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T · H · E Quick Answer

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Database Copying Made Easier

If you've experienced the displeasure of copying information between databases, you've probably learned two lessons: it's crucial to match the source fields to the target fields, and using the Merge Spec to do it barely beats working blind. Here's one of those "who-would-have-thought-of-that?" tricks that gives new meaning to the term labor-saving.

By Colin Coady



Ifrequently copy information from one database to another. The task is simple for databases with just a few fields, but some of the databases I work with contain hundreds of fields with totally different layouts. In order to properly match the source database's fields to the corresponding target database fields, I got into the habit of printing out a blank copy of the target database form, consecutively numbering the fields by hand, then using this sheet as a reference to fill out the Merge Spec. This was time consuming and error prone, and sometimes I'd wind up with a mess on my hands.

I decided to simplify and add accuracy to the process by using a macro (instead of a pencil) to consecutively number the target database fields. This way, I could run the macro, then use the resulting form to quickly and confidently fill out the Merge Spec. The macro takes just a few minutes to create, and you can use it whenever you need to

consecutively number all the fields on a form. Here are the steps:

1. From the Main menu select Write, then Type/Edit. Press Ctrl-F6 for Define Page and fill in the form as follows:

```
Left margin: 0      Right margin : 8
Top margin  : 1      Bottom margin: 0
Page width  : 8      Page length  : 2

Characters per inch.....: 10
Begin header/footer on page #...: 1
Begin page numbering with page #: 1
```

Press F10 to return to the document screen.

2. Press F8, choose Edit Header, type in #<tab>, then press F10. Your first "page" will appear as a small box with 1<tab> on the first line and a blank second line.

Continues on page 3

C O N T E N T S

Database Copying Made Easier, <i>Colin Coady</i>	1
README.1ST, <i>Tom Marcellus</i>	2
QuickTip: Navigation Spec, <i>William Halpern</i>	4
Enhance Posting and Updates, <i>William Halpern</i>	5
QuickTip: Create Field Nav. Menu, <i>Tom Marcellus</i> ...	6

Building Multiple Database Apps, <i>David Dvorin</i>	7
Review: DTF SPECS, <i>James R. Warren</i>	11
@Help, <i>Edited by Dave Reid</i>	13
QuickTip: Money Values to Text, <i>Tom Marcellus</i>	14
Pictures in a Database: The Cost?, <i>David Dvorin</i>	15

README.1ST

THE Washingtonian Marriott's banquet room was packed wall to wall with Q&A devotees who came to *The Quick Answer's* September 15 day-long Master Seminar near Washington, D.C. from as far as Oregon, Canada, and England. And a very good time was had by all.

The Quick Answer publisher **Mike Bell** and I, along with Q&A experts **Dave Dvorin**, **Gordon Meigs**, **Bill Halpern**, and **Jeff Nitka**, took turns at the "big screen" PC to show the more than 100 attendees the dramatic productivity gains they could expect to reap with the coming upgrade. The speakers demonstrated the new features in real applications to frequent "ooohs," "ahhhs," cheers, and applause. Not to be outdone by the old hands, Jeff Nitka, fresh out of Rutgers with a minor in computer science, capped the event with a demo of his new Program Evaluator, a powerful utility that checks your Q&A programming and reports on what—and where—the errors are. (You'll be hearing more from us on this, and Jeff's companion Macro Evaluator utility as well.)

The eight-hour event was professionally videotaped. We'll be offering the video set in a package that includes 20-pages of Q&A 5.0 technical material, along with the special seminar disk attendees received containing the 3.5M of Q&A 5.0 databases and related files the speakers used for their demos.

Following the seminar, the National Q&A User Group held its 5th Annual Bash. With 125 members attending the two-day event, the group enjoyed its largest turnout ever.

Meanwhile, the Q&A 5.0 American edition beta program is moving ahead, and our hopes are up for an October release.

When copying one database to another, if you goof while linking the source fields to the destination file, your data will wind up in all the wrong places. **Colin Coady** shows you a trick that helps ensure an error-free merge.

You can get more from Q&A by synchronizing your databases. **Dave Dvorin** shows you how to make a Q&A 4.0 database post or add new records to another, and how Q&A 5.0 does it even smoother. The upgrade lets you store and display graphic images—including photos—in your database, but it'll cost you. In a second article, Dave shows you how to minimize that cost.

While Batch Posting or Mass Updating, you can execute programming statements in the target records. If you're not taking advantage of this option, you could be creating unnecessary work for those who use your applications. **Bill Halpern** shows you how to kill two birds with one stone.

Want to connect with thousands of serious Q&A users and developers? You can, via an upcoming *Quick Answer* advertising supplement. If you have a Q&A-related product or service you'd like to make known, drop us a line and we'll send you the details.

Tom Marcellus
Editor

T-H-E Quick Answer

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Database Copying

Continued from page 1

3. Press Down arrow to display "page" 2, and you'll see a second small box with 2<tab> on the first line and a blank second line. (See Figure 1.) Press the Down arrow until you get to page 250. (You can decide on the number of pages by estimating the number of fields in the largest database you might want to copy to. I used 250 because I had no databases with more than 250 fields.)
4. Press F2 for the Print Options screen and select print to DISK. Save the document as an ASCII file named MERGE.TXT.
5. Press Esc to abandon the "document" and return to the Main menu. There's no need to save the "working copy."
6. You can now create the macro. Press Shift-F2, select Define Macro, then press Enter. Press Shift-F2 again and save the empty macro to a name such as *Auto Merge Numbers*. Leave Show Screen set to Yes, the End with Menu line blank, and save the macro to a new file name such as MERGE.ASC.
7. Display MERGE.ASC in Write and use the F8 Options menu to insert the MERGE.TXT document between the <vidon> and <enddef> macro commands. This adds the consecutive numbers, each followed by a <tab> command, to the macro.

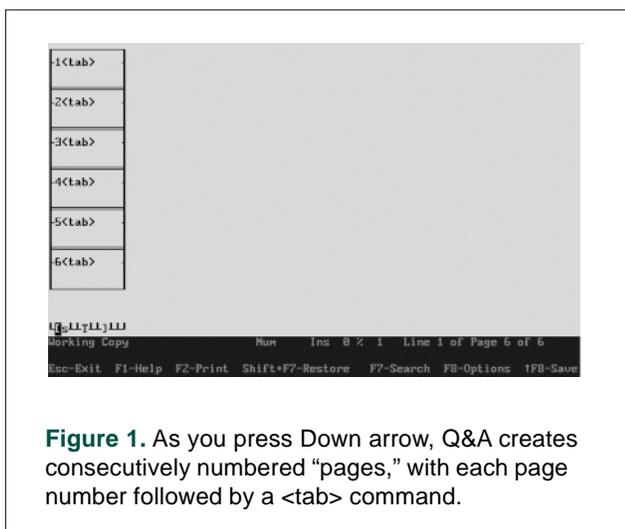


Figure 1. As you press Down arrow, Q&A creates consecutively numbered "pages," with each page number followed by a <tab> command.

8. To delete the carriage returns and spaces (see Figure 2), press F7 to display the Search and Replace box, enter the following parameters, then press F10:

```
Search for...: @CR
Replace with.: \
Method.....: Automatic
```

9. Press Ctrl-F8 and resave MERGE.ASC as an ASCII file.

Your macro is now ready to use. The trick is to get it to consecutively number the fields in the target database form so you can print the form and use it as a reference to fill out the source database's Merge Spec. The only Spec that will accept a macro like this in every case is the Merge Spec. (The Retrieve Spec might have date fields that will stop the macro prematurely. In Add Data, fields might be formatted for dates, be restricted, or include templates that won't accept numbers.) Follow these steps to use the macro.

1. From the File menu select Copy. Instead of entering the name of the source database, enter the name of the target database because it's this database's fields you need to number.
2. Choose Copy selected records and enter the target database name again. (Don't worry, you'll cancel this process before it begins.)
3. At the Retrieve Spec, press F10 to continue.
4. You should now be at the Merge Spec. Load the MERGE.ASC macro file into memory, press Alt-

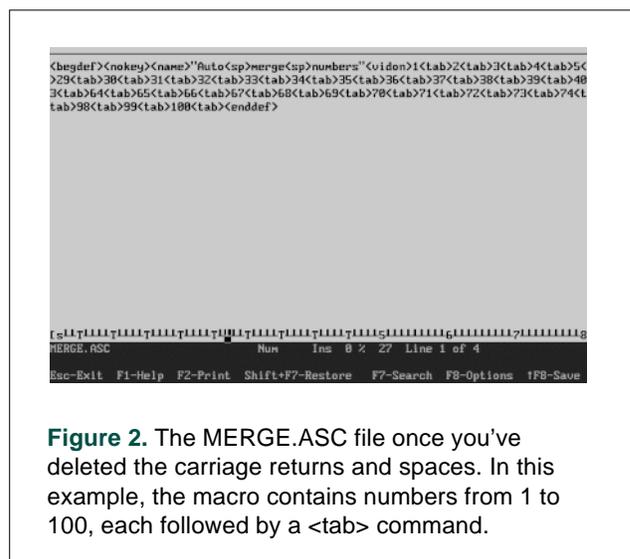


Figure 2. The MERGE.ASC file once you've deleted the carriage returns and spaces. In this example, the macro contains numbers from 1 to 100, each followed by a <tab> command.

F2, run your *Auto Merge Numbers* macro, and watch it rapidly number the fields. If the database contains 200 fields and the macro includes numbers to 250, the last field will continue to increment until it reaches 250 and your PC will begin beeping. You can press Esc to stop the macro before it reaches 250 or just let it run out of steam. Either way, you'll have to manually number the last field one higher than the second to last field.

5. Press F2 to print the form. You now have a printed copy of the target database form with the fields consecutively numbered.

6. Press Esc to cancel the operation.

Check the printed form for any one-character fields whose two-digit numbers aren't visible and use a pen to write in their numbers. Do the same with any two-character fields that received three-digit numbers. These are easy to spot, but watch out for any unlabeled one- or two-character fields because these don't show up at all.

You can now safely proceed with your copy operation. When you get to the Merge Spec, you'll have the reference you need to match the fields in the source database to the corresponding fields in the target database.

Colin L. Coady has been developing Q&A applications for many years. 61 LeFurgey Ave, Moncton, New Brunswick, Canada E1C 7G5.

Copying Information Between Databases

Before you can copy data from one database to another, you'll need to know the following:

- The names of the databases you want to copy from (source) and to (target)
- The source database records you want to include
- The fields you want to copy, and the position of the corresponding fields in the target database

When you use the File / Copy / Selected Records command, Q&A prompts you for #1, displays a Retrieve Spec for #2, then displays a Merge Spec for #3. (You can save your Retrieve and Merge Specs by filling them out and pressing Shift-F8, and reuse them the next time by pressing Alt-F8.)

The Merge Spec shows the *source* database form. In each field you want to copy, type the number that corresponds to the position of the same field in the target database. For example, If the City field is the 9th field in the target database (counting from the top left corner of its form), you'd type 9 in the Merge Spec's City field.

When you've properly filled out the Retrieve and Merge Specs, press F10 to run the Copy operation. Q&A will append the copied records to the end of the target database.—*T.M.*

QUICK TIP

Use the Navigation Spec to Boost Program Functionality

What do you do if you want to display a message or custom help screen when the cursor enters a field and have your program do something else when the cursor leaves the field? You can use the Navigation Spec for most any programming statement, as long as it doesn't change a field's value. For example, your Navigation Spec can contain this:

```
< #20: If #20 = "" then @Msg("Please enter an amount.")
```

And your Program Spec can contain this in the same field:

```
> #20: #30 = #10 - #20; Goto #50
```

You can similarly place an @Help command in the Navigation Spec to conditionally display your custom help screen when the cursor enters the field. Most of Q&A 5.0's new commands, including @Play, @Color, @Macro, Userselect, and XUserselect, can be placed in the Navigation Spec as well (even though the latter three commands might result in a field's value being changed). By splitting a field's program between the Program and Navigation Specs, you have a lot more flexibility, and your programs can be more sensitive to conditions.

Bill Halpern, PCTA, Newtown, Pennsylvania.

Enhance Posting and Mass Updates with Programming Options

Posting and Mass Update include options to execute programming in the target records. If you're not taking advantage of these options, you could be creating unnecessary work for yourself and those who use your applications.

By William Halpern



WITH Posting and Mass Update, Q&A 4.0 provides two time-saving tools to manipulate and update your databases.

Mass Updating lets you update all or a group of records in one fell swoop. For example, you can increase the price of your inventory items by 10 percent, or change the 313 area codes in ZIP code 48154 to a new 614 area code.

Posting involves two databases. It lets you update the records in database B from the records in database A. Posting, for example, can keep your inventory up to date by subtracting items sold from the quantities on hand.

Both features are powerful by themselves, but you can get even more power from them by taking advantage of the programming execution options they support. During Posting and Mass Updating, you can have Q&A perform field recalculations, as well as execute on-record-entry and on-record-exit programming statements. First, let's look at how these options work with Mass Update.

Mass Updates and program execution options

Suppose your employee database calculates bonuses as a percentage of salary and calculates earned vacation days based on the number of years the employee has worked for the company.

In the first case, if you change an employee's salary, Q&A automatically calculates the new bonus. In the second case, when you display an employee's record, Q&A compares today's date with the employee hire date and updates the number of earned vacation days.

Executing calculation statements

Business is going well, and you decide to give all the sales and production employees a 5-percent pay raise, knowing that their bonuses will be affected by this change. If the bonus calculation is complex, you might not feel comfortable retyping it in the same Update Spec that increases the salaries. That's not a problem. If the programming already in the database performs the calculation as a calc statement (for example, #10: Bonus = (Salary * Bonus Factor)/100),

your Mass Update can do it for you automatically. Here's how.

Choose File / Mass Update, fill out the Retrieve Spec, and type a statement like this in the Update Spec's Salary field:

```
#5: Salary = Salary * 1.05
```

Before you press F10 to run the Mass Update, though, press F8 to display the Auto Program Recalc screen (See Figure 1.) Choose Yes for Calculation statements, then press F10. Q&A will increase the selected employees' salaries by 5 percent and recalculate their bonus amounts at the same time with no additional programming.

On-field-entry and on-field-exit statements—those preceded by a "<" or ">"—can't be executed this way. The only types of statements that can be automatically recalculated are those shown in Figure 1.

If you press F9 from the Auto Program Recalc screen after setting your options, Q&A will redisplay the Update Spec, and you can save it by pressing Shift-F8. Any options you selected will be saved along with the Update Spec, and you can reuse them by recalling the Spec with Alt-F8.

That takes care of the salary and bonus updates. Now, what about bringing the accrued vacation days

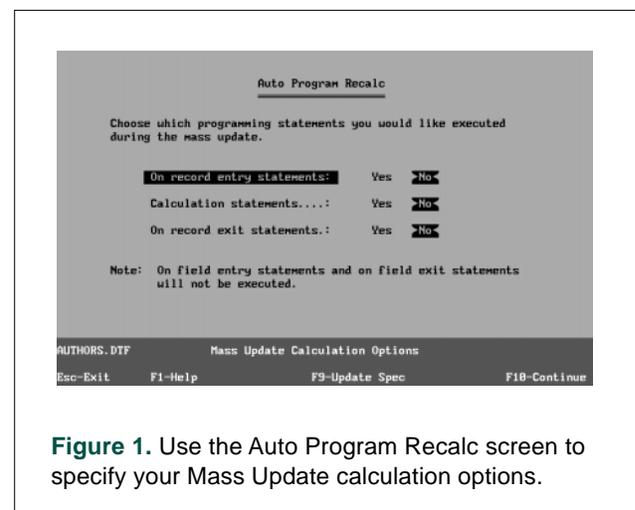


Figure 1. Use the Auto Program Recalc screen to specify your Mass Update calculation options.

up to date before running the vacation report.

Executing on-record-entry statements

You've probably set this program to execute on-record-entry so that whenever you display a record, Q&A updates that employee's earned vacation based on the current date. This means that if you want the report to be accurate, you'll have to first update the database.

Because the programming to update the earned vacation days is already in the database, all you have to do is Mass Update the database with on-record-entry statements set to Yes at the Auto Program Recalc screen. Q&A will update all the records that meet your Retrieve Spec even, in this case, if such statements are preceded by a "<" or ">."

When setting your Mass Update calculation options, you can tell Q&A to execute one, two, or all three types of statements.

Posting and programming execution options

Now, let's look at programming execution options for Posting.

Suppose you want to reduce inventory by the quantity of each item sold, then calculate the minimum reorder quantity to see if any items need to be reordered. Your inventory database contains programming that sets the Reorder field to "Y" and calculates the reorder quantity if, for example, the Qty on Hand falls below 500 units. Such a statement could be a calculation, on-record-entry, or on-record-exit statement. Posting alone would just subtract the sales from the Qty on Hand field. It wouldn't calculate the

reorder quantity or tell you it's time to reorder.

Instead of just Posting your sales to reduce the quantity on hand, press F8 from the Posting Spec to display the Auto Program Recalc screen—it's the same as the Mass Update Recalc screen (see Figure 1). When you choose your calculation option(s) and press F10, Q&A performs the post *and* executes the programming in each target record. Even if a record receives multiple posts (you might be posting several sales orders for the same item), you can be sure that the reorder calculations will be executed with each post, and the pertinent fields updated.

You can save the Posting Spec and it's related calculation options by pressing Shift-F8, just as you can with a Mass Update Spec.

Another way to use programming execution options is when you need the program to decide where to place the posted value. For example, you might want to post a payment to a Post field and execute a program to copy the amount to the next available field or to the current month's field.

Once you know how to use programming calculation options with Mass Updating and Posting, you'll be able to get more from Q&A and your databases with a lot less effort. In fact, you're liable to find yourself creating programs exclusively for execution during Mass Updates and Posting

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QUICKTIP

Create a Field Navigation Menu



If the sheer number of fields on a lengthy form makes it a pain to navigate, you can display a pick-list of fields and quickly jump to any field on the form. Here's how.

Add a field named GotoField to the tag end of the form. Next, open the Field Names Spec, and press F2 for the Print Options screen. Set *Print to* to Disk, *Print field labels* to No, *Print expanded fields* to Yes, and press F10. Name and save the disk file, then display it in Write. Press F7, Search for @Cr (carriage returns) and Replace with a comma, using Fast Automatic. Press F11, highlight the reformatted text, then press F10 to

copy it to the Clipboard. Open the Program Spec, expand the GotoField field, press F12 to paste the field name list from the Clipboard, then complete your program along the following lines:

```
<
Clear(GotoField);

Userselect("Last name,Firstname,Address,City,State,Zip,
Sex,Alma Mater,Hobbies,HiredDate,Department,Position,
Salary Grade,Manager,Review Date,Review,Review No,
Bonus Factor,Vacation(Y/N),Salary,Bonus,Holidays,
Comments,Telephone,ID No", GotoField);

Goto @(GotoField)
```

Finally, record a hot-key macro (perhaps Ctrl-G for "goto field") that contains three End commands (<end><end><end>).

Now, you can press Ctrl-G from anywhere on the form, select the field to go to from the alphabetically sorted field name list, and Q&A will take you there in a flash.

Tom Marcellus, Editor

Building Multiple Database Applications

You can get more from Q&A by setting up your databases to “talk” to one another. Dave shows you how to make one database conditionally post or add new records to another with a single keystroke in Q&A 4.0 for DOS, and how to do it even faster in Q&A 5.0.

By David Dvorin



CLIENTS often ask me to create applications and automate procedures involving multiple databases. Linking or integrating databases means that they can share their information and keep one another up to date. One way to integrate databases is to have one database post information or add records to another, depending on what’s required. I’ll show you some techniques you can use to perform these tasks whether you’re using Q&A 4.0 or Q&A 5.0.

What’s the problem?

Suppose you need to track orders and facilitate billing. Assuming an INVOICE database contains the orders, each invoice record contains the customer information, along with the items ordered and the billing amount. When you create an invoice for a customer already in the system, you shouldn’t have to retype the information—an XLookup command can retrieve the customer information from a customer database or previous invoice. But this alone might not be the solution you need.

If you retrieve the data from a previous invoice, there might be several such records for the same customer, and how would you know you’ve retrieved the most recent information? And if you wanted to use a mail merge billing letter, how would you prevent the application from printing letters for all your repeat customers?

Now suppose you have a separate CUSTOMER database—a single source for all your customer information. INVOICE simply performs an XLookup to CUSTOMER and retrieves the needed customer information. But what if the information in CUSTOMER isn’t up to date or the invoice is for a new customer? In such cases, you’d need to update or add the related CUSTOMER first, but if you have a large number of customers, chances are you won’t know if the customer is already in your CUSTOMER database until you begin creating the invoice. You’ll then have to abort the invoice, add or update the CUSTOMER record, then return to invoicing.

Ideally, INVOICE should retrieve the customer information from CUSTOMER. Then, if there are any changes to the customer’s particulars, you should be able to make them in INVOICE and have INVOICE update CUSTOMER. In the case of a new customer, you should be able to use the new invoice as the source for the information to add the new record to CUSTOMER. And the whole process should be automated.

Sounds promising, but how do you get Q&A to do it?

Toward a solution

I’ll show you five components you’ll need to fully integrate INVOICE and CUSTOMER. I’ll start by showing you sample structures for both databases and move on to the various Q&A Specs that map the related fields in the two files. Next, I’ll cover the XLookup programming you’ll need in INVOICE to retrieve CUSTOMER’s data, as well as the INVOICE on-record-exit programming you’ll need to determine if a Post or Add (or nothing) needs to be run to update CUSTOMER. Finally, I’ll describe the macro you’ll need to make it a pushbutton process.

Database structure

We’re concerned here with just two databases—INVOICE and CUSTOMER. Because I’m illustrating a technique, I want to keep things as simple as possible, so here are CUSTOMER’s fields:

```
Company
Address
City
State
Zip
PostAdd
OperationDate
```

All of CUSTOMER’s fields are formatted for text values except OperationDate, which is a date field. This read-only field is used to store a date stamp when a Post or Add operation is performed. The Company field is Speedy (indexed).

Invoice has the same fields as CUSTOMER (in addition to many others, of course), but includes the following special read-only fields formatted for text values:

```
ROCompany
ROAddress
ROCity
ROState
ROZip
PostAdd
```

The “RO”-prefixed fields store a copy of the values retrieved from CUSTOMER. You’ll see what role they play later. The PostAdd field stores the results of the program’s Post or Add decision. You’ll see how this works later, too. It’s important that the matching fields in the two databases are exactly the same length. For example, Company and ROCompany in INVOICE should be the same length as Company in CUSTOMER.

Mapping the integration with saved Specs

You’ll need several saved Specs in INVOICE and CUSTOMER to provide a pathway or map between the matching fields in the two databases. First, create and save the following three INVOICE Retrieve Specs:

```
Name of saved Spec: Customers to Add
PostAdd: Add
OperationDate: =
```

```
Name of saved Spec: Customers to Post
PostAdd: Post
OperationDate: =
```

```
Name of saved Spec: Customers Posted/Added
PostAdd: Post;Add
OperationDate: =
```

Next, create an INVOICE Mass Update Spec that looks like this:

```
Name of saved Spec: Stamp Post/Add Date
OperationDate: #1=@Date
```

You’ll need one INVOICE Batch Posting Spec along the following lines:

```
Name of saved Spec: Post Customer to CUSTOMER
Post value of field:
  Company
  Address
  City
  State
  Zip
  PostAdd
Into external field:
  Company
  Address
  City
  State
  Zip
  PostAdd
```

```
When the field: Company
Matches the external field: Company
In: CUSTOMER
Operation: Replace
```

Here’s INVOICE’s final Spec—a Merge Spec. It assumes that the first five fields in CUSTOMER match the first five fields in INVOICE:

```
Name of saved Spec: Add Customer to CUSTOMER
Company: 1
Address: 2
City: 3
State: 4
Zip: 5
PostAdd: 6
```

Two Specs are required for the CUSTOMER database—a Retrieve Spec and an Update Spec. Here’s the Retrieve Spec:

```
Name of saved Spec: Customers Posted/Added
PostAdd: Post;Add
OperationDate: =
```

And here’s the last saved Spec you’ll need—an Update Spec:

```
Name of saved Spec: Stamp Post/Add Date
OperationDate: #1=@Date
```

The macro, which I’ll show you later, will call these various saved Specs to perform the Post, Add, and other Update operations on the two files.

Programming

Basic XLookup programming in INVOICE finds and retrieves the CUSTOMER information. Listing 1 shows the pertinent program for INVOICE’s Company field.

Listing 1. Programming in INVOICE’s Company field retrieves the customer information from CUSTOMER.

```
>#100:
If Company = ""
  then {@Msg("Something must be entered in this field.");
  Goto Company};

ROCompany = @Xlookup("CUSTOMER", Company, "Company",
  "Company");

If Not @Error
  then {Xlookup("CUSTOMER", Company, "Company",
    "Company", Company,
    "Address", Address,
    "City" , City,
    "State" , State,
    "Zip" , Zip,
    "Company", ROCompany,
    "Address", ROAddress,
    "City" , ROCity,
    "State" , ROState,
    "Zip" , ROZip);
  Clear(PostAdd, OperationDate)}
else {@Msg("CUSTOMER does not know this customer.");
  Clear(ROCompany, ROAddress, ROCity, ROState,
```

```

        ROZip);
    Clear(Address, City, State, Zip));
Goto Address

```

This on-field-exit program begins by trying to match the value in INVOICE's Company field with the same field in CUSTOMER. If the XLookup finds the Company, it copies the information to the two sets of related fields in INVOICE, then clears the PostAdd and OperationDate fields. If the XLookup fails (there's no matching customer in CUSTOMER), a message appears at the bottom of the screen advising that the customer isn't known, and any previously retrieved information is cleared from the pertinent fields. The program clears the PostAdd and OperationDate fields as well, because if this is an update to an existing invoice, then the data in these fields are no longer valid.

Post, Add, or do nothing

Your programming needs to determine whether a Post (update the CUSTOMER record), Add (create a CUSTOMER record), or nothing needs to be done. Place the code in Listing 2 in INVOICE's OperationDate field:

Listing 2. Programming for INVOICE's OperationDate field.

```

>#999:
If (@Len(ROCompany) = 0 and @Len(ROAddress) = 0 and
    @Len(ROCity) = 0 and @Len(ROState) = 0 and
    @Len(ROZip) = 0) and

(@Len(Company) > 0 or @Len(Address) > 0 or
 @Len(City) > 0 or @Len(State) > 0 or
 @Len(Zip) > 0)
then {PostAdd = "Add";
     Clear(OperationDate)}
else If (Company <> ROCompany) or (Address <> ROAddress)
or
    (City <> ROCity) or (State <> ROState)
or
    (Zip <> ROZip)
then {PostAdd = "Post";
     Clear(OperationDate)}
else {PostAdd = "Nada";
     OperationDate = @Date}

```

I've used Field ID #999. You can use any field ID number you want. Complete the INVOICE Program Spec by pressing F8 and entering the field ID number you've assigned to this on-record-exit field.

The program decides to "Add" if nothing is retrieved from CUSTOMER (INVOICE's "RO" fields are empty) and something is entered into any of INVOICE's customer fields. The program's decision to "Post" occurs when there's a difference between the "RO" fields and the other customer fields. Finally, if all the customer information in INVOICE is exactly the same as the information in CUSTOMER, then the program decides that nothing needs to be done.

The Post or Add decision must be made during on-record-exit because it's the only time it can be determined with certainty. For example, if this is an update to an existing invoice record and the customer fields have changed, there's no way to know if a Post or Add is appropriate until the record is being saved to disk.

Auto-synchronize with macros

The remaining element is the engine that automates the Post and Add procedures. Listing 3 shows the macro that does the job.

Listing 3. The macro that automates the Post/Add operations.

```

<begdef><alts>
<name>"Synchronize INVOICE and CUSTOMER"<vidon>
<esc><esc><esc><esc><esc>
ftINVOICE<f10>
CUSTOMER<f10>
<altf8>Customers to Post<f10><f10>
<altf8>Post Customer to CUSTOMER<f10><f10>N
<esc><esc><esc><esc><esc>
fcINVOICE<f10>
sCUSTOMER<f10>
<altf8>Customers to Add<f10><f10>
<altf8>Add Customer to CUSTOMER<f10><f10>
<esc><esc><esc><esc><esc>
fmINVOICE<f10>
<altf8>Customers Posted/Added<f10><f10>
<altf8>Stamp Post/Add Date<f10><f10>N
<esc><esc><esc><esc><esc>
fmCUSTOMER<f10>
<altf8>Customers Posted/Added<f10><f10>
<altf8>Stamp Post/Add Date<f10><f10>N
<esc><esc><esc><esc><esc>
<endef>

```

This macro is executed with an Alt-S key combination. It assumes that Automatic Execution is set to Yes at the Utilities / Set Global Options screen. The macro also assumes that both INVOICE and CUSTOMER are in the default database directory.

The macro kicks off with a Batch Post involving the INVOICE records whose PostAdd field contains "Post." The Add operation executes next, copying the fields from INVOICE to CUSTOMER from the invoices whose PostAdd field contains "Add." Finally, Mass Updates are run on both databases, stamping the records to identify when the Post or Add operation was performed.

What Q&A 5.0 brings to the table

Q&A 5.0 gives you other ways to achieve the same results. The data synchronization technique you've seen involves batch processing—that is, the procedure is performed on a "batch" of records. In contrast, Q&A 5.0 lets you perform the synchronization in real-time, on a record-by-record basis. This means that a Post or Add can be performed automatically as required on individual records.

The easiest way to implement synchronization with Q&A 5.0 is to use @Modified and @Macro commands in the on-record-exit program. Listing 4 shows what the modified program looks like.

Listing 4. The modified on-record-exit program you can use with Q&A 5.0. It lets you Post and Add in real-time, record-by-record.

```
If @Modified
then {Clear(OperationDate);
  If (@Len(ROCompany) = 0 and @Len(ROAddress) = 0
and
@Len(ROCity) = 0 and @Len(ROState) = 0
and
@Len(ROZip) = 0) and

(@Len(Company) > 0 or @Len(Address) > 0
or
@Len(City) > 0 or @Len(State) > 0
or
@Len(Zip) > 0)
then PostAdd = "Add"
else If (Company<>ROCompany) or (Address<>ROAddress)
or
(City <>ROCity) or (State <>ROState)
or
(Zip <> ROZip)
then PostAdd = "Post"
else {PostAdd = "Nada";
  OperationDate = @Date};
If PostAdd <> "Nada"
then @Macro("Synchronize INVOICE and CUSTOMER")}
```

In this program, I've employed the new @Modified function so that only those records added or changed continue through the Post-or-Add determination and processing. At the end of the program, any Post or Add operation is executed by the @Macro command that invokes the macro. Because the macro executes on each record as it's saved, everything is updated when you save the invoice, and your data in both files is always current.

Another way to synchronize the databases is to replace the Batch Post commands in the macro with XPost commands in the INVOICE database. To do this, both the on-record-exit program in INVOICE and the macro must be modified. The revised on-record-exit program is shown in Listing 5.

Listing 5. The revised INVOICE on-record-exit program includes Q&A 5.0 XPost commands.

```
>#999:
If @Modified
then {Clear(OperationDate);
  If (@Len(ROCompany) = 0 and @Len(ROAddress) = 0
and
@Len(ROCity) = 0 and @Len(ROState) = 0
and
@Len(ROZip) = 0) and
```

```
(@Len(Company) > 0 or @Len(Address) > 0 or
@Len(City) > 0 or @Len(State) > 0 or
@Len(Zip) > 0)
then PostAdd = "Add"
else If (Company<>ROCompany) or (Address<>ROAddress)
or
(City <> ROCity) or (State <> ROState)
or
(Zip <> ROZip)
then PostAdd = "Post"
else {PostAdd = "Nada";
  OperationDate = @Date};
If PostAdd = "Post"
then
{XPost("Customer", Company, "Company", Address,
"Address");
XPost("Customer", Company, "Company", City, "City");
XPost("Customer", Company, "Company", State, "State");
XPost("Customer", Company, "Company", Zip, "Zip");
XPost("Customer", Company, "Company", OperationDate,
"OperationDate");}
If PostAdd = "Add"
then {@Macro("Synchronize INVOICE and CUSTOMER")}
```

In the Listing 5 program, the Post and Add operations are separated, and the posts are performed in real-time courtesy of the XPost command. The Add operation still relies on the macro, but because the macro now has less work to do, it can be reduced to the commands shown in Listing 6.

Listing 6. The revised macro no longer needs to Post. It's taken care of by the XPost commands in the INVOICE on-record-exit program.

```
<begdef><alts>
<name>"Synchronize INVOICE and CUSTOMER"<vidon>
<esc><esc><esc><esc><esc>
fcINVOICE<f10>
sCUSTOMER<f10>
<altf8>Customers to Add<f10><f10>
<altf8>Add Customer to CUSTOMER<f10><f10>
<esc><esc><esc><esc><esc>
fmINVOICE<f10>
<altf8>Customers Posted/Added<f10><f10>
<altf8>Stamp Post/Add Date<f10><f10>N
<esc><esc><esc><esc><esc>
fmCUSTOMER<f10>
<altf8>Customers Posted/Added<f10><f10>
<altf8>Stamp Post/Add Date<f10><f10>N
<esc><esc><esc><esc><esc>
<enddef>
```

Q&A for DOS gives you the tools you need to turn your databases into interactive applications. With programming, saved Specs, and macros, you can create sophisticated applications using databases that keep one another up to date.

David Dvorin owns Phoenix Solutions of Hillsborough, New Jersey, which specializes in tailoring off-the-shelf software for a broad range of business needs. 908-281-6272.

Review: Troubleshoot and Modify Your Q&A Databases Faster with DTF SPECS

Database programs often provide “data dictionaries” that catalog the various elements and features associated with a database. These assist the developer not only by listing all the fields in the database, but by showing their sizes, locations, attributes, and other details. Q&A doesn't come with a data dictionary, but a resourceful third-party developer has created one exclusively for Q&A. The more sophisticated your databases, the more you need it.



By James R. Warren

I'm a banker, and I've used Q&A for more than three years to solve banking-related data management problems far too complex for mere spreadsheets. Were it not for Q&A, the solution would have required a major commitment of resources from my MIS department.

As my Q&A-based solutions grew to incorporate custom menus, multiple, heavily programmed databases, and network access, I began to run up against some of Q&A's inherent programming limitations. Fortunately, *The Quick Answer* (“Use Your Programming Allowance More Effectively” by Spencer Wulwick, in the December 1994 issue) not only explained Q&A's programming limits, but also offered a solution: DTF SPECS—a utility developed by John Dow of The Lackner Group.

DTF SPECS is a powerful yet easy to use Q&A utility that tells you what you need to know about

DTF SPECS

\$100 (includes shipping)
John T. Dow, 6560 Rosemoor St.
Pittsburgh, PA 15217-3026.
Phone 412-279-2121
CompuServe 102701,2751
Internet jtd@pgh.net

DTF SPECS works with Q&A 4.0 databases. The author plans to update the utility to work with Q&A 5.0 databases, and make it available free of charge to the first 100 purchasers of the current version.

your database and especially your programming. In my case, though, DTF SPECS did much more. It allowed me to complete a complex tracking system that was 18 months in the making. Before DTF SPECS, I learned the hard way each time I exceeded Q&A 4.0's internal programming code capacity. Q&A doesn't warn you when you approach the 32K per field or 64K per database code barrier. It just lets you continue on toward disaster. To add insult to injury, once you exceed

either limit, not only do you risk damaging the database, Q&A won't let you save your program, but displays a cryptic error message informing you that “This spec is too complex. Please shorten it.”

DTF SPECS came to the rescue because it let me get key information about my programs and database structure at a glance—including how much of the 32K per field and 64K per database programming allotment was used up and how much remained (see

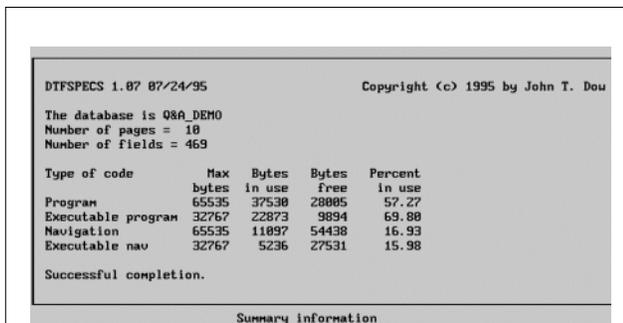


Figure 1. DTF SPECS' opening screen tells you how much of Q&A's programming capacity you've used, and how much is still available.

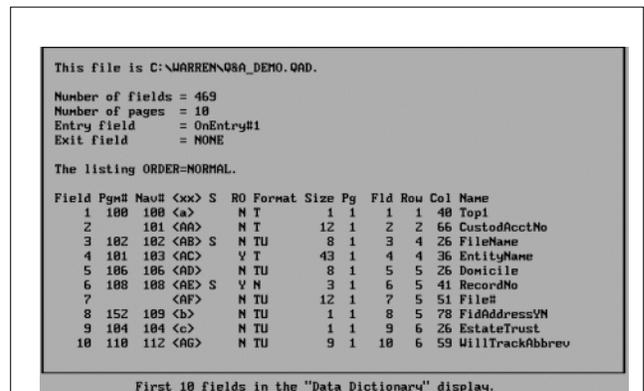


Figure 2. DTF SPECS fields screen gives you information on all the fields in your database at a glance, letting you see the big picture.

Figure 1). DTF SPECS also let me print, reorganize, and edit key information about my Q&A databases and programs.

But you don't need to design huge Q&A applications to appreciate DTF SPECS. The utility offers users a spectacular range of benefits that makes database design and programming so much easier and quicker. For example, to view a list of the fields in your database, all you have to do is make a selection from DTF SPECS' opening menu. But DTF SPECS goes beyond simple lists. It also tells you which fields are indexed, shows their internal field tags, formatting codes, and help screen text, and tells you their sizes and locations on the form. What's more, DTF SPECS lets you view or print this data in the order the fields appear in the database: in alphabetical order by field name or by Program Spec field number.

Another handy DTF SPECS option lets you view and print the programming for any field (or any page of fields) in the database. But it's the four ways DTF SPECS gives you for displaying this information that makes the utility so valuable. You can choose "AsIs" to see your program exactly as the field names and field numbers were entered. If you choose "Fieldname," DTF SPECS converts the field references in your programming to field names. Similarly, if you choose "Numbers," all field references are converted to their appropriate field ID numbers. If you need more flexibility to help you check your work, you can choose "Both," and the field names and field ID numbers are displayed side by side whenever a program references a field.

Press F10 then go on vacation

As my programs became more complex, Q&A was taking an inordinate amount of time to "compile" them. (Q&A "compiles" a program when you press F10 from the Program Spec after making edits.) My largest program took Q&A more than an hour to save

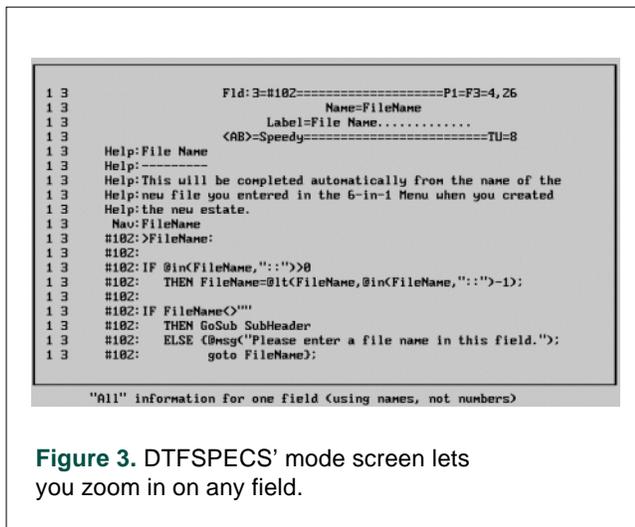


Figure 3. DTF SPECS' mode screen lets you zoom in on any field.

on a 486 DX2/66 each time I made a change. The problem, it turned out, was that I was using field names instead of field ID numbers as field references in my programming. DTF SPECS let me see, print, and edit every one of the hundreds of proposed changes to my programming specs before I actually converted the references. And once I made the changes, the program that took Q&A more than an hour to save, took a mere 15 seconds!

If you're a Q&A developer—even if your responsibilities are exclusively related to creating and maintaining in-house applications—DTF SPECS' has the tools you need to maintain, troubleshoot, and confidently modify your databases. For example, DTF SPECS can quickly give you a printout of all your custom help screens. Understanding report specs and comparing different versions of the same reports can be frustrating, but DTF SPECS takes the pain out. Simply choose Report from the utility's Main menu to view and optionally print the component parts of any report in your database (see Figure 4).

Although DTF SPECS began as a tool for advanced Q&A programmers, the utility now boasts an attractive, interactive interface that makes "surfing" your various Q&A database specs and programming outright fun. And no other utility allows you to view and edit your work the way DTF SPECS can.

Jim Warren, a full-time banking executive in North Andover, Massachusetts, uses Q&A extensively and sells his Q&A-based commercial lending tracking system. 508-794-5507.

[Would you like to get your hands on a utility that checks programming Q&A 5.0 won't accept, and tells you what—and where—the errors are? The stuff of dreams? Nope. We'll tell you about it in an upcoming issue.—Ed.]

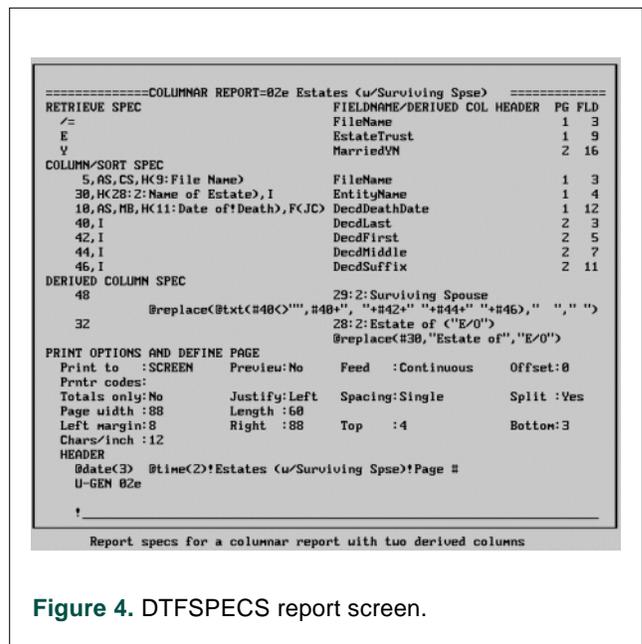


Figure 4. DTF SPECS report screen.



Edited by Dave Reid

Honey, Where's My Underline?



I recently switched from an old monochrome monitor to a newer color monitor. I use Q&A 4.0 for DOS, and I read in the *Getting Started Guide* about using the QA -SCC start-up switch for color monitors. I tried it, but I don't think it worked because Q&A no longer displays the underlines when I underline text. Is there another switch that will give me back the underlines?

Hannah Dayan, St. Louis, Missouri

What you're seeing is normal for color monitors, and unfortunately there's no switch that can restore the underlines. Only by changing back to your monochrome monitor will you be able to see the underlines. On color monitors, Q&A for DOS displays underlined text in green. If that's hard to remember, you can always place the cursor on the text, and Q&A will display "Undl" on the document's Status Line. If your need to display underlined text is overwhelming, consider switching to Q&A Write for Windows for your word processing needs. It's a fully WYSIWYG ("what you see is what you get") word processor that displays all text enhancements just as they'll look when printed.

Alternate F11 and F12 Clipboard Keys



The August 1995 issue of *The Quick Answer* mentions Q&A 5.0 includes a new Clipboard feature that uses the F11 and F12 function keys to copy and paste text. I plan to take advantage of the Clipboard, but I have a TSR utility that already uses these keys. Are there other keys I can use to simulate Q&A's F11 and F12 keys?

Jerry Altshuler, Chicago, Illinois

In the Write module, you can access the *Copy to Clipboard* and *Paste from Clipboard* commands by pressing F8 to display the Options menu, pressing B to choose Block operations, then pressing X to copy or V to paste. To use these features in the File module—from a database record or Retrieve Spec, for example—you'll have to press F6 to open the Field Editor before you can access the F8 Options menu.

[Here's another technique you can try. Be sure your TSR isn't loaded, and record two macros with key identifiers

Ctrl-X (or Alt-X) to copy and Ctrl-V (or Alt-V) to paste. Record an F11 keystroke in the Ctrl-X macro and an F12 keystroke in the Ctrl-V macro. They'll work just like pressing Q&A's F11 and F12 Clipboard keys. (They'll also mimic Windows' Ctrl-X and Ctrl-V Clipboard Copy and Paste keys.) If invoking these new macros still affects your TSR rather than Q&A, you'll need to replace them with macros that access the Clipboard commands via the F8 Options menu.—Ed.]

How to Check for Lengthy Names



My database contains tens of thousands of records with contact names, company names, titles, addresses, and so forth. Our company relies heavily on trade shows and other events, which means I sometimes have to print a thousand or more name badges ahead of time. We want the badges to look good, so we can't afford to have lengthy company names wrap onto a second line. Currently, we have to check every printed badge for wrapped lines and retype any bad ones by hand. Is there a way to have Q&A flag the records with lengthy company names so we can simply edit the records before printing the labels?

Ryan Lassen, via CompuServe

Most assuredly. You can use a Retrieve Spec expression to filter all the records whose company name exceeds a specified number of characters. First, determine the maximum number of characters you can print on a badge line in the font you're using. Once you know that number, you can use it in a Retrieve Spec expression like this one:

```
Company: {@Len(Company) > 25}
```

This expression finds all the records with company names longer than 25 characters. You can repeat the process to check for lengthy contact names and titles.

[If you're printing in a proportional font, be sure to take into account that some names with fewer characters might actually require more space to print than names with more characters. For example, Warrwum Wamwum, with 13 characters, will consume more space than Willis Wilkiestein, with 17 characters.—Ed.]

Manage Documents with a Database



I manage the Human Resources department for my company. When I receive a resume, I scan it and

convert it to an ASCII text file. I'd like to organize these files so I can browse through them. I think a Q&A database would work well, but I'd like to know if there's an easy way to get the files into one.

Teresa Syrios, Eugene, Oregon

Q&A 5.0 includes a new programming command perfectly suited to your needs. The @Insert command takes the name of a file, in either ASCII or Q&A Write format, and returns its contents to the target field. You could create an applicant database with fields for Applicant Name, Address, and so forth, plus a field for the name of the ASCII file that contains the resume and a field to store its text. When you've done this, add the following program to the database's Program Spec:

```
Filename: > If @Insert(Filename) <> "" Then
           Resume = @Insert(Filename)
```

Resume:

The If-Then conditional checks to see if the specified file exists. If it does, Q&A retrieves it into the Resume field. In case the filename doesn't exist (perhaps it

was deleted), the contents of the Resume field remain unchanged, protecting against the loss of any information already in the field.

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



Have a nagging question? Send it to @Help, **The Quick Answer, Marble Publications, Inc., PO Box 9034, Gaithersburg, MD 20898-9034** or fax to 301-424-1658. Please include your name, address, and phone number, along with your Q&A version number (and whether DOS or Windows) and a detailed description of the problem. We'll publish those questions we feel are of general reader interest. Individual responses are not possible.

QUICKTIP

Convert Money Values to Text

When entering dollar values, you normally want the field formatted "M" for Money because this saves you from having to type the "\$" sign and any trailing zeros. For example, if you want the field to display \$250.00, all you need to type is "250." This is fine unless you want to use the dollar amount strictly as a text value. In this case, if

the Amt field contains \$250.00, and you program a statement such as TextField = @Str(Amt) or TextField = Amt, Q&A will place "250" in TextField. Here's a routine for an Amt field (a text field) that lets you enter amounts that display as dollar values:

```
> If Amt <> "" Then
{
If @Instr(Amt, ".") = 0
  Then Amt = Amt + ".00"
Else If @Right(Amt,1) = "."
  Then Amt = Amt + "00"
Else If @Instr(Amt, ".") = @Len(Amt) -1
  Then Amt = Amt + "0";
Amt = "$" + Amt
}
```

The following table shows you the result of entering the amount various ways:

Typing this	Displays this
250	\$250.00
250.	\$250.00
250.9	\$250.90
250.98	\$250.98

Because the value is text, you can use it in a statement like this:

```
Billing line = "Paid " + Amt + " on account."
```

to place this in the Billing line field:

```
Paid $250.00 on account.
```

If you need to convert the Amt field to a *real* money value (so you can perform math on it), you can always use an @ToMoney(Amt) expression. But you might not need to do so. Though the Amt field is a text field, if you have a Paid field that's formatted for money values, a statement like this will work:

```
PaidField = Amt + 10
```

In this case, if you type "250" in Amt, the program will place \$260.00 in PaidField.

Tom Marcellus, Editor

Storing Pictures in Your Database: What'll It Cost You?

With the new Q&A 5.0 for DOS comes the ability to store and display graphic images—employee mug shots, property photos, inventory items, and just about anything else—in your database, but at a price you might not be willing to pay. Dave shows you how you can have your cake and eat it, too.

By David Dvorin



THE Q&A upgrade includes support for two popular graphic file formats: Windows' native .BMP, and the old standby .PCX and lets you use them in the following ways:

- A new database field format—Bitmap—lets you store images with records like a text field stores text. Each record in the database can have its own associated graphic file. When you format a field for graphic images, Q&A places `""*PICTURE*"` in it, and you can press Shift-F11 from the record to view the image.
- An external bitmap viewer utility, BITMAP.EXE, comes bundled with Q&A 5.0. You can use it independently of Q&A to view .BMP and .PCX files. Or, you can program your database with the new @Shell command to run the utility and pass it a graphic image filename to display.
- Write's GRAPH command has been updated to accept a bitmap filename parameter, so you can include a .BMP or .PCX image—your company logo, for example—in your printed document.

I'll focus on using graphic files with databases.

Two ways to view your pictures

Q&A 5.0 gives you two ways to integrate graphic images with your database. You can store the image in the database, making it a part of the database just like any other value, or you can store a *pointer* to the image in the database and use an @Shell command to call BITMAP.EXE and display it.

Each method has pros and cons. If you store your images in the database, you achieve portability. Because the image is like any other field in a database, if you copy the database, you copy its stored images as well. What's more, as long as you have the interoperability upgrade installed, along with the patch that comes with Q&A 5.0, the images will be accessible in Q&A for Windows as well.

The disadvantages of storing images in your database include the additional disk space they'll consume, and performance. A database that stores

images quickly grows in size and can become sluggish.

When your database records simply point to the file containing the associated image, portability goes out the window. If you move or copy the database between two non-networked computers, you'll need to haul the images over to the new location as well. You'll also need to ensure that the pointers stored in the records are still valid.

So, which method is right for you?

In The Quick Answer Labs

I tested one approach, then the other, on two duplicate databases to see what happens to their respective file sizes with and without embedded graphic images. You can perform the same tests I did. Start by creating a database that simply points to its images. Include in it the following fields:

Field	Format
Directory	T
File	T
Type	T
Date	D
Size	N0

Add the following program to the Type field:

```
>#16:
If @AskUser("", "Do you want to see this image?", "")
then {@Msg(@Shell("BITMAP.EXE " +
Directory + "\" + File + "."
+ Type));
@Msg("")}
```

With this much done, the database should weigh in at a modest 23K or so.

Next, enter the 19 records shown in Listing 1. These are the names and default paths to the host of .BMP files that come bundled with Windows 3.1. If you don't have Windows installed on your machine, you'll have to run a similar test with whatever .BMP or .PCX files you have to hand.

Listing 1. Records for the sample database.

Directory	File	Type	Size	Date
C:\WINDOWS	EGYPT	BMP	630	03-01-90
C:\WINDOWS	TARTAN	BMP	32,886	03-01-90
C:\WINDOWS	CHITZ	BMP	19,918	03-01-90
C:\WINDOWS	WINLOGO	BMP	38,518	03-01-90

C:\WINDOWS	256COLOR	BMP	5,078	03-01-90
C:\WINDOWS	ARCADE	BMP	630	03-01-90
C:\WINDOWS	THATCH	BMP	598	03-01-90
C:\WINDOWS	REDBRICK	BMP	630	03-01-90
C:\WINDOWS	MARBLE	BMP	27,646	03-01-90
C:\WINDOWS	FLOCK	BMP	1,630	03-01-90
C:\WINDOWS	SQUARES	BMP	630	03-01-90
C:\WINDOWS	CARS	BMP	630	03-01-90
C:\WINDOWS	LEAVES	BMP	15,118	03-01-90
C:\WINDOWS	HONEY	BMP	854	03-01-90
C:\WINDOWS	CASTLE	BMP	778	03-01-90
C:\WINDOWS	RIVETS	BMP	630	03-01-90
C:\WINDOWS	ARGYLE	BMP	630	03-01-90
C:\WINDOWS	ZIGZAG	BMP	630	03-01-90
C:\WINDOWS	ARCHES	BMP	10,358	03-01-90

Once you've added the 19 records, the size of the database should have grown just a bit to around 27.5K.

Now, create another database to store the images. Structure it the same as your first sample database, except add a field named Image and don't add the program to the Type field. Format the Image field with a "B" for Bitmap.

Before you begin entering records, the size of this second database should also be approximately 23K.

Once you've added the 19 records in Listing 1, however, it swells to a whopping 441K, even though the sum of the images stored in it is a little less than 157K. Obviously, Q&A is adding more to the database than just the images.

The bottom line

If you can afford the disk space and if database speed isn't an issue but portability is, storing your images in the database might prove more convenient. For most applications, though, especially if the number of records (and their associated images) is great, you'll probably be better off storing your bitmaps in their own directory, and using @Shell and BITMAP.EXE to display them.

David Dvorin owns Phoenix Solutions of Hillsborough, New Jersey, which specializes in tailoring off-the-shelf software for a broad range of business needs. 908-281-6272.

If You Plan to Use Images . . .

Q&A 5.0's new Utilities menu includes a selection, Install Graphic Card, that lets you set your screen resolution for the best results when displaying images. Depending on the modes your graphics adapter supports, you can select VGA 320 x 200 (the default), and VESA resolutions 640 x 400, 640 x 480, 800 x 600, 1024 x 768, and 2048 x 1024. You can test each mode to find the highest one Q&A will let you use.

If you plan to store images in a database, make sure they aren't larger than necessary. For example, if you want to use employee photos, do what you can to limit the sizes of the files before you add them to the database. If your monitor displays graphics in 640 x 480 resolution, generate the photos in this, or a lower,

resolution. Higher resolution images mean larger file sizes. You can use a graphics program such as HiJaak, Hot Shot, or even Paintbrush to convert color images to black and white, or you can crop the images or reduce their resolution—all three methods keep file sizes down.

You can optionally install BITMAP.EXE on your External Programs menu, using the %f parameter to pass the current field's value as the path and name of the image file. This way, while working in the database, you can move to the field that contains the path to the image file, press Alt-F9 to display the External Programs menu, launch the viewer and view the image, then press Esc to return to the record.—*TM*

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