next cell in the **Data Type** column and select the appropriate data type from the list.
    - **Text** is the most commonly used data type. It is used for words and letters, as well as, numbers that won't be used in calculations, like phone numbers.
    - **Number** is used for positive and negative numbers that might be used in calculations.
    - **Currency** is used for prices and other kinds of currency data.
    - **Yes/No** is used for answers to Yes/No questions, like Smoker Yes/No.
    - **Lookup Wizard** lets you create a dropdown menu like the one in our ProductName field.
- You can also write a description of the field and the appropriate answering formats in the third column.
- To change the general properties of a field, such as how much space it uses (Field Size), whether an answer is required or not, or whether an input mask is used (input masks put symbols automatically into an expression like phone numbers or zip codes), adjust the values under **Field Properties – General**.

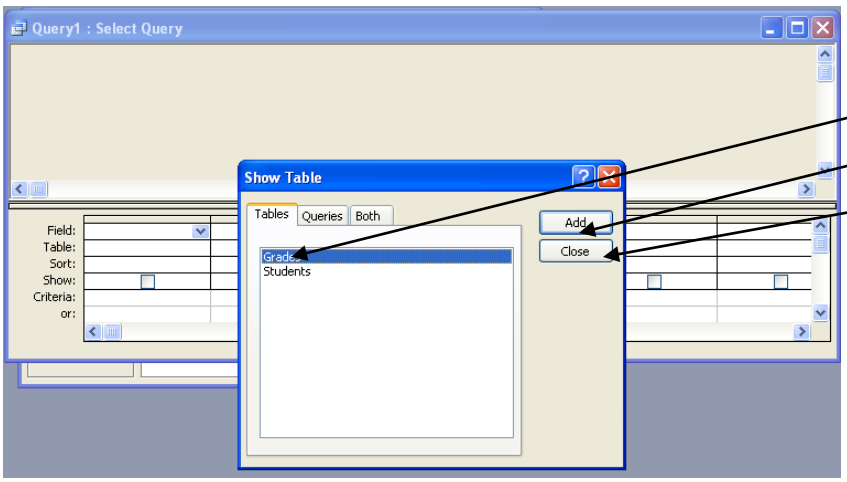


(For input mask symbols you can use to create your own input mask, see page 16)

If you added fields to a table, you would have to create a new form in order to enter the new information by form.

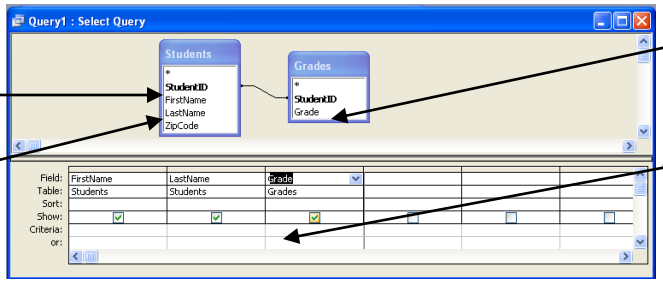
Creating a Query

- First close the table by clicking on the **X** at the top right corner of the window.
- Then click on **Queries** from the Object list and double click on **Create query in Design view.**
- On the ensuing screen you will see the **Show Table** dialog box that will allow you to add fields to your query. The **Students** field is already highlighted. Click **Add**.
- Next, click **Grades.** Click **Add,** then click **Close.**



Click each table in turn followed by **Add,** then click **Close.**

- You will now see your tables listed on the screen. Double-click on the fields you want to add to the query. Choose **FirstName** and **LastName** from the **Students** table and **Grade** from the **Grades** table.



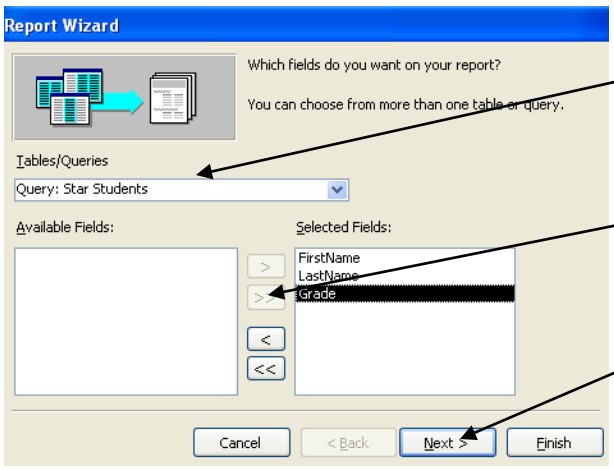
- In the box that intersects the Criteria row and the Grade column, type **A**.
- Click the **X** corresponding to the query dialog box to close and save the query.
- Give the query an intuitive name.
- Click **Queries** in the objects menu, and then double-click your query to open it.
- The query results will appear.
- To establish other criteria and narrow the query results, click on **View** and **Design View**.

Creating a Report

Close the query by clicking on the **X** in the top right corner of the query window.

To begin creating a report, click on **Reports** in the **Object** list and double click on **Create reports by using wizard**.

1. In the first step of the wizard, select the information you want to publish by doing the following:
   - Select the desired table or query (the Star Students query in this case) from the dropdown menu.
   - Move all of the query's fields (**FirstName, LastName,** and **Grade**) over to the report fields, by clicking on the >> transfer arrow.
   - Click on **Next**.



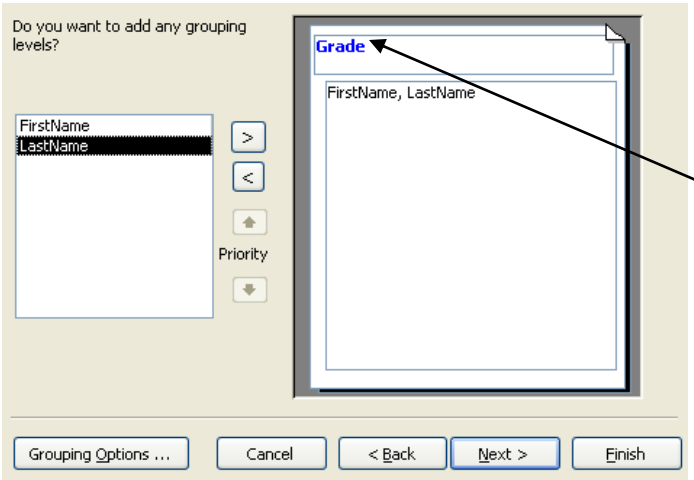
Click the dropdown arrow and select your query

Click the double arrow to move all the fields

Click **Next**

2. In the next step, select grouping and priority levels for the information being displayed on the report. By clicking on a field and clicking on the > arrow, you create a separate space for that field and set it apart from the rest of the information on the report, like below:

    - Double-click **Grade** to group it.

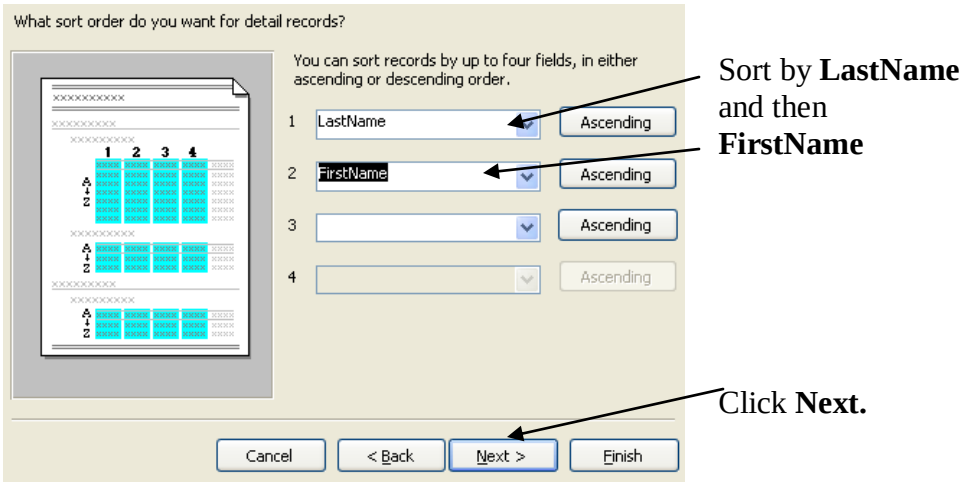


Grade is grouped

    There is no real need to group the zip code because it's our only criterion here, but we've illustrated it as an example.

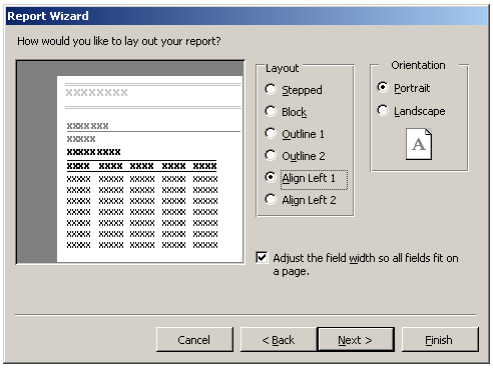
    - Click on **Next**.

3. The next step allows you to sort the records A to Z. You may sort up to three four levels. The information will be sorted by the first field, then the second, then the third, and finally by the fourth. The sorting is ascending by default, click on the AZ button and it will change to ZA, meaning that it will sort descending.
    - Select **LastName** as the first sorting criterion and **FirstName** as the second criterion.

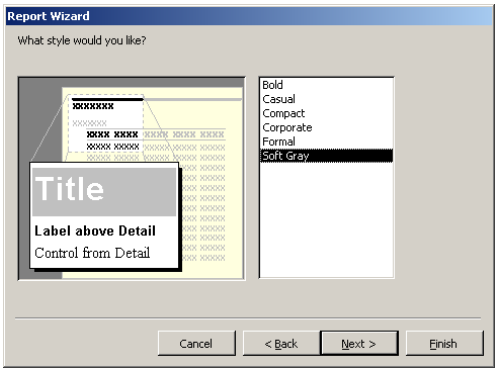


- Click on **Next**.

4. Select a layout for the report. Click on the different options to preview them.
   - Click on **Align Left 1** and click on **Next**.



5. Select a style for the report background and font. Click on the different options to preview them.
   - Click on **Soft Gray** and click on **Next**.

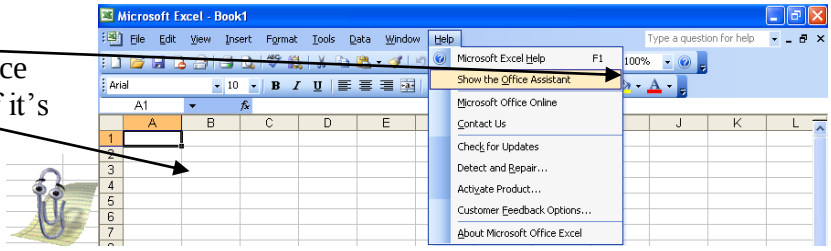


6. To name the report, type the title of the report into the field provided.
   - Keep the Star Students title.
   - Select the default **Preview the report** option.
   - Click on **Finished**.
7. The report should appear. The specific look of the report will depend on the options you chose when generating it.

The Help Menu

If you have a question about Excel that you need answered right away, you might want to consult the Help menu. The help menu has two interfaces: the Office Assistant and the standard Help menu. Let's examine the Office Assistant first. You've probably seen it before—it's a little dog, cat, paperclip, etc that you can click on to get help. If you don't see it, click **Help** on the main menu bar. Then click **Show the Office Assistant**, and the Office Assistant will appear. Once it appears, or if it was already visible, click on it to begin interacting with it.

Click **Show the Office Assistant**, and the Office Assistant will appear if it's not already visible.



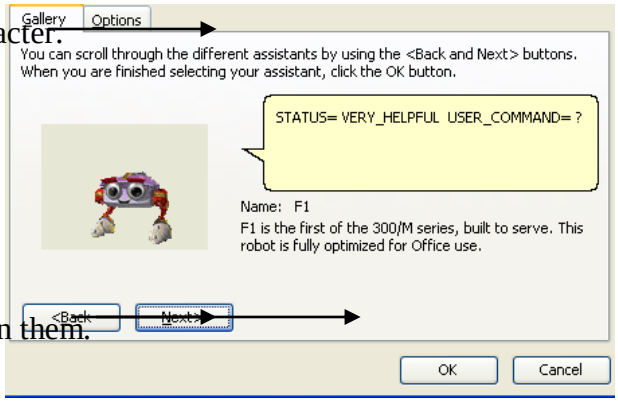
Clicking on the Office Assistant opens up a search bar into which you can type your help topic. Type "create a chart" (without the quotes) into the search bar, and click **Search.** You will see a task pane appear on the right side of the screen listing (usually) 30 results. You should see your help topic at or near the top of the list. Click on it to open another task pane with the solution to your problem. Close the two task panes when done.

Customizing the Office Assistant

Click on the Office Assistant again and click **Options**. Here you can change the look and behavior of the Office Assistant. You will see two tabs: **Gallery** and **Options**. Click on the **Gallery** tab. Here you can change the look of the Assistant. Click the **Back** and **Next** buttons to move back and forth between the selections. If one of these two buttons becomes grayed out, you must go in the opposite direction by pressing the other button.

Click **Gallery** to choose another character.

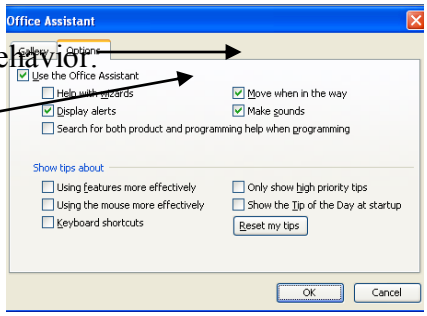
Click **Back** and **Next** to cycle between them.



Once you've examined the different characters, click the **Options** tab. **Options** presents several checkboxes with which you can customize the Assistant. Scan these over, and then uncheck the one at the top left that says **Use the Office Assistant**, and then click **OK**. The Office Assistant will disappear.

Click the **Options** tab to customize the Assistant's behavior.

Uncheck **Use the Office Assistant** to turn it off.



Now let's take a look at the standard Help menu. Click **Help** on the **Main Menu Bar**. Next, click **Microsoft Office Excel Help**. This will open a task pane on the right side of the screen. Type "create a chart" into the search bar provided, and then click the white arrow. You will see another task pane with the same 30 results you saw earlier. In other words, you get the same level of help whether or not you use the Office Assistant.

Click **Help** and then **Microsoft Excel Help**

For Further Reading and Learning

Thank you for attending Introduction to Microsoft Access. For further reading, search the library catalog for the subject "Microsoft Access."

Please consider building your research and/or technological skill sets by taking another class with us. Learn more about upcoming classes on the library's website, www.lfpl.org, or in the Computer Learning Center brochure.

Input Mask Characters

Character	Use in mask
,	Thousands separator or other character as specified by the regional settings for Windows.
/ :	Date and time delimiters or other characters depending upon the regional settings for Windows.
\	Regard next character as literal
!	Fill from left to right (default is right to left)
“string”	Show the values in between the double quotes literally in mask
<	Display as lowercase
>	Display as uppercase
A	Force alphanumeric
a	Optional alphanumeric
&	Force any entry including white space
0	Force any number
9	Optional any number
#	Digit, space (default), or operand
L	Force alpha
?	Optional character
C	Optional character or space
.	Decimal delimiter or other character as specified by the regional settings for Windows

Example: Phone Number !\(999") "000\-0000

Query Criteria Expressions

Expression	Returns
Between #12/1/98# and #2/3/99#	Dates from 12/1/98 and 2/3/98 inclusive
In (“Mary”, “Louise”, “Annie”)	Records with Mary, Louise or Annie
“ “ (quotes with a space in between)	Records with a blank
IsNull	Records with no entry (null field)
Like “Cas?le”	Cas then any character followed by le
Like “*s”	Ends in s (not case-sensitive)
Live “v*”	Starts with v (not case-sensitive)
<1000	Less than 1000
1000	Equal to 1000
Like “[A-C]??”	Starts with A through C and has three characters
????	Any four characters
Len([Surname])=Val(4)	Any surname of four characters
Right([Surname],2) = “is”	Any surname ending in the letters is
Left([Surname],4) = “Cass”	Surnames starting with Cass