Modify Huge Tables with MOST

By Whil Hentzen

If you wander into the garage of any serious automobile enthusiast or home hobbyist, you'll find a huge assortment of dusty, but still bright and shiny tools. Upon further examination, you'll see that many of these tools have only a nick or two on the gripping surface, and some haven't even had the price tag removed. These are tools that have been acquired in order to accomplish a specific task and have only been used once, or, haven't every been used, but were picked up "just in case" on some rainy Saturday. "I might find a use for this three knobbed, left-handed untwister gizmo, so I'd better buy it while I can."

Same thing goes for this month's Cool Tool. In contrast with the flexible tools we've seen in other columns that can be used most anywhere a hammer can, Boris Shnayder's MOST utility is one that will fall into one of three categories: (1) "Whil, why didn't you write about this last month? I NEEDED it just last week!", or (2) Wow, I just ran into this problem at a customer's site. This was perfect timing! or (3) Looks handy, but I don't have a need for it now. I'll put it in the toolkit for future reference." This third category, of course, also contains the people who write me six months later, saying "I remember when you talked about a tool that..."

Well, on to MOST. What does it do? In essence, it's a replacement for the MODIFY STRUCTURE command in FoxPro 2.x. However, it's not simply a pretty face, nor does it provide some sort of enhanced functionality like support for NULLs or whatever. Instead, it allows you to perform a MODIFY STRUCTURE when you are not going to be altering the memo or general fields of a table. (In the rest of this article, I mean 'memo or general fields' when I use the term 'memo field'.)

In order to fully appreciate the value, let's look at how FoxPro handles structure modifications now. If you simply modify the name of a field, FoxPro just tweaks the header of the .DBF and is done. However, if you make more serious modifications, FoxPro does more work. Once you've answered "Yes" to the "Make structure changes permanent?" dialog, FoxPro performs the following process. First, it will rename the original DBF with a .BAK extension. Next, it creates the new DBF structure, and appends records from the .BAK (which is really a DBF) to the new .DBF. Finally, the .BAK is erased.

Obviously, you need to have enough free space to accommodate a second copy of the .DBF file. Furthermore (and herein lies the rub), if you have a memo field in the table, the FPT file (which contains the actual data) is also renamed, and given a .TBK extension. The memo file data is then copied along with the records. This happens even if you haven't made any changes to the memo fields, and FoxPro will not let you get around this requirement! If you are modifying the structure of large tables, this behavior of FoxPro commonly causes two problems. First, this process can take a very long time. And, the second problem is space. You'll need a LOT of disk space, space that you might not have. Not everyone is fortunate enough to have an extra gig or two laying around, and those that do are usually foolish enough to waste it by doing full installs of every piece of software they own.

How MOST works

MOST performs a bit of slight of hand by changing the header of the .DBF so that it thinks it does not contain any memo fields, or have an associated .FPT file. Then, it brings forward the standard MODIFY STRUCTURE dialog, and you can have at it (within limits) as you like. (The limits concern modifying the memo fields. More on this in a minute.) Once you've finished with the modifications, FoxPro does it's thing, changing the structure of the table as normal. Once FoxPro is done, MOST picks up again and changes the header back so that the table recognizes that it has a memo field. The pointers in the DBF still are targeted to the same place in the FPT file. It's straightforward and pretty fast.

Back to those limits. When MOST modified the .DBF's header, two things happened. First, the flag in the header that tells FoxPro to look for an .FPT file was set off. Second, the type of each of the memo fields in the table were turned into character type. As a result, you could conceivably change the length of one of those memo fields from 10 to another value, or even to another data type. You could also (horror!) delete one or more of the memo fields. Obviously, these types of changes would be bad. However, since you are now in FoxPro's native MODIFY STRUCTURE dialog, MOST can't do anything about it except flash a warning about what not to do.

Assuming that you're a responsible adult, or at least that you're not trying this at 3 AM, I think these limits are pretty reasonable. You can add and delete any other fields, modify those fields, or move the memo fields to different positions in the table. You just can't change the size, type or name of a memo field. Actually, if you need to rename memo fields along with other structure changes, you can still take advantage of MOST by making the changes in two steps. First, make the field name changes (which just changes the header.) Then, use MOST to make all of the other structure changes.

How safe is it?

Safety is probably the next question on your mind. A utility like this that works "most of the time" (sorry about the pun) isn't going to be very useful. Alleviating this concern was on Boris' mind as he put this utility together, and this is how he's handled it. First, MOST does not delete any data files, nor are any significant (i.e. unrecoverable) changes made to any files. Next, he has trapped for situations like hitting ESCAPE during the process, and he provides an on-screen list of fields that may not be changed while using FoxPro's regular MODIFY STRUCTURE dialog. All fine and good, you say, but what about a power outage in the middle of the game? In this case, you'd be left with a DBF that doesn't know about the memo field. Again, he's considered the possibility, and before anything, MOST saves a copy of the data file header to a special file. If MOST finishes up without problems, this file is deleted. However, if MOST can't complete the operation successfully, this data header file is available. MOST includes a utility, RESTORE.APP, whose purpose is just automatic recovering of unsuccessfully modified data files using this header file and the original data files.

Additional Goodies

As you are probably aware, using FoxPro's native MODIFY STRUCTURE also packs the memo fields in the table, culling out deadwood and unused space. Because MOST does not touch the memo file, it appears that you can't have it both ways. But au contraire! Boris has created a front end for MOST that lets you choose if you want to use MOST's non-memo-altering mechanism, or FoxPro's regular MODIFY STRUCTURE process. (See Figure 1.)

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Furthermore, you can determine how much space each memo field is taking up. The Compare Memo File Sizes pushbutton allows you to select memo fields in the table and calculate how much disk space they are taking. This can be used to decide which method should be used.

Where to find it

MOST.ZIP is included on this month's Companion Disk, and ... (CIS?)

*\\\ Bob, do you have an exclusive agreement with Boris about this being a FoxTalk exclusive or will it go up on CompuServer as well???