Database Case 8

Pickering Rentals Inc.

Problem:	Develop a transaction and fee checking system
Management skills:	Control Decide
Access Skills:	Forms Action Queries Macros

Data Table: CARS

Doug Pickering punched the buttons on his hand-held calculator. Three months ago Pickering had been an independent rental car dealer, based in Fargo, North Dakota, when HiJaak Rentals, a medium sized operator, offered him a sizeable sum for majority ownership of Pickering Rentals. HiJaak had recognized that the recent boom in the Fargo area was merely the start of sustained growth. HiJaak also realized that the three existing rental agencies (two of them franchises of national dealerships) would provide intense competition for any start-up enterprise in the area. HiJaak decided to approach the single independent dealer with a partnership offer.

Doug was surprised and relieved when the HiJaak offer arrived. His 17 year old dealership was straining under the pressure from the newly established national franchises which were able to offer some cut price deals, one-way rentals, and arrangements with frequent flyer schemes which he couldn't. HiJaak had a cooperative deal with one of the key domestic airlines and Pickering realized that when rental dealers prices were very similar, customers made decisions based on issues like frequent flyer points. HiJaak could also assist during temporary price wars. Faced with deciding between hard times as independent and receiving cash for losing control, Pickering accepted HiJaak's offer.

Pickering soon realized that the extra security offered by HiJaak came with additional obligations such as monthly reporting duties. These reports involved the calculations he was currently performing manually on his calculator. Pickering already had a computerized reservation and charging system, a necessity in his industry. However, his system did not have the capability to provide the required reports. Although HiJaak were willing to supply their own software, Pickering was happy with his system. He knew that his system did offer the feature of writing details of transactions to an exportable file. With this knowledge, Pickering asked HiJaak to send one of their system programmers. HiJaak obliged by dispatching Jeanne Lind.

Jeanne examined a typical file on Pickering's system and found that it could be readily imported into any common database management system. Although not ideal, this solution would certainly prevent the need for Pickering to manually calculate his reports. Jeanne advised him to purchase a Windows-based database package, and use it to meet HiJaak's monthly reporting requirements.

The management of HiJaak needs quarterly information in order to make informed decisions. They require the total revenue derived from each of the car model sizes over each month. Each transaction record contains certain information: a sequential code generated by the computer, date of transaction, model code (S=small, M=medium, L=large, X=sports, W=wagon), car registration, miles traveled, number of rental days, rental fee and a logical field signifying whether the rental was "limited miles" or not. The customer usually has the choice of having unlimited miles or a limit of 100 free miles with a lower base rate. For a limited mile transaction, each mile above 100 miles would incur a per mile cost.

The CARS data table supplied on the *Solve it!* disk contains a partial list of transactions downloaded from Pickering Rentals reservation system.

Tasks: There are three tasks in this case:

1. Doug Pickering wants Jeanne to develop a simple solution for him so that he can check the accuracy of the transactions in the sample list against the paper records he has in his office. He wishes the solution to include an entry screen where the user may enter the transaction code (e.g. S24155). The procedure will then display the record corresponding to the code if it is valid. If the code is not valid the user should be informed the entry is invalid and be required to re-enter the code. The user should be able to exit the system by entering a certain code (e.g. "X"). The entry screen should have ample instructions for the user to use the system.

   Hint: use Forms and Form Control Wizards to complete this task.

2. A frustrating aspect of the existing package is that the output files do not contain the rental fee. To meet Pickering's reporting commitments, he must manually calculate the revenue from each transaction. Thus, he is keen for Jeanne to develop a procedure to calculate the fee for each transaction and place the result in the database. As HiJaak requires the total revenue by model type, Pickering wants Jeanne to include this facility as well. The charges for each model type are listed in the table below:

	Small	Medium	Large	Sports	Wagon
Limited Rate ($)	45	50	55	60	60
Additional cost per mile ($)	0.55	0.65	0.75	0.85	0.80
Unlimited Rate ($)	50	55	60	65	65
Depreciation Rate (%)	3.3	3.2	3.0	3.5	4.4
Purchase Price ($)	9200	11650	17800	19250	17100

   Hint: use a series of Update Action Queries to complete this task.

*3. HiJaak is becoming more demanding in its reporting requirements, adding to Pickering's workload. They wish to know the depreciation of any car in Pickering's yard.

   The method of depreciation in the car rental industry is dictated by the Internal Revenue Service. The depreciation amount for each vehicle depends on the total distance traveled, read from the odometer, the rate of depreciation for the model type (e.g. small) and the purchase price of the vehicle. The IRS says the depreciation amount is defined as a fixed percentage (i.e. the depreciation rate) of the purchase price, for every 6,000 miles the vehicle has traveled. Develop a procedure to calculate the amount of depreciation for each car based on the depreciation rates and purchase prices listed in the table above. Allow the user to enter the registration of a particular vehicle and then calculate the depreciation on that car.

Hint: use Parameter statements within Queries to complete this task.

Time Estimates (excluding task marked with *):

Expert: 1.5 hour
Intermediate: 2.5 hours
Novice: 4 hours

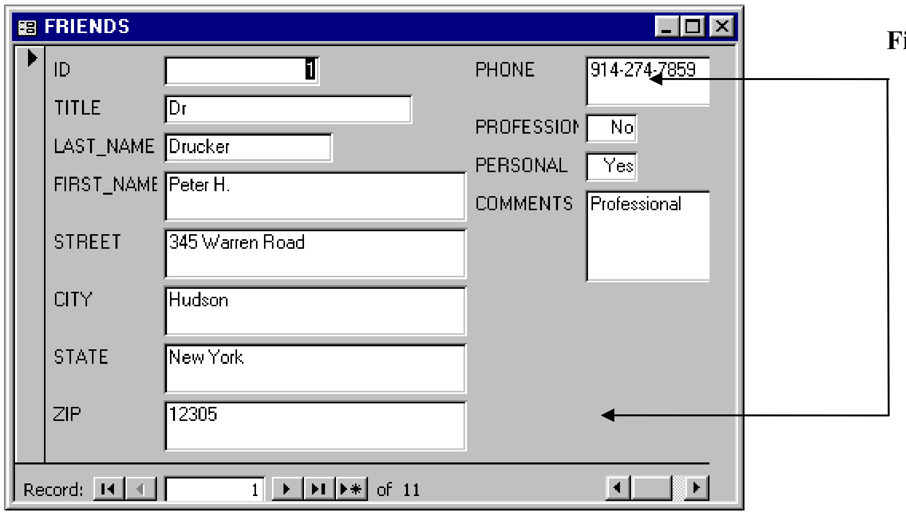
Tutorial For Database Case 8 Using Access 2000

Creating Forms in Access

Forms are used to view, enter or edit data in a database, and are often the most convenient way of performing these operations. Forms can be based on tables or queries, and display data on a record by record basis. As with reports, the forms feature includes a series of wizard dialog boxes, which enable the user to customize the way data will be displayed on a form. With one click of the mouse, you can switch from Form to Datasheet view, which is a tabular view of the same set of records.

With an Access form, you can include lists of values to choose from, use colors to highlight important data, include graphics, and display messages to indicate when an incorrect value has been entered. You can also set up your form so that Access automatically inserts data for you, or prints data on the click of a command button, and/or displays the results of calculations. Let's use the FRIENDS database to create a simple form.

1. Load the practice database FRIENDS.MDB. From the Database window, click on the *Forms* object and then click New. From the *New Form* dialog box, click on the ▾ button to the right of the *Choose the table or query where the object's data comes from*, and select the FRIENDS table. Now click and highlight the *AutoForm:Columnar* form option, which will automatically generate a form that displays fields in a single column. Click OK. Access creates the form and opens it for you. The form shows the first record in your table (see Figure 5-79). Save and name your form (e.g.: FRIENDS SHOW). In a matter of minutes, you have created a form that can be used for viewing, editing, adding and deleting records in the FRIENDS table.



ID	1	PHONE	914-274-7859
TITLE	Dr	PROFESSION	No
LAST_NAME	Drucker	PERSONAL	Yes
FIRST_NAME	Peter H.	COMMENTS	Professional
STREET	345 Warren Road		
CITY	Hudson		
STATE	New York		
ZIP	12305		

Record: 1 of 11

Figure 5-79

Text boxes with attached labels. Text boxes provide an area where you can display or type text or numbers

Access offers a number of other form wizard types:

AutoForm:Datasheet - which displays fields in datasheet format

AutoForm:Tabular - which displays each record as a row of fields.

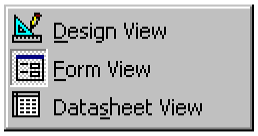
Chart Wizard - creates a form that displays graphs.

Form Wizard - creates a form based on user-selected fields. This wizard supports a variety of form display formats.

Pivot Table Wizard - creates a form with a Microsoft Excel pivot table - a feature which enables analysis and summarization of data in lists and tables.

Or you can create your own form from scratch using the *Design View* option. Forms can be also be used with Macros which are discussed later in this tutorial. You may find this useful to know when considering how to tackle some of the tasks associated with the development of the Pickering Rentals system.

Three Ways of Viewing a Form



Access offers three quick and easy ways of viewing a form. You will need to use each of these when designing and using forms. To switch views, simply click on the appropriate toolbar button.

Design View	Use for customizing the appearance, or changing the structure of forms, and for adding toolbox controls
Form View	Use for viewing, entering and editing record data
Datasheet View	Displays the underlying table or query dynaset on which the form is based

You can also use the *Print Preview* button to see how a form will look when printed.

Remember: *right click*, means to click the right hand button of your mouse once.
double click top left, means to click the icon such as or at the top left on an open window.

Creating a Form from Scratch (using the Design View option)

As the name suggests, you start off with a blank form (which is generated by selecting Design View from the New Form dialog box), and use the toolbox buttons in form design view to add all the text boxes, labels and other controls required for your form. For this reason, blank forms often have no initial connection to an underlying query or table. *Hint: you will need to use the blank form format for Task 1 of Case 8.*

To create a blank form:

1. From the Database window, click the Forms object and then click New. In the New Form Dialog box, select the Design View option if it is not already selected . Access immediately opens the form in design view. The initial form will only contain a Detail section. Forms use the same type of sectioning as Reports. Recap Access tutorial for Case 2 for an explanation of report sections.

Let's create a simple customized form using the FRIENDS table. The form is designed to lookup and display specific FRIENDS records based on their ID numbers (Note: Your FRIENDS table will need to contain an ID field set to Autonumber field type). *Hint: the criteria used could just as easily be product numbers or transaction codes.*

1. Select VIEW/FORM HEADER/FOOTER from the menu to add a Header to your new form. Next, click on the Label toolbox button, and then click in the Header section of the form. Type a heading for the form (e.g.: *Friends Lookup*). Change box and font size to suit.

2. Click on the Text Box toolbox button, and then click in the **Detail** section of the form to create an unbound text box and label for the form. Click on the label, and then *right click* and select Properties from the menu. In the Properties window, change the Caption bar to: *Search for a Friend*. Resize your label so that it displays all of the text. *Double click top left* to save and exit back to form design view.

3. Click on the unbound text box, and then *right click* and select Properties (within Properties, select the All tab). Scroll down, click on the Validation Rule bar and enter >=1 And <=16 (e.g.: where 16 is the last record in your FRIENDS table) to set up a valid ID number range. (Right click and select Zoom if you need more room to type). Click on the Validation Text bar and enter in some infringement text (e.g.: You don't have that many Friends !! Click OK and ReEnter). *Double click top left* to save and exit back to form design view.

4. Save your form (e.g.: FRIENDS LOOKUP). Next, we will create two *Command Buttons*. One that links the current form through an event procedure to the FRIENDS SHOW form and displays the relevant records, and one that Exits from FRIENDS SHOW and returns to FRIENDS LOOKUP.

Using Control Wizards in Forms

Control Wizards Button

Creating an *event procedure* in a Report or Form without having to directly do any programming is done through the Control Wizards function. An *event* is a particular action that triggers a procedure such as clicking on a command button in a form or report. A *procedure* is a unit of programming code designed to accomplish a specific task. Access Control wizards automate many frequently used activities associated with forms and reports, such and opening and closing objects, linking fields between objects, and going to specific records in tables or forms.

Command Button

1. Let's create the first of our command buttons. Click on the Control Wizard toolbox button. Click the *Command Button* tool in the toolbox, and then click on an empty section of the **Detail** section in the FRIENDS LOOKUP form.

The first of several Command Button wizard dialog boxes appears. Make these choices as you proceed through the dialog boxes:

- Under *Categories*, select Form Operations
- Under *Actions*, select Open Form
- Click Next
- Select FRIENDS SHOW as the Form to Open
- Click Next
- Choose to *Open the Form and Find Specific Data to Display*
- Click Next
- From FRIENDS LOOKUP, highlight the Text1 control
- From FRIENDS SHOW, highlight the ID field and click the <-> button to match the fields
- Click Next
- Select *Text*, and change the button caption to Show Record
- Click Finish to generate the Command Button

2. Save the FRIENDS LOOKUP form again.

3. Right click on the Show Record button and select Properties. Scroll down the list to the On Click: bar. Notice that Access has appended an Event Procedure to this line. Click in the On Click: bar, and then click on the **...** Build button. Access displays the event procedure code behind the Show Record button (see Figure 5-80). *Double click top left* to return to form design view.

Figure 5-80

```
Private Sub Command3_Click()
On Error GoTo Err_Command3_Click

   Dim stDocName As String
   Dim stLinkCriteria As String

   stDocName = "Friends Show"

   stLinkCriteria = "[ID]=" & Me![Text1]
   DoCmd.OpenForm stDocName, , , stLinkCriteria

Exit_Command3_Click:
   Exit Sub

Err_Command3_Click:
   MsgBox Err.Description
   Resume Exit_Command3_Click

End Sub
```

4. **Time to Test:** Switch to Form View. Enter an ID number between 1 and 16 (or whatever the last record number in your FRIENDS table is), and click the Show Record Button. The sequence works, but there is no easy or immediate way to run the procedure again, or to exit from FRIENDS SHOW. We need to add an Exit and ReRun button to FRIENDS SHOW.

5. Change to design view in FRIENDS SHOW. Create another command button in the **Detail** section of the form using the control wizards to Exit FRIENDS SHOW and ReRun the ID sequence. This procedure will be based around closing a form. Save the changes to FRIENDS SHOW, return to form view, and test the new button. It should close FRIENDS SHOW and return to FRIENDS LOOKUP.

6. **Extra Practice:** To complete this exercise, we really need a graceful way to exit the FRIENDS LOOKUP procedure and return to the Database window. Create another command button using the control wizard. (*Hint:* it's identical to the one just created in FRIENDS SHOW). Save and test the button, by clicking and exiting to the database window.

7. From the Database window, click Form and FRIENDS LOOKUP and Open to test and run the procedure several times from the beginning. Also enter an ID not in the valid range to

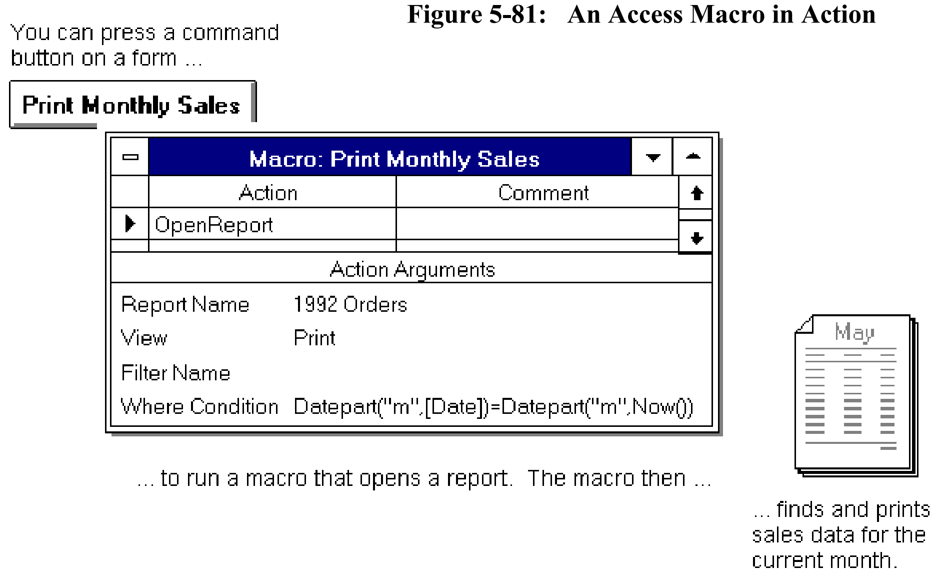
make sure the validation procedure is working. With two simple forms, and three easy to generate command buttons, we have created a robust, easy to use FRIENDS lookup program.

Macros in Access

A *macro* in Access is a set of actions that automate common tasks such as opening a table, or printing a report. Macros help you to work smarter and save time without having to learn programming. Macros are simple to create, and Access offers a choice of around 50 different macro actions which include (see also Figure 5-81):

- Opening and closing table, forms and reports
- Opening a form, and finding records related to another form
- Automatically printing reports upon opening a particular database
- Checking or improving data validity

Figure 5-81: An Access Macro in Action


You can press a command button on a form ...
Print Monthly Sales
Macro: Print Monthly Sales
... to run a macro that opens a report. The macro then ...
May
... finds and prints sales data for the current month.

Action	Comment
OpenReport	

Action Arguments

Report Name	1992 Orders
View	Print
Filter Name	
Where Condition	Datepart("m",[Date])=Datepart("m",Now())

The great thing about macros is that they can handle tasks that would often require extensive programming skills in other database packages, and the more you use them, the more you learn about the underlying principles of programming. Macro actions often involve *arguments*. These are simply parameters, which govern how an action is executed. If you have problems choosing macro actions or specifying arguments, press the F1 key for online help.

Let's create a simple macro using the practice database FRIENDS.MDB. This macro will open the FRIENDS table, then display only records whose Zip code is greater than 35000, and then within this, filter out all records where the City is not Arizona, before returning to the full FRIENDS table record set.

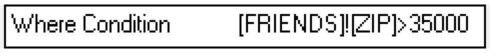
1. Load FRIENDS.MDB. Click on the *Tables* object in the Database Window, and double click on the FRIENDS table. Change to table design view, and make sure the Zip field is set to a numeric data type. Save necessary changes, and close the FRIENDS table.

2. From the Database Window, click the *Macros* object, and then click *New*. This will display the Macro Builder window. Click in the first blank row of the *Action* column, and then click the ▾ button to display a drop down list of all Macro actions. Using your mouse, scroll down this list, and select the *OpenTable* action. (Read the information box at bottom right of the window, for an explanation of what this action does). In the *Comments* column, type a short description of the action (e.g.: Opens the FRIENDS table).

3. Click on the *Table Name* bar in the *Action Arguments* section of the window, and then click on the ▾ button to the right of this and select the FRIENDS table.

4. Click on the next empty macro row, and select *ApplyFilter* from the *Action* list. In the *Comments* column, type a short description of the action (e.g.: Only display records where the Zip code is greater than 35000).

5 Click on the *Where Condition* bar in the Action Arguments section and type:

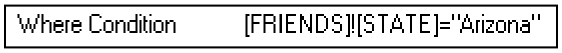


Where Condition [FRIENDS]![ZIP]>35000

Alternatively, click on the expression builder ... button to the right of the Where Condition bar to do this.

6. Click on the next empty macro row, and select *ApplyFilter* from the *Action* list. In the *Comments* column, type a short description of the action (e.g.: Within this reduced record set show records only from Arizona).

7. Click on the *Where Condition* bar in the *Action Arguments* section and type:

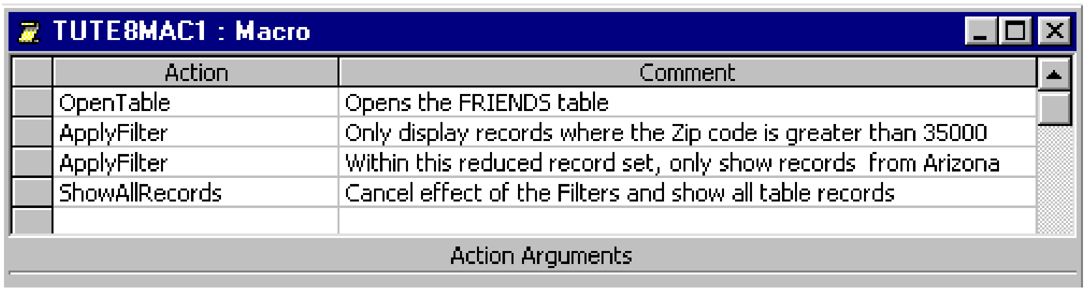


Where Condition [FRIENDS]![STATE]="Arizona"

or use the expression builder to do this. (Additional records were added to the FRIENDS table in the Tutorial for Case 4. If you did not do this tutorial, you will need to add 4 or 5 new records to the FRIENDS table, making sure that some of the state names you enter in the State field duplicate those of existing records. Choose a State name (e.g.: Arizona) for your macro line that <u>has</u> duplicates).

8. Click on the next empty macro row, and select *ShowAllRecords* from the *Action* list. In the *Comments* column, type a short description of the action (e.g.: Cancel effect of all Filters). Your macro window should now look similar to Figure 5-82.

Figure 5-82



TUTE8MAC1 : Macro

Action	Comment
OpenTable	Opens the FRIENDS table
ApplyFilter	Only display records where the Zip code is greater than 35000
ApplyFilter	Within this reduced record set, only show records from Arizona
ShowAllRecords	Cancel effect of the Filters and show all table records

Action Arguments

9. Save your macro by clicking on the *Save* toolbar button or selecting FILE/SAVE from the menu. In the *Save As* window give your macro a name (e.g.: TUTE8 MAC1), and click *OK*.

10. Execute the macro, by clicking on the *Run* toolbar button, or selecting MACRO/RUN from the menu. As the macro runs, it firstly opens and displays all the records in the FRIENDS table. The first filter is then applied, and only records where the Zip code is greater than 35000 are shown. The second filter then is then applied, and the record set is further reduced to records where the Zip code is greater than 35000 and the State is Arizona. Finally, the ShowAllRecords action is applied, and the effect of the filters are cancelled. The full record set of the FRIENDS table now appears.

11. Return to the Database window.

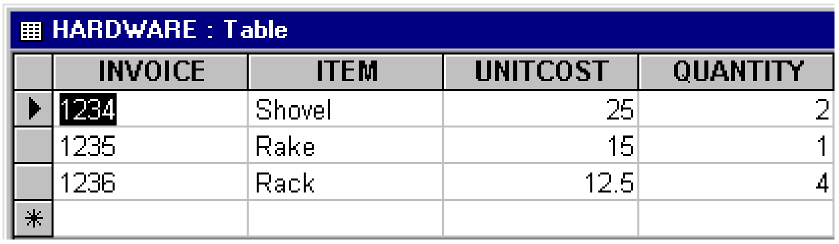
Use Macros When:	• performing tasks such as opening and closing tables or forms, or running reports • your application involves custom menus and submenus for forms • your application is basically simple and uncomplicated, and does not require debugging procedures

Update Queries in Access

Update queries are a type of action query, which modifies data according to specific criteria such as increasing all car rental rates or certain product prices by 15%. Update queries are created in much the same way as other queries except that a new value is specified for a particular field. Like all other types of action queries, update queries save time and effort, but must be used carefully because they actually change the data in the underlying table. Let's use the sample data table HARDWARE to create a simple update query. HARDWARE is included in SOLVE98.MDB.

1. Load the HARDWARE table, and browse the records of the table, particularly noting the data in the Unitcost field (see Figure 5-83).

Figure 5-83
Before Update



HARDWARE : Table

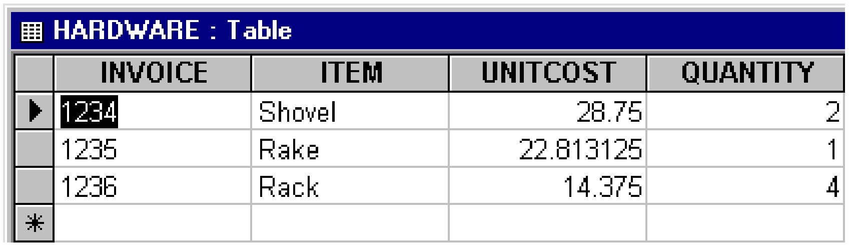
INVOICE	ITEM	UNITCOST	QUANTITY
1234	Shovel	25	2
1235	Rake	15	1
1236	Rack	12.5	4

Create a new query based on the HARDWARE table. From the query design window, select QUERY/UPDATE QUERY from the menu or click on the Update query toolbar button. This action turns the Select query into an Update query, and causes Access to add an *Update to:* line to the QBE Grid.

3. From the Update query design window, select and drag the Item and Unitcost fields in the HARDWARE field list down onto the Field: bar of the QBE Grid. In the *Update to:* cell under the Unitcost field enter the expression [Unitcost]*1.15. This tells Access that we want to increase prices of all items in the HARDWARE table by 15%.

4. Save (e.g.: TUTE8 QUERY1) and run the query, and then press F11 to return to the Database window. Open the HARDWARE table and notice the changes made to the Unitcost field (see Figure 5-84). Access has updated all prices by 15%.

Figure 5-84
After Update



HARDWARE : Table

INVOICE	ITEM	UNITCOST	QUANTITY
1234	Shovel	28.75	2
1235	Rake	22.813125	1
1236	Rack	14.375	4

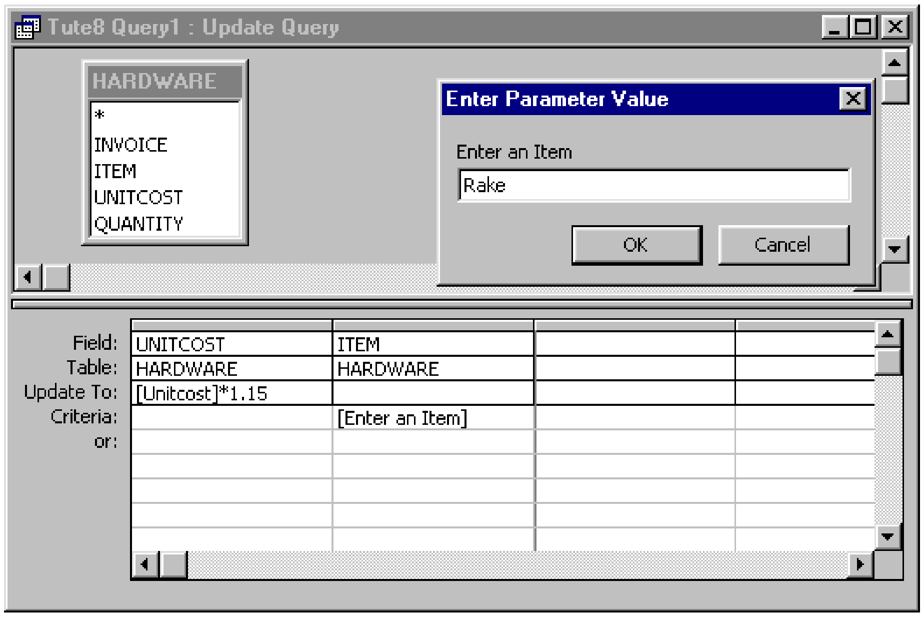
Update queries can also be limited to certain records or groups of records. Let's say we only wanted to update the unitcost of Rakes. A simple criteria or *parameter* must be added to the query to impose a filter on the table records. Access offers two ways of doing this:

a) In the Criteria: cell under the Item field of the update query window, enter Rake. This tells Access to limit update of the Unitcost field to only those records, which contain the word Rake in the Item field.

Alternatively:

b) In the Criteria: cell under the Item field of the update query window, enter a parameter statement: [Enter an Item]. Syntax is exactly as shown. When the query is run, Access will display the query Parameter Value window, prompting the user to enter text that will limit the update action (refer Figure 5-85). Entering Rake will produce the same result as method (a).

Figure 5-85



Tute8 Query1 : Update Query

HARDWARE
*
INVOICE
ITEM
UNITCOST
QUANTITY

Enter Parameter Value

Enter an Item

Rake

Field:	UNITCOST	ITEM
Table:	HARDWARE	HARDWARE
Update To:	[Unitcost]*1.15	
Criteria:		[Enter an Item]
or:		

Parameter statements can be used with all types of queries - select and action. They provide an added degree of control by minimizing user intervention with the query design window.

Tutorial For Database Case 8 Using Access 97

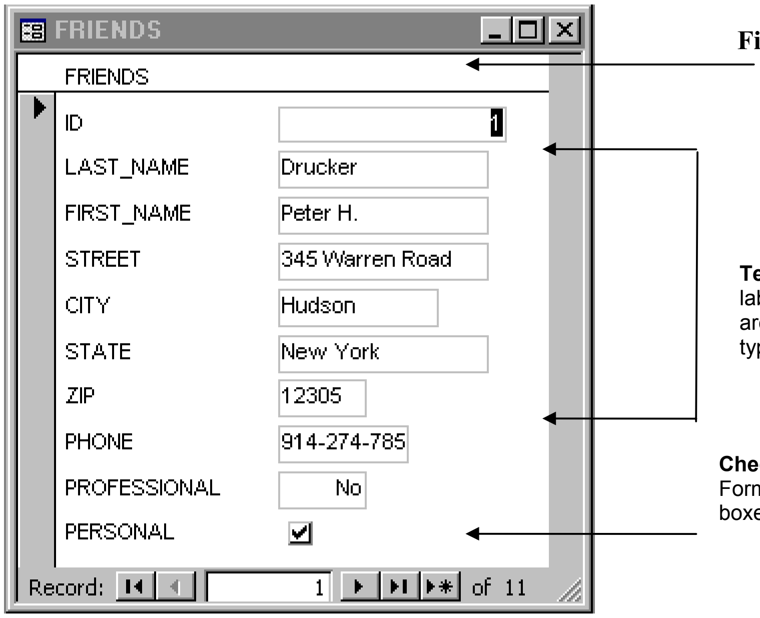
Creating Forms in Access

Forms are used to view, enter or edit data in a database, and are often the most convenient way of performing these operations. Forms can be based on tables or queries, and display data on a record-by-record basis. As with reports, the forms feature includes a series of wizard dialog boxes, which enable the user to customize the way data, will be displayed on a form. With one click of the mouse, you can switch from Form to Datasheet view, which is a tabular view of the same set of records.

With an Access form, you can include lists of values to choose from, use colors to highlight important data, include graphics, and display messages to indicate when an incorrect value has been entered. You can also set up your form so that Access automatically inserts data for you, or prints data on the click of a command button, and/or displays the results of calculations. Let's use the FRIENDS database to create a simple form.

1. Load the practice database FRIENDS.MDB. From the Database window, click on the *Form* object and then click New. From the *New Form* dialog box, click on the ▾ button to the

right of the *Choose the Table or Query Where an Object's Data Comes From*, and select the FRIENDS table. Now click and highlight the *Autoform:Columnar* form option, which will automatically generate a form that displays fields in a single column. Click OK. Access creates the form and opens it for you. The form shows the first record in your table (see Figure 5-86). Save and name your form (e.g.: FRIENDS SHOW). In a matter of minutes, you have created a form that can be used for viewing, editing, adding and deleting records in the FRIENDS table.


FRIENDS

FRIENDS

ID	1
LAST_NAME	Drucker
FIRST_NAME	Peter H.
STREET	345 Warren Road
CITY	Hudson
STATE	New York
ZIP	12305
PHONE	914-274-785
PROFESSIONAL	No
PERSONAL	✓

Record: 1 of 11

Figure 5-86

Label displaying text such as a title or caption

Text boxes with attached labels. Text boxes provide an area where you can display or type text or numbers

Check box: indicates a condition. Form Wizards can create check boxes for Yes/No data type fields

Access offers a number of other form wizard types:

Autoform:Datasheet - which displays fields in datasheet format

Autoform:Tabular - which displays each record as a row of fields.

Chart Wizard - creates a form that displays graphs.

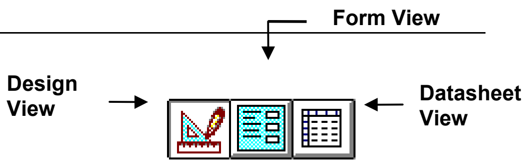
Form Wizard - creates a form based on user-selected fields. This wizard supports a variety of form display formats.

Pivot Table Wizard - creates a form with a Microsoft Excel pivot table - a feature that enables analysis and summarization of data in lists and tables.

or you can create your own form from scratch using the *Design View* option. Forms can be also be used with Macros which are discussed later in this tutorial. You may find this useful to know when considering how to tackle some of the tasks associated with the development of the Pickering Rentals system.

There are a number of different control objects, which you can use when designing a form. The *Autoform:Columnar* example in Figure 5-86 displays three of these - labels, text boxes and check boxes. Forms use the same set of Toolbox buttons as Reports (recap Access Case 2 tutorial for a listing and short explanation of these buttons).

Three Ways of Viewing a Form



Access offers three quick and easy ways of viewing a form. You will need to use each of these when designing and using forms. To switch views, simply click on the appropriate toolbar button.

Design View	Use for customizing the appearance, or changing the structure of forms, and for adding toolbox controls
Form View	Use for viewing, entering and editing record data
Datasheet View	Displays the underlying table or query dynaset on which the form is based

You can also use the *Print Preview* button to see how a form will look when printed.

Remember: *right click*, means to click the right hand button of your mouse once.
double click top left, means to click the icon such as ▦ or ▦ at the top left on an open window.

Creating a Form from Scratch (using the Design View option)

As the name suggests, you start off with a blank form (which is generated by selecting Design View from the New Form dialog box), and use the toolbox buttons in form design view to add all the text boxes, labels and other controls required for your form. For this reason, blank forms often have no initial connection to an underlying query or table. *Hint: you will need to use the blank form format for Task 1 of Case 8.*

To create a blank form:

1. From the Database window, click the Form object and then click New. From the New Form Dialog box, highlight the Design View button. Access immediately opens the form in design view. The initial form will only contain a Detail section. Forms use the same type of sectioning as Reports. Recap Access tutorial for Case 2 for an explanation of report sections.

Let's create a simple customized form using the FRIENDS table. The form is designed to lookup and display specific FRIENDS records based on their ID numbers (<u>Note</u>: Your FRIENDS table will need to contain an ID field set to Autonumber field type). *Hint: the criteria used could just as easily be product numbers or transaction codes.*

1. Select VIEW/FORM HEADER/FOOTER from the menu to add a Header to your new form. Next, click on the Label toolbox button, and then click in the Header section of the form. Type a heading for the form (e.g.: *Friends Lookup*). Change box and font size to suit.

2. Click on the Text Box toolbox button, and then click in the **Detail** section of the form to create an unbound text box and label for the form. Click on the label, and then *right click*

and select Properties from the menu. In the Properties window, change the Caption bar to: *Search for a Friend*. Resize your label so that it displays all of the text. *Double click top left* to save and exit back to form design view.

3. Click on the unbound text box, and then *right click* and select Properties (within Properties, select the All Properties tab). Scroll down, click on the Validation Rule bar and enter >=1 And <=16 (e.g.: where 16 is the last record in your FRIENDS table) to set up a valid ID number range. (Right click and select Zoom if you need more room to type). Click on the Validation Text bar and enter in some infringement text (e.g.: You don't have that many Friends !! Click OK and ReEnter). *Double click top left* to save and exit back to form design view.

4. Save your form (e.g.: FRIENDS LOOKUP). Next, we will create two *Command Buttons*. One that links the current form through an event procedure to the FRIENDS SHOW form and displays the relevant records, and one that Exits from FRIENDS SHOW and returns to FRIENDS LOOKUP.

Using Control Wizards in Forms

Control Wizards
Button

Creating an *event procedure* in a Report or Form without having to directly do any programming is done through the Control Wizards function. An *event* is a particular action that triggers a procedure such as clicking on a command button in a form or report. A *procedure* is a unit of programming code designed to accomplish a specific task. Access Control wizards automate many frequently used activities associated with forms and reports, such and opening and closing objects, linking fields between objects, and going to specific records in tables or forms.

Command
Button

1. Let's create the first of our command buttons. Click on the Control Wizard toolbox button. Click the *Command Button* tool in the toolbox, and then click on an empty section of the **Detail** section in the FRIENDS LOOKUP form.

The first of several Command Button wizard dialog boxes appears. Make these choices as you proceed through the dialog boxes:

- Under *Categories*, select Form Operations
- Under *Actions*, select Open Form
- Click Next
- Select FRIENDS SHOW as the Form to Open
- Click Next
- Choose to *Open the Form and Find Specific Data to Display*
- Click Next
- From FRIENDS LOOKUP, highlight the Text1 control
- From FRIENDS SHOW, highlight the ID field and click the <-> button to match the fields
- Click Next
- Select *Text*, and change the button caption to Show Record
- Click Finish to generate the Command Button

2. Save the FRIENDS LOOKUP form again.

3. Right click on the Show Record button and select Properties. Scroll down the list to the On Click: bar. Notice that Access has appended an Event Procedure to this line. Click in the On

Click: bar, and then click on the **...** Build button. Access displays the event procedure code behind the Show Record button (see Figure 5-87). *Double click top left* to return to form design view.

Figure 5-87

```
Private Sub Command3_Click()
On Error GoTo Err_Command3_Click

   Dim stDocName As String
   Dim stLinkCriteria As String

   stDocName = "Friends Show"

   stLinkCriteria = "[ID]=" & Me![Text1]
   DoCmd.OpenForm stDocName, , , stLinkCriteria

Exit_Command3_Click:
   Exit Sub

Err_Command3_Click:
   MsgBox Err.Description
   Resume Exit_Command3_Click

End Sub
```

4. **Time to Test:** Switch to Form View. Enter an ID number between 1 and 16 (or whatever the last record number in your FRIENDS table is), and click the Show Record Button. The sequence works, but there is no easy or immediate way to run the procedure again, or to exit from FRIENDS SHOW. We need to add an Exit and ReRun button to FRIENDS SHOW.

5. Change to design view in FRIENDS SHOW. Create another command button in the **Detail** section of the form using the control wizards to Exit FRIENDS SHOW and ReRun the ID sequence. This procedure will be based around closing a form. Save the changes to FRIENDS SHOW, return to form view, and test the new button. It should close FRIENDS SHOW and return to FRIENDS LOOKUP.

6. **Extra Practice:** To complete this exercise, we really need a graceful way to exit the FRIENDS LOOKUP procedure and return to the Database window. Create another command button using the control wizard. (*Hint:* it's identical to the one just created in FRIENDS SHOW). Save and test the button, by clicking and exiting to the database window.

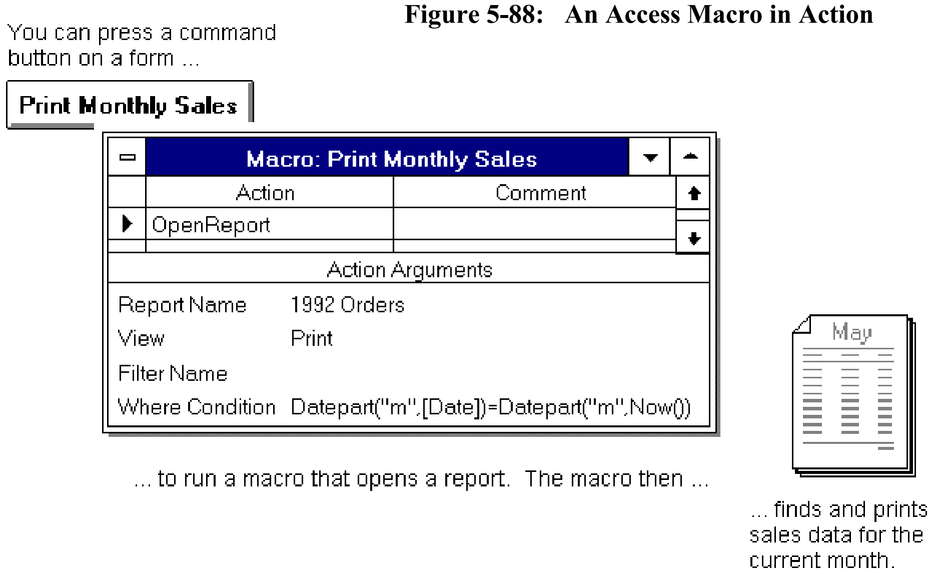
7. From the Database window, click Form and FRIENDS LOOKUP and Open to test and run the procedure several times from the beginning. Also enter an ID not in the valid range to make sure the validation procedure is working. With two simple forms, and three easy to generate command buttons, we have created a robust, easy to use FRIENDS lookup program.

Macros in Access

A *macro* in Access is a set of actions that automate common tasks such as opening a table, or printing a report. Macros help you to work smarter and save time without having to learn programming. Macros are simple to create, and Access offers a choice of around 50 different macro actions, which include (see also Figure 5-88):

- Opening and closing table, forms and reports
- Opening a form, and finding records related to another form
- Automatically printing reports upon opening a particular database
- Checking or improving data validity

Figure 5-88: An Access Macro in Action


You can press a command button on a form ...

Print Monthly Sales

Macro: Print Monthly Sales

Action	Comment
OpenReport	

Action Arguments

Report Name	1992 Orders
View	Print
Filter Name	
Where Condition	Datepart("m",[Date])=Datepart("m",Now())

... to run a macro that opens a report. The macro then ...

... finds and prints sales data for the current month.

The great thing about macros is that they can handle tasks that would often require extensive programming skills in other database packages, and the more you use them, the more you learn about the underlying principles of programming. Macro actions often involve *arguments*. These are simply parameters, which govern how an action is executed. If you have problems choosing macro actions or specifying arguments, press the F1 key for online help.

Let's create a simple macro using the practice database FRIENDS.MDB. This macro will open the FRIENDS table, then display only records whose Zip code is greater than 35000, and then within this, filter out all records where the City is not Arizona, before returning to the full FRIENDS table record set.

1. Load FRIENDS.MDB. Click on the *Table* object in the Database Window, and double click on the FRIENDS table. Change to table design view, and make sure the Zip field is set to a numeric data type. Save necessary changes, and close the FRIENDS table.

2. From the Database Window, click the *Macro* object, and then click *New*. This will display the Macro Builder window. Click in the first blank row of the *Action* column, and then

click the ▾ button to display a drop down list of all Macro actions. Using your mouse, scroll down this list, and select the *OpenTable* action. (Read the information box at bottom right of the window, for an explanation of what this action does). In the *Comments* column, type a short description of the action (e.g.: Opens the FRIENDS table).

3. Click on the *Table Name* bar in the *Action Arguments* section of the window, and then click on the ▾ button to the right of this and select the FRIENDS table.

4. Click on the next empty macro row, and select *ApplyFilter* from the *Action* list. In the *Comments* column, type a short description of the action (e.g.: Only display records where the Zip code is greater than 35000).

5 Click on the *Where Condition* bar in the Action Arguments section and type:

Where Condition	[FRIENDS]![ZIP]>35000

Alternatively, click on the expression builder … button to the right of the Where Condition bar to do this.

6. Click on the next empty macro row, and select *ApplyFilter* from the *Action* list. In the *Comments* column, type a short description of the action (e.g.: Within this reduced record set show records only from Arizona).

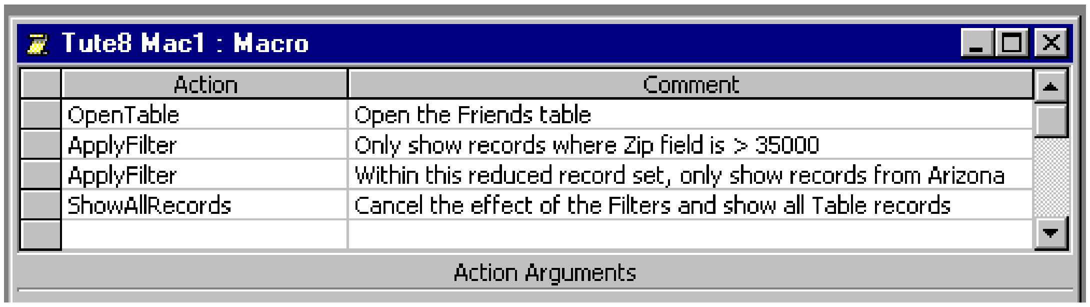
7. Click on the *Where Condition* bar in the *Action Arguments* section and type:

Where Condition	[FRIENDS]![STATE]="Arizona"

or use the expression builder to do this.
(Additional records were added to the FRIENDS table in the Tutorial for Case 4. If you did not do this tutorial, you will need to add 4 or 5 new records to the FRIENDS table, making sure that some of the state names you enter in the State field duplicate those of existing records. Choose a State name (e.g.: Arizona) for your macro line that <u>has</u> duplicates).

8. Click on the next empty macro row, and select *ShowAllRecords* from the *Action* list. In the *Comments* column, type a short description of the action (e.g.: Cancel effect of all Filters). Your macro window should now look similar to Figure 5-89.

Figure 5-89



Tute8 Mac1 : Macro

Action	Comment
OpenTable	Open the Friends table
ApplyFilter	Only show records where Zip field is > 35000
ApplyFilter	Within this reduced record set, only show records from Arizona
ShowAllRecords	Cancel the effect of the Filters and show all Table records

Action Arguments

9. Save your macro by clicking on the *Save* toolbar button or selecting FILE/SAVE from the menu. In the *Save As* window give your macro a name (e.g.: TUTE8 MAC1), and click *OK*.

10. Execute the macro, by clicking on the *Run* toolbar button, or selecting MACRO/RUN from the menu. As the macro runs, it firstly opens and displays all the records in the FRIENDS table. The first filter is then applied, and only records where the Zip code is greater than 35000 are shown. The second filter then is then applied, and the record set is further reduced to records where the Zip code is greater than 35000 and the State is Arizona. Finally, the ShowAllRecords action is applied, and the effects of the filters are cancelled. The full record set of the FRIENDS table now appears.

11. Return to the Database window.

Use Macros When:

- performing tasks such as opening and closing tables or forms, or running reports
- your application involves custom menus and submenus for forms
- your application is basically simple and uncomplicated, and does not require debugging procedures

Update Queries in Access

Update queries are a type of action query, which modifies data according to specific criteria such as increasing all car rental rates or certain product prices by 15%. Update queries are created in much the same way as other queries except that a new value is specified for a particular field. Like all other types of action queries, update queries save time and effort, but must be used carefully because they actually change the data in the underlying table. Let's use the sample data table HARDWARE to create a simple update query. HARDWARE is included in SOLVE98.MDB.

1. Load the HARDWARE table, and browse the records of the table, particularly noting the data in the Unitcost field (see Figure 5-90).

Figure 5-90
Before Update

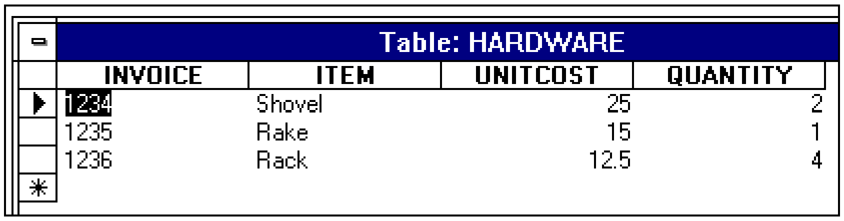


Table: HARDWARE

INVOICE	ITEM	UNITCOST	QUANTITY
1234	Shovel	25	2
1235	Rake	15	1
1236	Rack	12.5	4

Create a new query based on the HARDWARE table. From the query design window, select QUERY/UPDATE from the menu or click on the Update query toolbar button. This action turns the Select query into an Update query, and causes Access to add an *Update to:* line to the QBE Grid.

3. From the Update query design window, select and drag the Item and Unitcost fields in the HARDWARE field list down onto the Field: bar of the QBE Grid. In the *Update to:* cell under

the Unitcost field enter the expression [Unitcost]*1.15. This tells Access that we want to increase prices of all items in the HARDWARE table by 15%.

4. Save (e.g.: TUTE8 QUERY1) and run the query, and then press F11 to return to the Database window. Open the HARDWARE table and notice the changes made to the Unitcost field (see Figure 5-91). Access has updated all prices by 15%.

Figure 5-91
After Update

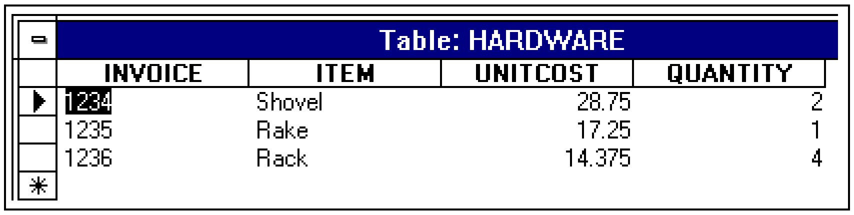


Table: HARDWARE

INVOICE	ITEM	UNITCOST	QUANTITY
1234	Shovel	28.75	2
1235	Rake	17.25	1
1236	Rack	14.375	4

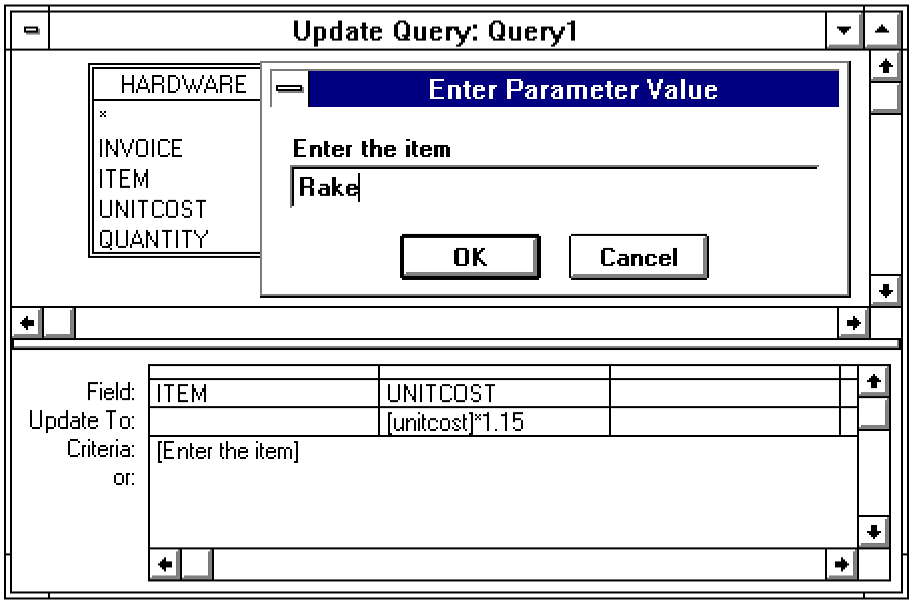
Update queries can also be limited to certain records or groups of records. Let's say we only wanted to update the unitcost of Rakes. A simple criteria or *parameter* must be added to the query to impose a filter on the table records. Access offers two ways of doing this:

a) In the Criteria: cell under the Item field of the update query window, enter Rake. This tells Access to limit update of the Unitcost field to only those records, which contain the word Rake in the Item field.

<u>Alternatively</u>:

c) In the Criteria: cell under the Item field of the update query window, enter a parameter statement: [Enter an Item]. Syntax is exactly as shown. When the query is run, Access will display the query Parameter Value window, prompting the user to enter text that will limit the update action (refer Figure 5-92). Entering Rake will produce the same result as method (a).

Figure 5-92



Enter the item

Rake

Field:	ITEM	UNITCOST
Update To:		[unitcost]*1.15
Criteria:	[Enter the item]	
or:		

Parameter statements can be used with all types of queries - select and action. They provide an added degree of control by minimizing user intervention with the query design window.