Database Case 2 *Hudson, Palmer, Martinez & Flenderson Attorneysat-Law*

Problem:	Construct a Personnel Database	
Management Skill:	l: Coordinate	
Access Skills:	Table Setup Data Input Select Queries Report Design Printing	
Data Table:	HUDSON PALMER	

Hudson, Palmer, Martinez, & Flenderson (Hudson Palmer for short) is a large legal practice with offices in Allentown, Harrisburg, and Scranton, Pennsylvania, specializing in corporate law. The Hudson Palmer Allentown office employs more than 85 freelance and contract personnel, including expert witnesses (EW) from various fields and disciplines, private investigators (PI), process servers (PS), and legal researchers (LR). These people are hired on an as-needed basis to assist in the conduct of cases on behalf of the many client corporations the firm represents.

Hudson Palmer has 38 Principal attorneys who are also the main partners in the firm. Each Principal has a staff of assistant lawyers. In addition, all Principals keep separate lists of contractors and freelancers with whom they have worked successfully in the past. Typically, these lists reside on 3" x 5" cards in a file cabinet in each partner's office. Whenever a client's case requires certain outside expertise, the partners reach for these cards and select their favorite people.

The partner's remuneration is based in part on their performance—the more successful cases they litigate, the more money they make. Moreover, the more experienced and competent freelancers they know, the more likely they are to successfully litigate, and thus the more likely that attractive clients will seek them out for assistance. In this environment, there is a natural tendency to safeguard the names of good freelancers and contractors for one's own accounts. However, there is also the likelihood that by sharing this information, the firm's overall success would increase and everyone would benefit.

Jeffrey Hudson started the law firm 24 years ago with fellow Temple University graduate Bradley Palmer. Jeffrey knows how the freelancing system works. The problem is that each attorney squirrels away the names of the people that he or she thinks are really excellent. When it comes to the talent pool, there is no sharing among attorneys. Second-rate people may be used on a case because the names of the first-rate people are only known by one or two attorneys. If a partner hires a poor freelancer, and the verdict on a case goes against the interests of a client, the client may be inclined to look for new legal representation in the future, and thus the firm's profits and reputation suffer.

Hudson wants to establish some sort of centralized repository for this information. Too much time is wasted searching for people with particular skills or knowledge that may already be known to some of the partners. The central repository could also contain comments on the performance of the freelancer or contractor on prior occasions and other relevant data. Hudson would like some sort of scoring system so that freelancers and contractors could be rank-ordered. This would ensure that only the best people would be hired to work with the firm.

The partners are not happy with this idea. Sharing these resources with the other partners may mean that their favorite people will be unavailable when they need them most. On the other hand, a central repository might help them find new resources for assistance about whom they did not previously know. Therefore, with somewhat mixed feelings, the partners have agreed to support the proposal to build a central repository of contractors. They have responded to a memo sent out by Hudson asking them to list the resources they would like to have stored in a central database.

The following fields were identified: First and Last Name, Skill, Hourly Rate, Number of Hours Employed for Each Quarter of 2008, Phone Number, Rating (Excellent, Good, OK, or Poor) and Initials of the Rater. Hudson reviewed the suggestions and added a field to store an additional free form text comment about each freelancer.

Parts of this database have been identified in the table HUDSON PALMER in the SOLVEIT_5 database. Create a new Access database and import this table now.

Tasks

There are seven tasks in this case:

- 1. Complete the design of the table to store the rating system devised by Hudson. Be sure to devise a way to limit the rating field to only 4 categories and to record free-form text remarks from the attorneys.
- 2. Fabricate and enter hours worked for the existing freelancers or contractors. Enter data for three new freelancers or contractors, such as private investigators (PI), process servers (PS), legal researchers (LR), or expert witnesses (EW). Enter data for at least the first three freelancers in the comments field. Use your initials for the partner who is contributing the remarks.
- 3. Create a query that shows the contractors sorted first by their skill, then by their rating, and then by their name. Include the comment field and print the results of this query.

- 4. Create a report to list all the freelancers and contractors with just the following fields: Last Name, First Name, Hourly Rate, the Total Number of Hours Worked, and the Total Amount Earned in 2008. Print the report.
- 5. Produce and print a report to list all expert witnesses who charge more than \$250.00/hour. Include in this report the total number of hours this group of freelancers worked for Hudson Palmer in 2008. Print the report.
- *6 There are several areas where this system can be enhanced and improved. (What will happen next quarter? What if two partners have the same initials?) Make a list of all of the improvements you would make, and then pick one and implement it into the database.
- *7. Currently, with the comments in a Memo field, no analysis or data manipulation can be performed using the ratings of the freelancers. There may also be conflicting opinions on the merit of any one freelancer if they have worked for more than one partner. Devise a method to accommodate these differing opinions in such a way that meaningful analysis can be performed. Note that this may mean redesigning the database.

Time Estimates (excluding tasks marked with *)

Expert:	45 minutes
Intermediate:	1.25 hours
Novice:	2 hours

Tutorial for Database Case 2 Using Access 2007

In the previous case, you learned to use Table Design View to change the structure of a table by adding new fields and setting field properties, and how to use Datasheet View for adding and editing records. This case introduces the *memo* data type and *report design*. Start Access and open the FRIENDS table you used for the Case 1 tutorial to practice the skills you will need for this case.

Using Memo Fields

Memo fields are used in tables to store free form text and notes. You use a memo field to store descriptive or narrative information and even large documents. A memo field in Access 2007 can hold up to 65,536 characters of text. Creating, entering, and saving data in an Access memo field is a very simple procedure. Because of their unstructured nature, memo fields cannot be indexed or sorted, but they can be searched. We will look at indexing, sorting, and searching in later cases.

- Open the SOLVEIT_CH5 database. Double-click on the FRIENDS table to open it in Datasheet View. Click the *Design View* button for click *View* on the Home tab of the Ribbon.
- 2. Let's add a new field to the end of the existing table. The name for the new field will be COMMENTS and the data type will be *Memo*. (Review the tutorial for Case 1 if you are unsure how to add new fields and select data types.) Notice that the Field Size cell in the Field Properties pane does not appear when you select the memo data type. Save the changes to the table structure by clicking the *Save* button or selecting *Save* on the Office menu.
- 3. Return to Datasheet View by clicking the *Datasheet View* button or by clicking the *View* button on the Ribbon. Scroll or tab over to the new COMMENTS field and enter text for each record to describe their relationship (e.g. personal or professional friend, family member, or a specific familial relationship). Press the down arrow key on the keyboard to move to each new record. (Remember that as you move to a new record, Access automatically saves the data.)

Printing Memo Fields

Memo fields can be printed like any other field in a table or query. To create a query that will select only certain fields in the table, including the memo field:

- 1. On the Create tab of the Ribbon, in the Other group, click the Query Design button.
- 2. In the Show Table dialog box, select the FRIENDS table, click *Add*, and then click *Close*.
- 3. In the FRIENDS field list, select the Last_Name and Comments fields and drag them to the design grid. Release the mouse button when the pointer is over the first Field cell.
- 4. Click the *Run* button on the Query Tools: Design tab to display the data in the Last_Name and Comments fields (see Figure 5-9).
- 5. Click the *Print* button on the Office menu to open the Print dialog box, and then click *OK* to print the query. Then click the *Close* button at the top right of the query window and click *No* when a warning dialog box asks if you want to save the changes to the design of Query 1.

LAST_NAME	COMMENTS	
Drucker	Personal	
Whitney	Professional	
Sitkin	Both	
Skalek	Friend	
Salione	College Prof	
Fabian	Family	
Kohlman	Friend	
Tedesco	Both	
Zito	Friend	
Peterson	Professional	
Nelson	Friend	
Buckley	Family	
Roberts	College Prof	
Thompson	College Friend	
Parker	Professional	
Jones	College Prof	
Kaufman	Friend	
Timko	Professional	
Emerson	Family	
Hicks	College Prof	
Hawthorn	Friend	

Figure 5-9

Creating Reports in Access

A more polished look can be achieved by creating an Access report. Reports are the database objects in Access specifically designed for printing. Reports can be based on tables and/or queries. They are used to provide subtotals and grand totals for numeric fields, and to produce summaries of information contained in the database, mailing labels, and presentation quality display of your data. Report Wizards speed up the creation, display, and printout by providing a series of dialog boxes to help you determine the data you want the report to contain, as well as a group of popular style templates from which to choose.

The items on a report that contain the data for display and printing are called *controls*. Different types of controls are used to display data of the various data types. Controls are used to display data from fields, along with the labels that identify this data and the results of calculations for report headers and footers that will print identifying information at the top

and bottom of every page of the report, as well as group footers that identify a particular group of related data. Report controls can also be used to include graphs, pictures, and other Access objects.

- 1. On the Create tab of the Ribbon, in the Reports group, click Report Wizard to open the Report Wizard.
- 2. The first Report Wizard dialog box opens. Here you can choose the fields that you want to display in the report and decide the order in which you want them to display. Notice that, because Fields is the currently selected table in the Navigation Pane, Access has selected the FIELDS table as the basis for the Available Fields list. Select four fields, Title, First_Name, Last_Name, and City, for inclusion in the report. With

the Title field selected in the Available Fields box, click the Add Field button to add it to the Selected Fields box (refer to Figure 5-10). Next, select the First_Name

field in the Available Fields box and click again to add it to the list of selected fields. Follow the same procedure to add the remaining two fields. (If you

accidentally add the wrong field to the report, select the unwanted field and click the

Remove Field button to return it to the Available Fields box.) When you have finished, click *Next*.

- 3. The second of the six Report Wizard dialog boxes opens. Here you can add grouping levels for the data in your report based on one or more fields. Data can be grouped by City, for example, so that all contacts that live in a particular city will be grouped together in the report. Without adding any grouping levels, click *Next*.
- 4. In the third dialog box, you can impose a sort order on the data in the report based on one or more fields. Select *City* in the first sort order list box and then click *Next*.

	Which fields do you want on your report? You can choose from more than one table or query.
<u>[</u> ables/Queries	
Table: FRIENDS	~
Available Fields: CONTACT NUMBER TITLE LAST_NAME FIRST_NAME	Selected Fields:
STREET	<

Figure 5-10

- 5. In the fourth dialog box, you can choose the layout for the report. Option buttons are provided to choose either *Portrait or Landscape* orientation for the report and a *Columnar, Tabular*, or *Justified* layout. Select the *Tabular* layout if necessary, make sure the *Adjust the field width so all fields fit on a page* check box is selected, and click *Next*.
- 6. In the fifth dialog box, you can select a style for your report. Select *Office* if necessary and click *Next*.
- 7. In the final dialog box, you can enter a title for your report. By default, Access enters the name of the table or query that serves as the record source for the report as the title name, which in this case is FRIENDS. Type *Report of My Friends*.
- 8. Make sure the *Preview the report* option button is selected and click the *Finish* button. Access will generate the report and open it in Print Preview, with the Print Preview tab open on the Ribbon. Note that the records are displayed alphabetically by City according to the sort order selected in the Report Wizard. Click the *Print* button on the Print Preview tab or select *Print* on the Office menu to open the Print dialog box, and then click *OK* to print the report. Close the report.

How to Use Reports to Display and Print Selected Fields

You can change the record source for an existing report, which will, in turn, change the records the report displays. For example, you can change the record source for the Report of My Friends report to the second query created in the tutorial for Case 1 (e.g. *Tute1Query2*). This query filters out all records in the FRIENDS table that do not have the title MR.

- 1. On the Navigation Pane, double-click *Report of My Friends*. (If the Navigation pane is not displaying all database objects, then click the down arrow at the top right of the Navigation Pane, make sure that *Object Type* is selected as the Category and then click *All Access Objects*.)
- 2. On the Home tab, click the *View* button arrow and then click *Design View* to open the Design View for the report (see Figure 5-11). Notice there are three Report Design Tools tabs on the Ribbon now: Design, Arrange, and Page Setup.

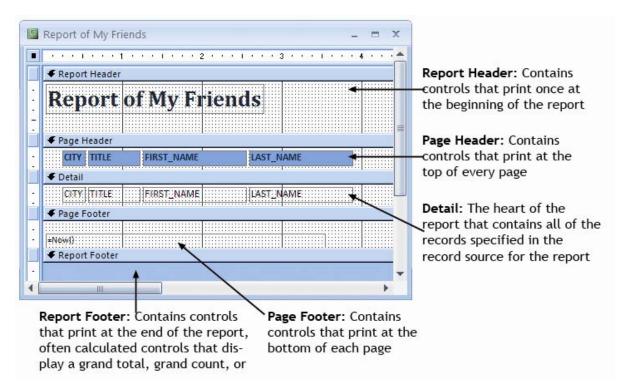


Figure 5-11

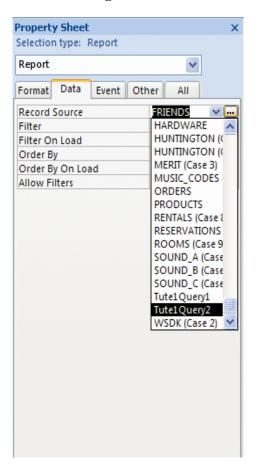
As Figure 5-11 shows, the Report Design View window is divided into sections. The **Report Header** prints once at the beginning of the report. It generally contains the report's title. The **Page Header** prints at the top of every page in the report and contains the labels or column headings. The **Detail** section contains the records that are being displayed in the report. The **Page Footer** prints at the bottom of each page and often contains calculated controls that display the current system date and time, along with the page number and total number of pages in the report. The **Report Footer** prints once at the end of the report. It often contains calculated controls that summarize or total the data contained in the report. Additionally, group headers will be automatically added to a report in which records are grouped based on like values. You can add group footers to include summary information about the group such as *Count, Sum*, or *Average*. We will look at report groups in a later tutorial.

- 3. On the Report Design Tools: Design tab, click the *Property Sheet* button on to open the property sheet for the report. Report properties define the data source for the report, as well as its overall appearance.
- 4. Click the Data tab on the property sheet if necessary. Click in the Record Source

property settings box and click the list arrow \checkmark to open a list of the available data sources in the FRIENDS database. Select the second query you created in the Case 1 tutorial (Tute1Query2) to change the record source for the report (see Figure 5-12.)

- 5. Close the property sheet by clicking the \times in the top right corner.
- 6. On the Report Design Tools: Design tab, in the Views group, click the arrow on the *Views* button and select *Print Preview* to view the new report. A reduced data set displays based upon the criteria set up in the query, but the sort order based on the City field and the report style selected in the Report Wizard remain.

Figure	5-12
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- 7. On the Print Preview tab of the Ribbon, in the Print group, click the *Print* button to open the Print dialog box. Click *OK* to print the new report.
- 8. Click the Office button and then click *Save As* to open the Save As dialog box. Type *Tute2Report2* in the top text box and click *OK*. Close the report and the FRIENDS table.

Using Expressions in Reports

Calculated controls are used to display the results of expressions that can be built using Access functions, mathematical operators, raw values, and any values contained in the fields in the report. For example, the expression = **[UnitCost]*[Quantity]** multiplies the contents of the two fields with these names and displays a single value as the result. A *function* is a predefined formula that helps simplify the process of building expressions. For example, the function *Sum* will add all of the values specified. The *Now* function in the Page Footer

section, shown in Figure 5-11, returns the current date as stored in your computer's system clock.

You can create calculated controls using expressions in one of three ways:

- By typing an expression directly into a text box control
- By entering an expression into the Control Source property for a control
- By using the Expression Builder to help you to create the expression

To learn and practice the skill of creating calculated controls using expressions, we will use the first method and the sample table HARDWARE provided in the SOLVEIT_CH5 database. First, create a new empty database with the name HARDWARE.ACCDB and then import the HARDWARE table from the SOLVEIT_CH5 database. (If you still have tables or reports open from the FRIENDS database, save and close them, and close the FRIENDS database.)

- 1. In the opened HARDWARE database, double-click the HARDWARE table to open it in Datasheet View. There are four fields: Invoice, Item, UnitCost, and Quantity. Press [F11] to view the Database window.
- 2. Open the Create tab on the Ribbon. In the Reports group, click *Report Wizard* and use the Report Wizard to create a new report using the HARDWARE table as the record source. Include the fields Invoice, UnitCost, and Quantity. Sort the records by the Invoice field, use the Tabular layout and the Office style, and give the report the title *Calculating Total Cost*. Click *Finish*. The report is generated and opened in Print Preview.
- 3. On the Print Preview tab, click the *Close Print Preview* button to switch to Report Design View.

To practice using expressions, we will create a field that calculates the total cost for an ordered hardware item by multiplying UnitCost by Quantity. Since this calculation, or expression, will use the values in two existing fields to calculate a new value, we must create a calculated control. A calculated control contains an expression and displays the result of that expression when the report is opened.

- 4. Open the Report Design Tools: Design tab on the Ribbon if necessary. Click the *Text Box* button in the Controls group. Click once with the Text Box pointer at the 5-inch mark on the horizontal ruler in the Detail section of the report. An unbound text box control and a label control to identify it are added to the report. The label text (*Text 11*) will vary depending on the number of controls on the report. Click the label control to select it and press the [Delete] key on the keyboard. You will add a label for the calculated control to the page header later.
- 5. Unbound controls are not linked to any existing field in the record source or sources for the report. They are used to display the results of *calculations*, text, or graphics. Click inside the unbound text box to get a blinking insertion point (called an *I-beam*).

Type =*UnitCost*Quantity*, making sure to begin the expression with an equals sign, and press the [Enter] key. Access automatically adds the correct syntax for you by enclosing each field in square brackets. Access is not case sensitive, so it does not matter if you enter your field names in upper or lowercase. You must, however, spell them correctly and use the correct spacing!

Note: If the field names contain spaces, you must enclose them in square brackets because Access will not recognize them as field names (e.g. [Time to Market]).

All expressions in Access must begin with an = sign. The asterisk is used to denote multiplication. A listing of other operators and functions used in Access is presented at the end of this tutorial.

- 6. You have now created a calculated control. The Detail section of your report should resemble Figure 5-13.
- 7. You will now add a label control to the page header to identify the calculated control. Click the *Label* button on the Ribbon. Click the Label pointer once in the Page Header section of the report at the 5.5-inch mark on the horizontal ruler. Type *TOTAL*.
- 8. Double-click the new calculated control in the Detail section to open the property sheet for the control. Click the Format tab. Click in the *Format* property settings box. Click the list arrow and select *Currency* on the list. Close the property sheet and switch to Print Preview. Your report should look similar to Figure 5-14. Save the changes and close the report.

Figure 5-13

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	INVOICEUUNITCOST	OUANTI	TY		nitCost]*[Qua	
				·····		
13						

	Hardware	: Database (Access 2002 - 2003 file	format) - Microsoft Acces	S	- = X
Print Preview Accobat	argins I Columns Show Margins Show Margins Print Data Only Page Setup	* Page Pages Pages *		Word Text File More ~ Close Print Preview Close Preview	٢
All Tables 🔍 👻 🔍	HARDWARE Calculating	g Total Cost			×
HARDWARE *					
HARDWARE : Table Calculating Total Cost	Calculatin	g Total Cost			
	INVOICE	UNITCOST	QUANTITY	TOTAL	
	1234	\$25.00	2	\$50.00	
	1235	\$15.00	1	\$15.00	
	1236	\$12.50	4	\$50.00	
	1237	\$5.60	2	\$11.20	
	1238	\$15.00	15	\$225.00	
	1239	\$3.40	4	\$13.60	
	1240	\$25.00	1	\$25.00	
	1241	\$2.50	6	\$15.00	
	1242	\$1.60	12	\$19.20	
	1243	\$5.60	3	\$15.80	
	1244	\$15.00	6	\$90.00	
	1245	\$3.40	3	\$10.20	
	1246	\$2.50	4	\$10.00	
	1247	\$1.60	5	\$8.00	
	1248	\$12.50	2	\$25.00	
	Page: H 4 1 > H H	K No Filter			•
eady)

Figure 5-14

Calculations in Queries

A more rapid way of achieving the same result is to create a query that includes the calculated field you want to display in the report and then to use the query as the record source for the report.

- 1. In the HARDWARE database window, open the Create tab of the Ribbon and click *Query Design*. Add the field list for the HARDWARE table to the Select Query window and close the Show Table dialog box. Drag three fields—Invoice, UnitCost, and Quantity—to the design grid.
- 2. In the fourth Field cell, type *TOTAL: [UnitCost]*[Quantity]*. Your query window should look like Figure 5-15.

- 3. Click the *Properties Sheet* button on the Query Tools: Design tab of the Ribbon to open the properties sheet for the calculated field. On the General tab, click in the *Format* property settings box. Click the list arrow and select *Currency*. Close the properties sheet.
- 4. Click Run on the Query Tools: Design tab (Results group) to run the query. Save the query as *CalculatingTotalCost*.
- 5. Use the Report Wizard to create a new report called *Calculating Total Cost 2* using the query as the data source for the report

	INVOICE	UNITCOST	QUANTITY	TOTAL: [UnitCost]*[Quantity] 🚩		
Table:	HARDWARE	HARDWARE	HARDWARE			
Sort:						
Show:		Image: A start of the start	✓	✓		
Criteria:						
or:						
						-
	•				•	

Figure 5-15

Expressions can play many roles in Access, and they can be used in virtually every type of database object. For example, you can use expressions in Table Design View to define default values for fields. In queries, expressions can be used to create calculated fields and criteria. The table below lists only those operators likely to be used in *Solve it!* For a more complete list, search the Access Help facility using the term *operators*.

Operators in Access

An *operator* in an expression describes the type of action that the expression should perform or the way in which a comparison between two values should be carried out. Access has four kinds of operators: Arithmetic and Text, Comparison, Logical, and Miscellaneous. The table below classifies, lists, and explains these operators. For a more complete list of operators, consult the Access Help facility.

Arithmetic and	
Text	
^	Raise one number to the power of the other (exponentiation)
*	Multiply two numbers
/	Add two numbers
+	Divide two numbers
-	Subtract two numbers
Mod	Divide two numbers and return the remainder
&	Concatenate: join two strings of text
Comparison	
<u>Comparison</u>	
< and <=	Less than; less than or equal to
> and >=	Greater than; greater than or equal to
= and <>	Equal to: not equal to
Logical	
And	Both comparisons are True
Or	One comparison or the other is True
Xor	One comparison or the other is True, but not both
Not	The comparison is not True
Miscellaneous	
Like	Text matches a pattern (Use with wildcard symbols ? and *)
Is	Comparison is True (e.g.: is Null)
Is Not	Comparison is not True (e.g.: not Null)

Functions in Access

A *function* in Access performs a calculation on data and returns the result of that calculation. There are over 100 functions available in Access in eight different categories. The table below lists only those likely to be used in *Solve it!* For a complete list, search the Help files using the keywords *functions* and *reference*.

Date/Time	
Date	Returns current date
Now	Returns current date and time
Logical	
IF	Tests and returns a value based on whether an argument is True
	or False
Choose	Selects a value from a list based on the content of its argument
Aggregate	
Avg	Average
Count	Count how many
Sum	Sum total

The Access Form and Report Design Tools

The buttons displayed in the table below appear in the Controls group on the Report Design Tools: Design tab. You use them to create labels, text boxes, option buttons, etc. for forms, subforms, and other Access objects.

3	Select Objects	Use to select a control, section, or form. Click this tool to unlock a control button that you have locked down.
:	Control Wizards	Turns control wizards on or off; Use control wizards to help you create a list box, combo box, option group, command button, chart, subreport, or subform.
Aa	Label	A control that displays descriptive text, such as a title, a caption, or instructions on a form or report; Access automatically attaches labels to the controls you create.
ab	Text Box	Use to display, enter, or edit data in either a form or report's underlying record source, display the results of a calculation, or accept input from a user.
[XVZ]	Option Group	Use along with check boxes, option buttons, or toggle buttons to display a set of alternative values. For example, you can use an option group to specify whether an order is shipped by air, sea, or land.
1	Toggle Button	Use as a stand-alone control bound to a Yes/No field, an unbound control for accepting user input in a custom dialog box, or as part of an option group.
0	Option Button	Use as a stand-alone control bound to a Yes/No field, an unbound control for accepting user input in a custom dialog box, or as part of an option group.
N	Check Box	Use as a stand-alone control bound to a Yes/No field, an unbound control for accepting user input in a custom dialog box, or as part of an option group.
Ē	Combo Box	Combines the features of a list box and a text box; You can type in the text box or select an entry in the list box to add a value to an underlying field.
	List Box	Displays a scrollable list of values; In Form View, you can select from the list to enter a value into a new record or to change the value in an existing record.
	Command Button	Use to perform actions, such as finding a record, printing a record, or applying a form filter.
\$	Image	Use for displaying a static picture on a form or report. Because a static picture is not an OLE object, you can't edit the image inside Microsoft Access once you've added it to a form or report.
\$ *	Unbound Object	Use to display an unbound OLE object, such as a Microsoft Excel spreadsheet, on a form or report. The object remains constant as you move from record to record.
	Bound Object	Use to display OLE objects, such as a series of pictures, on a form or report. This control is for objects stored in a field in either the form or the report's underlying record source. A different object displays on the form or report as you move from record to record.
二	Page Break	Use to insert or remove a new page on a form, printed form, or report.
	Tab Control	Use to create a tabbed form with several pages or tabbed dialog box (such as the Access Options dialog box on the Office menu). You can copy or add other controls onto a tab control. Right-click on the Tab control in the design grid to modify the number of pages, the page order, the selected page's properties, and the selected tab control properties.

	Subform/Subreport	Use to display data from more than one table on a form or report.
1	Line	Use on a form or report to emphasize related or especially important information.
	Rectangle	Use for graphic effects, such as grouping a set of related controls on a form, or for emphasizing important data on a report.
(M	Insert ActiveX Control	Adds an ActiveX control (such as the Calendar control) to a form or report; ActiveX controls are stored as separate files.