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T·H·E Quick Answer

The independent monthly guide to Q&A expertise

How to Get Faster, More Accurate Data Entry

Q&A 5.0's powerful new user message, user query, and list display commands help you simplify and speed-up data entry while preventing mistakes and misspellings.

By William Halpern



Q &A 5.0 includes new tools to help the database administrator overcome some of the most common data entry obstacles: too much thinking and too many keystrokes required, and thus too many mistakes made. Now you can program your database so that the people using it can enter information simply by answering straightforward Yes and No questions and selecting data from pop-up lists. At the heart of this capability are the new @Askuser, @Msgbox, and XUserselect commands, working in tandem with good old XLookup and If-Then logic. Although using a system like this is easy, implementing it isn't.

Where to program and when to execute?

Confusion can arise when you try to combine the various commands and features to create a smooth, sensible data entry system that prompts the user to make a choice, displays a message on what to do next, then displays a list of values to choose from.

Because of the commands and logic involved, it can be difficult to decide what should be programmed on-field-entry and on-field-exit, and what portions of the routine should be placed in the Program and Navigation Specs. Yet this is what you have to know to take full advantage of Q&A 5.0's potential to simplify data entry.

For example, the Navigation Spec accepts @Askuser and @Msgbox commands, so you can use a Navigation statement to prompt the user for a decision, wait for the response, then display an instructive message—all before you execute a single statement in the same field in the Program Spec.

I'll illustrate this with a small piece of an application I developed for a physician client.

The scenario

The doctor's office tracks information about patients, including the physicians who referred them. Not all

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README.1ST

AT last September's *Quick Answer* seminar in Washington, D.C., **Bill Halpern** demonstrated a Q&A 4.0 medical office application, then showed the same application turbocharged with Q&A 5.0. The difference was bankable. Where data entry was keystroke-intensive and required considerable operator familiarity, the upgraded 5.0 system practically filled in the forms on its own, resulting in faster, smoother data entry, and far fewer goofs. The 5.0 application guided—perhaps *controlled* better describes it—the user through the form with strategically displayed dialog boxes and selection lists. About all there was to do was answer Yes and No questions and choose the field entries from pop-up pick-lists. In this issue, Bill shows you how to simplify and error-proof data entry by taking advantage of the new features.

Our King of Derived Columns, **Gordon Meigs**, returns—this time with techniques to make Q&A print report subtotals where *you* want them. Employing a kind of derived column “If” statement, Gordon shows you how to make your group totals magically appear at the beginning or end of the group—and in a separate column—for improved report readability.

In his *Program Spec* column—now a regular feature—**Jeff Nitka** introduces you to Q&A's @Mod function. You might be surprised at how valuable this unassuming function can be in applications ranging from invoicing to employee time-keeping.

I'll show you how to graphically enhance your reports by designing them not in the Report module, but in the Mailing Label module. For list-like reports, such as attendance rosters, employee directories, checklists, and physical inventory count sheets, the attractive lines and boxes improve their look and make them easier to read.

Tom Marcellus
Editor

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Faster Data Entry

Continued from page 1

patients have a referring physician, so the procedure includes prompting the data entry operator to answer Yes or No. If there is a referring physician, the operator is then prompted to enter the first few characters of that referring physician's last name, press Enter, then select the physician from a list of referring physicians stored in an external database. Once this has been done, other information, such as the referring physician's phone and fax numbers, is then automatically retrieved into the new record. Believe it or not, all of this can be accomplished using a combination of navigation and regular form programming in a single field.

By dividing the programming between the two Specs, you can ask a question, prompt for input based on the answer, and permit data to be entered—all when the cursor arrives in the field—then *do* something with that data when the cursor exits the field.

Let me further illustrate using two databases. PATIENT.DTF (see Figure 1) tracks patient information, and DOCTOR.DTF (see Figure 2) contains information about referring physicians.

The Navigation program

When the operator adds a new PATIENT record and arrives at the Referral From field, you—the programmer—want to find out if there's a referring physician and, if so, tell the operator how to pop-up a list of referring physicians from the external DOCTORS database, so the correct one can be selected. You can do all this with a Navigation statement like the following in the Referral From field:

```
< #5:
If @Add and #10="" then
{
If @Askuser("Is there a Direct Referral
physician?","", "")
Then @Msgbox("Enter portion of doctor's last",
"name in the field and press Enter",
"for a selection list")
Else goto #20
}
Else goto #20
```

In this program, field #5 is the Referral From field, field #10 is the doctor ID number field, and field #20 is the field to go to if there's no referring physician.

In a new record with a blank doctor ID number field, the @Askuser command displays a large dialog box in the middle of the screen that prompts for a Yes or No answer (see Figure 3), then waits for a response before allowing the operator to continue. If the operator presses Esc, @Askuser interprets it as a "No."

If the operator answers "Yes" (presses "Y," highlights "Yes" and presses Enter, or clicks on "Yes"), then the @Msgbox command executes and displays a message in the middle of the screen (see Figure 4) with instructions on what to do next.

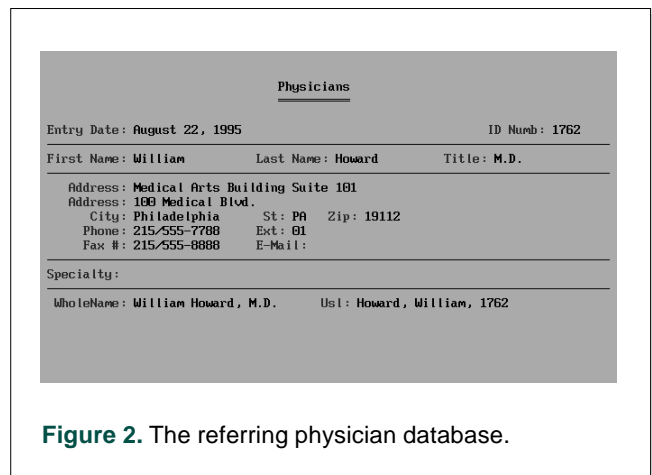


Figure 2. The referring physician database.

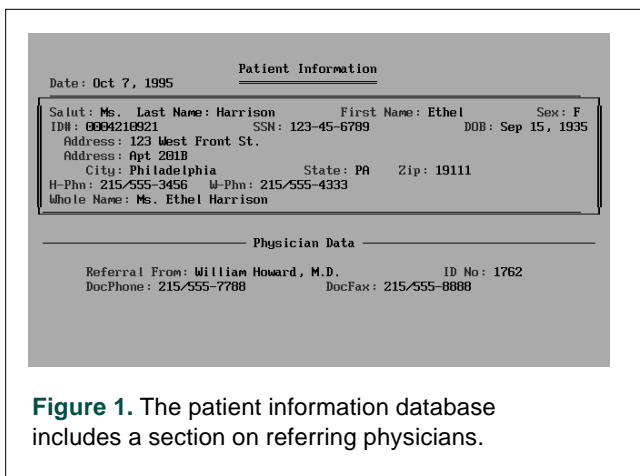


Figure 1. The patient information database includes a section on referring physicians.

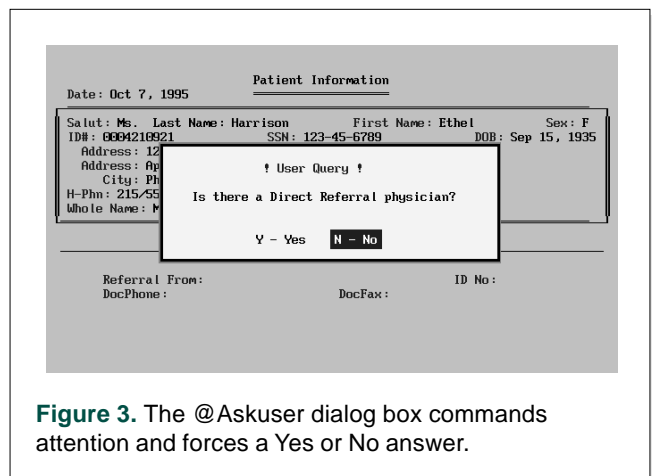


Figure 3. The @Askuser dialog box commands attention and forces a Yes or No answer.

The Form program

That's it for the Navigation program. The operator types the first few characters of the doctor's last name in the same field, presses Enter, and the on-field-exit Form program takes over. The characters supply a range for the XUserselectR command that displays a list of the doctors whose last names begin with those characters. Here's the complete program:

```
> #200:
If @Add Then
{ If #210 = "" and #200 <> ""
Then { XUsr("Doctor", "Us1", "Us1", #200, #200, #200);
If @Len(#200) > 4 Then { #210 = @Rt(#200,4);
Xlu("Doctor", #210, "ID Numb", "Whole Name", #200,
"Phone", DocPhone, "Fax #", DocFax) }};
If #200 = "" Then Goto #215
```

In this on-field-exit program, field #200 is the Referral From field, field #210 is the referring doctor ID number field, and field #215 is the next field to go to if there's no referring physician.

On exiting the field, the program checks to see if this is a new record, if there's something in the Referral From field, and if the referring doctor ID number field is blank.

If these three conditions are true, then the XUserselectR (abbreviated XUsr) command is executed. It uses the value in the Referral From field (the first few characters of the referring physician's last name) to search the Us1 (an abbreviation for Userselect) field in the external DOCTORS database and retrieve the records that fall within the range the operator typed in the Referral From field (#200). When Q&A has found all the qualifying records, it displays their Us1 values in an alphabetical list. (See the sidebar, "The Advantage of XUserselectR.")

The operator then selects a referring physician from the list, and Q&A places it in field #200, overwriting the first few characters that supplied the

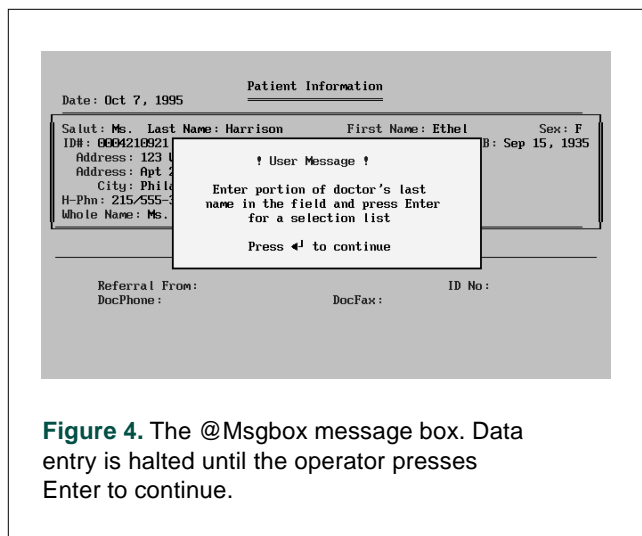


Figure 4. The @Msgbox message box. Data entry is halted until the operator presses Enter to continue.

range. The XUsr statement, as used in this program, includes the following parameters:

- The name of the external lookup database.
- The name of the external Speedy field.
- The name of the external field whose data is to be included on the list.
- The starting range of external records to include on the list.
- The ending range of external records to include on the list.
- The field in the current record where the selected item is to be placed.

In this case, XUserselectR checks the Us1 field in DOCTOR.DTF, compiles the Us1 values that start with the characters the operator has typed in field #200 (assume these were "Ho"), and displays an alphabetized list of those values on the right-hand side of the screen. (See Figure 5.)

The operator selects the physician from the list, and Q&A places it in field #200 (Referral From). The program then takes the doctor's four-character ID number from the end of the that value, and uses it to perform an XLookup to the DOCTORS database to retrieve the referring physician's whole name, phone, and fax numbers.

Using a unique key value

The ID number—rather than the referring physician's name or the Us1 value—is used as the key value for

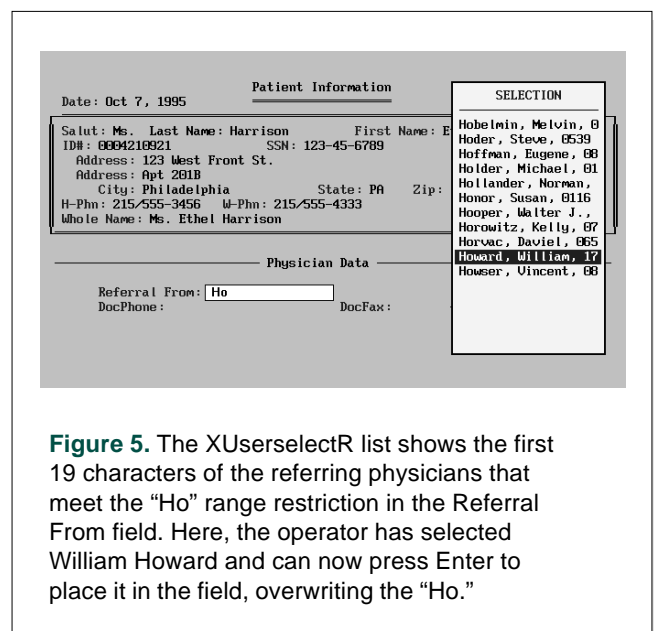


Figure 5. The XUserselectR list shows the first 19 characters of the referring physicians that meet the "Ho" range restriction in the Referral From field. Here, the operator has selected William Howard and can now press Enter to place it in the field, overwriting the "Ho."

the XLookup for two reasons. First, names aren't always unique, and it's always a good practice to use a unique key value in an XLookup statement. (Theoretically, an ID number will always be unique.) Second, you can't make the Usl field the key because XLookups are accurate only through the first 16 characters. In this case, the Usl value begins with the referring physician's name (though with the last name first, followed by a comma, then the first name), and with a lengthy name—Anderson, Robert, for example, is 16 characters—you'd run into the same problem with uniqueness.

Conclusion

Try this technique to ensure smooth and consistent data entry. When you allow the user to make selections from lists, there's less margin for error. And because the information comes from another database in the exact form it appears there, you'll find your searches and reports will be more accurate because your records are less likely to contain misspellings and variations.

[For more on XUserselectR, see the Q&A 5.0 for DOS review in the August 1995 issue, and "Create Versatile Pick-Lists" in the November 1995 issue.—Ed.]

Bill Halpern is executive vice president of Professional Computer Technology Associates in Newtown, Pennsylvania, and author of Pinnacle Publishing's *The Quick Answer Focus* special report on Macros and Custom Menus. Bill has been designing and installing Q&A business applications for the past eight years, and teaches Q&A at two community colleges. 215-968-4185, CompuServe 71023,356.

The Advantage of XUserselectR

Though Q&A 5.0 can display a list of up to 3275 records from an external file, if your lookup database contains a large number of records, it can take Q&A quite a while to display all the values. XUserselectR's range parameters let you specify a subset of those records by placing a restriction on what Q&A searches for and includes on the list. This enables Q&A to respond faster, and ensures that you're able to display lists from large databases.

If the external DOCTORS database included only a few dozen referring physicians, it might make more sense to display the whole list rather than have the operator type the first few characters of the physician's name. But because the DOCTORS database contains a large number of records, we're actually speeding data entry by asking the operator to provide "a clue." In this case, the more characters the operator enters, the more restricted the resulting list will be, the faster it will display, and the less scrolling will be required to select the correct item.

QUICK TIP

Create and Update Your Pick-Lists in Write

Q&A 5.0's new Userselect command lets you program a list of selections—acceptable field values, for example—to display during data entry. Here's one that displays a list of transaction types and places the selection in the Transaction field:

```
< Userselect ("Checking;Savings;Mortgage;IRA;Credit card",Transaction)
```

If the list is subject to change, you might want to be able to update it—or let the user update it—without having to reprogram the database. You can do this by creating the list in Write and programming Userselect with the new @Insert function. A list document named TRANS.LST stored in your default documents directory might look like this:

```
Checking;Savings;Mortgage;IRA;Credit card
```

You can then revise your program like this:

```
< Userselect (@Insert ("TRANS.LST"),Transaction)
```

This method offers several advantages. It simplifies programming, and you can use the same list for any field or database. If the list needs updating, you simply edit it in Write, which is practical if the database is in use on a network, and you don't want to lock other users out while you reprogram it.

Gordon Meigs, Professional Computer Technology Associates

[Terrific idea. If you maintain many lists, you might want to store them in a separate QA/LISTS subdirectory. Though you'll then have to specify the path—@Insert("C:\QA\LISTS\TRANS.LST"), for example—you're likely to benefit from the organization.—Ed.]

Print Group Subtotals in a Separate Column

Not only must your reports be accurate—they must be readable. Here's a technique that lets you customize how and where Q&A prints the subtotals.

By Gordon Meigs



AT the September *Quick Answer* Q&A 5.0 Seminar and National Q&A User Group Bash in Washington, D.C., I had the opportunity to meet many devoted Q&A users and developers. Because Tom Marcellus introduced me as “The King of Derived Columns,” it was inevitable that I would be challenged by a number of attendees to come up with solutions to various Q&A report formatting issues. I owe the solution in this article, though, to Vince Lackner, a talented Q&A expert. Vince brought his notebook PC with him to the Bash and happened to have the report design the attendee was after.

The situation

Q&A's Report module makes it easy to print column subtotals and totals on separate lines following a *break*—that is, a change in the sorted value when, for example, the sorted value changes from A to B, B to C, and so forth. (See Figure 1.)

Sched	Item#	Amount
A	1	0.00
	2	174,500.00
	3	4,200,000.00
	4	441,300.00
	5	
	6	100,000.00
Total:		4,941,646.00
B	1	1,720.31
	2	80,000.00
		4,000.00
	3	60,000.00
	4	0.00
	5	27,000.00
		338.00
	6	50,400.00
		1,400.00
	7	4,200.00
	8	100,000.00
		870.00
Total:		329,928.31

Figure 1. A normal, totals-only columnar report showing the total amount for each Sched (Schedule) category.

Often, though, the preferred format is to have Q&A print the subtotal on the *same line* as the sorted column (Sched, in this case) (see Figure 2). The technique to do this has been covered in previous *Quick Answer* articles. It uses the derived column function `@Total(n,m)` in conjunction with a “delayed”

copy of the sorted column in another derived column, along with a kind of “If” statement.

Sched	Item#	Amount	Subtotal
A	1	0.00	4,941,646.00
	2	174,500.00	
	3	4,200,000.00	
	4	441,300.00	
	5		
	6	100,000.00	
B	1	1,720.31	329,928.31
	2	80,000.00	
		4,000.00	
	3	60,000.00	
	4	0.00	
	5	27,000.00	
		338.00	
	6	50,400.00	
		1,400.00	
	7	4,200.00	
	8	100,000.00	
		870.00	
C	1	34,280.00	82,997.00
		188.00	
	2	6,000.00	
		82.00	
	3	20,000.00	
		167.00	
	4	11,108.00	
		112.00	
	5	1,000.00	
	6	10,000.00	
		60.00	

Figure 2. Sorted column totals placed in a separate column to the right on the first line of each grouping.

Here are the derived columns that make this trick possible, followed by an explanation:

- Heading: Time Delay #7
Formula: #7
Column Spec: 45,I
- Heading: 15:Subtotal
Formula: @text(#45<>#7,@total(#29,#7))
Column Spec: 42,F(N2,C)

The first derived column contains a copy of the primary sort field's value (in this case, Sched, column 7), and its formula compares that field in the current record with the same field in the previous record.

You can do this because Q&A assembles the information in a columnar report from left to right, from the lowest numbered column to the highest. In a given record, then, when Q&A prepares the entry for column 7, 10, or 42, column 45 still contains the information from the previous record (in this case, the

Sched value). The column is invisible because you don't need to see it.

The second derived column is the printed subtotal column. It uses the first parameter of the @Text function to perform a comparison of what's in column 7 with what's in column 45. @Text(*n*,*x*) produces *n* copies of the text *x*. The expression we've used for *n* is a kind of If statement that works like this:

```
If #45 <> #7 (if the Sched value from the previous record doesn't equal the Sched value from the current record), then the expression is true, and Q&A returns 1. If #45 <> #7 is false, then Q&A returns 0 (zero).
```

As a result, @Text returns either 1 or 0 copies of its second parameter. If it's 0, the column will be blank, and this record won't appear in the report. This way, you get a line with the subtotaled amount only when the Sched value changes. Perfect!

Well, it's perfect unless you want each group's subtotal to print on the *last* line of the group. But why would you?—because in some cases it makes more sense. If you're running a year-to-date sales report sorted by date with group breaks by month, it might be better to have each month's total appear at the end of the month group rather than at the beginning. Likewise, if you're totaling commissions by sales rep, or test grades by student, it makes more sense to have the cumulative value at the bottom of each group.

That was the challenge, and Vince Lackner's technique produces the report shown in Figure 3.

Sched	Item#	Amount	Subtotal
A	1	0.00	
	2	174,500.00	
	3	4,200,000.00	
	4	441,300.00	
	5		
	6	100,000.00	4,941,646.00
B	1	1,720.31	
	2	80,000.00	
	3	4,000.00	
	4	60,000.00	
	5	0.00	
	6	27,000.00	
	7	338.00	
	8	50,400.00	
		1,400.00	
		4,200.00	
		100,000.00	
		870.00	329,928.31
C	1	34,280.00	
		188.00	
	2	6,000.00	
		82.00	
	3	20,000.00	
		167.00	
	4	11,108.00	
		112.00	
	5	1,000.00	
	6	10,000.00	
		60.00	82,997.00
====	====	=====	=====
Total:			5,354,571.31

Figure 3. Group subtotals placed in a separate column on the last line of each group.

Revising the report

In the previous report with the subtotal on the first line of the group, the delayed column trick causes Q&A to look at the *previous* record. But in this revised case, Q&A would have to look at the *next* record to decide whether or not to print the subtotal, and it can't do that. Accordingly, you need create some additional derived columns that let Q&A know when it has reached the end of a group and it's time to print the subtotal.

Here are the derived columns that will print a subtotal on the *last* line of each grouping:

- Heading: Time Delay #7
Formula: #7
Column Spec: 45,I
- Heading: Running Balance
Formula: ((#7=#45)*#40)+#29
Column Spec: 40,I
- Heading: Regular Subtotal (non-printing)
Formula: @total(#29,#7)
Column Spec: 35,I
- Heading: Check that last Amount not zero
Formula: (#29<>0 and #35=#40)*#35
Column Spec: 50,I
- Heading: 15: Subtotal
Formula: @text(#50=#35,#35)
Column Spec: 55,T,F(N2,C)

Here's what these modified derived columns do:

- This column is our "usual" delayed copy of the sorted column on which you wish subtotals—made invisible because you never have to see it.
- This column accumulates a running balance of the Amount column (#29) within the group. The "If" part of this formula is #7=#40, which is either

QUICK TIP **Simpler Birthdate Program**

A QuickTip in the September 1995 issue (page 11) shows a program for calculating a person's age. I use the following statement with DOB (date of birth), a Date field, and Age, a text field:

```
Age = @Int((@Date - DOB)/365.25)
```

Roger Skidmore, Isle of Wight, United Kingdom

true (Q&A returns 1), or false (Q&A returns 0). If it's true, Q&A is still processing the same group, and `1*#40` returns what's in column 40, which is the accumulated subtotal from the previous record. The formula then adds the Amount (#29) from the current record and carries it forward. If, on the other hand, it's false (indicating a group change), then `0*#50` is zero, and the formula adds the Amount (#29) from the current record, thereby starting a new running subtotal. The objective is to print the subtotal when the running balance equals what's been calculated by the `@Total(n,m)` function.

3. This column contains Q&A's regular subtotal function, which produces the group subtotal. It's invisible because you want to print it only on the last line of the group.
4. This derived column performs a double check to see if the Amount in this record is 0 (zero). If the last item in a group is a zero amount, then the previous running balance is already the group's subtotal. That's supposed to be the signal to print the subtotal column. But when the last item of a group happens to have a zero amount, then the subtotal will print for both the last record *and* the previous record. To overcome this potential

problem, you have the column perform a "double If"—that is, if #29 isn't zero *and* the running balance equals the `@Total` amount, you get `1*#35`; otherwise, you get 0. Almost always, the subtotal will print on the last line of a group. Occasionally, it will print on the previous line.

5. In this column you finally print the subtotal. The earlier "check" column is either 0, or it's a copy of the subtotal. If the "check" amount equals the subtotal, then the subtotal is printed.

If, in your application, there's no possibility of the last item in a group being zero, then you can use the following formula for the derived column that prints the subtotal:

```
@Text (#40=#35, #35)
```

This formula says, "When the running balance equals the `@Total` amount, print it."

Gordon Meigs is vice president and general manager of Professional Computer Technology Associates in Newtown, Pennsylvania, and author of *The Quick Answer Focus* special report on Reports. He teaches courses and does corporate training on Q&A, and has been designing and installing advanced Q&A business applications for more than eight years. 215-968-4185, CompuServe 71023,356.

QUICKTIP

Faster Program Spec Saves in DOS



I run Q&A for DOS in Windows except when I'm on a programming binge. Here's why. Even though Q&A's System Information screen (press Ctrl-F3 from the Main menu) reports the same amount of memory usage on either platform, I found that Q&A saves my programs much faster in DOS. For example, a program that DTFSPACES reports is 32.5K—about half of Q&A's total Program Spec capacity—takes Q&A 85 seconds to save in Windows 3.1, compared to 50 seconds in DOS. The difference is all the more conspicuous when I'm testing and resaving various programming alternatives.

Tom Marcellus

QUICKTIP

The Case of the Missing @Msg



If you place an `@Msg` command ahead of a Q&A 5.0 `@Macro` command in a programming statement, the macro will kill the `@Msg` message. To use `@Msg` in conjunction with `@Macro`, you'll have to place the `@Msg` command elsewhere, perhaps in the next field in an on-field-entry navigation statement. Another solution is to add a small field to the form—name it `MsgText` if you like. You can hide the field and make it read-only. Place your message in this field at the proper time, then, after the macro has executed, restore the message to the message line with a command like this:

```
@Msg(MsgText); Clear(MsgText)
```

Tom Marcellus



Edited by Dave Reid

The Case of the Disappearing Data



We've been using Q&A for DOS for some time but never encountered this problem until now. As we add and update records, whole fields of information just disappear. The records are all there, and most of the data is still intact. What are we doing, and how do we make it stop?

Ruth Shingleton, Point Pleasant, West Virginia

The only time I've seen this problem occur is following a database redesign. During redesign, the fields are followed by a two-letter field tag such AA, AB, or AC. These are Q&A's internal way of connecting a field with its data and attributes. Accordingly, if you move the label along with the tag—as you should—you move the field. If you delete the tag, you delete that field. For example, if while redesigning your database you change this:

First Name:AA

to this:

First Name:

You delete everything connected with the First Name field and, in its place, create a new, empty First Name field. Consequently, you must exercise extreme caution when redesigning a database that contains "live" information. If several people use the database, you should password protect it to prevent users other than yourself from redesigning it.

Invalid Programming Messages



I've been trying to use the program from the QuickTip on page 6 of the June 1994 *The Quick Answer*. I keep receiving an invalid programming error message, and Q&A puts the cursor at the end of this second to last line:

```
Goto First Name);
```

I've scoured the statement for typos, and even retyped it a few times. But I can't see any difference between what I've typed and what appears in the issue. Is there a typo in the text?

C. Vaughn Minor, London, Ontario, Canada

It took me a while before I noticed the difference. The second to last line of your program should end with a closing French brace and semicolon, not a closing parenthesis and semicolon, as you have it. In the small font used for programming code, it's hard to tell the difference, but look carefully, and you'll see that the code, as printed, is correct.

In Q&A programming, French braces are used in place of BEGIN and END commands to group multiple statements into a block, usually in conjunction with an If-Then statement.

[We've since emboldened the programming code font to make it easier to read.—Ed.]

Force a Selected Entry



I'm using Q&A 5.0's new @Userselect command, but I'm not pleased that it lets users leave the field empty. With the list displayed, they can press Esc and move to the next field. How can I force the entry of a value from the list?

William Swift, Seattle, Washington

@Userselect and other Q&A 5.0 list commands are among the most exciting additions to the upgrade. The following program forces a selection from the displayed list of states:

```
< State = @Userselect("CA,OR,SD,WA");
  If State = "" Then
    {@Msg("Please select a state"); Goto State}
  Else Cnext
```

When the cursor enters the State field, the list appears, prompting for a selection. A valid selection places the value in the State field and the cursor is moved to the next field. If, on the other hand, the user presses Esc (leaving the field blank), a message appears, and the cursor reenters the State field, redisplaying the list. You can adapt this programming technique to a variety of situations using any of the Userselect family of commands.

Removing Leftover Files



I've been using Q&A 4.0 for DOS for some time, and I'd like to know what's causing empty files to appear in my QA4 directory. The filenames are gibberish, such as "AODCCJAH" and "APABCLEF." I see them among my list of Write files, and they're really annoying. I highlight them and press F3 to

delete them, but I'd prefer that they never appear in the first place.

Rebecca E. Zelazny Brooks, Columbus, Ohio

Q&A assigns a random string of letters to any temporary file it creates during the various operations it performs. In fact, a temporary file is created the moment you start Q&A. This is why you almost always see one in the list of files. You can't prevent Q&A from creating them, but you can hide them from view. Go to DOS and create a new subdirectory named TEMP under your main QA4 directory. Then, start Q&A, and choose Utilities / Set Global Options. Change the Q&A Temporary Files entry to C:\QA4\TEMP, and press F10. From now on, Q&A will store its temporary files in the TEMP directory, where they'll remain out of site and out of mind.

[While performing Record Copy, Mass Update, Mail Merge, and other data-intensive tasks, Q&A can create rather large temporary files. Q&A normally deletes these when it finishes the operation, but it can't if your PC has been whacked by a power glitch or similar interruption. In

this case, you might be left with huge "temporary" files. So, it's a good idea to periodically check your TEMP directory and delete any files there.—Ed.]

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. When writing, 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 will publish those questions we feel are of general reader interest; individual responses are not possible.

QUICKTIP

Quickly Find Files in DOS

When you just *know* you saved that ASCII or other file to disk but you can't find it, DOS, beginning with version 5.0, has a powerful file-searching capability that's not as well known as it should be. To find out how it works, exit Q&A to DOS, and change to the directory where you want to begin your search. If you start at the root directory, DOS will search the entire drive. Enter a command like this, replacing *filename*

with the name of the file you want to find:

```
DIR filename /s
```

The /s parameter tells DOS to search all subdirectories. For example, if you enter DIR cust*.txt/s or DIR *.dtf/s in the root directory, DOS will display details of every occurrence of any matching files in the directory structure.

You can also use this technique to find out which versions of system or program files are on your disk. For example, you can enter DIR EMM386.EXE/s or

DIR HIMEM.SYS/s in the root directory to view versions of these files that might be in your DOS and Windows directories. You can compare file creation dates, and update your bootup files to point to the most recent versions.

[I, too, was among "the uninformed" until Alec mentioned this trick at the September 15, 1995, Q&A 5.0 seminar in Washington, D.C. Here are a few variations on it that can come in handy if the resulting list is lengthy:

- DIR customer.* /s >prn prints the list of all the files named "customer" irrespective of the filename extension.
- DIR customer.* /s | more displays the list one screen at a time.
- DIR customer.* /s >c:\qa\docs\customer.chk prints the list to a file named "customer.chk" in the c:\qa\docs subdirectory.—Ed.]

Alec Mulvy, Ascot England

The Program Spec

By Jeff Nitka

@Mod in Action

YOU might be surprised at how useful a function that divides one number by another and returns the remainder can be. Q&A's built-in @Mod(*x,y*) function returns the remainder of *x* divided by *y*. For example, @Mod(15,3) returns 0 (zero), and @Mod(15,-4) returns 3. You can use @Mod, for example, to determine if a number is odd or even:

```
< if @Mod( Value, 2 ) = 0
  then @Msg( @Str(Value) + " is an even number." )
  else @Msg( @Str(Value) + " is an odd number." )
```

Usually, @Mod is used to determine if a value is evenly divisible by another, in which case it returns zero. But as the following examples show, @Mod can be useful in more complex calculations as well.

Suppose a company ships its products in 55-pound containers, sometimes making partial shipments. When preparing an invoice, the company wants to specify how many units were shipped. Here's a program that does it:

```
< if @Mod( Quantity Shipped, 55 ) = 0
  then Units Shipped = @Str( Quantity Shipped / 55 ) +
    " x 55 lbs"
  else Units Shipped = @Str(@Int(Quantity Shipped / 55)) +
    " x 55 lbs, 1 x " +
    @Str( @Mod( Quantity Shipped, 55 ) )
    + " lbs"
```

Converting money to text

Q&A drops the "\$" sign and trailing zeros when changing money values to text values. For example, the money value \$100.00 is converted to the text value "100." This method, from Tom Marcellus, creates a money format by manipulating the text value:

```
> If @Instr(Pay, ".") = 0 Then Pay = Pay + ".00" Else
  If @Right(Pay,1) = "." Then Pay = Pay + "00" Else
  If @Instr(Pay, ".") = @Len(Pay)-1 Then Pay = Pay + "0"
```

The following method uses @Mod and converts the text value to a numeric value via the @ToNumber function:

```
> If @Mod( @ToNumber(Pay) * 100, 100 ) = 0
  Then If @Right(Pay,1) = "."
    Then Pay = Pay + "00"
    Else Pay = Pay + ".00"
  Else
  If @Mod( @ToNumber(Pay) * 100, 10 ) = 0
  Then Pay = Pay + "0"
```

Time keeping

You can use @Mod to track hours worked. Suppose a database stores the time an employee arrives at work, leaves for lunch, returns from lunch, and goes home, then calculates the number of hours worked based on the following rules. For every quarter hour, an employee is allowed to be late by seven minutes (eight minutes or more, and the employee is docked 15 minutes pay). The seven minute buffer is renewed every quarter hour. The database reports the total hours worked in quarter hour increments: 7.25, 7.5, 7.75, 8, and so forth.

If employee Jeff is 22 minutes late, he's docked 15 minutes. But if he's 23 minutes late, he gets docked 30 minutes because he isn't allowed eight minutes past the quarter hour.

Here are the required fields for a database with these rules, followed by the program:

```
Start Time (H)      Time Arrived (H)
Out to Lunch (H)    Return Lunch (H)
End Time (H)        Time Departed (H)
Minutes Late (N)    Hours Worked (N)
Lunch (N) (minutes allowed for lunch)
```

```
< Minutes Late = 0;

if Time Arrived - Start Time > 7
then Minutes Late =
  15 * @Int( (Time Arrived - Start Time)/15 ) +
  15 * @Int(@Mod(Time Arrived - Start Time,15)/8)

if Return Lunch - Out to Lunch > Lunch + 7
then Minutes Late = Minutes Late +
  15 * @Int((Return Lunch-Out to Lunch-Lunch)/15) +
  15 * @Int( @Mod( Return Lunch - Out to Lunch -
    Lunch, 15) / 8 );

if End Time - Time Departed > 7
then Minutes Late = Minutes Late +
  15 * @Int( (End Time - Time Departed)/15 ) +
  15 * @Int( @Mod( End Time - Time Departed,15)/8 );

if Return Lunch - Out to Lunch > 0
then Hours Worked = ( End Time - Start Time - Lunch -
  Minutes Late ) / 60
else Hours Worked = ( End Time - Start Time -
  Minutes Late ) / 60
```

Though this sample program is designed for the company's specific rules, it should give you ideas on how to manipulate Hour fields using math and @Mod to obtain the results you need.

Jeff Nitka recently graduated from Rutgers University with a Bachelor of Science degree in mathematics and computer science. He develops Q&A applications part-time for Epoch Software, 908-874-3989. Jeff is the author of the Q&A Program Evaluator, a program debugging utility available from Marble Publications, Inc., publisher of *The Quick Answer*.

Make @Macro the Last Command

Q&A 5.0's @Macro command lets you invoke a macro from a programming statement, but it can be tricky. If you follow @Macro with other programming commands, Q&A might not run the macro. This is why @Macro should be the last command in a field's program.

You *can* safely follow an @Macro with an Else command, such as in an If-Then-Else statement. As long as the @Macro is the last command to execute within the condition, Q&A won't ignore it. The following @Macro command won't work:

```
< Printed = "X"; @Macro("Print Record"); Goto First Name
```

In this case, you might think the macro would make the Goto moot, but Q&A will place an "X" in the Printed field, then move the cursor to the First Name field without executing the macro. The following command, however, *will* work:

```
< If Printed = "X"
  Then @Macro("Print Record")
  Else Goto First Name
```

The rule seems to apply whether the program is set to execute on-field-entry or on-field-exit. Keep in mind that you can use @Macro in the Navigation Spec, too, and that Nav Spec commands execute after Program Spec commands.

Tom Marcellus

Handier Than the Average Macro Hot Key

Almost every Q&A application I build includes one or more pick-lists, either the Restrict Spec variety or lists generated from external databases using techniques familiar to most *The Quick Answer* readers. Because pick-lists are for user convenience, I try to make them even more convenient. For example, Q&A won't display a Restricted Values list without an Alt-F7 keypress, so I use a macro to invoke the

list and attach it to the "]" (right square bracket) key. Using "]" as the macro's hot key lets the user press the key that's right next to the Enter key to pop up the list. It's very popular with my clients, who want to know why it doesn't work in other programs! Here are the steps to create the macro:

1. Press Shift-F2 to display the Macro menu.
2. Choose Define Macro.
3. Press the "]" key.

Q&A will respond: *That key is already used by Q&A. Do you want to redefine it? (Y/N).* Answer Yes, and you can begin recording.

4. Press Alt-F7.
5. Press Shift-F2 to end recording.

6. Type a name for the macro, such as *Display Picklist*, press F10, then press Enter to save it.

Here's what the macro looks like in the Write editor:

```
<begdef>]<name>"Display<sp>Picklist"<vidon><altf7><enddef>
```

You can let users know which fields have a pick-list by displaying an @Msg message, a custom help screen or, as I sometimes do, by placing the "[" and "]" characters around the field, like this:

```
Cust No [< >]
```

If you use this latter approach, be sure to delete the left bracket from the field name at the Field Name Spec.

Of course, when the macro is in memory, whenever you press "]" Q&A will "press" Alt-F7. But you can still type the character by holding down the Alt key and pressing "93" on the numeric keypad.

[This is an excellent trick for Q&A 4.0. But if you're using Q&A 5.0, you can program an on-field-entry @Macro command (in the Program or Navigation Spec) to invoke the macro that "presses" Alt-F7. Q&A 5.0 also gives you more options for creating pick-lists.—Ed.]

Alec Mulvy, Ascot England

Create Reports with Graphic Lines and Boxes

Sometimes Q&A for DOS's Report module can't give you the output you need. But you don't have to tell anyone that the snazzy-looking report you just printed is really just a mailing label.

By Tom Marcellus



I was helping a client create a roster for people attending a seminar. It would have taken a minute to print the roster as a Q&A report because the names and so forth were in a database, and the roster was a simple list. The challenge was how to get the special formatting we were after. We wanted a roster with some character—with attractive graphic lines around the names, companies, and phone numbers, and a check box so that attendees could be marked-off as they arrived. Figure 1 shows the kind of output we had in mind.

I didn't want to attempt this feat in the Q&A for DOS Report module. (It would have been an easy Q&A for Windows Free-form report. See the sidebar, "Dress-up Your Output in Q&A for Windows.") Though we could have created the thing from scratch in Write, I shuddered at the time it would take (the actual roster was more than 15 pages). Besides, we wanted a reusable design—one that we could just "dump" the data into and come up with the same printed format each time.

We decided on a label strategy because although

Q&A for DOS's Mailing Label module has only rudimentary report-making capabilities, it provides a rich complement of word processing tools, such as the ability to draw graphic lines and boxes. It was an ordinary list-like report, but with unusual formatting requirements—just the ingredients Q&A for DOS's label generator can accommodate.

Designing the label

The roster included the following database fields:

Last (last name)
First (first name)
Company
Phone

The first step was to lay out the label. I selected a label at random from Q&A's List of Mailing Labels, and copied it to the name *Roster*. I scrapped the predesigned layout, started from scratch, and after several iterations (I'll spare you the details) I got just what I was after.

The final design used the default 10 characters per inch (cpi) LaserJet Courier font. (My printer is a LaserJet 4P.) The Define Label screen (see Figure 2) included the following settings:

Width: 80
Height: 4
Top margin: 0
Bottom margin: 0
Left margin: 2
Right margin: 80
Characters per inch: 10

At the Label Layout screen, I used the F8 Options menu (Lay out page / Draw) to add the graphic lines, and inserted the merge fields (see Figure 3) on the third line. Notice that the label doesn't include a bottom line, just a top line that extends from the left to right margins. The vertical lines are the same height as the label.

By including the space above and below the merge fields, I was able to use a printer control code to compress the vertical line spacing in a way that would cause the

Benson, Jeff	Benson & Associates	617-229-2924
Bowen, John	FirmSupport	914-758-0916
Clark, Fred	Clark Enterprises	209-292-0650
Coughlin, Sean	Alpha Software Corp.	617-229-2924
Davis, Diane	Pittsburgh Plate & Glass	412-561-5745
Elkes, Howard	Elkes & Company	818-906-7685
Fletcher, Gary	Fletcher & Fletcher	303-759-1258
Hammond Hardy, Sandra	Thronson Engineering	713-588-8235
Holland, Joe	SHL SystemHouse	508-229-4897
Hopkins, William	Hopkins Solutions	314-855-3256
Moran, Jo	DataBasics, Inc.	713-723-6709
Johnson, William	Bon Micro Solutions	603-437-6712
Li, Hua	Richland Enterprises	212-234-4322
Magno, John	Select Systems, Inc.	508-664-9796
Martin, Sherry	Computers Without Fear	508-548-9476
McCary, Mary		603-888-6281

Figure 1. A report formatted with eye-pleasing graphic lines.

graphic lines from one "label" to the next to meet (or overlap) to create the box around each row. (See the sidebar, "A Few Label Tricks.")

Printing the label report

With the label design completed, it was on to the Mailing Label Print Options screen (see Figure 4) where I typed the LaserJet code 27,38,108,49,50,68 on the Printer control codes line. This code forces 12-lines-per-inch printing, double the usual default of six lines per inch. (See the sidebar, "So, Where Do I Find Those Printer Control Codes?") These settings produced the final Figure 1 output.

What happens during printing

The printer control code compresses the spacing to 12 lines per inch, forcing each label's vertical graphic lines up to meet (actually overlap) the previous label's vertical graphic lines, creating the solid line appearance instead of the usual space between labels. It also happens that at 12 lines per inch, the horizontal graphic line at the top of each label perfectly meshes with the vertical lines of the previous label, so you get the solid box around each row of the report.

Need room for more fields?

You don't have to settle for a report that includes just a few fields. Figure 5 shows a label report printed in the LaserJet's 16 cpi Line Printer font in Landscape mode that contains eight fields (last name, first name, company, phone, street, city, state, and ZIP code) plus a column for notes.

The design of this landscape label report is essentially the same as the earlier report except for a few modifications. It uses the 16 cpi Line Printer font, and a label width and right margin setting (at the Define Label screen) of 175. At the Mailing Label Print Options screen, the landscape printer is selected, and the printer control code is 27,38,108,49,54,68, which

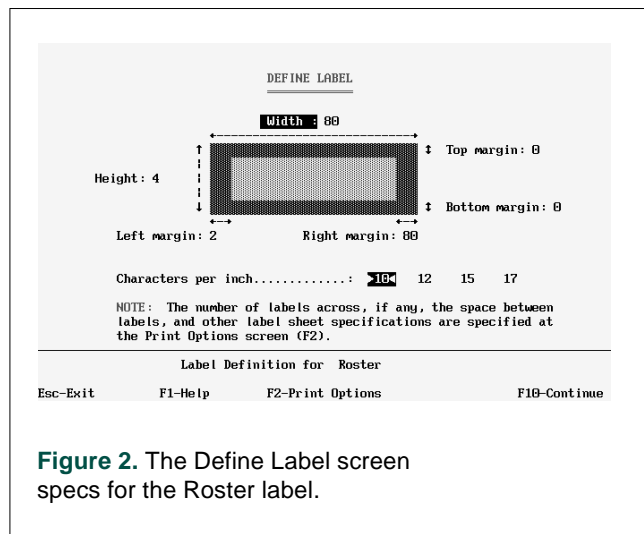


Figure 2. The Define Label screen specs for the Roster label.

Label Tricks

In Figure 3, notice the *Pg {program}* command that creates a merge value consisting of the last name, followed by a comma, a space, then the first name. (When using the Pg command, be sure to leave a space between the "Pg" and the opening French brace.) I did this so the last and first names would print as a unit and so the cell would contain a single merge value, allowing me better control over the maximum length of the merged value.

Most critical is the placement of the merge field asterisks and the use of the (L) code. As Figure 3 shows, the ending asterisk for each of the three merge fields is as far to the right as it can be. The (L) code tells Q&A to truncate any value that's longer than the space provided (the space between the starting and ending asterisks, inclusive). These two factors prevent any line exceeding the label's width from wrapping and thus messing up the label.

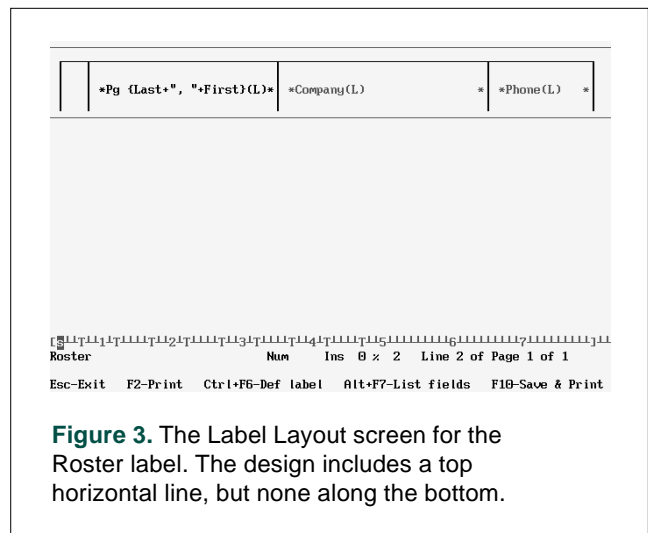


Figure 3. The Label Layout screen for the Roster label. The design includes a top horizontal line, but none along the bottom.

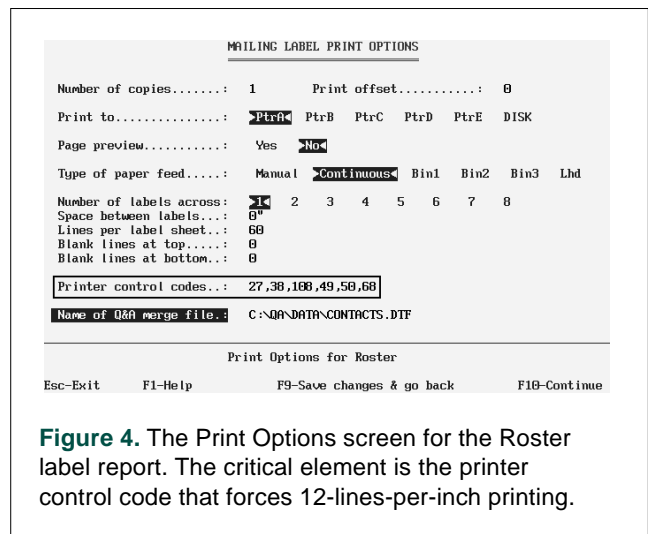


Figure 4. The Print Options screen for the Roster label report. The critical element is the printer control code that forces 12-lines-per-inch printing.

forces 16 lines-per-inch printing.

The only other modification is that the Figure 5 report includes a header and column headings. To add these, print the "labels" to disk, then display the resulting "document" in Write. Assign the smaller Line Printer font as the default, add a few carriage returns at the top to create some space, type in your header and column headings, then set the 16-lines-per-inch printer control code and landscape printer at the Print Options screen.

What about multiline entries?

Using the same techniques, you can create label reports with multiline entries. The sample report shown in Figure 6 is printed in portrait mode in the 12 cpi LaserJet Courier font. The double horizontal graphic line helps the eye separate the entries.

For the Figure 6 report, the label width is set to 96, and the label height is set to 6. The first line of the label is the double graphic line, followed by a blank line, the first row of fields, another blank line, the second row of fields, then a final blank line. The vertical graphic lines extend down from the top horizontal line through the blank lines as well as the merge field lines. The 12-lines-per-inch printer control code makes the lines and corners mesh smoothly.

Give it a whirl

You can use these techniques for printing all kinds of list-like reports—checklists, interview forms, physical inventory sheets, phone and employee lists, attendance rosters, and the like. Designs like these aren't just eye-pleasing—like any Q&A report, they're reusable. Once you've saved the design, you can run the report simply by selecting the label, then telling Q&A which

records to include and the sort you want. The only limitation is that you'll need to use a monospace font such as 10- or 12-cpi Courier, or 16-cpi Line Printer.

Tom Marcellus is editor of *The Quick Answer* and author of *PC World Q&A Bible*, published by IDG Books. His QuickClick Calendar Plus—a time- and activity-tracking database for Q&A 5.0—is available from Marble Publications, publisher of *The Quick Answer*.

[For more on using mailing labels for reports, see "Follow the Dotted Line to Improved Report Layouts" in the April 1995 issue, and "The Great Snaking Column Mystery" in the November 1992 issue.—T.M.]

Benson, Jeff Benson & Associates	Phone: 617-229-2924 Fax: 617-229-4322	168 Middlesex Turnpike Burlington MA 01803	Faxed Mailed
Bowen, John FirmSupport	Phone: 914-758-0916 Fax: 914-758-2211 2	Box 282A Red Hook NY 12571	Faxed Mailed
Clark, Fred Clark Enterprises	Phone: 209-292-0650 Fax: 209-292-1899	548 E. Lansing Way Fresno CA 93727	Faxed Mailed
Coughlin, Sean Alpha Software Corp.	Phone: 617-229-2924 Fax: 617-229-9199	168 Middlesex Turnpike Burlington MA 01803	Faxed Mailed
Davis, Diane Pittsburgh Plate & Glass	Phone: 412-561-5745 Fax: 412-783-2917	186 Morrison Dr. Pittsburgh PA 15216	Faxed Mailed
Elkes, Howard Elkes & Company	Phone: 818-906-7685 Fax: 818-895-8984	14106 Dickens St. Sherman Oaks CA 91423	Faxed Mailed
Fletcher, Gary Fletcher & Fletcher	Phone: 303-759-1258 Fax: 303-381-9011	18306 E. Mansfield Ave. Aurora CA 90013	Faxed Mailed
Hammond Hardy, Sandra Thronson Engineering	Phone: 713-588-8235 Fax: 713-901-6745	10323 Bell Gardens Houston TX 77041	Faxed Mailed
Holland, Joe SHL SystemHouse	Phone: 508-229-4897 Fax: 508-781-9835	313 Boston Post Rd. Marlboro MA 01752	Faxed Mailed
Hopkins, William Hopkins Solutions	Phone: 314-855-3256 Fax: 314-789-0166	Route 1, Box 319 Marble Hill MO 63764	Faxed Mailed
Horan, Jo DataBasics, Inc.	Phone: 713-723-6709 Fax: 713-781-1122	9806 Cliffwood Houston TX 77096	Faxed Mailed
Johnson, William Bon Micro Solutions	Phone: 603-437-6712 Fax: 603-352-9021	44 High St. #3 Derry NH 03038	Faxed Mailed
Li, Hua Richland Enterprises	Phone: 212-234-4322 Fax: 212-324-3211	2100 Shoreview Ct. W. Pittsburg CA 94565	Faxed Mailed
Magno, John Select Systems, Inc.	Phone: 508-664-9796 Fax: 508-548-9133	4898 N. Industrial Cir. Cleveland OH 41255	Faxed Mailed
Martin, Sherry Computers Without Fear	Phone: 508-548-9476 Fax: 508-548-9476	43 Gunning Point Rd. Falmouth MA 02540	Faxed Mailed

Figure 6. A multiline label report design like this can include lots of information per row.

Attendance Roster • Gemini Software Seminar • December 15, 1995				
NAME	COMPANY	PHONE	ADDRESS	NOTES
Benson, Jeff	Benson & Associates	617-229-2924	23 Overbrook Drive, Stamford CT 06906	
Bowen, John	FirmSupport	914-758-0916	Box 282A, RD0, Red Hook NY 12571	
Clark, Fred	Clark Enterprises	209-292-0650	20301 Westerly Rd., Poolesville MD 20837	
Coughlin, Sean	Alpha Software Corp.	617-229-2924	168 Middlesex Turnp, Burlington MA 01803	
Davis, Diane	Pittsburgh Plate & Glass	412-561-5745	186 Morrison Dr., Pittsburgh PA 15216	
Elkes, Howard	Elkes & Company	818-906-7685	14106 Dickens St., Sherman Oaks CA 91423	
Fletcher, Gary	Fletcher & Fletcher	303-759-1258	18306 E. Mansfield Ave., Aurora CA 90013	
Hammond Hardy, Sandra	Thronson Engineering	713-588-8235	10323 Bell Gardens, Houston TX 77041	
Holland, Joe	SHL SystemHouse	508-229-4897	313 Boston Post Rd., Marlboro MA 01752	
Hopkins, William	Hopkins Solutions	314-855-3256	Route 1, Box 316, Marble Hill MO 63764	
Horan, Jo	DataBasics, Inc.	713-723-6709	9806 Cliffwood, Houston TX 77096	
Johnson, William	Bon Micro Solutions	603-437-6712	44 High St. #3, Derry NH 03038	
Li, Hua	Richland Enterprises	212-234-4322	2100 Shoreview W. Pittsburg CA 94565	
Magno, John	Select Systems, Inc.	508-664-9796	488 N. Industrial Way, Cleveland OH 41255	
Martin, Sherry	Computers Without Fear	508-548-9476	43 Gunning Point Rd., Falmouth MA 02540	

Figure 5. You can use a landscape page and smaller line printer font to print more than 170 characters on a line.

Dress-up Your Output in Q&A for Windows

In addition to Columnar reports, Q&A for Windows boasts a Free-form report writer with a host of tools for graphically enhancing your output. All the label reports in this article can be created faster and with much more pizzazz—and with attractive proportional fonts—as Free-form reports in Q&A for Windows.

Q&A for Windows's label facility is no slouch, either. For example, you can place bitmap graphic images—the company logo, your photo, or clip-art—in your mailing label (or report header).

If the appearance of your reports or mailing labels is an issue, it might be worth having Q&A for Windows for that reason alone. The Interoperability Update available from Symantec lets you use your databases in both products, so you can continue to perform your data entry and data management tasks in Q&A for DOS, and turn to Q&A for Windows for those “state-of-the-art” reports and labels.

So, Where Do I Find Those Printer Control Codes?

Sometimes Q&A refuses to recognize printer control codes even though they're valid for the printer. The fault is in Q&A's printer drivers, which don't always support the codes I want to use.

Fortunately, the Q&A driver for the LaserJet 4 series supported the control codes I needed for the sample reports in this article. And it's likely that the Q&A drivers for the LaserJet 3 and 5 series printers—as well as for other printer makes—also support custom line spacing codes.

The manual that came with your printer will include a table (probably in an appendix) listing the features the printer supports and the software control codes that invoke them. To specify more or fewer lines per inch, locate the Vertical Line Spacing commands in the table, and use the relevant decimal control code. A typical LaserJet control code consists of a group of three-digit codes. When typing them in Q&A, you must separate each three-digit code by a comma, though you can drop any 0 (zero) that precedes a code. If Q&A prints the literal code, prints garbage, or if the code has no effect, it means you incorrectly typed the code or the printer driver you're using doesn't support it. (Be sure the Q&A printer driver you're using is designed for your printer.)

If you can't get Q&A to recognize a control code to turn on a printer feature, try using the printer's control panel. Your printer manual will tell you how.