# WINTIPS
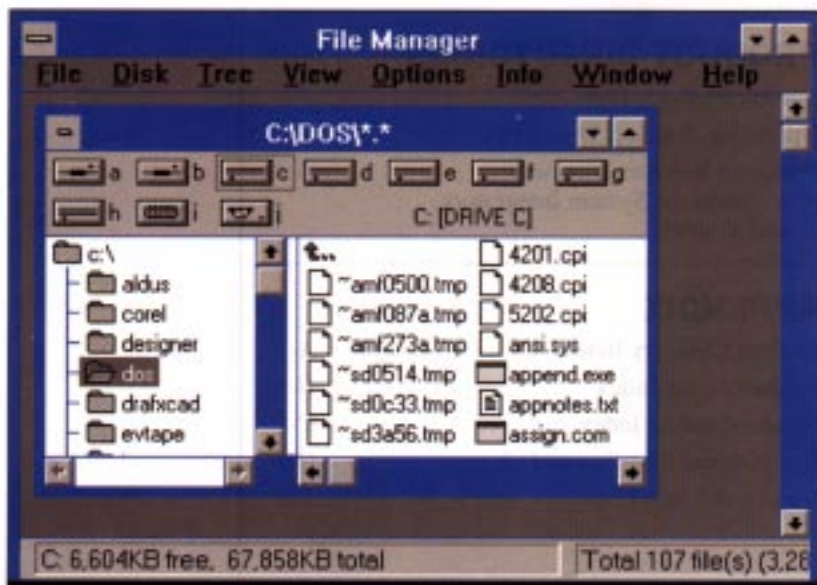## A Clean Boot-up — Automated Maintenance Saves The Day

by Chris Morton



*Figure 1. Multiple, "orphaned" temporary files of the same type can cause application errors. Letting Windows place them in the \DOS directory also isn't a good idea from a file organization standpoint.*

*If Windows and… Windows applications are not properly closed every time… "orphaned" temporary files are left to accumulate on your hard drive*

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Many Windows users unknowingly shut off their computers without first exiting from Windows to the DOS prompt. Other users' PCs are frequently subjected to momentary lapses in power (brownouts and blackouts). Still others are plagued by occasional "General Protection Fault" (GPF) application errors, sometimes forcing a warm boot or a full system reset. Sound familiar?

Although easily curable, each of these three scenarios can create an unstable operating environment for Windows. At the very least, significant amounts of hard disk space can be unnecessarily consumed.

### Those Pesky ~*.TMP Files

Many Windows applications use temporary files created "on-the-fly" during any given Windows session. Aldus PageMaker and Lotus AmiPro are but two common examples, creating files named ~PMxxxx.TMP and ~AMxx.TMP, respectively. As you normally exit or close one of these applications by clicking File - Exit (or by pressing [ALT+F4] on the keyboard), it cleans up after itself by deleting any ~*.TMP files it created during that single session.

If Windows itself and ~*.TMP-generating Windows applications are not properly closed every time they're run, "orphaned" temporary files are left to accumulate on your hard drive. As one of these applications is reopened during a subsequent Windows session, a residual temporary file may conflict with a new temporary file of

the same type, causing erratic application behavior and/or GPF errors. All too often, a form of temporary hard disk corruption, called lost allocation units (or "lost clusters") is also involved. See page 382 of the Microsoft **MS-DOS 5.0 User's Guide and Reference** for more information.

If you use Microsoft MS-DOS 5.0, you may check for orphaned ~*.TMP files on a given hard disk volume by closing Windows, turning on your printer, and following these steps:

```
CD\     [Enter]
DIR ~*.TMP /S > PRN [Enter]
```

Note the directory names in which the temporary files occur. Switch to each directory (CD\{directory name}) listed on your printout and issue the DEL ~*.TMP command.

You may also use Windows File Manager to carry out this same operation:

- Select View - Partial Details... and put a check in the Last Modification Date box
- Select File - Search. In the Search For text entry box, enter ~*.TMP. For every drive volume in succession, make sure the Start From box indicates just the root directory of that volume (e.g., C:\). Make sure the Search All Subdirectories box is checked and click [OK]
- After the search is complete, delete all temporary files that **DO NOT** reflect today's date adjacent to the filename
- Reset File Manager's default mode to View - Name

### Automating the Process — Part One

The aforementioned are manual methods of maintaining the integrity of your PC. If this is so important, which it is, why not perform these operations automatically each time you start or reboot your PC? Here's how:

First, use File Manager to make a backup copy of your AUTOEXEC.BAT file, as located in the root directory of drive C: (clicking once on the filename and pressing [F8] is a shortcut).

Now double-click on the MS-DOS Prompt icon in the Main Group Window. Type SET at the DOS prompt and press [Enter]. If you see a line that reads TEMP={some drive\directory}, this is where temporary files created by your Windows applications are being placed on the hard disk. If the directory is called \TEMP or \WINDOWS\TEMP, it's OK — but make sure the specified directory actually exists on the hard disk so the entry is valid (you may use File Manager to visually verify this). In order to protect operating system files, Mastering Computers, Inc., does not recommend that the entry read TEMP=C:\DOS. Type EXIT and press [Enter] to close the DOS session.

If the entry doesn't exist at all, use the MS-DOS 5.0 Editor, Windows Notepad, or the System Editor (File - Run - SYSEDIT) to add it to the AUTOEXEC.BAT file. If you have more than one physical hard disk, choose the fastest drive for the \TEMP directory. The volume needs to have a minimum of 1-2 Mbytes of free space available at all times.

If you're not going to be using a RAM disk (see below), add this (single) line to the AUTOEXEC-.BAT (see Figure 3):

```
IF EXIST {drive}\TEMP\~*.TMP DEL
  {drive}\TEMP\~*.TMP > NUL
```

The next time you start your system, DOS will automatically detect orphaned temporary files still located in the \TEMP directory from the last Windows session and delete them. Optionally, redirecting the screen message output (> NUL) prevents extraneous information from being displayed on the monitor, avoiding possible user confusion.

## Make Windows Applications Faster

If you have 8 Mbytes or more of RAM, you can speed up applications by creating a 1 Mbyte RAM (electronic) drive and making it the volume that holds the temporary files. In CONFIG.SYS, add the following line to create a 1 Mbyte RAM disk.:

```
DEVICE=C:\WINDOWS\RAMDRIVE.SYS /E 1024
```

As you reboot the system, watch the display carefully as the RAMDrive driver gets loaded into CONFIG.SYS. A new drive letter will be automatically associated with the RAMDrive; if you have one hard disk partitioned as a single volume C:, the RAM disk designator will be the next successive alpha character, D:. If you have both a C: and a D: drive, the RAM disk will be E:, and so on.

You'll also need to edit the AUTOEXEC.BAT entry to read SET TEMP={RAM drive designator}. Note: if you use large graphics applications such as CorelDraw! or Harvard Graphics for Windows, you'll need at least a 2 Mbyte RAMdisk. Change the CONFIG.SYS RAM disk entry to read:

```
DEVICE=C:\WINDOWS\RAMDRIVE.SYS /E 2048
```

The added advantage of using a RAM disk as outlined here is that the entire contents of the RAM disk, and therefore all temporary files, are automatically purged every time you reboot your PC. Consequently, the IF EXIST... entry in the AUTOEXEC.BAT is not required.

## A Healthy Drive is a Happy Drive

As a file is stored on your hard disk, DOS typically records it in a series of fragments wherever it happens to find available space. It then stores the location of the file fragments in a registry called the file allocation table (FAT). To protect your data, DOS maintains two FATs in the event one becomes corrupted.

Should your PC lose power or "hang", forcing a system reset, the relationship between any open files in memory and the FAT is often destroyed. The areas that were in use on the hard disk by the opened files cannot be reused, thereby wasting disk storage space. That is, unless you periodically issue the MS-DOS CHKDSK (check disk) command. Used alone, it reports the existence of
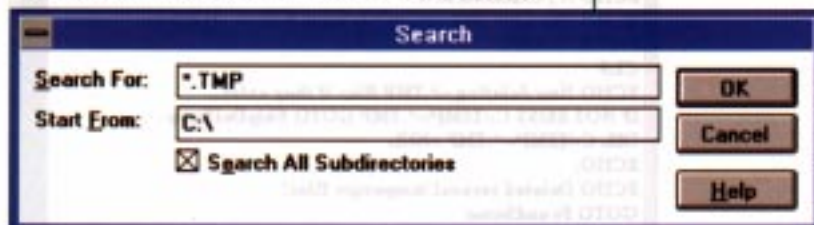


corrupt file relationships, called "lost allocation units". If any are detected, it asks if you would like them converted into files, but cannot actually do so at that time even if you answer "Yes".

*Figure 2. You can use the Search function to locate ~*.TMP files.*

*NOTE: So as not to be confused, understand that running CHKDSK is not the same as defragmenting a hard disk. There is simply no other substitute for periodically using this MS-DOS utility, except for drive volumes created by such third-party disk compression utilities as Stacker. These programs ship with their own maintenance utility set.*

To actually check for and reclaim lost allocation units, you need to type CHKDSK /F (for fix) and press [Enter]. As lost clusters are once again detected and you instruct CHKDSK to save them as files, they are sequentially renamed FILE0000.CHK, FILE0001.CHK, etc. There is absolutely no purpose for hanging onto these files unless: 1) you are a programmer and are interested in seeing where your application bombed, or 2) are desperately attempting to retrieve data that is absolutely impossible to retrieve, or recreate, by any other method (good luck!). Since these two conditions seldom exist in the everyday world, answer "No" when prompted. Answering "Yes" only creates the need for a second step — deleting all of the resultant *.CHK files which also consume disk space!

*The next time you start your system, DOS will automatically detect orphaned temporary files*

That said, perhaps someone else previously ran CHKDSK /F on your PC and did save the lost allocation units as files. To test for this condition, turn on your printer again and run a variation of the earlier command sequence:

```
CD\    [Enter]
DIR *.CHK /S > PRN [Enter]
```

Review the new printout and delete each *.CHK file, as you did previously with the ~*.TMP files. You may also use File Manager to search the volume and remove each occurrence, as you may have done in the earlier example.

```
─ Notepad - AUTOEXEC.BAT ▾ ▲
File   Edit   Search   Help
@ECHO OFF                                      ↑
(series of other AUTOEXEC.BAT commands)
...
ECHO Running CHKDSK-please stand by...
ECHO N | CHKDSK C: /F
ECHO N | CHKDSK D: /F
ECHO N | CHKDSK E: /F
ECHO The CHKDSK utility has been run on all drives.
E:\UTIL\WAIT 2
CLS
ECHO Now deleting ~*.TMP files if they exist...
IF NOT EXIST C:\TEMP\~*.TMP GOTO SkipDelTemp
DEL C:\TEMP\~*.TMP >NUL
ECHO.
ECHO Deleted several temporary files!
GOTO FoundSome
:SkipDelTemp
ECHO.
ECHO There were no temporary files found.
:FoundSome
E:\UTIL\WAIT 2
SET TEMP=C:\TEMP
CLS
(series of additional AUTOEXEC.BAT commands)   ↓
◄                                              ►
```

Figure 3. Automating the process of removing unneeded files from your hard disk.

Lotus Development Corporation has reported hundreds of user problems that were eliminated by regularly running CHKDSK /F. In addition to hogging disk space (one user we ran into had 11 Mbytes of lost allocation units on a 60 Mbyte drive!), having a hard disk with this ongoing condition does not help Windows' stability!

## Automating the Process — Part Two

Since this form of file/disk maintenance is so important, why not make it another automatic housekeeping routine? To do so, insert the following line in your AUTOEXEC.BAT:

```
ECHO N | CHKDSK C: /F > NUL
```

For each conventional DOS hard disk volume in your PC, duplicate this line entry and substitute the alphabetical disk volume designator for C:. For example, if you have a single, 200 Mbyte hard disk that's partitioned into three volumes of 66 to 67 Mbytes each (partitioning a larger drive into smaller volumes boosts performance, aids in disk organization/maintenance, and helps increase

hard disk life expectancy), your entries would read as follows:

```
ECHO N | CHKDSK C: /F > NUL
ECHO N | CHKDSK D: /F > NUL
ECHO N | CHKDSK E: /F > NUL
```

Each time you boot up, CHKDSK /F will automatically reclaim all disk space taken up by lost allocation units. When the command asks whether or not you would like to convert the lost allocation units to files, the pipe symbol (|) automatically passes a negative reply (ECHO N) on your behalf.

As before, redirecting the entire sequence to NUL keeps potentially confusing screen messages from becoming overly intimidating to some users. Since CHKDSK does take a bit of time to complete its operations on slower PCs, however, some users might think their PC is stalled during the boot-up process. For this reason, we like to precede the CHKDSK command lines in the AUTOEXEC.BAT with a friendly message (see illustration above):

```
CLS
ECHO Running routine system
  maintenance: patience, please...
ECHO N | CHKDSK C: /F > NUL
CLS
```

## Summary

These few tips are easily implemented, but they will make your Windows platform much more stable and at the same time may reclaim a great deal of hard disk space that you didn't know was being used wastefully. ◆

*...redirecting the entire sequence to NUL keeps potentially confusing screen messages from becoming overly intimidating to some users*