

typing a control A. This will cause DOS to display the previously executed command, leaving the line buffer pointer at the termination character. At this point you may edit the line by backspacing and then type a carriage return to execute it in its new form.

A Few Complaints

A few complaints are in order here. Filenames may only be six characters long. This is unhandy. Also if you desire to choose a specific drive you must type the file spec with a colon like: 1:LIST. The colon is in a very unhandy position on a lot of keyboards and a period would be a lot handier. In the LIST command I would like to have the ability to LIST only the files with a certain extension, or maybe even files that start with a certain letter, or two letters. Version 2.7 allowed you to list either the command files or the rest so maybe we are taking a step backward in this area. APPEND gives you the capability to append one file to another. The syntax is: APPEND, THIS, THAT. When you use this command THIS is gone forever. I don't like this implementation and would much prefer something like: APPEND, THIS, THAT, THESE. THIS and THAT should both be intact after the APPEND, I feel. Let's look at the new version 5.1 commands. GOTO is very useful as it allow you to jump to a program that has already been loaded into memory. The target address can be represented by a one to four digit hex number. BACKUP allows the user to make a complete image copy of a disk. Data is transferred on a track by track basis. It is faster than COPY but there is a disadvantage. If the original disk has files which are physically scattered, the new disk will be the same and your access times won't be as good. If you want to insure that all files on the disk are contiguous, use COPY. When I typed this command, I received a "ROM ERROR MESSAGE." This message is given if the user has one of the earlier ROMs in his system. This is a blow to compatibility and I would prefer a command which would work with all firmware. The experience makes you feel you have been had. BUILD is a nice addition which allows you to type in a small command file quickly. The files it creates default to a CTL extension and are used by the EXEC command. The EXEC command is also a very worthwhile addition. It allows the user to process a text file as a list of commands. When it is running DOS thinks it is getting its input from the keyboard. In fact, when booting the system automatically runs the command, EXEC, STARTUP. This configures your terminals and sets any of the operating parameters of your system. FORMAT is a prompting command that allows you to initialize diskettes. After formatting a disk, it retains control and thereby allows you to format a number of diskettes at a time. It also automatically copies the DFM68 overlay files onto the new disk. Its output is cute, especially the way it reports the track numbers as it works. I do have one small complaint. At one point it prompts you with "HONEST?" I typed "Y" for yes a half dozen times before I tried typing "H" for honest. Really now. REPAIR allows you to recover files that have been accidentally deleted, etc. I had to buy my original copy on a Users Group disk so it is nice of Smoke Signal to include it with the basic operating system. SAVE is not a new command, but this version has a new feature that is quite useful. You may save multiple regions of memory by simply repeating the starting address, ending address pairs as many times as needed in the command line. This is a lot easier than appending a number of small files together. It also saves disk space. SAVET, by the way, is exactly the same as SAVE except it loads at \$0100 instead of in the Transient Command Area.

The SET Command

The SET command is the one that will most likely

convince you to upgrade. It allows you to set a number of system and terminal parameters, including: back space character, delete character, depth count, width count, the number of nulls output with each carriage return, the number of eject lines to be sent at the bottom of a page, the STOP or escape character, the CONT character, and the BREAK character. It also lets you toggle a WAIT flag that will allow you to pause at the end of a page if you need to change paper, etc. SET also allows you to clear the User Command Table without rebooting, define a Date string, and set a location called MEMMAX, and a lock which will allow you force all lowercase letters to uppercase if you have a terminal that doesn't understand lowercase letters, like a Model 15 teletype or unmodified CT-1024. MEMAX can be read by other programs and allows the programmer to define the upper limit for user programs. With SET you can also change the CRT control port address, the Hard-copy port address, and the monitor ROM's echo control byte. It also allows you to define the system and work drives. Commands default to the system drive, and target files default to the work drive. One feature would make SET handier. It should allow the user to look at the parameters, if he desires, before he SETs them. An example would be to type SET(cr) if you wanted to see how you have things configured and use the present format if you want to change something.

Conclusion

DOS68 version 5.1 is a dramatic step in the right direction. Its cursor control is impressive and makes your CT-1024 look like it's been to school. Error messages are a lot nicer now and many of the shortcomings of earlier versions have been eliminated. And, the fact that it is driven by a parameter table makes it very easy to customize.

MINIDISK+ DOS

A 68 Micro Journal Lab Review

MINIDISK+ is a ROM-based disk operating system for the Percom LFD-400 floppy disk system. It is written by Bill Vergona of Cer-Comp Microcomputers, Las Vegas, who also wrote an early version of Percom's MINIDOS-PLUSX DOS (TM of Percom Data Co.) (Since MINIDISK+ is only useful if you have a Percom disk system, the rest of this review will assume some familiarity with Percom's hardware and software.)

MINIDISK+ is a 2K disk operating system supplied in two 2708 EPROMs. It plugs into the LFD-400 disk controller, next to the MINIDOS ROM already there. It adds named files to the basic read-write capability of MINIDOS itself. MINIDISK+ works with MINIDOS, but cannot be used with MINIDOS-PLUSX; the latter must be removed before plugging in the MINIDISK+ EPROMs, and the named file and directory handling functions of MINIDOS-PLUSX are then taken over by MINIDISK+.

Since MINIDOS itself stays, any program which uses only Percom's DSSS format ignores MINIDISK+ and works just as it did before it was installed. But programs written for MINIDOS-PLUSX do not work with MINIDISK+. Actually, this is not much of a problem since there is only one Percom program which fits into this category - Super Basic. Cer-Comp solves this problem by providing patches to adapt Super Basic to work with the new DOS.

On the other hand, since most Percom software does not use named files, for anyone who primarily uses this software (which includes Percom's assembler, editor, text processor, or the Softran conversion which runs TSC's Flex or SSB's DOS68) changing from MINIDOS-PLUSX to MINIDISK+ would have no effect one way or the other.

When it comes to named files, MINIDISK+ is quite different from MINIDOS-PLUSX, and has a number of very interesting features, made possible by the fact that it occupies 2K instead of just 1K. Most of these make use of the system a bit easier, but it also has several features which reduce accidental erasure of files, something which is easily done with MINIDOS-PLUSX. (Although, for the sophisticated user, these same features may occasionally get in the way because they won't allow him to do some unorthodox operations which the DOS considers harmful.)

MINIDISK+ Operation

MINIDISK+ assigns each disk a name. All files can be identified either by a drive number, or by a disk name. For instance, in MINIDOS-PLUSX file DATA on drive 2 would be called 2/DATA; in MINIDISK+ it is called :2 DATA. But if the name of the disk is ABCDEF, then you can also access the file as :ABCDEF DATA. MINIDISK+ will search all active drives until it finds disk ABCDEF, and then use that disk.

MINIDISK+ also uses the "wild card" character /. The / is like a joker in a card deck - it can replace any other character or characters. Thus / all by itself stands for any file name; TEST/ stands for any file name which starts with the letters TEST, such as TEST1 or TESTER.

Percom's MINIDOS and MINIDOS-PLUSX assign a file type to files, thus differentiating between text files, Basic files, and plain program files. But virtually no software checks the file type. Though this may give an occasional weird result, it never does any damage, and does in fact allow you to do some unusual things. MINIDISK+, on the other hand, assigns file types and checks them carefully.

MINIDISK+ can handle up to 45 files per disk, rather than the maximum of 31 which MINIDOS-PLUSX handles. Moreover, MINIDOS-PLUSX uses sectors 000 and 001 of each disk for the directory, leaves sectors 003 through 009 blank, and starts file storage at sector 010; MINIDISK+ uses 000-002 for the directory, and starts file storage at 003, giving 347 usable sectors on a disk instead of only 340 (or 397 instead of 390 on a 40-track drive.)

Since MINIDISK+ occupies 2K, compared with the 1K of MINIDOS-PLUSX, it contains more commands. For instance, functions to copy files or pack a disk are part of the MINIDISK+ in EPROM, whereas they are utilities which have to be loaded from disk when using MINIDOS-PLUSX. This does make operation a lot smoother.

In the following list of MINIDISK+ commands, the name of the closest MINIDOS-PLUSX command or utility is enclosed in parentheses after the MINIDISK+ command, although there are a lot of subtle differences between them. (All commands can be abbreviated to two letters.)

NEW (I) initializes a new disk, and gives it a disk name.

SAVE (S) saves memory contents to disk. If a file with the specified name is already on disk, MINIDISK+ checks whether you want to replace the old file. After the file is written, MINIDISK+ reads it back to check that it was written properly. Many users will find this read-after-write capability invaluable.

LOAD (L) loads files back into memory. A disk and/or file name can be specified, or the DSSS format can be used, as in MINIDOS. In either case, an alternate target address can be specified, so that a file may be loaded into a different location from that it was saved from.

ADD (A) adds 10 sectors to the end of a file to allow for future expansion.

OPEN (CREATE disk utility) creates an empty file on the disk.

REMOVE (D) removes one or more files from the disk. As in MINIDOS-PLUSX, the file space from a

removed file gets tacked on to the previous file, but with a difference. The vacated space is listed in a disk directory printout as available, and subsequent SAVE commands will insert other files into this empty space if they fit, permitting this space to be reclaimed without repacking the disk. This feature provides many of the advantages of dynamic sector allocation as used in Flex and other disk operating systems, without some of its disadvantages.

CHANGE (R) renames a file. If the new name already exists on the disk, then an error message is printed. There is no provision for file protection.

ANALYZE (F) prints the disk directory. Empty holes left by previous REMOVES are identified, and a total of the available area at the end of the disk is also printed (unfortunately in hexadecimal; there obviously wasn't room for a decimal conversion routine in the EPROM.) The ANALYZE command can be followed by one or more file names (with or without the wild-card character /), in which case only the specified files will be printed.

RUN, followed by a file name, loads a program file and runs it.

GOTO (J) jumps to a program in memory.

EXIT (X) returns to the monitor.

SQUASH (PACK disk utility) packs a disk to eliminate holes. Its error-handling appears much better than that of Percom's PACK utility and is less likely to clobber a disk if something goes wrong. Each time a file is moved on the disk, it is read before and after the move to check for errors. If an error is detected, the file name being processed is printed, and the directory is rewritten to indicate the current status of the disk.

COPY (COPY disk utility) copies files from one disk to another. In some ways, this command is much more powerful than Percom's COPY utility. Files can be copied from one drive to another, or to the same drive; in the latter case, MINIDISK+ will ask you to SWAP disks, thus allowing copying disks on single-drive systems. A whole series of file names can be specified in the command, or the wild-card character / can be used, so that more than one file can be copied, or in fact, an entire disk can be copied. If a file name already exists on the new disk, MINIDISK+ asks whether the old file should be removed. COPY also checks a file after it is copied to reduce errors. (There is no BACKUP routine furnished, but Percom's BACKUP will copy MINIDISK+ files very nicely. Copying a disk is preferable to doing a BACKUP, though, since it will also repack a disk if it has vacant space.)

Although the COPY command could be used to copy a disk having a MINIDOS-PLUSX directory into a MINIDISK+ directory, this function is more easily handled by a utility called CONVRT.

SIZE prints out the amount of contiguous memory available on the system. This function is used by several other commands to determine available memory size for buffers, but can also be used as a quick memory test.

CK reads a disk file and checks it for errors. The file is read into the area normally used to hold the directory, and does not disturb other memory. Thus it can be used to test a file after writing, so that it can be re-written if an error exists.

MINIDISK+ Supporting Software

A DOS is not much good without software to go with it. What is available?

First of all, all Percom software which uses the DSSS format will still run. This includes the Touchup Editor, Text Processor, and Percom Assembler.

Cer-Comp also provides several disks of programs or patches to other programs to adapt them

to MINIDISK+.

Patch Disk No. 1, at \$19.95, is an almost essential investment. It patches a number of programs to run under MINIDISK+; the patched programs then allow using named files for data and programs. Some of these are very well done.

The patch to SWTP Cores Editor/Assembler is a tremendous improvement over the original, or even over Percom's patch. It allows both source as well as object programs to be saved on disk; it also provides a memory option, which allows the object program to be directly placed into memory for execution. This patch also fixes up some Cores problems, and makes it into a really first-class assembler. The only limitation is that Cores can only assemble a source program which fits into memory.

Many old-timers - Is there such a thing? - who have moved up to a TSC or Percom assembler tend to look down on Cores as old-fashioned or unreliable. It takes a while to realize that with Cer-Comp's patches, Cores is suddenly transformed into a completely new and very useful program.

Another patch is for SWTP 8K Basic versions 2.0 or 2.2 which allows Basic programs to be loaded and saved on disk. It will not, however, load Basic programs from either Percom Super Basic, or from earlier Percom patches to the same SWTP Basics.

The patch disk also has two patches to the cassette version of Microware's A/BASIC compiler. The first of these allows A/BASIC to compile a disk source file into a disk object file; this patch is roughly equivalent to the A/BASIC patch on one of Percom's user group disks. The second patch allows A/BASIC to operate with disk files, a very useful addition. Another patch (on Disk No. 2) allows A/BASIC to be coresident with an editor, so that programs can be edited, compiled, and either stored on disk, or immediately placed into memory for execution.

The same disk also has a patch for Percom Super Basic to allow it to work with MINIDISK+. Though it makes some minor changes to commands, Basic operation appears unchanged. However, where the original version of Super Basic ignores file types, Cer-Comp's patched version does not. Hence Super Basic can no longer read text or program files as data and operate on them (unless patched). This disk also includes a conversion utility to convert disks with Percom MINIDOS-PLUSX directories into the MINIDISK+ format.

Cer-Comp's Disk No. 2, at \$39.95, contains more useful software. It includes a patch to the SSB Source Generator to allow disassembly and storage of text on disk, as well as programs to list disk files, and relocate program files when loading them. The latter adjusts extended addresses within the program to allow machine language programs to run after they are relocated. Also included is a disk-to-disk assembler which will handle programs too long for Cores, as well as the patch to permit coresident operation of ABASIC with Cer-Comp's Editor. Another utility permits reconstruction of a disk directory in case of an accidental erasure.

The Editor itself is also on this disk. Although it takes a bit of getting used to, it is a fascinating program to watch at work. In addition to the more common editor functions, such as string search and replacement, line replacement, and so on, Cer-Comp's editor has a line editing function which is sorely missing from TSC's editor, used in other 6800 disk systems. When characters are added or removed inside a line, the editor quickly re-writes the rest of the line and then backspaces the cursor to the character being worked on. In this way it always shows the line as it currently exists, and opens up or closes spaces within it. This function obviously requires a CRT terminal, and uses control characters for a CT-64 terminal; but the manual shows where the various control characters are

located so they can be changed for other terminals (although Hazeltine or other terminals which require a combination of two control characters for each function might require extensive patching.)

The editor also has a renumber facility for Basic programs, and does file conversion between Cores or SWTP Basic program format, and Percom Super Basic or Percom Assembler format.

What it Costs

MINIDISK+, including manual and two 2708 EPROMs costs \$69.

Patch Disk No. 1, at \$19.95, is an almost indispensable addition, since many of the features of MINIDISK+ are not utilized with programs which only use the DSSS format commonly used by Percom software.

Disk No. 2, at \$39.95, contains the Cer-Comp Editor, and is also a very important addition.

Thus the minimum system price for a new user would be about \$89 for MINIDISK and Patch Disk No. 1. The complete package of all software, attractive for the user who is switching from MINIDOS-PLUSX and has some Percom software as well, would be about \$129.

Conclusions

On the whole, MINIDISK+ and its supporting software works and works well. For a new owner of a Percom LFD-400 disk system, it provides an attractive alternative to Percom's MINIDOS-PLUSX.

Although MINIDOS-PLUSX provides for named files, most Percom software does not support that ability and still uses the DSSS address format for specifying file location on a disk. The disadvantage is that a slip of the finger can put a file in the wrong place on a disk and erase something.

MINIDISK+ and its software supports named files, so there is much less chance for error. Add to this its error checking, and you get a system which is much less likely to clobber a disk or erase valuable data. The result is an idiot-proof system more like the 'big' DOS systems.

MINIDISK+ also provides a number of new, ROM-based commands which do things which require disk-based utilities elsewhere. This too makes operation easier and more convenient.

In a way, MINIDISK+ provides some of the niceties that are present in TSC's FLEX or in the SSB DOS, but without their slow speed and without requiring two drives or large amounts of memory or disk space to hold utilities.

On the other hand, a more experienced user, or one who has a heavy investment in Percom software, may feel differently about it. He may not need all the features of MINIDISK+, or may find that it sometimes prevents doing some intentionally 'wrong' operation. Some may also be bothered by the need to convert existing disks, or to relearn a new system.

In any case, deciding on a DOS is a very important decision which affects every other use of the system for a long time to come. Cer-Comp's MINIDISK+ is an interesting alternative to consider.

Additional information may be obtained from:

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* CORRECTION *

The February '80 issue carried our 1979 Index. An error snuck in! Page 11, the 'Christmas Card Programs' was written by Chaplain (Maj) USA, Paul E. Phelps.
