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# **Create and Print Invoices**with Unlimited Line Items

If you use a line-item database for invoices, sales orders, or bills of lading, here's how to make your application as versatile as it can be.

By Jeff Nitka





NE of the problems with line-item databases—invoices, sales orders, bills of lading, and the like—is their lack of flexibility. They don't lend themselves well to reports that summarize item and quantity activity. To get this information, you first have to copy each line item to a separate database designed for one record per item. Also, such databases hold you to the number of lines you've designed into the data entry form. If your database has 10 lines, and the customer orders 11 items, you have to add a second record just for that 11th item.

If this describes your situation, chances are you'll gain the data entry, printing, and reporting flexibility you need using a different approach to your line-item application. You'll be able to create invoices and the like containing practically unlimited line items, design informative summary reports without having to copy your line items to a separate database, and print professional-looking invoices or similar documents to send to your customers.

I'll show you how to create invoices that can contain as many line items as you need. You can easily adapt this approach to a bill of lading or sales order application. The approach includes the following features (Figure 1 shows the relationship between the application components):

- The application consists of three databases: the principal transaction and data entry database, INVOICE.DTF; a secondary database named HISTORY.DTF to store a copy of each invoice you print; and a typical customer information database named ROLODEX.DTF for name and address information.
- Each line-item record in the INVOICE database is linked to a customer and purchase order and contains a unique transaction number. As you'll see, this arrangement gives you a great deal of flexibility, not only when it comes to generating invoices, but for designing reports as well.

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## QuickAnswer

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## **README.1ST**

Dear Reader,

This issues caps *The Quick Answer's* fifth year of publication—60 issues to date—and we're still the only game in town when it comes to maximizing your productivity with Q&A. Pinnacle Publishing would like to thank you for your loyalty and commitment to *The Quick Answer*. You—and this publication—have truly been a pleasure to serve. It is with our warmest wishes that we at Pinnacle say good-bye to *The Quick Answer*.

The fifth anniversary issue of *The Quick Answer* will have a new home at Marble Publications with Mike Bell as publisher and Tom Marcellus continuing as editor. Mike, as some of you may know, is a pioneer in Q&A development. His expert solutions have appeared often in *The Quick Answer* and he is the author of the Program Pack for Q&A and the new Turbo Pack for Q&A (which we will review in an upcoming issue).

This transition of *The Quick Answer* from Pinnacle to Marble will not affect your subscription. Pinnacle and Marble have worked together to ensure that you will continue to receive the same high quality publication you have been accustomed to receiving. **Beginning on May 1, 1995, please direct all customer service inquiries to Marble Publications at 800-780-5474.** 

Exciting times are ahead for *The Quick Answer*—new developments for Q&A will be discussed in upcoming issues!

This month, three veteran Q&A developers bring you new ways to meet traditional data management challenges. You can escape from the prison of a flat-file line-item database structure (invoices, sales orders, bills of lading) using **Jeff Nitka**'s approach that permits virtually unlimited line-items per transaction.

If time is of the essence, **Darrel Hoefling**'s slick program calculates the future date from any number of days, weeks, months, or years. And you can add the capability to your existing database with as few as three fields.

Been thinking about moving to Q&A for Windows? **Dave Dvorin** made the leap and lives to relate the ecstasy—and the agony.

We at Pinnacle and Marble thank you and wish you all the

Susan Jameson Harker Publisher Pinnacle Publishing, Inc.

Mike Bell Publisher Marble Publications, Inc.

Tom Marcellus

Editor





## **Invoices** Continued from page 1

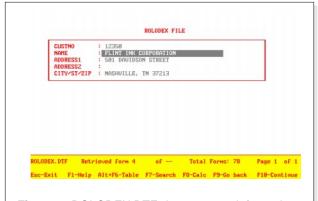
You'll be able to create reports that provide valuable summary information across the entire database, whether by item, customer, date range, or all three.

- Invoices are printed via a Write merge document template. You can take advantage of Write's extensive layout features to create really professional-looking invoices.
- The procedure is automated by a macro that, as its final step, prints the invoice. You enter the line items for a particular customer order as you normally would, and the macro does the rest. The routine can even be modified so you can compile and print several invoices at a time. See the sidebar, "How to Print Multiple Invoices."

#### The databases

ROLODEX.DTF (see Figure 2) is your basic customer information file. You use it to store the customer number, name, address, and so forth, all of which can be retrieved via XLookups.

INVOICE.DTF (see Figure 3) is the transaction entry file. Its Calc mode must be set to automatic. (You can do this in Add Data by pressing Shift-F8 for Calc Mode and choosing automatic). INVOICE's fields, except for Line No, are typical of a line-item database. The Date and Line No fields are Read-only. Transaction No (field #1) and Extended Cost (field #8) require the following programming statements:

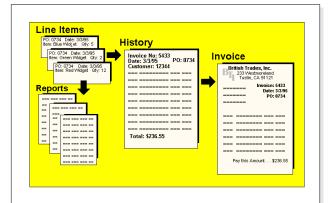


**Figure 2**. ROLODEX.DTF, the customer information file. All fields are formatted for text. The CustNo field must be Speedy to accommodate XLookups from INVOICE.

The program for the Transaction No field assigns an incremental transaction number. It executes in Add Data mode and finds the highest transaction number in the file and adds a 1 to it for the current record. (@Number is used to mass update the Line No field, so it can't be used to assign the transaction number.)

After you've designed the INVOICE form and added the programming, go to the Initial Values Spec, and Type 0.1 in the Line No field and @Date in the Date field. (You'll find out why later.) Also, make the Line No field Speedy to accommodate XLookups. Line No, which is incremented by the macro that runs the invoice-generating procedure (which I'll describe later), controls the record's position in the Write merge template. For example, the record with the largest Line No value will be the first item on the invoice.

The third and final database is HISTORY (see Figure 4). No data entry occurs in this file. The automated procedure uses HISTORY to compile the



**Figure 1**. The line-item records that comprise an order are organized and stored in the history file, which becomes the merge file for the printed invoice.



Figure 3. You use INVOICE.DTF to enter and store a record for each transaction line item.

 $\oplus$ 



invoice and save a record of it. You can search HISTORY at any time to see what items were included in an invoice. HISTORY also serves as the merge database for the Write document template that prints the invoice. Though my sample history database includes only enough fields for a 10-line invoice, you can expand yours to include as many line items as you might need—up to Q&A's limits of 10 screen pages, 248 fields per page, and 2045 fields total.

InvNo (field #1) and Date (field #2) are Speedy fields. Listing 1 shows the relevant programs for InvNo, Date, and Max (field #3).

Listing 1. InvNo, Date, and Max programs.

```
<#1: If @Add and #1 = ""
      Then { #1 = @XLookupr(@Filename,999999,"X#1","X#1");
     If #1 < 5000 then #1 = 5000 else #1 = #1 + 1; }; Cnext
<#2: Goto #3
<#3: If @Add
      Then {
      XLookupr("INVOICE.DTF",999999,"X#9","X#9",#3);
      If #3 >= 1
      Then {
XLookup("INVOICE.DTF", #3, "X#9", "X#3",
    #5,"X#4",#51,"X#2",#52);
XLookup("ROLODEX.DTF", #5, "X#1", "X#2",
    #4);
XLookup("INVOICE",#3 - 0,"X#9","X#6",#10,"X#5",
    #20,"X#7",#30,"X#8",#40);
XLookup("INVOICE",#3 - 1,"X#9","X#6",#11,"X#5",
    #21,"X#7",#31,"X#8",#41);
XLookup("INVOICE",#3 - 2,"X#9","X#6",#12,"X#5",
    #22,"X#7",#32,"X#8",#42);
XLookup("INVOICE",#3 - 3,"X#9","X#6",#13,"X#5",
    #23,"X#7",#33,"X#8",#43);
XLookup("INVOICE", #3 - 4, "X#9", "X#6", #14, "X#5",
    #24,"X#7",#34,"X#8",#44);
XLookup("INVOICE",#3 - 5,"X#9","X#6",#15,"X#5",
    #25,"X#7",#35,"X#8",#45);
XLookup("INVOICE",#3 - 6,"X#9","X#6",#16,"X#5",
    #26,"X#7",#36,"X#8",#46);
XLookup("INVOICE",#3 - 7,"X#9","X#6",#17,"X#5",
    #27, "X#7", #37, "X#8", #47);
XLookup("INVOICE",#3 - 8,"X#9","X#6",#18,"X#5",
    #28,"X#7",#38,"X#8",#48);
```

**Figure 4**. The HISTORY database is a secondary file that compiles the invoice data and stores a record of each invoice you print.

```
XLookup("INVOICE",#3 - 9,"X#9","X#6",#19,"X#5",
#29,"X#7",#39,"X#8",#49);
#50 = @Sum( #40 .. #49 ) } }
```

Field #1's program returns the next invoice number in sequence. Even if you use invoices with pre-printed invoice numbers, this field and its program are still necessary to retrieve information for the Write merge invoice.

Field #3's program compiles the invoice. When the procedure creates a new HISTORY record, the XLookupr statement searches INVOICE for the record with the highest value in the Line No field ("X#9") and stores that value in Max (#3). The next two XLookup statements use this value to retrieve the customer information to print on the invoice. The remaining XLookup statements retrieve the line-item information from the pertinent INVOICE records by proceeding through a descending sequence of values in the external Line No fields.

Notice the #3 - 0 parameter in the first of these XLookups. This parameter retrieves the data from the external INVOICE record with the maximum Line No value. Each of the remaining XLookup statements retrieve data from the external record in which Line No has a value one less than the Line No in the previously retrieved record (you'll see how this sequence works when I discuss the routine later). When these statements have all been executed, the invoice is complete and can now be printed.

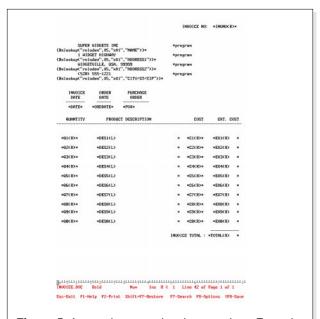


Figure 5. A sample merge invoice template. Enough fields are included for 10 line items, but you can add more. The programming expressions that retrieve the customer name and address are positioned so that Q&A prints this information in a block on the right side of the invoice.



#### The merge document

Figure 5 shows a sample Write merge document template, INVOICE.DOC. Like the HISTORY database, INVOICE.DOC includes only enough merge fields for a 10-line invoice, but you can add more. The advantage to using a merge document to print invoices (besides the obvious ability to assign attractive fonts and other enhancements to the document) is that you can add merge fields for as many line items as you need. INVOICE.DOC can contain merge fields for a hundred or more line items (to match the number of line items in HISTORY), and Q&A will close up any unused lines when you print the invoice

#### Compiling and printing the invoice

Data entry consists of adding a record to the INVOICE database for each line item to appear on the invoice. Once you've entered an order, you invoke the macro-driven procedure that compiles and prints the invoice. Following are the steps the macro performs. I'll give you the commands (divided into parts) to record in the macro, followed by an explanation of what they do:

#### Part 1

- At the Main menu, select File to display the File menu.
- Select Mass Update, type in the path and database filename (in this case INVOICE), and press Enter.
- 3. At the Retrieve spec, move to Line No, type > 0.1 and press F10.
- 4. At the Update Spec, move to Line No, type #1 = 0.1 and press F10.
- 5. Press *n* to answer No to the prompt to update one record at a time, and press Enter.

This part of the macro searches for previously updated records, which must be updated once more so they won't be included in the new invoice. Remember that each time you compile an invoice, the Line No field is assigned a value greater than 0.1. To print a new invoice that won't include information from previously updated records, Line No is reset to its default value of 0.1.

#### Part 2

Select Mass Update from the File menu. Q&A will propose INVOICE because it's the last file you accessed. Press Enter.

- 7. At the Retrieve Spec, press Alt-F2 to pause the macro for you to enter the records to be selected.
- 8. Select the records to be included on the invoice. (My design allows a maximum of 10 records.) You can use the Customer PO field to select the records, in which case you should make it a Speedy field to speed processing. Press Alt-F2 again to end the pause.
- 9. Press F8 for the Sort Spec.
- 10. Move to the field on which you want to sort the line items for the invoice. Type 1AS to sort in descending order, or 1DS to sort in ascending order. (This is the opposite of what you might expect. I'll explain later.) Press F10.
- 11. At the Update Spec, move to Line No and type #1 = @Number.
- 12. Press F10, answer No to Q&A's prompt, and press Enter.

This part of the macro prompts you for the records to be included in the invoice you're about to print. Record retrieval options include using the transaction number range, the purchase order number, or a combination of both. Each has its own merits and drawbacks. It's up to you to ensure that the record retrieval option you choose includes just the records you want on the invoice.

The macro continues, requiring you to specify a sorting parameter opposite to what you might expect. In the program for HISTORY's field #3, the data is retrieved in reverse transaction number order, requiring this change in convention. For example, I like to place Extended Cost values in descending order on the invoice. Therefore, in my macro, I move to the Extended Cost field and type in 1AS.

The Update Spec assigns a unique number to each record to be included in the invoice. Remember, the default Line No value is 0.1, so every record to be included in the invoice will need a value greater than or equal to 1. Those records not to be included will contain a Line No value less than 1.

#### Part 3

- 13. From the File Menu, select Add Data, type in HISTORY, and press Enter.
- 14. Press Shift-F10, then press Esc to return to the Main Menu.

The macro adds a record to HISTORY.DTF. As the new record is started, the programming retrieves





## **How to Print Multiple Invoices**

The routine I've described prints one invoice at a time, but you can divide the macro into two macros to print several invoices in a row.

Referring to parts 1, 2, 3, and 4 of the macro I discussed earlier, split the procedure into two macros, Macro A and Macro B. Macro A runs parts 1, 2, and 3—and you can run it repeatedly. For example, you can run it five times to create five new HISTORY records. When you're finished, run Macro B to perform the actions in part 4. However, instead of typing *Max* in the InvNo field at the Retrieve Spec, type *Max5*. If you want the invoices printed in a particular order, you can modify Macro B as follows:

- 15. Select Write, and press Enter.
- 16. Select Get, type in INVOICE.DOC, and press Enter.

17. Press F2 then F10.

- 18. At the Retrieve Spec, press Alt-F2 to pause the macro for you to enter the number of records you wish to print. Move to InvNo, type in *Max5* (replace the *5* with the number of invoices to print).
- 19. Press Alt-F2 to resume the macro.
- 20. Move to the Date field, press Ctrl-F5, then press F8.
- At the Sort Spec, move to the InvNo field and type 1AS.
- 22. Press F10 then Enter to begin printing.

Your invoices will print in ascending order by invoice number.

the data from all the INVOICE records you included in your Retrieve Spec. The record is then saved to disk.

#### Part 4

- 15. Select Write and press Enter.
- 16. Select Get, type in INVOICE.DOC, and press Enter.
- 17. Press F2 then F10 to print. The Retrieve Spec appears.
- 18. Move to the InvNo field and type *Max*.
- 19. Move to Date field and press Ctrl-F5.
- 20. Press F10 then Enter to begin printing.

When the INVOICE.DOC template is opened and sent to the printer, Q&A prompts for the HISTORY record to be merged with it. The pertinent HISTORY record is the one the procedure just saved—the record with the highest invoice number. The procedure ends as the invoice is printed.

#### Conclusion

My initial approach to this application didn't include the secondary HISTORY database; it printed the invoice without creating and saving a record of it. The technique involved placing the programming

statements (similar to those in HISTORY's field #3) in the merge document itself. However, because Q&A limited me to 16 programming expressions in the merge document, my invoices could contain only a few line items, and the invoice total had to be calculated separately and in a way that reduced speed. The whole thing performed awkwardly, and it actually took longer to print the invoices.

The secondary HISTORY database reduces programming complexity, allows the routine to run more efficiently, and stores a complete record of the printed invoice. The downside is that you're storing duplicate information, though you can always add a few steps to the procedure to delete the pertinent HISTORY record once the invoice is printed.

The application I've described creates a simple invoice, but you can adapt it to create more sophisticated invoices. For example, you could add item number fields for the items ordered. Quantity shipped fields could be added as well. This way, if the value in Quantity were greater than Quantity Shipped, the procedure could print back order information on the invoice.

All the elements of the application are open to modification. You have the basics. How you expand on them depends on your own application needs.

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# @HELP

Edited by Dave Reid

## Improve Search Performance



I have a 24,000-record database I've recently placed on a network file server. I routinely run a retrieve that selects multiple records, such as all the records with *Johnson* in

the Last Name field. Q&A seems to slow down after finding the first record. When I press F10 to display the subsequent records, sometimes the next one comes up instantly, sometimes it takes up to 15 seconds. Then, the next one might appear instantly. Why does this happen, and how can I improve performance?

Jon Lewis Dallas, Texas

I suspect that the Last Name field in this database isn't Speedy. Go to the Speed-up Spec, and type an S in it. The problem you describe can happen whenever Q&A for DOS or Windows performs a *linear* search of a database that involves multiple records. When you press F10 to go to the next record, Q&A has to check each and every record until it finds the next match. If there are many records that don't match, it can take a while to find and display the next one. Other network activity can exacerbate the delay. On the other hand, when the field is indexed (Speedy), Q&A uses what's called a *binary* search to find the next matching record. In either case, specifying a sort will eliminate the delay between records. To sort in Q&A for DOS, press F8 from the Retrieve Spec, and type 1AS in any field. Then, press F10 to retrieve the records. Q&A will round up the matching records in one fell swoop, so you should experience no delay when "F10-ing" between them.

#### **Fix Label Wrap Problem**



I'm having trouble printing two-column mailing labels. Whenever there's a long address in the right-hand column, instead of wrapping to the next line of the same label, it wraps to the left of the first column, like this:

Jacob Smith 123 Main Street Blvd New York, NY 12345 Madison Smith
1144 South Winchester
San Diego, CA, 91234

How can I keep this from happening? There's no easy way to predict which addresses will wrap, so I can't just edit the lengthy ones.

Alfred Kemmerling Amsterdam

You've probably defined your labels slightly larger than they really are. Press Ctrl-F6 from the label template to display the Define Label screen and decrease the Label Width setting slightly. I can't give you the exact setting because you didn't mention your current settings. Begin by reducing it by approximately 1/4-inch, and take it from there. The text is wrapping this way because, for that one line, Q&A sent more data than the printer could handle. Q&A believed the label to be wider than it is, so the combined length of the text for the two labels was wider than the printable area of your printer, thus forcing the text to wrap to the next line.

## Use If-Then Logic with XLookups



I use XLookup to pull pricing information from a parts database into an invoice record. I sell both new and used parts. In the parts database, I have one record per part but with two different price fields: New Price and Used Price. On the invoice, I indicate whether the part is new or used. So far, XLookup only gets the New prices. How can I program to get either the new or used price depending on what's indicated in the invoice?

Melvin Getlan New Rochelle, New York

You can use If-Then logic to control which of two XLookup statements is executed. The following program checks the contents of the NewOrUsed field. If the field is marked Used, the Used Price is retrieved; otherwise, the New Price is retrieved.

You'll need to repeat this statement for each line of the invoice, changing the references to the line-item fields (NewOrUsed1, Part No1, and Price1) to the pertinent line number.





#### **Fix Broken Line Draw Boxes**



#### **Double-Sided Printing**



I designed a database in Q&A 4.0 for DOS and used Line Draw to add boxes around groups of fields. When I print the form, the right edges of the boxes print in a broken, wavy line. The boxes look fine onscreen, so there must be something wrong with the printer.

Dierdre Kellner Silver Spring, Maryland

The boxes appear to be properly spaced because onscreen every character is the same width. When you print your forms, however, you're probably using a proportional font. In a proportional font, the space Q&A assigns to each character is proportional to its actual width. For example, the letters *W* and *l* require different spacing.

To correct the problem, print with a monospaced font instead of a proportional font. To change the font, press F2 to display the Print Options screen, then press F8 for the Define Page screen. Move to the Header area at the bottom of the screen and press Ctrl-F9 to display the Font Assignments. Move to the Regular Font line and press the space bar to clear it. (You can leave this line blank because the printer's default font is monospaced. You can also assign any monospaced font.) Press F8 to make this screen the default every time you print a form, then press F10 to save your changes. Now, when you print your forms, the boxes should turn out all right.

#### **Multiple Top Margins**



I print multipage documents on my HP LaserJet IIIP. I know how to use Q&A for DOS's LHD paper feed option to print the first page on letterhead and the subsequent pages on plain paper. However, I'd like to have a 12-line top margin for the first page, and a smaller four-line margin for subsequent pages. Can I do this?

Richard Light Metairie, Louisiana

Q&A for DOS doesn't support different margin settings within a document, but there's a simple solution. Set your document's top margin to four lines. Then, on the first page, press Enter eight times to push the text down the page. The resulting page one margin will be 12 lines, and the other pages will print with the regular four-line top margin.

I have an HP LaserJet IIIP, and I'd like to set up Q&A so I can print on both sides of the paper. I've been looking for a feature that allows me to print the odd numbered pages first, then, after restacking and reloading the paper, print the even numbered pages. Is there such a feature?

Charles Wright Vancouver, British Columbia

Q&A doesn't support double-sided (duplex) printing on printers, such as HP IIIP, that don't support it. For printers that do support duplex printing, such as the HP IID and IIID, Q&A supplies additional drivers to control duplex mode.

## Mail Merge Program Not Executing



I haven't had any luck using mail merge programming in Q&A 4.0 for DOS. I've added the following programming expression to my document—it should print the initial of the person's first name:

\*Program{@Left(First Name, 1)}\*

But Q&A prints the entire literal statement instead. What gives?

Hardy Ledbetter Whiteville, North Carolina

Your expression's syntax looks fine, but you need a space between the word *Program* and the left French brace. Add the space, and the expression should execute as expected. Here's what the corrected expression should look like:

\*Program {@Left(First Name, 1)}\*

Dave Reid is a Symantec senior support analyst providing second-level assistance to technical support representatives. He's the coauthor of The Q&A 4.0 Wiley Command Reference, published by John Wiley and Sons, and works as an Q&A consultant. PO Box 12083, Eugene, OR 97440.



Have a nagging question? Send it to Marble Publications, Inc., PO Box 9034, Gaithersburg, MD 20898-9034 or fax it to 301-424-1658. Indicate that it is for @Help and include your name, address, and phone number, along with your Q&A version number (and whether DOS or Windows) and detailed description of the problem. We will publish questions of general reader interest.



## **Moving to Q&A for Windows**

Depending on the applications you're converting, migrating from Q&A for DOS to Q&A for Windows can mean losses and gains. A veteran Q&A developer converts a sample application, and tells you what he likes—and doesn't like—about using it in Q&A for Windows.

By David E. Dvorin

&A for Windows can present Q&A for DOS users with application design problems, as I learned when I ported my Q&A for DOS Investment Performance Tracker (IPT) application to Q&A for Windows. By the time all the adjustments were made, I had an application that benefited from the flare of Q&A for Windows (and was still usable with Q&A for DOS—an advantage called interoperability that I'll tell you about later), but I had to sacrifice several application elements. I'll tell about you the issues I had to confront during the conversion process.

#### **Application description**

My investment performance tracker database does what its name says—it tracks how well my investments are doing. By filling in a few fields that describe an investment transaction, IPT calculates and displays on the record the investment's gain or loss and rate of return since the last transaction . A variety of reports allow me to track aspects of an investment's performance history over time.

The database's form design includes two screen pages—only one page is visible during data entry and lots of Line Draw for visual appeal. The application uses no custom menus or macros, but includes saved Retrieve, Sort, and Mass Update specs, along with a handful of columnar and crosstab reports. IPT's Program Spec is extensive but screens are used throughout the database, which has no security features, such as User IDs, groups, or field-level security. Opening a Q&A for DOS database

includes no navigation programming. Custom help

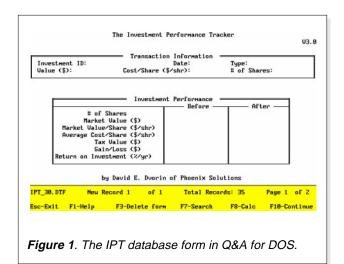
## in Q&A for Windows

When I opened IPT in Q&A for Windows for the first time, most of its properties came through without a hitch. Q&A for Windows re-created the form design and named it Master form. All the field names and their attributes (formatting, restrictions, programming, and so forth) remained intact, along with my saved Retrieve, Sort, Mass Update, and Report Specs. However, because Q&A for Windows doesn't support crosstab reports, these were left behind.

#### Form design

Figure 1 shows the IPT form I created in Q&A for DOS, and Figure 2 shows how Q&A for Windows rendered it. The Master form is a barebones affair without any special fonts or colors, though the Line Draw came through along with all the field names and their relative positions on the form. Figure 3 shows the result of applying several Q&A for Windows form design tools to add different fonts, font sizes, and color (though you can't see the colors

While working with the Master form, I learned



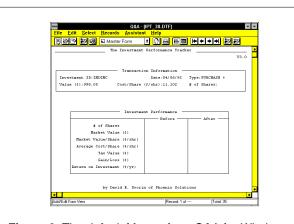


Figure 2. The default Master form Q&A for Windows created for the IPT database.



that video resolution is a factor. Higher resolution monitors display more information on the screen. For example, if you're using regular VGA (640 x 480 pixels), then a 6.25-inch x 4-inch image area—as measured by the onscreen rulers—is visible before you need to scroll horizontally or vertically. With a Super VGA screen (800 x 600 pixels), a 7-inch-by-5-inch image area is visible. The higher the resolution of your monitor, the more stuff you can see onscreen at one time.

Color, or lack of it, is another aspect you have to take into account. If you plan to use your database on a monochrome notebook, you'll have to experiment to see how your forms will look. With IPT, I created a special form for my monochrome notebook. It looks like Figure 3, except that the form background is white with the field names, field values, and text in black and gray.

You might need to rethink any multipage forms you designed in Q&A for DOS because Q&A for Windows forms don't include page breaks. Q&A for Windows converts a multipage form to a single screen form that scrolls vertically.

For some forms, this can be an advantage. With Q&A for DOS forms designed to mimic paper forms, the maximum of 21 lines per screen page can present problems—page breaks between screens may not be visually appealing or functionally optimum. On the other hand, clean page breaks in some types of forms actually make them easier to use.

However, in Q&A for Windows, you can create up to 300 different forms for a database, and a form doesn't have to include all the fields in the database. You can use Q&A for Windows' @Layout function in conjunction with a goto command to program the cursor to move to another form when you exit a field, though, depending on the speed of your computer, it can take time for the next form to appear. You can also program the cursor to move to

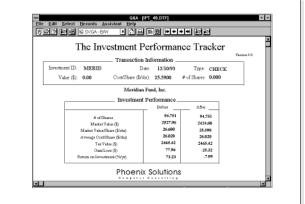


Figure 3. The IPT form after reworking it for a few minutes in Q&A for Windows.

an area of the same form that includes only the fields on what used to be a separate screen page. This is faster than swapping forms, but creating a form "page" in an isolated area of the form can be tricky. (See the Sidebar, "Q&A for Windows Form Design Basics.")

#### Reports

When I first opened my IPT database in Q&A for Windows, I went to the report area to see how my saved reports had been affected by the conversion. The first thing I noticed was the lack of the *Print to* option that appears on the Print Options screen in Q&A for DOS. All Q&A for Windows reports are printed to a single output device—the one you set up in Windows as your default printer. Q&A for Windows does allow you to change the output device via the Printer Setup selection on the File drop-down menu, but the device isn't linked to the report as it is in Q&A for DOS.

Because my IPT reports were all designed to print to the screen, I had to redesign them so they looked good when printed on paper. The only way to print reports to the screen in Q&A for Windows is to select Print Preview when the Print dialog box appears.

My IPT database includes two crosstab reports. Unfortunately, Q&A for Windows doesn't support crosstabs. If I need to run these reports, I have to use Q&A for DOS.

#### **Scripts**

In Q&A for Windows you create scripts—not macros—to automate database tasks. Recording a script is equivalent to recording steps while using Q&A for DOS's Intelligent Assistant or Query Guide. In Q&A for DOS, I had created a macro to automate a mass update procedure to recalculate modified transactions. In Q&A for Windows, I had to do it all over again, saving the commands in a script (see Figure 4). Q&A for Windows, however, lets you attach a script to a button and place it right on the form. When you push the button (by clicking on it), you execute the script. (See the sidebar, "A Primer on Scripts.") This, to me, is a lot more sensible than having to cope with macros named Alt-this and Ctrl-that.

#### Other conversion issues

Though converting my database to Q&A for Windows wasn't difficult, the application was incomplete because of the lack of crosstabs. With other applications, other issues—such as custom menus, posting, and mail-merge documents—might need to be addressed. Scripts and multiple forms

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### **Simulating Custom Menus**

Though Q&A for Windows doesn't support custom menus, you can simulate a custom menu system by creating forms that contain nothing but buttons, each one representing a different menu option. There's still a limitation, however. Q&A for Windows scripts only work within the database in which they're created.

Before designing a form to serve as a menu, decide which options or tasks you'd like to include. Such options can include displaying another form for a submenu or data entry, running a report, or performing a search or mass update. Once you have the menu options in mind, create whatever forms or specs are needed for them, and use the Scripting Assistant to create and save the scripts for each action or task.

To create the menu, start with a blank form in the same database. Pull down the Select menu and choose

Design Input Forms. Then, pull down the Forms menu, and choose New Input Form. Choose the script button tool from the Tool Palette, and place the first button on your form. Q&A for Windows will display a dialog box, and you can select the script to attach to the button.

Continue by placing a script button on the form for each task you want to include on your menu. Complete the menu by annotating it. Use the text tool to add a title and instructions, and the other tools to enhance the menu's overall visual appeal with lines, boxes, and colors.

When you're finished, you can add a script button to your data entry form to call your new menu form. And you can include a button on your menu form to redisplay your data entry form.

might provide a suitable alternative to custom menus, but there's no practical way to get around the lack of posting. Moreover, you'll have to rework any mail-merge documents and labels you've created in Q&A for DOS.

#### Custom menu workarounds

You can combine scripts and multiple forms to create a custom menu system in Q&A for DOS. Because scripts can be placed on a form as buttons, you can create forms that contain nothing but buttons (see Figure 5). A button can perform a search or mass update operation, run a report, or display another form. (See the sidebar, "Simulating Custom Menus.")

#### Mail-merge documents

Q&A Write for Windows merge documents handle and display merge fields differently. In Write for DOS, you identified a merge field by surrounding it with asterisks (\*Last Name\*). In Write for Windows, you must select a merge field from a list (you can't type it in). It's displayed surrounded by chevrons (»Last Name«). The major difference between the two versions is that the chevrons and the field name are a single object. This means that for any Q&A for DOS merge documents you bring over into Q&A for Windows—as well as any mailing labels—you'll need to reinsert all your merge fields.

#### Application interoperability requirements

In order to use your database in both Q&A for DOS and Q&A for Windows, you must install the Q&A

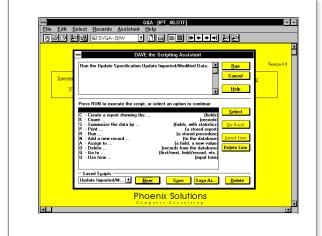


Figure 4. Q&A for Windows' Scripting Assistant.

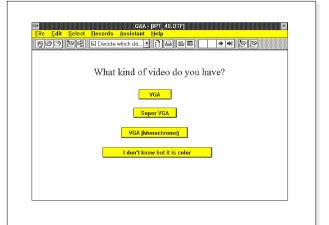


Figure 5. A Q&A for Windows form with nothing but buttons can serve as a custom menu.

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for DOS interoperability upgrade. The upgrade is available for a small charge from Symantec, or you can download it free of charge from the Symantec BBS. When you install the upgrade, Q&A for DOS won't look or behave any differently—it simply lets you use your databases in both products.

To find out if you need the upgrade, press Ctrl-F3 from the Q&A for DOS Main menu to display the

System Information screen. The fifth line shows the date of your QA1.EXE file. If it's earlier than 08/30/93 and you want interoperability, you need the upgrade.

#### Obtaining the Q&A for DOS upgrade

If you have a modem and communications software, you can download the upgrade from the Symantec

### **Q&A for Windows Form Design Basics**

When it comes to form design, Q&A for Windows excels. You can create and use multiple forms with a single database, and each form can have all the fonts, colors, and graphics you'd expect from a Windows application.

#### Copy the Master form

By default, Q&A for Windows creates a bare-bones Master form for your database. Before you rework the Master form, it's a good idea to copy it to another name and rework the copy.

Open the database, change to Design mode by pulling down the Select menu and choosing Design Input Form. To copy the form, pull down the Forms menu and choose Save Input Form As. Enter a new name for the form, and click OK. The new form name appears at the top of the form window, and you can now make your changes.

#### Adding elements to the form

You use the Tool Palette to create and enhance Q&A for Windows forms. (See Figure 6.) The Tool Palette is available whenever you're in Design mode. For example, to draw a line on your form, click on the line drawing tool on the Tool Palette (it's the icon with the diagonal line). When you bring the mouse pointer back to the form, the cursor changes to a cross hair with a diagonal line. The cross hair is your pointer, and the diagonal line indicates you're using the line drawing tool. Click the left mouse button where you want the



**Figure 6.** Q&A for Windows' Tool Palette.

line to begin and, while holding it down, drag the mouse to where you want the line to end, then release the mouse button. There's your line.

You can use the other form design tools to embellish your form with boxes, rectangles with rounded corners, circles, or ovals. If you want to change the thickness or color of a graphic object, use the attribute tools at the bottom of the Tool Palette. The tools at the very bottom are for line and border thickness, style, pattern, and color. The tools just above these are for a graphic object's fill color and pattern.

To add free text anywhere on the form, click on the text tool (the icon with the large T), position the cursor, and type away. To change the appearance of your text, pull down the Format menu and choose Font to display the Font window. You can set text attributes such as font, size, style, effects, and color. When you're finished, click OK, and the text on the form is transformed according to your specifications.

The Tool Palette includes other tools as well. As you become familiar with them, you'll find ways to add lots of pizzazz as well as functionality to your forms. (See Figure 7.)

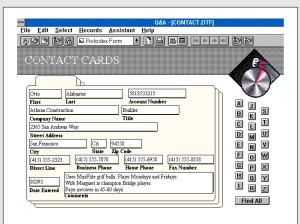


Figure 7. The ready-to-use Rolodex form (CONTACTS.DTF) that comes with Q&A for Windows. The alphabetically arranged buttons along the right are attached to scripts to help you quickly find and display contacts.

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## A Primer on Q&A for Windows' Scripts

To Q&A for DOS veterans, Q&A for Windows scripts are nothing more than saved commands that lead to an action by the Intelligent Assistant or Query Guide. You use scripts to automate tasks, from running searches and generating reports, to performing mass updates.

For example, if you wanted to have Q&A for Windows run a sales report based on 1994 information, you could record a script that reads like this:

Create a report showing the Salesman and Dollar amount from the records where Date Of Sale is after 12/31/93 and before 1/1/95 sorted by Salesman.

To create a script, pull down the Assistant menu and select Scripting Assistant (see Figure 4). Double-click on the word or phrase from the Phrase Window (the bottom area of the window) that describes the next action, until you've finished building the request. The script, as you and Q&A build it, is displayed in English in the upper window. When you've included all the commands that lead to the result you want, you can click on Run to execute the script, or click on Save to save the script for later use.

A script can include a series of actions, such as this one that finds records and summarizes them:

- Find the records that have a date later than four months ago.
- Summarize the data by Name and City showing all statistics for Amount from ALL records.

Saved scripts can be added to the Assistant dropdown menu or attached to a button on a form. To include your script on the Assistant menu, pull down the Assistant menu, and select Manage Assistant Menu. Q&A displays the list of saved scripts along the left side of the window. Double-click on any script, and Q&A will add it to the Assistant menu.

To add a script button to a form, go into form Design, choose the script button tool from the Tool Palette, and place the button on your form. Q&A will display a dialog box from which you can select the script to attach, and you can type in a name for the button label. Save the form, and click on the button to execute the script.

BBS. Set your communications software for 8 bits, no parity, and 1 stop bit. For 9600 baud or faster modems, the Symantec BBS number is 503-484-6669. For all other modem speeds, the number is 503-484-6699.

If you're new to the BBS, enter New as your User ID. At the first prompt, enter  $/GO\ QA$ , and a menu will appear. Enter F for the Files Library, enter D for download, and enter QAUP.EXE as the file name. Select your file transfer protocol, and download the file.

#### Q&A for DOS upgrade changes

The upgrade looks and feels just like Q&A for DOS version 4.0; however, there are a couple of changes. First and foremost, the upgrade lets you use your Q&A databases in either product. Just open your databases, and they'll be upgraded automatically.

Second, the upgrade includes two new programming functions: @Platform and @Layout. In Q&A for DOS, @Platform returns DOS; in Q&A for Windows, it returns WIN. So, you can use conditional programming commands that execute depending on the platform in which you're working. In Q&A for DOS, @Layout returns DOS; in

Q&A for Windows, it returns the name of the current form, and allows you to program your database to conditionally display different forms during data entry.

[Though Q&A for Windows doesn't support crosstab reports, you can create a Freeform summary report that looks suspiciously similar to one. See page 13 (Figure 8, in particular) of the July 1994 issue for an example of a Q&A for Windows open invoice summary report in a crosstab format.

Also, though you can't use Q&A for Windows scripts to automate advanced procedures such as accessing multiple databases or running a mail merge, you might be able to use Windows' macro recorder to do so. (See page 11 of the May 1994 issue.) For example, you can create a Recorder macro to copy a key value from the current record to the Windows Clipboard, move to the Retrieve Spec of another database, paste the key value into the pertinent field, and retrieve the linked record.— Ed.]

David Dvorin owns Phoenix Solutions of Hillborough, New Jersey, which specializes in tailoring off-the-shelf software for a broad range of business needs. His investment tracking application is available from him in Q&A for DOS and Windows versions. 908-281-6272.

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## Letters

#### **Credit Card Validation**

I found an error in the article, "Validate Credit Card Numbers" (October 1994). On page 16, in the first column, there's a line of code that should read as follows:

If ((@Lt(#200,1)+1)\*10)-#200=#100 then

The last reference on this line should be to field #100, not field #200 as it appeared. When I changed it to #100, the routine worked fine.

Gary Chappelear Birmingham, Alabama

[Thanks, Gary. A routine to validate credit card numbers also appears on page 15 of the January 1995 issue.—Ed.]

#### **Step Missing**

Jeff Nitka's article on protecting fields from changes (March 1995, page 14) is excellent. This is a feature we all need from time to time. At the end of the article, Jeff describes how to use Mass Update to change a protected field. However, if you update only a page 1 protected field, your change will be overwritten with the original value in the corresponding page 2 field when the record is recalculated. It's better to update the page 2 field and set Programming Statement execution to Yes at the Auto Program Recalc screen. This way, Q&A will update the page 1 field as well.

Alec Mulvey Ascot, Berkshire, England

[Thanks, Alec. The article didn't specify which of the two groups of fields to Mass Update. And executing the Program Spec during the update will, as you point out, update both fields. —Ed.]

## Your Q&A Tips Are Worth Cash!

Share your tricks, shortcuts, and workarounds with your fellow Q&A users, and we'll send you a \$25 check for each one we publish. Upload your tips to us on CompuServe (73370,1575) or mail them on a disk to the address shown on page 2.

# QUICKTIP

## Run a Report and Return to the Same Record



A client wanted to display a customer record, run a Freeform Profile report for that customer, then return to the same record. To give the client this capability, I added two fields to the database, Tag and Get, modified the report Retrieve Spec, and created an Update Spec.

I redesigned the Profile report to retrieve and print the records that contain an X in the Tag field. The Mass Update Spec named Clear Tag clears the Tag field. The Retrieve Spec for Clear Tag is X in the Tag field, and the Update Spec is #1="" in the Tag field and #2=@Number in the Get field. The Print Profile script contains the following commands:

Run the Freeform report PROFILE Run the Update Specification CLEAR TAG Find all the Records Sorted by Decreasing GET

When the client wants to print a customer's *Profile* report, he or she types an *X* in the Tag field, then clicks on the Print Profile script button I added to the form. Q&A runs the report, deletes the *X* from the Tag field, returns the highest number to the Get field in the same record, and then finds and displays the record with the highest Get value, which is the same customer record.

Bob Clark, Rohnert Park, California

[The capability to launch a procedure from a record, then return to the same record can be designed into a Q&A for DOS database using the same logic. The macro could optionally include marking the record for you.—Ed.]

# *QUICK*TIP

## Change Text Attributes



During form design, you can change text attributes for several text objects at once. Hold the Shift key and click on each text object to select it. Choose your new text attribute, such as a different font, and Q&A will apply the change to the selected objects.

David Dvorin, Phoenix Solutions, Belle Mead, New Jersey



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## **Determine Future Dates**

Here's an easy way to set up any database to accept days, weeks, months, or years and return the correct future date.

By Darrell D. Hoefling

needed a way to calculate future dates for a follow-up system. I wanted to be able to type an entry such as 10 days, 2 weeks, 6 months, or 1 year—or select any time period from an Alt-F7 popup list—and have Q&A determine the future date. After experimenting with a number of ways to do this, I discovered how to do it very economically.

The program I use determines dates for days, weeks, months, and years into the future and takes into account leap years and months that end on the 28th, 30th, or 31st. The program is contained in a single field, and only the following three fields are required:

- Time Period—a text formatted field to store the time period (the number of days, weeks, months, or years into the future).
- Calc Field—a text formatted field to temporarily store the results of intermediate calculations.
- Future Date—a date formatted field to store the calculated future date.

I use the @Instr (in string) function to check for the type of time period entered (days, weeks, months, or years). When the program determines this, it returns the number from the same field and executes the appropriate conditional procedure, returning the correct future date. Days, weeks, and years posed no problem. Months, however, were a little tricky.

To handle months, the program adds the number of months entered to the current month. If the answer is greater then 12, the program divides the answer by 12, and the remainder yields the correct month. The procedure then adds the integer of a prior procedure to determine the year. If this yields an invalid date, the program changes the date to the first of the following month and then subtracts a day, which always yields the correct last day of the previous month.

Listing 1 shows the three pertinent fields. You can incorporate them, and the program that follows, into any database.

Listing 1. Date calculation program.

```
Time Period: #1
Future Date: #5
 Calc Field: #6
>#1:
If #1<>"" Then {
If @Instr(#1,"Week")>0
   Then {#5=@Da+@Num(#1)*7;#1="";#6=""}
Else If @Instr(#1,"Day")>0
   Then {#5=@Da+@Num(#1)*1;#1="";#6=""}
Else If @Instr(#1,"Month")>0 and @Num(#1)
   +@Month(@Da)>12
   Then {{#6=@Str(@Mod(@Num(#1)+@Mt(@Da),12))+"/"+
     +@Str(@Dom(@Da))+"/"+@Str(@Yr(@Da)+(@Int(@Num(#1)
     +@Mt(@Da))/12));#5=@Todate(#6)}
       Then {#6=@Str(@Mod(@Num(#1)+@Mt(@Da),12)+1)+"/"
     +"01/"+@Str(@Yr(@Da)+@Int((@Num(#1)+@Mt(@Da))/12))
     ;#5=@Todate(#6)-1}}
Else If @Instr(#1, "Month") > 0 and @Num(#1)
   +@Month(@Da)<=12
  ;If #5=""
     Then {#6=@Str(@Month(@Da)+@Num(#1)+1)
      +"/01/"+@Str(@Yr(@Da));#5=@Todate(#6)-1}}
Else If @Instr(#1,"Year")>0
   Then
    {#6=@Str(@Year(@Da)+@Num(#1))+@Str(@Rt(@Da,6))
     ;#5=@Td(#6)
    ;If #5=""
    Then {#6=@Str(@Month(@Da)+1)
    +"/01/"+@Str(@Yr(@Da)+@Num(#1));#5=@Todate(#6)-1}
     ;#6=""
    ;#1=""}
;#1=""
;#6=""}
```

Because the program uses the internal system date as the current date and treats it as the starting date, you don't need a current date field in the database.

[Darrell makes clever use of the @Instr function by including it in a statement that returns true or false. Normally, @Instr is used to have Q&A check for the position of a word (or any string) in a field. Here's the syntax:

```
@Instr(field, "string")
```

Field is the field name or Program Spec field ID number. String is the word or string you want Q&A to look for. @Instr returns the position in the field where String begins. However, by following the function with the >0

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For example, if you want your program to do something only if field #1 contains the word day anywhere in the field, you can use a statement like this:

If @Instr(#1, "day") > 0 then...

Darrell uses @Instr to determine if the non-blank field #1 contains the word day, week, month, or year, and follows this up with a routine to handle each condition. This way, during data entry, he can type in a number followed by the time period (day, week, and so forth) on which the number is based, and have Q&A treat his entry both as a number and a calendar period.

You can modify Darrell's program so that you only have to type in the number plus the letter d, w, m, or y to indicate the calendar period.—Ed.]

Darrell Hoefling uses Q&A to manage his chain of senior citizen residences. 515-276-5725.

## Use Up Your Label Sheets





I use Q&A to create and print mailing labels. I have a special Mailing field in my address database. I mark this field with an *X* in the records I want to print a label for. When I print the labels, I simply type an *X* in this field at the Retrieve Spec, and Q&A prints only the marked labels.

I print my labels on 20-per page Avery label sheets, and I usually have leftover labels on the last sheet. I didn't know how to "teach" Q&A how to start the next batch of labels at a certain position on the label sheet (so I could use the leftover labels), but eventually I found a solution that works for me. I added 19 dummy records to my database. When it's time to print the next batch of labels, I count how many labels have been used on the leftover sheet, place an *X* in the Marked field of that many dummy records, and sort alphabetically by name. Because the dummy records contain no names or addresses, Q&A "prints" them first (printing nothing). This way, the real labels begin printing exactly where I want them to.

Michelle L. Ramsey, Myrtle Beach, South Carolina

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