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DTFDATA, Indirection, and Other Nifty Tools

Tom Marcellus

L AST month I travelled east to meet with a small group of Q&A luminaries from three countries. Though I'm not yet at liberty to say what was discussed (and demonstrated) at this gathering, during the ride from the airport, I told my "chauffer" (a fellow Q&A developer we'll call "Cliff") about one of the more interesting Q&A applications I'd recently worked on. Some of the techniques and tools I had used interested him, and he urged me to write an article about the application for *The Quick Answer*. So here it is.
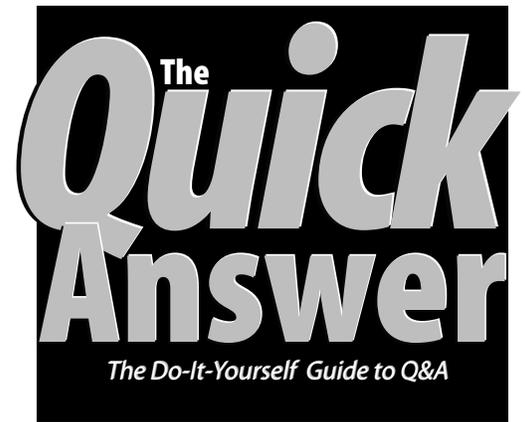
The challenge

A growing title company with offices in several states needed a fast and easy way to reconcile receipts and disbursements relating to the "funding" of real estate refinance loans. Receipts (checks or wire transfers received from the lender) are entered against a File Number (an account number unique to each refinance case). Disbursements (checks written by the title company) are entered the same way, but with a minus amount.

Ultimately, a refinance File should reconcile on the transactions. That is, the disbursements should equal the receipts and balance to 0 (zero). Reconciliation could have been done with a simple report except that the transaction records for a given File might be in any of *three* Q&A databases. (For example, to keep the quantity of records per database at a reasonable level, transactions with cleared checks are moved to a "cleared" database.) Some of the transactions might be in *Database A*, while others for the same File might be in *Database B* or even *C*. All three databases were of the same design.

A consolidated report needed

We've talked about DTFDATA, John Dow's (*www.johntdow.com*) utility that extracts data from Q&A databases. (Search TJ's *Quick Answer* database at *www.quickanswer.com* on the keyword "DTFDATA" to find the pertinent issues.) When I found out that *three* databases would have to be searched for records with a given File number, I knew that DTFDATA and a separate database (Refi.dtf) designed to perform the reconciliations would be the most efficient way to go about it. In a nutshell, here's how the application works:

1. The user enters the File number to reconcile in Refi.dtf.

2. Programming assembles the *parameters* that tell DTFDATA the File number to search for in the three databases, which fields to extract from the matching records, and how to format the output files.

3. These parameters are passed to a DOS batch file by Q&A where they're saved to disk as the DTFDATA parameters file (called a "QAX" file).

4. The batch file then runs DTFDATA three times, once on each database, using the same QAX file and specifying the output be appended to nosort.txt (an ASCII file) for each of the three runs.

5. The batch file then sorts nosort.txt on its first column (the date, in Q&A's internal date format), then returns control to the Q&A atabase record.

6. Programming then inserts the sorted text file (now a consolidated report) in a field and parses all the transactions in it, distributing the dates, check numbers, payees, amounts, etc. into line-item like fields in the record.

7. Finally, programming adds up the disbursements and receipts and displays the balance along with a transaction count. If the balance is zero, the File is reconciled at that point. If it's off, then knowing the amount it's off helps track down the discrepancy.

Quick **Tip**

Changing Sign

One way to change a number's sign is to multiply it by –1. For example, *#2 = #1 * -1*. There is a shortcut though. You can simply say *#2 = -#1*.

Erika Yoxall

You can turn a negative number into a positive one using the @Abs() function. —Ed.

Quick **Tip**

Keep Developer's Reports Separate

A developer can have trouble identifying his or her own reports from the pages of reports created by users. I have long used the "« »" notation for report names and other saved specs. For example: «Update after Posting». The left chevron is composed by holding down the Alt key and pressing 174 on the numeric keypad. The » symbol is Alt-175. This works in Q&A for DOS and Windows. There are three advantages to using this special notation:

- Your own reports, specs, etc. are readily identifiable.

- Users aren't likely to know how to name or rename reports to include these symbols.

- Your own reports and specs are listed last, after all the others.

Alec Mulvey

Quick **Tip**

No Expanded Memory

Got an email from a Q&A user who couldn't get Expanded Memory in his new Gateway desktop PC. I sent him the config.sys lines from Tom Marcellus' tip on page 12 of the May 2000 issue, but then his computer wouldn't boot. Here's what he reported the problem turned out to be:

I have a Promise card in my computer. It is an Ultra ATA100 bus card that makes the hard drive work super fast. All the new computers are coming out with this option. Anyway, the Promise card allocates all Expanded Memory to itself. The technician at Gateway had me disconnect it, and now Q&A works fine.

Erika Yoxall

Running Q&A 5.0 without Expanded Memory will result in "Not Enough Memory…" errors during many operations. —Ed.

Quick **Tip**

Locked Programming Exposed

You can protect the Program Spec from prying eyes by following the Q&A menus *File / Design / Customize Application / Lock Database.* However, there is a back door to get to the code: the Program Spec will appear in the Update Spec when Shift-F5 is pressed.

David Dvorin

And that code will execute! You can prevent this by assigning access rights that don't allow users to run Mass Updates. —Ed.

DTFDATA, Etc... cont'd from page 1

The database design

Figure 1 shows Refi.dtf's first screen page at the Field Names Spec. The remaining fields are just a continuation of the line-item fields.

The screen-wide **Line** field (dark gray in Figure 1) is where the sorted text file is inserted after DTFDATA and the batch file have done their jobs. By pressing F6 to expand the field, the user can see all the transaction records in a neatly-aligned report-like columnar format (see Figure 2 on page 5) and can press F2 to print a hardcopy.

The line-item fields start with **Date1** through **Date 45**—the dates of the transactions on the File number. **Check1** through **Check45** store the check numbers. **Payee1** through **Payee45** contain the payee depending on whether the transaction on that line is a receipt or disbursement. **Amount1** through **Amount45** store the amounts, and **Cleared1** through **Cleared45** indicate if the check has cleared. The data for all these fields originates in the three external databases and all are auto-filled by programming. We settled on 45 lines of fields because no File number would ever reach that many transactions. To conserve space and make the form easy on the eyes, the Temp fields (Temp1 through Temp5) and the line-item fields don't have labels. But the field *naming* convention for the line-item fields simplifies the programming required to parse the inserted text file into them, as you'll see.

With the entire report viewable and printable in the **Line** field, you might wonder why we bothered with all the line-item fields. I designed the database that way so the client could have a choice of which approach he liked best. It turned out that he found uses for *both* options.

The batch file

The batch file shown below (Refi.bat) contains comments (REMs) to describe what it's doing. This is the version of Refi.bat I used during my testing phase, so everything points to a C:\Temp directory. Your paths will differ.

Notice the batch file's fourth line. The "%1" is the temporary file passed to the batch file by Q&A 5.0's

```
@ECHO OFF
REM Write QAX file (from REFI.DTF Temp1 field) for DTFDATA
REM The %1 comes from the External Programs %G parameter
copy %1 c:\temp\refi.qax
REM Switch to C:\TEMP and delete all earlier output files
REM so they can't be used in case of a failure somewhere
c:
cd\temp
del refi.txt
del nosort.txt
REM Run DTFDATA on the 3 DBs with refi.qax parameters file
dtfdata c:\temp\refichk1.dtf refi.qax nosort.txt
dtfdata c:\temp\refichk2.dtf refi.qax +nosort.txt
dtfdata c:\temp\refichk3.dtf refi.qax +nosort.txt
REM Sort nosort.txt. Output sorted file to refi.txt
sort < nosort.txt > refi.txt
del refi.qax
d:
cd\qa
Exit
```

External Programs feature. The line on the External Programs screen looks like this:

```
4 - DTFDATA REFI.QAX   |   c:\temp\refi.bat %g
```

When this External Program selection is invoked, its *%g* switch passes the contents of the current database field as a temporary file to Refi.bat, which then writes it to disk as Refi.qax. In this case, the External Program selection is invoked by pressing Alt-F9, 4 from the **Temp1** field—the field that assembles the qax file parameters. I'll show that programming later.

Two other key elements in the batch file are (1) the DTFDATA switch that outputs to nosort.txt after the first run, then appends to nosort.txt (+nosort.txt) thereafter and (2) the DOS Sort command that takes nosort.txt as input, sorts it, then outputs the sorted file to refi.txt.

You supply DTFDATA with certain command line parameters. In this case, they're (1) the location of the database, (2) the QAX file to use and (3) the name of the output file to create. A typical QAX file for this application (created by the programming, as you'll see) looks like this:

```
Select='File No'=3244GA-MD
Format=R
Truncate=Y
10 Date
6 Check#
44 Payee
11 Amount
1 Cleared
```

```
═══ MHT Refi Reconciliation ═══              TJM 1.0

File No: File No   Reconcile? (Y/N): R→     Temp1  Temp2  Temp3  Temp4  Temp5

 Total: TOTAL        Count: Count              Amount

Click ↓ and press F2 to print detail
Line

─────────────── PgDn Detail Continues ───────────────

DB    Date     Check        Payee               Amount   Cleared
 →   Date1    Check1   Payee1                   Amount1  Cleared1
 →   Date2    Check2   Payee2                   Amount2  Cleared2
 →   Date3    Check3   Payee3                   Amount3  Cleared3
 →   Date4    Check4   Payee4                   Amount4  Cleared4
 →   Date5    Check5   Payee5                   Amount5  Cleared5
 →   Date6    Check6   Payee6                   Amount6  Cleared6
 →   Date7    Check7   Payee7                   Amount7  Cleared7

REFI.DTF                    Field Names Spec           Page 1  of 3

Esc-Exit   F1-Help   F2-Print   F3-Clear Spec   F6-Expand Field   F10-Continue
```

Figure 1. First screen page of the Refi.dtf reconciliation form at the Field Names Spec.

These parameters tell DTFDATA to do the following:

1. Include all matching records (*N=0*).

2. Extract the records where the **File No** field contains *3244GA-MD*.

3. Generate output in DTFDATA's *Record* format—table-like output with the values in aligned columns, like a Fixed-Ascii file.

4. Output only the specified fields and truncate any values that exceed the specified column widths.

By using DTFDATA's *Record* format with *Truncate* set to Yes, the **Date** field values occupy the first 10 characters of the line, the **Check#** values occupy the next six characters (DTFDATA puts a space between each column), the **Payee** values occupy the next 44 characters, and so on. If the Payee value exceeds 44 characters, DTFDATA truncates it. In practice, only the Payee values risk being truncated because the maximum widths of all the other values can be predicted.

The reason for using Truncate and specifying maximum widths for the values is so the resulting combined and sorted text file will fit into the database's expanded **Line** field without wrapping. If you add up the width values (10, 6, 44, 11, and 1), you'll get 72. Add the space between each column, and you get 76. Since an expanded field is 78 characters wide, the 76-character-wide list always fits snugly into it without any lines wrapping.

For the QAX file's *Select* statement (DTFDATA's "Retrieve Spec"), it's a good practice to use single quotes around any field names that contain spaces or other non-alphanumeric characters. (If you have trouble getting DTFDATA to extract records, there's probably something wrong with your Select statement syntax. Consult the documentation.)

Programming

I'll show the programming for each Refi-dtf field in the order the fields appear on the form. After each one, I'll explain what the program does.

Reconcile? (Y/N)
```
> If File No = "" OR Reconcile <> "Y" Then Goto
File No
```

The user must supply a File number and type a "Y" in the **Reconcile? (Y/N)** field (named *Reconcile* at the Field Names Spec) before anything happens.

Temp1
```
< If File No <> "" and Reconcile = "Y" Then
Temp1 =
"SELECT='FILE NO'=" + @Chr(34) + File No +
@Chr(34) + "
" + "FORMAT=R" + "
```

```
" + "TRUNCATE=Y" + "
" + "10 DATE" + "
" + "6 CHECK#" + "
" + "44 PAYEE" + "
" + "11 AMOUNT" + "
" + "1 CLEARED"

@Msg("Press Alt-F9 and run the DTFDATA REFI.QAX
selection.");
```

Here, the DTFDATA QAX file parameters file is assembled. The program ends each line in a hard carriage return to ensure the data is passed properly formatted to the Refi.bat batch file. The File number is enclosed in quote marks (ASCII character 34) to ensure that DTFDATA can read it correctly. (This can be particularly important when the value might contain spaces.) Finally, an @Msg message prompts the user to run the DTFDATA External Program. (After installation, the client added an @Macro command to the end of this program to automate the Alt-F9, 4 keypresses.)

Temp2
```
< If File No <> "" and Reconcile = "Y" Then
{
Temp4 = "1";
Line = @Insert("c:\temp\refi.txt");
Temp5 = Line
}
```

The Temp2 program executes after Refi.bat and DTFDATA have run and control has been returned to the same Refi.dtf record. Here, **Temp4**, a counter field, is initialized with "1" and the sorted output file generated by DTFDATA and the batch file is inserted into the screen-wide **Line** field, then copied to the **Temp5** field where it will be parsed.

Temp3
```
< If File No <> "" and Reconcile = "Y" and Temp5 <>
"" Then
{
@("Date"    + @Str(Temp4)) = @Left(Temp5, 10);
@("Check"   + @Str(Temp4)) = @Mid(Temp5, 12, 6);
@("Payee"   + @Str(Temp4)) = @Mid(Temp5, 19, 44);
@("Amount"  + @Str(Temp4)) = @Mid(Temp5, 64, 11);
@("Cleared" + @Str(Temp4)) = @Mid(Temp5, 76, 1);

If @("Cleared" + @Str(Temp4)) = "1" or @("Cleared"
+ @Str(Temp4)) = "2"
Then @("Cleared" + @Str(Temp4)) = "";

Temp5 = @Mid(Temp5, @Instr(Temp5, "
") + 1, 32000);

Temp4 = Temp4 + 1;
Goto Temp3
}
Else Goto Temp4
```

Here's where the grunt work begins—the process of parsing the sorted text file into the line-item fields. At this point, Temp5 contains a copy of the sorted text file and Temp4 contains *1*. The @*(Field)* indirection function combines the first line-item fields' names (without their suffix numbers) with the Temp4 counter value. So the first

time through, Q&A will know you want to parse Temp5's data into the **Date1**, **Check1**, **Payee1**, **Amount1** and **Cleared1** fields. The @Left and @Mid functions take care of grabbing the appropriate chunks of data from the first line in Temp5.

As you can see, having the **1** through **45** suffixes on the line-item field names, then using a counter field, allows you to use indirection to auto-fill all the fields. This saved an enormous amount of programming.

At this point, the first Temp5 line has been parsed into the first five line-item fields and now you want to get rid of that line. To do so, the program locates the first hard carriage return in Temp5 and replaces the Temp5 value with everything after it.

With this done, The counter in Temp4 is increased by 1 (from *1* to *2*) and control is passed back to the same Temp3 field, re-executing its program. This parses what is now the first line of data in Temp5 into the *second* group of line-item fields (Date2, Check2, and so on).

This process continues until the sorted text file has been fully parsed into the line-item fields and Temp5 is empty. Control then passes to the **Temp4** field.

Temp4

```
< If File No <> "" and Reconcile = "Y" and Temp4
<> "" Then {
Total = @Sum(Amount1..Amount45);
Count = Temp4 - 1;

Line = "MEGALITH HOME TITLE Settlement Report for
File No " + File No + "
" + @Text(76, "-") + "
" + Line;

Amount = @Abs(Total);
Amount = @Str(@Tonumber(Amount) + 0.001);
Amount = @Left(Amount, @Len(Amount) - 1);

If @Len(Amount) >= 7 Then

Amount = @Left(Amount, @Len(Amount) - 6) + ","
        + @Mid(Amount, @Len(Amount) - 5, 9);

If Total < 0 Then
Amount = "-" + Amount;

Line = Line + "
" + @Text(76, "-") + "
" + "TOTAL:" + @Text(68 - @Len(Amount), " ") +
@Str(Amount) + "
" + "COUNT:" + @Text(10 - @Len(Count), " ") +
@Str(Count);

Clear(Reconcile, Temp1..Temp5, Amount);

If Count = 0 Then {
Clear(Total, Count, Line);
Clear(Date1..Date45,Check1..Check45,Payee1..Payee45);
Clear(Amount1..Amount45,Cleared1..Cleared45);
@Msgbox(" ","No records for File No " + File No,"
")
}
Else @Msg("Done!");
Goto File No  }
```



```
METALITH HOME TITLE Settlement Report for File No 1316MO
-----------------------------------------------------------------------
1999/01/13 34540  AMERICAN EXPRESS                           -1858.00 Y
1999/01/13 34542  AMERICAN LIFE TITLE INSURANCE COMPANY        -34.00 Y
1999/01/13 34543  BEVERLY E. WAYNE AND CALVIN L. WAYNE       -9309.78 Y
1999/01/13 34545  CITIBANK                                    -591.00 Y

1999/01/13 34555  MIDWEST IMAGING                             -300.00 Y
1999/01/13 34556  MEGALITH HOME TITLE, INC.                   -531.00 Y
1999/01/13 34557  NATIONSBANK                                 -971.00 Y
1999/01/13 34558  ORCHARD BANK                                -673.00 Y
1999/01/13 34559  PBT GOLD                                   -5509.00 Y
1999/01/13 34560  SEARS                                       -259.00 Y
1999/01/13 WIRE   WIRE IN                                    62324.43 Y


-----------------------------------------------------------------------
TOTAL:                                                        -669.41
COUNT:        21
```

Figure 2. Portion of a report that appears in the **Line** field. The reconciliation for this File number 1316MO is off by -$661.41.

The **Temp4** program adds up the amounts in the **Amount1** through **Amount45** fields and places the sum in the **Total** field, which is formatted *NC2* for numbers with two decimal places and commas. If disbursements have exceeded receipts, **Total** will show a negative number, providing an important clue in tracking down the source of the discrepancy.

Next, 1 is subtracted from the Temp4 counter field and the result is placed in the **Count** field, giving the total number of transactions against the File number.

Next, a header is inserted at the top of the report in the **Line** field. It includes the company's name and the file number followed, on the second line, by 76 dashes.

Next, the balance in the **Total** field is converted to an equivalent text value with commas for a hidden **Amount** text field. This is so a readable balance can be inserted at the end of the **Line** field's report.

The Temp4 program ends by inserting "TOTAL" and "COUNT" labels at the end of the **Line** field report, along with their respective values from the **Amount** and **Count** fields. (Figure 2 shows a portion of a sample report in the **Line** field.) This is followed by some clean up and an @Msg message informing the user that the process (which might take all of a couple of seconds) is complete.

Line

```
< @Fedit
```

This final program in the **Line** field automatically expands the field when the user enters it so that the entire transaction report is exposed and can be printed with F2.

Tom Marcellus is editor of *The Quick Answer*

@Help

Line Wrap Report Format Needed

I would like Q&A for DOS 5.0 to generate a specially-formatted report for me. I currently get this:

```
Microsoft    Word 5.0    $23.98
Microsoft    Excel 6.98 $23.87
Microsoft    Powerpoint $12.98

Lotus        Notes      $198.88
Lotus        Help Disk  $2338.99
```

I would like my report to look more like this:

```
Microsoft
Word 5.0    $23.98
Excel 6.98 $23.87
Powerpoint $12.98

Lotus
Notes      $123.98
Help Disk  $2338.99

Another Name
List of products, etc.
```

I know that I can use the *R* code in the Column/Sort Spec to tell Q&A not to repeat duplicate values for a field, but I would like the repeating values as a page title or section heading. Any ideas?

Stuart Morley, UK

When used in the same field with an ascending sort (AS) or descending sort (DS) code in the Column/Sort Spec, The *R* code functions as a "toggle switch" depending on the current *Default to Repeating Values* setting at your *Report Global Options / Columnar Global Options / Set Format Options* screen. In other words, if your Global Format Option has *Default to Repeating Values* set to "Yes," then the *R* code turns Repeating values *off* for this field in this report. The danger is that if someone later changes the global option to "No," and you run the report via *Design/Redesign a Report,* the *R* code will suddenly have the *opposite* affect. (See Alec Mulvey's "All About Columnar Report Global Options" in the February 1996 issue.)

Assuming your *Default to Repeating Values* is set to "No," a standard columnar report should print like this if you specify a descending sort on the Manufacturer field (*10,DS*, for example):

```
Microsoft    Word 5.0   $23.98
             Excel 6.98 $23.87
             Powerpoint $12.98

Lotus        Notes      $198.88
             Help Disk  $2338.99
```

However, if you want the products to appear under the manufacturer name in the same column, as shown in your example, you'll need to use derived columns. To illustrate, I'll use a database with three fields: Manufacturer, Product, and Price. Design a new report with the following Column/Sort Specs:

```
Manufacturer: 10,AS,I
Product: 20,I
Price: 30,I
```

As you can see, I'm using an "I" code in each column to prevent it from printing but still make it available for use in a derived column. You'll need the following four derived columns to accomplish what you want to do:

```
Heading: spaces
Formula No. 2  @Txt(20," ")
Column/Sort Spec: 2,I
```

This first derived column creates a series of twenty spaces that we'll use in later columns to force-wrap them.

```
Heading: copy of manufacturer
Formula No. 1  #10
Column/Sort Spec: 100,I
```

This column creates a copy of the Manufacturer at the very end of each line. The key here is that Q&A can use any report field, invisible or not, in subsequent calculations.

```
Heading: 20:\
Formula No. 3 @Txt(#100<>#10,"—")+#2+
@Txt(#100<>#10,#10)+#2+#20
Column/Sort Spec: 25
```

Here, you tell Q&A to compare the value in column 10 to the value in column 100 and do something if they don't match. In the first record, column 100 doesn't yet exist, so Q&A prints "- -" and adds 20 spaces. And because column 100 still doesn't exist, Q&A prints the value in the Manufacturer field on the next line. In all the records, Q&A then adds another 20 spaces and prints the product name. Since you've restricted the column width to 20 (*Heading:20:*), the lines will be forced to wrap.

When you get to the second record, Q&A again looks for field 100, but this time, since 100 has not yet been created for the second record, Q&A uses the column 100 value from the previous record. They will match, so no dashes will be printed.

```
Heading: 15:\
Formula No. 4   @Txt(#100<>#10,"—")+#2+
@Txt(#100<>#10,"—")+#2+"$"+@Str(#30)
Column/Sort Spec: 35
```

Here, you use the same trick to wrap the price of the first item down an extra line so that it will line up with the Product rather than the Manufacturer.

The resulting report should look like this:

```
—            —
Lotus        —
Notes      $123.98
Help Desk  $2338.99
—            —
Microsoft  —
Word 5.0   $23.98
Excel 6.98 $23.87
Powerpoint $12.98
```

Just what the doctor ordered! By substituting a non-printing character such as the bell character (ASCII 7), you can even get rid of the dashes.

Q&A and Server Memory in Windows NT

I've followed all the information published in your column and have been successful at setting up and running Q&A in Windows NT. However, I've noticed that my server's CPU utilization pegs at 100% and stays there whenever Q&A is running, whether or not anyone is actually using it. This has me concerned and I would like to know if I'm doing something wrong or do I just have to live with this?

Chris

You're not doing anything wrong. This is a fact of life when using Q&A or any DOS program. DOS programs *constantly* poll the keyboard looking for user input. This puts a load on the processor as it listens to the needs of the application. It has been a headache for many O/S manufacturers. There is one company, however, that seems to have solved this dilemma—Citrix Systems. They sell an O/S designed to be used as a remote terminal application. In the knowledge base at their web site (www.citrix.com), there are at least three articles that discuss this phenomenon in some detail. In addition, they offer a small TSR utility called *DPAKBD.COM* that helps

solve the problem. Preliminary review shows that use of this TSR with Q&A allows processor utilization to immediately reach 100% but then, almost immediately, it drops to under 10%. We haven't performed any significant testing to see what, if any, performance penalties are created by its use, but initial indications are good. It also seems to work in Windows 98. The way to run the DPAKBD.COM is to start Q&A with a batch file like this:

```
CD\QA (or the proper directory)
Dpakbd
QA.com
Exit
```

If you're using *Lesspace* to solve your large hard drive issue, place the lesspace.com line *after* the dpakbd line.

In keeping with our promise to provide you with continued information on Windows 2000, it seems that according to the Windows 2000 performance monitor, processor usage spikes only when Q&A is actually being used. It drops to almost zero when the program is at rest and no user input is taking place. One more indication that Q&A for DOS and Windows 2000 work well together.

Q&A Screens in Windows 2000

I recently upgraded to Windows 2000 (NT) and can't get Q&A to run in full-screen mode. Also, I have a new notebook with Windows 2000 and haven't been able to get Q&A to run in any colors other than black and white.

Karen

See the article on using Q&A in Windows 2000 in last month's issue, or go to www.pcta-usa.com, click on the Q&A icon, then follow the link to "Q&A and Windows 2000." You have to make sure you're running Q&A properly. You also want to make sure that you're running it with the Lesspace utility if your hard drive is larger than 2G. If Q&A is running in a window and you want to see it full screen, simply press Alt-Enter. Unlike Windows 95/98, however, this mode isn't "sticky." In other words, Q&A will always start in a Window unless you open your Q&A shortcut's properties (right-click on your Q&A desktop icon) and change the settings on the *Screen* tab to *Full Screen*. Alt-Enter is simply a toggle and can be used as needed to switch back and forth between screen modes.

If you have Q&A 4.0 on your notebook and desktop computers, you probably got them there by copying your Q&A files from another PC on the network. (Q&A 4.0's install utility won't install Q&A to a partition greater than 2G.) You're seeing Q&A in black and white on your notebook because its screen (monitor) doesn't have the same characteristics as the monitor on the PC from which you copied the program. Try starting Q&A (one time) on your laptop using the command line *QA –SCC*.

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Getting Started with Q&A Reports

ALEC MULVEY

I've often heard people remark that reports in Q&A (for DOS) are easy, but I'm not sure I agree. They're easy only after you've become familiar with them, when you've forgotten the head-scratching and wasted paper you went through at first. To the novice, the Report module's Column/Sort Spec can be a daunting confusion of obscure codes. The Report design module is, it has to be admitted, one of the more primitive parts of Q&A. Here's a brief primer that I hope will boost your confidence and make it easier for you to design your first reports.

Start by selecting *Reports* from Q&A's Main menu. (You don't select *File* first.)
The Report menu consists of these four choices:

```
            REPORT MENU
         ─────────────────
    D - Design/Redesign a report
    P - Print a report
    S - Set global options
    R - Rename/Delete/Copy
```

The first option, *Design/Redesign a report*, is the one you'll use most often. "Design/Redesign" means to create a new report or modify an existing report, and the *Print a report* selection enables you to print a report to screen or to your printer, with the option of previewing it before printing. When you select *Print a report*, you have the option of making any changes you want to the report—*for this printing only*— without altering the saved version of the report design.

Let's get a few things straight about these reports before going into the nitty-gritty of putting them together.

There are two types of reports in Q&A for DOS—*Columnar* and *Crosstab*—and they're fundamentally different. Columnar reports show database fields arranged in columns. They might have totals or subtotals or not, but they do show actual values from database records. Crosstab reports, on the other hand, don't show actual field entries, they show cross-tabulated totals—the results of Q&A analyzing the data in the database. Crosstab reports are comparatively advanced and we aren't going to cover them in this article.

Columnar reports are good for "narrow" data and ideal for numerical data such as sales figures for employees and the like. They're not as good for listing such things as names and addresses where you must have several "wide" columns side by side. This is because you want each column to show the entire field entry, which can cause the report to wind up with lots of wasted space. In these circumstances you should consider other printing methods such as Mailing Labels or a Print Spec.

Any columnar report can be printed to screen or to a printer. You don't have to create and save two separate reports. You can simply design the report so that it prints to the printer by default, then opt to print it to the screen when you run it.

Here are the steps to designing a simple columnar report:

1. Select *Report / Design/Redesign a report*.

2. Type in or select the database.

3. A list of existing reports displays (unless none have been created yet).

4. When designing a new report, type a name for it. A report name can be up to 31 characters and contain spaces and capitalization.

5. Select *C - Columnar Report*.

6. Press Enter or F10 to continue.

7. The *Retrieve Spec* is displayed. Fill it in to specify the database records to be included in the report. You can press Alt-F8 to load a saved Retrieve Spec (if you have one) to save having to enter the retrieval criteria manually.

8. Press F10 to continue to the *Column/Sort Spec* screen. Place a number into each field you want included in the report. Q&A will arrange the report columns in the same order as the numbers in the fields in this Spec. For example, a *1* in the Company field will make *Company* the first column in the report.

9. Press F10 to continue to the *Report Print Options* screen. This is similar to the Print Options screen in Q&A Write. Here you can set:

• The printer—A to E, or print to disk, or print to screen.
• Page Preview on or off, and some other settings.

10. Press F10 to continue. Q&A displays a message telling you that *Your Report has been saved. Do you want to print it now?* Answer Yes or No as appropriate.

> **Tip**—At the Column/Sort Spec, increment your column numbers by 10. For example, number them 10, 20, 30, 40, and so on. This avoids having to renumber all the higher columns if you later add or reposition any columns.

Figure 1 shows an example of a simple report from my USA.dtf database.

The Column/Sort spec simply has 10 in the *State* field, 20 in the *Abbrev.* Field, and so on. Notice that the data isn't sorted. You have to add a sort code if you want the records to be listed in a particular order. (In a very small database, Q&A might list the records in the order in which they were created, but you can't rely on this.)

Normally you want your data sorted. To do this, at the Column/Sort Spec, you put a code in the field to be sorted. For example, to sort the above report by *State*, you add the *AS* (for an ascending sort) code after the number in the State field. The complete Column/Sort Spec then becomes:

```
STATE  : 10,AS    ABBREV. : 20
CAPITAL: 30
ORDER  : 40       ORIGINAL 13 ? :
AREA   : 50
```

And the resulting sorted report is shown in Figure 2.

Notice that two things have happened: The report is sorted, but it's also now double-spaced. This is because the *AS* code not only sorts, but creates a Column Break on the State field. That is, the values in that field are now grouped by state. Now, the default behavior of Q&A is that when a sorted field "breaks," Q&A skips a line. As each value (name of state) is different, a column break occurs after every state. So, Q&A isn't really double-spacing the report despite its appearance. Sometimes, you want exactly this for easier reading. At other times, you don't. So here's how you prevent it from happening. The setting for whether a line is skipped on a column break can be changed globally at the *Report Global Format Options* screen. (See Figure 3.)

However, I strongly advise you not to change this setting. If you change it to *Don't skip line*, you'll never be able to have skipped lines again in *any* report. These

global format options affect *all* reports, including existing reports in *all* databases, despite the fact that Q&A prompts you for a database name before you can reach this menu. (See my article, "All About Report Global Options" in *The Quick Answer* February 1996 issue.)

The better solution is to suppress the skipped line for this field in this report only. You do this by adding the *CS* code to the State field, like this:

```
STATE: 10,AS,CS
```

This sorts the column without breaks, so there are no skipped lines. The *CS* code is somewhat tricky, though, in that it stands for *Cancel Skipped lines* and *Cancel Subcalculations*. Both are suppressed for that field when the *CS* code is used. This means that you won't get subtotals based on breaks in this field either, but that's another issue. For now, just remember that *AS,CS* sorts by the field these codes are in, plain and simple.

Here are a few additional notes on codes for the Column/Sort Spec:

- Q&A Column/Sort Spec codes are not case sensitive—*as* is the same as *AS*. Q&A automatically capitalizes the codes when you save the report.

- There are many other codes, and you can add as many as you need in one field.

- You can type the codes in any order. (This never ceases to amaze me!)

- You don't have to add the commas to separate the codes. Q&A will add them when you save the report.

Grand totals

Q&A makes it easy to specify column totals. You simply put the relevant code in the field. The commonly used totals-related codes are these:

T—Prints the *Total* (sum) of a numeric or money field.
C—Prints the *Count* of the number of non-blank entries. This is normally used for a text field, but you can get a count on most any type of field.
A—Returns the *Average* of the entries in the column.

At the Column/Sort Spec, press F1 twice for a comprehensive list and explanation of the various codes. Don't be overwhelmed by the number of codes and variations. You'll only use a fraction of them.

Figure 1. Report 01. A simple unsorted list.

Figure 2. Report 02. The list is now sorted.

Figure 3. Report Global Format Options screen.

Incidentally, you don't need to sort a report in order to get a Total (T) or Count (C).

Figure 4 shows the result of adding some *Total* and *Count* codes to our report.

Notice that the totals at the foot of the Figure 4 report have labels that appear in the first column. If the first column isn't wide enough for the text (in this case, it's only six characters for *Total:*), then Q&A will place them to the left of the first column, which wastes space. It's better to make the first column a bit wider to accommodate the labels, or use even shorter labels. (The Report section of the *Q&A User's Guide* shows how to do this).

As you can see, the report is starting to provide some useful information. But it needs some sprucing up.

Formatting columns

You can use codes in fields in the Column/Sort Spec that alter the appearance of the resulting column. You place such codes within the *F( )* formatting command. Some examples:

F(JC), F(JR)—Justify Center, Justify Right.
F(D2)—Use date format #2 (19 Jul 2000).
F(U)—Display in ALL UPPERCASE.
F(TR)—Truncate text to fit column width (don't wrap).
F(N2)—Format numbers to two decimal places.
F(C)—Format money and numbers with commas.

You can use as many formatting codes as you wish inside one set of parentheses, for example *F(D5,JR)* formats date column entries as 3/19/1995 and applies right justification.

Tip—Date format codes can be very useful if you have reports that only just fit the page width when you used pre-Y2K date fields formatted to display in a short date format (with a two-digit year). Now, with the compulsory four-digit-year format, the report might not fit on the page. Don't despair, simply format your date columns in the report with *F(D3)* and they will display in the report only in the shorter format. As long as the field itself is formatted correctly at the *Global Format Options* screen, your dates will be stored correctly.

```
     STATE          ABBREV.    CAPITAL        AREA      ORIGINAL 13?
-------------------  -------  ---------------  ---------  ------------
ALABAMA              AL       Montgomery        51,595
..
RHODE ISLAND         RI       Providence         1,202   Y
SOUTH CAROLINA       SC       Columbia          31,047   Y
SOUTH DAKOTA         SD       Pierre            77,026
TENNESSEE            TN       Nashville         42,233
TEXAS                TX       Austin           267,269
UTAH                 UT       Salt Lake City    84,893
VERMONT              VT       Montpelier         9,606
VIRGINIA             VA       Richmond          40,804   Y
WASHINGTON           WA       Olympia           68,173
WEST VIRGINIA        WV       Charleston        24,175
WISCONSIN            WI       Madison           56,139
WYOMING              WY       Cheyenne          97,888
===================  =======  ===============  =========  ===========
Total:                                        3,600,334
Count:                  51                         51        13
```

Figure 4. Report 03. Our report now shows Grand Totals.

Changing column headings

For a simple database, the column headings in your report will be the field labels. This can result in some very wide columns, though, because unless you specify otherwise, Q&A will make the column as wide as is necessary to accommodate the column heading or the longest entry in the column, whichever is longer.

An example of this is the *Original 13?* field in the sample database. (See Figure 4.) This is a *Yes/No* field, so the data is only one character wide. But the column is 12 characters wide to accommodate the field name/heading. The State column, by contrast, is wide enough to accommodate *District of Columbia*.

There's more than one way to change the column heading without changing the form design. In fact, there are three. You can change the heading to be used for a particular field for all reports at *Report / Set Global Options / Columnar Global Options / Set Column Heading/Widths*. Here you can specify the heading to be used, and/or a width for a column, in either characters or inches. Here are some examples:

```
Customer Full Name:  FullName
Customer Full Name:  22: Cust. Name
Customer Full Name:  2"
```

Or, you can set the heading and/or width for a column (just for the report you're designing) by placing a code in that field at the Column/Sort Spec. You do this with the *H( )* command:

```
Original 13? :  H(Orig 13?)
```

A neat refinement of this is that you can make the column heading wrap onto two or even three lines. This can be a very handy way of keeping the columns narrow while still conveying enough information at the head of the column. The syntax used here is an exclamation mark (!) to indicate a line break, like this:

```
Original 13? :  H(Orig!13?)
```

Now that column is a mere four characters wide, as shown in Figure 5.

The third way of changing the column headings is to assign a different field Name. Q&A determines what to use for the column heading according to this hierarchy:

```
                                            Orig
     STATE         ABBR.     CAPITAL    AREA   13 ?
---------------  -------  -------------  --------- ----
ALABAMA          AL       Montgomery      51,595
ALASKA           AK       Juneau         586,156
ARIZONA          AZ       Phoenix        113,879
ARKANSAS         AR       Little Rock     53,088
CALIFORNIA       CA       Sacramento     158,651
COLORADO         CO       Denver         104,313
CONNECTICUT      CT       Hartford         5,008   Y
DELAWARE         DE       Dover            2,057   Y
```

Figure 5. Report 04. Report shown with substitute column headings

1. Column heading as specified at the Column/Sort spec.

2. Column heading as specified in *Report Global Options / Column Headings*.

3. Field Name, as specified at *Program / Set Field Names*.

4. Field label as shown on the database form.

Changing the Regular font

You can do a lot with fonts in Q&A reports. For now, let's confine ourselves to the most important—assigning a font for the entire report. Assuming you have the correct printer driver set up, this is what you do.

To change the font for the entire report:

1. At the Column/Sort Spec, press *Shift-F6* (Enhance Text).

2. Press *A - Assign Fonts.*

3. Select the appropriate font file (for example, HPLASER4.FNT for most HP LaserJets).

4. With the cursor on the *Regular Font* line, press *F6* for a list of fonts.

5. Select the font you wish to use.

6. For a proportionally-spaced font, specify a point size.

7. Press *F10* to return to the Enhance Text menu.

8. Press *Escape* to return to Column/Sort Spec.

9. Continue.

Headers & footers

At the third screen in the report design (the *Print Options* screen), you have the option of pressing F8 to go to the *Define Page* screen. (There's a reminder of this keystroke at the bottom of the Print Options screen.) Here, you can set the page dimensions, margins, and so forth, and also specify headers and footers. Enter the text you want as a Header in the Header section, and likewise for the Footer section. You must have at least a one-line top margin to have a header (use line #1 in the Header section), and a three-line margin to use all three Header lines. It's best to use no more than two lines for the header, though, or you'll be left with no space between the header and the body of the report.

There are three invisible "zones" in the header and footer sections: Left, center, and right. Imagine them separated by exclamation marks (!), like this:

```
Left ! Center ! Right
```

Any text before the first "**!**" is left-aligned at the left margin. Anything to the right of the first "**!**" will be centered between the margins. Anything to the right of the second "**!**" will be right-aligned at the right margin.

So if your header line at the Define Page screen looks

like the following example, it will appear in the report as shown in Figure 6.

```
USA.dtf ! STATES OF THE USA ! Printed @Date(12)
```

You can enhance the header and footer text by pressing Shift-F6 with your cursor at the start of the text in the Header or Footer section. Boldface and Underline can be effective at making the header stand out.

Using codes in headers & footers.

The following codes can be used in the Header & Footer sections of reports:

@Date(n)—Prints the current date, using date format #n.
@Time—Prints the current time.
#—Prints the page number, for example, *3.*
Page #—Prints *Page 3*, for example.

(Unfortunately, Q&A provides no easy way to print the total number of pages in a report.)

These codes can be formatted using Shift-F6 as above. It can be very useful to show the report name or number in small italics in the report footer.

Editing a report

Follow these steps to edit (redesign) a report:

1. Select *Report / Design/Redesign a report*.

2. Enter the name of the database. (The last database used is shown by default.)

3. At the *List of Reports* screen, select the report to amend from the list of reports, and press Enter.

4. Q&A steps you through the various Specs involved in defining the report:

   • Retrieve Spec

   • Column/Sort Spec

   • Print Options (with the option to press F8 for the Define Page screen).

5. Q&A informs you that *Your Report has been saved. Do you want to print it now?* Answer Yes or No as appropriate.

USA.dtf		States of the USA		Printed 20 June 2000
STATE	Abbr.	CAPITAL	AREA	Orig 13 ?
-------------------	-----	--------------	---------	----
ALABAMA	AL	Montgomery	51,595	
ALASKA	AK	Juneau	586,156	
ARIZONA	AZ	Phoenix	113,879	
ARKANSAS	AR	Little Rock	53,088	
CALIFORNIA	CA	Sacramento	158,651	
COLORADO	CO	Denver	104,313	
CONNECTICUT	CT	Hartford	5,008	Y
DELAWARE	DE	Dover	2,057	Y

Figure 6. Report 05. Header with automatic date-stamping and enhancements. (Proportional fonts not shown.)

Tip—If you print a report to screen or use Page Preview, you can press *F2* to return to the Print Options screen, then press *F9* to backtrack through the Specs. This is a quick way of making changes as you fine-tune your report. Set *Print Preview* to *Yes* until you're ready to commit your report to paper.

Copying a report

Once you've successfully designed a report, it saves time to make a copy of it rather than start redesigning another similar report from scratch.

To Copy a Report:

1. Select *Report / Design/Redesign a report*.

2. Enter the database name.

3. Select the report to copy from the List of Reports.

4. Press *F5.*

5. Type a name for the new report.

6. Press Enter.

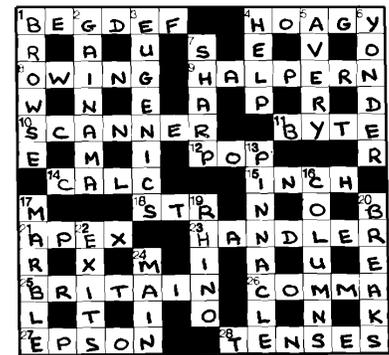7. Make the changes you want to the new report. (See *Editing a report* above.)

Conclusion

As you grow in confidence, you'll find satisfaction in producing attractive, easy-to-read reports on your laser printer, rich with valuable management information. We'll take another look at reports in a future issue, where you'll learn how to use subtotals, derived columns and other more advanced features, and you'll get an introduction to Q&A for DOS Crosstab reports.

USA.dtf is in the download file for Online edition subscribers. It includes all the reports we've covered.

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Solution to last month's crossword puzzle

July 2000 Issue