

Access Tutorial 7: Subforms

7.1 Introduction: The advantages of forms within forms

A columnar/single-column main form with a tabular subform is a natural way of representing information from tables with a one-to-many relationship. For example, the form shown in [Figure 7.1](#) is really two forms: the main form contains information about a specific course; the subform shows all the sections associated with the course.

In the `Courses` and `Sections` example, the foreign key (`DeptCode` and `CrsNum`) provides a link between the two forms. This connection allows Access to **synchronize** the forms, meaning:

- when you move to another course record, only the relevant sections are shown in the subform;
- when you add a new section, the foreign key in the `Sections` table is automatically filled in (in

fact, there is no need to show `DeptCode` and `CrsNum` in the subform).

Although you will quickly learn to take a feature such as form/subform synchronization for granted, it is worthwhile to consider what this feature does and what it would take if you had to implement the same feature using a programming language.

7.2 Learning objectives

- What is form/subform synchronization?
- How do I create a form/subform combination?
- How do I link a form with a subform?

7.3 Tutorial exercises

Although there are a number of different ways to create a subform within a main form, the recommended procedure is the following:

FIGURE 7.1: A typical form/subform combination.

Because a link is established between the main form and the subform, only the sections that belong with "COMM 351" are displayed in the subform.

The main part of the form is columnar (one record per page) and displays information from the Courses table.

The subform is a separate tabular form that displays information from the Sections table.

The screenshot shows a database form titled "Courses". The main form contains the following fields:

- Department code:
- Course number:
- Title:
- Credits:
- Activity:

Below the main form is a subform table with the following columns: CatalogNum, Section, Session, Term, Meeting days, Meeting time, Building, Room. The table contains three rows of data:

CatalogNum	Section	Session	Term	Meeting days	Meeting time	Building	Room
13713	001	95W	1	MW	830-1000	ANGU	426
82937	002	95W	1	MW	1000-1130	ANGU	426
23832	003	95W	1	W	1830-2130	ANGU	310
*			0				

1. create and save both forms (one columnar, one tabular) separately;
2. drag the subform on to the main form; and,
3. verify the linkage between the two forms.

7.3.1 Creating the main form

- Use the wizard to create a columnar form based on the `Courses` table.
- Rearrange the fields so that they make efficient use of the top part of the form, as shown in [Figure 7.2](#).
- Save the form as `frmCoursesMain`.

7.3.2 Creating the subform

- Use the wizard to create the subform, as shown in [Figure 7.3](#) and [Figure 7.4](#).
- Subforms created by the wizard typically require some fine tuning in order to reduce the amount of

space they occupy. A number of editing issues are highlighted in [Figure 7.5](#).

- Save the form as `sfrmSections` and close it.

7.3.3 Linking the main form and subform

In this section, you are going to return to the main form and drag the saved subform from the database window to an appropriate position on the main form.

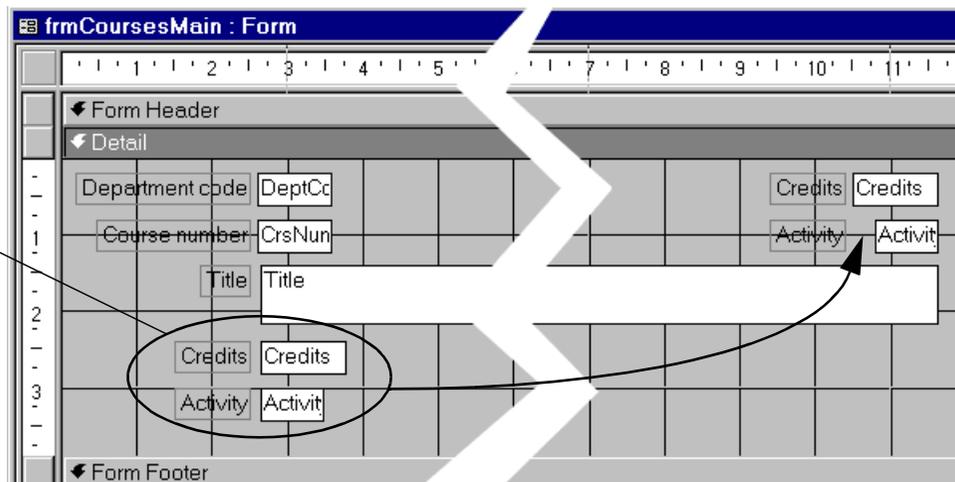
- Open the main form (`frmCoursesMain`) in design mode.
- Select *Window > univ0_vx: Database* to open the database window in the foreground. Alternatively, you can press the database window icon () on the tool bar.
- Perform the steps shown in [Figure 7.6](#) to drag the subform on to the main form.
- The result of the drag-and-drop operation are shown in [Figure 7.7](#). The advantage of the drag-and-drop method of creating a sub form is that

FIGURE 7.2: Rearrange the text boxes on the main form to make room for the subform.

a Use the wizard to create a columnar form based on Courses.

b Enter form design mode and rearrange the text boxes to make room for the subform.

c Save the form under the name frmCoursesMain.



? To move more than one form object at a time, either hold down the **Shift** key when selecting or drag a box through the objects (click and drag to create a box).

FIGURE 7.3: Use the wizard to create the Sections subform (part 1).

a Select the form wizard and bind the new form to the Sections table.

b There is no need to include DeptCode and CrNum since they are shown in the main form.

? The order in which the fields are added to the right-hand pane determines their order (from left to right) on the form. Use the < and > buttons to get the desired ordering.

New Form

This wizard automatically creates your form, based on the fields you select.

Choose the table or query where the object's data comes from:

OK Cancel

Form Wizard

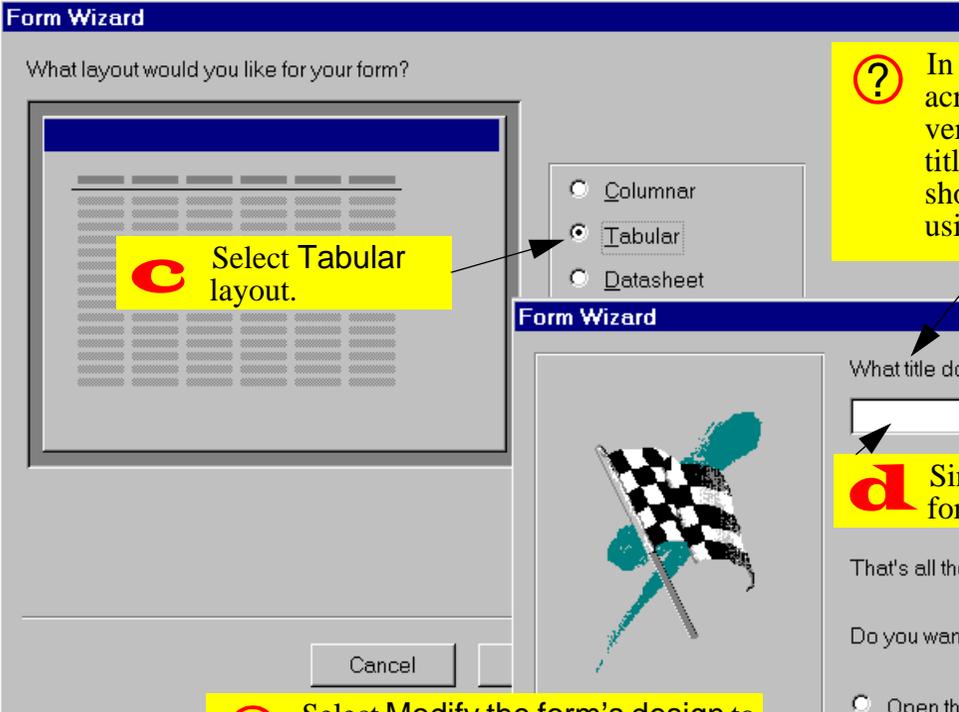
Which fields do you want on your form?
You can choose from more than one table or query.

Tables/Queries:
Table: Sections

Available Fields:
DeptCode
CrNum

Selected Fields:
CatalogNum
Section
Session
Term
Days
Time
Building
Room

FIGURE 7.4: Use the wizard to create the Sections subform (continued)



The screenshot shows the 'Form Wizard' dialog box with the title bar 'Form Wizard'. The main text asks 'What layout would you like for your form?'. There are three radio button options: 'Columnar', 'Tabular', and 'Datasheet'. The 'Tabular' option is selected. A yellow callout box with a red 'C' and a question mark icon points to the 'Tabular' option, containing the text 'Select Tabular layout.'.

Below the options is a preview area showing a grid of form fields. To the right of the preview is a 'Cancel' button. Below the preview is a 'Modify the form's design' button, which is highlighted by a yellow callout box with a red 'Q' and a question mark icon, containing the text 'Select Modify the form's design to enter form design mode directly.'.

Below the 'Form Wizard' dialog box is another 'Form Wizard' dialog box, partially visible, with the title bar 'Form Wizard'. The main text asks 'What title do you want for your form?'. There is a text input field. A yellow callout box with a red 'd' and a question mark icon points to the input field, containing the text 'Since a subform is embedded in a main form, you do not have to provide a title.'.

Below the input field is a text area with the text 'That's all the information the wizard needs to create your form.' and 'Do you want to open the form or modify the form's design?'. There are two radio button options: 'Open the form to view or enter information.' and 'Modify the form's design.'. The 'Modify the form's design.' option is selected.

FIGURE 7.5: Edit the subform to reduce the amount of space it uses.

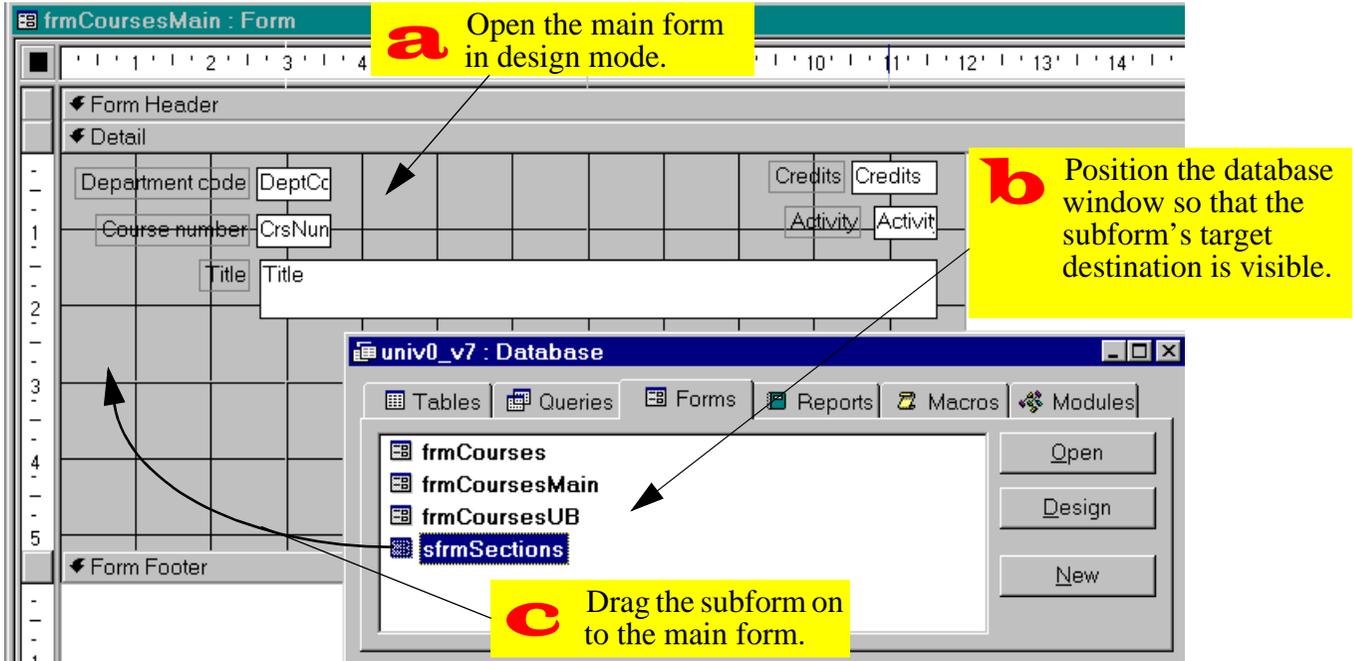
a Reduce the horizontal space used by the headings and fields.

b Reduce the vertical space by moving the fields up to the “detail band” and bringing the “form footer” band up against the fields (to move a band, drag it using the mouse).

? To split the headings into two or more lines, place the cursor at the desired split location and press **Shift-Enter**.

? To move all the fields at once, drag a “selection box” so that it touches each field. Note that the box does not have to enclose objects for them to be selected.

FIGURE 7.6: Drag the subform on to the main form.



the width of the subform control (the white window) is automatically set to equal the width of the subform.



If you make changes to the size of your subform once the subform control is created, you may have to resize the subform control by clicking and dragging a corner handle.

7.3.4 Linking forms and subforms manually

If both the form and the subform are based on tables, and if relationships have been defined between the tables, Access normally has no problem determining which fields “link” the information on the main form with the information in the subform. However, when the forms are built on queries, Access has no relationship information to rely on. As such, you have to specify the form/subform links manually.

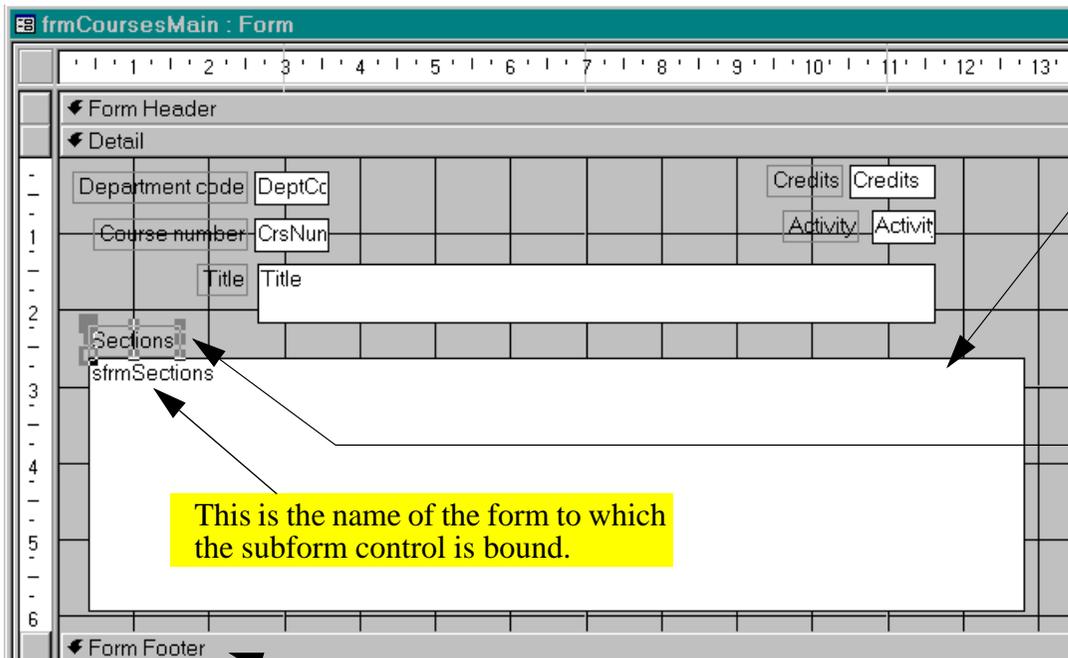
Since both the forms created in [Section 7.3.3](#) were built on tables, Access could automatically determine the relationship.

- Verify the link between the form and the subform by examining the property sheet of the subform control, as shown in [Figure 7.8](#).



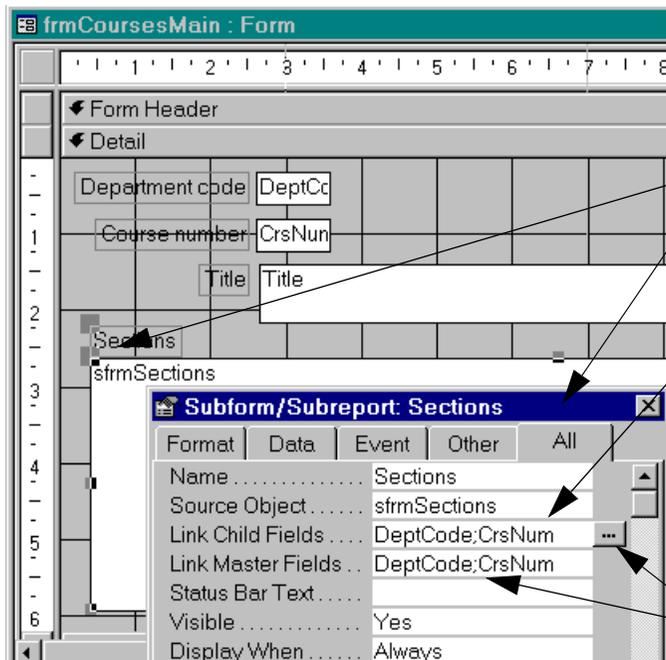
The terminology “link child field” and “link master field” is identical to “foreign key” and “primary key”. The main form is the parent (“one” side) and the subform is the child (“many” side).

- View the resulting form. Notice that as you move from course to course, the number of sections shown in the subform changes (see [Figure 7.9](#)).

FIGURE 7.7: The drag-and-drop operation creates a subform control.

The screenshot shows the Microsoft Access design view of a form named 'frmCoursesMain'. The form has a header, a detail section, and a footer. The detail section contains several text boxes: 'Department code' (DeptCc), 'Course number' (CrsNun), 'Title', 'Credits', and 'Activity'. A subform control is being added to the form. The subform control is a white rectangle with a label 'Sections' and 'frmSections' below it. The form footer is pushed down. Three yellow callout boxes provide additional information:

- The white area is a “subform control”. It is essentially a window through which the subform shows.
- You may want to delete the label created with the subform window. To delete the label only, select it and press Delete.
- The form footer is pushed down when the subform control is created. You may move the footer to create more or less area at the bottom of the form.

FIGURE 7.8: Verify the link fields for the form/subform.

a Select the Sections subform control (the white window) and bring up its property sheet.

b Verify that Access has correctly determined the link fields.

? When there are more than one link fields (i.e., the foreign key is concatenated), separate the field names with a semicolon. In Access version 7.0, a builder is available to select the field names from a list.

FIGURE 7.9: A synchronized main form/subform.

a Note that for COMM 290, eight courses are listed in the subform.

c For COMM 291, four sections are listed in the subform.

b Click the “next record” navigation button on the main form to move to the next course.

? There are two sets of navigation buttons: one for the main form (bottom) and one for the subform (at the bottom of the subform window).

The screenshot shows two instances of the 'frmCoursesMain' form. The main form is in the foreground, displaying data for Department code 'COMM', Course number '290', and Title 'Introduction to Quantati'. Below this is a table of sections:

Catalog Num	Section	Session	Term	Meeting days
44411	001	94W		
57455	002	94W		
48516	003	94W		
71845	004	94W		
69495	005	94W		

The subform is positioned behind the main form, displaying data for Department code 'COMM', Course number '291', and Title 'Applied Statistics in Business'. Below this is a table of sections:

Catalog Num	Section	Session	Term	Meeting days
84203	001	95W	2	MW
83920	002	95W	2	WF
30293	003	95W	2	M
93209	004	95W	2	MW
*			0	

Navigation buttons are visible at the bottom of both forms. The main form's navigation buttons are at the bottom of the window, and the subform's navigation buttons are at the bottom of the subform window.

7.3.5 Non-synchronized forms

In this section, you will delete the link fields shown in [Figure 7.8](#) in order to explore some of the problems associated with non-synchronized forms.

- Return to form design mode and delete the link fields (highlight the text and press the *Delete* key).
- View the form. Note that all records in the `Sections` table (not just those associated with a particular course) are shown.
- Attempt to add a new section to COMM 290 as shown in [Figure 7.10](#).
- Re-establish the correct link fields and save the form.

7.3.6 Aesthetic refinements

In this section, you will modify the properties of several form objects (including the properties of the form

itself) to make your form more attractive and easier to use.

In [Figure 7.11](#), the basic form created in the previous sections is shown and a number of shortcomings are identified.

7.3.6.1 Changing the form's caption

- Select the form as shown in [Figure 7.12](#).
- Change its *Caption* property to “Courses and Sections”.

7.3.6.2 Eliminating unwanted scroll bars and navigation buttons

Scroll bars and navigation buttons are also form-level properties. However, in this case, you need to modify the properties of the subform.

- To quickly open the subform in design mode, double-click the subform control when viewing the main form in design mode (this takes some practice)

FIGURE 7.10: A non-synchronized main form/subform.

a Delete the link fields for the subform control and view the resulting form.

b Note that all 37 sections show in the subform (moving to a different course has no effect).

c Add a new catalog number and click the record selector to try to save the new record.

frmCoursesMain

Department code: COMM Credits: 3

Course number: 290 Activity: LEC

Title: Introduction to Quantative Decision Making

Sections

Catalog Num	Section	Session	Term	Meeting days	Meeting time	Building	Room
37358	001	95W	0	T Th	1030	MUSC	301
48804	002	95W	0	T Th	1130	MUSC	301
84545	003	95W	0	T Th	1430	MUSC	301
00001			0				

Record: 37 of 37

Record: 1 of 11

? Since the forms are not synchronized, the DeptCode and CrsNum fields of the Sections table are not automatically filled in by Access.

Microsoft Access

! Index or primary key can't contain a null value.

OK Help

FIGURE 7.11: A form/subform in need of some basic aesthetic refinements.

The caption of the form shows the form's name. A more attractive/descriptive caption is required.

Department code Credits

Course number Activity

Title

Sections

Catalog Num	Section	Session	Term	Meeting days	Meeting time	Building	Room
44411	001	94W	1	MW	830-1000	ANGU	413
57455	002	94W	1	WF	830-1000	ANGU	415
48516	003	94W	1	WF	1030-1200	ANGU	415
71845	004	94W	1	MW	1000-1130	ANGU	413
69495	005	94W	1	MF	1300-1430	ANGU	415

Record: of 8

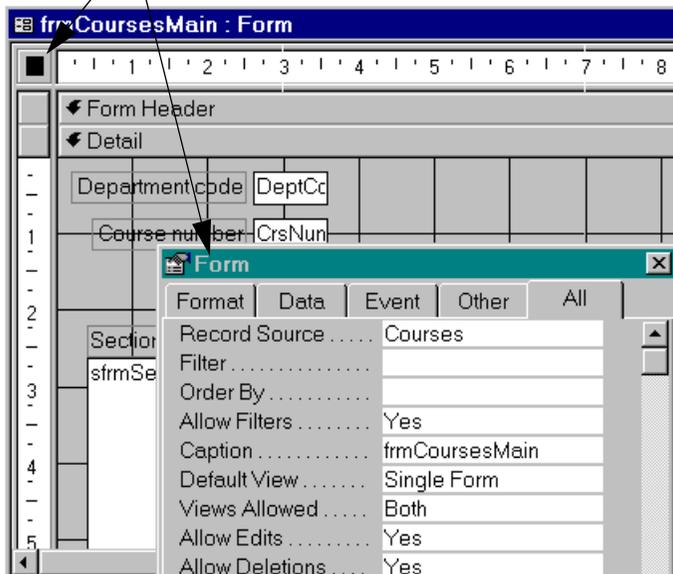
Record: of 11

Since the subform control was automatically sized to fit the underlying form, a horizontal scroll bar is not necessary.

The navigation buttons for the subform are too easily confused with the navigation buttons for the main form

FIGURE 7.12: Select the entire form.

a Click on the square where the vertical and horizontal rulers meet in order to get the property sheet for the form.



- Bring up the property sheet for the form and scroll down to change its *Scroll Bars* and *Navigation Button* properties, as shown in Figure 7.13.

The net result, as shown in Figure 7.14, is a more attractive, less cluttered form.

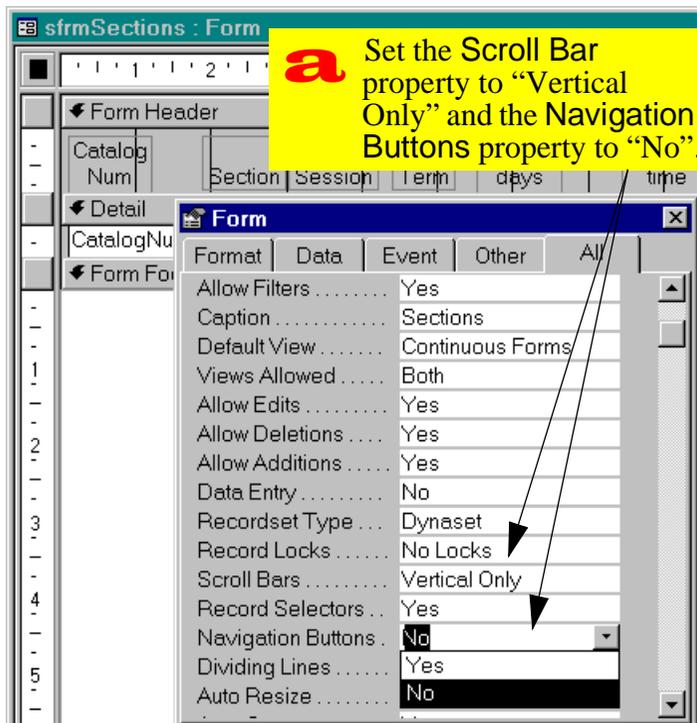
7.4 Application to the assignment

- Create a form and subform for your *Shipment* and *ShipmentDetails* information. You will use this form to record the details of shipments **from your suppliers**.

Note that both forms should be based on queries:

- the *Shipment* form should be based on a “sort” query so that the most recent shipment always shows first;
- the *ShipmentDetails* form should be based on a join query so that validation information (such as the name of the product) is shown when a product number is entered.

FIGURE 7.13: Change the scroll bars and navigation buttons of the subform.



- Create a form/subform to show customer orders that have already been placed (such as the one you entered manually in [Section 4.5](#)). The top part of the form should contain information about the order plus some information about the customer; the subform should contain information about what was ordered and what was actually shipped.



The form you created in the preceding step is used for viewing existing orders, not for adding new orders. To add new orders, the form must be more complex. For example, it has to show the quantity on hand and the back ordered quantity for each item so the user can decide how many to ship. You will create a form for order entry in the latter tutorials.

- Set the *Allow Additions* and *Allow Edits* properties of the "order viewing" form to No. This pre-

FIGURE 7.14: A form without subform scroll bars or navigation buttons.

Department code Credits

Course number Activity

Title

Sections

Catalog Num	Section	Session	Term	Meeting days	Meeting time	Building	Room
▶ 44411	001	94W	1	MW	830-1000	ANGU	413
57455	002	94W	1	WF	830-1000	ANGU	415
48516	003	94W	1	WF	1030-1200	ANGU	415
71845	004	94W	1	MW	1000-1130	ANGU	413
69495	005	94W	1	MF	1300-1430	ANGU	415
34134	006	94W	1	MW	1300-1430	ANGU	413

Record: of 11

7. Subforms

Application to the assignment

vents the user from changing the details of an order that has already been invoiced or attempting to use the form for order entry.