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# T·H·E Quick Answer

The independent monthly guide to Q&A expertise

## Follow the Dotted Line to Improved Report Layouts

Making your reports easier to follow is an unending challenge. For reports that serve as lists, you can improve their look and readability by using dot leaders to connect the entries in one column to the corresponding entries in another.

By Tom Marcellus



OPEN most phone books and you'll notice a dotted line between the name (or in some books the name and address) and the phone number. The dotted line (called a dot leader) guides your eyes to the phone number. If you design reports that simply list things, such as a telephone directory or a price list, you can make them easier to read by adding dot leaders.

The examples I'll show illustrate how to design a telephone directory with dot leaders between names and phone numbers. (See Figure 1.) The first version produces a phone list in two parallel columns with the entries sorted horizontally across the page, like mailing labels. To get Q&A to do this, you'll use a specially designed mailing label format.

The second version is a standard columnar report with "snaking" or "newspaper" columns, where the entries are sorted vertically down the first

column and continue at the top of the second column on the same page, like a phone book. Which version you use depends on your needs.

### The database

To keep things simple, I'll illustrate the techniques using a sample database containing the following four fields:

- First: #1
- Last: #2
- Phone: #3
- Dept: #4

The field ID numbers from the Program Spec follow the field names. As you'll see, certain Q&A limitations make it necessary to use field ID numbers instead of field names.

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## The Quick Answer

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*The Quick Answer* (ISSN1052-3820) is published monthly (12 times per year) by Pinnacle Publishing, Inc., 18000 72nd Avenue South, Kent, WA 98032. Cost of domestic subscriptions: 12 issues, \$79.00; 24 issues, \$142.00. Outside the U.S.: 12 issues, \$99.00; 24 issues, \$172.00. Single copy price: \$10.00; outside the U.S., \$12.50. All funds must be in U.S. currency. Back issues are available upon request, for the same price as a single copy; multiple-copy discounts are available.

For European newsletter orders, contact: Tomalin Associates, The Old Bakery, High Street, Great Bardfield, Essex CM7 4RF, United Kingdom  
 Phone: +44 (0)371 811299; fax: +44 (0)371 811283  
 12 issues: £69; 24 issues: £109

Second-class postage paid at Kent, WA and additional entry points. USPS#006941.  
 POSTMASTER: Send address changes to *The Quick Answer*, PO Box 888, Kent, WA 98035-0888.

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For Q&A technical support, call Symantec: 503-465-8600.

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Volume 6, Issue 4

# README.1ST

UPGRADES for Q&A for DOS and Q&A for Windows are still in the pipeline and appear to be getting closer. Though Symantec in Cupertino, California is as tight-lipped as ever about the venture (and has been known to summarily drop projects even in advanced stages of development), there are just too many signs and too much activity to deny that “something wonderful is about to happen.”

Official upgrade feature lists originating from as far away as Symantec’s facility in Dublin, Ireland are winding up in unofficial hands. I’m looking at a recent Q&A upgrade list prepared by a Symantec product engineer there that contains 20-some new features. Terms such as *powerful*, *more relational-like*, and *added versatility* spring to mind. The German-language Q&A for DOS upgrade is due to appear any day now. I’m reluctant to say more at this point out of concern that the plug might be pulled or that the new release will be available everywhere except in the country where Symantec is headquartered.

It’s still a game of wait-and-see.

While we’re waiting, we can work on making our reports easier to follow. For reports that serve as lists, such as phone directories or price lists, you can improve their readability by adding dot leaders (like a phone book) to connect the entries in one column to the corresponding entries in another. I’ll show you a variety of ways to do it.

If your business requires advance employee scheduling, a Q&A database can help you keep tabs on who’s assigned to work when, as well as help you anticipate labor costs and get valuable payroll information. **Bill Halpern** shows you how to build an employee scheduling system you can modify to meet your needs. He includes a couple of those “impossible” reports for which he and his partner Gordon Meigs have become legendary.

This issue also contains a feast of *QuickTips* and answers to reader questions, on topics ranging from suppressing report columns and adding a “private” field to your data entry form (without password protecting the database) to auto-updating related records in another database.

*Bon appétit!*

**Tom Marcellus**  
*Editor*

*The Quick Answer* is looking for tips, tricks, and application techniques that solve problems and make Q&A easier to work with. If you have found a way to work smarter with Q&A, submit your tips or article (and a biographical sketch) on disk in Q&A Write for DOS or Windows, WordPerfect for DOS, or Microsoft Word for Windows. Enclose a printout—and a daytime phone number.

Mail your submission to The Editor, *The Quick Answer*, PO Box 888, Kent, WA 98035-0888. Honoraria are paid upon publication.







This produces the following format:

Thurman, Wayne (Sales)

- The expression then concatenates the preceding name and department string with the result of the @Text expression, giving you this:

Thurman, Wayne (Sales).....

- Finally, the phone number (field #3) is tacked on, giving you this:

Thurman, Wayne (Sales).....213-985-6179

Because the names and departments are different lengths, the trick is to have Q&A calculate the number of dots required to connect them to the phone numbers so they'll align left. To do this, I've assigned a value of 35 to the @Text function and subtracted from that the combined length (in characters) of the last name, the first name, and the department. As Q&A processes the record, if the sum of the lengths of these three values turns out to be, say, 25 the @Text function subtracts 25 from 35 and prints 10 dots. You can adjust the 35 to print more or fewer dots, but you'll need to keep it in the 30 to 40 range depending on the lengths of the names and departments and the physical page dimensions.

When you've typed in the programming expression as shown, press F2 for the Print Options screen and make the following settings:

- Set the Space between labels to 0.
- Set the Number of labels across to 2.
- Set the Number of lines per label sheet to 66 to print approximately 132 names and phone numbers on a page in two columns. If you want more space (more leading) between the rows, set the Number of lines per label sheet to a lower number, such as 50 or 60. If you want to cram more entries on a page (less leading) set it to a higher number, such as 75 or 80.
- Set the Print offset to 5 to begin with. You can increase or decrease this setting in order to center the list on the page. (Use Page Preview to get a rough idea of how the page will look at various offset values.)
- Type in the path and name of the pertinent database on the Name of Q&A merge file line.

With your Print Options set, press F10 for the Retrieve Spec. You can leave the Retrieve Spec blank to select all the records in the database, or you can type in the retrieval parameter to select, for example, just the people in the sales department.

Press F8 for the Sort Spec, type 1AS in the last name field, and 2AS in the first name field. Finally, press F10 to print the report. You'll get a horizontally sorted layout that looks like the top of Figure 1.

### A snaking column list

To produce a two-column phone list sorted vertically (like a phone book), you'll need to start with a columnar report and finish by printing the report to disk, calling it up in Write as a document, and printing it out using Write's multicolumn print option. Using the same sample database, here's the Column Sort Spec for the Phone List report:

```
First: 1,I
Last: 2,I
Phone: 3,I
Dept: 4,I
```

For the sake of simplicity, I've numbered the columns in the same order as the Program Spec field IDs in the earlier example. The columns are made invisible with the I command. Here's the single derived column:

```
Heading: \
Formula: #2+", "#1+" ("+#4+")"+
        @Text(35-@Len(#2+#1+#4),".")+#3
Column Spec: 5,AS,HS(\ )
```

The derived column is the only column that prints and the expression used in its formula is the same as the one used for the mailing label report. The optional "\ " command on the Heading and Column Spec lines suppresses the column heading along with the dashed separator line that prints beneath it.

After you've filled out the column specs, press F10 for Print Options, and then press F8 to define your page. Set your page width and right margin to 85, set your other margins to 0, and set your page length to a value higher than the number of entries in the report. This way, Q&A won't break the report into pages when you print it to disk.

```
*Pg {#2+", "#1+" ("+#4+")"+@Text(35-@Len(#2+#1+#4),".")+#3}*
```

**Figure 3.** The programming expression typed into the label box.





Press F9 to return to the Print Options screen. Set the report to print to disk, and justify the report body left. Press F10 and assign a name to the resulting disk file.

### Convert the report to a two-column format

The report you just printed to disk is a one-column layout. The next step is to convert it to a two-column layout. For this you need to treat the report as a Write document.

From the Write menu, select Get, type in the disk file's name, and press Enter to bring it onto the Type/Edit screen. Press Ctrl-F9 for the Font Assignments screen and make a small monospaced font, such as Line Printer, your default font. Press F10 to return to the document screen.

Press Ctrl-F6 to define the page. Set the page width and right margin at 140. Set your other margins to 0. Set the page length between 55 (more leading for fewer entries per page) and 80 (tighter leading for more entries per page).

Press F10 and F2 for the Print Options screen, set the Number of columns to 2, set Page Preview to Yes if you want to see what the page will look like, and press F10 to print. If the report prints too far to the left on the page, return to the Print Options screen, enter a value between 1 and 10 on the Print offset line, and print the report again.

If the gap between the two columns (called the gutter) is too large, you can reduce it at Write's Global Editing Options screen.

So there you have it—three ways to print attractive and easy-to-read multicolumn lists. Once you've become familiar with the tools and techniques to achieve these feats, you can perform all sorts of useful tricks with your output.

*Tom Marcellus is editor of The Quick Answer, and the author of PC World Q&A Bible, published by IDG Books, and The Quick Answer Focus special report on monthly billing statements, published by Pinnacle Publishing.*

## Create a Simplified Dot Leader Report

The two sample telephone lists I've shown include dot leaders that extend from the end of the name and department to the beginning of the phone number. You can create a simplified dot leader report, such as the one shown in Figure 4, with the leader extending only to the end of each column. By minimizing the space between the report columns (at the Report Global Format Options screen), the dots will connect the column entries except for the single space between the columns.

Suppose the Company and Contact fields are both 30 characters wide, and you want to print a contact list

with dot leaders showing the company name, person to contact, and phone number. You can use the following Column/Sort Spec and two derived columns to get the report shown in Figure 4:

```
Company: 1,I
Contact: 3,I
Phone: 5

Heading: Company
Formula: #1+@Text(30-@Len(#1),".")
Column Spec: 2,AS
```

```
Heading: Contact
Formula: #3+@Text(30-@Len(#3),".")
Column Spec: 4
```

If you don't know the widths of the database fields, you can replace the fixed 30 in the derived column @Text functions with the variable @Width function. The following derived column formula subtracts the length of field #1's value from the field's width and fills the remaining character spaces with dots:

```
Formula: #1+@Text(@Width(#1)-@Len(#1),".")
```

Should you want a different leader character—a dash, for example—you can replace the period. (You can choose an ASCII graphic character, if you like.) Q&A will use whatever character you specify to connect the entries.

Company	Contact	Phone
Acme Paper.....	Forrest Hagerstrom.....	213-785-3433
Berkeley Supply.....	John Smith.....	415-233-7833
Bleary Optometry.....	Harry Squints.....	313-673-8766
Capital Management Group.....	Joe Dokes.....	714-433-8977
Cassidy Co.....	Jane Amanson.....	301-325-7888
DAC Inc.....	Ed Sims.....	213-675-7788
Granada Productions Inc.....	Rose Myer.....	213-788-6733
IBM.....	Hartha Rayes.....	415-761-8977
Nevada Power and Light.....	Jim Ford.....	702-344-4387
TRW Inc.....	Rosemary Rothschild.....	212-788-7866

**Figure 4.** A portion of a simplified columnar report with dot leaders.





## QUICKTIP

# Save Time When Updating Related Records

DOS

Q&A won't let you add records to a database and have related records in another database updated simultaneously. Here's how I worked around this limitation.

I use an accounts payable database (AP.DTF) that includes vendor name and address data, in addition to multiple general ledger account number and amount fields. With this database, I can record a payment to a

vendor along with the check number, and break the payment down into several general ledger expense accounts.

I also maintain a vendor information database (VENDOR.DTF) that includes vendor name and address data, along with the general ledger expense accounts to which payments to this vendor normally apply.

When entering payments in AP.DTF, I use the vendor code to lookup the vendor's name, address, and general ledger account information from VENDOR.DTF. This process went smoothly until I had to pay a new vendor or some existing vendor's address or other basic information changed. At this point, I had to quit AP, switch to VENDOR, add or edit the information, and then switch back to AP to continue. I decided to create a shortcut.

I added two new fields to the AP database: New Vendor and Changed Info. During AP data entry, I type an X in the New Vendor field if it's a new vendor, or an X in the Changed Info field for an address or other change. I then type in the new or changed information in the AP record.

After the AP session, I update the VENDOR file using the Xs in these two new fields as retrieval parameters.

For the AP records where the New Vendor field is checked, I use Q&A's Copy feature along with a Merge Spec to create new prefilled records in the VENDOR file.

For the AP records where the Changed Info field is checked, I use Q&A's Posting feature to update the related VENDOR records with the changed information.

I then run a Mass Update to clear the two fields in the AP database so the same records can't be copied or posted again.

Of course, I use a macro to automate the process. It's designed to perform these steps.

To create new VENDOR records, do the following:

1. Run Copy from the File menu (from AP to VENDOR).
2. Use a saved Retrieve Spec that includes the AP records with an X in the New Vendor field.
3. Use a saved Merge Spec.

To update existing VENDOR records, do the following:

4. Run Post from the File menu (from AP to VENDOR).
5. Use a saved Retrieve Spec that includes the AP records with an X in the Changed Info field.
6. Use a saved Batch Posting Spec. The VENDOR records are now up to date with any address or other changes.

To clear the New Vendor and Changed Info fields, do the following:

7. Run Mass Update from the File menu.
8. Use a saved Retrieve Spec that includes the AP records with an X in either the New Vendor or Changed Info field.
9. Use a saved Update Spec that blanks both fields.

Now, when entering payments, I don't have to switch back and forth between the two databases. I let Q&A do the work for me after the session.

*John Kell, Schofield, Wisconsin*

## QUICKTIP

# Drawing Straight Lines

WIN

When drawing lines on a form, you can restrict the line to horizontal, vertical, or 45 degrees by holding the Shift key down while dragging the line.

*David Dvorin, Phoenix Solutions  
Belle Mead, New Jersey*





*Edited by Dave Reid*

## Suppress Report Columns



**Q** I designed a Q&A report to place the totals of a group of records on the same line as the name of the group. To do this, I used the technique described in “Create Attractive

Summary Reports” in the July 1993 issue, but it didn’t work as well as I had hoped. The totals appear on the same line as the group name, but Q&A still prints the individual group members on the subsequent lines. Thankfully, the total line for each member is suppressed, but how can I get rid of their names?

*Norman Zabb  
West Palm Beach, Florida*

**A** It sounds like you’ve followed the instructions in the article but you’ve missed a step. The only columns you want to leave visible in your report are the total columns, along with any columns that define the groups, such as Department Name. If you still get a column of names or individual salaries, they need to be made invisible. Simply add a comma and an *I* to the Column/Sort Spec for those columns you want to remove. The rest of the report won’t be affected.

## Search for Non-Dates in Date Fields



**Q** I use Q&A 4.0 to track incoming shipments to my office. When I order a product, I create a record that identifies the Shipper and the Ship Date. I also have a Date Received field, which I like to fill with Not Yet until the shipment arrives. I don’t mind that Not Yet isn’t a date and that I have to press Enter twice to get Q&A to accept it. The trouble comes when I try to retrieve records with *Not Yet* in the Date Received field—Q&A won’t let me do it. Any suggestions?

*Grant Beech  
San Jose, California*

**A** Q&A expects to see actual dates in fields formatted for dates and doesn’t let you use text values as retrieval parameters unless you override the restriction with a special retrieval code. If *Not Yet* is the only text value in the Date Received field, you can use the following Retrieve Spec parameter:

Date Received /..

The /.. code tells Q&A that the value you’re searching on isn’t properly formatted for the field, and Q&A will retrieve all the records containing a non-date value in the Date Received field. If you use a variety of text values in the Date Received field, such as *Not Yet*, *Lost*, and *Returned*, and you want to search them individually, limit your retrieval parameter to the specific value, like this:

Date Received ]Not Yet

The right bracket tells Q&A to treat the retrieval as if Date Received were a text field. You can use this approach with each of the text values to retrieve only the records that contain the value you’re looking for.

## Print One Page of a Lengthy Report



**Q** I often print a 25- to 30-page report in Q&A 4.0. After printing the report, I read through it before distributing it. Sometimes I spot an error, or perhaps an address needs to be changed. I’d like to correct the error and then reprint just the corrected page. Unlike the word processor, I can’t specify which page I want to print. Is there anything I can do?

*Virginia Meyer  
St. Cloud, Minnesota*

**A** You can’t select which report pages to print because Q&A compiles and prints the entire report based on the records you’ve included at the Retrieve Spec. However, if your records are sorted by a unique value, such as a client ID number, you can print the report again by retrieving just the records on the page with the corrected error. Simply note which clients are the first and last on the page, and enter their IDs at the Retrieve Spec for the same report, like this:

Client Number: >=23045..<=23102

Because you haven’t changed the Column/Sort Spec, the selected records should fill the corrected page just as they did in the original report. Be aware, though, that you’ll need to manually control the page number when printing a corrected page because Q&A will think it’s page one of a new report. To do this, you can type the page number in the report header or footer—wherever the page numbers appear in the rest of the report.





## Solve XLookup Problem



**Q** I use Q&A to track customers and invoices, and I'd like to use the last four digits of the customer's phone number as the customer identifier. The following statement in my invoice file is intended to look up the customer's name on the four-digit number in field #70:

```
XLookup("Client", #70, @Right("Phone",4),
"Name", #80)
```

However, I get the error message, *Cannot find external key field: hone*. I don't understand what's going on.

*Ken Olsen  
Mesa, Arizona*

**A** The problem is the statement's third parameter, @Right("Phone",4), which isn't a valid external key field name. Moreover, because the values in the external key field are indexed, Q&A requires a match on the whole value, not just its rightmost four digits. The error message indicates what's gone wrong. Q&A is executing the @Right statement on the *word* Phone, the rightmost four characters of which are *hone*. So, Q&A looks for an external key field named *hone*. Because no such field exists, the XLookup fails. To solve the problem, add a Speedy field to your customer file and program it to return the last four digits of the phone number. Make it the external key field in the XLookup statement, and you'll be in business.

## Converting Documents to WordPerfect



**Q** We need to convert documents between Q&A 4.0 and WordPerfect 5.1 and 6.0b for DOS and WordPerfect 6.1 for Windows. Is there a trick we don't know about?

*John Avers  
Monticello, Indiana*

**A** Q&A converts Write documents to WordPerfect 5.0 and 5.1 for DOS formats—they're on the Write / Utilities / Export menu. Select WordPerfect and then select version 5.1. Specify the document you want to export and assign a new name to the converted document. Though you can't export to other versions of WordPerfect, those versions will probably let you open documents from earlier versions of the same program. Check your WordPerfect 6.0b for DOS and

6.1 for Windows documentation to see if they're able to open WordPerfect 5.1 for DOS documents. Chances are they will.

## Fix Blank Lines in Address Blocks



**Q** I use Q&A Write for Windows to mail merge letters and envelopes with data from a Q&A database. I noticed that when a record has no company name, Q&A leaves a blank line in the printed output. After checking the manual, I added the Line Break (Shift-Enter) command to separate the address lines. The letters now print without any blank lines; however, the problem persists in the envelopes. What gives?

*Bill Syrios  
Eugene, Oregon*

**A** I suspect that when you corrected your merge letter by inserting the line breaks, you didn't do the same for the envelope. You can edit the existing envelope to add the line breaks (as you did in the document) by choosing Edit Envelope from the Tools menu. When creating a new mail merge document, type the address block with line breaks the first time. When you design the envelope, select the correctly typed address block, and choose Create Envelope from the Tools menu. The address on the envelope will then include the proper line breaks.

## Automate Cursor Navigation



**Q** I use a database to record transactions. The operator enters individual transactions in fields in an area near the top of the form and then transcribes the data into fields in a log area on subsequent pages. The log area is made up of 38 fields to store the information transcribed from the upper-area fields. When the operator finishes entering a transaction in the upper area, I'd like Q&A to automatically move the cursor to the next available line in the log area. How can I do this?

*Rick Elias  
Brooklyn, New York*

**A** I suggest you add a field near the bottom of the form to hold a line counter. Program it so that when the operator exits the last field in the upper area, Q&A executes the program in the counter field to place the cursor in the next available empty line in the log area. Use a program such as this in the last field of the upper area:





```
>Gosub Counter; Goto @("Date"+Counter)
```

The program begins by executing the program in the Counter field and then moves the cursor to the Date field referenced by the Counter field. (The program assumes that the 38 Date fields are named Date1 through Date38. To change your field names to match these, use the Field Names Spec.) The Counter field program determines the next available blank line as follows:

```
<If Counter = "" Then Counter = 1;
If @("Date"+@Str(Counter-1)) = "" AND Counter > 1
Then {
    Counter = Counter - 1;
    Goto Counter
};
If @("Date"+@Str(Counter)) = ""
Then Return
Else {
    Counter = Counter + 1;
    Goto Counter
}
```

The first If-Then statement initializes the blank Counter field. The second If-Then statement checks to see if the previous line in the log area is blank. If it is, the program decrements the Counter and loops back to Counter to check again. (This case isn't likely to occur, but it makes the program more robust because it helps prevent skipped lines if the counter field somehow gets set too high.) The final If-Then-Else statement checks the Date field for the current line and, if it's blank, returns control to the

upper area. But if the Date field isn't blank, it increments Counter and loops back to Counter.

You might be able to take advantage of similar programming to automatically transcribe and fill-in the pertinent line in the log area, which might prove a more productive long-term solution.

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Have a nagging question? Send it to **@Help, The Quick Answer, PO Box 888, Kent, WA 98035-0888** or fax to 206-251-5057. 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

### See Your Forms for a Change



Q&A/Windows default data entry forms can be hard on the eyes for three reasons:

- The field labels and data appear in the same font, sometimes making it hard to differentiate between the two.
- The font size can be too small, forcing you to strain to see your data.
- The fields can be too close to each other, compounding the problem.

You can make your data entry forms easier to see and work with by making a few of quick changes.

First, add more "white space" between the fields on the form. Click on the Select menu, click on *Design input forms*, and choose the form you want to

work with. Start with the fields at the bottom of the form. Click on a field to select it, press Shift, and click on its label. You can now work with the field and its label as if they were a single object. Click and drag the field and label to a new position farther away from the surrounding fields. Do the same for the other fields and labels until you've achieved enough "white space" between the fields to make the form visually appealing.

Next, assign a larger and bolder font to your data values to make them distinctive. If they're in the default 8 point regular font, make them 10 point boldface. To do this, click on a field (the information blank, not the label) to select it, click on the Format menu, click on Font, click on Bold in the Font Style column, click on 10 in the Size column, and then click OK. Do the same for each field in turn.

When you're finished, your field labels and data, and the overall form, will be easier to read.

*Tom Marcellus*





# Create an Employee Scheduling System

If your business requires advance employee scheduling, Q&A makes it a snap to keep tabs on who's assigned to work when, and helps you predict labor costs and get valuable payroll information, to boot.

By William Halpern



A large retail bakery asked me to design a flexible and easy-to-use employee scheduling system. With minimal additional work, I was able to include hourly and weekly timekeeping and budgeting capabilities in the application as well.

The application called for two databases and a couple of key reports. One of the reports, a portion of which is shown in Figure 1, is posted at the workplace to show employees their hourly schedules for the week. Another report (see Figure 2) provides the client with a summary of weekly scheduling. I'll describe the databases and reports that make up the system. (The report designs are particularly instructive in that they required rather sophisticated derived column techniques to achieve the layout the client wanted.) An application such as this could be used by a retail outlet, a rental agency, a restaurant, a repair shop, and so forth—wherever employee work schedules can vary from week to week.

## Scheduling database

The main database is the employee scheduling file, named SCHEDULE.DTF. Figure 3 shows a typical SCHEDULE record, and Figure 4 shows the form

layout. The form includes separate sections for hours scheduled and hours worked. Many of SCHEDULE's fields don't include field labels, and the columnar field arrangement for in and out times and total hours makes it easy to enter and view the data. Each weekday In and Out field is formatted for time values in the military style, and each daily Total field is formatted numbers.

To make data entry flow logically, form navigation commands in the Navigation Spec ensure that the cursor moves vertically down the daily columns, allowing both the In and Out times to be filled in for the day. The commands then move the cursor to the subsequent day.

Scheduled Daily Hour Totals by Dept For Week of October 17, 1994

Dept	Monday Dept Hrs	Tues Dept Hrs	Wed Dept Hrs	Thurs Dept Hrs	Fri Dept Hrs	Sat Dept Hrs	Sun Dept Hrs	Tot Dept Hrs
300	8	8	8	8	8	8	8	32
400	9	15	14	5	15	7	8	65
Total:	17.00	23.00	14.00	13.00	23.00	7.00	8.00	97.00

Figure 2. Portion of the summary report of scheduled hours by department. It looks like a crosstab, but it's a columnar report.

Page 1 Scheduled Weekly Hours for Week of October 17, 1994

Dept	Name Emp Numb Week	Monday In/Out Total	Tues In/Out Total	Wed In/Out Total	Thurs In/Out Total	Fri In/Out Total	Sat In/Out Total	Sun In/Out Total	Emp Tot Hrs
300	MARK ACKERMAN 003001 1994/10/17	6:00 14:00 8	8:00 13:00 8	8:00 14:00 8	6:00 14:00 8	5:00 13:00 8	8:00 8:00 0	8:00 8:00 0	32.00
Department Total									32.00
400	MUNZIA BADALAMENTI 004003 1994/10/17	5:00 1 8	8:00 8 8	9:00 8 8	8:00 8 8	8:00 7 8	5:00 12:00 7	8:00 8:00 0	32.00
	ALFONSO GASPARRO 004027 1994/10/17	1:00 9:00 8	6:00 13:00 7	12:00 18:00 6	9:00 14:00 5	9:00 16:00 7	8:00 8:00 0	8:00 8:00 0	33.00
Department Total									65.00
Total:									97.00

Figure 1. Portion of a weekly employee schedule, showing each employee's starting and quitting times, with totals by employee and department.

TERMINI BROTHERS BAKERY  
EMPLOYEE SCHEDULING SYSTEM  
WEEK OF: Sep 5, 1994

Employee Number: 002015 Employee Name: ROBERT DEETZ  
Employee Dept: 01-200 Pay Rate: \$7.25

		Hours Scheduled						
		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
IN		12:00	8:00	8:00	11:00	12:00		5:00
OUT		16:00	17:00	16:00	18:00	18:00		12:00
TOTAL		4.000	9.000	5.000	6.000	6.000	0.000	7.000
Total Scheduled Hours		31.000						
Total Scheduled Wages		\$224.75						
		Hours Worked						
IN		12:45	8:00	11:15	11:45			5:00
OUT		16:00	16:45	16:00	18:20			12:00
TOTAL		3.250	8.750	4.750	6.583	0.000		7.000
Total Hours Worked		30.333						
Total Gross Wages		\$219.91						

Figure 3. Typical employee scheduling record.





## Employee database

To complement the application and to enable cost budgeting and payroll calculations, I needed a database to store employee information. (See Figure 5.) The Payroll Number field, which is the employee's ID, must be Speedy and Unique. The Start, Max, and Current Salary fields store the employee's starting, maximum, and current pay rates.

The SCHEDULE database's programming and reports are what make the application easy to use. The programming performs operations and calculations specific to my client's needs, so I'll follow the programming statements with an explanation of what each one accomplishes. You can then make whatever programming modifications are appropriate for your system:

```

Week of: >#10:
If #10="" Then{
  If @Dow$(@Date)="Monday" Then #10=@Date+7;
  If @Dow$(@Date)="Tuesday" Then #10=@Date+6;
  If @Dow$(@Date)="Wednesday" Then #10=@Date+5;
  If @Dow$(@Date)="Thursday" Then #10=@Date+4;
  If @Dow$(@Date)="Friday" Then #10=@Date+3;
  If @Dow$(@Date)="Saturday" Then #10=@Date+2;
  If @Dow$(@Date)="Sunday" Then #10=@Date+1}

Employee Number: >#20:
If #20="" Then {@Msg("This Field Requires a Value
- Please Enter");
  Goto #20}; If #30="" Then {
  #30=@Xlu("Employee",#20,"Pay Num","First Name")
  + " "+
  @Xlu("Employee",#20,"Pay Num","Last Name");
  Xlu("Employee",#20,"Pay Num","Str/Dept",#40,
  "Current Salary", #50)};
If @Error Then {@Msg("This Employee Number Is Incorrect
- Please re-Enter"); Goto #20}

Employee Name: <#30: cnext
Employee Dept: <#40: cnext
Pay Rate: <#50:cnext

```

Assign the following seven field ID numbers to the In fields in the Hours Scheduled section of the form (Monday through Sunday, respectively):

#60, #70, #80, #90, #100, #110, #120

**TERMINI BROTHERS BAKERY  
EMPLOYEE SCHEDULING SYSTEM**

WEEK OF: >

Employee Number: > Employee Name: >

Employee Dept: > Pay Rate: >

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	
IN	<	<	<	<	<	<	<	
OUT	<	<	<	<	<	<	<	
TOTAL	<	<	<	<	<	<	<	
Total Scheduled Hours<	>						Total Scheduled Wages<	>

Hours Worked

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	
IN	<	<	<	<	<	<	<	
OUT	<	<	<	<	<	<	<	
TOTAL	<	<	<	<	<	<	<	
Total Hours Worked<	>						Total Gross Wages<	>

Figure 4. Employee scheduling form layout.

Assign the following seven field ID numbers to the Out fields in the Hours Scheduled section of the form (Monday through Sunday, respectively):

#61, #71, #81, #91, #101, #111, #121

Assign the following seven field numbers and programs to the Total hours fields in the Hours Scheduled section of the form (Monday through Sunday, respectively):

```

#62=(#61-#60)/60
#72=(#71-#70)/60
#82=(#81-#80)/60
#92=(#91-#90)/60
#102=(#101-#100)/60
#112=(#111-#110)/60
#122=(#121-#120)/60

```

Here's the formula for Total Scheduled Hours:

```
#130=@Sum(#62,#72,#82,#92,#102,#112,#122)
```

Here's the formula for Total Scheduled Wages:

```
#140=#130*#50
```

The weekly schedule is prepared during the week previous to the effective week, and the programming is designed to automate the data entry. Accordingly, the first statement in the Week Of field checks to see what day of the week the current day is, and sets Week Of to the date of the following Monday. Programming execution takes place on field exit only if the Week Of field is empty. You can also make simple program modifications to create a two-week advance schedule, begin the work week on Sunday, and so forth.

The program in the Employee Number field looks up the employee's name, department, and current pay rate from the related EMPLOYEE record on entry of a valid employee ID. To speed data entry and avoid errors, you can use a Restricted Values list

**TERMINI BROTHERS BAKERY  
EMPLOYEE DATABASE**

PCTA UER 090394.A Date Updated

First Name: WILLIAM MI: J. Last Name: HALE

Address: 51 SHERRY RD

City: NEW HOPE State: PA Zip: 18940

Home Phone: 968-1137

Emerg Phone: 969-0901

Date of Birth: Apr 4, 1954

Soc Sec Num: 155-35-2559

Payroll Num: 004040 Str/Dept: 01-000

Date of Emp: Jan 1, 1992 Next Increase Date: Jan 1, 1995

Title: COMPUTER CONSULTANT Month of Perf Eval: JANUARY

Start Salary: \$70.00 Current Rating: EXEC

Max Salary: \$125.00 Prior Rating: EXEC

Current Salary: \$86.00 2nd Prior Rating: EXEC

Date Left:

Figure 5. Typical employee record.





in this field to display employee names and ID numbers.

Because of the sensitive nature of the data in the EMPLOYEE file, you'll probably want to password protect it, preventing unauthorized users from accessing it. If you password protect EMPLOYEE, you must then set an XLookup password for SCHEDULE to allow SCHEDULE's programming to perform XLookups to EMPLOYEE. You can do this via the File / Design / Security menu. If the person who prepares the weekly schedule is authorized to access the EMPLOYEE file, you can use that person's User ID and password.

The programs in the total hours fields for Monday through Sunday subtract the starting time from the ending time and divide the difference in minutes by 60 to return the number of hours scheduled for each day.

The program for the Total Scheduled Hours field simply adds the daily hours totals. The program in the Total Scheduled Wages field multiplies the total hours by the employee's hourly rate and is helpful for estimating labor costs for the coming week.

You can use the same programming for the fields in the Hours Worked section of the form (the bottom half of the form) to calculate the actual worked hours and the actual gross pay.

### The employee schedule report

The real power of the SCHEDULE database is in the informative reports it makes possible. The key to the employee scheduling report in Figure 1 is in using derived columns to make it look like a schedule rather than a bunch of columns.

To design the report, choose Report from the Main menu, and then choose Design/redesign a report for the SCHEDULE database. Name the

report Employee Weekly Schedule, and confirm that it will be a columnar report.

For now, leave the report Retrieve Spec blank, and press F10 to display the Column/Sort Spec. Type in the specs for each column as shown in Figure 6. The I command included in each column's spec tells Q&A to make the column invisible. This way, you can use the data in the derived columns that I'll show you next.

With the Column/Sort Spec completed, press F8 to display the derived column screen. Type in the Headings, Formulas, and Column Specs as follows (some of the formulas are shown here on two lines for space reasons):

Heading: Spaces  
Formula: @Txt(25, " ")  
Column Spec: 1,I

Heading: 25:Name!Emp Numb!Week  
Formula: @Str(#38)+#1+@Str(#36)+#1+@Str(#99)  
Column Spec: 39

Heading: Dept  
Formula: @Rt(#30,3)  
Column Spec:35,AS,STL(Dept Tot)

Heading: 6:Monday!In/Out!Total  
Formula: @Str(#40)+#1+@Str(#41)+#1+@Str(#42)  
          +#1+@Txt(6,"-")  
Column Spec: 65

Heading: 6:Tues!In/Out!Total  
Formula: @Str(#50)+#1+@Str(#51)+#1+@Str(#52)  
          +#1+@Txt(6,"-")  
Column Spec: 70

Heading: 6:Wed!In/Out!Total  
Formula: @Str(#80)+#1+@Str(#81)+#1+@Str(#82)

## Use Automatic Calculation for SCHEDULE's Programming

SCHEDULE's programming is simple enough that you can use Automatic Calculation mode and avoid on-field-entry and on-field-exit commands. Automatic Calculation mode will execute the programming statements whenever there's a change to any field. This means the programs are recalculated when you enter the starting time for any day. The totals fields may even show negative numbers, but Q&A will fill the them with the correct numbers once you've entered the ending times. To set the database to Automatic Calculation mode, display a record in either Search/Update or Add Data, press Shift-F8, set the Calculation mode to Automatic, and press F10. You only have to do this once.

TERMINI BROTHERS BAKERY EMPLOYEE SCHEDULING SYSTEM WEEK OF: 99,AS,I							
Employee Number: 36,I	Employee Name: 38,I			Type:			
Employee Dept: 38,I	Pay Rate:						
Hours Scheduled							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
IN	40,I	58,I	80,I	90,I	100,I	110,I	120,I
OUT	41,I	51,I	81,I	91,I	101,I	111,I	121,I
TOTAL	42,I	52,I	82,I	92,I	102,I	112,I	122,I
Total Scheduled Hours *See Below				Total Scheduled Wages			
Hours Worked							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
IN							
OUT							
TOTAL							
Total Hours Worked				Total Gross Wages			
*138,HkEmp!Tot!Hrs),ST,T,F(NZ)							

**Figure 6.** Column/Sort Spec for the Employee Weekly Schedule report. Figure 1 shows the output you can expect.





```

      + #1 + @Txt(6, "-")
Column Spec: 85

Heading: 6:Thurs!In/Out!Total
Formula: @Str(#90) + #1 + @Str(#91) + #1 + @Str(#92)
      + #1 + @Txt(6, "-")
Column Spec: 95

Heading: 6:Fri!In/Out!Total
Formula: @Str(#100) + #1 + @Str(#101) + #1 + @Str(#102)
      + #1 + @Txt(6, "-")
Column Spec: 105

Heading: 6:Sat!In/Out!Total
Formula: @Str(#110) + #1 + @Str(#111) + #1 + @Str(#112)
      + #1 + @Txt(6, "-")
Column Spec: 115

Heading: 6:Sun!In/Out!Total
Formula: @Str(#120) + #1 + @Str(#121) + #1 + @Str(#122)
      + #1 + @Txt(6, "-")
Column Spec: 125

```

The first derived column is invisible. Its formula creates a string of 25 spaces, which force the information in any subsequent columns that reference it to wrap properly. This way, you can force the Employee Name, Employee Number, and Week Of fields (#38, #36, and #99) into a single column by restricting the column's width and adding the spaces. In other words, by placing the first derived column (#1) between the three fields (see the second derived column for an example of this), you can make a MARK ACKERMAN 003001 1994/10/17 string appear in the report like this:

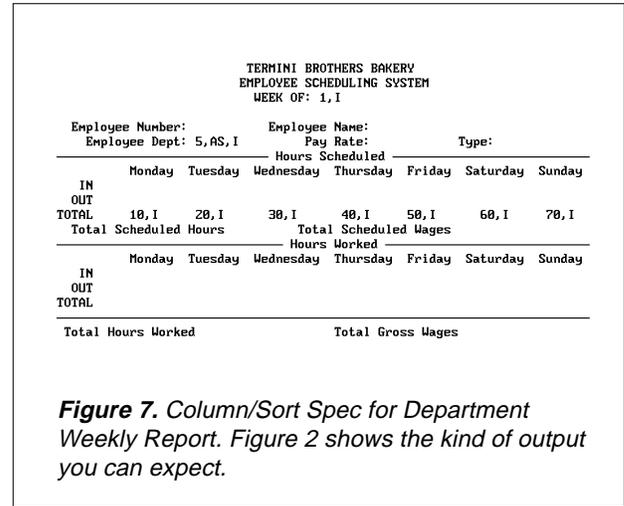
```

MARK ACKERMAN
003001
1994/10/17

```

Remember to fix the column width at 25 by making the column Heading start with 25:.

The department numbers the client uses are a combination of the employee's department and ID



number. (See Figure 3.) The third derived column causes Q&A to return the rightmost three characters of the department number and sort the report by department. You can omit this derived column if you're using a straight department number, but be sure to change the Column/Sort spec for the Department field to 30,AS,STL(Department Total). Don't forget the STL(Department Total) because this is what changes the subtotal label from Total to Department Total to avoid confusion when reading the report.

The fourth through tenth derived columns print the daily work schedules in a vertical format that includes the starting time, the ending time, and the scheduled hours, like this:

```

12:00
18:00
6
-----

```

## QUICKTIP

### Print a Q&A for DOS Screen in Windows



Although you can print out most Q&A/DOS specs, sometimes it's handier to perform a screen print by pressing the Print Screen key. When running Q&A/DOS under Windows, however, pressing the Print Screen key

copies the screen to the Windows Clipboard instead of printing it out. To print a hard copy of the active window, press Shift-Print Screen instead.

*Alec Mulvey, Ascot, England*





The first derived column is again referenced in each of these subsequent derived columns whose widths are restricted to six characters. This way, the starting time, the ending time, and the total hours for each day can be combined into a string and then wrapped onto separate lines. To get the dashed line under each set of numbers, the formulas reference the first derived column and add six dashes to the end of each string via the `+#1+@Txt(6,"-")` part of the expression.

### The schedule summary report

Now, let's look at the design elements of the schedule summary report shown in Figure 2. The approach is the same as in the previous report because you want the data presented in a custom, easy-to-read layout. Accordingly, you'll need to place most of the data in derived columns and use the `@Total` command to have Q&A summarize it.

Design a new report named Department Weekly Schedule and tell Q&A that it's a columnar report. For the moment, leave the Retrieve Spec blank, and press F10 to display the Column/Sort Spec. Type in the specs for each of the columns using Figure 7 as your guide.

Next, create the requisite derived columns to format and summarize the data. Type in the Headings, Formulas, and Column Specs as shown here:

```
Heading: Dept
Formula: @Rt(#5,3)
Column Spec: 8,AS

Heading: Dupd Dep
Formula: #8
Column Spec: 300,I

Heading: 8:Monday!Dept!Hrs
Formula: @Txt(#300<>#8,@Tot(#10,#8))
Column Spec: 15,F(JC),T

Heading: 8:Tues!Dept!Hrs
Formula: @Txt(#300<>#8,@Tot(#20,#8))
Column Spec: 25,F(JC),T

Heading: 8:Wed!Dept!Hrs
Formula: @Txt(#300<>#8,@Tot(#30,#8))
Column Spec: 35,F(JC),T

Heading: 8:Thurs!Dept!Hrs
Formula: @Txt(#300<>#8,@Tot(#40,#8))
Column Spec: 45,F(JC),T

Heading: 8:Fri!Dept!Hrs
Formula: @Txt(#300<>#8,@Tot(#50,#8))
Column Spec: 55,F(JC),T

Heading: 8:Sat!Dept!Hrs
Formula: @Txt(#300<>#8,@Tot(#60,#8))
Column Spec: 65,F(JC),T

Heading: 8:Sun!Dept!Hrs
Formula: @Txt(#300<>#8,@Tot(#70,#8))
Column Spec: 75,F(JC),T

Heading: Tot!Dept!Hrs
Formula: @Txt(#300<>#8,@Sum(#15,#25,#35,
#45,#55,#65,#75))
Column Spec: 200,T
```

The first column performs the same function as the Department column in the previous report. If you have a straightforward Department field in your database, you can omit this derived column and use an 8,AS Column/Sort spec in the Department field.

The key to this summary report is in the second derived column. It's a hidden copy of the Department column and the final column in the report. By having Q&A compare the value in this column with the value in column 8, you can control when to print or calculate other derived columns in the report. The `@Txt(#300<>#8,command)` formula tells Q&A to execute *command* only when the value in the duplicate department column (#300) doesn't match the value in the Department column (#8). Because Q&A processes column entries from left to right, the expression will be true for each record where the department differs from the previously processed record, and Q&A will execute the conditional `@Total` command. This illustrates the importance of sorting the report by department.

The third through ninth derived columns calculate the hours total for each day of the week based on a break in Department and print them only when the Department changes.

The 10th derived column sums the daily derived columns and prints the total each time the Department changes. Keeping in mind Q&A's report calculation sequence, it's vital that the column numbers are in the proper order.

When printing these reports, be sure to confirm that you want to make temporary changes so you can enter the appropriate date in the Week Of field at the Retrieve Spec.

### Conclusion

You now have the elements of an employee scheduling system that includes timekeeping and budgeting features. You can, of course, make database design and programming changes, and create any additional reports you might need. For example, you could redesign the database to accommodate two-week advance scheduling requirements, calculate regular and overtime pay for different classes of employees (salaried, hourly, and daily), create an employee phone book, track employee work and pay history, and generate reports for payroll or outside payroll services.

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## QUICKTIP

### Get Better Screen Prints

DOS

If you're using an HP LaserJet, and your print screens (when you press the Print Screen key) are printing with odd ASCII characters instead of the lines and boxes on the screen, use the printer's control panel to select the PC-8 Symbol Set. This internal HP character set includes the line and box ASCII characters, and allows you to print a true copy of your screen.

To select the PC-8 Symbol Set on an HP LaserJet 4P, for example, press the On Line key to take the printer off line. Next, press the Menu key

twice to select the PCL menu, press the Item key four times to display SYM SET=PC-8, and press the Enter key (on the printer) to select it. Press the On Line key to place the printer back on line, and print your screen.

If the cursor doesn't race down the screen when you press Print Screen, press it a second time (or press Shift-Print Screen instead). If the Form Feed light on the control panel lights up but the page doesn't feed, press On Line, Form Feed, and On Line again.

*Tom Marcellus*

## QUICKTIP

### Cut and Paste with the Mouse

DOS

Q&A for DOS doesn't have a mouse-driven cut and paste feature, but you can add it to Q&A Write with two simple macros. To create the cut function, start the macro recorder, set the macro identifier to Alt-C (for cut), press F3, end recording, and name the macro Cut. Create the paste macro the same way, except assign it the Alt-P key identifier (for paste). Press Shift-F7, and name the macro Paste.

Here's what the two macros look like in Write:

```
<begdef><altc><name>"Cut"<vidoff><f3><enddef>
<begdef><altp><name>"Paste"<vidoff><capsf7><enddef>
```

To use your new feature, highlight some text with the mouse, click the right mouse button to display the Macro List, and click on Cut. Position the cursor where you want to paste the text, click the right mouse button, and click on Paste.

*David Dvorin, Phoenix Solutions, Belle Mead, New Jersey*

## QUICKTIP

### Lengthen, Shorten, or Expand a Field

WIN

You can quickly lengthen, shorten, or expand a field's information blank on a data entry form. To do so, choose *Design input form* from the Select menu, and click on the form you want to work with. With the form displayed, click on a field's information blank to select it. Q&A

outlines the field, and places a solid block (called an *anchor*) at each corner of the outline. Move the pointer to the lower right block until the double arrow appears. Drag the block to the right to lengthen the field, drag it to the left to shorten it, or drag it downward to expand it.

*Tom Marcellus*





DOCS

**QUICKTIP**

## Add a "Secret" Field to Your Form

Suppose you want to add private comments to some of your records but you don't want to hassle with password protecting the database, creating a hidden field, and so forth. You can add a couple of fields to your form, and program them to allow access to the secret field only when the password field contains the correct password.

If your data entry form consists of one page, make the password field the last field on that page, and the secret field the first and only field on the second page. Program the password field as follows:

```
< Clear(Password); @Msg("Enter your password  
to access page 2")
```

This statement clears the field named Password and displays a message prompting you to enter your password.

Program the secret field like this:

```
< If Password <> "Sharky" then  
  {@Msg("Valid password not entered. Try again");  
  Clear(Password);  
  CPrev}  
Else Clear(Password)
```

This statement checks to see if the Password field contains *Sharky* (use whatever password you want). If it does, the password is cleared and the field named Secret is displayed. Otherwise, the password is cleared and you're prompted to try again.

As long as the secret field is the only field on the second page, it can't be reached during Add Data or Search/Update without the proper password. Someone could, however, find out what's in it by including it in a report. And they could see its first 14 characters if it were included in a Table View.

If the information in the field is highly sensitive, it merits going to the trouble of password protecting the database and hiding the field. That way, only users with the proper access can see and edit it.

*Tom Marcellus*



Pinnacle Publishing, Inc.  
PO Box 888  
Kent, WA 98035-0888  
206-251-1900  
206-251-5057 (fax)

Second-Class  
Postage Paid at  
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