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Create a Keyword Summary Report from Multiple Fields



JON McLAUGHLIN

Q&A's Report Module is incredibly versatile. It can be used to view and print a wide variety of information in a database. It is very useful for creating Summary Reports. In this demonstration database, I use Q&A's Keyword Report feature to display a count of entries from multiple fields.

Figure 1 shows the form design of Summary.dtf, a database used to track information about music students. (Summary.dtf, a Q&A for DOS 4.0 database, is included in this month's download file.)

Normally, to summarize, say, twelve fields by count, you would need twelve corresponding columns in a Report, one for each field. A report like this is awkward to read and may not even fit across the page. In short, it is unacceptable.

I needed a specially-formatted Report to list all the fields in one single column, with a second column showing counts as the summary values, similar to Figure 2. My solution was to add a Keyword field to the database design and use a Keyword Report to provide the summary information I needed.

A Keyword field can contain multiple entries, each separated by a semicolon. (See "All About Keyword Fields" in the May 1998 issue.) In a columnar Report, when this field is sorted as a Keyword field, multiple entries are printed as separate values down a single column.

For example, let's say there's a record in the database for a student who is 15 years old, male, and enjoys rock and blues music. Your Keyword field might look like this:

Continues on page 3

```

                                STUDENT PROFILE
TITLE:  _      FIRST NAME: Don      LAST NAME: Hiest

GENDER: Male    AGE: 17

MUSICAL INTERESTS (Y/N)
Classical:
Jazz:
Rock: Y
Country:
New Age:
Blues: Y

Alphabet Code: 1;i;d;e
Column Name:
    
```

SUMMARY.DTF Retrieved form 29 of -- Total Forms: 31 Page 1 of 1
 Esc-Exit F1-Help Alt+F6-Table F7-Search F8-Calc F9-Go back F10-Continue

Figure 1. Summary.dtf form design. The two fields near the bottom are the key to the special technique used for this report.

The Quick Answer

The Do-It-Yourself Guide to Q&A

April 2002

Volume 13 Number 4

- 1 Create a Keyword Summary Report
Jon McLaughlin
- 2 **Tip**—@Shell and Multi-Function Batch files
- 4 **Sesame Seeds**—Introducing New Form Elements in *Sesame*
Alec Mulvey
- 5 **Tip**—Offbeat Cure for a Sluggish Database
- 6 **@Help**—Edited by *Bill Halpern*
 - *Q&A Win as a Q&A DOS Companion*
 - *Q&A Win Databases Keep Growing!*
 - *@Maximum and @Minimum in Reports*
- 8 Put Your Q&A Data On Your Web Site, Part 4
Tom Marcellus

MARBLE PUBLICATIONS

STUDENT PROFILE	Mar 17, 2002
CATEGORY	COUNT
-----	-----
Classical	4
Jazz	4
Blues	6
Rock	11
New Age	3
Country	4
Under 16	4
16 to 25	6
26 to 40	4
Over 40	2
Male	10
Female	6

Figure 2. Keyword values in the left column and the summary values (counts) in the right column. Readable, but not yet subcategorized.

Is your Q&A 5.0 External Programs menu filled up? Or are the commands on it that used to work now bombing in Windows 2000 or XP? If so, consider passing parameters to a batch file via @Shell instead, as an alternate way of performing tasks outside of Q&A.

Q&A 5.0's External Programs includes support for a %f parameter. This lets you pass the contents of the current field (the field you are in when you press Alt-F9 to display the External Programs menu) to a batch file or another program as part of the command line to invoke that batch file or other program. Although this %f parameter isn't supported by @Shell, you can still use @Shell to call a batch file and pass it one or more %f-like variables. The batch file, then, can decide which external program to start and file to open, if any, based on the variables(s) you pass it.

Here's a simple batch file command (Word.bat) that opens the Microsoft Word document of your choosing. (The entire command must be one line):

```
"c:\Program Files\Microsoft
Office\Office\Winword.exe" "c:\My
Documents\%1.doc"
```

The %1 variable you see just before the ending ".doc" is passed to the batch file by this @Shell program:

```
< Get Word Doc =
  @Userselect("Letter1,Letter2,Letter3");

If Get Word Doc <> "" Then
  @Msg(@Shell("word.bat " + Get Word Doc))
```

You could have many more options than these and handle them all with a single @Shell command and batch file. For example, if your @Shell command includes an **A**, **B** or **C** parameter (from a field) following the batch file name, a batch file like this would know what to do based on that parameter:

```
GOTO %1

:A
[commands for Option "A"]
GOTO EXIT

:B
[commands for Option "B"]
GOTO EXIT

:C
[commands for Option "C"]
GOTO EXIT

:EXIT
```

You could have an @Shell command like the following and pass three variables to a batch file named multi.bat (the entire command would be on one line):

```
@Msg(@Shell("multi.bat
" + Field1 + " " +
Field2 + " " +
Field3))
```

You could use this technique to tell multi.bat to GOTO label **Field1** (%1) in the batch file, start program **Field2** (%2) and open file **Field3** (%3).

You can also use IFs in batch files:

```
IF "%1"=="A" GOTO A
IF "%1"=="B" GOTO B
Etc.
```

Thus, if you typed "B" in a database field (or selected "B" from a list), and followed that with an @Shell command that passed the "B" as a parameter to a batch file, the batch file would know to go to label "B" and run the commands under it.

A batch file can act on up to nine parameters, %1 - %9. (*More*, actually, by using the *Shift* command.) Each parameter when used this way must be a single word or string with no spaces. (A parameter like "Merge Labels"—with a space—will be treated as two variables.)

The point is, a single batch file can accommodate any number of options and carry out a host of different commands. A single batch file

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Keyword Summary... cont'd from page 1

Male; Under 16; Rock; Blues

Sorted as a Keyword field, this entry would produce a Report column like this:

Blues
Male
Rock
Under 16

But herein lies the problem: Q&A lists values in Keyword Report columns alphabetically. Since I wanted the values listed similar to Figure 2, I needed to work around this default behavior. Here's how you can do it.

First make a list of the Keyword values in the order you need them to appear in the Report. Then, assign each value a letter, in alphabetical order, as in the following **Keyword Chart**:

Code	Column Name
B =	Classical
C =	Jazz
D =	Blues
E =	Rock
F =	New Age
G =	Country
H =	Under 16
I =	16 to 25
J =	26 to 40
K =	Over 40
L =	Male
M =	Female

This chart will be used to create a Keyword field entry that contains the substitute letter codes for the correct column names. So, instead of an entry looking like this:

Male; Under 16; Rock; Blues

It would look like this:

L;H;E;D

(Don't worry—We'll associate these entries with the correct column names later.)

The programming

Now to add some programming to the database. In addition to the Keyword field, which I'll call **Alphabet Code**, one more field is needed, which I'll call **Column Name**. Below is the programming in full:

```
TITLE:
FIRST NAME: #1
LAST NAME:
GENDER: #3
AGE: #4
```

```
Classical: >#5: if #5<>"Y" and #5<>"N" then #5=""
Jazz: >#6: if #6<>"Y" and #6<>"N" then #6=""
```

```
Rock: >#7: if #7<>"Y" and #7<>"N" then #7=""
Country: >#8: if #8<>"Y" and #8<>"N" then #8=""
New Age: >#9: if #9<>"Y" and #9<>"N" then #9=""
Blues: >#10: if #10<>"Y" and #10<>"N" then #10=""
```

Alphabet Code: #14

```
Column Name: #15:if #15="" then clear(#14);
if #3="Male" then #14=";L";
if #3="Female" then #14=";M";
if #4<>" " and #4<16 then #14= #14+";H";
if #4>15 and #4<26 then #14= #14+";I";
if #4>24 and #4<41 then #14= #14+";J";
if #4>40 then #14= #14+";K";
if #5="Y" then #14= #14+";B";
if #6="Y" then #14= #14+";C";
if #9="Y" then #14= #14+";F";
if #10="Y" then #14= #14+";D";
if #7="Y" then #14= #14+";E";
if #8="Y" then #14= #14+";G";
if #15="" then #14=@del(#14,1,1)
```

The programming in Field #15 is set to execute as you leave the record. (Press F8 at the Program Spec and type 15 on the *On exit field ID* line.) It first clears the **Alphabet Code** field, then fills it with the appropriate values based on the entries in Fields #3 through #10. This makes updating existing records easy. The values entered in the **Alphabet Code** field are the letter substitutes for each Keyword value, based on the **Keyword Chart**.

Next, go to *File / Add Data*. Twelve "special" records must be added to the database, one for each value in the Keyword Chart. In each record, only two fields will contain data. The field "Column Name" will contain one of the 12 desired column names. The "Alphabet Code" field will contain the column name's letter equivalent, as listed in the Keyword Chart. For example, a single record is created with "Male" in the Column Name field, and "L" in the Alphabet Code field, and so on for all 12 names.

A ";" at the beginning of a Q&A 5.0 Keyword field can cause problems. You can handle it like this:

```
If @Left(#14, 1) = ";" Then #14=@Del(#14, 1, 1)
```

To exclude these "special" records from searches, reports or other operations where the Retrieve Spec for the operation would otherwise include them, remember to type "=" (the field is blank) in the **Column Name** field.

Creating the Report

Now it's time to design the Report. Go to *Report / Design*, give the Report an appropriate name and press F10. In the next screen, Report Type, choose *Columnar Report* and press F10. At the next screen, *Retrieve Spec*, press F10 to retrieve all records in the database.

The next screen is the *Column/Sort Spec*. Here, type "1,K,I" in the Alphabet Code field. ("I" makes the column invisible). The twelve records in the **Column Name** field are each associated with a unique letter in the **Alphabet Code** field, so assigning this field the Spec *3,H(Category)* produces a column list exactly in the order we want!

Concludes on page 12

Introducing New Form Elements in *Sesame*

ALEC MULVEY



As you would expect from a modern Windows program, *Sesame* offers many more types of “widgets” on your form than Q&A for DOS—or even Q&A for Windows—do. By *widget*, I mean a device or control for entering and displaying data other than an information field into which you type your entry. In *Sesame*, these widgets are called *Layout Elements*.

As you can see from Figure 1, the list includes Labels, Text Boxes, Lines and Boxes. These can all be found in Q&A. The others, though, are either entirely new or new in the way they are implemented in *Sesame*. You have probably encountered devices like Combo Boxes and Radio Buttons in other Windows programs such as your word processor or email program.

Check Box

A Check Box is a form layout control that would normally be used for *Yes/No* fields. Rather than having to type a “Y” or “N” into the field, you simply click on the corresponding Check Box as shown in Figure 2. A check mark represents a “Yes” entry.

Sesame Check Boxes are highly versatile. For one thing, they are *tri-state*. This means that as well as being able to show “Yes” (checked) or “No” (unchecked) they can also show “Unknown.” This is compatible with Q&A in that a *Yes/No* field can be left blank. This might appear at first glance to be a minor distinction, but it certainly is not. For example, if the *Yes/No* field in question is “Blood Sugar OK?” then there is a world of difference between

the *unchecked* “Blood sugar level is NOT OK” and the indeterminate “We don’t know—results not in yet.”

Another interesting characteristic of *Sesame* Check Boxes is that they are sizeable. Some other database products offer only two-state check boxes of fixed size.

List Box

The List Box layout element (see Figure 3) displays all the possible values for a field all the time. The selected one (the current value) is always highlighted. This is convenient when the list of choices is brief and doesn’t vary (such as *Small, Medium, Large*). The disadvantage is that the List Box permanently occupies an area of “real estate” on the form layout. Although List Boxes like these are useful, many users will, I think, prefer to use *Sesame* Combo Boxes.

Combo Box

A Combo Box is a *combination* of a picklist, where you select a value from a prescribed list, and a Text Box, into which you type a value. Figure 4 on the following page shows a closed Combo Box, and Figure 5 shows an open Combo Box.

One big advantage of a Combo Box is that, unlike a List Box, it only occupies the space of a normal field until it’s opened by clicking on the down arrow alongside it to drop down the list of permitted values. A user can optionally type a value that is not on

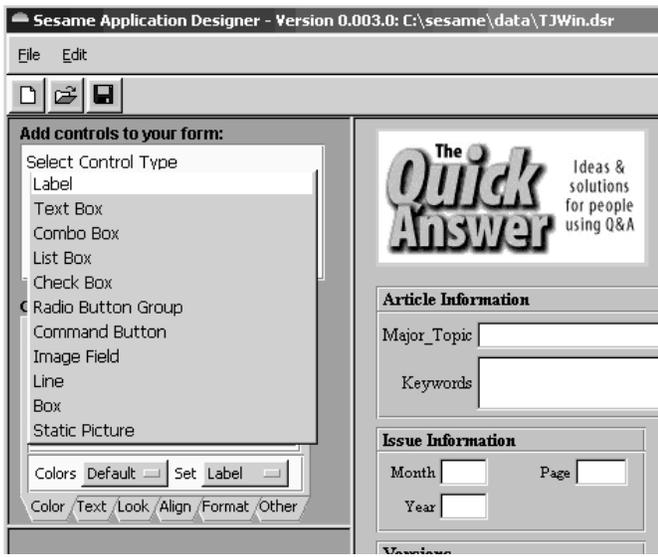


Figure 1. *Sesame*’s available Layout Elements.



Figure 2. *Sesame* Check Boxes. Each Check Box represents a field in the database

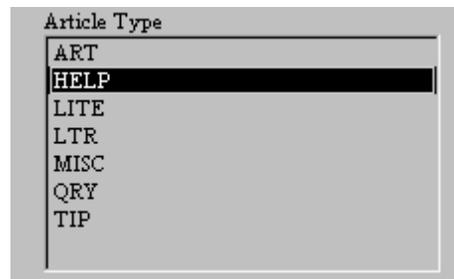


Figure 3. A *Sesame* List Box. It occupies this much space on the form.

the list, or be prevented from doing so, depending on how the Combo Box is set up. Combo Boxes are also active in *Sesame's* Retrieve Spec, which is a vast improvement over Q&A. (Q&A offers no way to simply *select* retrieval parameters—you must always manually *type* them in.)

Radio Buttons

Where there are a small number of non-changing values to choose from—and where the entries are mutually exclusive—(that is, selecting one automatically deselects the others), then Radio Buttons can be tremendously useful. Classic examples are sizes like *Small, Medium, Large* or shipping methods such as *USPS, FedEx, UPS*.

Why choose Radio Buttons over Check Boxes? Well, for two reasons. One is that there is a Windows convention that a square box is a Check Box, and any number of these can be checked. For example, in the earlier illustrations, an article on programming can apply to both DOS and Windows versions of Q&A, so they can both be checked. The size of a garment, on the other hand, has to be just one of the available sizes, it can't be "Small" *and* "Large."

Another important distinction is this—whereas three Check Boxes represent three values for three separate fields, a Radio Button group returns just *one* value, and as such corresponds to just *one* field.

But *Sesame* Radio Button groups have another advantage. Unlike most Windows Radio Button groups, *Sesame's* can be *deselected*. In other words, once you've made a choice, you can completely deselect it to return to a "no choice" state. The database designer can assign a default choice, and that Radio Button will be selected by default unless the user selects another choice.

Next month, I'll introduce you to the process of converting a Q&A database to *Sesame*, then redesigning the form to include these appealing new widgets.

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Figure 4. A closed *Sesame* Combo Box.

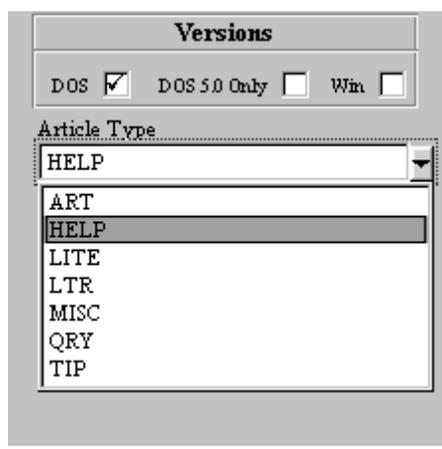


Figure 5. A *Sesame* Combo Box in use.

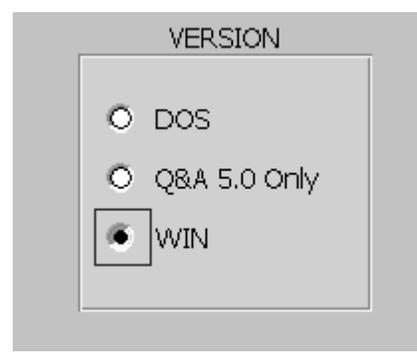


Figure 6. A *Sesame* Radio Button Group.

Quick Tip

Offbeat Cure for a Sluggish Database

After recently performing some routine database maintenance for a client, I got a call from him reporting that searching one of the databases had become very slow. Puzzled at how my efforts to keep his databases lean and fast might have caused just the opposite, I quizzed him on the problem. Apparently just "F10-ing" through a stack of retrieved records was slow. Having determined that it was the same on all the PCs on the network, I returned to his office, diligently rechecked all the usual things and recovered the database on a local drive—all to no effect.

If a search produced a set of, say, 80 records out of the 36,000 in the database, pressing F10 to display the second record was quick. Advancing to the third took a second or two; to the fourth about six seconds. By the eighth or ninth record, it was taking 30

seconds. Pressing Ctrl-End to move to the last record worked fine, but then "F9-ing" to go back through the records produced the same poor performance. It made no difference whether the records were sorted or another user was accessing the database.

I changed the Database Sharing Mode from *Auto* (the correct setting for a network with a dedicated file server) to *Allow*. No difference. I then changed it to *Disallow*, which speeded things up dramatically but prevented database sharing. Then I changed it back to *Auto* and found—to my surprise and delight—that the fast performance had returned. Problem solved. If you've experienced a similar problem, and this "fix" works for you, too, please let me know.

Alec Mulvey, amulvey@lantica.com



Q&A for Windows as a Q&A for DOS Companion

I need to be able to print some very fancy forms and reports from my Q&A for DOS 5.0 database. They must be able to contain logos and colors because (1) my clients have requested better looking forms, and (2) they want their reports in very specific format which Q&A columnar reports just won't accommodate. Is there any way I can do this? Will exporting to MS Word help?

Stephanie

If you were just looking for a "fancy" merge document with colors and logos, exporting from Q&A and importing to MS Word would be one way of accomplishing the feat. This has been covered in past issues of *The Quick Answer*. However, since you've added reason #2, you've left the realm of a merge document which can only "import" one record per document. Therefore, what you need is something that can create some really "fancy" free-form reports rather than merge forms. But fear not—as a colleague of mine likes to say: "the best utility ever released for Q&A for DOS is Q&A for Windows." The Windows version of Q&A can be made to work seamlessly with the DOS versions (both 4.0 and 5.0). And when combined with Q&A 5.0 for DOS, you get a real powerhouse. This is because you can take advantage of 5.0's @Macro programming and ability to run External Programs, and combine that with Q&A for Windows ability to run scripts.

Let me give you an example of an application I just finished. The client needed some heavily formatted "reports" but wanted his people to be able to continue to work within the familiar Q&A for DOS interface. I created the application in Q&A 5.0 for DOS so that I had all the power of the programming and the XPosting features he needed. I could have designed his forms in MS Word, but that would have meant creating some complex export specs and macros, as well as teaching his users how to work in both programs. It would also have slowed down operations. I simply opened the final database design in Q&A for Windows 4.06 and designed some free-form reports in that application. I was able to create reports containing his color logo in the header and make use of

fonts and colors throughout. By using Q&A for Windows multiple forms capability, I was also able to create some really nice looking forms for his database records. As the last step in Q&A for Windows, I created a *default* opening form that consisted of nothing but *Script* buttons to print the fancy reports and forms. Because of space limitations, I can't go into the details of form design, scripts or setting the defaults for Q&A Windows, but it is not difficult to do.

Next came the issue of bridging the user from Q&A for DOS to Q&A for Windows with minimal effort. Q&A 5.0 makes this easy. First, create and save a batch file called *qawin.bat* that contains the following lines:

```
cd\qawin      (directory where the Q&A Win program
               files reside)
qa.exe referals.dtf  (name of the database for
                    Q&A Win to open)
cd\qa5        (directory where the Q&A DOS program
               files reside)
```

Now, in Q&A DOS, create an External Program link under *Utilities / External Programs* like this:

Menu option	Command line
QAWin	c:\qa5\qawin.bat (path where you saved the batch file)

The reason for doing this with a batch file is to make it universal. In Windows 98, you could just put the second line of the batch file on the External Programs menu *Command* line. However, in Windows 2000 or XP this will not work. You'll get an error message. Also, remember that you *must* include *both* the starting and the ending directories for the batch file. It starts where the Q&A for Windows *program* files are located and ends where the Q&A for DOS *program* files are located. Omitting these lines will cause some very strange behavior in Q&A for DOS because it will not know where it is supposed to be working from.

Two final steps: In the Q&A for DOS database, add a field named *PrintRec* and another called *PrintNum*. Program the *PrintRec* field with the statement:



Stumped?

Send your Q&A questions to @Help, The Quick Answer, Marble Publications, Inc., 1927A Harbor Blvd, Costa Mesa, CA 92627 or email to mailbox@quickanswer.com. Include your name, address, phone, and your

Q&A version number (and whether DOS or Windows) and a detailed description of the problem. We'll publish those questions we feel are of general reader interest; individual responses aren't possible.

```
> If PrintRec <> "" Then {PrintNum = @Number;
PrintRec = ""; @Macro("qawin") }
```

(In Q&A for Windows, attach a Retrieve Spec that specifies *max* in the *PrintNum* field to each of your forms or reports.)

Also, in Q&A 5.0, write or record a macro like the following named *qawin*:

```
<begdef><nokey><name>"QAWIN"<vidon><capsf10><esc><esc>
<esc><altF9>q<enddef>
```

A little work for the application designer, but a dream for the users. They type a "Y" or an "X" in the **PrintRec** field, get a "fancy" Q&A Win menu screen asking what form or report they want to print for that record, click on the appropriate button, close the menu screen (in Q&A for Windows), and they're back at the Q&A for DOS menu with their report or form emerging from the printer.

Q&A for Windows Databases Keep Growing

I have been using Q&A for Windows along with my Q&A for DOS 5.0 applications for a while now. They work together great. But, I am concerned because my databases seem to grow in file size at an alarming rate. This does not happen with any databases that are used exclusively in the DOS version, but those in the Windows version can go from 900KB to 7.5MB in one day. I have tried Recovery and nothing changes. Is this a problem? Is there anything I should be doing?

Patrice

I will bet that in that one day of immense growth, you designed or redesigned a form or free-form report in Q&A for Windows. It seems that Q&A for Windows keeps complete copies of *all* versions of *everything*. So, every design change seems to almost double the size of the file. And, unlike the DOS version, running Recover on the database seems to do nothing to stem this uncontrolled growth. That is the bad news. The good news is that this problem is easy to fix, and the fix is actually good for keeping your data healthy and fresh. Just open the file in Q&A for Windows and, from the File menu, copy the database *and all the records* to a new name. Use Windows Explorer to delete the old .dtf and .idx files and rename the new one to the old names. Your database will now be back close to its original size and all of the records will be refreshed.

@Maximum and @Minimum Functions in Reports

Using my Q&A 4.0 Invoice Register database, how do I create a monthly report that would produce the following results:

```
Day From Inv# To Inv#
1 6208 6231
2 6232 6256
3 6257 6288
4 and so on
```

I've tried using the formula `@text((#1<>#50),@str(#2))` or `@text((#1<>#50),@min(#2))` or `@text((#1<>#50),@max(#2))`. I have tried using `@min` and `@max` in various ways and always end up with the *From* and the *To* numbers being the same. I would appreciate any help.

Vir

This is a case of not using quite the appropriate function. You have the right idea but you have passed on two of Q&A's really neat functions: `@Maximum(n,m)` and `@Minimum(n,m)`. These work in reports to return the minimum or maximum of the values in column *n* on a break in column *m*. When you combine these with the `@Text` function—which you use as an "IF/THEN" control over when a column should be printed—you can get the result you're after.

Let's look at just two of fields in the database: **Date** (formatted "D" for dates) and **InvNum** (formatted "N" for numbers). Create a report with the following Column/Sort Specs:

```
Date: 10,AS,I (sorting this field is the key)
InvNum: 20,I
```

Add the following Derived Columns:

```
Heading: Copy of Day
Formula No. 1 #10
Column/Sort Spec: 500,I
```

```
Heading: Date
Formula No. 4 @Txt(#10<>#500,@Rt(#10,5)+"/"+
@Lt(#10,4))
Column/Sort Spec: 15
```

```
Heading: From Inv#
Formula No. 2 @Txt(#10<>#500,@Minimum(#20,#10))
Column/Sort Spec: 50
```

```
Heading: To Inv#
Formula No. 3 @Txt(#10<>#500,@Maximum(#20,#10))
Column/Sort Spec: 60
```

And your final report will look like this:

Date	From Inv#	To Inv#
04/01/2002	6001	6015
04/02/2002	6016	6026
04/03/2002	6027	6034
04/04/2002	6035	6040
04/05/2002	6041	6049
04/06/2002	6050	6058

Just what the doctor ordered!

The first derived column makes a copy of the date field for testing conditions to control record printing.

The second derived column is used simply to stop Q&A from printing a blank row between each line. It's a copy of the sorted field, but is not sorted itself—therefore, no line break. Also, in the same derived column, when working with copies of dates, you must reformat them or

Concludes on page 12

Put Your Q&A Data On Your Web Site, Part 4

TOM MARCELLUS



In this series, we look at five different ways to get the data out of your databases and onto the World Wide Web where anyone anywhere can access it.

In this five-part series we're looking at various methods or techniques you can use to get your Q&A data on a Web site. The method you choose depends on the kind of output you need from Q&A. The Q&A output you need depends on the kind of Web page you want to create or update.

Here, in a nutshell, are the five methods:

1. Turning individual Q&A database records into individual ready-made Web pages that you can add to your Web site.
2. Formatting Q&A documents as ready-made Web pages that you can put on your Web site.
3. Designing Q&A reports with HTML-formatted output that display your data in attractive, easy-to-read tables or spreadsheet-like formats on a Web site.
4. Exporting then uploading your data to your Web server in plain ASCII files that can be parsed (divided up) by programming on the server and displayed in informative tables.
5. Placing actual Q&A databases on your Web server with the ability to select (via a browser) which records and fields you want to see, and have the results displayed in tables, records, reports or other formats.

In Part 1 in the January 2002 issue, I covered method #1, a technique that automatically generates a Web page for any record in a database. That is, you pull up a Q&A database record, answer "Yes" to a prompt, and programming in the database outputs the record's data to a Web-ready HTML file you can upload to your Web site. This method is most suitable for, say, high-ticket products where you might want a separate Web page for each item.

In the February issue, I covered method #3, Q&A reports designed to output HTML-formatted Web pages. This method, instead of giving you one Web page per database record, yields a Web page that includes data from some or all the records in a database, in an output format that's commonly called an "HTML table"—a

spreadsheet-like format that displays your data in rows and columns.

Last month, we looked at method #2, formatting Q&A documents to turn them into ready-made Web pages.

If you haven't read these first three installments, you might want to do so before proceeding. They cover some of the basic HTML (Hypertext Markup Language) tags you need to create Web pages out of anything that comes from Q&A.

Using export files as a Web page data source

This month we'll cover method #4—Exporting then uploading your Q&A data to your Web server in plain ASCII text files that are parsed (divided up) then displayed in tables by what's called server-side programming.

In terms of the final result (how the Web page looks in a browser), this method is similar to method #3, the Q&A report method. With method #3, you use derived columns in a Q&A report to transform the report's output into an HTML-encoded table. That is, your output file contains all the rows (records) and columns (fields) of a normal columnar report, but with the HTML tags added to make the file Web-ready.

The Report method, though—because of Q&A's maximum 16 derived columns—limits you to an HTML table containing only so many fields. The Export method, as you'll see, suffers from no such limitations. You can create an export file containing the data from 100 fields, and have the corresponding table on a Web page show all 100 if you like.

What's more, you could have a 50-field export file, but show only five fields in the Web page. Or, you could show five fields to the general public, 20 fields to remote staffers who come to the page through a password validation, and all 50 fields to visitors who come to the page through a higher (administrative) password validation. What data you show to whom, and how you show it, can all be controlled by server-side programming long after you've uploaded your export file.

You can't do this with an HTML-formatted Q&A report because it's a "sealed can of beans" when you upload it to the Web server. In contrast, since an export file contains just the "beans," you can have the server create the can *and* select which beans to put in it at runtime—when the page is requested by a visitor to your site.

That said, you *can* create a "data-only" Q&A report—

a report that outputs a custom export file containing nothing more than lines of unformatted data with field delimiters. This is the exception. You *can* upload this kind of report output to a Web server and manipulate it as a plain text file, just as you can a “beans only” Q&A export file.

What is server-side programming?

In a Web environment, there is *client-side* programming as well as *server-side* programming. We’re not interested in client-side programming here, but just a word or two to point up the main differences.

Client-side programming (Javascript) generally controls what the browser *requests* from the server and how the data returned from the server is *displayed* in the browser. Server-side programming, in contrast, controls what actually gets *delivered* to the browser. A browser can say, “Gimme this Web page,” and the server can say, “Get lost. You can’t have it.” The browser can then say, “Oh, sorry, yes, here’s my password,” and the server can then say, “That’s better. Here ya go.”

Only server-side programming can write data to a file on the Web server. You need server-side programming to validate passwords or the like against a password file on the server. It takes server-side programming to read in the data from a Q&A export file on the server, parse it, and deliver the results to the browser for display.

There are a number of languages or packages you can choose from to do your server-side programming: You’ve got Javascript Server Pages (JSP), Active Server Pages (ASP), PERL, PHP, C (executables) and others. The language you choose depends on factors such as 1) the one(s) supported by the Web server, 2) the one that best accomplishes the task and 3) the one that’s the easiest for you to write your programming in.

Two widely-used server-side programming languages are ASP and PERL. PERL was one of the earliest server programming languages, and ASP has gained popularity in recent years because it’s a Basic language and relatively easy to work in. (You’ll find similarities between the VBScript that ASP uses and Q&A’s programming language.) ASP and PERL are both free. PERL is a compact and lightning fast language. Most Web servers support it. If yours doesn’t, chances are your Web hosting company will install it for you. There are versions of PERL available for virtually every platform. (You can download PERL packages from www.activestate.com.) And you can actually run PERL programs right on your own Windows desktop computer, which makes them debuggable before you FTP them up to the server.

ASP is bundled with Microsoft’s Internet Information Server (IIS) Web server software as well as with FrontPage, Microsoft’s popular Web authoring program. FrontPage comes with Personal Web Server (PWS), a Web server you can run right on your local PC. You can configure PWS to run PERL and/or ASP. ASP runs only on Windows-based Web servers, but a version for non-

Windows platforms, called *Chili!Soft ASP*, is available from www.chilisoft.com.

Though I use ASP wherever I can, there are some tasks at which PERL just naturally excels. For example, if I had to loop through 1,000 text files in search of a particular string, or sort a huge array of values, I would head straight for PERL. On the other hand, FrontPage and most other modern Web authoring programs integrate nicely with ASP right out of the box. You can get basic books on any server-side programming language—always a good place to start.

A sample application

As in the earlier installments in this series, we’ll create a sample application that will guide you through the basics. For this one, I’ll use a simple products database once again. (Products.dtf, a Q&A 5.0 database, is included in this month’s download file.) We’ll export the data from this database, pretend we’ve uploaded it to our Web server, then design the Web page—with the server-side programming embedded in it—to parse the data in the export file and display it in an HTML table. We’ll design *two* Web pages, actually—one that uses ASP to parse the export file and display the data, and another that uses PERL to do the same thing. This way you’ll be able to compare the two languages and the way they can be used to create essentially the same Web page.

Products.dtf contains the following six fields:

Stock No:
Type:
Description:
Price:
Availability:
Notes:

Nothing remarkable here except that **Price** is a Money field and **Notes** is a free-form multi-line text field containing a lengthy description of the product. There are 24 records in this sample database, so you should wind up with a Web page comprising a table containing six columns (for the six fields) and 24 rows.

The first thing to do is to generate an export file from Products.dtf. Follow the *File / Utilities / Export data* path in Q&A for DOS (*File / Export* in Q&A for Windows). Fill out your Retrieve, Sort and Merge Specs to include the records and fields you want. For this example, export all the fields and records, but sort *1,AS* on the **Description** field.

You *could* have your *server-side* program sort the export file at runtime instead of (or in addition to) having Q&A do it prior to upload. This way, your HTML table could be sorted on-the-fly by **Stock No.**, **Type**, **Description**, or **Price**, depending on the preference of the person requesting the page. This, however, would take us beyond the basics and so beyond the scope of this primer.

When you come to Q&A’s Export Options screen, choose “No” for *Quotes around values*, and choose *Semicolon* as the field delimiter. This means that there can be no semicolons in any of your fields, but it will also

make the file easier to parse on the server. So, for the purpose of this demonstration, export with *no quotes* and a *semicolon* as the field delimiter.

At this point, it's assumed you'd upload the export file to your server. This can be taken care of automatically. One client of mine uses a task scheduler utility running on their network server. (See, for example, **AutoTask 2000** at <http://www.cypressnet.com/products/autotask/autotask.htm>.) Every five minutes—the setting can be any time interval—the utility triggers a batch file that starts a specially configured copy of Q&A set-up to run the export via an autostart macro. (Network users accessing the shared database aren't affected since exporting is not an *exclusive-mode* operation.) When the export file has been produced and saved into a special folder, the utility then, via a second batch file, launches an FTP program (with command line switches) that uploads the new file to the Web server, replacing the old one of the same name. That batch file looks like this (everything from the third line on is actually a single line in the batch file):

```
c:
cd c:\ws_ftp32
ws_ftp95 -s
c:\status\status.txt -d
www.titlesolutions.com/
status/status.txt
```

This way, visitors to the Web site see data that is no more than five minutes old.

Designing the Web pages

Now we'll do some server-side programming to parse and display the data in the export file. We'll start with an ASP page. Listing 1 shows everything included in a Web page (file) named `products.asp`. This plain text file (but with an `.asp` filename extension) is just another Web page. But what makes it dynamic is that whenever a request for this page

is made by a visitor's browser, the page's embedded programming is executed and reads in the data from the Q&A-generated export file and displays it in an HTML table. (You can go to www.quickanswer.com/products.asp

```
<% Response.Expires = 0 %>
<html>
<head>
<title>Your Basic Product Information Page</title>
</head>
<body>

<p><b><big>Product Information by Description</big><br>
(Click on Stock Number for more info)</b></p>

<table border="1" cellpadding="4" cellspacing="0">
  <tr>
    <td><b>Description</b></td>
    <td><b>Stock No</b></td>
    <td><b>Type</b></td>
    <td><b>Price</b></td>
    <td><b>Availability</b></td>
    <td><b>Notes</b></td>
  </tr>
<%
path = Server.MapPath("txtfiles/products.txt")
Set fileObject = Server.CreateObject("Scripting.FileSystemObject")
Set dataFile = fileObject.OpenTextFile(path)

Do Until dataFile.AtEndOfStream = TRUE

Record = dataFile.ReadLine

If Len(Record) > 2 Then

RecordArray = Split(Record, ";")

` The Split function parses the record into field values
` based on the delimiter, which in this case is ";"
` Array indexes always start at 0.

StockNo = RecordArray(0)
ProductType = RecordArray(1)
Description = RecordArray(2)
Price = "$" & RecordArray(3)
Availability = RecordArray(4)
Notes = RecordArray(5)

Link = "<a href='" & StockNo & ".htm'" & StockNo & "</a>"

Response.Write "<tr>"
Response.Write "<td>" & Description & "</td>"
Response.Write "<td>" & Link & "</td>"
Response.Write "<td>" & ProductType & "</td>"
Response.Write "<td>" & Price & "</td>"
Response.Write "<td>" & Availability & "</td>"
Response.Write "<td><small>" & Notes & "</small></td>"
Response.Write "</tr>"

End If

Loop

dataFile.close
Set fileObject = Nothing
%>
</table>
</body>
</html>
```

Listing 1. An ASP page that parses your Q&A export file and displays it in an HTML table.

now and see how it looks.)

With ASP files, you place all the VBScript programming inside `<% ... %>` brackets. The programming is executed by the server but is never seen by the user because the only thing the server delivers to the browser is the result of the programming—the generated HTML—not the programming code itself.

The `<% Response.Expires = 0 %>` command at the very top of the page defeats the tendencies of browsers to cache pages. This means that the person viewing the page is sure to get the latest data even if he's hit the page many times before.

The `Server.MapPath` method lets you get the *physical* path to the text file relative to the Web's *virtual* root directory. (Physical paths are typically required to read and write data files on servers.)

The `If Len(Record) > 2 Then...` condition avoids Q&A's DOS-like end-of-file marker at the end of any export file it generates. Windows programs don't know what to make of this marker, so you want the server to ignore it.

The `Link` variable creates a hyperlink based on the Stock Number plus an ".htm" filename extension. Visitors can click on the link and be taken to a page that provides more detail about that particular product.

You'll notice that the page contains the beginnings of the table definition *before* the

programming begins. Following the fixed column headings row, the programming takes over and fills in all the remaining rows with the data from the export file, surrounding it, of course, with the appropriate HTML tags.

Listing 2 shows a PERL script that generates the same Web page as Listing 1. You can view this one online by going to www.quickanswer.com/cgi-bin/products.pl. (PERL files typically have a ".pl" filename extension.)

If you'll be running this script on a Unix server, its first line will need to read something like this (check with your Web host to be sure):

```
#!/usr/bin/perl
```

Moreover, on a Unix server, you'll need only one backslash between each path element to the text file.

For me, PERL is more arcane and thus harder to write and debug than ASP. I wouldn't normally use PERL to generate a Web page like this where I could use ASP. By comparing the two scripts, you'll notice that the ASP programming is placed inside the regular HTML, whereas the PERL file is all code. Today's ASP lets you execute PERL scripts within an ASP page via the `<% @Language = perlscript %>` command.

Next month, when I discuss the technique for extracting data from an actual Q&A database residing on a Web server, I'll introduce you to the Q&A 4.0 Perlmaqr.dtf database I demo'ed at the January 2001 International Q&A Users Conference in California. This little workhorse database can take a lot of the pain out of creating a PERL script for Web form processing.

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```
## PERL Script.    Creates HTML Table using products.txt as data source

print "Content-type: text/html\n\n";
print "<html><head>";
print "<title>Your Basic Product Information Page</title>";
print "</head>\n";
print "<body>\n";
print "<p><b><big>Product Information by Description</big><br>";
print "(Click on Stock Number for more info)</b></p>\n";
print "<table border='1' cellpadding='4' cellspacing='0'>\n";
print "<tr>\n";
print "<td><b>Description</b></td>\n";
print "<td><b>Stock No</b></td>\n";
print "<td><b>Type</b></td>\n";
print "<td><b>Price</b></td>\n";
print "<td><b>Availability</b></td>\n";
print "<td><b>Notes</b></td>\n";
print "</tr>\n";

open (DATAFILE, "<d:\web\quickanswer\txtfiles\products.txt");

while (defined($Record=<DATAFILE>)) {

($StockNo, $Type, $Description, $Price, $Availability, $Notes) = split(/;/, $Record);
print "<tr>\n";
print "<td>$Description</td>\n";
print "<td><a href='\"$StockNo.htm\"'>$StockNo</a></td>\n";
print "<td>$Type</td>\n";
print "<td>\$Price</td>\n";
print "<td>$Availability</td>\n";
print "<td><small>$Notes</small></td>\n";
print "</tr>\n";
}
close (DATAFILE);
print "</table></body></html>\n";
exit (0);
```

Listing 2. A PERL script that produces the same Web page as the ASP script in Listing 1.

they will come out looking like 2002/04/04, the way Q&A stores them internally.

The third and fourth derived columns tell Q&A to print the minimum and maximum values in the **InvNum** field based on a given date, and only when the date changes from the previous record. Remember, you must use the terms *maximum* and *minimum*, not *max* or *min*.

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can be designed to do so many different things, that you might not need so many of them sprayed all over your Q&A directory.

As Bill Halpern points out in this month's @Help column, when using Q&A 5.0's External Programs feature to run batch files, it's always a good idea to have the return path to your Q&A program files directory as the final batch file command. This holds true for batch files run via @Shell commands as well.

So, if you're getting unexpected results when trying to launch other programs directly via External Programs or @Shell, try running them via batch files instead.

Keyword Summary... cont'd from page 3

Also, since any record will always contain an entry in the **First Name** field, we will refer to it to count entries. It gets this Spec: "2,I."

Finally, press F8 and add this Derived Column:

Heading: Count
Formula: @Text(#3 <> "", @Count(#2, #1))
Column Spec: 6

The formula tallies how many "First Name" entries there are for each value in the **Alphabet Code** column. The expression:

```
@Text(#3 <> "", @Count(#2, #1))
```

limits to one the number of times this tally prints.

That's it. Now the Report looks like Figure 2.

For a better looking and more readable report, it's even possible to add subheadings to the Category column. For a report that looks like Figure 3, here's how.

Go back to *File / Add Data*. In the **Column Name** field type "MUSICAL INTERESTS..." Next, refer to the Keyword Chart. To have "MUSICAL INTERESTS..." appear above "Classical," it needs an alphabetical assignment like "a" in "am". Accordingly, type one of these in the **Alphabet Code** field. Create similar records for the subheadings AGE and GENDER.

Go back to *Report / Design*, navigate to the Derived Column Spec and add this formula:

Heading: Count
Formula: @Text(#6 <> 0, #6)
Column Spec: 7

This formula suppresses the zeroes that would otherwise appear in the "Count" column next to any added subheadings.

To insure accuracy and prevent accidental entries, I suggest you make the

Column Name and **Alphabet Code** fields

Read-only. (Choose *Read-only fields* on the Programming menu.)

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STUDENT PROFILE		Mar 17, 2002
CATEGORY		COUNT

MUSICAL INTERESTS...		
Classical		4
Jazz		4
Blues		6
Rock		11
New Age		3
Country		4
AGE.....		
Under 16		4
16 to 25		6
26 to 40		4
Over 40		2
GENDER.....		
Male		10
Female		6

Figure 3. A more readable report with the data grouped under subheadings.



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