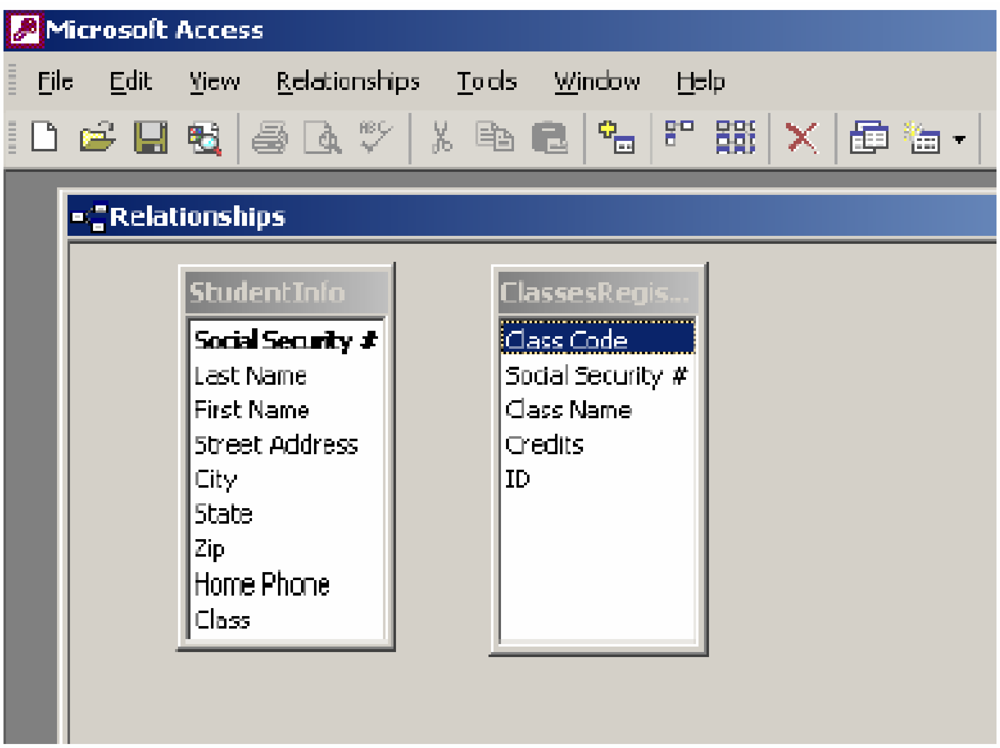
Microsoft Access 2003

Using More Than One Table

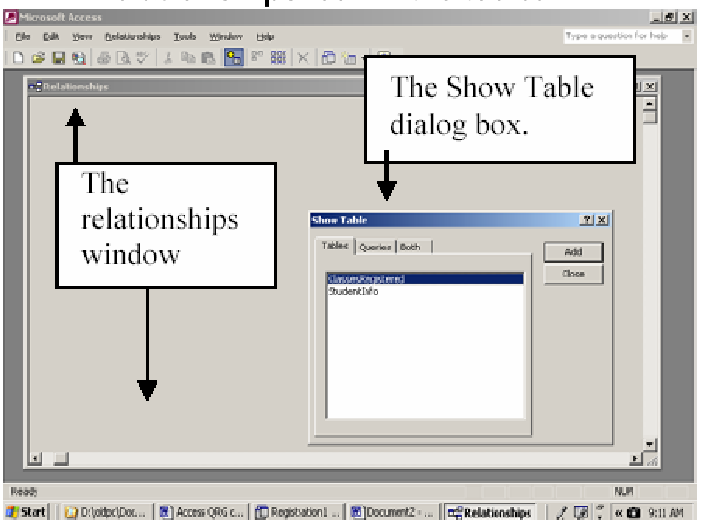
Typically, a database will have more than one table. For example, in a registration system, one table might contain information about each individual student, and another table might hold information about which classes each student has enrolled in. In order for Access to be able to assemble the information from these two tables, a relationship has to be established between the two tables. One type of relationship is the “one to many” relationship, which is illustrated here.



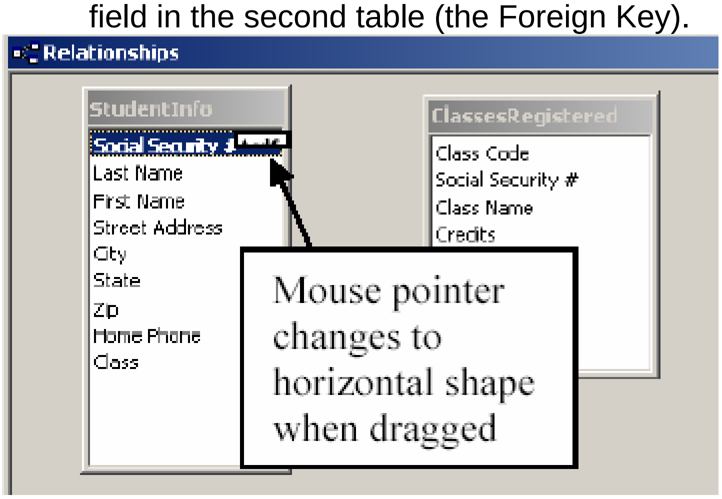
Creating a Relationship Between Tables

To Create a Relationship Between Tables:

1) Click the **Tools** menu item, then select **Relationships**. Or, click the **Relationships** icon in the toolbar

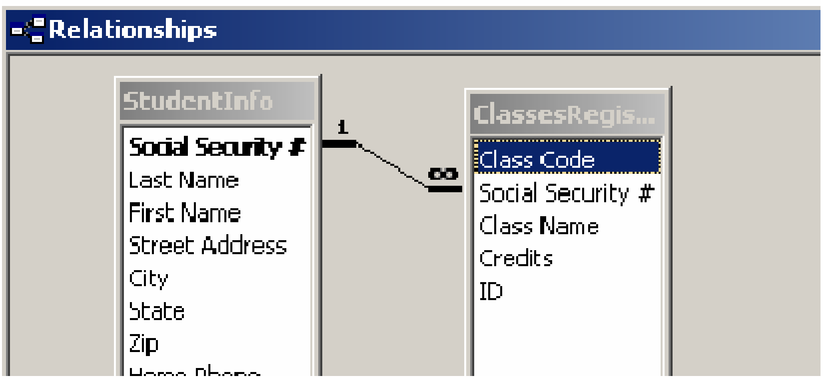


2) If the Show Table dialog box doesn't appear in front of the gray **Relationships** window, click the **Show Table** icon. Relationships screen with Show Table box will be displayed.
3) Double-click each table you'd like to include in the relationship. Alternatively,
4) Select a table you'd like to include, then click the **Add** button. This will place representative field lists on the Relationships window, as shown next. Field lists for tables in the Relationships window
5) Left-click and hold the mouse button on the field name you want to relate to a field in another table. Below, Social Security # is the field that will relate one table to the other. Click and hold the **Primary Key** in the parent table
6) Drag the mouse from the Primary Key in the first table towards the related field in the second table (the Foreign Key).



7) Release the mouse button to display the **Edit Relationships** dialog box
8) Click in the **Enforce Referential** Integrity check box
9) Click the **Create** button. The relationships window will show a line between the related fields as shown on the next page. On one end of the line is a "1" indicating the "one" side of a one-to-many relationship.
10) The other end of the line will have an infinity symbol next to it to show that there are potentially many entries on the "many" side of the one-to-many relationship.

Relationship diagram showing "one to many" relationship (one student, many classes).

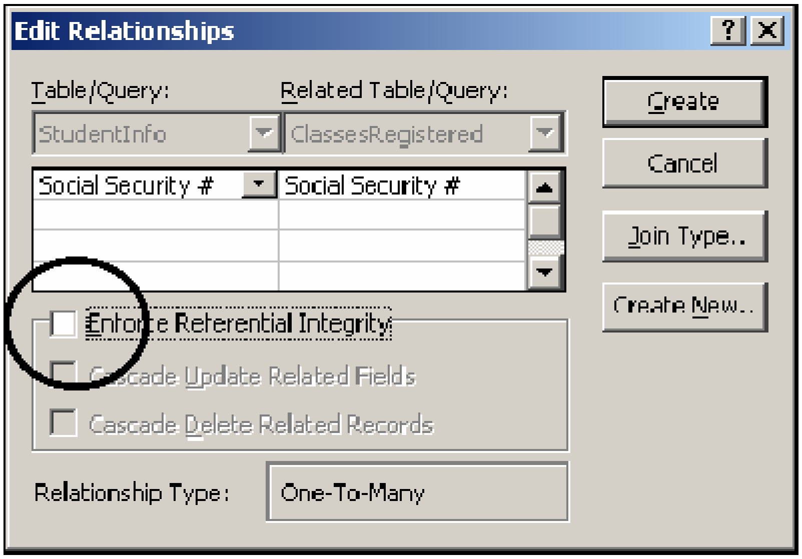


11) Click the **Save** button to save the relationship

Referential Integrity

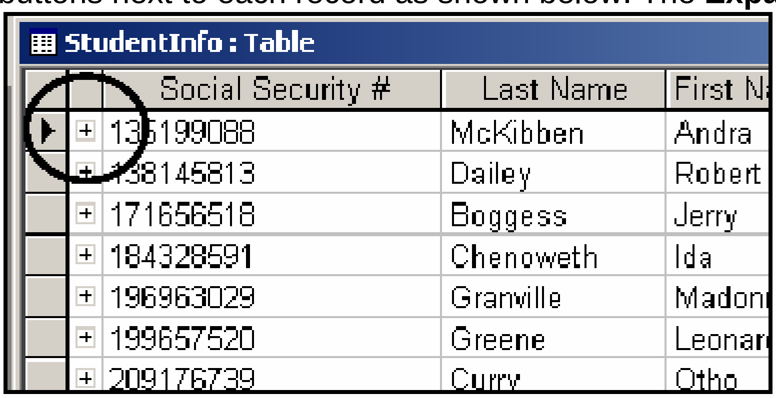
The "one" side of a relationship is represented by a table which is considered the "parent" table. A primary key in this table is called the **Primary Key.** The "many" side of the relationship is considered to be the "child" table (a parent can have many children). A primary key in this table, if a one-to-many relationship exists, is called the **Foreign Key**. Enforcing referential integrity ensures that the following three rules will not be broken:

- Do not enter a value in the foreign key field of a child table if that value doesn't exist in the primary key of the parent table.
- Do not delete a record from a parent table if matching records exist in a related table.
- Do not change the value in the primary key field if that record has related records in another table.

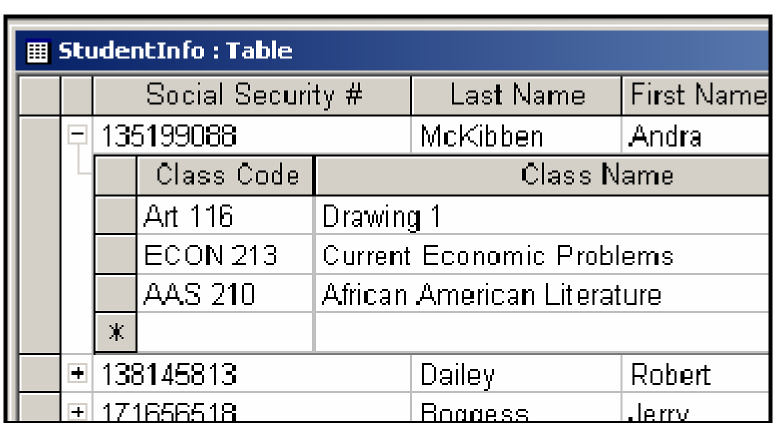


Working with Related Tables

Go to the tables object in the database window, and open the table that's represented on the "one" side of the relationship. Notice that there are expand buttons next to each record as shown below. The **Expand** button is circled.

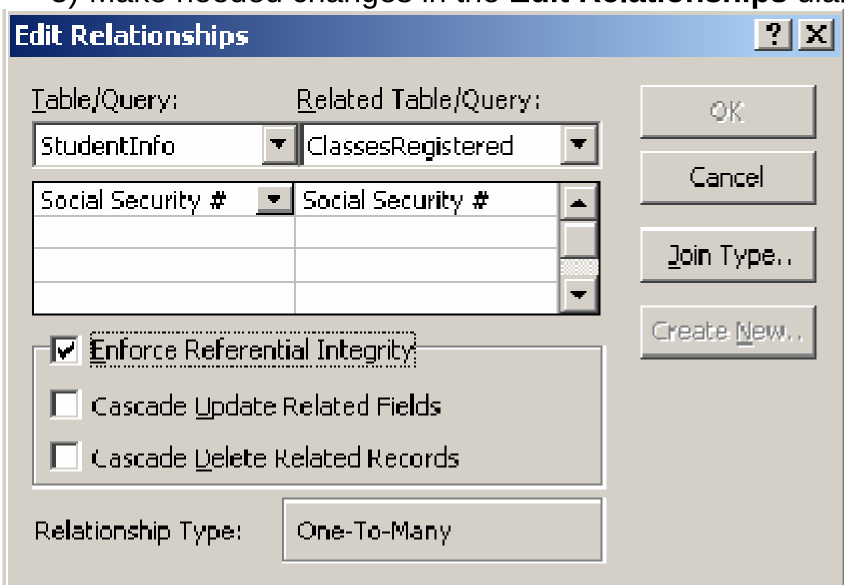


When the **Expand** button is clicked, the related information in the second table is shown. When entering data, the fields for the related table can be filled after the Expand button is clicked. Such a table is shown below.



Editing a relationship

1) Click the **Tools** menu item, then select **Relationships**. OR, click the **Relationships** icon in the toolbar.
2) Place the **TIP** of the mouse pointer directly on the line between two field lists, and near the halfway point between the field
3) Right-click the mouse to see a shortcut menu that will include Edit Relationship and Delete. OR, double-click on the line between the two field lists to go directly to the Edit Relationships dialog box.
4) Select **Edit Relationships**. The Edit Relationships dialog box will appear.
5) Make needed changes in the **Edit Relationships** dialog box.



Cascade Update Related Fields: This option requests that Access automatically update any foreign key values in the “child” table (the “many” table in a one-to-many relationship) if you change a primary key value in a “parent” table (the “one” table in a one-to-many relationship). For example, if this option is selected, you can change a primary key such as a social security number in the primary table (also called the parent table) and Access will update the social security (the foreign key) fields for related records in the child table.

Cascade Delete Related Records: This option requests that Access delete child rows in the child table when a parent row is deleted. For example, if you remove a customer from a database, it’s a good idea to also remove that customer’s orders. The customer record will be removed from the parent table, and the related orders will be deleted from the child table when this option is selected.

Working with Queries

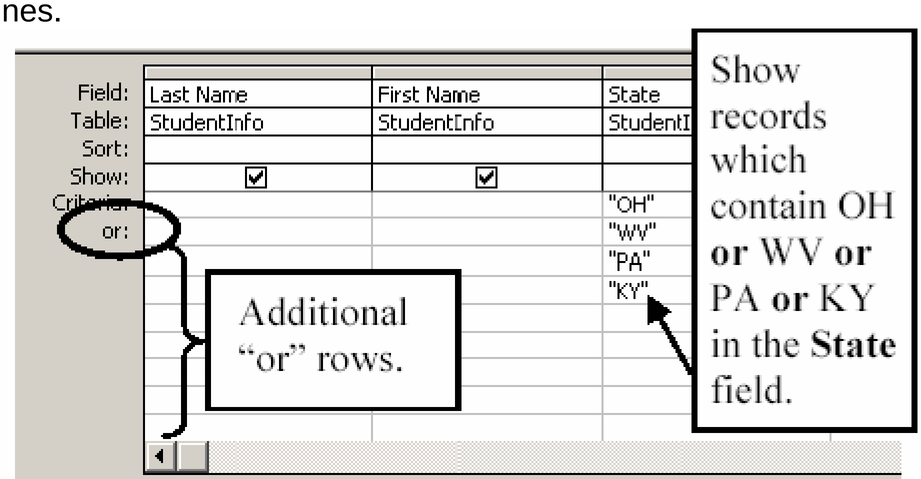
Using the Zoom Box for Easier Viewing:

1) Start typing in the criteria cell
2) HOLD the **SHIFT** key, then press the F2 key at the top of the keyboard to see the Zoom box. (Note that font attributes can be changed by clicking the Font button.)

Using OR in a Query

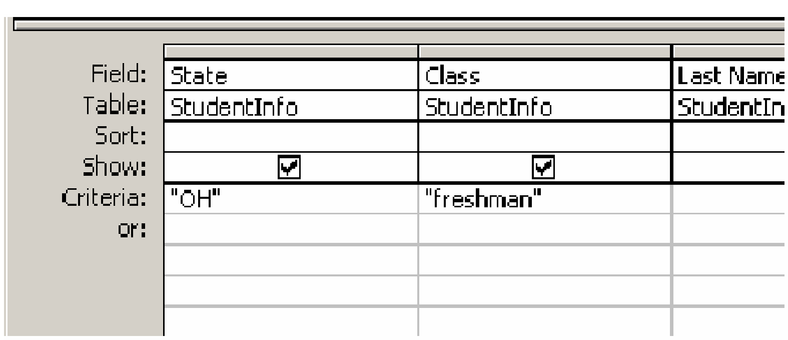
Note that the row below the Criteria row in the query design screen is an “or” row.

The additional rows below are all “or” rows also, even though they’re not labeled as such. The “or” rows would be used if we wanted the query to find either OH or WV or PA or KY. For this query, type a state abbreviation in the first four “or” lines.



Using AND in a Query

To write a query that will show records in which one condition is true AND another condition is also true, type two criteria in the Criteria line in different columns. For example, to find all students from Ohio who are freshmen, type OH in the criteria row in the State column, and type Freshman in the same criteria row, but in the Class column, as shown below.

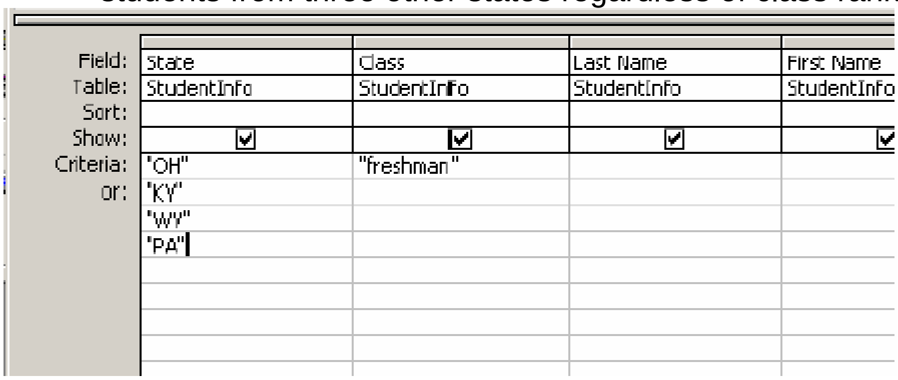


Query for records with OH **AND** freshman

Using AND and OR in a Query

To find records for Freshmen from Ohio OR students of any rank from KY, WV, or PA, type Freshman and OH on the criteria row to find freshmen from Ohio, then type the other state abbreviations on the OR lines as shown below. The query will return records of

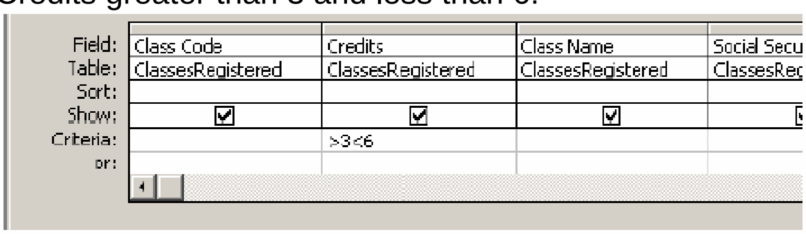
- students who live in Ohio AND are in the freshman class.
- students who live in KY, WV, or PA, regardless of class rank.
- students from Ohio who are freshmen
- students from three other states regardless of class rank.



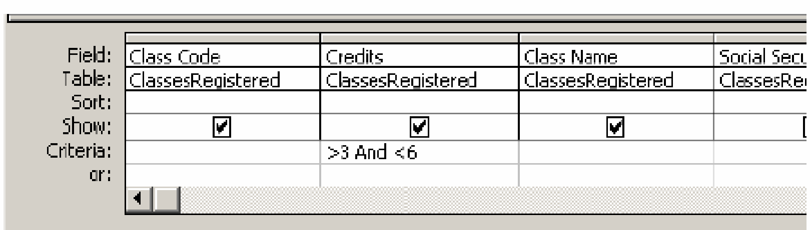
Field:	State	Class	Last Name	First Name
Table:	StudentInfo	StudentInfo	StudentInfo	StudentInfo
Sort:				
Show:	☑	☑	☑	☑
Criteria:	"OH"	"freshman"		
or:	"KY"			
	"WY"			
	"PA"			

More Query Examples

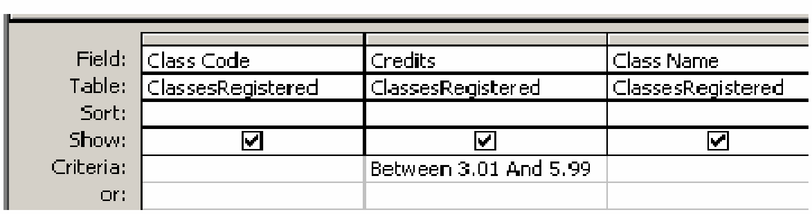
Following are some examples of different ways to write criteria. 3 ways to find Credits greater than 3 and less than 6:



Field:	Class Code	Credits	Class Name	Social Secu
Table:	ClassesRegistered	ClassesRegistered	ClassesRegistered	ClassesReg
Sort:				
Show:	☑	☑	☑	☑
Criteria:		>3<6		
or:				



Field:	Class Code	Credits	Class Name	Social Secu
Table:	ClassesRegistered	ClassesRegistered	ClassesRegistered	ClassesRe
Sort:				
Show:	☑	☑	☑	
Criteria:		>3 And <6		
or:				

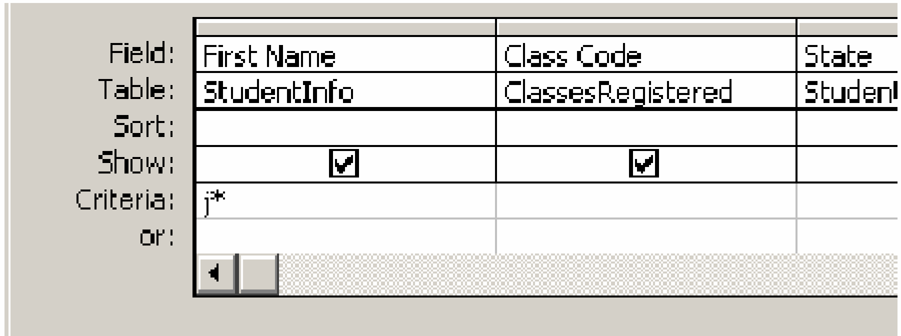


Field:	Class Code	Credits	Class Name
Table:	ClassesRegistered	ClassesRegistered	ClassesRegistered
Sort:			
Show:	☑	☑	☑
Criteria:		Between 3.01 And 5.99	
or:			

Additional "or" rows show records which contain OH or WV or PA or KY in the state field.

To Find all First Names Starting with J:

Type “j*” in the criteria row in the First Name column as shown below:



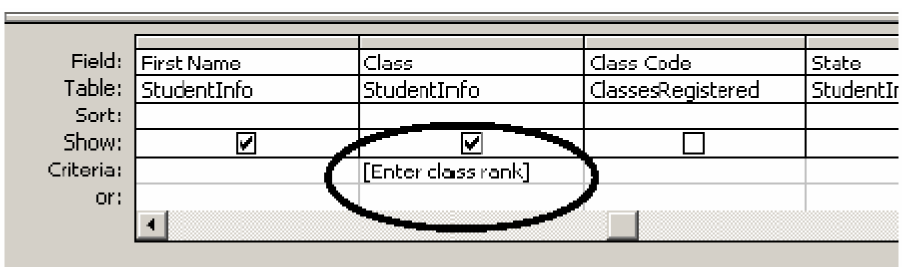
This means “anything that starts with j followed by any other character(s)”. When ou press the TAB key to leave that criteria cell, Access changes the criterion to “Like j*” as shown below. Query will find names like Jason, Jerry, and June

To Find all First Names Starting with JO:

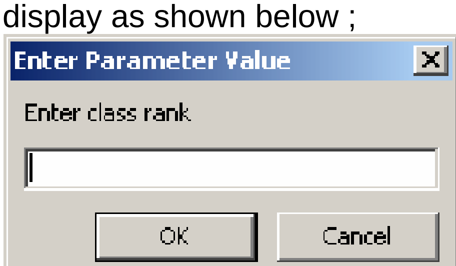
Type “jo*” in the criteria line. When you tab out of the criteria cell for First Name, Access will change your criterion to Like “jo*” as shown below. This query will find first names that start with the letters “jo”.

Creating and Using a Parameter Query

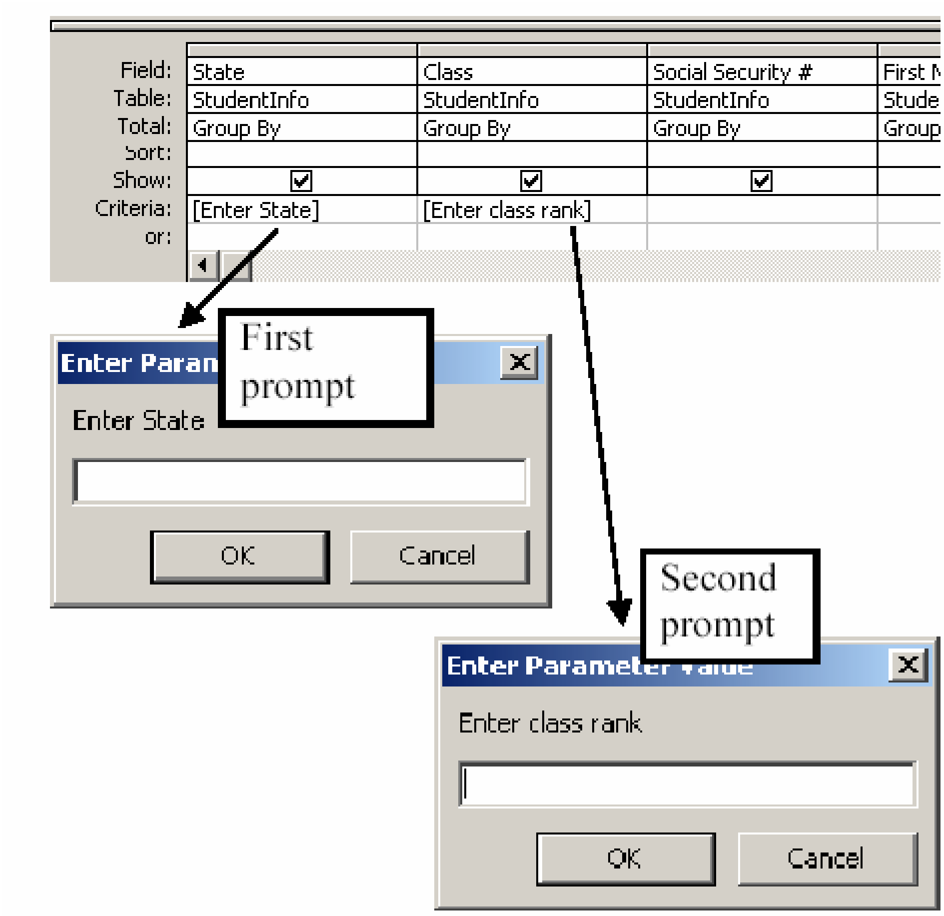
In a parameter query the criterion written on the criteria line is actually a prompt to the user of the query to type in a criterion. The prompt must be enclosed in square brackets (located above and to the left of the **ENTER** key) on the criteria line. When executed, the query will display the prompt, and the user will enter the criterion he or she wishes to use.



When the parameter query is run, the prompt written on the Criteria line will display as shown below ;



The query will return records in which the field contains the item the user entered. When the query is run, the parameter query's prompt will display, and the user will enter what they are searching for. Multiple prompts may be used in a parameter query, too, and will show in left-to-right order.



Using a Calculated Field in a Query

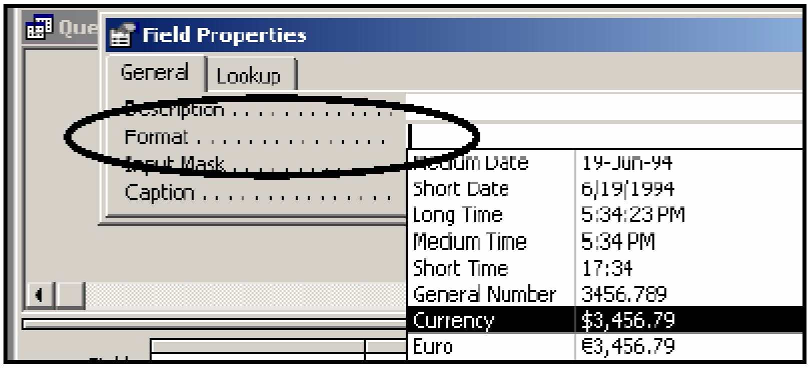
A query can be used to perform calculations. For instance, if a PAY RATE field is included in a table, a query can be used to multiply that pay rate by 1.5 to calculate an overtime rate or add two fields together, or multiply one field by another field

1) Click in the next empty field cell in a query grid
2) Press **Shift F2**
3) Type the name of the new field in the query followed by a colon, then space then the fields enclosed in square brackets []involved in the calculation. Example GrossPay: [hourly rate]*[rate of pay]

This would create a new field in the query called **GrossPay.** When you run the query, the **GrossPay** field shows the result of the calculation you created.

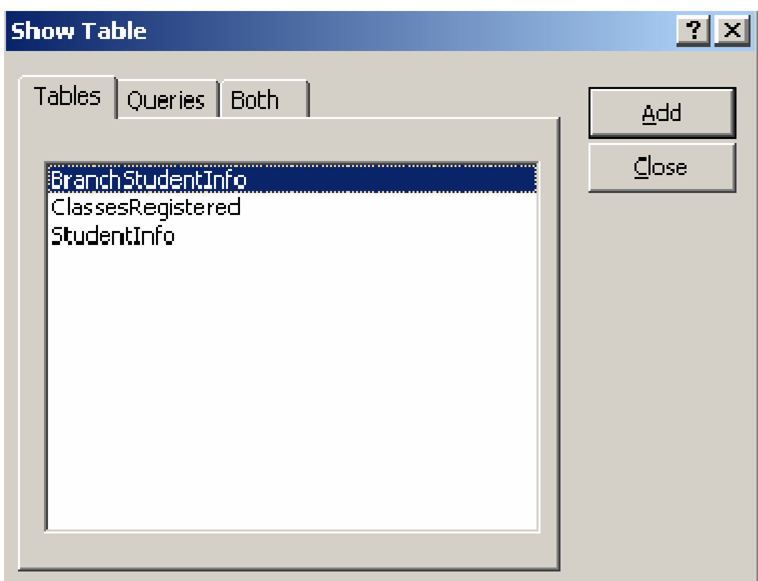
To Apply a Format to the Calculated Field:

1) Return to Design view
2) Click in the calculated field
3) Click the **Properties** button
4) Click on the **Format** line
5) Select **Currency** from the drop-down list
6) Close the Properties box and run the query

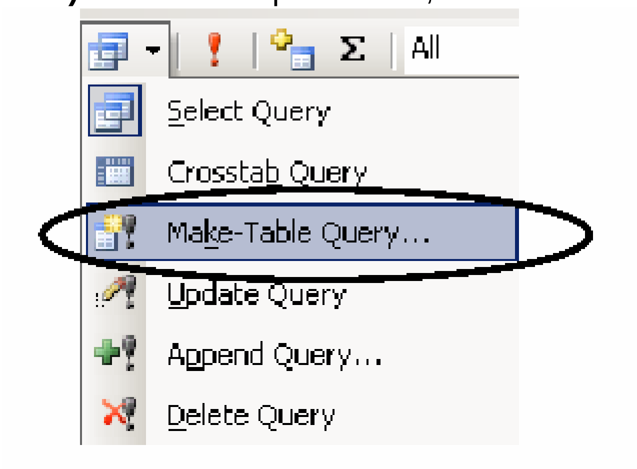


The Make Table Query

1) Move to the **Queries** object in the database window.
2) Double-click **Create Query** in Design view.
3) In the **Show Table** dialog box, note three tabs at top left for tables, queries, or both. Select the tab that contains the tables or queries from which you want to make a new table. (If the Show Table dialog box doesn't appear, click the Show Table icon in the menu bar.)

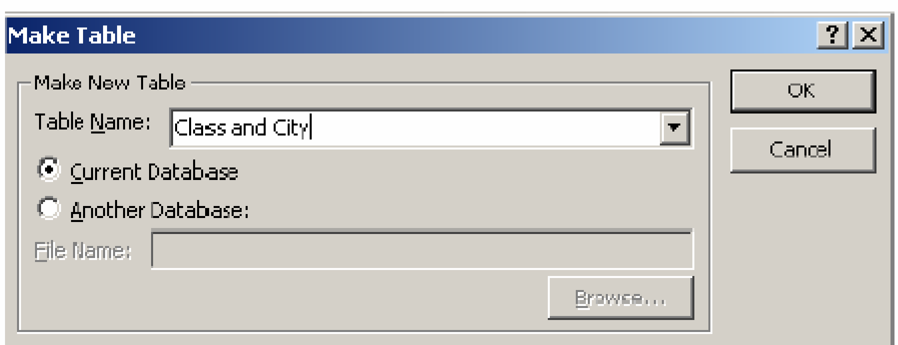


4) Double-click each table or query that has fields you want to include in the new table. This will place those tables' field lists in the field list section of the query design screen.
5) Close the **Show Table** dialog box.
6) Double-click the fields in the field lists that you want to include in the new table. This will add the fields to the Field row in the query design grid.
7) With the desired fields in the query design grid, click the down-arrow next to the Query Type icon
8) From the drop-down list, select **Make Table Query**



The Make Table dialog box will appear.

9) In the **Table Name box,** enter the name of the table you want to create. (Or, if you're replacing a table, enter the name of the table you want to replace)
10) Select either **Current Database** or **Another Database**. Select name and location for new table



11) Click **OK**
12) Add criteria to the query if desired.
13) Save the query if desired.
14) Click the **Run** button . 

A message will appear to tell you how many rows will be pasted into the new table. ***Note that the message warns that the changes can't be reversed with the UNDO command***.

15) Click **Yes** if you're comfortable with the information provided by the message.

The query design screen will appear without any extra dialog boxes when the Make Table query has created the new table.

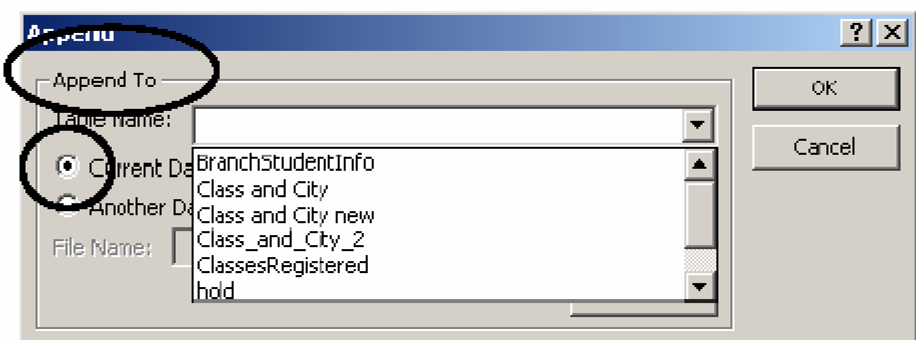
16) Move to the Tables object in the database window and examine the new table.

The Append Query

The append query is used to append the contents of one table to another table.

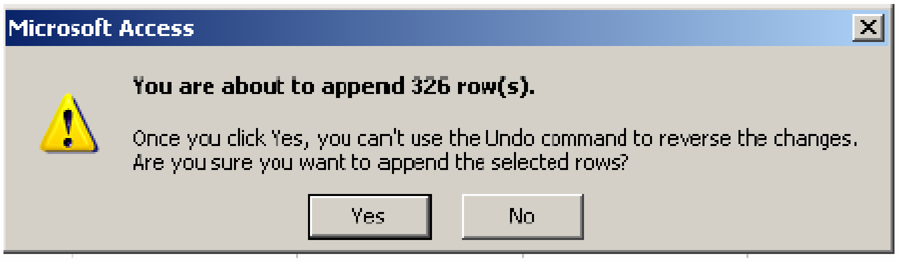
Using the Append Query:

1) Select the **Queries** object in the database window.
2) Double-click **Create Query in Design View**
3) If necessary, click the **Show Table** icon to display a list of tables in the database.
4) In the Show Table dialog box, select the table you want to APPEND to another table.
5) Close the Show Table dialog box.
6) Double-click the fields from the selected table that you want to append to the other table. Ensure that the column names in the query are arranged in the same order as those in the table you're appending to.
7) Click the **down-arrow** next to the Query Type icon .
8) Select **Append Query**
9) In the Append dialog box, use the dropdown arrow on the Table Name line to select the table that you want to append records TO.
10) Click the **radio button** to select Current Database.



11) Click **OK** to exit the Append dialog box.
12) Click the **Run** button to execute the query.

Note the message advising you that you're about to append X number of rows, and that you can't undo this action.

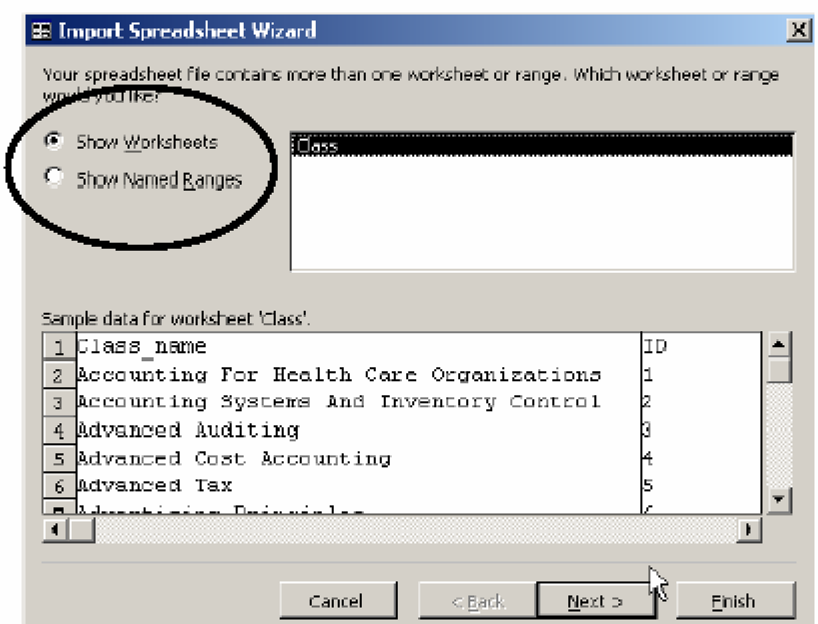


13) If you're comfortable with the information contained in the message, click **Yes** to append one table to the other.

Importing Tables

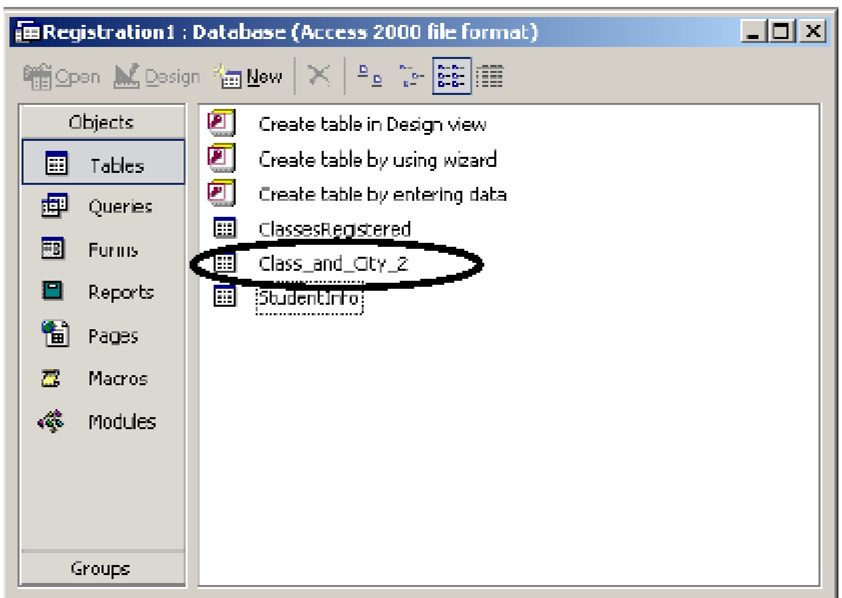
External files such as Excel spreadsheets can be imported into Access to be Access tables.

1) Click the button for the **Tables** object in Access.
2) Click **FILE, GET EXTERNAL DATA,IMPORT**
3) Specify where the file is to be found in the **Look In** line at the top of the dialog box. Specify what TYPE of file you're importing in the Files of Type line at the bottom of the dialog box.
4) Select the file you wish to import
5) Click the **Import** button to start the Import Wizard, shown below.
6) If importing a spreadsheet, select whether to show the worksheets or the named ranges in the spreadsheet by clicking the appropriate "**radio button"** at the top of the dialog box
7) Click **Next**.



8) Tell the Import Wizard whether the first row of the imported spreadsheet contains Column Headings by checking or clearing the **First Row Contains Column Headings** check box. Click Next
9) Determine whether to store the imported file in a new table or an existing table. If you plan to over-write an existing table, select its name from the drop-down list.
10) Click **Next**
11) Click a column header in the bottom part of the Import Wizard to see Field Options for that field in the top part of the wizard. Make changes in the Field Options section of the wizard if needed, then click **Next**
12) Set field options for the field which is highlighted in the bottom of the dialog box.
13) Choose whether to let Access add a Primary Key, choose the Primary Key yourself, or elect to have no Primary Key, then click **Next**
14) Type a name for the table that will be created from the imported spreadsheet on the Import to Table line, then click **Finish**

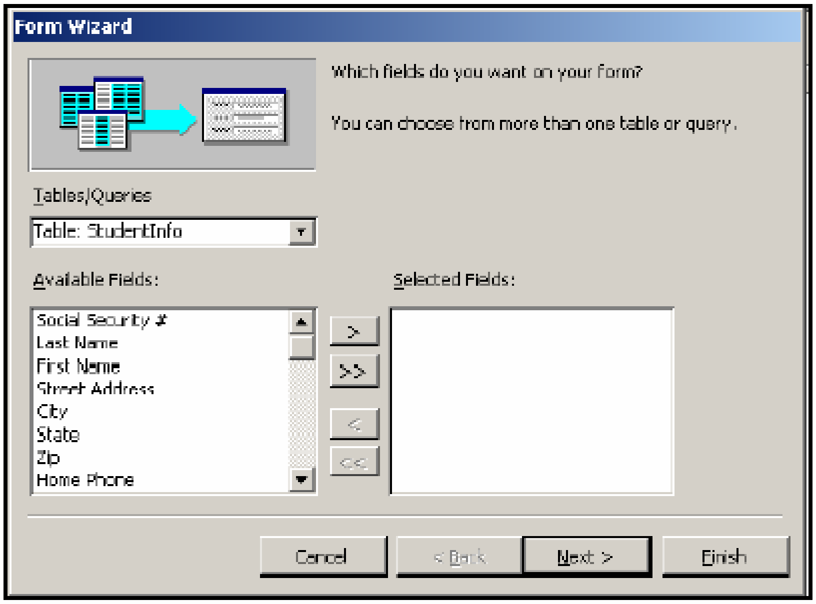
The newly-created table will appear in the Tables object of the Database window.



Create a Form Representing Two Tables Using the Forms Wizard

1) Move to the Forms object in the database window.
2) Double-click **Create Form by using Wizard** (or, select **Create Form by using Wizard**, then click the **Open** button)

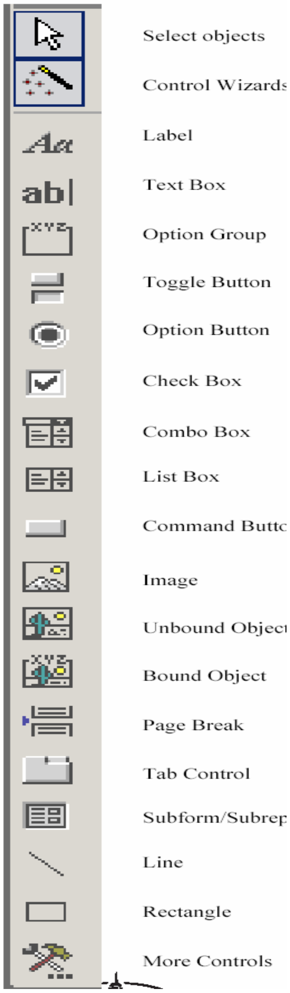
The Forms Wizard will start as shown below.



3) Use the drop-down arrow on the Tables/Queries line at the top left of the dialog box to select the table(s) with fields that you want to include in the form. Select the fields that you want on the form by double-clicking a field name on the left, or by selecting a field on the left, then clicking the single right-pointing arrow. To include all fields in the form, click the double right-pointing arrows. If you want the form to reflect the information in more than one table, you must first have established a relationship among the tables, such as the One-to-Many To include information from another table, use the drop-down arrow on the Tables/Queries line at the top left of the dialog box to select additional tables with fields that you want to include in the form.
4) Select the fields from the additional tables in the same manner
5) Click **Next**
6) Decide how you want to view the data on the form by clicking on a table name on the left and viewing a preview of the form on the right
7) Click **Next**, then choose a layout for the form
8) Click **Next**, then choose a style for the form
9) Click **Next**, then type a title for the form and ensure that the "Open the form to view or enter information" option button is selected
10) Click **Finish**

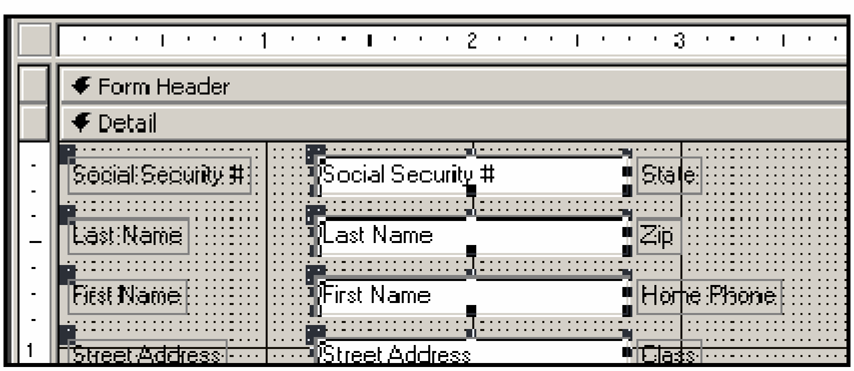
Working with Controls on a Form

Controls are the graphical objects that you place on a form to perform specific functions when you use the form. All controls have properties, or values, assigned to them. You can assign other properties to a control, such as size and color. A control that is associated with a field in a table or a query is called a bound control. A control that is not associated with a field in a table or a query is called an unbound control.



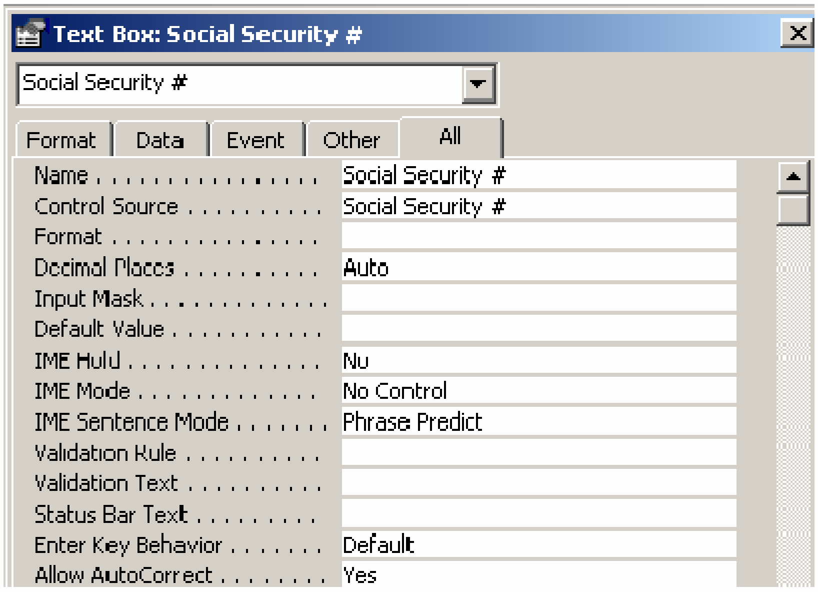
To Select a Control:
Click on the control

To Select Multiple Controls:
1) Click and drag your mouse around the area or "lasso" to encompass the controls to be edited.
Or
2) Hold down the **SHIFT** Key and select the first of several controls then click to make additional selections



To Modify Properties of Individual Controls on a Form:

1) Switch to **Design View** if needed
2) Select the control(s)
3) Click the **Properties** button on the toolbar (or right-click to display a menu on which you can select Properties)
4) Click the **All** tab in the Properties box to see all available options, or click the **Format** tab to see options related only to formatting



The Field List

Clicking the **Field List** button will reveal the list of fields in the table or tables upon which a form is based. When a form is based on more than one table - a form with a subform, for instance - the field list displayed will depend on whether the form or the subform is selected.

Adding a Field to a Form Using the Field List

1) Switch to **Design View**
2) Click on a field that's based on the table from which you want to add another field
3) Click the **Field List** button and note the table name at the top of the Field List
4) Click and drag the field to the desired position on the form

Moving, Aligning and Sizing Controls

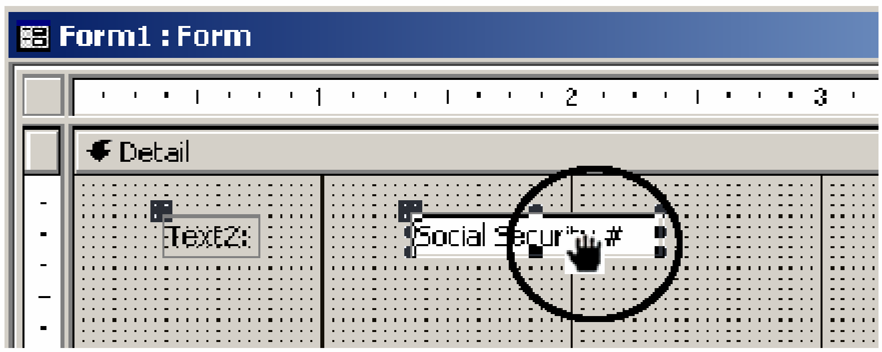
Controls may be moved, resized, and aligned either "manually" or by selecting controls and then selecting options from menus.

Moving Controls with the Mouse

A control that has an attached label may be moved in tandem with the label or independently, depending on where the mouse is positioned on the control.

To Move a Control and its Label:

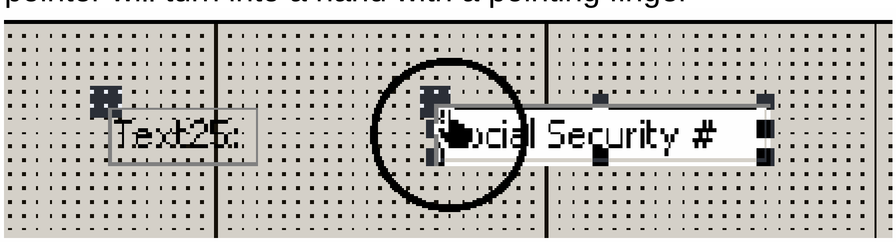
1) Move the mouse pointer over either the control or its attached label. Preparing to select controls
2) Click and HOLD the left mouse button to see an open hand pointer



3) While continuing to hold the left mouse button, drag the controls to a new location, then release the mouse button

Move a Control and its Attached Label Independently

1) Click the control or the attached label to select both of them. This will cause the appearance of the larger handle in the upper left corner of both the control and the label, as shown next
2) Position the mouse pointer over one of the large selection handles. The pointer will turn into a hand with a pointing finger



3) Drag the control to its new position

Resizing Controls with the Mouse

Controls can be resized one dimension at a time or two dimensions at a time, depending on where the mouse is positioned.

1) To change two dimensions simultaneously
2) Click a control once to select it
3) Position the mouse over a corner selection handle so that the mouse pointer becomes a two-headed arrow, as shown next
4) Click and hold the mouse, then drag away from the center or toward the center of the control

To Change One Dimension Independently:

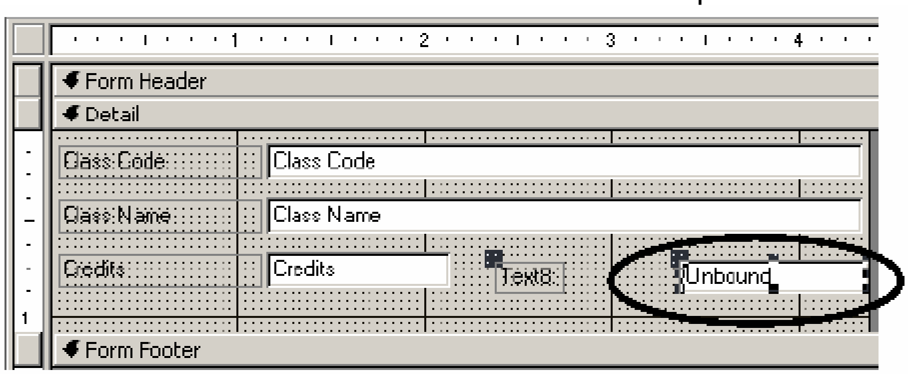
1) Click a control once to select it
2) Position the mouse over a top, bottom, or side selection handle so that the mouse pointer becomes a two-headed arrow
3) Click and hold the mouse, then drag away from the center or toward the center of the control

Using a Text Box for a Calculation

The form below has a credits field that may be used in a calculation. We'll add a text box, then type a formula in the text box.

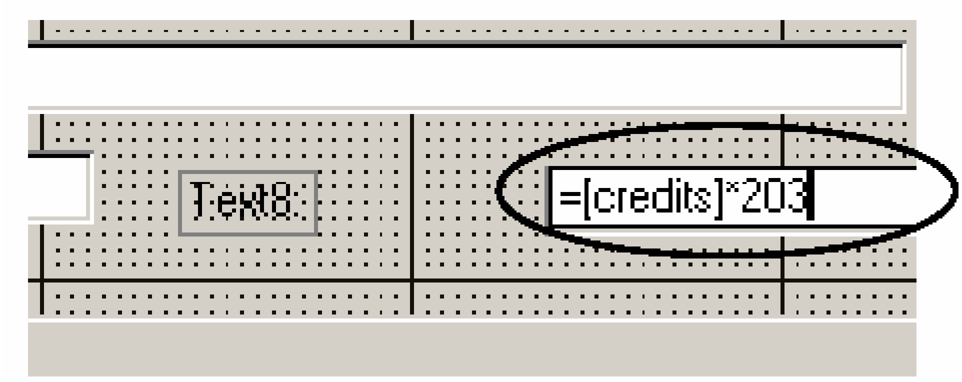
Open a form in design view

1) If the toolbox isn't displayed, click the **Toolbox icon** in the menu bar
2) Click and release the **Text Box tool,** then click in the form where the text box should be. An unbound text box will be placed on form



3) Click once in the **unbound text box** (not inthe label) to see a blinking insertion point

4) Type a formula. Start with the equal sign, then create the formula by enclosing field names in square brackets, as shown below
5) Click in the **attached label** to see a blinking insertion point, then type a label



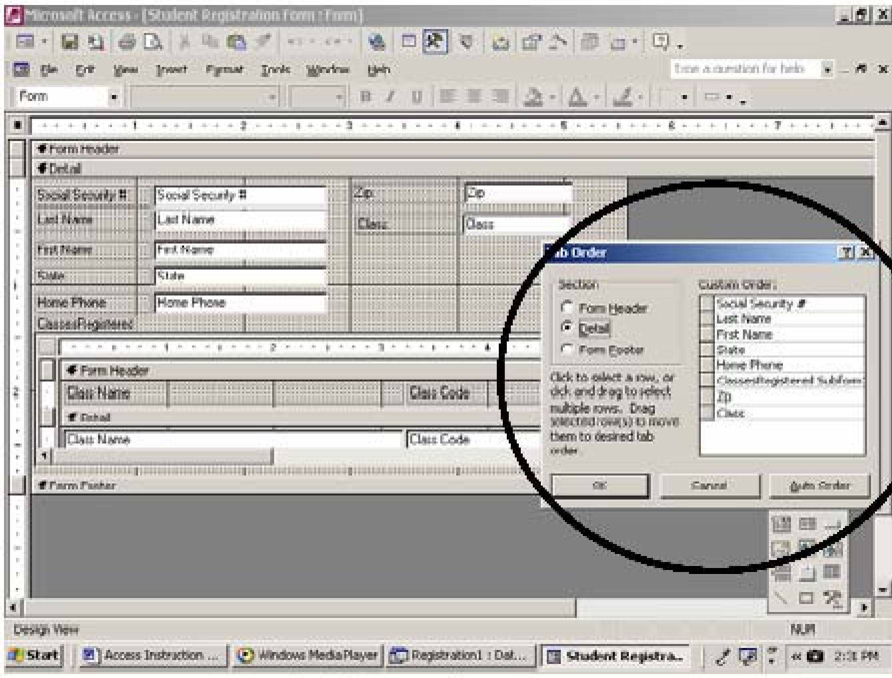
6) Save the form, then view the form in **FormView**

Changing the Tab Order

The tab order is the order in which your cursor moves through controls on a form when you press the **TAB** key. The default tab order is the order in which the controls are created on the form. Often, the tab order is not optimized after several controls have been added. Use the Tab Order dialog box to change the order in which controls are selected when the TAB key is pressed.

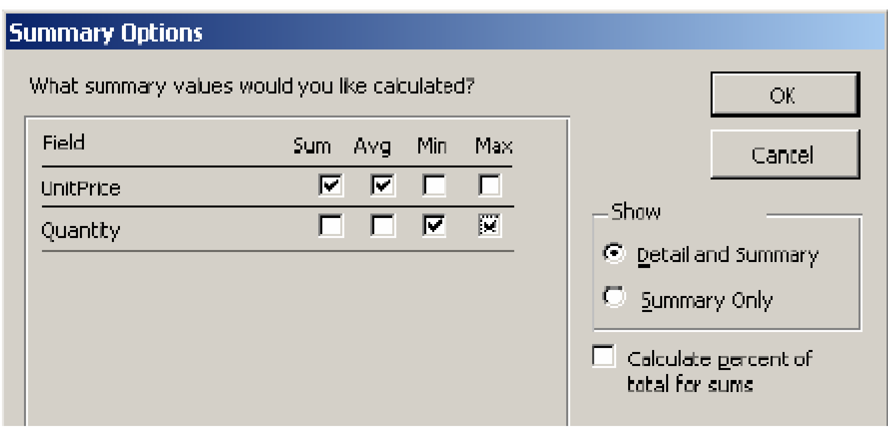
Using the Tab Order Dialog Box

1) Open a form in design view
2) Select **View** on the menu bar, then select **Tab Order**
3) Click the **row selector** (gray box at left of the field name) to highlight a field name in the Tab Order box
4) Move the field up or down in the **Custom Order** list by clicking again on the row header then holding the mouse button. A thick line will appear at the top edge of the selected row whenever the left mouse button is clicked and held.
5) While continuing to hold the left mouse button, move the field name up or down in the list to place it in the proper order
6) When the fields are ordered as you want, click the **OK** button



Create a Summary Report

1) Move to the **reports** object in the database window
2) Create a report using the wizard
3) After selecting fields, determine how you want to view the data, and selecting a grouping field if desired, the Report Wizard will present the Sort Order screen
4) Click the **Summary Options** button to see the Summary Options dialog box



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The Summary Options dialog box shows fields for which the Sum, Avg, Min, and Max functions can be applied. Additionally, the Show area of the dialog box allows the options of displaying Detail and Summary on the report, or just Summary Only.