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Ups & Downs—Reporting Changes Over Time

TOM MARCELLUS

Application in
ONLINE Edition

A Q&A database makes it a snap to record the increases and decreases in something over time. But designing reports to *summarize* those changes within a variable date range can be a tricky affair.

JUST recently I was asked to “experimentally” design a medical application to track certain blood factor changes in patients over time. The “factor” in this case was hemoglobin levels (the iron-containing respiratory pigment in red blood cells), but it could just as well have been some other medical factor such as body weight, blood pressure, or that baneful byproduct of too many Big Macs with fries—cholesterol.

The interesting aspect of the application wasn’t the routine recording of patient readings in simple database records, but reporting the long-term changes in the factor for any patient or group of patients.

The doctor might want to see the aggregate increase or decrease in the factor over a month, three months, six months, or more—a period that rarely coincided with the dates of the initial and most recent readings for any patient. Readings for patients A, B, and C might start months apart and be taken at different intervals (weekly, bi-weekly, monthly, depending on the patient). The medical facility wanted to be able to punch in a date range and get a report that showed the earliest and latest patient readings *within that date range only*, along with the increase or decrease between the two readings. Figure 1 is a sample report that shows the aggregate change in patient’s weights during a three-month period.

Earliest and latest

In my December 1996 article, “Reports that Show Only the Latest or Earliest Whatever,” I showed how to create a report that includes only the results of field health care providers’ *most recent* visits to clients’ homes. That report listed each provider’s clients, the date of the most recent visit to each one, the results of that visit, and the number of days since the previous visit. I also showed how the same basic report design could be used by a

sales manager to see, for any date range, the results of his salespeoples’ most recent contacts with their customers.

In the application I’m

Patient Weight Readings from 03-01-1998 to 05-31-1998						
Patient ID	First Reading in Date Range	Weight	Last Reading in Date Range	Weight	Elapsed Days	Weight Gain/Loss
0005	03-05-1998	130	05-12-1998	131	68	+1
0011	03-03-1998	129	04-15-1998	126	43	-3
0026	03-01-1998	125	04-05-1998	119	35	-6
0033	04-03-1998	122	05-10-1998	127	37	+5
0055	03-09-1998	142	05-31-1998	122	83	-20

Figure 1. A report that shows changes in patients’ weights between the dates specified in the report’s Retrieve Spec, which in this case was a three-month period between March 1 and May 31.

The Quick Answer

The Do-It-Yourself Guide to Q&A

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discussing now, the requirements are a bit different. In this case, it’s the earliest *as well as* the latest items of information within the date range that are needed in the report. Fortunately, this one turned out to be less complex than the previous one. Let’s start with the database design, followed by the report specs.

The database

The database for taking patient readings, a simple affair, is shown in Figure 2 on page 3. After the nurse takes a reading, he or she simply enters the Patient ID,

Continues on page 3

Letters

I followed your suggestion in the July 1999 issue (p. 12) and downloaded the 8514OEM.FON Windows screen font from www.quickanswer.com. I like this font and the screen size it produces when I'm running Q&A in a Window. There's only one problem. If any of the three available lines in an @Askuser or @Msgbox command are blank, this font puts a garbage character (the letter "a") on that line. I want to keep using this 10 x 20 screen font, but how do I get rid of that garbage character? —Robert Gomez

In the Program Spec, type a "space" between the pair of quote marks for any empty line in an @Msgbox or @Askuser command. The unwanted characters will disappear.
—Tom Marcellus

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Editor / Publisher
Tom Marcellus

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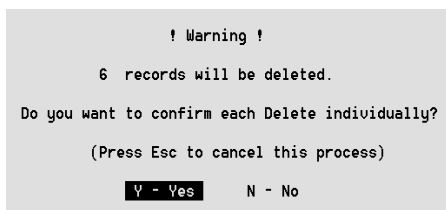
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Quick Tip A Quick Check for Duplicate Records

Over the years, *The Quick Answer* has presented a variety of techniques for finding duplicate records, verifying them as actual duplicates, removing them, and so on. When you suspect there might be some duplicate records in a database, here's a way to run a quick check to satisfy yourself that your database is duplicate-free.

First, make a backup copy of your database (just to be on the safe side), then follow these steps:

1. From the Main menu, select File / Remove, enter the name of the database, then select *Duplicate Records to ASCII*.
2. For the ASCII filename, use the name of the database with an ".ASC" filename extension, such as CONTACTS.ASC.
3. At the Duplicates Spec, type a "D" in the field(s) you want Q&A to analyse for duplicates, then press F10. A warning dialog box like the one shown below will appear if the database contains any records whose "D" fields are duplicated in other records.



4. Press Enter or Yes to view the duplicate records. (You definitely want to *confirm* each deletion.)
5. Press F10 to move through the records, writing down the unique identifier(s) for each one. (F10 tells Q&A, "Don't delete this record. Show me the next one;" whereas Shift-F10 deletes the record.)

That's all there is to it. If you accidentally told Q&A, "No, I don't want to confirm the deletions" at the warning dialog box, (as I did when I was preparing this!), then Q&A will delete any duplicate records from the database. But don't despair, you can easily re-import them as long as you initially selected "Remove duplicates to ASCII" and not just "Remove Duplicates." Here's how:

1. Select File / Utilities / Import / Standard ASCII.
2. For the ASCII filename, type the filename you specified earlier, such as *contacts.asc*.
3. Leave the Merge Spec blank and press F10.
4. Press F10 at the ASCII Options screen without making any changes to it.

Alec Mulvey, alec@keywordtraining.com

Reporting Changes. . .cont'd from page 1

the date and weight. When the record is saved, an on-record-exit program generates a unique Record ID, which is a combination of the Patient ID and date:

```
#100: Record ID = PatientID + @Replace(@Str(Date),"/","")
```

Accordingly, a test performed on Patient 0053 on August 15, 1999 would produce a Record ID of 005319990815. This unique key value (the field is Speedy) indicates two important things in a single string—*who* it was and *when* it was. Because the Patient ID is always four characters (four digits in this case) and the date string is always eight digits, you get a unique 12-character value for every record in the database.

Even if a reading doesn't get entered into the database until a later date (or if a nurse goes back at a later date to correct the Patient ID or date in a record) the Record ID value will still accurately reflect the who and when. (Thanks to John Dow for thoughtfully suggesting this added capability.) As you'll see, it's this unique record identifier that makes it possible for Q&A to isolate the *latest* record for each patient regardless of the date range entered at the report's Retrieve Spec. As for the *earliest* record in the date range for any patient, that's even easier.

The report

As you've probably guessed, report output depends primarily on a series of derived columns. The report's Retrieve Spec, as mentioned earlier, is variable. For example, the doctor or nurse might punch in a range like this to include the readings taken on all patients between March 1 and May 31, a three-month period:

```
Date: >=3/1/1999..<=5/31/1999
```

This date range will include all the records dated between the two dates, but the report's derived columns will isolate only the earliest and latest records within that range for each patient.

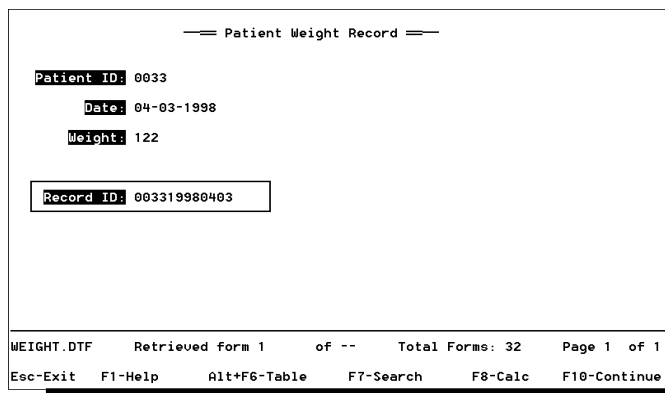


Figure 2. The Patient Weight database contains one record per reading. The fields supply patient identification, the date, weight, and a unique record identifier comprised of the Patient ID and Date.

Here's the Column/Sort Spec:

```
Patient ID: 1,AS,I
Date: 2,AS,I
Weight: 3,I
Record ID: 4,I
```

These specs tell Q&A to sort the report's output first on the Patient ID, then on the Date, and include the Weight and Record ID number. These columns are all invisible, though, because they're not to be printed—they're strictly for use by the derived columns.

Below, I show the 10 derived columns in the order in which they appear in the report design, followed by an explanation of what they do:

```
Heading: Copy Patient ID (Invisible)
Formula No. 1 #1
Column/Sort Spec: 100,I

Heading: Patient ID
Formula No. 2 @Text(#1<>#100, #1)
Column/Sort Spec: 20

Heading: First Reading!in Date Range
Formula No. 3 @Text(#1<>#100, #2)
Column/Sort Spec: 30,F(D)

Heading: Weight
Formula No. 4 @Text(#1<>#100, #3)
Column/Sort Spec: 40,F(JC)

Heading: Record No (Invisible)
Formula No. 5 @Maximum(#4, #1)
Column/Sort Spec: 45,I

Heading: Last Reading!in Date Range
Formula No. 6 @Text(#1<>#100,@XLu(@Fn, #45, "Record ID",
"Date"))
Column/Sort Spec: 50,F(D)

Heading: Weight
Formula No. 7 @Text(#1<>#100, @XLu(@Fn, #45, "Record
ID", "Weight"))
Column/Sort Spec: 55,F(JC)

Heading: # of Days!Between!Readings
Formula No. 8 @Text(#1<>#100, @Todate(#50) -
@Todate(#30))
Column/Sort Spec: 60,F(JR)

Heading: Gain or Loss (Invisible)
Formula No. 9 @Text(#1<>#100, #55-#40)
Column/Sort Spec: 65,I

Heading: Weight!Gain!/!Loss
Formula No. 10 @Select(#65 > 0, "+" + @Str(#65), #65)
Column/Sort Spec: 70,F(JR)
```

The first derived column makes a copy of the Patient ID and stores it in column 100, the last column in the report. What for? Well, you want Q&A to *evaluate* each and every patient record within the specified date range, but print only the first and last records for any patient in one line per patient. A key element in this process is knowing exactly when Q&A is about to start processing *the next* patient's records.

Q&A processes report columns from left to right, and the Patient ID is the first (leftmost) column (1,AS,I). Therefore, at the instant the Patient ID changes, all columns to the right of column 1 still contain data from

the *previous* patient's records, and column 100 still contains the previous patient's Patient ID. This gives you a way to *conditionally* trigger report calculations for all columns in between these two. As you'll see in the following columns, you're telling Q&A to perform various calculations only when column 1 doesn't equal column 100—that is, when the Patient ID has changed.

Derived column 2 uses the @Text function to *conditionally* print the Patient ID only when it changes. Many of the remaining derived columns use @Text in the same way also to conditionally print information from the records Q&A is processing.

Since the records in the retrieved range are sorted 2,AS on the Date field, when Q&A reaches Derived column 3, the record it's on can only be the first record for the Patient ID being processed. (No patient will have two weight readings on the same day.) So, as long as column 1 isn't equal to column 100—*Bingo!*—you've got the Date of the first reading and can print it. Derived column 4 then prints the Weight from that same record using the same conditional logic, and you're half-way there.

Derived column 5 is where things get interesting. Here, you have the formula, @Maximum(#4, #1). This tells Q&A to evaluate all the values in column 4 (the Record IDs) whenever column 1 (the Patient ID) has just changed, and pick the highest one. Well, the highest Record ID for the patient being processed will be from that patient's record containing the most recent date. (To make this clearer, you might want to review the earlier discussion on the structure of the Record ID Key value.)

Now that you've had Q&A isolate the highest Record ID for the patient, you can use it as the matching Key value in derived column 6's @XLookup to extract and print the Date from it. Derived column 7 does the same thing to retrieve the Weight from the same record.

Derived column 8 is optional. It calculates the number of elapsed days between the earliest and latest reading dates for the patient which, at this point, are in columns 30 and 50, respectively.

Derived column 9 calculates the difference between the weight of the earliest reading date and that of the latest reading date (columns 40 and 55, respectively). The result will be a minus value if the weight has decreased. For the sake of appearance, I wanted an increased weight to print with a plus sign. So I made this column invisible and used its result in the next and final derived column.

Derived column 10 uses @Select to format and print the result of derived column 9 depending on whether its value is positive or negative. If the value is positive, it's preceded by a plus ("+") sign. If it's negative, it's left as is with the minus sign intact.

Conclusion

If you're using Q&A 5.0, you can add another feature to this report—a dynamic report header that includes the variable date range of records in the report. For example, if you were running the report with a date range of March

through May 1999, you might want the header to look like this:

```
Patient Weight Readings from 03-01-1999 to 05-31-1999
```

To do this, you'll need two more derived columns and a couple of special codes in the report header. Derived columns 11 and 12, both invisible, should look like this:

```
Heading: Min Date
Formula No. 11 @Mid(@Minimum(#2),6,2) + "-" +
               @Rt(@Minimum(#2),2) + "-" +
               @Lt(@Minimum(#2),4)
Column/Sort Spec: 75,I
```

```
Heading: Max Date
Formula No. 12 @Mid(@Maximum(#2),6,2) + "-" +
               @Rt(@Maximum(#2),2) + "-" +
               @Lt(@Maximum(#2),4)
Column/Sort Spec: 80,I
```

These two columns store the single earliest and single latest date, respectively, of all the records Q&A has processed for the report, and formats them for printing in the mm-dd-yyyy format.

Next, you simply fill in the report's Header 1 line (at the Define Page screen) as follows, using French braces around the question marks and column numbers:

```
Patient Weight Readings from *Pg{?11}* to *Pg{?12}*
```

Just remember, though, that the dates in the header reflect the earliest and latest records that the Retrieve Spec found, not the starting and ending dates as they were typed at the Retrieve Spec.

And there you have it. As you've seen, several techniques that contribute to the desired overall results are at work in this report design. You're using the @Text function as a conditional tool to print only one line per Patient ID. You have the secondary ascending sort on the Date field, which easily isolates each patient's earliest record within the specified date range. You have the @Maximum report function isolating the highest (latest) Record ID for each patient, which you then use to @XLookup the latest Date and corresponding Weight reading. And finally, you have the @Select function perform an If-Then-Else to format a column's data.

Where else might a report design like this prove useful? In cases where:

- You want to print the data from only the earliest and latest, or lowest and highest or smallest and largest records for each *subject*. (In this case, the *subject* is patients within the range you specify.)
- You want the output to show one row per subject.
- The range (such as a date range) and which subjects to include can be easily specified at runtime using regular Retrieve Spec parameters.

Tom Marcellus is editor of *The Quick Answer*

Flashing, Beeping Conditional Messages

TOM MARCELLUS

Jar them out of their data entry comas with these eye-catching add-ons

HOPEFULLY, your data entry operators aren't falling asleep at the keyboard. But it's an all too common problem—people filling in the fields and saving your records for hours on end don't always stay as sharp and attentive as you need them to be.

Fortunately, Q&A provides a variety of tools to snag data entry goofs. You have your basic @Msg messages. There's the Restrict Values and Format Specs to trap out-of-range and offbeat values. You can pop-up a help box at an offending field. An XLookup to the same database can find out if the person or company is already there. The SE code in the Speed-Up Spec can warn that somebody who should *already* be in the database isn't.

Q&A 5.0 gives you even more goof-proofing tools such as @Color to change a field's color, @Msgbox to force the user to press Enter, and @Play to make the PC beep.

Personally, I like on-field-exit @Msg messages because they're "benignly" intrusive, and don't force the user to press any additional keys unless something actually needs to be corrected.

But not everyone doing data entry is "there" 100% of the time, and some typists are lightning fast. The message appears at the bottom of the screen and disappears with the next keystroke. It's too easily missed. I've tried various ways to get an @Msg message to flash on and off a few times then stay on to increase its attention-getting power. I've also tried to make text flash, or make the field flash in different colors. All, alas, to no avail.

Then, about a month ago, a Q&A database arrived by email from subscriber Ed McKenna (Global Data Group, 800-875-2291, xbrit61@aol.com). Normally, I don't like getting databases from people unless they do something *really* interesting or unusual. This one did both. I added a record to it, and the screen started flashing with both the field colors and text changing. It was one of those "Jeez—How does he do it?" things.

Ed's technique turned out to be adaptable to field text, field colors, @Msg messages, and even @Play. You can make one or all of the above flash on and off at a rate—and continue for any length of time—you choose.

For this article (and for Online Edition subscribers), I created five databases that demonstrate a variety of schemes using variations of Ed's technique. Four of these demo databases are for Q&A 5.0, and the last one is for Q&A 4.0.

Essential fields

Though Ed's programming isn't that complicated—it's a bit mystifying as to how it makes Q&A perform the magic. So I'll just give you the fields and programming and let you have at it. All the databases, except where noted, are for Q&A 5.0, have a white (light gray, actually) background, and contain the following eight labelless fields, formatted for the data types noted. All but the last field can be hidden and/or placed on a back screen page.

Field Name	Format	Program Spec Field ID number
F0001	T	#1000
F0002	H	#1005
F0003	N4	#1010
F0004	N4	#1015
F0005	N4	#1020
F0006	T	#1025
F0007	T	#1030
MsgField	T,JC	

Following are the demo database names, a brief synopsis of the flash-message/beep scheme produced, and the programming that does the trick.

FLASHER2.DTF—Flashing text field with a message line that flashes in counterpoint. (By *counterpoint*, I mean that when the text field is in its blank or *off* state, the message line is in the *on* state, flashing the message, "Press Esc to Continue.") In this program, as in the others, you can adjust the ".01" value to get a faster or slower rate.

```
<#1000: GOTO #1005

<#1005: if #1005 = "" Then
{ #1005 = @time; #1010 = #1005;#1015 = #1010;
  #1020 = #1010 +.8000; Goto #1020 }
  Else { #1015 = #1015 + .01; Goto #1020 }

<#1020: If #1015 = #1020 Or #1015 = #1020 +.01
Or #1015 = #1020 -.01 Then
{ #1020 = #1020 + .80;#1030 = #1025;
  If #1030 = "" then #1025 = "yes";
  If #1030 = "no" then #1025 = "yes";
  If #1030 = "yes" then #1025 = "no";
If #1025 = "yes" then { @Color(MsgField,14,7);
MsgField = "GENERATE A FLASHING MESSAGE";
@Msg(""); Goto #1000};

If #1025 = "no" then {@Color(MsgField,14,7);
MsgField = ""; @Msg("Press Esc to Continue");
Goto #1000 }} Else { #1015 = #1015 + .01; Goto #1000}
```

FLASHER3.DTF—Continuously flashing message line with beep. (In this database, only a portion of the message line flashes. The rest of the line doesn't change.)

```
<#1000: GOTO #1005

<#1005: If #1005 = "" Then
```

Continues on page 9



EDITED BY GORDON MEIGS
AND WILLIAM HALPERN



Removing Password Protection

If you know the password and want to remove all password protection from a database, how do you do it? I have a very old copy of Q&A with a library database containing more than 5,000 book records. I need to be able to use this database without the password. Unfortunately the user manual that came with Q&A is long gone. I want to keep using this database because a commercial library program costs more than \$3,000 and my school can't afford it. We are a rural district with just over 150 students in grades 7-12. Thank you very much.

Cecilia Baker via the Internet

In QA 4.0 and QA 5.0 for DOS, select File / Design / Secure a File, and enter the name of the database. (At this point, Q&A will prompt you to enter the administrator user name and password.) Then, select Assign Access Rights. At the List of Users/Groups screen, highlight each name, in turn, and press F3 to delete it. When all the names have been deleted, Q&A will display the message:
Note: Your database is not protected.

In Q&A for Windows, open the database. From the Select menu, choose Database Structure, then Security, Users & Groups. If you have users in the Unassigned Users group, click on each one, then click on Delete. Then, do the same for Administrators. Q&A will warn you about deleting these, but when all the names are gone, there will be no further warning about the database now being unprotected.

Disabling the Intelligent Assistant

Is there anyway to disable the Assistant choice on Q&A's Main menu? We have many users, some of whom are new employees. Often, one of them will "try out" the Intelligent Assistant (IA) and end up attaching it to a database. Our main database is already quite large and highly automated with programming and macros. The IA makes it terribly slow and this interferes with our productivity.

Renee, Horsham, Pennsylvania

One way to disable the IA is to create a custom replacement Main menu that does not have the Assistant as a choice. The problem with this, though, is that you cannot then have Alternate Program selections on the right side of the Main menu, and a "clever" user might figure out that pressing Shift-F2 and clearing macros will display the usual Q&A Main menu.

Here's a little item from the Q&A 4.0 for DOS User Guide, page 8-15:

Note: Once you have password protected a database, the Intelligent Assistant Teach function is available only to the database administrator.

What you can do for each database is add an Access Control form with a User ID and password you control, and give yourself full rights. Don't tell anyone (except another administrator) what it is. Then add another Access Control form that has all rights except the ability to assign passwords. (You can, of course—and you should—add other restrictions.) This second Access Control form can be a simple User ID, such as "A," and have no password. This way, it won't really slow anyone down. You can optionally use an autostart macro (in Q&A DOS) that will automatically "enter" this User ID for all users so they won't even be aware of it. The autostart macro, which must be named Alt-0 through Alt-9, simply contains the keystrokes *F6, A, Enter, Enter*. Assuming the autostart macro is Alt-1, the command line to start Q&A DOS would be this:

```
qa.com -m1
```

Getting Database Field Contents Into Write

I'm using Q&A 4.0 for DOS. What's the easiest way to get the contents of a database field into a Write document?

Robert Clardy, Pelzer, South Carolina

Unlike Q&A 5.0, Q&A 4.0 doesn't have its own internal clipboard you can use to copy and paste data/text with F11 and F12. In Q&A 4.0, the "easiest way" depends on



Stumped?

Send your Q&A questions to **@Help, The Quick Answer, Marble Publications, Inc., 1927A Harbor Blvd, Costa Mesa, CA 92627** or email to **mailbox@quickanswer.com**. Include your name, address, phone, and 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 aren't possible.

several things, most importantly the kind of information the field contains. If the field is formatted "T" for text, then it's pretty easy. But if it's formatted for anything else (such as numbers, dates, time, or money) it's not.

To copy the contents of a text field, press F6 to open the Field Editor, then press Ctrl-F5 (Q&A Write's *Copy to file* command). Highlight the text you want to copy, then press F10. Q&A will prompt you for a filename to save the text to. Now, in Write, you can either open the file you just saved or, if you want the text in another document, open that document, press F8, select Document / Insert, and select the file you just saved.

In all other types of database fields, F6 won't open the Field Editor, so the above method won't work. However, if you're running Q&A under Windows 95/98, you have another option. First, right-click on your desktop shortcut to Q&A, and select Properties. On the Misc tab, be sure Fast Pasting is *not* checked. Then, start Q&A. If Q&A is running in full screen mode, press Alt-Enter to put it into a Window. (You can click the Maximize button in the upper right corner of the window to make Q&A almost full screen, but still in a Window.) If the Toolbar is not displayed under the Title bar, click the icon in the upper left corner of the window, and click the Toolbar on. To the right of the font selection box, there are Mark, Copy, and Paste icons. Click Mark, move the mouse pointer to the beginning of the text you want to copy to Write, then click and hold the left mouse button and drag the pointer across the text to highlight it. Then, click the right mouse button (or press Enter) to copy the highlighted text to the Windows Clipboard. Exit the record, go to Write, move to where you want to insert the data, then click the Paste icon on the Toolbar.

If you want to get the contents of several fields into Write, you can design a mail-merge document or a File / Print Spec that includes those fields, and print to a disk file. In either case, Q&A will ask you to fill in a Retrieve Spec. Assuming you want the information from only one record at a time, you'd specify the record to print, then assign a filename for the output. You can then Get that document in Write. (It will be in ASCII format.)

If you find yourself copying the contents of database text fields to Write all the time, and you're running Q&A in Windows, you might want to check out WinClip for Q&A 4.0. With WinClip, you simply move to any database text field and press Ctrl-C to copy it to the Windows Clipboard. From there, you can paste the text into Q&A Write or most any Windows program. Information on WinClip is available at www.quickanswer.com.

Can't Print a Graphic in a Write Document

I want to print a Q&A 5.0 Write document that includes a photo. After scanning the photo and saving it in .PCX or .BMP format, I tried printing it using the GRAPH command—*graph filename.pcx* or *graph filename.bmp*. However, the image just won't print. Usually, the image area is blank

when the document emerges from the printer; sometimes there are a few scattered dots. I've tried it in Q&A 5.0 running on various Windows and DOS-only computers. I've tried it with HP6P and HP5L LaserJet printers. I've tried it with images scanned from two different scanners using three different scanning programs. I've tried reducing the size of the scanned images so the resulting files will be smaller. All these images print fine from a Windows word processor but not in Q&A. I'm out of ideas. Can you help?

Jan Pickett via the Internet

You would have saved yourself all that frustration if you had subscribed to *The Quick Answer* earlier. In the December 1998 issue, we point out that Q&A 5.0's *GRAPH bitmap file* command doesn't work as advertised. You can sometimes get small black-and-white (monochrome) images to print okay via the GRAPH command in Write, but the Q&A 5.0 utility that converts them to .BIN format often reverses the colors, prints a black "blotch," or prints nothing at all if the image isn't "just right" to begin with. (And nobody we know of has yet figured out what "just right" is.) In that and the subsequent January 1999 issue, we show how you *can* print bitmap images in your Write documents, reports, and elsewhere in Q&A for DOS with a handy third-party program. Not only does this program help you print graphic images in your Q&A output, you can use it to print custom graphical letterhead right along with your letters on plain paper, and even merge-print your Q&A data to complex business forms. It's called FORMagic from ProHelp Systems. It costs \$99 and requires an HP LaserJet II or later compatible printer. See the two *Quick Answer* issues mentioned earlier for more information.

Bill Halpern and Gordon Meigs own Professional Computer Technology Associates in Newtown, Pennsylvania, 215-598-8440, www.pcta-usa.com, email pcta@comcat.com.

Letters

Regarding your July 1999 article, "The Ultimate Applicaton Switcher"—what a wonderful database! I am busy implementing it on our network (trial phase). However, there is a problem. Every time you change modules, you need to re-enter your password. This is inconvenient. I have a workaround which is mediocre. Once the user is on the network (must enter password the first time), every module macro autoloads the user's password. But this has limitations if you want to change your password. Also, you need to write a separate macro for each user for each module. Can be done but it is cumbersome.

—Daniel Kirsh, South Africa

Sorting It All Out

MARK MYERS

When you need to produce an unusual sorting order for a report or other output, the easiest way to get it might be a specially programmed Sort field in the database.

FOR some reporting tasks, you might need to override Q&A's normal sorting criteria for a text or date field. For example, you might have a field that stores a value comprised of alphabetical characters and numerical digits, which you need to sort on letters before digits. A field might contain uppercase and lowercase letters, and you need to sort on the lowercase letters before their uppercase counterparts. Or, you might need to sort on calendar dates regardless of the year.

Such results aren't impossible, but might require an additional field in the database along with some highly specialized programming. The idea is to wind up with a field that will enable Q&A to sort the records the way you want. For example, if you wanted to sort a text field on letters of the alphabet before digits, you'd need programming that places a character indicator in front of each character in the field. In the following example, the original field entries on the left would be changed as shown in order to sort on letters first:

```
TRV094 0T0R0V101914
783RE$ 1718130R0E1$
4TJ342 140T0J131412
```

In this case, a "0" is inserted before each letter and a "1" before each number or punctuation character. An ascending sort on these text fields will sort in a "letters first" manner. (Note that this "letters first" technique is not a "numbers last" technique. Once the letters are moved to the top of the sort, all other characters will be sorted normally.)

Having the report itself calculate these sorting values at runtime is tricky and can eat up a lot of derived columns. This wouldn't be the case for sorting by calendar date independent of the year, however, since you could simply use a derived column formula like this:

```
@Month(#1) * 100 + @Dom(#1)
```

But for other kinds of sorting, the "in-report" method takes up space because every character from the original field must be evaluated and added to a new field (column entry) with its precursor—the single digit representing the character type. Without loops or If-Then statements in reports, it can be extremely difficult and bulky to generate

these special sort values in derived columns.

It's usually easier to add a field and programming. I recommend bundling the calculation with the on-record-exit program. This way, you'll know you have the correct sort value whenever you run a report (unless the relevant fields are somehow changed by a Post or Mass Update).

The sort field value must be built character by character, so you'll need a subroutine that runs one cycle for every character in the original text field. In addition, the sort field must be initialized to the empty state and built from scratch. In order to initialize the sort field and build its new value through a loop, the programming must somehow prevent repeated initialization. Probably the best way to do this is to initialize in one field and call the loop via a Gosub command:

```
SortField = "";
Gosub BuildSort

If @len(SortField) = 2 * @len(TextField) then return;
If ((@mid(TextField,@len(SortField)/2+1,1)>64 and
@mid(TextField,@len(SortField)/2+1,1)<91) or
(@mid(TextField,@len(SortField)/2+1,1)>96 and
@mid(TextField,@len(SortField)/2+1,1)<123)) then
SortField=SortField + "0" else SortField=SortField + "1";
SortField=SortField + @mid(TextField,@len(SortField)/
2)+1,1); Goto BuildSort
```

The first component above is self-explanatory. It initializes SortField and calls the subroutine. In the second component, the first line tests the length of SortField. If it's double the length of TextField, the subroutine is terminated. (SortField has been built correctly.) The second line tests the ASCII value of the current character in TextField. If it's a letter, a "0" is added to the end of SortField. If it's not a letter, a "1" is added to the end of SortField. Next, the current character is added to the end of SortField. Finally, the loop recycles.

This logic can be used to sort on most any criteria. For some sorting needs, you might need to increase the complexity of the program in order to achieve the desired result. For example, if you wanted to sort lowercase letters before uppercase letters, and all letters before numbers, you'd have three different classes of characters to account for. What's more, you'd have to decide how to handle the remaining characters in the ASCII table

Once you've built the the SortField value in your reports, sorting your report becomes a no-brainer. Simply include SortField as an invisible column and sort on it, and include TextField as the next highest column number and don't sort on it.

Mark Meyers is a programmer/analyst at Bluegreen Corporation in Boca Raton, Florida. He can be reached at lofi@hotmail.com.

Flashing...continued from page 5

```

{ #1005 = @Time;#1010 = #1005;
  #1015 = #1010;#1020 = #1010 +.8000;
  Goto #1020} Else
{ #1015 = #1015 + .01; Goto #1020 }

<#1020: If #1015 = #1020 Or #1015 = #1020 +.01
Or #1015 = #1020 -.01 Then
{ #1020 = #1020 + .80; #1030 = #1025;
  If #1030 = "" then #1025 = "yes";
  If #1030 = "no" then #1025 = "yes";
  If #1030 = "yes" then #1025 = "no";
If #1025 = "yes" Then
{ @Msg("CUSTOMER OVER LIMIT! (Press Esc to cancel
message)"); @Play("Click"); Goto #1000};

If #1025 = "no" Then
{ @Msg("                (Press Esc to cancel
message)");
  Goto #1000}} Else { #1015 = #1015 + .01; Goto #1000 }

```

FLASHER4.DTF—Message line flashes and PC beeps three times only, then the message stays displayed in the usual way (the next keystroke makes it disappear).

```

<#1000: #1000 = #1000 + 1;
  If #1000 < 230 then Goto #1005
  Else { Clear(#1000..#1030); STOP }

<#1005: if #1005 = ""
Then {#1005 = @Time; #1010 = #1005;
#1015 = #1010; #1020 = #1010 +.8000; Goto #1020 }
Else { #1015 = #1015 + .01; Goto #1020 }

<#1020: If #1015 = #1020 Or #1015 = #1020 +.01
Or #1015 = #1020 -.01 Then
{ #1020 = #1020 + .80; #1030 = #1025;
  If #1030 = "" Then #1025 = "yes";
  If #1030 = "no" Then #1025 = "yes";
  If #1030 = "yes" Then #1025 = "no";
If #1025 = "yes" Then
{ @Msg("Customer Over Limit! Get the Boss!");
@Play("Click"); Goto #1000};
If #1025 = "no" Then { @Msg(""); Goto #1000 } }
Else { #1015 = #1015 + .01; Goto #1000 }

```

FLASHER6.DTF—Flashing reverse-colored message field and counterpoint flashing message line, plus beep. Three iterations, then stops and returns to offending field. Timer, Counter, and custom messages for three fields (FollowUp Date, Est Order Date, and Est Comm Factor) are in Lookup Table, making them easily editable.

Additional fields required:

```

FollowUp Date: D
Est Order Date: D
Est Comm Factor: N

```

F0008—Format = Text, Field ID = #1035
F0001—Change formatting to N for numbers

FLASHER6.DTF's Lookup Table:

KEY	1
Timer	1
Counter	260
Field Names	Messages
FollowUp Date	Invalid Follow-up Date. Please Re-enter.
Est Order Date	This Date is earlier than follow-up date!
Est Comm Factor	Commission % too high! Please re-enter

Programming:

```

FollowUp Date:
> If FollowUp Date <= @Date Or FollowUp Date > (@Date+90)
  Then { #1035 = "FollowUp Date"; Goto #1000 }
  Else { Clear(MsgField);
        @Color(MsgField, 7,7); CNext }

Est Order Date: > If Est Order Date < FollowUp Date
  Then { #1035 = "Est Order Date"; Goto #1000 }
  Else { Clear(MsgField);
        @Color(MsgField, 7,7); CNext }

Est Comm Factor: > If Est Comm Factor > 20
  Then { #1035 = "Est Comm Factor"; Goto #1000 }
  Else { Clear(MsgField);
        @Color(MsgField, 7,7); CNext }

SalesPerson: < Goto FollowUp Date

< #1000: #1000 = #1000 + 1;
  If #1000 < @Lu("Counter",1) then Goto #1005
  Else { Clear(#1000..#1030);
        @Color(MsgField,7,7);
        Goto @Field(#1035) }

< #1005: If #1005 = "" Then
{ #1005 = @Time; #1010 = #1005; #1015 = #1010;
#1020 = #1010 +.8000; Goto #1020 }
Else
{ #1015 = #1015 + .01; Goto #1020 }

< #1020: if #1015 = #1020 Or #1015 = #1020 +.01
Or #1015 = #1020 -.01
Then { #1020 = #1020 + @Lu("Timer",1);
      #1030 = #1025;
      If #1030 = "" then #1025 = "yes";
      If #1030 = "no" then #1025 = "yes";
      If #1030 = "yes" then #1025 = "no";
If #1025 = "yes" then {
  @Color(MsgField,14,0);
  MsgField = "";
  @Msg(@Lu(#1035,1));
  @Play("Click"); Goto #1000 } ;
If #1025 = "no" then {
  @Color(MsgField,14,0);
  MsgField =@Lu(#1035, 1);
  @Msg(""); Goto #1000 } }
Else { #1015 = #1015 + .01; Goto #1000 }

```

FLASHQA4.DTF—This Q&A 4.0 database generates a flashing message field and counterpoint flashing message line for four loops, then quits and leaves message line displayed. Requires an additional Follow-Up Date field formatted for dates. If the follow-up date is earlier than, the same as, or more than 90 days after the current date, the warning system is invoked. Timer and Counter values looked up from the Lookup Table.

FLASHQA4.DTF's Lookup Table:

KEY	1
Timer	1
Counter	460

Programming:

```

Follow-up Date:
> If FU Date <= @Date Or FU Date > (@Date + 90)
  Then Goto #1000
  Else { Clear(MsgField);
        Goto Consultant ID }

< #1000: #1000 = #1000 + 1;
  If #1000 < @Lu("Counter",1) then Goto #1005
  Else { Clear(#1000..#1030);

```

Concludes on page 12

Save Typing—Auto-Fill Your Fax Number Field

ALEC MULVEY



Once Q&A knows the phone number, chances are it can fill most of the fax number field, too

MOST individuals and companies who use Q&A have one or more databases for storing names, addresses, phone numbers, and the like. Here's a technique that will save time during data-entry, particularly in an environment where phone and fax numbers are routinely entered.

All customers have a phone number. Most have a fax number. When there's a fax number, it's often the same as the phone number except for the last few digits. A real time- and keystroke-saver would be to have Q&A automatically copy, into the fax number field, that portion of the phone number that's likely to be the same as the fax number, leaving you to type only the final digits.

At first glance, having Q&A simply copy part or all of the telephone number into the fax number field might seem like a good approach. But what if there's no fax number? Having to then manually remove the unwanted fax number reduces the benefit. Here's a better way.

You enter the telephone number in the usual way. Here in the UK our telephone numbers tend to have variable formats. Here are three typical ones (I'll cover US and Canadian numbers later.):

```
01344-884 111
0181-247 1866
020-8247 1866
```

With any of these formats, the local part of the number is the last group of three or four digits. Some users prefer spaces as separators, others prefer hyphens—there's really no standard. I prefer a hyphen first, with a space separating the basic number from the local portion.

An on-field-exit program in the telephone number field copies the number into the fax number field, with the last bit chopped off. The "last bit," in this case, is the local part of the number after the final separator, be it a space, a hyphen, or whatever.

```
Tel: > If @Add And Tel <>" " And Fax = ""
Then { Fax = @Left(Tel, @Instr(@Repllas(Tel, " ", "%"),
"%") -1) };
@Macro("End & Space") }
```

Execution of the program is first conditional on being in Add Data mode. This is optional. In this case, the final separator character is a space. If you prefer a hyphen, change that portion of the program to this:

```
(&Repllas(Tel, "-", "%"))
```

The macro named "End & Space" consists of just two keystrokes, End and Right Arrow, like this:

```
<begdef><nokey><name>" End & Space"<vidon><end><rgt>
<enddef>
```

For Q&A 4.0 or Q&A for Windows, omit the @Macro command as it isn't supported in these versions.

The second part is the on-field-exit program in the fax number field:

```
Fax:
> If Fax = @Left(Tel, @Instr(@Repllas(Tel, " ", "%"),
"%") -1)
Then Clear(Fax)
```

Note that although on-field-exit programming is used in the Tel and Fax fields, you could instead use on-field-entry programming in Fax and the next field (or a suitable combination of the alternatives) to get the same result.

How it works

What you want in the Fax field is all but the final portion of the telephone number. You have to tell Q&A what you want to *keep*, not what to discard. In this case, it's the telephone number up to the final space. You can find the position of the first space by using the @Instr function, but there's no function to find the last incidence of something. So the trick is to use the @Repllas (replace last) function to change the final space, hyphen or whatever, to a character that will be unique in the string—I use the percent sign (%)—and then use @Instr to find its position. You then take the leftmost characters up to "%," minus one. The macro (QA 5.0 only) places the cursor in a position ready for you to enter the final digits of the fax number. With QA 4.0, you'll need to press the End key manually to move to the end of the partial fax number.

Programming in the next field simply deletes the number in Fax if it is unchanged. This way, you don't have to press any additional keys if there's no fax number.

When there *is* a fax number, and it's the same as the phone number up to the last few digits, then all you have to do is type those few remaining digits.

US and Canadian numbers

If you're working with North American phone numbers, chances are you're entering them consistently in one of the following common formats:

Concludes on page 12

Play Windows Sound Files from your Q&A Databases

5.0

Application in
ONLINE Edition

A. D. VELPER

This neat-o “plug-’n-play” companion shows yet another way to make Q&A 5.0 interact with Windows programs

If you’re running Q&A 5.0 under Windows 95/98, I bet you’d kill to be able to auto-play Windows .wav and .mid sound files on demand or conditionally from the database record you’re working on.

Forget @Play—unless you *like* the wonkey noises produced by that microscopic speaker hidden somewhere inside your computer. Sure, @Play can beep, click and shriek. And if you’ve got nothing better to do, you can always program it to play kid’s stuff like “Charge!” or “Happy Birthday”*

@Play is okay for wusses, but I’m talking about something much more potent here. I mean, just think how impressed your coworkers will be when that piddling five-dollar sales order you just entered blasts a side-splitting guffaw over your powerful multimedia speakers! (If @Add and Order Amount < 20 Then....)

How about an audio Help message booming “IDIOT!” from the cubicle when somebody screws up a record? (If Birthdate > @Date Then....)

Or, you might want everyone within 100 yards to appreciate how bored you are filling in those patient records. Each time you start one, why not have a few bars of Russia’s state funeral dirge solemnly echo from your workstation out into the waiting room? (If @Add and @UserID = “Sally” Then....)

I’m telling you, people will be clamoring to have features like these in the Q&A databases they work with. And before long, the place will liven up to where it’ll almost be fun spending a third of your life there.

Every database needs a little character

I try to set aside a little quality time each day to work on important database capabilities like these. In this case, @Play just didn’t pack enough wallop. I wanted to make witches cackle, dogs bark, bombs go off, bodies moan and burp, fugues fugue—all without interrupting what I was doing in Q&A. And with the glut of terrific (and free!) .wav and .mid files out there on the World Wide Web, I just couldn’t pass up the golden opportunity. Now you don’t have to, either.

To familiarize yourself with what it takes to auto-play sound files in Q&A, design a little database that demonstrates the technique. Call it Player.dtf. Add a field named **SoundFile**, then a field just below it named, uh, **Field2**.

Program SoundFile like this. (Substitute your own paths and and filenames):

```
> SoundFile = @Userselect("Alarm.wav,Bark.wav," +
"Laugh.wav,Explode.wav,Fugue.mid");
```

```
If @Right(SoundFile,3) = "wav" Then
  @Msg(@Shell(
    "c:\windows\sndrec32.exe /play /close " +
    "c:\sndscape\samples\wave\" + SoundFile));
```

```
If @Right(SoundFile,3) = "mid" Then
  @Msg(@Shell(
    "c:\windows\mplayer.exe /play /close " +
    "c:\sndscape\samples\midi\" + SoundFile));
```

```
@Msg("");
```

```
REM "
Change paths to where your Wav and
Midi players and files are located
```

```
Windows Media Player plays both
Wav and Midi files, though Sound
Recorder may play wav files faster
```

```
To find .wav or .mid files, use
Start / Find / Files or Folders
and search for *.wav or *.mid
```

```
Add filenames to the Userselect list"
```

Add the following program to the SoundFile field in the Navigation Spec:

```
< @Msg("Press Enter for sound files list")
```

As you exit the SoundFile field, up pops a handy-dandy list of your personal favorites. Simply click on the sound file you want to hear. Q&A will launch the appropriate Windows sound file player (on Windows 95 PC’s, this will probably be Sndrec32.exe for .wav files and Mplayer.exe for .mid files), play the selected file, close the player, then return you to where you left off.

Once you get how it works, you can add sound file-playing capabilities to any Q&A 5.0 database. Just ditch the Userselect list and use If-Then programming in any field to conditionally play the appropriate sound file.

With the new Millennium fast approaching and the US still ranked as the world’s #1 debtor nation, I think it’s high time we got advanced productivity tools like this into workplaces everywhere.

* See “Play That Tune!” in the August 1996 issue to find out how to compose simple @Play tunes and program Q&A to auto-play them when certain conditions in the database are present.

A.D. Velper is currently working on a voice-recognition module for hands-off Q&A data entry. He can be reached at mailbox@quickanswer.com

Flashing...continued from page 9

```
Goto FU Date }

< #1005: If #1005 = ""
Then { #1005 = @Time;
#1010 = #1005;
#1015 = #1010;
#1020 = #1010 +.8000;
Goto #1020 }
Else { #1015 = #1015 + .01; Goto #1020 }

< #1020: if #1015 = #1020 Or #1015 = #1020 +.01
Or #1015 = #1020 -.01
Then { #1020 = #1020 + @Lu("Timer",1);
#1030 = #1025;
If #1030 = "" then #1025 = "yes";
If #1030 = "no" then #1025 = "yes";
If #1030 = "yes" then #1025 = "no";
If #1025 = "yes" then {
MsgField = "";
@Msg("Invalid Follow-up Date! Please re-enter");
Goto #1000 };
If #1025 = "no" then {
MsgField ="Invalid Follow-up Date! Please re-enter";
@Msg(""); Goto #1000 } }
Else { #1015 = #1015 + .01; Goto #1000 }
```

Of course, these few little sample databases can't demonstrate all the different ways you can make things flash, change color, beep, and so on. But you get the idea. Have fun!

Fax Numbers...continued from page 10

949-722-9919
(949) 722-9919
(949)-722-9919

For any of these formats, you can use the following programs in the Tel and Fax fields:

```
Tel: > If @Add And Tel <>" " And Fax = ""
Then { Fax = @Left(Tel, @Instr(@Repllas(Tel, "-", "%"),
"%")); @Macro("End") }
```

```
Fax: > If Fax = @Left(Tel, @Instr(@Repllas(Tel, "-", "%"),
"%")) Then Clear(Fax)
```

In this case, you don't want the Right Arrow keystroke in the macro, just the End keystroke, so you can name the macro "End" and edit it accordingly.

These shortcuts won't work if you're using field templates for your phone and fax fields.

Alec Mulvey owns Keyword Training & Consultancy in Ascot, near London, England, and has been building Q&A applications and training clients for nine years. Keyword Training is the UK distributor for the International English edition of Q&A and John Dow's Utilities. Fax +44-1344-884-111, alec@keywordtraining.com, www.keywordtraining.com.

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