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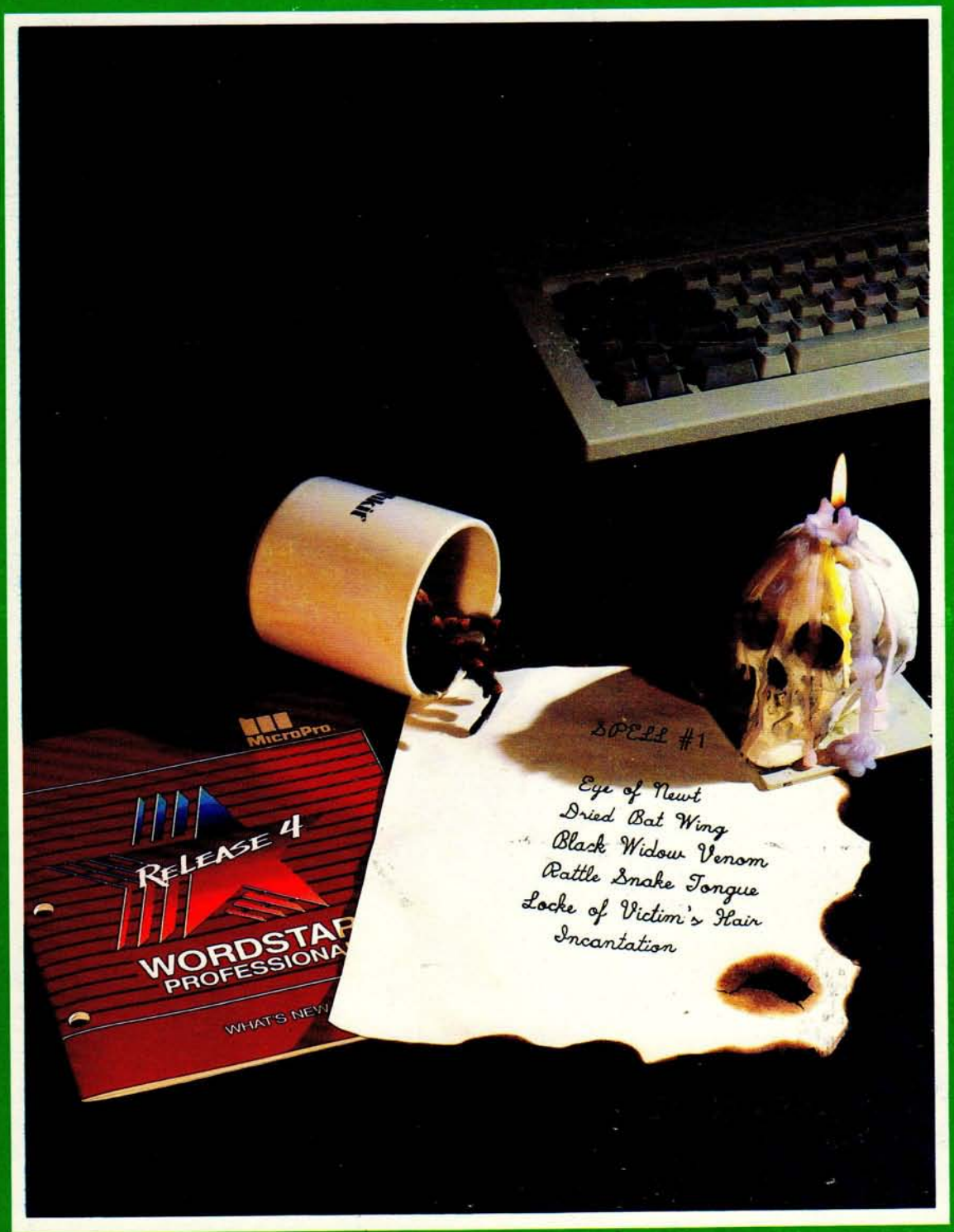

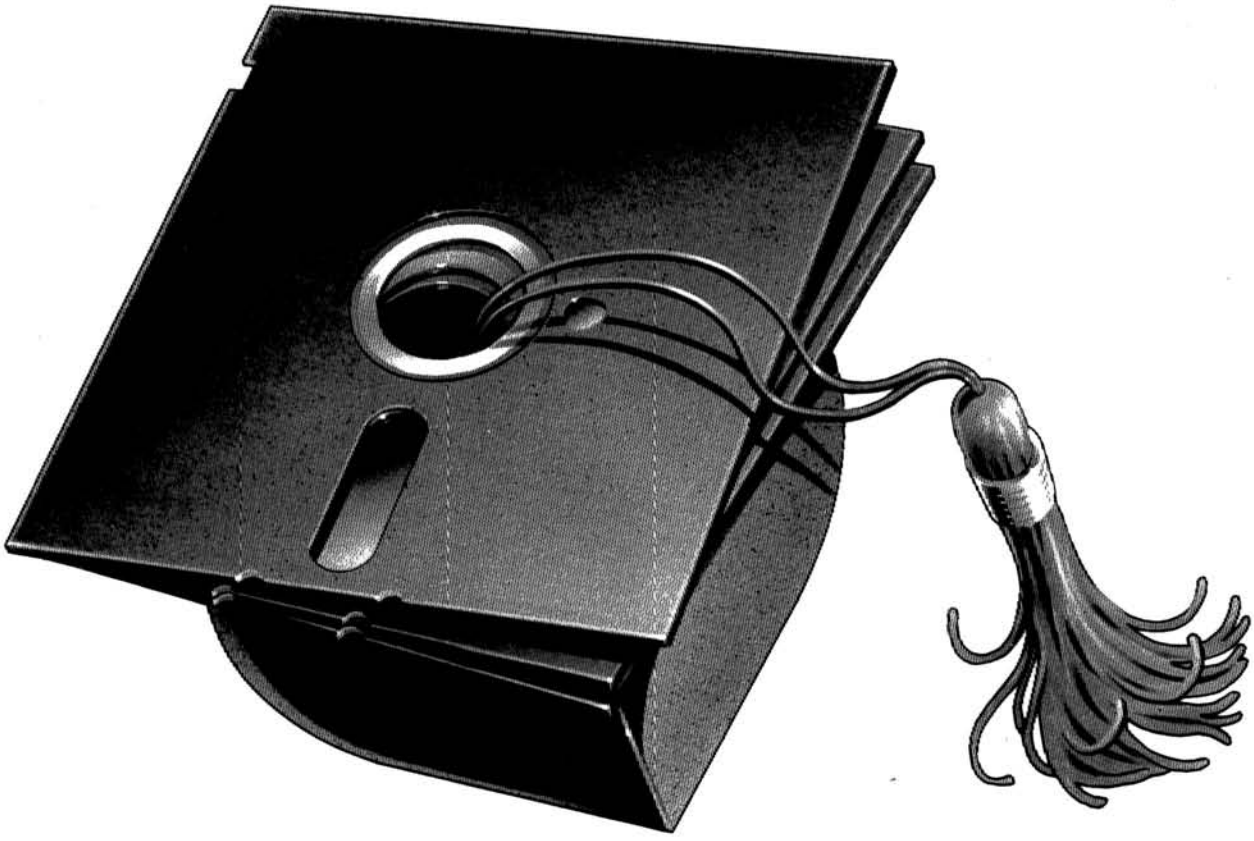

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REMark®

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On The Cover: *Trick-or-Treat? Find out what several of our authors have to say about Wordstar Release 4. Photo by: Jim Buszkiewicz*

Old Conference, New DataBase, Old New Software, and New Old Hardware

Whew! What a conference! There isn't any other way to describe it. Those of you who were there, know what it was like. Those that missed it, well, sorry. If you weren't able to come, or couldn't quite 'get enough', CHUGCON is just around the corner. For more details, check out their ad, elsewhere in this issue.

Finally after many months (too many to count) of programming efforts, our new subscription/membership database is now online. It took somewhat longer than expected, but I feel it was worth the wait. This new system (actually a '248 with 2-40 meg drives) will allow Margaret Bacon (Ma-HUG... remember Ma-HUG?) to access subscription information, additions, modifications, deletions (heaven forbid), immediately, if not sooner! No more long delays. This database will also service our reader service cards. No, none of them have been sent out yet, but will be very shortly. We apologize for this delay, and hope it hasn't caused too many problems for anyone. Actually, all of you have been most patient, and we appreciate that.

I'd like to mention that we still have some of the older 8-bit software left. Digital Research's CP/M-86 (OS-63-2) for the H/Z-100, and Microsoft's Macro-80 Assembler package (HMS-837-52), for CP/M. This software will work on either the H/Z-89/90, or the H/Z-100. The CP/M-86 package will run both regular 8-bit CP/M programs as well as the 16-bit CP/M-86 programs. Both packages are $25 each, and can be ordered from anyone of us here at HUG, by calling (616) 982-3463.

For those of you who may have missed my May 1987 editorial, I'd once again like to mention our new 'Writer Incentive Program'. Articles published in REMark Magazine can now earn you between $250 to $400 cash, or $350 to $500 in HUG Bucks! Done something interesting with your system lately? Let other HUGgies know about it as well as earn yourself some pocket change!

Lastly, we've started acquiring hardware for our HUGPBBS Bargain Centre. Registered users might want to check out the items we have there. This stuff is priced to move, and move it does! The list is constantly changing, and may never be the same from one day to the next.

See Ya At CHUGCON

Jim

BUGGIN' HUG

Making Life Easier For Newcomers

Dear HUG:

This is probably "old hat" to you veteran dBASE programmers, but the following tip may help to make life a little easier for some of the newcomers to dBASE programming (like me).

I had been spoiled by programming in the GW-BASIC Interpreter & Turbo PASCAL Compiler environments, i.e., switching between source code editing and run-time testing is almost instantaneous. Then, I decided to take a fling at dBASE programming.

Switching from dBASE interactive mode where I can run/test the program under development ("DO <program>") and the dBASE editor ("MODI COMMA <program>") is far from instantaneous. Soooo, when I tired of this process, here's what I worked out to speed things up.

- Load the .PRG source file into SIDEKICK's Notepad.
- Enter dBASE. From the infamous "dot" prompt you can Run/Test your program and when you need to make changes to your source code, hit SIDEKICK's "hot keys" and the "N" key and you are INSTANTLY in edit mode with your .PRG source code.
- Make changes to your source code; hit F2 to save the source code; then hit ESCape and you're INSTANTLY back at dBASE's dot prompt ready to test the changes with "DO <program>".

I think this is about as close as you can come to the programming environment that is built-in to many other languages, but is lacking in dBASE.

Sincerely yours,

Wm. F. Fowler
4014 Hillwood Court
Beltsville, MD 20705

For Those Whose Spouses Hate Computers

Dear HUG:

This is an increasing phenomenon occurring almost in proportion to the number of new users. To my wife, the computer is just another thing that must be dusted while doing the housework, and another distraction that keeps us from doing things together, like watching television. I have tried many approaches to get her involved, but with little success.

Naturally, with word processing the computer has completely surplanted the typewriter just as the pocket calculator has replaced the slide rule. However, my wife remains distrustful, and I must remain nearby when she attempts a typing project. Games and other such amusements have met with no success. I suspect there are many readers who have the same problem.

Just last week, however, I made a major breakthrough when the checkbook failed to balance and my dear wife was near hysteria. The purpose of this letter is to share this experience with you and suggest that others out there in readerland might have similar success stories to contribute. The outcome was a simple BASIC program to show checkbook entries combined with a batch file, so that all she had to do was turn the computer on with her diskette inserted and type "CHECK" to begin. If she wanted a "tape" of the transactions (from the printer), all she had to do was type "TAPE". The project was a success and now the computer has some useful function after all. It is a small beginning, but a beginning nonetheless.

The project consisted of two batch files, BASICA.EXE, the BASIC program, and the system files on a separate diskette. If you have a hard disk and boot up automatically, then perhaps you would make a directory with the name of your spouse so that all that was necessary would be to type in "CD ALICE" or "CD ALEX". The following is a listing of the batch files, the BASIC program (I used GW-BASIC), and some sample output.

```
CHECK.BAT :
BASICA CHECK.ASC > TAPE
  (output recorded on file named TAPE)

TAPE.BAT :
TYPE TAPE > PRN
 (normal screen output sent to printer)
```

The BASIC program CHECK.ASC:

```
100 CLS
102 PRINT : PRINT : PRINT
104 PRINT " CHECKBOOK BALANCING
    PROGRAM "
106 PRINT : PRINT
108 INPUT " Enter beginning balance ",
    BAL
109 PRINT
110 PRINT "      DEBIT", "         BAL
112 PRINT
120 INPUT ; "         " ,DEBIT
122 IF DEBIT = 999 GOTO 200
124 BAL = BAL - DEBIT
125 PRINT
126 PRINT USING "######.##";BAL
128 PRINT
140 GOTO 120
200 SYSTEM
```

Sample output with notes:

```
CHECKBOOK BALANCING PROGRAM

Enter beginning balance  2500.87

    DEBIT                BAL
    36.25                2464.62
    125.45               2339.17
    10                   2329.17
    -150                 2479.17
  (- signifies deposit of money)
    -1500.85             3980.02
    369.74               3610.28
    999 (causes session to be ended)
```

The user is asked for the beginning balance and the debits, which are echoed to the screen. The subtraction is made for each entry and the balance shown as the debits are made. Note the minus sign to add deposits, since most entries are debits. The numeric keypad is used to simulate a simple calculator. By returning to the SYSTEM instead of END for the program, one is immediately able to call the batch file "TAPE" for a printout, if desired.

Hope this example is useful to you and will perhaps justify your next computer expenditure on the home front!

Dick Olsen
36 Dorothy Drive
Morristown, NJ 07960

Won't Boot At Higher Speed

Dear HUG:

Some attempts to speed up an H/Z-150 produce a system that will not boot at the higher speed. Instead, boot-up attempts at the higher speed abort with a "+++ Timer Interrupt Failure! +++" message. The fix described here is crude, but effective. This fix works for either simple clock speed-ups or 80286 accelerator boards. You do need an EPROM programmer, however.

The H/Z-150 has a power-on self-test (POST) in the boot ROM. The POST compares the interrupt timer (driven by the peripheral clock signal) with a software timing loop. A CPU speed-up without an equal increase in the peripheral clock rate will fail to boot (+++ Timer Interrupt Failure! +++). Any change to the peripheral clock will ruin the DOS time accuracy. Two

hardware solutions to this dilemma were discussed in REMark (June '86 and December '86). The approach presented here is a brute force software patch that simply disables the timer test in the POST. The patch is programmed in a new EPROM which replaces one (or both) of the EPROMs on the CPU board. ROM addresses are given for the particular BIOS version in my machine (12/03/84), but the directions tell how to find the addresses on other BIOS versions.

I also planned to replace the boot EPROM anyway as part of Dave Brockman's (FBE Research) fix to put the boot RAM on the CPU board (so the Zenith CGA board can be removed). Brockman's fix is discussed in BUSS #139. In my case, the patch to the EPROM code is the same. Here's what you do.

First, use debug to find the address of the beginning of the "Timer Interrupt Failure" message. Use -df000:xxxx to select the proper segment. In my version of the BIOS ROM, -df000:fefa is the address for the start of the message.

Next, use debug to copy the contents of the boot EPROM into RAM. MOVE the 8000H (32K) bytes of data starting at location F800:0000 to CS:0100. This produces a 100H offset in all the addresses, but it is easier to write a file this way (try this for a file of the original ROM contents).

Third, unassemble the EPROM code (starting at CS:0100) to find a sequence like:

```
CS:032D JNB     yyyy
CS:032F MOV     SI,xxxx
CS:0332 JMP     zzzz
CS:yyyy ....    ....
```

where xxxx is the address for the interrupt failure message (found earlier). Your address offsets (i.e., the 032D, 032F, 0332, and yyyy) may be different from those shown above depending on the version of the BIOS PROM.

Finally, make the following two patches:

```
-a032D
JMP yyyy
-e032F
46
```

where you substitute the corresponding address offsets for your BIOS version for 032D and 032F (if different). The first patch (-a032D;JMP yyyy) forces the execution to jump over the error exit without regard for the results of the timer test. The second patch preserves the ROM checksum.

WRITE the patched code (8000H bytes) to a file and program the file into an EPROM with an EPROM programmer. You can use a 128K EPROM (which only holds half of the 8000H bytes) and install it in the ROM 2 socket on the CPU board. If you use a 256K EPROM, the ROM 2 jumper must be set to the 256K position and ROM 1 must be retained, unless Dave Brockman's RAM fix is also installed.

With these changes, the interrupt failure message should be a thing of the past. If you ever really want to test the interrupt (at 4.77 MHz), you can use the ROM diagnostics which still work.

V. Scott Ritchey
2933 Southfield Drive
Beavercreek, OH 45385

Bencivengo's Accelerator In My '161

Dear HUG:

Last year, I installed Bencivengo's accelerator in my Heath 161, Heath's (trans)portable machine.

This particular model has a very convenient spot on the *front* to locate the switch, pushbutton and LED. It is slightly to the left of the screen, above the sliding door and between two reinforcing inside bosses. Of course, the keyboard had to be modified also, namely I had to dig holes into it to accommodate the protrusions of the devices installed in the main housing. I used a polarized plug to make the ribbon cable detachable. Also, since the small board came loose everytime, I pulled the adjacent board or inserted the CPU board, I drilled two matching holes into the small board, as well as into the PCU board. (Isn't this sacrilegious?). Two pieces of #5-40 threaded nylon rods went into these holes, with nylon nuts securing these boards together.

So far, so good. Trying out the slower of the Xtals everything worked fine — for about 5 minutes, at which time the keyboard locked up. Having had a very busy period at

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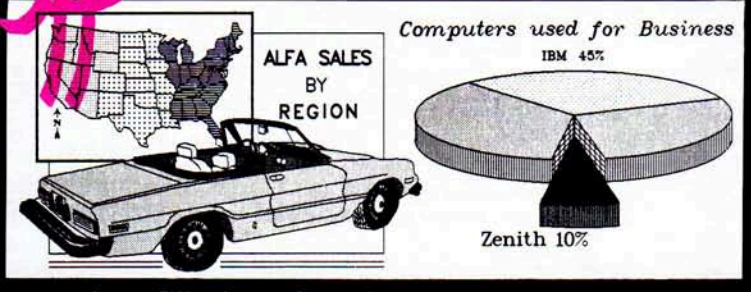

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that time, there was no occasion to look into the viscera of my machine. However, the reset button out in front proved to be well worth the money spent for the entire installation. I don't use the Ctrl-Alt-Del at all.

And so matters stood until Bencivengo's article in the April issue of REMark. I hit a slack time professionally, so the time came for brain surgery.

First, I checked out the ICs. They were all the "right" kind. Then, I installed a V-20 and an 8087, the slow kind. Finally, I epoxied aluminum heat sinks to the offending heat producers. Presto, everything works fine now, except copying from one disk to another. Even that is easy to fix: the slow-down switch is right in the front.

Having read Maskasky's article in the May issue of REMark, I am planning to upgrade my machine to the faster Xtal and a set of 256K RAMs. I don't believe that Maskasky's software will be necessary in this machine due to the availability of the slow-down switch in the front. But I might try it anyway, just for fun.

Laszlo M. Vesei, PE
420 Philip Road
Niles, MI 49120

The ZPC Hardware Support Board Can Be Made To Work!

Dear HUG:

I was determined to make the ZPC Hardware Support (ZHS) board work. I built the early version (REMark, April 1986) and could never make it work, even with Pat's subsequent suggestions. I replaced the 8259 interrupt controllers with Intel parts, tried faster chips on the ZHS board — everything. Still, I got "8259's slow" when I ran Pat's ZHSTST diagnostic program (REMark, September 1986).

When the improved ZHS board design appeared (REMark, December 1986), I scrapped the first board and built the new one, certain that the added wait-state generator would solve the problem. Still — I got "8259's slow".

The diagnostic program is specific. The indicated error means that the generated interrupt is not serviced until the next instruction after the port IN instruction, where it must occur. Even replacement of the 8259 interrupt controllers with the faster 8259-2's, replacement of the bus interface LS240 octal inverter with an ALS240, and replacement of the 8088 CPU with an 8 MHz part (8088-2) failed to solve the problem. It was time to start thinking about the problem.

Our Z-100 was one of the first ones built. A previous owner had installed a 256K RAM upgrade of unknown origin. He had also managed to run the CPU clock speed up 7.6 MHz by only replacing the crystal. None of the modifications that were recommended for the HA-108 Upgrade Kit, as described in REMark, July 1985, had been made. Even so, the machine worked without a hint of any problem.

Among the suggested 8 MHz modifications was the addition of one extra wait-state for I/O operations. This simple modification, which adds an unused flip-flop to the wait-state generator circuit, finally made the ZHS diagnostic report "ZHS Board OK". Under these circumstances, I doubt that the Scottie Board would have worked either without the added wait-state.

No doubt, there are many Z-100s like ours, with old motherboards and incomplete upgrades, that gave disappointing results with the ZHS board. It would be worthwhile for anyone who has given up to go back and add the wait-state. My guess is that this simple modification would have

resolved most of the complaints that the ZHS board just could not be made to work.

Very truly yours,

Charles Horn
Horn Engineering Associates
1714 Patricia Lane
Garland, TX 75042

Warning: Fastcard IV Is Not Compatible

Dear HUG:

My fellow HUG members need to be warned about a problem with the PMI (Thesys) Fastcard IV expanded memory card: it is *not* compatible with the Wildfire speedup mod for the Z-150 computer. I started with the FASTCARD IV on my system and was very impressed with its capabilities; that is, until I subsequently installed my Wildfire kit and found I couldn't boot properly. According to Software Wizardry, it may be a software problem, but I suspect it's the NEC V-20. Has anybody tried substituting the 8088-2?

By the way, thanks for the article on modifying the Z-151 for EGA. What I want to know, though, is how come Heath/Zenith hasn't put out a new color board with EGA, so we can simply retrofit our computers? Come on Zenith!, how about supporting all of us Z-150 owners? Even IBM has plans to bring out a VGA for XT owners!!

Sincerely,

Ellis W. Sharadin
1370 Owyhee Drive
Moutain Home, ID 83247

James Hughes: Letter Of July '87

Dear HUG:

This is a follow-up to James J. Hughes' letter in the July '87 issue of REMark concerning changing 96 TPI disks from ZDOS to MS-DOS Version 2.

In his letter, he shows how to change the FAT-ID byte in the first FAT. However, as pointed out in Appendix H of the ZDOS manual and in Chapter 3 of the Programmer's Utility Package (PUP) Vers. 2, there are actually two (2) FATs on each 96 TPI disk. The second is put there at the time the disk is formatted and is updated by the operating system when the first is updated. The second one exists to be a backup (there's that word again) in case something happens to make the first one unusable (i.e., scratched, coffee spills, etc.)

In changing from ZDOS to MS-DOS, the FAT-ID byte in both FATs should be changed from FD to FB, just in case something goes wrong (Heaven forbid) with the first FAT.

The instructions supplied by Mr. Hughes should be changed to the following:

2. Give the Commands:

```
L 0,0,1,2
E 0,FB
E 200,FB
W 0,0,1,2
```

Thank you very much for your fine publication. Keep up the good work.

Happy computing,

Kenneth W. Simmons
3808 N. Oak Drive, #U31
Tampa, FL 33611

All Kinds Of Ribbons

Dear HUG:

For people who cannot find MPI-99 ribbons, or any other ribbons for that matter, the place to find them is Bell Atlantic Business Supplies. Their number is 1-800-523-0552 for ordering and for a complimentary catalog.

Jeff Clark
1405 59th Street
LaGrange, IL 60525

It Does Work!

Dear HUG:

When I purchased my Z-148, I also bought an NEC Multi-Sync monitor, with the idea that I would eventually upgrade to an Enhanced Graphics Adapter (EGA). When the time came to upgrade, I was interested in the new "super" EGA boards offering 640 by 480 resolution with my Multi-Sync. Both Video 7 and Tseng Labs offered boards, so I called to see if they were compatible with my Zenith Z-148. Video 7 said "no", but that eventually turned out to be a misunderstanding about the on-board CGA capability of the Z-148 and not snipping the video enable jumper. Tseng said they didn't know.

So, being a loyal Zenith user (the Z-148 is my fourth Heath/Zenith computer), I called "the experts" at Zenith. The Zenith folks were the only ones who were *absolutely, positively* sure that the Z-148 could *not* use the new high-res EGA boards. It just didn't seem to make sense to me. After questioning their certainty several times, I finally received a letter signed by Mr. Joseph Schulte (President of Veritechnology) stating that the "Tseng video card does not work with our present '148s, '158s or '200 series computers . . . the '148s were completely designed before anyone saw the tremendous popularity of enhanced graphics and more specifically the Tseng Laboratories products.

To make a long story short, I have been successfully using the NEC GB-1 graphics board (the NEC-labeled version of the Tseng board) in my Z-148 for several months now, with no problems. I took the time and trouble to find one at a dealer, arrange to bring my computer in to test it, and it works! DO NOT believe Zenith when they tell you something won't work. TRY IT! Let's revive the old Heathkit "hacker" spirit!

Sincerely,

Rick A. Martin
8484 East Jamison Circle North
Englewood, CO 80112

On The Leading Edge

William M. Adney
P.O. Box 531655
Grand Prairie, TX 75053-1655

Scottie Board And ZPC, 16 Colors On The Z-100, DSBACKUP+, MACE Utilities 4.10, DOS/MS-DOS/PC-DOS, WordStar Version 4, Microsoft Word Problems

This article contains a little something for everyone no matter whether you have a Z-100 or a PC Series system. For the Z-100 owners, there is a look at the Scottie Board that is the hardware complement to Pat Swayne's legendary ZPC program. I have found more than a few problems in Word 3.10, and you can see why I am less than enthusiastic about it. For owners of the PC Series computers, there is a look at WordStar version 4 that is my personal favorite as a word processor. You'll see why later.

ZPC And The Scottie Board

If you liked ZPC, you will probably think the Scottie Board is the best thing since sliced bread. ZPC will allow your Z-100 to run many PC programs without too much fooling around. Perhaps the best feature of ZPC is that you can start the "PC mode" from the Z-100 MS-DOS. All of the other emulators — the Gemini and the Easy PC — require that you reboot the system in the PC mode, as well as some kind of PC compatible DOS.

Although I went into some detail about ZPC in the July 1986 REMark, I will mention a few of the more important things about ZPC before we get to the details on the Scottie Board. The most important is probably to have 768K of RAM in your Z-100 in order to have the maximum PC compatibility available with ZPC.

The second important thing about ZPC is that it will not work with copy-protected programs that require specific hardware features of the PC's disk controller. You must remove the copy protection before you can use the program under ZPC. The Softguard protection scheme is one of the worst in that regard. Information about some utilities (e.g. UNLOCK and UNGUARD) that can remove the copy protection is included in the ZPC documentation.

And finally, some programs require some patching to run under ZPC. These programs usually use "unauthorized" DOS techniques instead of using the standard programming functions that DOS provides. And therein lies the advantage of the Scottie Board. In most cases, the Scottie Board will allow you to run many more PC programs without having to make program patches.

The Scottie Board

The Scottie Board is a very professional looking S-100 board that plugs into a slot on your Z-100. For best results, you should have ZPC version 2 and the upgrade disk. All of the testing that I did on my Z-100 was with ZPC version 2.1.3 running under MS-DOS 3.10.

In order to get everything up and running properly, I recommend that you read Pat's article on the "ZPC Hardware Patch" that appeared in the April 1986 REMark. It gives you an idea of things that you must do in order for the PC emulation to work properly. Similar instructions are, of course, included with the Scottie Board, but Pat's article is a good place to start. There is a slight Video Board modification (page 18 of Pat's article) that requires a 16-pin IC socket and a short piece of wire. Two solder connections and it is done. Pat mentions in the article that the Video Board modification causes no problems even if you do not have the additional ZPC support hardware (e.g. the Scottie Board) installed.

Once that is done, it is time for the Scottie Board. Installation of the Scottie Board is a snap — just plug it in. You can get some options that include a clock and some PC COM ports that you may need for some software. Perhaps the biggest part of the installation is reading all of the documentation and making sure that ZPC is set up properly. It takes longer to read all of the documentation than it does to actually set up everything. I spent about two hours reading everything before I started, and the Scottie Board installation took less than an hour, including the Z-100 disassembly, soldering, etc.

If you are not interested in soldering, Scottie Systems has also thought about that. You can buy a no-solder installation kit for $5.00, and you can update the 8 Mhz motherboard interrupt function for $12.00 if you did not install the HA-108 upgrade

kit. You may want to call Scottie Systems before you order so you can be sure to order everything you need.

The base price of the Scottie Board with the ZPC software is $149.00. You can also add COM ports to the Scottie Board at a modest price. And a real-time clock is also available on the Scottie Board. I have had a lot of fun working with the Scottie Board, and it really seems to improve ZPC although I did not do any official benchmarks.

As I mentioned in the ZPC article, I still do not have a lot of PC software available for testing. But Word Perfect 4.1 seems to do just fine with my color monitor and no patches. Of course, I still do not have 16 colors, but all tested functions appear to operate normally. Norton Utilities 3.1, and SuperCalc 3 (the Zenith version) also seem to run just fine. By the way, I did not test everything in all of these programs, but the common commands seem to work with no problem. I should also mention that I loaded most of the software on my hard disk in a special partition for testing, and the hard disk also seems to have no problem with ZPC (or vice-versa).

All in all, I recommend the Scottie Board if you are looking for effective (and fast) PC emulation at a modest price. By the way, if you are thinking of adding a hard disk to your system (Z-100 or PC), you might want to check out the Scottie Systems' prices on page 19 of the July REMark.

What Is DOS?

Although I have mentioned this before in my articles, you may have missed a couple of them. In any case, the information is worth repeating since it is also mentioned in a letter that appeared on page 29 of the July 1987 REMark. It appears that there is some possible confusion on what is DOS, MS-DOS, and PC-DOS. Although the letter specifically referred to a comment made by my colleague Joe Katz, I checked with him to make sure that we are consistent in our DOS terminology. Fortunately, we are.

Despite what you may have heard, DOS is a generic acronym for Disk Operating System. Old mainframe computers (I think it was the IBM 360 series) had a DOS before new operating systems, like MVS, were available.

In the early 80's, IBM released an operating system for the PC line that was OFFICIALLY called the "Disk Operating System version x.xx". You can find those exact words on the title page of all DOS releases from IBM. The title page usually notes that the "Disk Operating System" is for IBM Personal Computers, and most people just started called it PC-DOS as the name for IBM's specific DOS release. If one were to be quite precise, I suppose the official "correct" name for PC-DOS is IBM DOS.

In my perusal of various PC-related publications, I find that virtually everyone refers to the IBM version as PC-DOS. When we are trying to be quite specific, both Joe and I refer to IBM's version as PC-DOS.

On the other hand, MS-DOS is an acronym for Microsoft Disk Operating System. A quick review of microcomputer history in the early 80's will reveal that MS-DOS existed before PC-DOS, since IBM asked Microsoft to write an operating system for the IBM PC. When Joe and I refer to MS-DOS in our articles, you can safely assume that we are specifically talking about the Zenith MS-DOS, since this is a Heath/Zenith-related publication.

That's fine, but what is DOS? First, it is important to understand that the 16-bit DOS developed by Microsoft contains a number of "standard" features, like the built-in commands, for example. Each microcomputer vendor (e.g. Zenith or IBM) customizes the basic Microsoft DOS to run on a specific type of computer system. This customization includes things like the Basic Input/Output System and certain commands, such as FORMAT. That not withstanding, the basic DOS code still includes the "standard" features including technical DOS support functions, such as interrupts.

In any case, the term "DOS" simply means any of the 16-bit operating systems that were developed by Microsoft. Joe and I have consistently referred to the "basic" operating system as a DOS, since that includes both MS-DOS (Zenith's and others), as well as PC-DOS.

Some DOS Bugs

As you might expect, there have been a number of bugs in the DOS that was shipped out to various vendors from Microsoft. In one DOS version (I think it was 2.10), the FORMAT command would not format a hard disk under some circumstances. Both the Zenith and IBM versions had problems, although Zenith did send out a general update that corrected the problem. For those of you who are technically inclined, this was the famous "64K boundary problem" that was discussed in a number of PC-related publications at the time.

Back to the letter in REMark. It refers to Joe's comment about a problem with the DOS 3.1 BACKUP command which affects files that span backup disks. This is a Microsoft DOS problem, not a Zenith specific problem. From what I have read, this problem has been specifically found in PC-DOS, and I suspect that other manufacturers have had this problem, too.

When In Doubt, Back It Up

Backups are probably the single most critical thing that you can do in a computer system. That applies to floppy disk systems, as well as hard disks, but it is much more important to backup a hard disk system due to the large amounts of data and programs.

I personally do not like the DOS BACKUP command no matter who the vendor is. BACKUP is simply too SLLOOOWWWW. If you have the time, I suppose that it is fine, but be sure that you check it out, since a lot of DOS commands have had problems of one kind or another.

As I said in the December 1986 REMark, I particularly like the DSBACKUP program that is available from Design Software. It has been updated and is now called DSBACKUP+. It's a tad faster than the original DSBACKUP and includes a number of additional features that make it even easier to use. I have not used the MS-DOS BACKUP program for over 12 months at this point, and I doubt that I will ever use it again. DSBACKUP+ is fast, easy to use, and is not copy protected. I think it is the ultimate in stupidity for a company to try to sell a copy-protected backup program.

If You Have A Hard Disk . . .

There are at least two utilities that I recommend to all hard disk owners. And if you are planning to buy a hard disk, I suggest that you add these to your budget, since they will save you a lot of grief.

First, a good backup utility is a necessity. As I have said, I personally like DSBACKUP+ because it is fast, effective, and reasonably priced. One of the best features is that DSBACKUP+ can be run from menus or direct from a command line. On my '248 system with a 40 MB hard disk, I can backup a 1.2 MB floppy in just over 60 seconds. A restore takes a few seconds longer. There is no way to compare that time-wise with the regular BACKUP command. Depending on the system, the old DOS BACKUP will take 3-5 times as long as DSBACKUP+. For a 40 MB disk, it takes about 45 minutes because mine is nearly full. Plan on spending a couple of hours with the BACKUP command.

The second important utility is some kind of file recovery and unfragment program. I mentioned the MACE Utilities in the December 1986 issue of REMark, and a new version (4.10) is now available. It is really neat and works great on the '248. More on that next month when I will talk about some of the new features in the latest version. You will need a file recovery program when your hard disk finally rotates itself into the Twilight Zone.

I will continue this general subject next month, so stay tuned. If you have written me with a specific question about your hard disk, chances are that you will see the answer again next month.

Monitors And Color Displays

One of the more interesting, but little known, facts about the standard IBM PC Color Graphics Adapter (CGA) is that it can really display only eight colors. Depending on your monitor, you will normally see two colors — usually white (or green or amber depending on the monitor) letters on a black background. I call this a black and white (b/w) display, since the computer is actually sending signals to display white letters, but their actual color depends on the type of monitor itself. One of the characteristics of the b/w display is that it normally uses an analog electrical signal (like a telephone) to connect the video board to the monitor.

Internally, the standard color monitor has three electron guns: one for Red, one for Green, and one for Blue. That is why many color monitors are sometimes called RGB monitors. It is no accident that these are referred to as primary colors they cannot be produced by mixing other colors. These primary colors can then be mixed to produce other colors. Let's see how this is done to produce the standard eight colors.

Since we already have the three primary colors, that is no problem. We can mix green and red to produce yellow, red and blue to produce magenta, and blue and green to form cyan. Mixing all three primary colors together produces white. That is seven colors. If we simply do not activate any electron gun, the screen itself displays as black for a total of eight colors. I should note that each electron gun does not, by itself, produce the actual color.

Each color is produced by the stream of electrons from the appropriate gun(s) that hit a specific "dot" (or dots) that generates a specific color. The actual color that we see is generated by one or more of these dots emitting the light that our eyes see as color. Each dot contains a specific type of phosphor that generates a color. As you might expect, these dots are grouped together in a red/green/blue cluster. This group of dots is therefore the smallest addressable "piece" of a CRT screen which can be called a picture element or PIXEL, for short. When one or more of the electron guns is activated to strike a specific pixel, color is generated. If no gun is activated, the phosphor displays black by default (and design). Of course, all of this happens so fast that our eyes do not see the activation of each pixel, but this is generally how it works.

The type of phosphor on a dot determines what color will actually be displayed when struck by the electron stream. In addition, the phosphor may also be of a long-persistence type that retains its "color" longer after being activated with an electron gun. This type of long-persistence phosphor is generally recommended with the original IBM PC with a CGA, since the flickering on the screen is something to behold. That was nothing but an IBM design bug, and there is no excuse for that. Zenith corrected that problem when they designed the PC series.

If you are considering buying a new monitor, there is one other characteristic that is important: dot pitch. Since it is difficult to provide an easy explanation of how that works, I will simply say that "smaller is better" in terms of resolution. In my reading, I have seen monitors that range from 0.28 mm to 0.43 mm dot pitch.

After much reading, thought, and looking around, I finally decided to buy an NEC Multisync monitor and a Vega 7 EGA board for my '248. The Multisync has a .31 mm dot pitch, a medium persistence phosphor, and is capable of a maximum of 800 horizontal pixels on 560 separate display lines. That is usually indicated as 800 × 560.

The primary reason for the Multisync was simply to obtain a "nicer" display, since I spend a considerable amount of time staring at a CRT every day. And it is absolutely terrific. Even though the Vega 7 is not one of the "auto-switch" boards, it was significantly cheaper and has the same capabilities, including Hercules emulation. The Vega 7 includes a program that allows you to switch display modes (e.g. CGA, EGA, Hercules, etc.), and I can spend a few seconds entering the appropriate command, since the price differential is considerable. I do not think that the "auto-switch" boards are worth the premium price, but of course that depends on your specific application.

Perhaps the most important thing to do if you want a new CRT is to actually see it and use it. Moreover, it is not enough to just look at the CRT, you should check it out with the exact video board that you intend to get with it. And finally, it is also important to take a look at how your specific applications will be displayed by the CRT/video board combination. A video display, like a keyboard, is mostly a matter of personal ease of use, but I am totally satisfied with the NEC Multisync/Vega 7 combination.

By the way, the Multisync has a nice 13" display, and it also has a text-only single-color mode that lets YOU choose the default color through a set of switches on the back. I like that. But, now let's get back to the subject of color displays in general.

Displaying 16 Colors

All things considered, the IBM CGA was not a particularly innovative design. Since it was a relatively simple matter to display eight colors, there is also an easy way to double the number of colors. All you have to do is add another line to the CRT called "intensity". That allows you to vary the color slightly to form additional colors. For example, you can take the standard blue, change the intensity, and you have light blue. That is how the CGA actually gets 16 colors.

Speaking of colors, it is appropriate to note that most RGB monitors normally use a digital signal (consisting of binary 0's and 1's) for the display. This digital signal, sometimes called TTL for Transistor-to-Transistor Logic, is different from the analog signal (sometimes called composite) that is used in most b/w monitors. I should also note that the TTL signal is a requirement for the IBM Monochrome Display Adapter (MDA) and various equivalents.

Microsoft And Word 3.10

I got Microsoft Word version 3.10 thinking that it would not have any significant bugs in it. In fact, I wrote the Zenith/Heath MS-DOS version 3.2 FlipFast book with 3.10, and I found a lot of undocumented "features" (I call them bugs) that made it really difficult to write that book. Although I admit that I really stretch the limits of word processing when I write a book, Word simply could not do some things that old CP/M WordStar 3.30 could do. I was not the only one to observe that since a couple of my friends at UTA were trying to use Word to write their doctoral dissertations — they had similar problems. I'll mention two of the most serious ones.

The first was that the new FlipFast contains about 1,000 error messages. Each one is

listed under the appropriate command, and I had planned to use Word's indexing capability to create the Error Message Cross Reference that lists every message generated by each command with the appropriate page number. Even though I wrote the book in sections, I planned to create a single file (for the entire book) that I could index to create the final file. Word let me know, in no uncertain terms, that I could not even edit a file that exceeded one megabyte because of "Insufficient memory".

Despite the fact that Word can generally edit a file that exceeds the available memory, it turns out (according to Microsoft) that my files contain so much formatting that Word actually does run out of memory. They tell me that, regardless of file size, ALL of the formatting "stuff" is loaded into memory when the file is loaded. Since my FlipFast books, in general, and Section 4 (the command section), in particular, contain a considerable amount of font changes and other special formatting, Word simply ran out of memory when I tried to load a 100K file. The fact that I had the full 640K of memory in my '200 did not help at all. Even poor old CP/M version 3.30 with 64K of memory could edit a completely formatted, one megabyte file with no problems. I think that you will agree that it is reasonable to expect similar capabilities from a program that is "supposed" to be one of the top-of-the-line (at least in price) word processors today.

Then I was forced to split up the sections in much smaller chunks just to be able to edit them. Then I tried to run the indexing feature to "pick up" all of the error messages in that much smaller section. The Library Index function frequently blew up with ANOTHER "Insufficient memory" message. Microsoft told me that was due to the fact that there is only 19K of memory available for that function — another dumb limitation. I was therefore forced to split up each subsection again just in order to get the indexing feature to work. I also ran into a similar memory problem which I tried to get the sorting function to sort all of the index error messages into alphabetical order. The only way around that was to keep splitting the subsections until I found a size that Word COULD handle. Needless to say, I spent a lot of wasted time simply trying to get Word to do the things that I needed to do.

In summary, there are several problems. First, Word cannot always edit a file that is larger than available memory — that depends on how much formatting the file contains. Second, Word cannot always generate an index (or table of contents) for a file even though it can be edited. And finally, the sorting function does not always work even if the file can be edited and indexed. All of these problems are a result of some kind of memory allocation problem in Word.

During this editing process, I even managed to completely freeze my system several times. This would normally have required a power-off/on to correct, but fortunately, I have the "hardware reset switch" that Jim Buszkiewicz wrote about in REMark last year. In any case, the system freeze occurred when I had a couple of windows open for several files. There was no warning at all — the keyboard would not respond, and a CTRL-ALT-DEL had no effect. Although I cannot recall my exact thoughts at the time, I can assure you that they were not appropriate for repeating, let alone printing.

Through the good auspices of the local Microsoft office, I wrote a letter to their main office in Washington state explaining the problems and asking for information on their solution. That was back in March of this year. I still have not heard anything although the letter was directly addressed to the Word project manager. Although various people in the local Microsoft office really DID try to help, they are pretty much at the mercy of the Corporate Office. And the Corporate Office does not seem to be inclined to help (or even acknowledge) a written letter.

WordStar is my favorite word processor simply because it does everything I need and most of the things I want. It also does not contain any catastrophic bugs in the later versions (i.e. 3.30 up) that have ever caused me to lose data while I was editing. Word has, and I admit that I am not particularly tolerant of software that does that when I am NOT testing it. When I test software, I intentionally try to make if fail. When I use software for "production" work, I follow the rules so that it will NOT fail. But when a supposedly mature product like Word fails and causes a data loss, that is cause for concern in my opinion. It certainly makes me wonder what ELSE might also cause me to lose data that I do not know about. Even worse, the Corporate Office has not seen fit to even answer my letter about the problems. I suppose that Word is probably okay for short documents, but I personally don't have a lot of confidence in it. I spent a lot of days working around the Microsoft Word-caused problems and bugs just to get both books finished. And one of my friends has had similar problems trying to finish his doctoral dissertation at UTA. Microsoft has been little help to either of us.

It appears that Microsoft is not interested in discussing problems with Word, and it probably explains why they have had so many problems with the Mac version 3.0. In case you are not aware of it, Microsoft essentially had to issue a general "recall" of the Mac version 3.0 because there were so many bugs in it. But now, let's look at a GOOD word processor.

WordStar Version 4.0

Despite what many people seem to believe, WordStar is still one of the best word processors available today. And it has been made even better with the release of version 4. But first some history.

I originally bought WordStar 3.3 for my old H-89, since I found that Magic Wand was totally unacceptable for writing. At the time, WordStar was the only word processor that approached the WYSIWYG (pronounced "whizzy-wig" — what you see is what you get) concept. Magic Wand certainly did not. In any case, I got the WordStar Professional Package that included a spell checker, MailMerge, and StarIndex. I never did use the spell checker (SpellStar) because it was so clumsy. Version 3.3 had CorrectStar which was somewhat better, but still quite clumsy. CorrectStar has been "corrected" in version 4, but it is not my favorite spell checker. S&K Technology's Resident Speller for the PC is a much better choice.

As I said earlier this year, one of the risks involved in making comments about personal computers (and software) is that people who disagree take it "real personal". But I still maintain that WordStar (except for the Zenith versions that had bugs) is one of the best word processors available. In some respects, WordStar is the best word processor that you can find. At least it does not have memory problems like Word 3.10.

I have to admit that I had nearly given up on MicroPro since I really needed some new features that WordStar 3.30 did not have. I considered (for a SHORT time) using the Zenith version of WordStar for the PC, but I really did not think much of it compared to the original MicroPro CP/M version 3.3. For one, the Zenith version was too slow. And there were several bugs in it that did not appear in the CP/M version.

But WordStar 4.0 is really nice. It is compatible with files created under previous

versions and has a remarkable number of new features. Perhaps the best ones for me are that it includes an excellent Thesaurus (Word Finder), and all of the Function key combinations are already set up (and can be easily changed). Now you can fully implement 40 Function key combinations with "normal", Shift, CTRL, and ALT. The ALT Function key combination is already set up to "draw" box-type graphics characters on the screen if you are so inclined. Of course, this version FINALLY includes path support, so that WordStar can find its own files (and data files) in subdirectories. And WordStar 4.0 also includes a number of printer setups that are already defined for most of the popular printers. Would you believe that there is even a setup for the Z-25/125 printer?

Another needed new function is the "Goto page number" in the document mode which changes to "Goto line number" in the non-document mode. That is activated with ^QI. That is one that I have already used a lot. Not to mention the fact that you can now "unerase" a delete character or characters up to about 500 or so. If that is not large enough, you can even change that with the WSCHANGE program.

WordStar 4.0 also includes 14 math functions that can be accessed through an on-screen calculator (^QM - like a popup calculator) or you can mark a block and perform a "block calculation" using ^KM. Both are nice features that I have used.

You can also have up to three headers and three footers instead of the previous limitation of one each. CorrectStar has been improved to the point that it is pretty good now, but I still prefer the PC Resident Speller.

Indexing and table of contents generation commands are included in the Opening Menu instead of being in a separate program (i.e. StarIndex). There is some modification to these commands although you can still use StarIndex commands with 4.0 as long as you have the StarIndex program. In general, I prefer using StarIndex since it has a much wider variety of commands, but I doubt that most users will find this a problem.

WordStar version 4 is generally installed with the WINSTALL program. If you do not like some of the installed WordStar features and defaults, you can change virtually anything with the new configuration program WSCHANGE. Most users will probably not need a lot of the customization facilities, but you can change most anything. Nearly all information for complete customization is included in a file called PATCH.LST that lists all addresses for changing things on a hex byte level. This new version also has a new command (^QU) that allows you to "strip" the high-order bits in the non-document mode so that you can create an ASCII file. That can be used in place of the ubiquitous conversion programs that convert WordStar document files to ASCII. I used that command quite a bit when I discovered that I had edited a C program file in the document mode and found that the Microsoft C compiler (version 4.00) gets real sick when it tries to figure out what an 8A hex (soft line feed) is.

Last, but certainly not least, the documentation has been completely revised. My first reaction is that it is quite a bit smaller than the original, but everything is listed in alphabetical order which makes it much easier to find. I also think that the documentation is MUCH better than the original, but that is always a matter of personal opinion.

I have not tried to list all of the new WordStar functions, but there are a lot of surprises. WordStar can now use color to display print enhancements. I use blue for bold and green for underline. That makes it much easier to see if you forget to mark the end of the enhanced text. And you can also display a 43-line screen if you have the appropriate monitor and video card.

One of the biggest changes that I noticed is the way that blocks are handled. Old WordStar used to highlight the block that was copied. I used that to see where I needed to edit the "copy" to ensure that all changes were made. WordStar 4 "keeps" the highlight on the original block when it is copied, but of course a "moved" block (^KV) is still highlighted after it is moved. I have not quite decided whether or not I like that yet, but I have not found anything yet that I can identify as a distinct bug. Some of the other "standard" features also work a little differently than in previous versions, but I have had no problems with that as yet.

My biggest criticism is that WordStar 4 still does not provide a "windows" capability that can be used on a single file or multiple files. No matter how many lines you can display on a screen, there are still a lot of cases where it is very useful to have at least two windows for the same file or be able to view (and edit) two or more files.

Still, this new version provides some significant enhancements over the old version. The thesaurus alone is pretty much worth the upgrade fee of $89 (plus $5.00 shipping) that applies if you are a registered MicroPro (not Zenith) WordStar user. You must include your current software registration number or the title page from your old WordStar documentation. Be sure to include which version you are requesting — e.g., CP/M-80 or the PC compatible version. Also mention what disk size you want, such as 5.25" or 3.50". If you have any questions about upgrades, I suggest you call the toll-free order number listed at the end of this article.

In The Future

There was an incredible response to my request for information about high speed hard disks for the Z-100 in the July article. As it turns out, my usually reliable source was exactly right — you CAN use a high-speed AT-type hard disk on the Z-100. I will talk about some specifics next month along with the names of Huggies who have implemented them.

I also received a number of letters about the table of cluster factors that was included in my July column. A number of people report that they are using Zenith MS-DOS, but they still have the wasteful 16 sectors per cluster (8,192 bytes). Find out how to fix that next month. And in case you are wondering, that table was exactly correct as published.

It's clear that most of the next article will center on hard disk usage for our computer systems. I will also tell you about a new Z-100 upgrade board that allows 16 color display from Hughes Development Systems. And even though it is not the end of the year yet, I have decided to give my first annual "Turkey of the Year" award (or equivalent) to Zenith Data Systems for one of the hardware features of the new Z-386 machines. It was a close call because IBM is a very close runner-up, but ZDS actually won the award for perpetuating some really incredible stupidity. See how they did it next month.

I appreciate your letting me know your interests, and the next column is a specific response to a number of your questions. Based on the mail that I receive, it seems like just about everyone is interested in implementing a hard disk. If you have a specific interest, be sure and let me know.

As usual, be sure to include a self-addressed, stamped envelope (business size preferred) if you would like a personal reply to your question, suggestion or comment. And don't be too surprised if you see

your name as we take a look at your suggestion or article idea.

Products Discussed

HUG Software
ZPC II (885-3037-37) $60.00
ZPC Upgrade Disk (885-3042-37) 20.00
(Note: Both of these are included in the basic price of the Scottie board listed below)
Heath/Zenith Users' Group
Attn: Nancy Strunk
P.O. Box 217
Benton Harbor, MI 49022-0217
(616) 982-3838 (HUG Software only)

DSBACKUP+ $79.95
Design Software
1275 W. Roosevelt Road
Chicago, IL 60185
(800) 231-3088 (Orders only)

MACE Utilities version 4.10 $99.00
Paul Mace Software, Inc.
400 Williamson Way
Ashland, OR 97520
(800) 523-0258 (Orders only)

Scottie Board w/ZPC II and Upgrade $149.00
No solder Z-100 Mod kit 5.00
8 Mhz Interrupt kit 12.00
COM1 port cable 44.00
COM2 port cable 39.00
8 Mhz V20 11.00
Scottie Systems
2667 Cropley Avenue, #123
San Jose, CA 95132
(408) 259-6226

FlipFast Guide to Z/H GW-BASIC $21.95
FlipFast Guide to Z/H MS-DOS 24.95
S-A Design Books
515 W. Lambert, Bldg. E
Brea, CA 92621-3991
(714) 529-7999

Word Version 3.10 $450.00
Microsoft
13221 SC 26th Street, Suite L
Bellevue, WA 98005
(800) 426-9400 (Orders only)

WordStar Version 4.00 Upgrade $94.00
(includes $5.00 shipping)
(See text for additional information)
MicroPro International
Attn: Customer Service
P.O. Box 7079
San Rafael, CA 94901-7079
(800) 227-5609 (Orders only)

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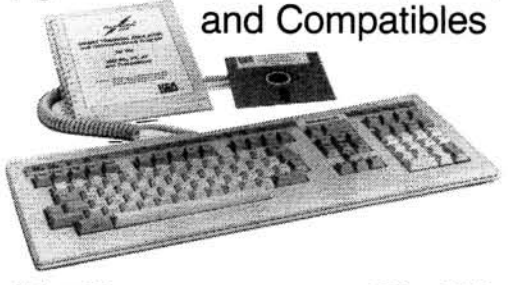

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New Generation Editor

From Condor Computer Corporation

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Introduction

Over the past several months (article written in November 1986), there have been a number of references made to an upcoming Editor from Condor Computer Corporation, the CONDOR 3 Relational Database Management System company. For those of you who were at the HUG-CON in Chicago in August 1986, most likely you stopped at the Condor booth and received some literature. Buss #126 back in August had a small article covering some of the main features of this Editor. Then, the November '86 issue of REMark made a reference to this Editor in an article written by Condor. Finally, for those of you who have Condor 3 and are on the Condor mailing list, you should have received a copy of the newsletter, The Link, which also talked about this Editor.

Until one actually tries a software package for himself/herself, that individual doesn't really have a good feeling on whether that product is as good and powerful as advertised, or as easy to use as advertised. However, let me tell you that there truly is a Condor Editor and it's every bit as good as advertised and then some. In fact, it's an excellent piece of work in my opinion.

Although the Condor Editor was not released at the time of my writing of this article in November (but will be by the time this article is published), I was fortunate to have had the opportunity of using this Editor for a number of months prior to release. I was one of the Beta Testers of this Editor and worked with a number of versions over several months. I'm extremely impressed, to say the least.

In previous articles that I have written for REMark, including the article on Condor 3 that was in the November 1985 issue, I have mentioned that I have two machines, an H-100 and a Z-160. Currently, I have the latest version of Condor 3 on my H-100 which I purchased from Condor and an "almost" latest version on my Z-160 (V2.11.9Z) from Zenith. The current version is V2.11.11 as stated in the November 1986 issue of REMark. I got my first version of Condor back in 1983 when I purchased my H-100 and have been using Condor 3 ever since, mainly at home, but do use it at work, as well. The only complaint that I have had with Condor 3 is that it never had an editor to use for creating Help pages, and Command files. One had to use EDLIN from MS-DOS or some other text editor or possibly even a word processing package. Now that has changed for the PC-type micros with the introduction of the Condor Editor. The "void" has been filled. Unfortunately, the Condor Editor does NOT support the H/Z-100 machines.

At this point, I would like to give you an overview of the Condor Editor covering the various features and discussing some of the features in some detail.

Overview

First of all, the Condor Editor is a multi-purpose editor for the IBM-PC (XT and AT) micros and compatibles (and that includes the Zenith PC-types, as well) . PC-DOS/MS-DOS version 2.0 or later is required. It was not designed just to be used with Condor 3 and future Condor products, but to be used wherever a text editor is needed. For us Heath/Zenith users, that means as an editor for our favorite programming language(s) and/or applications. As I said above, this editor fills a void in CONDOR 3. It can be used to generate help pages, command files, and to create/modify dataset and report forms. It is truly a general purpose editor.

Just as with any other powerful, feature-rich, application, the Condor Editor requires considerable memory. As a stand-alone editor, it requires 256K of RAM. If it's used in conjunction with Condor 3, then 384K is required which includes Condor 3 itself. The Condor Editor supports either a monochrome or color graphics adaptor. The Editor automatically determines which is present. For my Z-160, it determines that I have a color adaptor which is correct since the Z-150/160 class of micros has a built-in Color Graphics Adaptor (CGA) capability. Although the Condor Editor works just fine with a monochrome adaptor/monitor, as well as with a color adaptor/monochrome monitor (as with the Z-160's amber mon-

itor), it looks best, however, when used with a color monitor. The colors used for various parts of the screen can be changed by editing the CONDOR.SYS file.

The Condor Editor was designed to be a powerful and useful development tool for both the inexperienced user, as well as the experienced user. All features/capabilities in the Condor Editor can be accessed either through menus (menu-driven) or via special commands (command-driven). The menu route uses a menu bar at the top of the screen with a number of pull-down menus, such as those used in Microsoft Windows or those used in MacIntosh computer (bite my tongue) applications. For the inexperienced users, the menu route is the best for them, while the command route is the most effective for the experienced users. However, there is nothing preventing users from mixing the two. Both methods are always available. The occasion will determine which is best and more efficient to use than the other.

According to Condor Computer Corporation, their application software developers have been using the Condor Editor (even in a pre-release form) for some time now and their productivity has increased significantly. I, myself, have been using the Condor Editor whenever I have a need for a text editor.

The text that is entered is displayed in a 'window'. In fact, up to 15 'windows' can be active at one time, which means many files may be open at the same time. This allows users to create and modify more than one file at a time without having to close a particular file before opening and working on another. This multi-window/multi-file feature makes it very easy for a user to copy or move information from one file to another.

We will see shortly that the Condor Editor also provides a way to save parts of many files for later 'pasting' into another file. Most applications that support 'cut' and 'paste' operations allow only one block of information to be available at any one time. This means that if some information is already in the 'save' buffer, the next bit of information put into the 'save' buffer by a 'cut' or 'copy' request will overwrite what's there. This makes it a difficult task when there is a need to copy text from multiple files to one particular file. In this situation, one 'copy/cut' and 'paste' operation needs to be completed before another 'copy/cut' operation is requested. The Condor Editor overcomes this deficiency.

Switching between the various active files/windows is simple and extremely fast. I will talk more about 'windows' shortly. For now, suffice it to say, the 'windowing' capability in the Condor Editor is extremely powerful and flexible, yet easy to use, and plays an important part in the editor.

For on-line assistance, the Condor Editor provides an excellent HELP facility. At any point while you are editing, you can request 'help' by pressing the F1 key. There is one exception where F1 won't bring up a help screen and that is when the Line/Box drawing commands are being used. ALT-D is used in this case to request 'help.'

DeskTop Environment

The menu-driven facility of the Condor Editor is referred to as the DeskTop User Interface (I refer to it as the DeskTop Environment). As was mentioned before, the user can either use the menus to accomplish certain tasks, such as searching, copying and pasting, etc. or use the associated commands which I will talk about later.

The DeskTop Environment is activated via function key F6. This brings up a menu bar containing the titles of the various pull-down menus. There are eight pull-down menus: Desktop, File, Edit, Search, Windows, Cursor, Page, and System. I will discuss each of these in turn. After pressing F6 which brings up the DeskTop Environment, the title of one of the pull-down menus is highlighted. To select that pull-down menu, press the RETURN key (or called ENTER on some systems). To exit this pull-down menu, press the ESC key.

To select another pull-down menu than the one highlighted, use the left and right arrow keys. The menu bar (the line containing the eight pull-down menu titles) is 'circular' which means that if the last title on the menu bar is highlighted and the right arrow key is pressed, the first title becomes highlighted. Similarly, if the first menu title is highlighted and the left arrow key is pressed, the last menu title on the menu bar will be highlighted. The HOME and END keys can be used to highlight the first or the last menu titles, respectively.

Below the menu bar line is a description line which gives a short descriptive phrase about the highlighted menu title. Condor refers to this line as the Help line. When a menu is selected, this description line will display information about the function within the selected menu that is highlighted.

When one of the eight pull-down menus is selected, a menu of functions appears approximately right below the menu title. To the right of each function name is the key(s) to press if one chose to select the function via the command route rather than the menu route. There a few exceptions, such as the Desktop pull-down menu. To select one of the functions in the pull-down menu displayed on the screen via the menu route, the function must be highlighted first. This is accomplished using the up and down arrow keys. The HOME and END can also be used to highlight the top and bottom functions, respectively. After highlighting the function that is desired, select it by pressing RETURN.

If the requested function requires some additional information, a pop-up menu (as Condor refers to them) appears on the screen. A choice is selected in the same way as the functions: use the up and down arrow keys to highlight the choice and RETURN to select it.

Desktop Menu

This menu has only two selectable functions: Information and Form drawing. The Information function causes some general information on the editor itself to be displayed, such as version number, authors, etc.

The Form Drawing function displays the various keys used in the 'form' (line/box) generation facility. This facility allows the user to draw single and/or double-line boxes around information displayed. This works just fine on the screen, but unless you have a printer that supports the full IBM Proprinter character set (which includes these special 'line/box characters'), you won't get these special characters printed. Instead, you will get whatever characters your printer supports for these upper ASCII characters. For example, an EPSON FX-85 in 'EPSON' mode will print upper case letters for most of these 'line/box characters.' However, if the EPSON FX-85 is set to IBM mode via the dip switches, then the line characters, either single or double-line, will all be printed as single line characters. The EPSON FX-286 printer, when set to the IBM Proprinter mode via the dip switches, will print both the single and double-line characters as seen on the screen.

File Menu

This menu provides the user with the usual set of file functions: Open an existing file (you can specify a path along with the file name); Open new file (if file name entered cannot be found on the disk unit specified or default disk, then the file is assumed to be a new file and it is opened as such); SavePb file using name specified on Open; Save as . . . allows the user to specify a dif-

ferent file name than the one specified on Open (this means that another version of the file is saved. The Save and Exit function is similar to Save, except that the Condor Editor is terminated after saving the file.

The next function request is the Print On/Off function. Selecting this function brings up a 'pop-up' menu that has four options: 'Cancel the print request' (will stop printing a file already printing); 'Print file as is' (prints the file as the user typed it); 'Print file with standard title' (prints file as the user entered it plus day-of-week, date, time, file name, including a path if supplied, and page numbers); 'Print file with standard title and line numbers' (prints as above, but adds line numbers).

If, for some reason, you need to abandon the file (i.e. throw out what you have done), the next function from the File Menu lets you do that. Its the Exit File function. The last function, Exit Editor, lets the user exit the Condor Editor.

Edit Menu

This menu provides the user with all the typical editing type functions. The first is just a toggle: Insert/Replace mode. The next function, Delete Character, deletes the character at the Cursor. The Left Delete function deletes the character to the left of the cursor.

Insert Line works this way. If the cursor is at the beginning of a line, the entire line is moved down and the user can now enter information at the beginning of the just inserted blank line. If the cursor is positioned on a character other than the first character in the line, all the characters after the cursor, including the character at the cursor are moved down a line. The cursor is left where it was and the user can enter characters starting at this point.

The Delete to End of Line function deletes all characters following the cursor, including the character at the cursor. The information that is 'deleted' is actually saved for later use. The Undo Last Delete Line function will copy the information that was deleted by the above function to the current cursor position.

The next set of editing functions deal with the concepts of "pads". These are nothing more than save buffers, however, they are only temporary; they are lost when the editor is terminated. There are two provided by the editor: "__Copy" and "__Del". These two pads are used with the next four functions. The first function is the Mark for Copy function. This allows the user to mark a portion of text that is to be copied elsewhere in the same file or in a different file. The marked text is copied to the "__Copy" pad.

The Paste Marked Text function will copy the contents of the "__Copy" pad to the current cursor position. To erase a portion of text, use the Mark for Erase function which works similar to the Copy function, except that the marked text is erased and the text is moved to the "__Del" pad. The Paste Erased Text function will do just that; it will copy the contents of the "__Del" pad to the cursor position. The contents of the "__Del" pad are left intact after the Paste operation so that the contents can be pasted elsewhere,if desired.

The last two functions available through the Edit Menu are the Name a Pad function and the Pads Status Report. This latter function displays the contents of each of the active pads, including the "__Copy" and "__Del" pads. Although I indicated that the Mark for Copy and Paste Marked Text deal with the "__Copy" pad which is true, but they also work with user named pads. If the user specifies no pad name before using the above commands, the "__Copy" pad is used as I described.

However, if the user names a pad via the Name a Pad function, then this pad is the one referenced by the Copy and Paste functions. The active pad name is shown on the bottom of the right-hand side of the screen. So if you want to save text from many different areas of your document, before doing each Mark for Copy function, Name a Pad first. Then, each of the copied text areas will be stored in a separate pad. The Mark for Erase and Paste Erased Text only work with the "__Del" pad.

Search Menu

The functions provided by this menu all deal with 'find' and 'replace' text. The Find First function will find the first occurrence of a word or string. In order to get the 'first' occurrence, the cursor should be at the beginning of the file. Wildcard characters are allowed with the Find and Replace functions. Although there are usually two characters (* and ?) when we talk about wildcard characters, in general, only the ? is supported for the 'find/replace' functions in the Condor Editor. Find Next just finds the next occurrence of a word or string. For both of the 'Find' functions, the user is prompted not only for the word/string to find, but also whether the search is to take place in a forward direction (toward the end of the file) or in a backward direction (toward the beginning of the file).

Replace First is similar to Find First except that after finding the requested word/string, the word/string is automatically replaced with a new word/string specified by the user. Replace Next finds the next occurrence of the word/string specified for the Replace First function and replaces it with the word/string also specified for that function. In addition to supplying the word/string to find and the replacement word/string, the user is prompted whether the search takes place forward or backword, and the number of times the replacement should take place. To replace all occurrences, use a very large replace count.

The Keyword File Search function allows the user to search 1 or more files for a particular word/string (keyword). The user is prompted to enter the keyword and file names. Wildcard characters (?) can be used for the keyword and file names to search (* and ? just as for PC and MS-DOS files). A special keyword file is created that contains all the lines containing the keyword. If the keyword is a single word, then the keyword file name is the keyword (truncated to 8 characters) with the extension .KEY. If the keyword is a string, then the user is prompted to enter a keyword file name and that file name can have any extension.

The Extract Keyfile function allows the user to select a line in the special keyword file created by the Keyword File Search function which in turn opens a window with the contents of the file containing the line with the matching keyword. The user can now directly edit this file or perform some Copy and Paste operations with this file and 1 or more other active files.

Windows Menu

Before covering the Window functions, let me describe the 'Windowing' capability in the Condor Editor. It was mentioned before that each file has its own window which is a way to display the contents of the file and edit it. Up to 15 windows can be active at any one time. The Condor Editor supports a number of different types of windows. What this really means is that there are a number of ways to position multiple windows on the screen at the same time. This makes the windowing facility a very powerful yet flexible tool.

When the first file is opened in the editor, it takes the entire screen minus a few lines at the top of the screen for menu information, and status information on the bottom. When opening a second window and subsequent windows, the position of the window depends on the current position of the cursor. The upper left-hand corner of the window is positioned at the cursor.

If the cursor is in the Home position, i.e., in the upper left-hand corner of the screen, then the next window will be positioned there and 'overlap' the window underneath. Thus, we have what Condor refers to as Overlapped Windows. If all windows were created this way, we would have basically a 'stack' of windows, one exactly on top of another, with only the last window created visible. However, the window that is visible can be changed by using a window function which will be covered shortly.

If we position the cursor at the left-hand side of the screen, but down from the top position and then open up another window, then we have what Condor calls Split Windows. This means that the top window is just 'slid' down the screen somewhat from the one beneath it. This allows the user to see some information in the window underneath, as well as information in the top window. One can continue this process to have many Split Windows.

Now, if we modify what we did for Split Windows, we get another type of window called Frame Windows. To create this type of window, we position the cursor down from the top AND to the right of the left side of the screen. What we have now is a screen that not only is 'slid' down some from the top, but also is 'slid' to the right. Now we can see information in the screen underneath at the top and left side.

Now we have one more type of windows called Tiled Windows. There can be up to 6 tiled windows displayed at any one time; however, these 6 are the most recent opened windows. To display tiled windows, first one opens a number of windows (file) as above; they can be Overlapped, Split, or Framed windows. Then, one selects the Tile/Untile Windows function. What happens now is that the windows are placed as 'tiles' on the screen.

If there are only two windows, then the windows are displayed side-by-side; i.e., we have a vertical split between the two windows. If there are 3 or 4 windows, then the screen is split into 4 equal parts. The first two windows take the upper left and upper right 'boxes'. If there are only three windows, then the third window takes the lower two boxes as one. For four windows, the last two take the lower left and lower right boxes.

For 5 or 6 windows, the screen is divided into 6 equal parts, 2 boxes across and 3 high. Again, if there are only 5 windows, the fifth window takes the entire bottom third of the screen. To put the windows back to where they were before, the same function is selected again and the tiled windows disappear. Now for the functions available.

Open a New Window performs the function that was described above for the first 3 window types. By selecting Exit Window and File, the user can get rid of the currently active window. To see the status of your current window, use the Display Window Status function. This provides you with the window number, name of the file and size, left and right margins, and justification/word-wrap status. To see the status of all your opened windows, use the Status of All Windows function. The same information is displayed as that for the current window.

The Tile/Untile Windows function is a toggle. The first time it is selected, the 6 most recently opened windows are 'tiled'. Selecting this function again, 'untiles' the windows, i.e., returns them to the way they were. Zoom/Unzoom Windows allows the user to 'blow up or expand' the current window to utilize the entire screen. To return it to its former state, select this function again. Its a toggle function like the Tile/Untile Windows.

Frame-Mode Windows can be changed to Split-Screen Windows using the Split/Unsplit Windows function. This too is a toggle. To refresh the screen to get rid of the ruler or marked text information, select the Refresh Window Content function.

The last two commands in this menu deal with moving from one window to another. The Go to Previous Window function removes the current window to allow the previous window to be displayed. It makes this previous window the new current window. Similarly, with the Go to Next Window, if there is one. The current window is overlaid with the next window in sequence, making that window the new current one.

Cursor Menu

The various Cursor Movement functions are as follows: Beginning of Line, End of Line, Top of Screen, Bottom of Screen, Page Up (move to previous page if there is one), Page Down (move to next page if there is one), Beginning of Text (beginning of file), End of Text (end of file), Word to the Left, Word to the Right, View Page (the line containing the Cursor is moved to the top of the screen), and Go to Line # . . . This last function allows the user to go directly to a specific line in the file. Remember that one of the print options allows printing of the file contents with line numbers.

Page Menu

The functions provided through this menu help the user organize the text page with such functions as margins, tabs, justification, etc. The Set Right Margin and Set Left Margin functions allow the user to specify the right and left margins via column numbers.

Set Paragraph Indentation allows the user to specify the starting column of the first line of a paragraph. Set Line Wrap On/Off works the same way as this function does in a word processing package; namely, words extending beyond the right margin are moved automatically to the start of the next line if Word-Wrap is ON. Likewise with the Set Right Justify On/Off. Just as with word processors, if Right Justification is ON, necessary spaces are inserted into the text to keep the right-hand end of a line flush with the right margin. If Justification is turned off, then the right side of the text is 'jagged', i.e. the ends of the lines are not necessarily flush with the right margin.

The Set Tab Length sets a tab at the column number specified by the user. If it is necessary to change the margins of a paragraph after it is written or turn Right Justification on once the paragraph is finished, the Format Text function will adjust the paragraph to fit the new margins or perform the justification on the lines, etc.

When entering titles, it is not necessary to do any calculations for centering the title. Just enter the title and select the Center Line function to automatically center the line for you. At times, it is nice to have an aid when trying to line up text/numbers in columns, etc. The Display Ruler function is your aid. A 'ruler' line appears just above the line containing the Cursor.

The last function in this menu is the Set Form Drawing On/Off. This function allows the user to toggle between 'Edit' mode and 'Graphics' (or 'Box-Drawing') mode. After toggling to the Graphics mode, the Function keys take on a new meaning. They are used to enter single-line or double-line characters that can be used to draw boxes. The Function keys are either used by themselves or in conjunction with either ALT, CTRL, or SHIFT. When finished in Graphics mode, the Set Form Drawing must be toggled off to get back to the 'Edit' mode and normal use of the function keys.

System Menu

The DOS Shell function allows the user to access the PC/MS-DOS operating system to execute DOS commands. The Memory Usage function displays memory usage

information to the user, such as total available memory, amount of memory used, percentage used, etc. If you ever need the current date and time in the document that you are editing, the Insert Time Stamp function will insert the DOS running date and time at the current position of the Cursor.

The last System Menu function is the Add/Modify a Macro function. This facility allows the user to create either single-command macros (up to 78 characters) or multi-command macros stored as macro files (up to 65,520 characters) or 'pads'. The single-command macro is created directly by using the above function and the macro command language. The user assigns a macro 'id' or number to the macro; 0-9. Then when the user wants the macro executed, the ALT-n (where n is 0-9) is used to call it. Macros created this way are temporary.

Another type of temporary macro is the 'pad' macro. This type of macro can have one or many commands. The user creates a 'pad' macro via a window, entering all the macro commands he/she wants, then copies the block of commands to a pad. To access this type of macro, a single-command macro has to be created first as above. The single command is a call to load and execute the contents of the pad. The single command is: /P<pad name>. To initiate the pad macro, use the ALT-n key sequence where n is 0-9 as assigned by the user.

The last type of macro is the file macro. It is permanent since the file of commands is stored on a disk. To execute a file macro, one has to perform the same set of operations as for the pad macro. However, the single command used to load and execute the file is: /F<d:\pathname\filename .ext>. Although the file macros are permanent, the id assigned to it is only temporary, since it is lost when the Editor is terminated. At any time while editing a file, the user can redefine a macro id to be a single-command macro, a call to a pad macro, or to a file macro. Only 10 macros are active at any one time; 0-9.

The Macro facility has a programming language all of its own, but it will not be covered in this article. Suffice it to say, that the Condor Editor Macro facility is a very powerful and flexible tool for the more sophisticated user.

Key-Commands

At the beginning of this article, I stated that all functions with the exception of the DeskTop Menu functions can be accessed either via menus or via key-commands. There is no need to go into the functions again at this time, so I will just list the commands with their corresponding key-command.

- **File Menu:**
  - Open F5
  - Save F3
  - Save As ... CTRL-F3
  - Save and Exit ALT-F3
  - Print On/Off ALT-F5
  - Exit File ESC
  - Exit Editor F10
- **Edit Menu:**
  - Insert/Replace Toggle INS
  - Delete Character DEL
  - Left Delete BS
  - Insert Line CTRL-L
  - Delete to End of Line CTRL-D
  - Mark for Copy CTRL-C
  - Paste Marked Text CTRL-P
  - Mark for Erase CTRL-E
  - Undo Last Delete Line CTRL-U
  - Paste Erased Text ALT-P
  - Name a Pad CTRL-N
  - Pads Status Report SHIFT-F2
- **Search Menu:**
  - Find Next F7
  - Find First ALT-F7
  - Replace Next F8
  - Replace First ALT-F8
  - Keyword Search SHIFT-F7
  - Extract Keyfile CTRL-X
- **Windows Menu:**
  - Open a New Window F2
  - Display Window Status ALT-F2
  - Status of all Windows CTRL-F2
  - Exit Window and File ESC
  - Tile/Untile Windows F4
  - Zoom/Unzoom Windows ALT-F4
  - Split/Unsplit Windows CTRL-F4
  - Refresh Window Content SHIFT-F4
  - Go to Previous Window F9
  - Go to Next Window ALT-F9
- **Cursor Menu:**
  - Beginning of Line HOME
  - Top of Screen CTRL-HOME
  - End of Line END
  - Bottom of Screen CTRL-END
  - Page Up PgUp
  - Beginning of Text CTRL-PgUp
  - Page Down PgDn
  - End of Text File CTRL-PgDn
  - Word to the Left CTRL-Left_Arrow
  - Word to the Right CTRL-Right_Arrow
  - View Page CTRL-V
  - Go to Line # ... CTRL-G
- **Page Menu:**
  - Set Right Margin ALT-R
  - Set Left Margin ALT-L
  - Set Paragraph Indentation ALT-I
  - Set Word-Wrap On/Off ALT-W
  - Set Right-Justify On/Off ALT-J
  - Set Tab Length ALT-T
  - Format Text ALT-F
  - Center Line ALT-C
  - Display Ruler CTRL-R
  - Set Form Drawing On/Off CTRL-F
- **System Menu:**
  - DOS Shell CTRL-S
  - Memory Usage CTRL-M
  - Add/Modify a Macro CTRL-F6
  - Insert Time Stamp CTRL-Z

The function keys used in Graphics mode to draw boxes will not be included in this article. The printing of the special characters is difficult unless one has a printer that can print out both the single-line and double-line characters. I don't have such a printer. Suffice it to say that the keys used are the function keys by themselves and in conjunction with CTRL, ALT, and SHIFT keys.

Summary

Just a few words on the information that is provided at the bottom of the screen. There are two lines at the bottom that contain useful status information: Column/Row Number of Cursor, Left/Right Margins, Word-Wrap Status, Right-Justify Status, active Pad name, path of disk file of current window, date, INS/REP Status, etc.

That is it. Hopefully, this gives one an idea what the Condor Editor can do and the method of achieving the tasks (menus versus commands). If you have a need for an excellent Editor, I would suggest that you take a close look at this Editor and compare its capabilities and ease-of-use with other editors. Happy Editing . . . *

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Reading 48/96 TPI Drives On Your H/Z-100

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The H/Z-100 disk controller board will support both 48 TPI (Tracks Per Inch) and 96 TPI drives, as well as four 5.25 inch drives and four 8 inch drives. The MS-DOS Input/Output Handler (BIOS) can easily be changed to support a mixture of 48/96 TPI drives and the eight drives. You may have already seen other methods for implementing the 48/96 TPI drive mix on the H/Z-100. One of these methods employs a modification to the disk controller board and supports one 48 TPI and one 96 TPI drive. This approach had several limitations, the worst of these is the inability to format a disk in both formats without rebooting. The modification offered here to the format program will fix that problem, even if you don't care to add the extra drives.

Well, let me describe what you will find in this article. I will begin with why I wanted these changes and offer a description of what they will do. I will follow with a description of what they will not do, and then I will describe the changes themselves. Finally, I will offer several alternatives that may suit your needs better.

Why eight floppy disks? You can easily increase the on-line disk storage to 6.9 MBytes without a hard disk and increase the disk formats you can copy. One of the H/Z-100's strongest features is it's programmable disk controller, it can be real handy when you want to transport software to and from many machines, especially when you have access to a large public domain library. With two drives of the same type, you can easily make backup copies of the software. You will be able to add high density drives without losing the standard density capability. The higher density disk allows application programs like WordStar w/CorrectStar to be run from a single disk, which eliminates the need for constant disk swaps. The increased on-line storage capacity can also allow you to employ a more versatile menu driven operating environment. I will not go into the virtues of a menu driver operating environment, I will only say that they can be a very valuable tool.

Anyway, I started this project with three objectives. First, several of the other members of the Miami Amateur Computer Club were replacing one of the 48 TPI drives with a 96 TPI drive and were looking for a solution to the resulting formatting problem. We wanted to be able to format and copy disks in a variety of formats because the club was maintaining five different public domain libraries, and even though the club meets in the local Heath/Zenith store, its membership was by no means all Heath/Zenith users/owners. Finally, I wanted to maximize my system's capability, and I started this project prior to the release of MS-DOS version 2 and the introduction of the device driver for the H/Z-100.

I have now made changes to both MS-DOS version 2 and 3. These changes support four 5.25 inch, four 8 inch, four hard disk/partitions, and four other block device drivers (RAM/Electronic disk). They support two 48 TPI and two 96 TPI drives. The H/Z-100 can be booted from any one of the eight drives or the hard disk. A disk can be formatted on any of the drives and all four of the 5.25 inch drives will read a 320/360K disk. The hard disk support is unchanged and there are no hardware modifications.

Moving to the restrictions: The system will only auto boot from drives "A", "E", and "I". You cannot boot the system with a 48 TPI disk in a 96 TPI drive and vice versa. You still can't read a 96 TPI disk in a 48 TPI drive, and you cannot read a 96 TPI disk which was formatted under version 1 without changing the File Allocation Table (FAT). This is not caused by the changes to the BIOS, but is the result of adding the nine sector format support to version 2. Next, CONFIGUR.COM can not be used to change the drive step rate for the added drives; however, this limitation can be resolved by setting the desired step rate in the table as they are added. Also, as you might expect, the Disk Based Diagnostics program available through ZDS will not test the extra drives. If you want to test the added drives, configure your system so that the drives you want to check are "A"

and "B", set the disk controller board for the correct type, and run the disk diagnostics test.

We are now ready to describe the BIOS changes, there are four source files that must be changed. They are DSK207.ASM, DEFDSK.ASM, BBLKDEV.ASM, and BDSKTB.ASM. The good news is that they are the same for both version 2 and 3. Note: However, these source files are not interchangeable between the two versions, so the changes will need to be made in both versions. A partial listing of the four files follows:

```
        CMP     BYTE PTR SRH_UNIT[BX],MAXDSK4 ;Is it < 2
        JC      DSK0_BPB2A                    ; If so skip
        OR      AL,AS96T                      ; Set to 96TPI
DSK0_BPB1AB:
;       Was 96tpi drives, show double step and write protect
        OR      CS:BYTE PTR DSK_FLAG[DI],DSK_FDP+DSK_FWP
;       Now check if old or new format
DSK0_BPB2A:
```

Again, we find the AUX STATUS port is read and an adjustment is needed to correctly determine the drive density for the third and fourth drives.

DSK207.ASM:

```
DSK_IAS:
     MOV  DX,FDAS                    ; Get AUX STATUS port offset
     ADD  DX,WORD PTR DSK_PORT[SI]   ; Add BASE port address
     IN   AL,DX                      ; Read AUX STATUS port
     TEST AL,AS96T                   ; Is AUX STATUS port set 48 or 96TPI?
     JNZ  DSK_IAS1                   ;  Jump if set for 96TPI
     CMP  DSK_LDRIVE,MAXDSK4         ; Is drive # < 2?
     JC   DSK_IAS2                   ; If so skip
     OR   AL,AS96T                   ;   It wasn't so make it a 96TPI
     RET
DSK_IAS1:
     CMP  DSK_LDRIVE,MAXDSK4         ; Is drive # < 2?
     JC   DSK_IAS2                   ; If so skip
     AND  AL,0FFH-AS96T              ;   It wasn't so make it a 48TPI
DSK_IAS2:
     RET                             ; and return
```

BDSKTB.ASM:

```
DSK_TPTR     LABEL   WORD

     DW      OFFSET DISK0      ; 5.25 inch drive
     DW      OFFSET DISK1
     DW      OFFSET DISK2
     DW      OFFSET DISK3

     DW      OFFSET DISK4      ;8 inch drives
     DW      OFFSET DISK5
     DW      OFFSET DISK6
     DW      OFFSET DISK7

     DW      OFFSET DISK8      ; Winchester drives
     DW      OFFSET DISK9
     DW      OFFSET DISK10
     DW      OFFSET DISK11
     DW      -1                ; Mark end of table
```

The call to DSK_IAS: reads the AUX STATUS port and returned. The change reads the AUX STATUS port, test setting, branches, test the drive number, fixing the 48/96 TPI bit, and then returned. This code determines whether the 48 TPI or 96 TPI drives are installed so that the correct parameters can be placed in the drive tables. Since we are using both types, we will need to adjust the answer. First, we will make an assumption, and then install the additional based on that assumption. I have assumed that the 48/96 TPI switch will be set for 48 TPI if drive "A" and "B" are 48 TPI drives and "C" and "D" are 96 TPI drives. And the switch will be set for 96 TPI if "A/B" are 96 TPIs and "C/D" will be 48 TPIs. This eliminates the need for a hardware modification. In both cases, the switch setting is correct for the "A" and "B" drives (no correction is needed), but the "C" and "D" drives must be corrected.

DEFDSK.ASM:

```
;
;  Define the disk info block (one is needed for each drive)
;

MAXDSKEQU 15; Maximum number of disks
MAXDSK4EQU 2; Maximum 5 inch drives of 1st type (0-1)
MAXDSK5EQU 4; Maximum 5 inch drives of both types (2-3)
MAXDSK8EQU 8; Maximum 8 inch drives (4-7)
MAXDSKWEQU 12; Maximum winchester drive (8-11)
```

A definition for the number of new drives is added to the definition table and the maximum number of drives for each type is adjusted to the number supported. You may notice, for example, that the MAXDSK5 is the maximum number of 5.25 inch drives and not just the number of the second type, while MAXDSK8 is the maximum number of floppy disk drives and so on.

Add OFFSETs for two 5.25" drives (DISK2 and DISK3), renumber both 8" drive OFFSETs (DISK4 and DISK5), add OFFSETs for two 8" drives (DISK6 and DISK7), and renumber winchester drive OFFSETs (DISK8 through DISK11).

BDSKTB.ASM (cont.):

There is no change made to SPDISK and only the step rates are changed in the DISK0 and the DISK1 tables. The step rate is changed by replacing FDFS30 with FDFS6 in three places for each table.

BBLKDEV.ASM:

```
DSK0_BPB1A:
MOVDX,CS:WORD PTR DSK_PORT[DI]  ; DX = port number
ADDDX,FDAS
INAL,DX      ; Get aux status
TESTAL,AS96T                    ; Is AUX STATUS port 48 or 96TPI?
        JZ      DSK0_BPB1AA                 ; Jump if set 48TPI
CMPBYTE PTR SRH_UNIT[BX],MAXDSK4 ;Is it < 2
JCDSK0_BPB1AB      ; If so skip
AND     AL,0FFH-AS96T     ; Set t0 48TPI
        JMP     DSK0_BPB2A
DSK0_BPB1AA:
```

```
;
;   5.25 inch, Unit 2
;

DISK2   LABEL   BYTE
        ERRNZ   DISK2,DSK_STA
        DW      0                       ; Status
        ERRNZ   DISK2,DSK_TYPE
        DB      DSK_TZ2075              ; Z-207 type disk
        ERRNZ   DISK2,DSK_LTRK
        DB      0                       ; Last track
        ERRNZ   DISK2,DSK_LOPT
        DB      DSK_OUK                 ; Last operation is unknown
        ERRNZ   DISK2,DSK_FLAG
        DB      DSK_FDS+DSK_FDC+DSK_FSL ; Double sided disk
        ERRNZ   DISK2,DSK_SEL
        DB      CONDSEN+2+CONPC         ; Select disk 2, no precomp
        ERRNZ   DISK2,DSK_RS
        DB      FDCRST+FDFHLB+FDFS6     ; Restore(home) command
        ERRNZ   DISK2,DSK_SPHI
        DB      FDCSTI+FDFHLB+FDFS6+FDFUTR ; Step in command
        ERRNZ   DISK2,DSK_FMT
        DB      FDCWRT+FDFDLF           ; Format(write track) command
        ERRNZ   DISK2,DSK_RD
        DB      FDCRDS+FDFSLF           ; Read command
        ERRNZ   DISK2,DSK_WR
        DB      FDCWRS+FDFSLF           ; Write command
        ERRNZ   DISK2,DSK_SK
        DB      FDCSEK+FDFHLB+FDFS6     ; Seek command
        ERRNZ   DISK2,DSK_SERR
        DW      0                       ; # of soft errors
        ERRNZ   DISK2,DSK_MAXT
        DB      80                      ; Number of tracks on disk
        ERRNZ   DISK2,DSK_NRETRY
        DB      1                       ; Number of retrys
        ERRNZ   DISK2,DSK_SPT
        DB      8                       ; Sectors per track
        ERRNZ   DISK2,DSK_BPS
        DW      512                     ; Bytes per sector
        ERRNZ   DISK2,DSK_BPWT
        DW      6437                    ; Bytes per write track
        ERRNZ   DISK2,DSK_BPRT
        DW      6437                    ; Bytes per read track
        ERRNZ   DISK2,DSK_DELAY
        DW      400                     ; 400 instr = 1.5mls
        ERRNZ   DISK2,DSK_LDELAY
        DW      8000                    ; 8000 instr = 30mls
        ERRNZ   DISK2,DSK_PORT
        DW      Z207A                   ; Base Port number
        ERRNZ   DISK2,DSK_RDT
        DB      FDCRDT+FDFDLF           ; Read track command
        ERRNZ   DISK2,DSK_IMGFLG
        DB      DSKIF_DV                ; Drive exits
        ERRNZ   DISK2,DSK_TDSEL
        DW      100                     ; Time to wait before deselect
        ERRNZ   DISK2,DSK_NAME
        DB      'C'                     ; Drive C:
        ERRNZ   DISK2,DSK_TIMOUT
        DW      0                       ; Current timeout
        ERRNZ   DISK2,DSK_SIZE
```

```
;
;   5.25 inch, Unit 3
;

DISK3   LABEL   BYTE
        ERRNZ   DISK3,DSK_STA
        DW      0                       ; Status
        ERRNZ   DISK3,DSK_TYPE
        DB      DSK_TZ2075              ; Z-207 type disk
        ERRNZ   DISK3,DSK_LTRK
        DB      0                       ; Last track
        ERRNZ   DISK3,DSK_LOPT
        DB      DSK_OUK                 ; Last operation is unknown
        ERRNZ   DISK3,DSK_FLAG
        DB      DSK_FDS+DSK_FDC+DSK_FSL ; Double sided disk
        ERRNZ   DISK3,DSK_SEL
        DB      CONDSEN+3+CONPC         ; Select disk 3, no precomp
        ERRNZ   DISK3,DSK_RS
        DB      FDCRST+FDFHLB+FDFS6     ; Restore(home) command
        ERRNZ   DISK3,DSK_SPHI
        DB      FDCSTI+FDFHLB+FDFS6+FDFUTR ; Step in command
        ERRNZ   DISK3,DSK_FMT
        DB      FDCWRT+FDFDLF           ; Format(write track) command
        ERRNZ   DISK3,DSK_RD
        DB      FDCRDS+FDFSLF           ; Read command
        ERRNZ   DISK3,DSK_WR
        DB      FDCWRS+FDFSLF           ; Write command
        ERRNZ   DISK3,DSK_SK
        DB      FDCSEK+FDFHLB+FDFS6     ; Seek command
        ERRNZ   DISK3,DSK_SERR
        DW      0                       ; # of soft errors
        ERRNZ   DISK3,DSK_MAXT
        DB      80                      ; Number of tracks on disk
        ERRNZ   DISK3,DSK_NRETRY
        DB      1                       ; Number of retrys
        ERRNZ   DISK3,DSK_SPT
        DB      8                       ; Sectors per track
        ERRNZ   DISK3,DSK_BPS
        DW      512                     ; Bytes per sector
        ERRNZ   DISK3,DSK_BPWT
        DW      6437                    ; Bytes per write track
        ERRNZ   DISK3,DSK_BPRT
        DW      6437                    ; Bytes per read track
        ERRNZ   DISK3,DSK_DELAY
        DW      400                     ; 400 instr = 1.5mls
        ERRNZ   DISK3,DSK_LDELAY
        DW      8000                    ; 8000 instr = 30mls
        ERRNZ   DISK3,DSK_PORT
        DW      Z207A                   ; Base Port number
        ERRNZ   DISK3,DSK_RDT
        DB      FDCRDT+FDFDLF           ; Read track command
        ERRNZ   DISK3,DSK_IMGFLG
        DB      DSKIF_DV                ; Drive exits
        ERRNZ   DISK3,DSK_TDSEL
        DW      100                     ; Time to wait before deselect
        ERRNZ   DISK3,DSK_NAME
        DB      'D'                     ; Drive D:
        ERRNZ   DISK3,DSK_TIMOUT
        DW      0                       ; Current timeout
        ERRNZ   DISK3,DSK_SIZE
```

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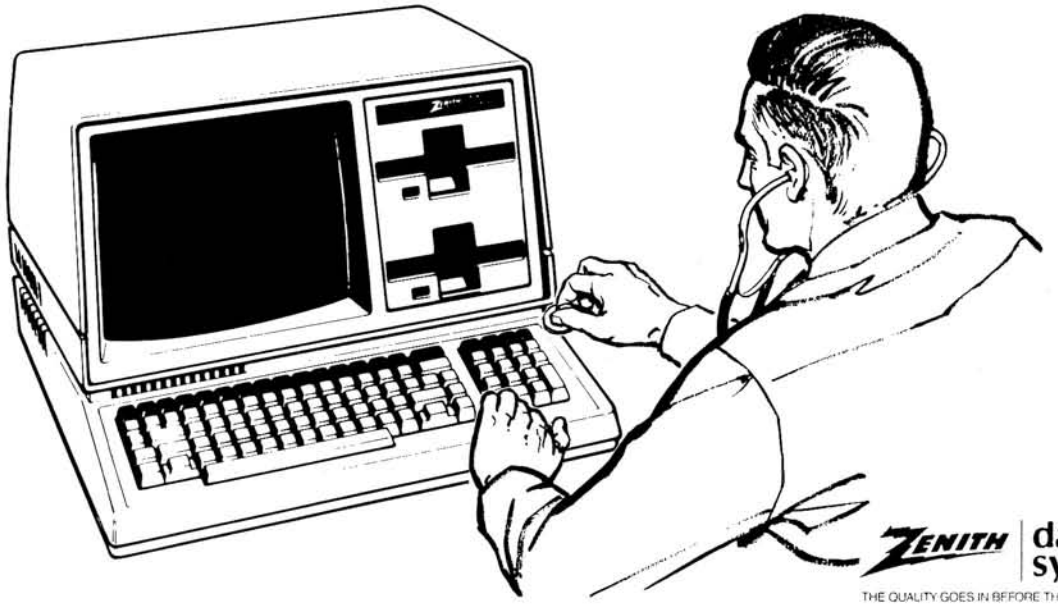

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Note: The two 5.25" drive tables you are adding will be put between the original two 5.25" drives and the original two 8" drives. Add two 5.25" drive tables by copying the DISK0 and DISK1 tables. Change the remarks of the first added table (the copy, not the original) to read: "; 5.25 inch, Unit 2", and the remarks of the second added table to read: "; 5.25 inch, Unit 3". Next, change the label DISK0 of the first added table to DISK2 and the second to DISK3. Note: The label is used 29 times in the 5.25" drive table and must be changed every time. Again, to the first added table change the line containing the remark: "; Select disk 0, no precomp" from "0" to a "2" in the code and in the remarks. And in the second added table change the "1" to a "3". The next step is to change the DSK_NAME from "A" to "C" and from "B" to "D" in the respective added tables. You will find that the disk name is in the fourth line from the bottom.

BDSKTB.ASM (cont.)

```
;
;       DISK4 - 8" unit 0
;

DISK4   LABEL   BYTE
        ect.

;
;       DISK5 - 8" unit 1
;

DISK5   LABEL   BYTE
        ect.
```

First, we need to do some repairs to the 8" drive tables. You should note that they are units "0" and "1", this is how they are addressed; hence, we will have units "0" through "3" in both 5.25" and 8" drives. In the original 8" tables, we will make three changes. First change the label, DISK2 to DISK4 and DISK3 to DISK5, respectively. Next change the DSK_NAME from "C" to "E" and "D" to "F". Finally, change the step rate from FDFS30 to FDFS6.

BDSKTB.ASM (cont.)

```
        ERRNZ   DISK6,DSK_RS
        DB      FDCRST+FDFHLB+FDFS6     ; Restore(home) command
        ERRNZ   DISK6,DSK_SPHI
        DB      FDCSTI+FDFHLB+FDFS6+FDFUTR ; Step in command
        ERRNZ   DISK6,DSK_FMT
        DB      FDCWRT+FDFDLF           ; Format(write track) command
        ERRNZ   DISK6,DSK_RD
        DB      FDCRDS+FDFSLF           ; Read command
        ERRNZ   DISK6,DSK_WR
        DB      FDCWRS+FDFSLF           ; Write command
        ERRNZ   DISK6,DSK_SK
        DB      FDCSEK+FDFHLB+FDFVRF+FDFS6 ; Seek command
        ERRNZ   DISK6,DSK_SERR
        DW      0                       ; # of soft errors
        ERRNZ   DISK6,DSK_MAXT
        DB      77                      ; Number of tracks on disk
        ERRNZ   DISK6,DSK_NRETRY
        DB      1                       ; Number of retrys
        ERRNZ   DISK6,DSK_SPT
        DB      8                       ; Sectors per track
        ERRNZ   DISK6,DSK_BPS
        DW      1024                    ; Bytes per sector
        ERRNZ   DISK6,DSK_BPWT
        DW      1                       ; Bytes per write track
        ERRNZ   DISK6,DSK_BPRT
        DW      1                       ; Bytes per read track
        ERRNZ   DISK6,DSK_DELAY
        DW      400                     ; 400 instr = 1.5mls
        ERRNZ   DISK6,DSK_LDELAY
        DW      8000                    ; 8000 instr = 30mls
        ERRNZ   DISK6,DSK_PORT
        DW      Z207A                   ; Base Port number
        ERRNZ   DISK6,DSK_RDT
        DB      FDCRDT+FDFDLF           ; Read track command
        ERRNZ   DISK6,DSK_IMGFLG
        DB      DSKIF_DV                ; Drive exits
        ERRNZ   DISK6,DSK_TDSEL
        DW      100                     ; Time to wait before deselect
        ERRNZ   DISK6,DSK_NAME
        DB      'G'                     ; Drive G:
        ERRNZ   DISK6,DSK_TIMOUT
        DW      0                       ; Current timeout
        ERRNZ   DISK6,DSK_SIZE

;
;       DISK7 - 8" unit 3
;

DISK7   LABEL   BYTE
        ERRNZ   DISK7,DSK_STA
        DW      0                       ; Status
        ERRNZ   DISK7,DSK_TYPE
        DB      DSK_TZ2078              ; Z-207 type disk
        ERRNZ   DISK7,DSK_LTRK
        DB      0                       ; Last track
        ERRNZ   DISK7,DSK_LOPT
        DB      DSK_OUK                 ; Last operation is unknown
        ERRNZ   DISK7,DSK_FLAG
        DB      DSK_FDS+DSK_FDC+DSK_FRS ; Double sided disk
```

```
;
;       DISK6 - 8" unit 2
;

DISK6   LABEL   BYTE
        ERRNZ   DISK6,DSK_STA
        DW      0                       ; Status
        ERRNZ   DISK6,DSK_TYPE
        DB      DSK_TZ2078              ; Z-207 type disk
        ERRNZ   DISK6,DSK_LTRK
        DB      0                       ; Last track
        ERRNZ   DISK6,DSK_LOPT
        DB      DSK_OUK                 ; Last operation is unknown
        ERRNZ   DISK6,DSK_FLAG
        DB      DSK_FDS+DSK_FDC+DSK_FRS ; Double sided disk
        ERRNZ   DISK6,DSK_SEL
        DB      CONDSEN+2+CONDS8+CONPC  ; Select disk 2, no precomp
```

```
ERRNZ   DISK7,DSK_SEL
DB      CONDSEN+3+CONDS8+CONPC  ; Select disk 3, no precomp
ERRNZ   DISK7,DSK_RS
DB      FDCRST+FDFHLB+FDFS6     ; Restore(home) command
ERRNZ   DISK7,DSK_SPHI
DB      FDCSTI+FDFHLB+FDFS6+FDFUTR ; Step in command
ERRNZ   DISK7,DSK_FMT
DB      FDCWRT+FDFDLF           ; Format(write track) command
ERRNZ   DISK7,DSK_RD
DB      FDCRDS+FDFSLF           ; Read command
ERRNZ   DISK7,DSK_WR
DB      FDCWRS+FDFSLF           ; Write command
ERRNZ   DISK7,DSK_SK
DB      FDCSEK+FDFHLB+FDFVRF+FDFS6 ; Seek command
ERRNZ   DISK7,DSK_SERR
DW      0                       ; # of soft errors
ERRNZ   DISK7,DSK_MAXT
DB      77                      ; Number of tracks on disk
ERRNZ   DISK7,DSK_NRETRY
DB      1                       ; Number of retrys
ERRNZ   DISK7,DSK_SPT
DB      8                       ; Sectors per track
ERRNZ   DISK7,DSK_BPS
DW      1024                    ; Bytes per sector
ERRNZ   DISK7,DSK_BPWT
DW      1                       ; Bytes per write track
ERRNZ   DISK7,DSK_BPRT
DW      1                       ; Bytes per read track
ERRNZ   DISK7,DSK_DELAY
DW      400                     ; 400 instr = 1.5mls
ERRNZ   DISK7,DSK_LDELAY
DW      8000                    ; 8000 instr = 30mls
ERRNZ   DISK7,DSK_PORT
DW      Z207A                   ; Base Port number
ERRNZ   DISK7,DSK_RDT
DB      FDCRDT+FDFDLF           ; Read track command
ERRNZ   DISK7,DSK_IMGFLG
DB      DSKIF_DV                ; Drive exits
ERRNZ   DISK7,DSK_TDSEL
DW      100                     ; Time to wait before deselect
ERRNZ   DISK7,DSK_NAME
DB      'H'                     ; Drive H:
ERRNZ   DISK7,DSK_TIMOUT
DW      0                       ; Current timeout
ERRNZ   DISK7,DSK_SIZE
```

We will add the copy of the 8" drives between the original 8" drives and the hard disk drives. We will again need to change the remarks, labels, disk select, and disk name. The added 8" drives are units 2 and 3, DISK6 and DISK7, select disk 2 and 3; and Drives "G" and "H".

The final change to BDSKTB.ASM is to change the drive names of the hard disk drives. They should be changed to "I", "J", "K", and "L".

You are now ready to compile your modified BIOS. It may be possible to compile the new BIOS without using DO.COM and MAKEBIOS.DO, but I wouldn't. However, I did find a bug in my copy of MAKEBIOS for version 2. Initially I thought I had made a bad backup copy, but found even the original wouldn't work. The bug may have been caused by a bad disk, never the less, the last three lines should read:

Partial listing of MAKEBIOS.DO:

```
A link @BIOSL
A exe2bin BIOS.exe bios.bin <EXEBIOS.DAT
A erase bios.exe
```

MAKEBIOS generates a file named BIOS .BIN, which must be renamed to IO.SYS when it is copied to your bootable disk. Do not replace the IO.SYS file on your MS-DOS distribution disk. IO.SYS is a hidden, read/only, system file on your bootable disk. The read only attribute bit must be changed before your modified IO.SYS file can be copied into its place. You can change the file attributes with FLAGS .COM, copy the modified IO.SYS to the bootable disk, and set the modified IO.SYS file back to a hidden, read/only, system file. Or you can use the SYS.COM to transfer the modified system file to your bootable disk.

To complete our modification package, we need to fix the format program. FORMAT .EXE (.COM for version 2) reads the AUX STATUS port to determine the type of drives installed. Since the 48/96 TPI switch setting is no longer accurate in every case, we must either add the necessary code to use the drive number with the switch setting or we must tell the format program which density we want. I have chosen to tell format which density I want by building a FORMAT48 and a FORMAT96 program. The conditional jump made after reading the AUX STATUS port must be deleted for the 96 TPI drives and must be made for the 48 TPI drives. We can use DEBUG.COM to make the changes shown in the 96 TPI column for the 96 TPI drives and rename it FORMAT96.EXE (.COM for version 2) and make the change shown in the 48 TPI column for the 48 TPI drives and rename it FORMAT48.EXE (.COM for version 2).

Partial listing of FORMAT.EXE:

```
                    Original     48 TPI     96 TPI

XXXX:1288 E4B5   IN   AL,B5   ; NC        ; NC
     128A A808   CMP  AL,08   ; NC        ; NC
     128C 741D   JZ   12AB    JMP 12AB    NOP    ; Must zero
                                          NOP    ;  out both
     128E 06     PUSH ES      ; NC        ; NC
```

In version 2, the format program is a .COM file and should not be a problem to change. However, in version 3 it is an .EXE file and takes some doing to modify. I used DEBUG's Load, Enter, and Write commands to do the job. Begin by copying FORMAT.EXE to a blank data disk, it isn't too difficult to find the code then. In either version, after loading FORMAT, do a Search for "E4 B5 A8 O8" to find the correct code. Once you have found the code, make the changes indicated above.

A final note: I have not tried to run the modified BIOS with a hard disk, since I do not have a hard disk. I would not expect to have any problems, but be careful.

Finally, we will look at several alternatives. Is there a way to modify the BIOS to better fit your needs? I would expect so. If, for example, you only wanted to add drives without mixing 48/96 TPI drives, you would only need to change DEFDSK.ASM and BDSKTB.ASM. Or you may rather add the 48/96 TPI support without adding 8" drives. This would require adjusting the MAXDSK4, MAXDSK5, and MAXDSK8 to the totals you want and omitting the additional 8" offsets and tables. You could delete the 8" drives completely.

An option that may be more desirable for Gemini or UCI board users, may be to move the 96 TPI and the four 8" drives after the hard disk so that the PC-compatible drives would be the same in both modes. You should only need to change the offset and drive names to the order you want. You could have your drives in any order you want. Might be a life saver if you are using both MS-DOS and CP/M.

My next project may be to change the third and fourth 8 inch drives to AT-compatible 5.25 inch drives. And if someone would build a hard-sector controller board for the H/Z-100, we could then do everything except Apple formats.

In conclusion, the initial objective was to maximize the H/Z-100 hardware while supporting both 48 TPI and 96 TPI drives without the formatting limitations and without a hardware modification. These modifications do this by changing four source files and the format program. I have assumed that anyone trying to make these modifications will have a working knowledge of Assembly language programming, have ZDS' MS-DOS version 2 or 3, and have the Programmer's Utility Pack. My current objective is to share what I have found. Enjoy. *

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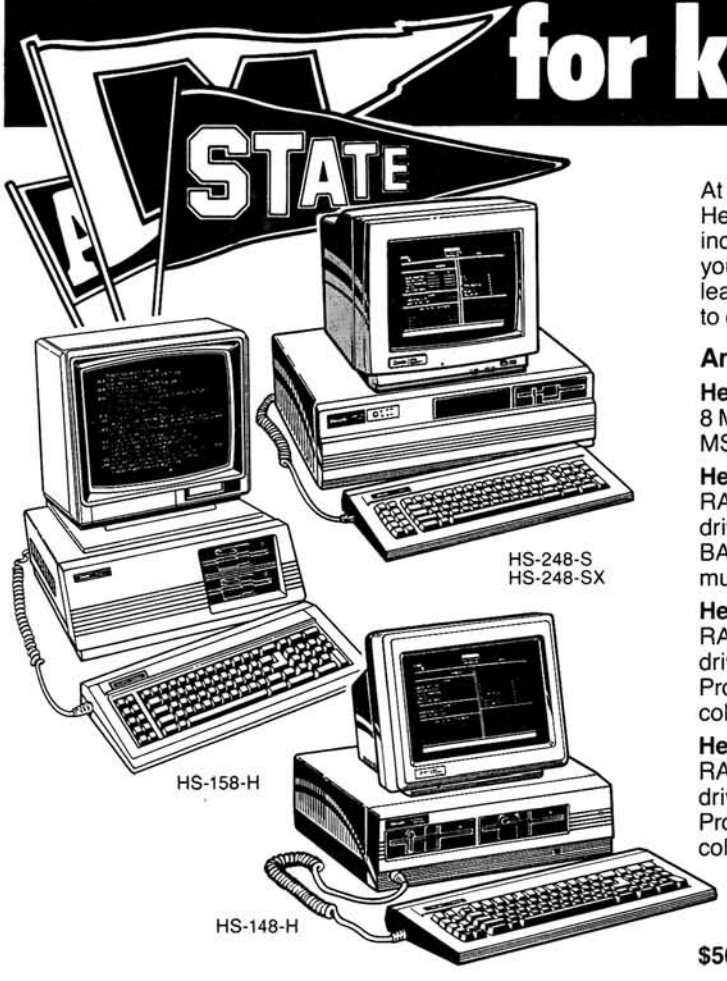

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WordStar Versus WordStar

A Comparison Of WordStar Release 3.3 And WordStar Release 4.0

Pat Swayne
HUG Software Engineer

> ***Note to Z-100 (not PC) users:*** *If you are thinking of skipping this article because WordStar Release 4 is only available for PC-compatible computers, please don't. WordStar 4 can be patched to run on YOUR machine, and later in this article I will tell you about it.*

By now you have probably read something about the new version of WordStar, Release 4.0. (If you haven't, dig up last June's REMark and read Joseph Katz's column.) Most of the articles written about the new WordStar state that it is faster and has more features, but if you are thinking of upgrading, you may need more information. In this article, I will attempt to answer these questions:

1. Is the new WordStar really faster, and if so, how much? How does the system environment affect its speed?

2. What are the new features like, and how are they better than the old WordStar's features?

3. Do you have to give anything up if you upgrade?

4. What can the Z-100 user do, since the generic version has not been released yet (as of this writing)?

The Theory Of Relativity

You may be shocked to learn this, but even though WordStar 4 seems to work faster than WordStar 3, it is actually slower at performing some operations. To help you understand how this can be, here is a little information about how WordStar works.

WordStar 3 (which, I guess, is the last "real" WordStar) started out as a CP/M program. In the CP/M environment, there is less computer memory to work with, so the program was made in pieces — a main program and some overlays. When WordStar was brought over to the MS-DOS world, it was never translated completely. So WordStar 3 still uses overlays, even though an MS-DOS system can have enough memory to put everything in memory at once. One of the things that slows it down is the time it takes to load overlays, but on a fast hard disk system or with everything in a memory disk, that time becomes negligible.

WordStar 4 is actually not an upgraded version of WordStar 3, but it is a completely new program that just happens to do the same job. It is not written in the CP/M model, and it does not use an overlay for any of the common editing functions (but it does for other functions, such as printing or spelling checks). That means that you never have to wait for an overlay load, but it also means that you have to have more code in memory, which can actually slow things down a bit. (I'm speculating as to why WordStar 4 is slower.)

WordStar uses a virtual memory system to manipulate the file you are editing. That means that while the file seems to be all in one place while you are working on it, it is actually in two places. Some of it is in memory, and some is on the disk. WordStar 4 loads more of the file into memory than WordStar 3 does, which cuts down on the amount of time required for disk access while you are moving around in a file, but it is actually slower than WordStar 3 in handling data that is already in memory.

To illustrate the speed differences in the two WordStars, and to show how the system environment can make a difference, I did some simple "bench marks". In the first test, I had each WordStar search for a text string that was at the very end of a 47k file. I did the test with the file on a hard disk, and on a floppy for each WordStar, and I did it two times on each medium. The first search was done right after WordStar loaded the file. Before doing the second search, I moved to the end of the file using ^QC (Control-Q, C) and back to the beginning with ^QR (Control-Q, R). Moving to the end and back to the beginning of a file causes a larger portion of the file to be placed in the computer's memory, and makes subsequent search operations faster. All of my tests were done on an H-248 with a fast 20 megabyte hard disk drive and two floppy drives. Below are the results of my tests. The times are in seconds.

Search to end test	WordStar 3	WordStar 4
Initial search, hard disk	5.13	6.41
After ^QC ^QR, hard disk	2.91	6.33
Initial search, floppy	33.55	7.39
After ^QC ^QR, floppy	12.64	6.33

As you can see, WordStar 3 was faster than WordStar 4 on the hard disk, but slower on the floppy disk. I should point out that the largest portion of a file that WordStar 3 can have in memory at one time is 32k, so it had to do some disk accessing to perform the search in the 47k file even after I used ^QC ^QR. WordStar 4, however, was able to load the entire file in memory, and there was no disk access when the search was done after ^QC ^QR. The tests show that even though WordStar 3 has to do some disk accessing after ^QC ^QR, it was still quite a bit faster than WordStar 4 with the file on the hard disk. With a file of 32k or less, the speed improvement would have been even more dramatic. But before you condemn WordStar 4, you should know that the times recorded above are only the actual search times. With WordStar 3, there is some time involved in the process of invoking the search command, because it must load in part of an overlay to do it. On a floppy system, the time it takes to load overlays is quite noticeable, and is the main reason that WordStar 3 has a reputation for slowness.

The next benchmark test I did was to have each WordStar perform a global search and replace operation. I had every occurrence of the string "the" replaced with "tha" throughout an 8k text file (the text of my June "ZPC Update" article). The test was done only on the hard disk, but I did it two ways for each WordStar. The first time, I just typed in the command and did nothing else until the operation was completed. The second time I used a trick for speeding up multiple search and replace operations that some of you may not be aware of. Normally, when you do such operations, WordStar shows each replacement on the screen. But if you press one of the cursor direction keys (arrow keys) immediately after entering the search and replace command, WordStar will turn off screen updating and just display a "Wait" message until the operation is finished. This causes it to work much faster. Below are the results of the tests.

Global search and replace	WordStar 3	WordStar 4
Screen showing update	13.1	3.8
Screen update off	1.9	2.1

As you can see, WordStar 4 was much faster than WordStar 3 when the operation was done with all replacements shown on the screen, but with screen updating off, WordStar 3 won by a small margin. These tests illustrate the main area where WordStar 4 gets it reputation for speed. It is indeed much faster in updating the screen during some operations. Since screen changes are what people see when they use computer programs, they often evaluate the performance of the program as a whole on screen speed alone.

The conclusion of these tests is that if you have a floppy system, WordStar 4 will work much faster for you than WordStar 3, but if you have a fast hard disk, WordStar 3 will win out by a small margin for at least some operations. This test is by no means a complete speed comparison, and you might want to do your own tests if you get the opportunity. As Einstein might say, the speed of WordStar is relative. But it is the new features, not speed, that makes the new WordStar shine.

The New WordStar Features

Unless your current WordStar is the complete WordStar Professional Package (as opposed to just WordStar Release 3.3 or another release), then what you have is no comparison at all to the new WordStar Release 4.0, and you would do well to upgrade to the new version. For those of you unfamiliar with WordStar Professional Release 3.3, it included WordStar itself along with MailMerge and CorrectStar, an excellent spelling checker. The new WordStar Professional Release 4.0 has mail merge capability, an improved spelling checker based on CorrectStar built right in, along with a number of other new features. The spelling checker is one of the best things about the whole package.

The Spelling Checker

The first spelling checker that MicroPro (the WordStar people) provided with their word processor was SpellStar, which was a real dog. Back in the days when that was the only MS-DOS spelling checker I had, I used a CP/M spelling checker running under CP/EMulator instead. Then came CorrectStar, which seemed almost magic the first time I used it. When CorrectStar comes to a misspelled word in a document, it attempts to find a replacement for it, and if the replacement is acceptable, you can insert it right into the document with one key stroke. You also have the option of entering a correction of your own, ignoring the misspelled word (it could be a proper name or something), or adding the word to your personal dictionary so that it will be considered a properly spelled word from then on. SpellStar is started from the WordStar main menu, but it actually works within the edit mode with the file you are checking loaded in, and it finishes in the edit mode. So if it works in the edit mode, why can't you start it in the edit mode?

The spelling checker built into WordStar 4 is like CorrectStar, except that you DO start it while you are in the edit mode. You just type a control code (or press a function key if one is programmed to start the spell checker) and WordStar begins to check the spelling from the word at the current cursor location to the end of the file. You can also check the spelling of just the word at the cursor using a different control code. When the new spelling checker finds a misspelled word, it usually offers not just one replacement for it, but as many as it "thinks" are what the word should be. The replacements are numbered on the screen, and you only have to type the number of the word you choose to have the misspelled word replaced with it. When you check the spelling of just one word, WordStar 4 offers replacement suggestions even if it indicates that the word is spelled correctly (in case you are looking for a homonym or something).

Both CorrectStar and the new WordStar's spelling checker use three dictionary files. One is INTERNAL.DCT, which contains the most commonly used words and is loaded entirely into memory for rapid scanning. The second dictionary is MAIN.DCT, which contains most of the words supported. With WordStar 4, you have the option of loading this dictionary entirely into memory if you have enough space. The third dictionary is PERSONAL.DCT, which is a list of words you have selected during spelling checks that you want WordStar to assume are spelled correctly.

The MAIN.DCT and INTERNAL.DCT files for WordStar 4 are smaller by several k-bytes than their counter parts with Correct-

Star. That must be because a better compression scheme is used and not because there are fewer words. In fact, when I checked the same file using both systems, CorrectStar found two more words than WordStar 4 that it flagged as misspelled, which were actually spelled correctly.

Other New Features

Since I use WordStar for writing source code and REMark articles, I don't use the mail merge facility, and never really bothered to learn much about it. So I will not compare the two WordStar's mail merge capabilities here except to say that under the new WordStar, you can print more than one copy of a document using just the normal print command. With WordStar 3.3, you had to use MailMerge to print more than one copy.

There are other differences in the document printing sections of the new WordStar. The most important difference is that the printer overlay contains drivers for a large number of printers, and you can select one of them instead of the driver you selected at installation if you want to use another printer. If you go through all of the Print questions (instead of pressing Escape to bypass them), a list of abbreviated printer names will be displayed at the last question, and you will be prompted to select one. The overlay containing the printer drivers is quite large, but you can reduce the size of it using an installation utility called Wschange (more on that later) to specify only the printer drivers you want.

The new Print command does not ask you if you want to output to disk as the old one did. If you want Print output to go to disk, you can either specify ASCII as the printer driver, in which case a file called ASCII.WS will be produced, or you can enter the MS-DOS re-direction symbol (>) and a file name as the printer driver, and a file with the name you entered will be produced. There are problems with either method, which I will discuss later.

If you want to take the internal WordStar codes out of a file, there is a feature in the new WordStar that makes it easy. When you load a file as a non-document and then use the Reform Paragraph command (now called the Align Paragraph command), any WordStar commands formed by setting the high bit on a character will be removed. In other words, the high bit on characters will be stripped. This works on phantom spaces and markers placed on the last character in words, but not on phantom hyphens, which are Control-_ characters. In the old WordStar, the Reform Paragraph command worked the same way in both the document mode and the non-document mode, and I sometimes would mess up an assembly source file by accidentally pressing the function key I had assigned to produce the Reform Paragraph command. That's one thing I do not have to worry about with WordStar 4.

One new feature completely absent in the old WordStar is a shorthand facility. To use shorthand, you press the escape key followed by a character that you have defined previously to produce a certain response. For example, I have Esc-S defined to put the salutation at the end of letters I write. There are also some pre-defined shorthand codes, including codes that will print the current DOS time or date at the cursor position. That makes it easy to add the time or date to files, and you can define the format in which they will be printed. You can nest shorthand definitions, so you can build up a complex definition that includes the time and/or date, and also other definitions of your own making.

Another completely new feature in WordStar 4 is a built-in calculator. You can mark a block of text, and issue a command that will sum up any numbers in the block. You can also pop up a general purpose calculator which supports the basic 4, plus square root, exponentiation, logs, and some trig functions. There is a pre-defined shorthand code that will place the result of any calculation into your text.

One feature present in several of the new generation word processors, but up until now missing in WordStar, is the ability to undo deletions. WordStar 4 has come at least partly up to date with the addition of a restricted undelete capability. You can undo block and line deletions in the normal configuration, but not character deletions. You can configure WordStar to support character undeletions, but since you can only undelete a single deletion, character undelete is not very useful. What WordStar needs is a separate character undeletion that works by storing deleted characters in a buffer, and restores them one at a time each time a special code is entered.

Two other new features that are also part of other new word processing programs are the automatic index and table-of-contents generators. You can mark words in your text for indexing, or index other words using dot commands. The table of contents generator can generate up to 10 tables per document, and uses dot commands to insert entries into the tables.

Customization Features

Back in the early days of WordStar and CP/M, MicroPro was committed to making WordStar the most customizable word processor they could, and so they provided a great deal of information in the manual, including source listings of the patch area of WordStar. And if that was not enough, you could purchase a separate document called the "WordStar Customization Notes" with even more information. Then when WordStar 3 came out, although it had a pretty good installation utility, they no longer included source listings of the patch areas, and seemed to be less committed to supporting customization. But with WordStar 4, the old days of customization support are back.

WordStar Release 4.0 comes with two customization utilities. The first one, Winstall, allows you to set up the normal things, such as selecting a default printer type that will be used if you do not select one when you use the Print command. The second utility, Wschange, allows you to customize such things as the format in which the date will be printed when you enter the shorthand date code. There are an enormous number of parameters that you can customize with Wschange, with so many menus and submenus that you can almost get lost in them (Adventure players will love it). There is also a large file called PATCH.LST that is a source listing of the entire patch area in WordStar 4, and with Wschange, you can enter address labels from this file and make patches at those addresses in hexadecimal or ASCII.

A Fly In The Ointment

There are a few areas in which the new WordStar could use some improvement. As I have mentioned, there are problems when you want to print a file to disk. If you print to a file by re-direction, custom print controls may be embedded into your document. That will happen if the default printer you have selected is anything other than "draft". The solution is to make "draft" your default printer, and then select your actual printer from the menu when you want to print to your printer instead of to the disk.

If you print a file to disk using the ASCII driver, the file will not contain print controls, but it will not be paginated either. That is OK if the file is to be viewed on a screen, but if you are putting a long documentation file on a disk that you want the user to print out with the command COPY FILENAME PRN, you will probably want it to be paginated.

Another problem with the new WordStar involves cursor positioning when there are marker characters of some type on the screen. For example, suppose you wanted to mark a line of text for processing with one of the block commands. You would place the cursor at the beginning of the line and type ^KB (Control-K, B) to mark the beginning of the block. The line would look like this:

```
<B>This is text line one.
This is text line two.
```

The cursor would be where the underline is shown above. Now, suppose you moved the cursor down one line by pressing the down arrow key once. With the old WordStar, the screen would now show:

```
<B>This is text line one.
This is text line two.
```

Notice that the cursor is at the beginning of the new line, which is where it should be. It was at the beginning of the line above before you moved it, because the "<B>" is not really in the text — it is just a marker. However, with the new WordStar, the cursor would be as shown:

```
<B>This is text line one.
This is text line two.
```

The new WordStar treats the marker as actual text, and it does that with other markers as well, such as "^B", "^S", etc. In my opinion, this is an honest-to-goodness bug, and I intend to report it to Micropro.

The third problem with WordStar 4 involves a trick I sometimes used with WordStar 3 that you may not have known about. If I wanted to print a small part of a file (usually less than a page), I would load the file into WordStar 3, mark the block of text I wanted to print, and then use the block write command (^KW) and specify PRN as the name of the file to write. That does not work with the new WordStar. It reports that the file is write protected, and refuses to output the data. I may be able to fix that one with a patch, and I will tell about it here in REMark if I do.

In spite of these problems, I have replaced WordStar 3 with WordStar 4 as my everyday writing tool, because I like the way it can be customized, and I like the new spell checker. The Word Finder thesaurus is also a plus, although I rarely use it. There are enough sesquipedalian words in my vocabulary as it is.

WordStar 4 For The Z-100

If you have a Z-100, there are two ways in which you can run WordStar 4 on your machine. One is to use ZPC, and the patch in the ZPC Update in the last issue makes it run fairly well. However, with an extensive amount of patching, it can also be made to run as a native Z-100 program, with full support for the function keys, keypad, and screen colors. I have put together a package that includes a program that automatically patches WordStar 4 for the Z-100 and placed it on the HUG bulletin board and Compuserve. The package is in the form of a file called WS4Z100.ARC, and you will need ARC version 5.1 (or higher), or PKXARC to extract the individual files from WS4Z100.ARC. Also included in the package is a shell that runs the WSCHANGE program on a Z-100 for customizing your WordStar, and a patch for Z-100 users who also have a PC-compatible to make the program use the keypad and function keys the same way on a PC as it does on a Z-100. With that last patch, you can go back and forth between machines without having to adjust yourself to a new layout each time.

The only drawback with the patches for native Z-100 operation is that they do not support Word Finder. If I ever work that one out, I will write it up here in REMark.

*

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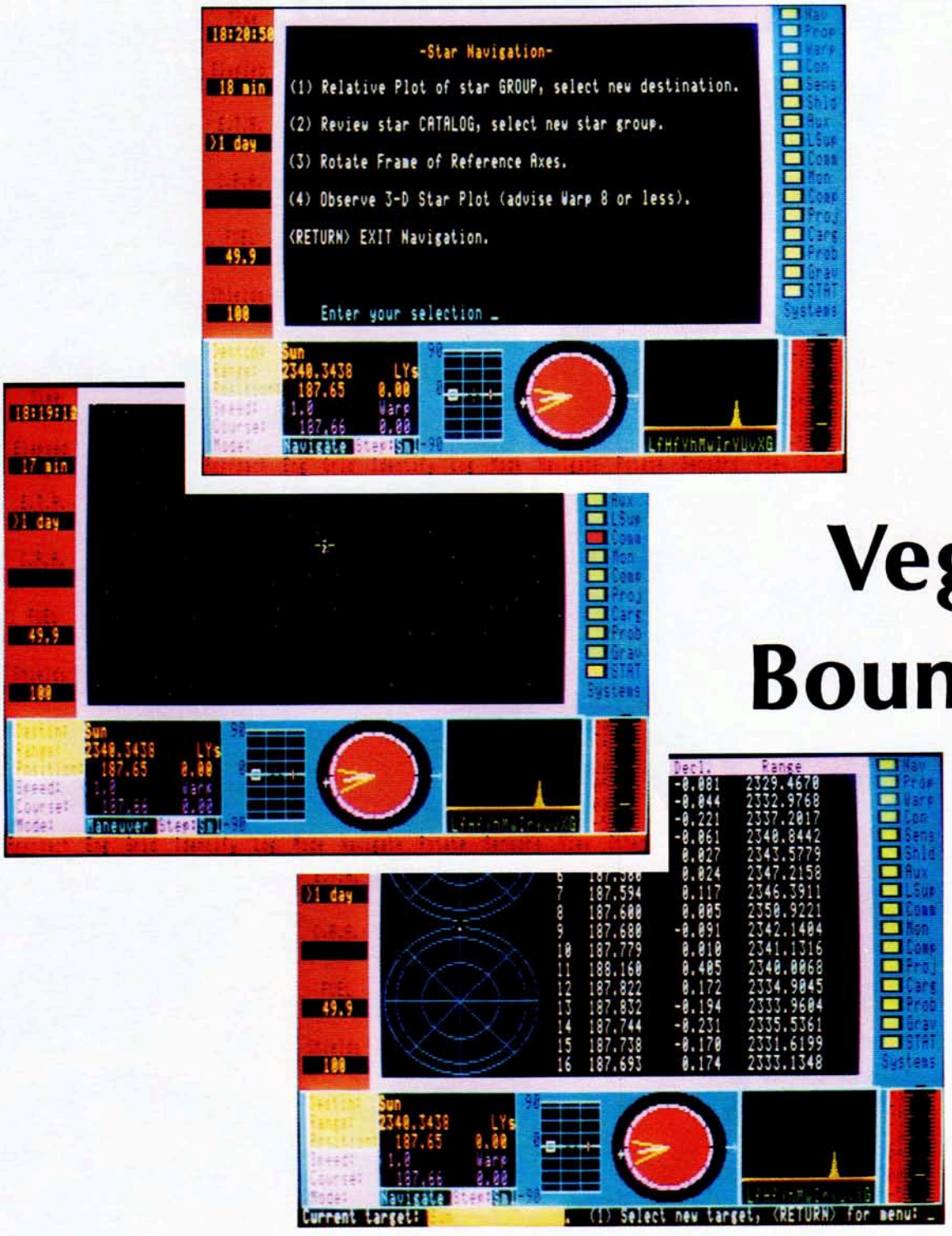
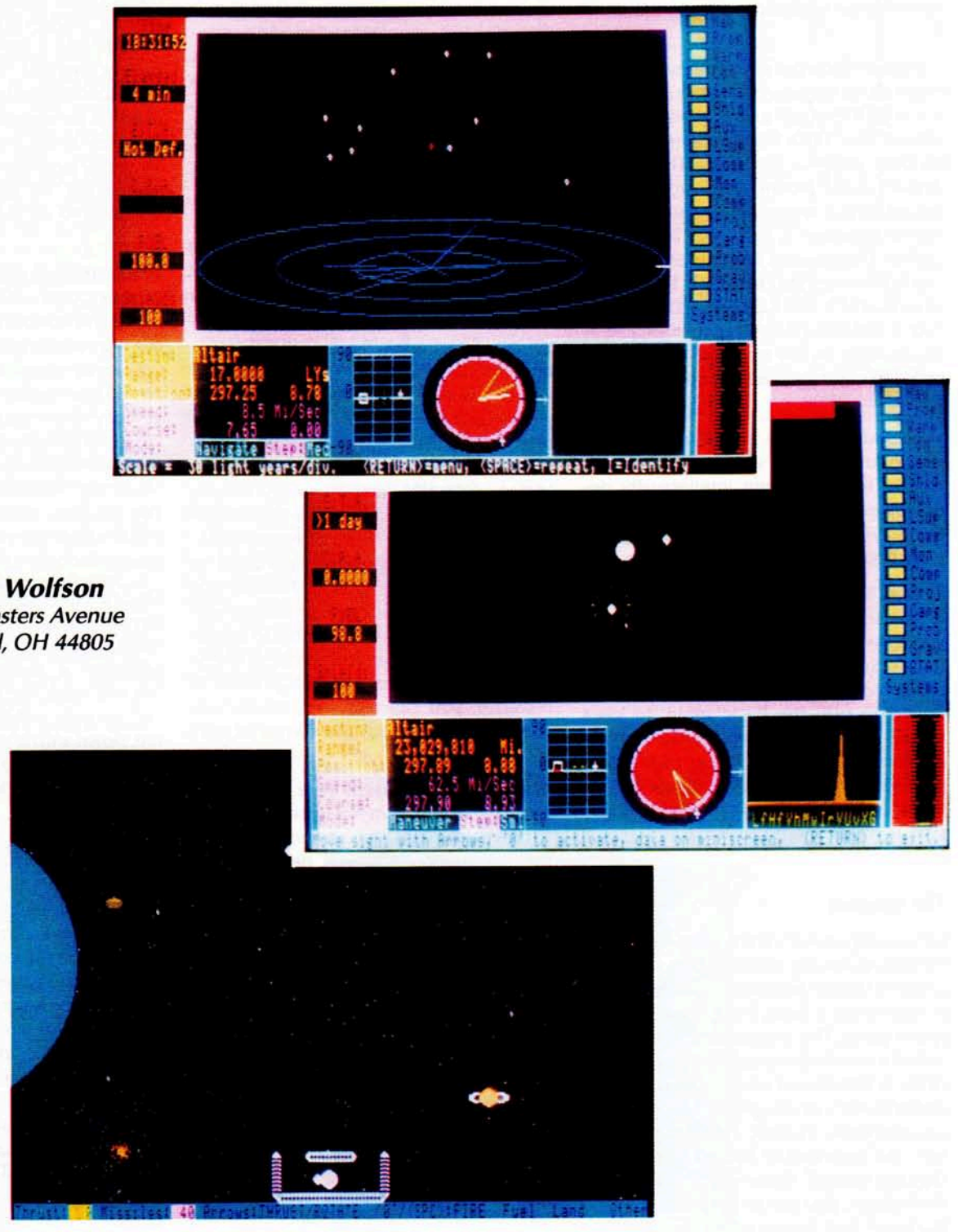
MoC


-Star Navigation-
(1) Relative Plot of star GROUP, select new destination.
(2) Review star CATALOG, select new star group.
(3) Rotate Frame of Reference Axes.
(4) Observe 3-D Star Plot (advise Warp 8 or less).
<RETURN> EXIT Navigation.
Enter your selection _
Sun
2340.3438 LYs
187.65 0.00
1.0 Warp
187.66 0.00
Navigate
Maneuver
Decl. Range
-0.081 2329.4670
-0.044 2332.9768
-0.221 2337.2017
-0.061 2340.8442
0.027 2343.5779
0.024 2347.2158
7 187.594 0.117 2346.3911
8 187.600 0.005 2350.9221
9 187.680 -0.091 2342.1404
10 187.779 0.010 2341.1316
11 188.160 0.405 2340.0068
12 187.822 0.172 2334.9045
13 187.832 -0.194 2333.9604
14 187.744 -0.231 2335.5361
15 187.738 -0.170 2331.6199
16 187.693 0.174 2333.1348
Current target:
(1) Select new target, <RETURN> for menu: _

Vega Bound 2

Mike Wolfson
1125 Masters Avenue
Ashland, OH 44805



If you're anything like me, the mere rumor that Jim Illman (former owner of Interdiscipline Corporation) is releasing a new simulation is enough to make your knees shake and your hands itch. That's what happened when I first heard about a new version of his original program, Vega Bound 1.

In spite of all the gee whiz comments being made about the new H/Z-241's and '248's, the H/Z-110 is still a very good machine. One of the '110's best features is how it handles graphics and text. The system doesn't mess around with arcane techniques to put words and pictures on the screen together. It just does it. Interdiscipline Corporation used these built-in capabilities very successfully in the original Vega Bound 1, and USS Fast Attack. Jim Illman is still using those capabilities, just as successfully, in the updated USS Fast Attack, Jim's War, and last but not least, Vega Bound 2.

Vega Bound 2 differs from its predecessor in two fundamental ways. First of all, this version is much more intellectually demanding. The level of control provided for the player is significantly greater than in Vega Bound 1.

In Vega Bound 2, you have greater control of the ship and more information about your vessel and the space through which it travels. Second, in Vega Bound 1 a certain amount of eye-hand coordination was required to play the basic game. In Vega Bound 2, this has been almost entirely eliminated. The new version of the program stresses instead cerebral involvement in the simulation. As such, I think this version is much more satisfying and stimulating.

The Program

Other programmers have written software to take advantage of the screen attributes of the "110, but Vega Bound 2 is different. It is more than a whiz-bang shoot-em-up space game. The program deserves to be called a simulation because that is what it does. It simulates a voyage through interstellar space with the player acting as captain and crew. As such, during the voyage, you are responsible for navigation and damage control. Once you arrive at your destination, you can use sensors to study the target and, if signs of life are found, be given the option of deploying unmanned probes to study planets suspected of harboring life.

To carry out these operations, the player is provided with an impressive set of commands. These commands are listed on the 25th line of the monitor, a standard feature of Jim Illman's work. The obvious place to begin is to pick a target. When the simulation is first booted, you are on course to a small G2 star called Sun. If you elect to continue on to this target, you'll find that it doesn't have any planets that support intelligent life orbiting around it and is not worth investigating. In any case, you should select a target for your first reconnaissance. You do this by depressing the "N" key. This stands for navigate and is probably the most important command. By the way, all other commands are selected in the same way, by depressing the first letter in the command. Upon pressing the "N" key the screen will clear and a menu will replace the original view with a list of options.

While reviewing this list, you should keep in mind that all destinations are clustered within groups. There are 7 different star groups and each group contains 16 destination stars. You are not bound by these choices though. As navigator, you can select an arbitrary heading and follow it if you want. You can also add to the destination list and create your own star systems. Options include changing the target star to one from the same group, changing star groups, rotating your frame of reference to get a better idea of your orientation in relation to your target star, and finally, viewing a 3-D plot of the current star group. While in Navigate, you can also use the Identify command to find out the names of stars shown on the plot.

After you have chosen your destination and have exited from Navigate, you return to the main screen. This screen contains all the information you will need to successfully con your ship to the selected destination. You will be presented with a cockpit screen and a number of instruments that you monitor and control. The cockpit screen is used to display your destination star, ship's heading marker (showing ship's heading), sensor pointer, identify pointer, and other deep space objects such as other stars, galaxies and star clusters. Instrumentation available to the pilot to both monitor and operate the spacecraft (through the keyboard, anyway) include a table showing course, speed, amount of fuel available, shield status, closest point of approach, your E.T.A., elapsed time, and current time; a display showing the mode you are currently running in, (more about mode later); a sensor display; a small indicator showing your heading relative to the view on the cockpit screen; a warp gauge; and an engineering board showing the status of various systems aboard the ship. You use one or more of these instruments in the course of your flight to the destination star.

As mentioned above, one of the parameters you have control over is the "Mode" under which you are operating. In Vega Bound 2 there are two modes, maneuver and pan. The maneuver mode is used to navigate the ship. The pan mode is used to determine from which direction the view in the cockpit screen originates. To toggle between modes the player depresses the "M" key. The mode you are in is displayed on the lower left side of the screen.

While in transit, you have complete control of your spacecraft. The velocity and heading of the vehicle are controlled by using the numeric keypad. First, make sure that you are in maneuver mode. The up arrow key on the keypad is used to increase your velocity. The down arrow is used to decrease your velocity. Your vehicle has a minimum velocity of 1.1 miles per second. Maximum indicated velocity is warp 22. The program automatically updates your E.T.A. whenever you increase or decrease your velocity.

To maneuver, the numeric keys of the keypad are used. The "2" and "8" keys are used to turn up and down, respectively, while the "4" and "6" keys are used to turn left and right. The keys "1", "3", "7", and "9" are used to change direction down and left, down and right, up and left, and finally, up and right. Key "5" is used to alter the rate of change in direction from low to medium to high.

During the transit to your destination, you'll probably want to see the sights. Who knows, you might not get back that way again for several million years. To control the view on the cockpit screen, you must first enter the pan mode by depressing the "M" key. The numeric keypad is again used to control the direction in which you are looking. The up and down arrow keys are used to pan up and down, and the left and right arrow keys to redirect your view to the left and right. To quickly get the view from a particular direction, the number keys should be used. The "8" key shows the view directly ahead, and the "2" key displays the scene directly behind you. Number "4" and "6" are used to look along the port beam and the starboard beam. Keys "1", "3", "7" and "9" are used to look midway between those views. Finally, the "5" key is used to change the panning rate from slow to medium to fast.

Another way to see where you are is to use the View command. The program uses your current heading to create a plane that divides the galaxy up into northern and southern hemispheres. The plane created by the simulation is then used as the basis for displaying the positions of the stars in the current star group and your position in relation to these stars. The View command will allow you to look upwards or downwards from the reference plane. This command is selected in the same way as the other commands are chosen, depress the "V" key and follow the menu instructions.

A useful option is the ability to rotate the view so that your frame of reference is altered. This is particularly useful, because when using the pan up and down commands (up and down arrow), you are only capable of elevating or depressing the "camera lens" so far. Beyond a certain fixed amount your vertical view is cut off. By rotating your reference point, you can circumvent this limitation.

These limits have been included to eliminate an optical effect that would actually be encountered during voyages at high velocities. Physics dictates that the light reaching an observer traveling at high velocity is distorted. Light rays reaching an observer from a source on his flight path are distorted less than those rays approaching at an angle to that path. The more this angle departs from a point exactly along the observer's direction of travel, the more the light rays are distorted.

When using this feature, what actually happens is that your "ship's computer" redraws the star field so that you are looking at the same view, except from a different angle. Your spacecraft's position does not change. You are still on the same course. The only thing that changes is the location in space that the "ship's computer" uses as a basis for determining what is and is not displayed on the screen and how it is displayed.

To rotate your reference point, depress the "R" key. You are then informed of the current settings and asked if you want to change them. If you decide you do want to alter these settings, then proceed as indicated. The player is given the opportunity to alter the frame of reference along two axes: the z or right ascension axis and the y or declination axis. Either one, or both values can be changed. This capability is especially valuable when your heading is sufficiently different from something you want to look at so as to make observing it directly impossible.

The ability to identify different spatial objects has also been included. To use this feature, first press the "I" key and then, using the arrow keys on the keypad, move the Identify Pointer to outline the object you wish to identify. When you have the marker properly located, push "0" on the keypad and if the object is listed its identity will be shown. Not all objects are identifiable.

At any time, you also have the option of adding a log entry. This is done by pressing the "L" key. You have the option of using the LOG.DAT file included with the program or the software will create a new LOG.DAT file if one is not present. Entries into the log are menu driven. The log uses an editor that is line oriented. Once <RETURN> has been pressed that line may not be edited.

One of the most intriguing parts of the game is the Engineering Status Board. This Board shows a list of 16 different ship functions. Included on the list are provisions to monitor Navigation, Propulsion, Warp Drive, Control Power, Sensors, Shields, Auxilliary Control, Life Support, Communication, Ship's Monitoring, Ship's Computer, Cockpit Screen Projection, Cargo, Probes, and Artificial Gravity. When a system malfunctions, the Status light starts to blink. The "E" key is then depressed to indicate that Engineering routines are desired. You then use the up and down arrow keys to move the cursor to the location of the offending system and depress "0" to correct the malfunction. Failure to correct a problem could make it impossible to carry out some operations.

The Grid command is useful when used with the Rotate command. The command causes a grid to be drawn on the cockpit screen. This is useful for showing your frame of reference in relation to the star field you are viewing.

During the voyage of a real starship, the captain would be constantly monitoring the space around his vessel. You also have this ability. For example, after having identified a passing celestial body using the Identify command, you may elect to scan the object with your sensors. The sensors you are equipped with are calibrated to detect electromagnetic emissions. The sensors are activated by depressing "S". Instructions on the 25th line describe the operation of the sensor system. As you approach your destination, the simulation provides your sensors with additional capabilities. In this case, you want to activate your sensor system by depressing the "A" key. This command activates your approach sensors. These sensors are the same ones used by the Sensor command, but here they have an added twist. If they detect electomagnetic radiation while scanning the target world, you are notified and the ship is automatically slowed down to allow for more detailed exploration.

This more detailed exploration involves deploying unmanned probes to study your target. The manual does not provide details about operation of the probes or what you'll find on the surface of the worlds you explore. As the manual puts it, "You're on your own 'down there'." The documentation goes on to say that it might take several voyages to master operation of the probes. After about 10 hours of trying, I have not yet landed and returned successfully. (Curse you, Red Baron !!)

Finally, there are three general purpose commands that help make the program

easy to live with. The first of them is the Other command. This command allows the player to toggle between two different sets of commands that are displayed on the 25th line. The number of commands available to the player is too large to be displayed all at once, so the author built in a way to display all the necessary commands. In order to toggle between command lines, the player depresses the "O" key. All commands are available regardless of which line is currently visible. Depressing the <HELP> key causes the simulation to pause. Repeating the action a second time unfreezes the program and allows you to continue from where you stopped. The last command I'll mention is <CTRL-E>. This command is used to abort the program and return to DOS.

The Graphics

This is one area that deserves some special attention. The H/Z-110 has received alot of praise for its graphics capabilities. In this day and age of EGA and PGA boards, this praise might seem dated. In terms of putting text on a screen, maybe it is, but in terms of putting graphics on a screen, I think that the '110 can still more than hold its own. Vega Bound 2 proves this point. The charts, diagrams and instruments are crisply formed and clearly visible. What's more, the screens are redrawn very quickly.

The program also takes full advantage of the '110's color capabilities. According to the documentation, Vega Bound 2 can be run with a monochrome monitor, but to take full advantage of the program, you owe it to yourself to try it on an RGB monitor. I guarantee you'll never run it again on a monochrome system.

Comments

Vega Bound 2 is a very good simulation of what interstellar travel would involve. It challenges the player to become actively involved in selecting a target and crossing the void of space. While in transit, you are kept involved in the simulation by making course corrections, repairing systems, identifying stellar objects and generally doing the things the crew of a starship would have to do during a voyage. The program is very impressive. As the owner of Vega Bound 1 and the original and updated versions of USS Fast Attach, I am familiar with Jim Illman's work. After running his simulations, arcade games lose alot of their impact. Mr. Illman knows the H/Z-110 and it shows in how he uses its capabilities. He gives the person running the program control over many of the spacecraft's functions.

Suggestions about changing some aspect of a programmer's work are about as welcome as making similar suggestions to an author. In other words, no one knows a program or a literary work like its author, and amateur programmers like myself should learn to control their opinions and not "second guess" the software's creator. Having said that, I would like to offer a few suggestions on how I think an already excellent program could be enhanced. Basically, I would like to have more control over the operation of the spacecraft.

The Engineering Status Board described earlier, in my opinion, is ripe for a number of added features. For example, the communications function could be used to access secondary screens providing the player with the capability to communicate with various bases or even the capability to intercept communications traffic from the target world. The artificial gravity command could be used to vary conditions throughout the ship to suit various crew members or passengers. The same comments apply when discussing the life support systems on board the vessel.

The shields function also has some interesting possibilities. I would like to have the ability to control the shield intensity and to control which shields are in use. The player is already given an instrument that monitors energy used by the drive, I would also like to be able to manage power used by the shields. Control of overall ship's power would also be interesting. As it stands right now, you cannot divert power from the drive to the shields or from the shields to the drive. This would be a basic capability provided to the crew of an interstellar vessel and I think it should be added to the program.

There are two major changes that I would like to see made to the program. In my opinion, the operation of the unmanned probes is too difficult, and in relation to the design of the rest of the program, differs drastically. To me, the differences are so extreme that it seems like the routines used to control the probes are really a separate program tacked on at the last moment as an afterthought. Earlier in this review, I commented on the fact that Vega Bound 2 did not require many of the skills usually associated with arcade games. When it comes to deploying and operating the probes, this statement is inaccurate. The probes are hard to control because they rely on keyboard input to receive commands. This makes them unresponsive. Controlling the probes with a joystick would be a better alternative.

My feelings about the implementation of the unmanned probes extend beyond their control difficulties. They include the fact that the probes are armed and provide the player with the ability to shoot back at attackers. It does not seem logical to arm unmanned probes while providing the populated mothership with nothing more lethal than shields of unknown power. In the introduction to the documentation, the author accurately points out that arcade-like attacks are not present in the transit part of Vega Bound 2 like they were in Vega Bound 1. That is true. I think it detracts from the simulation to include them in the exploration portion of the program.

The other part of the program I would change would be the inability to save the current status of the voyage before it is concluded. In Mr. Illman's other simulations you can save the current status of the program and reload it later to continue where you left off. This is one feature that I sorely miss.

Vega Bound 2, as well as Jim Illman's other simulations can be obtained by writing to:

James R. Illman
P.O. Box 14141
Seattle, Washington 98114

The cost of the program is $29.95. The program comes on one disk formatted for 8 sectors, double-sided, double-density. A 34 page manual is also included. The software is not copy protected. Like Mr. Illman's other simulation programs, Vega Bound 2 is written in compiled ZBASIC.

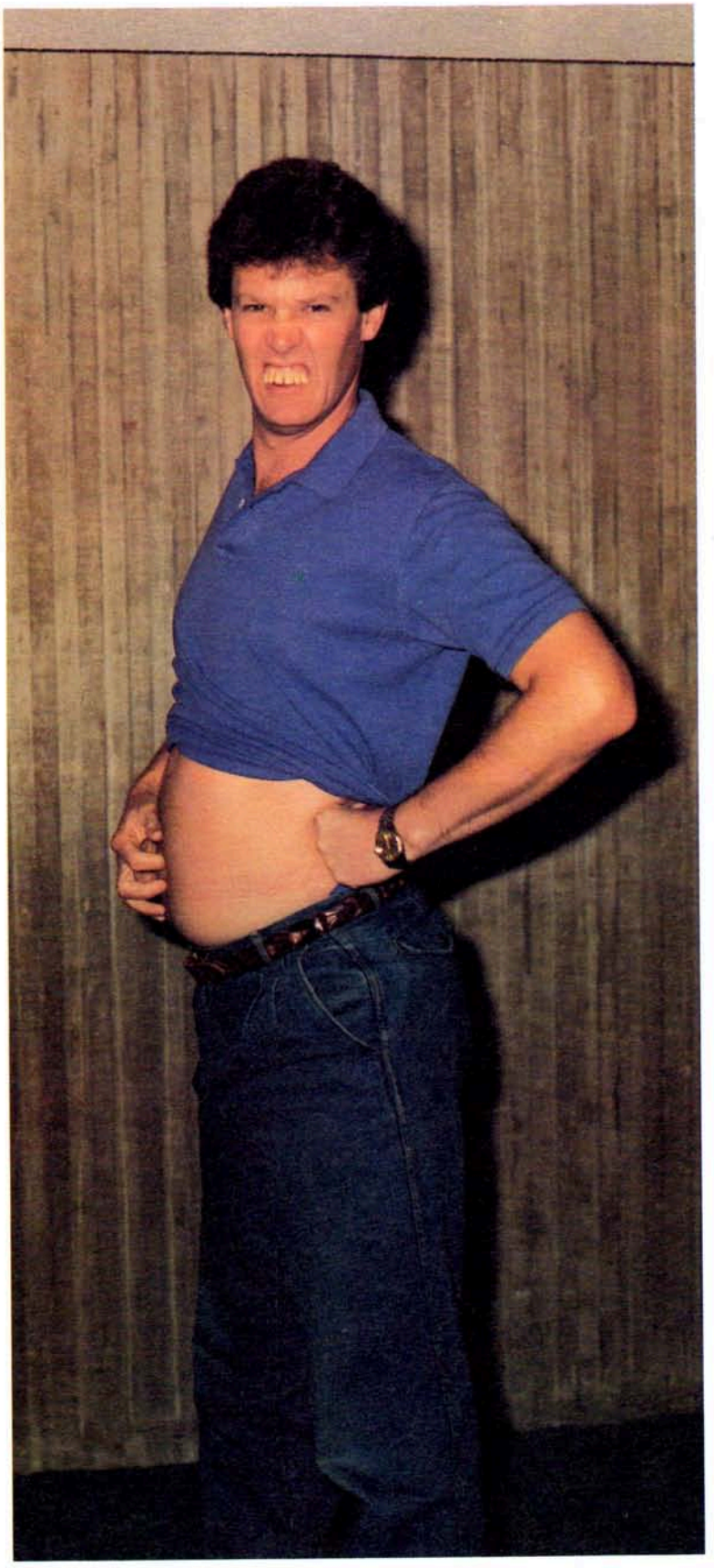
System requirements are:

H/Z-110 or 120 computer system
192k Ram
32k full color video ram
1 floppy disk drive
Compatible video monitor (Zenith green phosphors don't display well)
ZDOS or MS-DOS
A hard disk or A ramdisk are optional

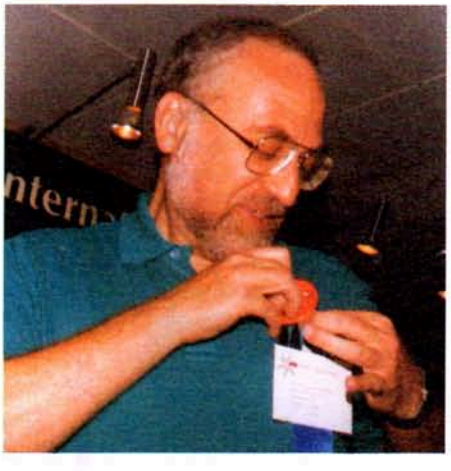
The author recommends that you use an 8MHz processor to run the program. I've used a system running at 5MHz, as well as at 8MHz, and found the slower speed acceptable.

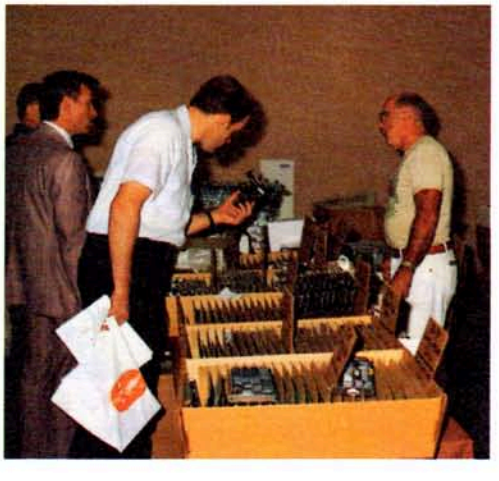
Mr. Illman also is the author and publisher of a newsletter for people interested in writing software using simulation techniques. Information about the newsletter can be obtained by contacting Mr. Illman at the above address. ✱

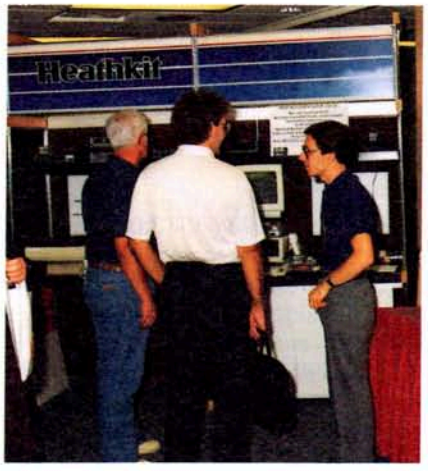
I'm From Kentucky!



ZENITH
THE QUALITY GOES IN BEFORE THE NAME GOES ON






Heathkit

Jay Gold Software

A WEEKEND TO REMEMBER

Kevin Lerch
Heath Computer Consultant

Webster defines HUG as follows:

Hug, embrase fondly; keep close to; hold fast; -n. close embrace

I define HUG as follows:

Hug, A group of Intelligent computer users dedicated to the fun and education involved in using Heath/Zenith computer systems.

Thus HUGCON '87 would be a convention of people looking to have a couple of days of fun and maybe even learn a thing or two. This is not to mention finding a possible great deal on a piece of hardware or software.

When I took on the responsibility of attending HUGCON and writing this article, I looked foward to going to Chicago for 4 days of fun and computer talk. There was also a couple of other seeds in the back of my mind. I hoped to find one of those great deals I kept hearing about year after year when everyone returns from the conference. In particular, I was looking for an EGA monitor for my H-248 and maybe some new software.

When the morning of departure arrived, I woke up to the silence of my bedroom, expecting to hear the trusty alarm clock singing its ugly song. A quick glance at the clock told me what I had expected, late again!. Ya, I took the time to set the alarm the previous night, but neglected the formality of turning it on. I was supposed to meet Rick Simpson (Mr. KBJ) at 9:30; things didn't look good. Well to make a long story short, I made it a little late but close enough. We hopped in our rented van packed with HUG goodies and headed for the windy city. Ah, the windy city, Chi town, Chicago, home of the CUBs, great pizza, the Sears tower, and HUGCON '87. The anticipation of the up and coming weekend was overwhelming, I couldn't wait to get there. As we pulled out of Heath Co. parking lot I felt great. This feeling, however was short lived. About a half mile down the road the front end of our heavily laden van began to shake uncontrollably. Oh boy, trouble before we got a half mile from home.

The smell of burning rubber made us stop at the closest gas station for an inspection of the tires. They looked good, so now what do we weary travelers do? EAT!!! A little rest for the van, and some Mcburgers for us did the trick. We got on the expressway and the van worked fine. Rush Street here we come. Chicago and the Hyatt Regency O'Hare was the next stop.

Before I go on with this story I would like to say that the people and the facilities at the Hyatt Regency O'Hare were top shelf. The rooms and the service were nothing less then the best; Hyatt Regency, hats off to you!

Upon arrival at the Hyatt, and unloading all of our HUG goodies from the van, the next thing on the agenda was obvious, EAT!!! Yes, once again we retired to the nearest restaurant. Thursday was kind of a mundane day with extra time to wander through the hotel and sightsee. As long as by 8:00 you were dressed and ready for the vendor reception party by the pool.

The vendor party was kind of a small get-together for all of the exhibitors, staff members, and speakers. An open bar, and finger food (my favorite word), was available. This was my first chance to meet some of the people I would be seeing all weekend. The party turned out very well, and all that attended seemed to have a good time.

After the vendor party, I met one of my high school buddies I had not seen in a couple of years. We topped a great day with a beer or two and some great conversation about the good old days. After he headed for home, I retired with the anticipation of the opening of the conference heavy in my thoughts.

Friday had finally arrived and after a good breakfast (there I am, eating again), it was time to head downstairs to check out the displays and deals.

The display area didn't open untill 3:00 so I had a couple of hours to roam around before the crowds did. When I first walked into the main convention room Friday morning, it was as I had imagined. Vendors were scurrying about, setting up their displays. There was more Heath and Zenith computer hardware and software in that room than you could have imagined. Everyone was hustling around with computers, printers, and lots-n-lots of hardware options.

Being my first HUGCON, I didn't know what to do, so I kind of stood around and watched in disbelief as an entire Heath store was constructed. Heath had a large display, and some of the products displayed included the new line of starter kits, the SK series. The SK series of kits are designed to be for the first time or novice kit builder. With these inexpensive and easy to build kits, a person who has never thought he was capable of building an electronic kit, can do so in just an evening or two. With the optional SK-100 Educational Manual, you can learn how each of the kits offered in the SK line function. There is a circuit description and quiz on each kit for the kitbuilder to learn and test his new found knowledge. Besides, these kits are also useful when you complete them.

Also at the Heath/Zenith display area was what I considered to be the hit of the show, the ZCM-1490 Flat Tension Mask Monitor. This monitor is a 31.49 KHz, RGB analog input that is compatible with Zenith's new Z-449 video card. The monitor is also capable of MDA, CGA, EGA, and

EGA+. This was the first time I had a chance to see this monitor and was it impressive. It resembled the clarity of a backlit photographic slide. What a monitor!

I had a chance to talk to some of the vendors before the doors opened. As I was wandering through the booths dodging people with huge arm loads of stuff, I bumped into Darrell Pelan. He offered to show me his H-89 system which included a 20Mb hard drive. Darrell operates MICRONICS TECHNOLOGIES, a company which markets speed upgrades and hard disk systems for the H-89, and H-150/160 computers. The hard drive for the '89 had a card that plugged in the standard H-89 slot and had a PC style buss on the top. Then the hard disk controller card plugs into this PC style slot. Darrell had the half height, 20Mb hard disk mounted beside the half height 5-1/4 floppy. The system looks attractive to any '89 user that needs mass storage. He also showed me an inexpensive speed upgrade for the 150 series PC's.

After speaking with Darrell, I wandered next door and spoke to Janet Hersch from HOGWARE. Hogware produces a graphics program called SHOWOFF. If you own a Z-100 and have a color monitor, look at this program. I was very impressed with the color graphics images produced by this software. From my vantage point, Janet made the software look very easy to use. Janet also used a Logitec C7 mouse, which also simplified the drawing process. I also picked up a couple of newsletters she produced using the Showoff program. Looks great Janet, but put out a EGA version for us PC users! By the way, Hogware wins my vote for best T-shirt of the show.

It was about 2:58 and Jim Buszkiewicz gets on the PA and warns "The doors are about to be opened." The last frantic preparations are done and everyone seems ready. The final seconds tic and the PA barks "HUGCON 87 is now open, everyone welcome!"

What happened next is extremely difficult to describe. I was standing near the entrance to the Heath store I spoke of earlier. A column of people flooded through the door at a feverish pace. I was lucky I was not in front of the door to the store. Anything that was in front of that door was quickly swept into the store, and most likely would have been swept up in the buying frenzy that followed.

As I stood and watched, parades of people came in empty handed, and came out, arms loaded with computers and associated accessories. Credit cards were flailing, cash was flying, it was unbelievable. I even heard one gentleman say, and I quote "They remind me of feeding Piranhas." Throughout the rest of the weekend, I don't believe I ever walked by the store when there wasn't 20 people or so in the process of buying something.

Other vendors I visited included Public Brand Software. They have a large catalog of inexpensive software that looks great. Mega Brand software, MEGAMICRO Co., also gave me a catalog boasting many great looking programs. Quikdata Computer Services Inc. offer a full line of Heath/Zenith hardware and software. You could set up your entire office with software and hardware from these guys, and on and on.

Well, after the exhibit area closed it was time to relax, if you know what I mean. So by the latter part of the evening, Bob Harris (Sr. Technical Consultant, for Heath computers) and I went up to the top floor restaurant for dinner. The restaurant was one of those fancy jobs that rotates so you can see the surrounding city while you eat. It felt somewhat strange, moving slowly around and trying to eat dinner.

Saturday when the exhibit area opened at 9:00 am there was a new twist to the show, Discussion Groups. Even though it was hard to decide from the lengthy list of speakers, I managed to attend several very interesting talks. The first seminar that I went to was Heath Company's Product Line Manager's presentation. The subject here was newly released and soon to be released products. Jim Bungard spoke of a couple of items that I found to my liking. He showed us a small weather station product that came with a circuit board that plugs into a PC style slot. The PC then would monitor various aspects of data from the outdoor sensors. The software can then be set to take in and store that data at user programmed intervals. The best part of this product is the ability of the software to run in the background of your computer. If you wanted to run a spreadsheet or game you could do so while the weather station was collecting data. Jim also spoke of a device that would allow you to transfer film type movies or still slides to video cassette. This would require a video camera or slide projector. Some companies will do this for you but the cost could be substantial if you were doing a large number of slides or movies. These were the two products I found most interesting.

Immediately after the new products seminar, I went to the discussion group on the new Z-386 hardware. Being a Computer Hardware Consultant at Heath, I could use the information on a daily basis. The discussion started out in a fairly simple manner but the questions soon began to draw the subject matter into a more technical aspect. Eventually Jim Kelly was explaining some heavy hardware stuff. Probably the most confusing aspect of the the discussion was the Cache memory card and the wait states used on the system memory card.

The Cache memory card is an amazing concept, it uses 64K of extremely fast access RAM that floats in system RAM. When the system reads a memory address from system RAM it simultaneously compares that address to the block of 64K Cache RAM. If the address appears in the Cache memory, the system reads the information out of the faster Cache RAM instead of the system RAM. This allows for much faster memory reads when the Cache card is being used.

The other point that I mentioned was wait states used by the Z-386 memory circuitry. Depending on the last address called for and the type of memory cycle, the Z-386 can use from 0 to 3 memory wait states. I really can't go much more into it than that, but the sucker cooks, take my word for it!

At 1:30 Saturday I attended the Bionics discussion group given by fellow HUGgie Steve Greelish. Steve works with the development of human limb replacement.

The replacement limbs developed by Steve and his associates have developed a technology that utilizes "myo-electricity". Myoelectricity is what causes the muscles in your body to contract and work. The limbs that Steve develops with the help from Heath/Zenith computers, sense the myoelectric signals going to a 'still existent' muscle. Information from this muscle is picked up by two or three small plastic ships that are held in place against the skin with a velcro band. When a sensor detects a muscle contraction, it sends the signals necessary to the appropriate motor and the arm moves in the prescribed direction. When another muscle is contracted, the arm moves in the opposite direction. The arm has an internal NiCad battery pack that should run the limb for about 8 hours before it needs recharging.

At the end of the discussion Steve asked if anyone would like to give it a try. The room went quiet. Well I figured it would make good meat for my article, so I spoke up and Steve motioned me to the front of the room. At the beginning of the discussion, Steve demonstrated an arm with a gripper. After 'hooking' me up to this particular unit with the velcro strap I mentioned earlier, he explained to me that my bicep (front muscle) would make the gripper open, and my tricep (back muscle) would make the gripper close. He turned the power on to the arm and told me how to isolate my muscle contractions to make the gripper operate. It took a minute but I finally got the hang of it. Once again, I would like to thank Steve and his associates for the hundreds of people around the world benefiting from his research.

Well that kind of ended my day at the exhibit area, but before the store closed I went in and made sure that they still had some of the EGA monitors I wanted. I decided to wait until Sunday to do my purchasing. Besides, I had to go get ready for the climax of the show, the dinner. I was told by good sources that the entertainment would be worth watching. I was not mis-informed.

After getting ready for dinner, I went up to the 29th floor for the nightly ritual of partaking in the free party given by the hotel.

There were a few more people attending tonights gathering, like Bill Johnson, President of Heath Co., John Frank, President of Zenith Data Systems, and Joe Schulte, President of VEC.

It was 8:00 pm. and the gates to Saturday evening's festivities were opened. Dinner began immediately and the meal was great. After dinner Jim B. took over as Master of Ceremonies. Local club representatives were recognized as well as the owner of the most H8's in the world (34 to be exact). The first award went to Mr. Joe Katz as 'User Of The Year'. Joe as you may know, is the author of the monthly column "Mainstream Computing" in RE-Mark Magazine. The Software Group received the 'Vendor Of The Year' award. The Software Group is responsible for porting the popular ENABLE package over to the H/Z-100 system. Two lifetime memberships were awarded to Herb Friedman and Jim Jones, for their outstanding contributions to the International HUG organization. A big round of applause goes to you both.

The next award was given to a person that has had more to do with the success of HUG then any one individual. That person was Bob Ellerton. Boy was he surprised when Jim B. announced the award. Hats off to you Bob.

After the awards, John Frank, President of Zenith Data Systems, addressed the dinner attendees, and discussed the future of ZDS.

The entertainment was next on the agenda and words can not describe what transpired after Jim introduced Dick Hardwick. Dick is a comedian who has worked at Disneyland, and is currently appearing at "Crackers" in Anaheim California. Dick was also in the recent movie "Nothing In Common" staring the late great Jackie Gleason and Tom Hanks.

Dick's routine kept the crowd in stitches for about 45 minutes.

After the entertainment it's time for all HUGgies favorite portion of the traditional Saturday dinner, prizes! This year's prizes were second to none. During the course of the day's activities, Jim B. handed out some specially marked business card to 4 randomly picked children. After dinner, these kids were then allowed to trade in their cards for prizes. The two younger kids received Fischertechnik Start 200 kits, and the two older kids received GR-9009 color TVs! The Heath Users' Group also gave away two HS-248 computer systems with monochrome monitors. Allen Gregalot and Bob Gray won these great systems.

Next, Jim gave away a full blown Z-386 system. This system was donated by Zenith Data Systems Federal Systems Office of Vienna, Virginia. The proud winner of that system was Walter Golembiewski from Erie, PA. Jim then turned the floor over to "Bill", "Joe", and "John".

John Frank, the new President of Zenith Data Systems, awarded a new Z-181 portable to James S. Davidson of Castleton, Vermont. This system was donated by the Zenith Data Systems Consumer Group. Joe Schulte, President of Veritechnology (all the Heath stores), gave away an HS-248 system which included a 20-megabyte hard drive. This $3600 hardware package was won by John D. Irwin of Miami, Fl. Finally, the grand prize was presented by Bill Johnson, President of Heath Company. This system consisted of a yet 'unreleased' HS-386 computer, and the lucky winner of this $4800 piece of hardware was James D. Hall from Strongsville, Ohio. Congratulations to you all!

By the way, Jim tells me that some of the prize winners have not yet sent in their 'filled in' copy of their prize certificate. Without these certificates, the prizes can't be awarded.

I got a chance to talk to the guy who won the Z-386 system. He had bought a Z-158 that day to update from an H-8 he had been using up to this point. The store was nice enough to take the Z-158 back after learning that he had won a Z-386 system. I think the term "culture shock" applies here, don't you; going from an H-8 to a Z-386 in one jump, WOW!!

Saturday evening's festivities were enough to tire the best of night owls, so I retired to my room for a much needed rest.

Sunday morning I headed straight for the store to make my final offer on the EGA monitor I wanted. Needless to say I got what I wanted and a little more. I scored on a couple games they had on sale, some disk storage boxes, and a font cartridge for my TI printer. If you want to purchase some computer hardware you should go to your regional HUCCON's and you won't be disappointed, I'm sure.

After the buying binge I had one more discussion group to attend. I work closely with Bob Harris who was giving a talk on RS-232 interfacing. I wanted to see how Bob worked under pressure, so I snuck in to check it out. Myself and 41 other people were treated to the basics of RS-232 and interfacing information, good job Bob.

We at Heath/Zenith would like to say thanks to all who attended and to all the vendors for their support. Without all of you it would not be possible. This was the last International HUGCON scheduled, giving way to the new regional HUGCONs. But some day it just might have to happen again. I hope so. Until we meet again, so-long. *

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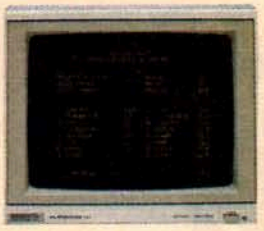

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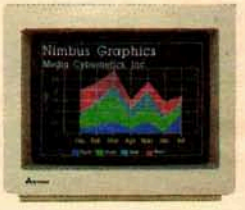

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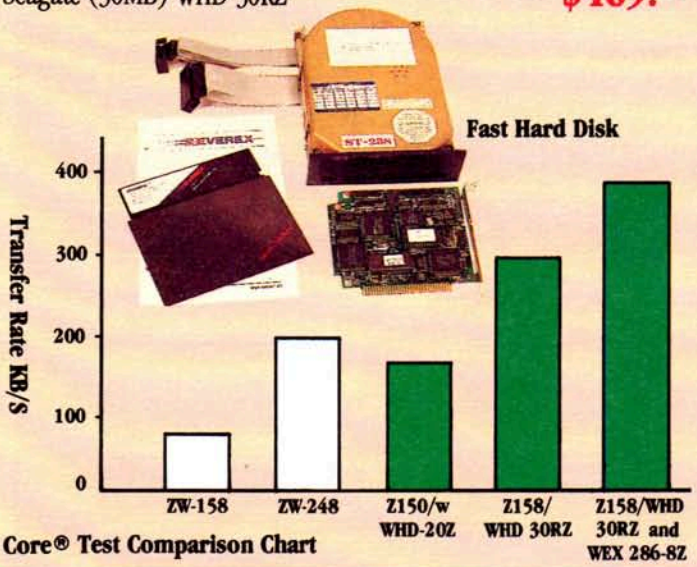

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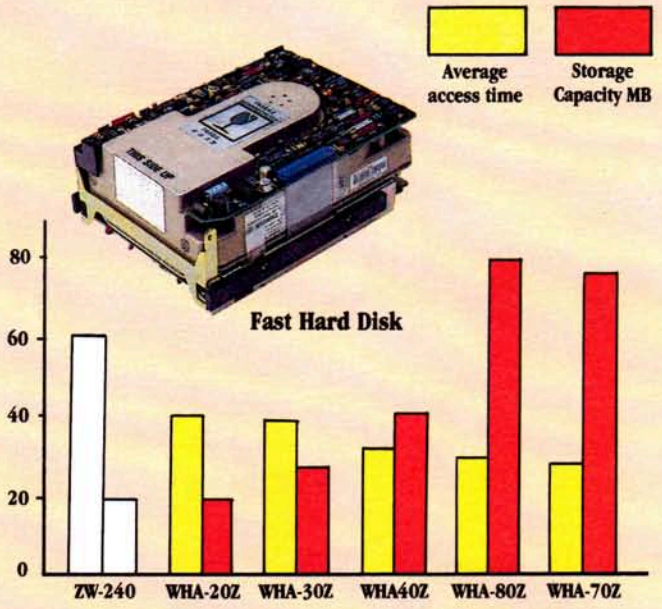

Storage capacity and access time comparison chart

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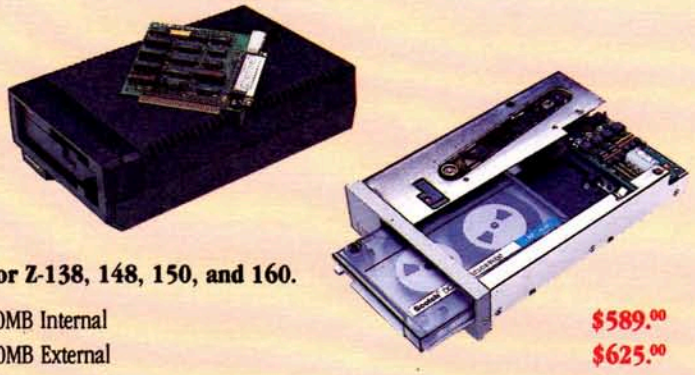

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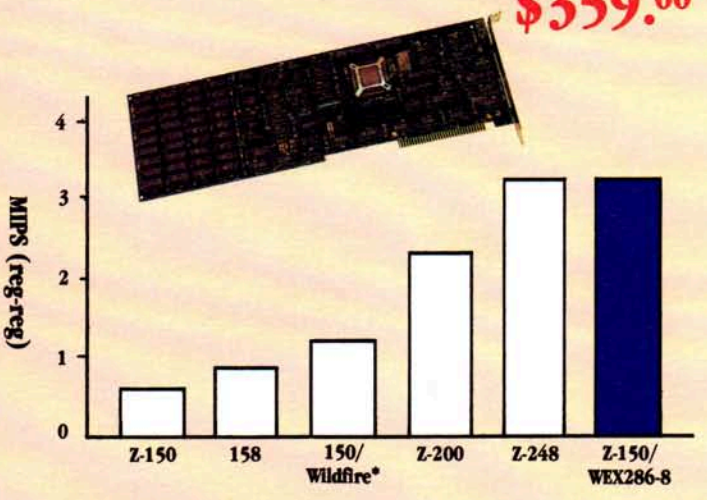

CPU Performance Comparison Chart

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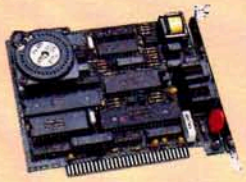

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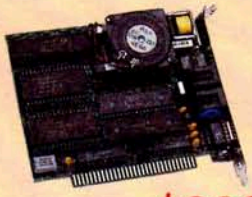

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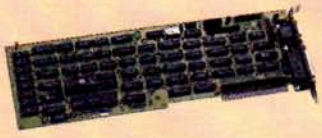

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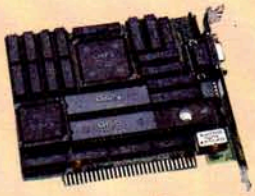

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- ★ Works with all 3 different monitors (Multisync type is required to take full advantage of the Multisync mode.)
- ★ 1/2 short card

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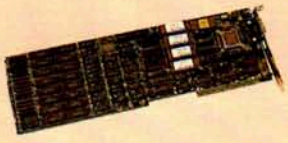

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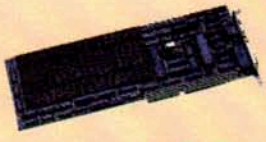

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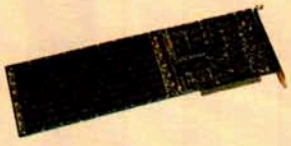

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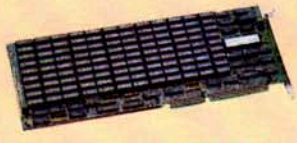

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WordStar Professional V4.0

Richard (Rich) L. Mueller, Ph.D.
11890-65th Avenue N.
Maple Grove, MN 55369

Background/Overview

Back in December 1986, I had the opportunity to Beta Test the new release of WordStar (Version 4.0) for MicroPro International, the first update since V3.3 back in 1984. Shortly after WordStar V4.0 was released, I wrote the original version of this article for REMark. The article was accepted for possible publication in a future issue of REMark.

However, back in late Spring, I received copies of WordStar V4.0 from Zenith Data Systems to Beta Test for both the H/Z-100 and PC series machines. The original article, as I wrote it, holds true for the PC series of H/Z-machines, but there are some limitations with respect to the H/Z-100 machines. So I updated the article, which you are now reading, to point out the limitations/differences.

Just like so many of you early Heath/Zenith users, WordStar has been the way of life for me with respect to my word processing needs. I purchased WordStar back in early 1983, when I purchased my H-100 and have used it ever since. I have WordStar V3.3 installed on both my H-100 and my Z-160, and installed V4.0 on my Z-160 after it was released by MicroPro International last February. Will get and install V4.0 on my H-100 as soon as Zenith Data Systems releases the product.

At the time of writing this updated article (August 1987), Zenith had not yet released the product. As I understand it, Zenith will have one product, MP-4164-13, that will have the necessary disks for both an H/Z-100 machine and a PC series H/Z-machine.

What has puzzled me for a long time is why MicroPro International didn't upgrade WordStar sooner to keep up with the competition. Some of the other popular word processing packages have gone through a number of enhancements during that time adding graphics, larger dictionaries, multiple dictionaries, a thesaurus, forms, indexing capability, table of contents, multiple headers and footers, and the list goes on and on. Finally, last year MicroPro decided it was time to release a major update with more updates planned. WordStar Professional V4.0 was released in February of this year.

Since doing the Beta Testing for MicroPro, I have been using V4.0 on my Z-160 and love it. One of the first things that I noticed was the increase in speed. Everything works so much faster even on my Z-160 running at 4.77 MHz with two floppy disks (no hard disk). There also is a speed increase for the H/Z-100, but not as noticeable as for the PC series.

Before I forget, to run Wordstar V4.0, requires 256k of RAM and two floppy disks; 320K if the user wants to use the thesaurus (PC series only) that comes with V4.0.

Features/Enhancements

When I received my Beta Test materials, the documentation listed 125 new features, some major and some minor, for WordStar V4.0. Regardless whether they are major or minor, the list, nevertheless, is quite impressive. What I would like to do in this article is cover some of the features and enhancements to give you, the WordStar users, some idea of these changes so that you can make up your minds on whether you want to upgrade or not. I have already made up my mind; WordStar V4.0 is the version to use.

In addition to the speed increase, the next change that caught my eye were the menus. The menus have been cleaned up with some rearrangement to give them a more organized appearance. All the old commands are there with some new ones.

One enhancement that ranks very high on my list that was lacking in previous versions was path support. Now a user can create and modify files in any directory/subdirectory by simply specifying the full path of the file. Similarly, the WordStar program files can reside in various subdirectories.

CorrectStar, the spell checking module which was previously available as a separate product, is now part of WordStar V4.0. Just as with document files and program files, the user can specify where

the dictionary (or dictionaries) resides. If multiple dictionaries are used, the user can specify which one to use for the spell checking operation. In addition to the standard 87,000 word dictionary, the user can specify and supply his/her own dictionary and/or add one of the special dictionaries available from MicroPro: Legal, Banking/Finance/Insurance, and Medical. Each of the special dictionaries is available from MicroPro International for $25.

Released with WordStar V4.0 is the Word Finder thesaurus from Microlytics, Inc. As I mentioned above, this is not available for the H/Z-100 machines. There are two synonym files that come with the release; the main one contains 220,000 synonyms and a smaller one that can be used if disk and/or memory space is a problem. The smaller file, which is a subset of the larger one, consists of 120,000 synonyms. To use Word Finder, the user loads the Word Finder program itself which is about 32K as a memory resident program before calling WordStar. Then to call Word Finder while in WordStar, the user uses the ALT-1 key combination. This key combination can be changed during the installation of Word Finder if the user so desires.

Another major feature that was badly lacking in previous versions was an "undo" or "undelete" or "unerase" capability. This feature allows the user to restore the last set of characters that were erased. The characters that are restored are stored at the current cursor location. When characters are erased, they are stored in a special save buffer in working memory. The default is 500 characters, but this can be changed when customizing WordStar. When the user restores characters from this special save buffer, the characters in the buffer are not erased. This allows the user to restore the contents of the save buffer any number of times in a document.

Bold, Double Strike, Underline, Subscript, Superscript, Italics, Errors, Strike-out, Menus, Key Labels, and Normal text are now shown on the screen by special highlighting. On a monochrome screen this is done by intensity (PC series only). On a color monitor, this is done with foreground and background colors. For the H/Z-100 machines, 8 colors are available, while 16 colors are available for the PC series when intensity is specified for a particular color. Blinking is also available for the PC series. These attributes, as they are referred to, are set/changed by using the customizing program which I will briefly cover shortly.

With the PC series version, the user has access to the IBM-PC extended character set which is the upper 128 characters in the ASCII character set. This means the user can use and print the special foreign, math, and graphic characters. The ALT-Fx key combination allows the user to draw lines and boxes around text for use in such documents as organization charts. The other characters in the upper 128 character set can be selected by use of the ALT key and the numeric key pad. The ASCII codes for these characters are keyed in while holding down the ALT key. When using these line/box drawing characters, as well as the other special characters in your document, please be sure, first, that your printer will print those characters. For example, the IBM ProWriter will support these characters, as well as the Epson FX-286/FX-286e printer in IBM mode.

For the H/Z-100 user, the line/box drawing capability is also available via the Shifted Function keys. However, I noticed that unless the user has loaded GRAPHICS.CHR via the FONT command prior to loading and using WordStar, the line/box characters will not appear as such on the screen. This is also true for the boxes that are drawn around the various WordStar menus. GRAPHICS.CHR must be loaded first. The MS-DOS V2 and V3 manuals state that GRAPHICS.CHR is loaded at boot time as the default alternate character set. I must be doing something wrong because that doesn't happen on my system. I have to explicitly load this character set via the FONT command.

The H/Z=100 does not support the IBM extended character set so this feature is not available on the H/Z-100. Also, the H/Z-100 does not have an ALT key as required for this extended character support.

Multiple Headers and Footers are now available. This is special text that is printed at the top and bottom of every page, containing such information as titles, date/time, page numbers, etc. Up to three lines for a header and three lines for a footer can be specified. Headers and Footers can alternate to the left or right on the page depending on whether the page is even or odd.

Prior to WordStar version 4.0, one had to get Starindex to generate an Index and Table of Contents. Now it is possible to generate an Index and a Table of Contents with WordStar itself. This is true for both the H/Z-100 version and PC version. However, what is generated by WordStar V4.0 is not the same as that generated by Starindex. If for some reason, a user wants to still use Starindex, he/she can still do that with WordStar V4.0 files.

Now for all those WordStar users who love to patch WordStar, WSCHANGE is available for that purpose. Users can re-define monitor and printer attributes, various defaults used by WordStar, the four custom print controls that were available in previous versions of WordStar can be set, etc. WSCHANGE makes it very easy for the user to customize WordStar for his/her needs. WSCHANGE also has an auto patcher feature that allows the user to save any or all the changes made to WordStar. This information can then be copied to unmodified copies of WordStar without having to re-enter all the changes through WSCHANGE.

Most MS-DOS/PC-DOS commands can be executed while editing a document if enough memory is available. The memory must hold the program/command you want to execute, the WordStar program and data areas, and COMMAND.COM. It is advisable not to load a memory resident program via this method. Memory resident programs, however, can be used, but should be loaded before calling WordStar. If loaded before calling WordStar, a memory resident program can then be activated while running WordStar via the proper key combination as defined by the memory resident program.

To help with calculations during the entry of some documents, WordStar V4.0 provides a calculator or Math Menu as defined in the documentation and shown on the screen. The Math Menu provides the usual math operations of addition, subtraction, multiplication, and division plus the trigonometric functions, square root, and log functions. Equations can be nested by use of parentheses up to 32 deep. Scientific notation can be used for very large numbers.

If your printer supports 'proportional spacing', then you can select it for your document via a special dot command. Proportional spacing means that each character only takes up the space on a line relative to its width in contrast to normal spacing where each character takes the same space regardless of its actual character width. By use of dot commands, proportional spacing can be turned on and off at will.

Instead of typing in a file name of a document to modify or type in a printer name if other than the default printer is wanted, one can now select the above via the cursor keys. One simply positions the cursor to the name of the document or printer and press RETURN to select it.

WordStar V4.0 introduces the user to what it calls "Shorthand" characters, but in reality it is what we know as macros. This feature allows the user to replace a sequence of keys with just two; the ESC character followed by either an alpha character or a numeric character. Thus, up to 36 shorthand characters can be defined. A special menu, the Shorthand Menu, is provided to help the user in generating shorthand characters, as well as look at the shorthand characters already defined. There are a few special shorthand characters that WordStar provides, namely, one for the time, date, last math equation entered, formats last math calculation, etc. Shorthand character definitions are stored in a special WordStar file, WSSHORT.OVR. This file is created by WordStar if one does not exist.

Printer support has been enhanced. WordStar V4.0, as released, has driver support for over a hundred printers; dot matrix, daisy wheel printers, and laser printers, as well as support for sheet feeders. It is possible to define up to two different printer ports. In addition, the user can have all or some of the printer drivers installed which means the user can select the printer at the time a document is to be printed. One of the drivers is installed as the default driver at installation time and this is the driver that is used when the user does not select a specific printer when printing a document. In addition, there is a couple of drivers that can be used by the user to actually build his/her own printer driver. In other words, the user can customize printer drivers for his/her own needs. The customizing program described above, WSCHANGE, is the program used to customize printer drivers.

In the PC version of WordStar V4.0, there are 40 function keys already defined for the user's use. Each defines a particular WordStar command that can be executed by a single key or single key combination. They are the function keys F1-F10 by themselves and in conjunction with the Shift, ALT, and CTRL keys. However, the user can redefine any of these 40 function keys via the customizing program WSCHANGE. The user can also decide whether he/she wants the meaning of the functions displayed on the bottom of the screen or not.

For the H/Z-100 version, there are only 20 function keys defined. Function keys F1-F10 are defined the same as for the PC version while the shifted function keys are used for the line/box drawing characters. The CTRL key together with the function keys are not recognized by the H/Z-100, and there is no ALT key. The user can define function keys F0, F11, and F12 if necessary.

More Changes . . .

In addition to the changes/enhancements discussed above, there are a great deal more that I have not discussed, but will list some of them here:

- Go to a specific page
- Embedded ruler lines
- New merge printing commands
- New find and replace features
- Column replace mode
- Help updated
- Protect files
- Move blocks of larger size
- Can turn on/off letter quality print if printer supports this mode
- Improved indentation and underlining
- Dot command enhancements
- Etc. . . .

There is a utility program that comes with WordStar called WC for "word count". This utility allows the user to get the number of lines, number of characters, and the number of words in a document. You can call this utility either from the MS-DOS/PC-DOS prompt or from WordStar using the "run a DOS command" feature. The user just enters WC followed by the file name or names of the files to get the various counts. I personally find this a very useful utility.

Documentation

The documentation, in my opinion is much better than previous versions. The Reference Manual is very well organized. It contains the usual sections: installation, getting started, tutorial, and reference section. The documentation also consists of a special manual for the thesaurus and a small booklet containing a summary of all the changes/enhancements in WordStar V4.0.

Wrap-Up

As I said earlier, my intention with this article was to give you a quick overview of the changes and enhancements that are part of Version 4 (or V4.0 as I have referred to it in my article). Hopefully, I have given you enough information that can help you make up your mind whether to upgrade to V4.0 or stay with V3.3. The speed alone, in my opinion, is well worth the upgrade.

Let me recap the limitations for the H/Z-100. There is no extended character support, there are only 8 colors to choose from versus 16 for the PC version, there are only 20 function keys defined versus 40 for the PC, the thesaurus is not supported, and not mentioned before, the Tutorial is for the PC version only.

As I said earlier, I am sold on this upgrade and I believe I made the right decision. Good luck on your decision. *

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SPREADSHEET/DATABASE Corner II

H. W. Bauman
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This project will be a follow-on of the one in SPREADSHEET/DATABASE Corner I. Did you complete that project? If not, please do that one first. It will help you to do this project. If you had any problems that you could not work out, please write to me with complete details and printouts. Throughout this series, I will always need a business size, stamped, self-addressed envelope. I receive a lot of mail and I cannot buy the stamps and envelopes! I will return an answer to you within a week of my receiving your letter. If you do not have Ashton-Tate's dBASEII, dBASEIII, or dBASEIII PLUS, please write and tell me what program you are using. I have nearly all of the better programs. I am using dBASEIII because from my recent questionnaire most of the readers told me that these were the programs that they had. Also, remember, the more information that you can supply me with about your problems, the better the chances that I will be able to provide an answer. Please, NO letter just saying I have tried and I just can't do the project!

This article will continue with our Real Estate database. We will use the files from SPREADSHEET/DATABASE Corner I (S/D I) and this project in a later project; so, be SURE you keep your files! This month's project could be used by a Realtor to select properties that would meet a potential client's needs. I will not use a detailed step-by-step; I feel that I do not need to furnish the user with that much information. The reader can refer back to S/D I for help. The readers that are really trying will KNOW what we covered before. I would also advise the interested reader to use his Manual and the HELP screens! Start using these to look up the following commands:

1. CREATE
2. DISPLAY
3. APPEND
4. LIST
5. LIST FOR
6. LOCATE

Also, check which of the ten function keys will do what for you. They can save you a lot of time.

I will go into some detail about the new commands that we will use for this month's project. They are 'LIST FOR' and 'LOCATE'! I will not be going into this much detail for new commands in future months, as I would expect that the user will learn better if it is necessary to do a little more research. Also, I will not have enough room for all of the explanations for the more complicated projects we will get to.

'LIST FOR' is a searching command. This project will use the files that we have named 'CLIENTS' and 'CLIENT1'. Be sure that you have them on your data disk and the disk in the correct drive that you are using. Start dBASE as we did in project I. When the '. DOT' prompt appears, we will ask dBASE to:

```
USE x:CLIENTS and press return.
```

How many readers remembered what the 'x:' is used for? We can also use '.SET DEFAULT TO x:' so that it will not be necessary to put the x: into our commands. If you do not remember about 'x:' refer back to Project I article.

If we would like to find the only house or houses in our database with a Zip Code of 92672, we can use the 'LIST FOR' command, such as the following:

```
LIST FOR ZIP = '92672' and Press Return
```

Notice that the '=' sign is used to mean "equal to". What did you expect to see on the screen? Did it work that way? How would you print this result? Now, let's see if we can leave "CITY" out of the display. I would use the following command:

```
LIST FOR ZIP = '92672' ZIP,FNAME,LNAME,
  ADDRESS  press return
```

What do you find to be different in this result than the previous one? Print out the result.

The above commands are just a few of the many that we can now use. Now, we will build a new database file that I am going to

name 'CLIENT1'. Again, we start with the command 'CREATE'. As you should remember, this will establish a new file structure. If you do not use my file name, remember the name rules! Do you remember them?

This Record Structure will contain six fields. How many readers remember what a field is? You will need to know these items, because as the projects get longer, I will not have the space in the articles for reminders. The fields for this database will include the following:

1. LNAME
2. BDRMS
3. BATHS
4. POOL
5. GARAGE (1, 2 or 3 stalls)
6. PRICE

Some of these fields are character type data (can you tell which?). The POOL field is a Logical field (last month I showed 'y' or 'n'). This month, we will find that we can use 'T' True or 'F' False. The reader can decide which he likes. I like to stay with one type 'y' or 'n'! The BDRMS, BATHS, GARAGE are numeric digits that will not be used for calculations; thus, they are character in type for this database. The PRICE is Numeric and will be used in calculations at times; therefore, they are Numeric with 0 decimal digits.

I will give the reader a start with some of the steps and expect the user to add in any necessary steps:

1. Type 'CREATE'.
2. Type 'x:CLIENT1'.
3. At #1, type LNAME,C,10,0 (Use LNAME info from #18 file).
4. At #2, type BDRMS,C,1,0.
5. At #3, type BATHS,C,1,0.
6. At #4, type POOL,L,1,0.
7. At #5, type GARAGE,C,1,0.
8. At #6, type PRICE,N,6,0.
9. At #7, press Return.
10. Type N.
11. At '.', type 'USE x:CLIENT1'.
12. At '.', type 'APPEND'.
13. dBASE will display Structure — is it right?
14. Type in data (use my printout).
15. Repeat the above steps 24 more times for a total of 25 entries.
16. Check the 'CLIENT1' file by using LIST.
17. If the file checks OK, print it.
18. Did you remember to type '.SET PRINT OFF'?

Now, we are ready to try some interesting things that dBASE can be asked to do with the 'CLIENT1' file. To work with many of the commands, it is necessary to use Relational and Logical Operators. I will list some of the ones that are used most often.

The FOR condition, which is one of the powerful ones, can be used with DISPLAY, LIST, etc. commands:

```
=   Equal to
<   Less than
>   Greater than
```

Or combine them:

```
<=  Less than or equal to
>=  Greater than or equal to
<>  Not equal to.
```

To use these, DO NOT put a space between the combined symbols. The above symbols are called Relational Operators that look mathematical, but they can be used with Character fields, as well as Numeric fields! They CANNOT be used with Memo fields or Logical fields.

The Logical fields are listed below. Be SURE to use the '.' DOTS before and after the operator:

```
.AND.
.OR.
.NOT.
```

One more thing to remember is that uppercase letters have a LOWER value than Lowercase letters! There are a few rules that will show up when we get to them.

The FOR clause can be used with character fields if the information is enclosed with single or double quotes (' or ") or in square brackets ([&]). Also, if you type say a lowercase 'r' in place of an uppercase 'R', everything is listed by dBASE as typed. dBASE searches for exactly what you ask for and the Uppercase letter will change its value and the search will be WRONG! Again, remember that fields like ZIP CODE are character fields and, in this case, they MUST be enclosed in quotes.

This project will use 'CLIENTS' and 'CLIENT1" only as separate database files. A future project will use them together. We will start with 'USE CLIENTS'. Try these experiments:

1. LIST FOR CITY = "SAN CLEMENTE"
2. Did the display surprise you? Print it.
3. LIST FOR CITY = "SAN CLEMENTE" .AND. "SAN DIEGO"
4. View the result using LIST. What did it show you? Print it.
5. LIST FOR ZIP = '92672'
6. Did the screen show what you expected? Print it.
7. LIST FOR ZIP = '92672' .AND. '97742"
8. Were you surprised with the result? Print it.
9. Type 'USE CLIENT1'
10. LIST FOR BDRMS = '4' — PRESS RETURN
11. Did you expect this result? Print it.
12. LIST FOR BDRMS = '4' .AND. BATHS >= '2' .AND. POOL = '0'
13. Did you find the expected result? Print it.
14. LIST FOR BDRMS = '3' .AND. BATHS >= '2' .AND. PRICE >= 175000
15. Can you see how the 'LIST FOR' command will be handy for any of your own projects? Print the results.
16. Try some of your ideas of how to use 'LIST FOR'.

The 'LOCATE' command is used for searching for a position of a record in the database based upon a desired characteristic. That sounds complicated? Well, it is not! 'LOCATE' does NOT display the resulting data like 'LIST FOR'! It is necessary to use the 'DISPLAY' command to view the result of the search. It is also necessary to use the 'FOR' statement to indicate the characteristic we want to search for. Here is how to ask dBASE to search for a price of 300000 or less:

```
LOCATE FOR PRICE >= 300000
```

This will give us a dBASE view of:

```
Record #1
```

This does not tell the required result. To view the result:

```
DISPLAY and press return
```

We now see a complete record of the information that we started to search for! However, there might be more than one record that fills the characteristic we searched for. Try typing:

```
CONTINUE and press return
```

If there is another result that fills the characteristic, we will view:

```
Record #x where x is a record number
```

If there were no other records that meet the characteristic, the following will appear:

```
End of locate scope
```

Of course, you would use CONTINUE until the above display is shown. So, this is not difficult! However, if the database had thousands of entries and many that would meet the characteristic that is being searched for, this procedure would not be very handy! A quicker approach would ask for the desired record more specifically. This would be done with a Logical Operator like .AND.:

```
LOCATE FOR PRICE >= 325000 .AND. POOL
```

The result of this command:

```
Record = 1
```

On the first try, type DISPLAY and a correct result is viewed. The user should still use CONTINUE to see if there are any other records that meet the required characteristics.

Note: Did you remember to type the database name that you were going to search? You would need:

```
USE 'CLIENT1'
```

Last, but not least, we will search where we know that there is a good chance of finding a field that generally matches what we are searching for. Suppose we want a POOL and need 4 bedrooms. Type the following:

```
LOCATE FOR BDRMS = '4'$POOL
  and press return
```

Notice that the grammar is reversed from what we have been doing. This is not a good example, but it is the only one I could think of using our database. Can you find a better one to use '$'? The '$' means "embedded in". The syntax makes sense because the above command says, "find a record with '4' BDRMS embedded into a record with a POOL included". Now try typing the following:

```
LIST FOR BDRMS '4'$POOL
```

Did this give us the result expected? Print it.

Next, I want the reader to try combining search conditions. How would you find in the 'CLIENTS' database anyone who lives in San Diego or San Clemente with a two bedroom house? This is not an example, but it is an assignment to get the reader thinking! How are you going to do this using the '$' symbol?

Note: Command lines can become too wide for the screen (or page), so use the ';' semicolon. Also, the user can type in a command as one long line (without the semicolon, or press return after typing the semicolon, press the SPACE BAR, and type the rest of the command. The reader MUST try these to understand them!

In some searching examples with a really large database, it is possible to get some incorrect results. An example would be where LNAME = 'SMITH' would also display SMITHSONIAN, if it were in our database. This can be solved by typing a space —'SMITH '. This further defines LNAME. dBASE has another built-in parameter that can be added to solve this problem — EXACT. Try typing this parameter before the file:

```
.SET EXACT ON and press return
```

Then proceed as above.

This concludes this project. I hope that I am providing the help that the readers of REMark want. If not, I would like to hear from you either pro or con! Remember, REMark is for the HEATH/ZENITH USERS' GROUP and you are paying for REMark as part of your dues. If you are not getting what you want, it is no ones fault but your own. If you do not tell the REMark staff, how will we know!

I would like to reply to the hundreds of letters that I have received over the last six months:

1. First, Readers ask are you still writing "SPREADSHEET Corner"? The answer is yes, but I have had health problems and I have not been able to stay on top of the series. I am now nearly as good as new and I have closed most of my computer business. Thus, I will have more time to spend on the articles. Besides, I have been working with Jim Buszkiewicz, Managing Editor of REMark. We have decided that this series will be published on a regular schedule, provided that I get my "copy" to them, with the two and one-half months lead time that the REMark staff needs. I think that this staff, which is smaller than ever, is doing a top notch job! Let's get behind them by telling them what you want or do not want so that they can put their efforts to the best use! Sometimes, it may appear that they are not paying attention, but it takes time to get things shifted around with the publishing lead time!
2. Second, I have most readers asking me to make the projects easier or shorter. I

Record#	LNAME	BDRMS	BATHS	POOL	GARAGE	PRICE
1	BAUMAN	4	3	.F.	3	325995
2	BUTLER	3	2	.T.	2	192500
3	CAMPBELL	3	2	.F.	2	170000
4	COOKE	2	2	.F.	2	165500
5	GREYSTOKE	4	2	.F.	2	159995
6	LAKELAND	4	3	.F.	2	199500
7	LOCK	3	2	.T.	2	177500
8	LYMAN	3	2	.F.	2	169750
9	NEUHOFF	4	3	.F.	2	170000
10	RANDOLPH	3	2	.F.	2	169500
11	ROARKE	3	2	.T.	2	199900
12	SMITH	3	2	.T.	2	210000
13	APPLETON	3	2	.F.	2	177500
14	JAMESSTON	4	3	.T.	3	335900
15	RYAN	2	2	.F.	2	159000
16	PHILBROOK	3	2	.F.	2	175000
17	BACON	3	2	.F.	2	195000
18	ELLERTON	4	3	.F.	2	205000
19	JONES	3	2	.T.	2	185000
20	BARRET	4	2	.F.	2	235000
21	OORAN	4	3	.T.	3	315000
22	LIDSTER	4	3	.F.	2	225000
23	STUMP	4	3	.F.	3	299500
24	GILLMORE	4	3	.T.	3	255000
25	JOHNSON	2	2	.F.	2	135000

find that it is hard to obtain a good balance between projects for the novice and the more advanced. I try to write the articles in small easy steps so that each advances the user to the next level project. I am going to try harder to do this.

3. Third, many readers tell me that they have database software, but do not know how to make better use of it. They like the Spreadsheet projects, but want to use the database software. Therefore, as you may have noticed, I have changed the name of the series to include Database! I have also started a series of articles at the novice level, and I will build on each one so that everyone will be at least to the intermediate level. After we reach that level, I will take the new spreadsheet software and build on each project to take the readers from the novice level to the intermediate level. Next, I plan to take and combine the use of the two types of software and show the readers how to use the two software programs together to obtain the best overall results. I also plan on slipping in a few Review articles so that the readers will know the direction where the software changes are going. The Reviews will not be in depth unless I hear from the readers that they would like to know about any in greater detail!

4. This is a general outline of what will happen in this series, unless I hear from enough readers asking me to change it. It is always YOUR series and I want to give you what you want. I will change it myself if I think that something new has come up that rates attention!

Please, let's keep the communications going with your letters so that you get maximum usage from REMark, your software, and computer! I will be watching for your input. Good luck with the project!

*

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Batch Menu System

Earl R. Zimmerman, Jr.
169 Spinning Road
Dayton, OH 45431

The most inefficient part of a computer system is the user. Some of you may disagree with this statement, so let me explain. Day after day users issue the same commands to a computer. If you're an MS-DOS user with a hard disk system, you constantly change subdirectories, enter and leave those directories, enter and leave application packages, backup directories, and erase backup files. The list is even longer, but you get the idea. It takes time to type in these commands, especially if your a hunt-and-peck typist or a new user. It is not uncommon that you have to enter the command more than once because you misspelled something. How can you save time and increase efficiency? Use batch files!

If you are an employer who has just switched from the manual method of doing something to the computerized method of doing the same thing, chances are that some of your employees have never used a computer. You realize the need for training, but you don't know where to begin — application packages or operating system. Let's assume you don't have the time to train operators to format disks, backup directories, do diskcopies, or all the features associated with the operating system. How can you bridge the knowledge gap? One method is to develop a menu driven batch system.

"False Menu Creation"

Before creating batch files it is necessary to create false menus. These menus can be created using EDLIN, the MS-DOS editor, or BSE100 or BSE150, the screen editors that are in the MS-DOS Programmers Utility Package.

Begin by creating a master menu STARTER .TXT (See Figure 1). From this menu you can enter and leave major programs; go to a training or disk maintenance menu; exit to the DOS prompt; and place the hard disk in SHIP mode.

```
CD\         (Returns to root directory)
CLS         (Clears the screen)
TYPE STARTER.TXT
   (Main menu appears on the screen)
^Z          (CTRL Z - Signifies the end
             of the batch file)
```

If you did everything correctly, the computer will respond with:

```
1 File(s) copied
```

```
**************************************************
*                    MAIN MENU                   *
**************************************************
*                                                *
*  1. WORDSTAR      5. GO TO TRAINING MENU       *
*  2. LOTUS 1^2^3   6. GO TO DISK MAINTENANCE MENU *
*  3. DBASE II      7. RETURN TO E: DRIVE        *
*  4. STATISTICS    8. QUIT FOR DAY (SHIP)       *
*                                                *
*   SELECT PROGRAM BY PRESSING NUMBER & RETURN.  *
*                                                *
**************************************************
```

Figure 1 — False Main Menu

This menu should be created in the root directory (\) along with all the false menus and their related batch files. Each batch file you create should correspond to its number on the menu. For instance, file 1.BAT will allow you to enter, use, and exit WordStar. After creating STARTER.TXT, edit your AUTOEXEC.BAT file by adding the following line to the end of it:

```
TYPE STARTER.TXT
```

In order to return to the main menu after exiting from one of your programs you must create a batch file which you should call START.BAT. At the DOS prompt type the lines below followed by the RETURN key after each line. My comments are in parenthesis. In effect, you will be running one batch file from another. You'll see how this will work later in this article.

```
COPY CON START.BAT
ECHO OFF  (Causes following three
   lines to not be displayed)
```

You're now ready to begin creating the training menu, which is number 5 on the main menu, and the disk maintenance menu, which is number 6 on the main menu. Follow the same procedures for these menus as you did for the main menu with the exception of updating the AUTOEXEC.BAT file. Figure 2 is the training menu and Figure 3 is the disk maintenance menu. Name the training menu TRAINING.TXT and the disk maintenance menu DISKMAIN.TXT.

```
**************************************************
*                  TRAINING MENU                 *
**************************************************
*                                                *
*              9. WORDSTAR TUTOR                 *
*             10. LOTUS 1^2^3 TUTOR              *
*             11. DBASE II TUTOR                 *
*                                                *
*                                                *
*   SELECT PROGRAM BY PRESSING NUMBER & RETURN.  *
*                                                *
**************************************************
```

Figure 2 — Training Menu

```
**************************************************
*           DISK MAINTENANCE MENU                *
**************************************************
*                                                *
*  12. GENERAL BACKUP     15. DISKCOPY           *
*  13. WORDSTAR BACKUP    16. SWEEP COMMAND      *
*  14. FORMAT FLOPPY      17. COPY D.COM TO A:   *
*                                                *
*                                                *
*   SELECT PROGRAM BY PRESSING NUMBER & RETURN.  *
*                                                *
**************************************************
```

Figure 3 — Disk Maintenance Menu

Creating Batch Files

By creating the three previous menus, you have created an outline for your batch files which are the heart and soul of the batch menu system. Before you go any further, it is necessary to illustrate (See Figure 4) how the hard drive is set up for purposes of this article. If you are a new user and do not understand subdirectories, I suggest you review your MS-DOS manual or read William Adney's article in the April '86 edition of REMark. For purposes of this article, an entry like MD\(directory name) would make a subdirectory. For instance, MD\WS would create the WordStar directory. Note that the root directory and the major programs are on Drive E and the tutorials are on Drive F.

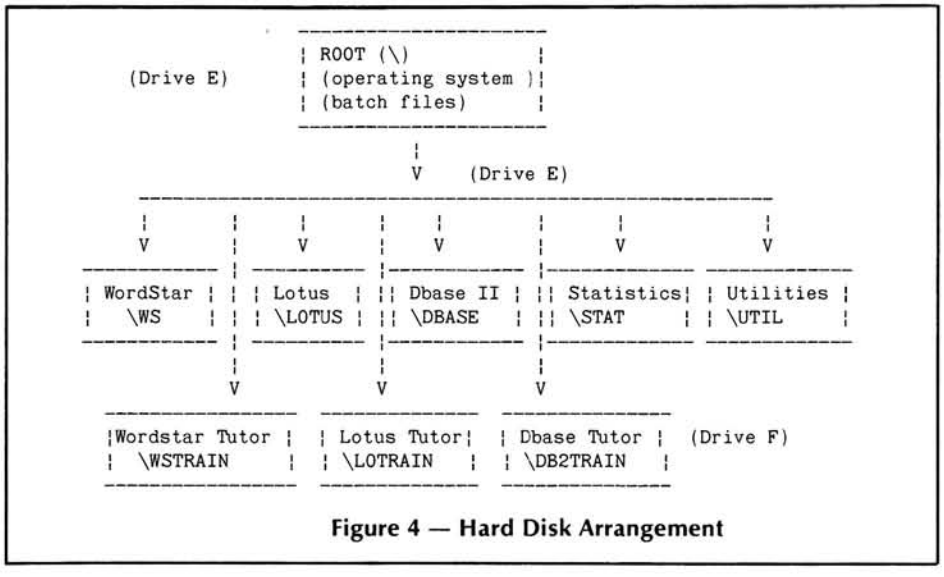

Figure 4 — Hard Disk Arrangement

Entering And Exiting Programs

Using the COPY CON procedure I described previously, it is now time to create the batch files. The first one that you should create is 1.BAT or in plain English, how to enter, use, and exit WordStar. As before, my comments are in parenthesis.

```
ECHO OFF (Lines after this will not
         appear on the screen when the
         batch file runs)
E: (Go to E Drive. This is optional
    because WordStar is on E drive.)
CD\WS (Change directory to WordStar.)
WS (Call up WordStar program (WS.COM).
    You would now use the program.)
CD\ (Return to the root directory)
START (Calls up START.BAT you created
       previously.  The main menu will
       reappear and you will be back
       in the root directory!)
```

To test your batch file, type 1 and depress RETURN. I hope it worked for you. If not, enter TYPE 1.BAT at the prompt to check for mistakes. You can correct the error by repeating the above procedure or use EDLIN.

Batch files for the other three major programs follow the same format as the example above. The only differences will be the directory name and the command to enter the program. These programs are listed below.

```
2.BAT          3.BAT          4.BAT

ECHO OFF       ECHO OFF       ECHO OFF
E:             E:             E:
CD\LOTUS       CD\DBASE       CD\STATS
LOTUS          DBASE          STATS
CD\            CD\            CD\
START          START          START
```

Changing Menus And Returning To E:

Moving from one menu to another is also very easy to do. To move from the main menu to the training menu, enter 5.BAT. To move to the disk maintenance menu from the main menu key in 6.BAT. Depress the appropriate number to insure you did not err. To return to the E drive, simply create a batch file that consists of the CLS statement (7.BAT).

```
5.BAT                6.BAT                7.BAT

ECHO OFF             ECHO OFF             CLS
CLS                  CLS
TYPE TRAINING.TXT    TYPE DISKMAIN.TXT
```

Quitting For The Day (Ship)

Placing a hard disk in the SHIP mode will prevent possible damage to your hard disk if the computer is moved or bumped accidently. It should be part of your shutdown procedure whether you are a home or business user. You may also like to erase all the backup files your word processor may have created as part of your end of day procedure. The following batch file (8.BAT) accomplishes both tasks.

```
ECHO OFF     (Following lines will not
              appear on screen)
CD\WS        (Change directory to
              WordStar)
ERASE *.BAK  (Erases all backup files)
CD\UTIL      (Change to UTIL directory
              where Ship command is
              located)
SHIP         (Invokes Ship command)
```

The Training Menu

The training menu allows you to access tutorials that come with some of the more complicated application packages. Creating batch files for tutorial usage is almost identical to those created for the application packages. The only real difference between the two is that you will have to switch to the F drive where the tutorials are located and return to the E drive. For instance, if you want to access the WordStar tutorial, you would create 9.BAT as follows:

```
ECHO OFF      (Following lines will not
               appear on screen)
F:            (Changes from E drive to
               F drive)
CD\WSTRAIN    (Goes to Wordstar training
               directory)
WSTUTOR       (Calls up Wordstar
               Introduction)
E:            (Return to E drive when
               lesson completed)
CD\           (Returns to root directory)
START         (Main menu reappears)
```

The batch files for the Lotus tutorial (10.BAT) and the Dbase II tutorial (11.BAT) are listed below.

```
10.BAT          11.BAT

ECHO OFF        ECHO OFF
F:              F:
CD\LOTRAIN      CD\DB2TRAIN
TUTOR           DBASE
E:              E:
CD\             CD\
START           START
```

If you desire, you could create a batch file for each lesson in the WordStar tutorial. The Z-100 tutorial disk of WordStar 3.31 has an introductory lesson and six additional lessons. Each lesson has a different command for you to enter. For instance, the first lesson command is WSTUTOR1 and the second lesson command is WSTUTOR2. You could call these files 9A.BAT and 9B.BAT. If you choose to do this, you would have to modify your training menu (file TRAINING.TXT) to reflect all the lessons. With the exception of the command to enter the lesson, these batch files would be the same as 9.BAT.

The Disk Maintenance Menu

The disk maintenance menu will allow you to perform backups; format 5-1/4" disks in 9 sectors (Z-100 users); diskcopy; invoke disk maintenance programs; and copy selected utility programs from the hard drive to floppy disks.

One time consuming disk maintenance activity is backing up a hard disk. Using a batch file could speed up this procedure somewhat and reduce the chance of operator error. Below is file 12.BAT which can be used to backup an entire drive and return you to the main menu.

The REM statements tell you what the program will do and what disks to use. This example assumes that the backup procedure was run once before this batch file. The PAUSE statement stops the execution of the batch file until any key is depressed. This particular line allows you time to insert a 5-1/4" disk in drive A. The BACKUP command instructs the computer to backup the entire E drive to the disks you will be inserting in the A drive. All the files will be stored in a file named BACK1. The /G switch means global directories and tells the computer to back up all files in all directories. The /N switch tells the computer not to format the disks you place in A drive prior to backing up files. For more detail on the backup procedure consult your MS-DOS manual.

Often it is only necessary to back up selected directories. File 13.BAT is an example of how you could back up the WordStar directory. This batch file will tell you what the file is for; erase backup files on the WordStar directory; let you know disks to use; back up the WordStar directory; and finally return you to the main menu.

A common mistake of new users is the misuse of the FORMAT command. Format is just another word for disaster if the hard disk is accidentally formatted. All your data is lost and you must then restore all your data from your backup disks. Chances are you will lose at least one day of work, or possibly more if you only back up the hard disk once a week. To avoid such disasters, set up 14.BAT as follows. Omit the /9 switch if you are a Z-100 PC user because these computers automatically format in 9 sectors. If you are a Z-100 user and you want to format in 8 sectors, also omit the /9 switch.

```
14.BAT

ECHO OFF
CLS
FORMAT A:/9 (Formats disk in A drive in
  9 sectors (Z-100 only))
START
```

You can also do a DISKCOPY and return to the main menu by creating file 15.BAT as follows:

```
ECHO OFF
CLS
DISKCOPY  (DISKCOPY must be in root dir)
CD\
START
```

You can also use batch files to invoke a disk maintenance program, such as CSWEEP. This utility program performs numerous functions, such as sorting directories, renaming files, viewing files on the screen, and printing the size and time of files, etc.

```
13.BAT

CLS
REM ********************************************************
REM * THIS FILE WILL ERASE ALL .BAK FILES ON THE WORDSTAR  *
REM * DIRECTORY AND BACKUP ALL FILES                       *
REM ********************************************************
ECHO OFF
CD\WS
ERASE *.BAK
CD\
ECHO ON
REM *  MAKE SURE YOU ARE USING BACKUP DISKS LABELED WSBACK1 *
PAUSE ENSURE DISK 0 IS IN DRIVE A. HIT RETURN.
ECHO OFF
BACKUP E:*.* A:WSBACK1/N  (BACKUP must be in root directory)
CD\
START
```

To use this file, provide information on its use, and return to the main menu, create 16.BAT as in Figure 5.

You can also copy commonly used utility commands from your hard disk to floppy disks. One of my favorites is D.COM, a sorted directory utility. File 17.BAT will accomplish this and return you to the main menu.

```
17.BAT

ECHO OFF
CLS
CD\UTIL(Where D.COM is located)
COPY E:D.COM A:
CD\
START
```

Conclusion

As you have seen, batch files can greatly reduce the number of keystrokes it takes to

```
12.BAT

CLS
REM ********************************************
REM * THIS PROGRAM WILL BACKUP THE ENTIRE E DRIVE *
REM * USE THE PROPER BACKUP DISKS (BACK1)        *
REM ********************************************
PAUSE ENSURE DISK 0 IS IN DRIVE A. HIT RETURN.
ECHO OFF
BACKUP E:*.* A:BACK1/G/N  (BACKUP must be in root directory)
CD\
START
```

do the routine tasks. They make the user a more efficient part of the whole computer system. Batch files can serve as a bridge between inefficiency and efficiency. This article has only skimmed the surface of what you can do with batch files. I encourage you to find more uses.

*

```
CLS
REM ***************************************************
REM * INSTRUCTIONS FOR CSWEEP COMMAND.                *
REM * CSWEEP CAN BE USED IN ALL DIRECTORIES IF YOU TYPE *
REM * Z AND ENTER THE DIRECTORY NAME, E.G. WS.  THERE  *
REM * IS NO NEED TO ENTER A CD\ COMMAND AT THE DIRECTORY *
REM * PROMPT.                                         *
REM ***************************************************
PAUSE
ECHO OFF
CLS
CD\UTIL  (Where CSWEEP is located)
CSWEEP
CD\
START
```

Figure 5

HEATH/ZENITH 88, 89, 90 PERIPHERALS

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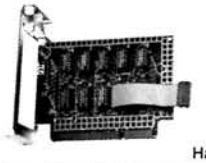

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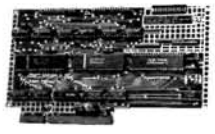

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Mouse Power

A Mouse Driven Menu System

Jack W. Bazhaw
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Bellingham, WA 98225
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Many PC users with a hard disk set up some kind of menu system. Generally, the system will either type out a file to screen or use echo commands in a batch file to generate the menu. Some excellent examples of this type of menu system can be found in Van Wolverton's book, "Supercharging MS-DOS," from Microsoft Press.

However, if you use the Microsoft Mouse with your PC, there is another method of generating a menu system. If you purchased the Mouse prior to the current edition, 6.0, everything you need was included. The latest edition of the Mouse is furnished without the documentation and utilities needed to make your own menu system. This information is available from Microsoft as the Mouse Programmer's Reference Guide for an additional $25. Don't let the title make you think you have to be a programmer to make the menus work. No prior knowledge of a programming language is needed.

How Does It Work?

After installation, you will notice no difference in your screen subsequent to turning your machine on. But, click a mouse button and instantly a menu will appear. By moving the mouse, a highlight within the menu will move. The item highlighted will be selected when you click a button. Your selection could start a program or bring up another menu if additional alternatives are involved.

Once the final decision from the menu(s) has been made, the menu file types out the name of the appropriate batch file or commands. Following completion of whatever program you selected the menu is reloaded, ready for use again.

How Do I Make The Menu?

There are two types of menus which you can design that the mouse supports. The easier one to make requires only that you enter the menu text and labels; the borders, title placement, size, etc. are all handled by the program. It is, however, limited to 20 choices. This simpler menu type I use to provide alternate options from the main "popup" menu selection. The popup menu can contain multiple columns and fill the entire screen, if desired. Being more versatile, it naturally requires more effort to design. Either menu system supports several attributes including inverse video, blinking and color.

Two steps are necessary to make the mouse menu. First, the design of the menu screen and commands are entered into an ASCII file which is saved with the extension of ".DEF". I find it convenient with Microsoft WORD to keep the normal formatted file with the .DOC extension. I keep all margins set to 0 and use the plain printer driver. When everything is completed, I save a printer file with the correct extension to the proper subdirectory. After exiting the word processor, this ASCII file is then compiled with MAKEMENU.EXE to make the menu file with the same name as the .DEF file, but with the extension of ".MNU". The compiled .MNU file should not exceed 57K bytes (6K bytes if using version 5).

Table I is a partial listing of the ASCII file for the menu system I use. Comments in this file are preceded by a semi-colon (;). Table II is the batch file used with the word processor and Table III is the batch file used with the hard disk backup system. The line numbers are for reference only.

The first line in Table I marks the start of the menu with the required word "BEGIN". The next two words are the labels that will be executed when the buttons on the mouse are clicked. Both buttons do not have to call the same function. Originally, I had the left button call the main menu with the "main" label, and the right button call the menu for memory resident programs with the "run2" label. At that time, the first line read: BEGIN main, run2. Later, I decided to make this selection available only from the main menu.

When either button is clicked the label "main" is called and it in turn calls for the execution of "newmenu" which defines the popup menu. The menu will start on line 3, column 14 of the screen and in the colors defined by "78". These numbers are the ones following the menu type, "pop-

Table I: Main Menu Definition File

```
1. BEGIN      main, main
2. MAIN:      EXECUTE newmenu
3. run2:      EXECUTE memresmenu
4.  newmenu: popup,3,14,78
5.  text "2222222222222222222222222IMMMMMMMMMM;22222222222222222222222"
6.  text "IMMMMMMMMMMMMMMMMMMMMMMMM9 MAIN MENU LMMMMMMMMMMMMMMMMMMMMMM;"
7.  text ":                          HMMMMMQMMMMM<                     :"
8.  text ":   CANCEL MENU                3   Archive Files to Disk     :"
9.  text ":   Microsoft Word - Vicki     3   Microsoft Word - Jack     :"
10. text ":   (Reserved)                 3   Reflex                    :"
11. text ":   Printmaster                3   Reflex Reports            :"
12. text ":   PC Paintbrush              3   Lotus 1-2-3               :"
13. text ":   Multiplan                  3   (Reserved)                :"
14. text ":   Manage Your Money          3   Telecommunications        :"
15. text ":   Microsoft Chart           3   CADD                      :"
16. text ":   Sideways                   3   Plot QBO                  :"
17. text ":   Show Partner               3   Utilities                 :"
18. text ":   Memory Resident Programs   3   Basic                     :"
19. text "LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMOMMMMMMMMMMMMMMMMMMMMMMMM9"
20. text ":                 / END SESSION - Park disk heads .          :"
21. text "LMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM9"
22. text ":ppp/ To see this Menu again click a button or type: HELP .ppp:"
23. text "HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<"
24. ;Note: replace the characters "/" and "." with {ALT-16} and {ALT-17}
22. ;which do not print but produce a better screen display.
25. ;left column
26. select  4,2,30
27. select  5,2,30,       VICKI
28. ;select  6,2,30,
29. select  7,2,30,       PM
30. select  8,2,30,       PCPB
31. select  9,2,30,       MP
32. select 10,2,30,       MYM
33. select 11,2,30,       MSC
34. select 12,2,30,       SIDE
35. select 13,2,30,       SHOW
36. select 14,2,30,       RUN2
37. ;right column
38. select  4,33,30,      ARK
39. select  5,33,30,      JACK
40. select  6,33,30,      DB
41. select  7,33,30,      DB2
42. select  8,33,30,      LOTUS
43. ;select  9,33,30,
44. select 10,33,30,      MODEM
45. select 11,33,30,      CAD
46. select 12,33,30,      QBO
47. select 13,33,30,      UTILITY
48. select 14,33,30,      BASIC
49. select 16,2,61,       PARK
50. PEND
51. ;labels
52. VICKI:    EXECUTE vickimnu
53. PM:       TYPE "PM" ENTER
54. PCPB:     TYPE "PB" ENTER
55. MP:       TYPE "MP" ENTER
56. MYM:      TYPE "MYM" ENTER
57. MSC:      TYPE "MSC" ENTER
58. SIDE:     TYPE "SIDE" ENTER
59. SHOW:     EXECUTE showmenu
60. PARK:     EXECUTE parkmenu
61. ARK:      EXECUTE arkmenu
62. JACK:     EXECUTE jackmnu
63. DB:       TYPE "RFLX F" ENTER
64. DB2:      TYPE "RFLX R" ENTER
65. LOTUS:    TYPE "1-2-3" ENTER
66. MODEM:    TYPE "modem" ENTER
67. UTILITY:  EXECUTE utilmenu
68. CAD:      TYPE "CAD" ENTER
69. QBO:      TYPE "MAP" ENTER
70. BASIC:    TYPE "BA" ENTER
71. ;*********************************************************
112. BEGIN
113. vickimnu: MENU "SELECT DOCUMENT TO LOAD",6,30,96
114.      OPTION    "CANCEL"
115.      OPTION    "Letter",                VICKIL
116.      OPTION    "Previous Document",     VICKIP
117.      OPTION    "Clean Slate",           VICKIC
118.      OPTION    "Directory Listing",     VICKIDIR
119.      OPTION    "Main Menu",             MAIN
120. MEND
121. VICKIL:   EXECUTE WORDS, V, V2, V3
122. VICKIP:   EXECUTE WORDS, V, V2, V4
123. VICKIC:   EXECUTE WORDS, V, V2, CR
124. VICKIDIR: EXECUTE WORDS, V, V2, CR, DIR
125. WORDS:    TYPE "WORDS"
126. V:        TYPE 32 "\VICKI"
127. V2:       TYPE 32 "VICKI"
128. V3:       TYPE 32 "LETTER.DOC" ENTER
129. V4:       TYPE 32 "/L" ENTER
130. CR:       TYPE ENTER
131. DIR:      TYPE 27 "TL" 0,77
132. BEGIN
133. jackmnu:       MENU "WHICH DIRECTORY?",6,30,97
134.      OPTION    "CANCEL"
135.      OPTION    "Letters",          LETTERS
136.      OPTION    "Articles",         ARTICLES
137.      OPTION    "NALS",             NALS
138.      OPTION    "Other",            OTHER
139.      OPTION    "Main Menu",        MAIN
140. MEND
141. LETTERS:   EXECUTE jackmnu3
142. ARTICLES:  EXECUTE jackmnu4
143. NALS:      EXECUTE jackmnu5
144. OTHER:     EXECUTE jackmnu6
145. BEGIN
146. jackmnu3:       MENU "SELECT DOCUMENT TO LOAD", 6,30,23
147.      OPTION    "CANCEL"
148.      OPTION    "Letter",                JACKL3
149.      OPTION    "Previous Document",     JACKP3
150.      OPTION    "Clean Slate",           JACK3
151.      OPTION    "Directory Listing",     JACKDIR3
152.      OPTION    "Main Menu",             MAIN
153. MEND
154. BEGIN
155. jackmnu4:       MENU "SELECT DOCUMENT TO LOAD", 6,30,23
156.      OPTION    "CANCEL"
```

```
157.      OPTION    "Letter",                JACKL4
158.      OPTION    "Previous Document",     JACKP4
159.      OPTION    "Clean Slate",           JACK4
160.      OPTION    "Directory Listing",     JACKDIR4
161.      OPTION    "Main Menu",             MAIN
162. MEND
163. BEGIN
164. jackmnu5:       MENU "SELECT DOCUMENT TO LOAD", 6,30,23
165.      OPTION    "CANCEL"
166.      OPTION    "Previous Document",     JACKP5
167.      OPTION    "Clean Slate",           JACK5
168.      OPTION    "Directory Listing",     JACKDIR5
169.      OPTION    "Main Menu",             MAIN
170. MEND
171. BEGIN
172. jackmnu6:       MENU "SELECT DOCUMENT TO LOAD", 6,30,23
173.      OPTION    "CANCEL"
174.      OPTION    "Letter",                JACKL6
175.      OPTION    "Previous Document",     JACKP6
176.      OPTION    "Clean Slate",           JACK6
177.      OPTION    "Directory Listing",     JACKDIR6
178.      OPTION    "Main Menu",             MAIN
179. MEND
180. J:          TYPE 32 "\DATA"
181. J2:         TYPE 32 "JACK"
182. J3:         TYPE 32 "\LETTERS"
183. J4:         TYPE 32 "\ARTICLES"
184. J5:         TYPE 32 "\NALS"
185. JACKL3:         EXECUTE WORDS, J3, J2, V3
186. JACKP3:         EXECUTE WORDS, J3, J2, V4
187. JACK3:          EXECUTE WORDS, J3, J2, CR
188. JACKDIR3:       EXECUTE WORDS, J3, J2, CR, DIR
189. JACKL4:         EXECUTE WORDS, J4, J2, V3
190. JACKP4:         EXECUTE WORDS, J4, J2, V4
191. JACK4:          EXECUTE WORDS, J4, J2, CR
192. JACKDIR4:       EXECUTE WORDS, J4, J2, CR, DIR
193. JACKP5:         EXECUTE WORDS, J5, J2, V4
194. JACK5:          EXECUTE WORDS, J5, J2, CR
195. JACKDIR5:       EXECUTE WORDS, J5, J2, CR, DIR
196. JACKL6:         EXECUTE WORDS, J, J2, V3
197. JACKP6:         EXECUTE WORDS, J, J2, V4
198. JACK6:          EXECUTE WORDS, J, J2, CR
199. JACKDIR6:       EXECUTE WORDS, J, J2, CR, DIR
200. ;*************************************************************
201. BEGIN
202. toolmnu:        MENU "Make PCTOOLS Memory Resident?",6,30,36
203.      OPTION    "CANCEL"
204.      OPTION    "Yes", TOOL2
205.      OPTION    "No",  TOOLNR
206.      OPTION    "Main Menu",MAIN
207.      MEND
208. TOOL2:     EXECUTE keyrmnu
209. TOOLNR:    TYPE "UTILITY 3" ENTER
210. BEGIN
211. keyrmnu:  MENU "Which Keys to Activate PC Tools?",6,30,36
212.      OPTION    "CANCEL"
213.      OPTION    "CTRL - ESC", TOOLR
214.      OPTION    "CTRL - F1", TOOLR1
215.      OPTION    "CTRL - F2", TOOLR2
216.      OPTION    "CTRL - F3", TOOLR3
217.      OPTION    "CTRL - F4", TOOLR4
218.      OPTION    "CTRL - F5", TOOLR5
219.      OPTION    "CTRL - F6", TOOLR6
220.      OPTION    "CTRL - F7", TOOLR7
221.      OPTION    "CTRL - F8", TOOLR8
222.      OPTION    "CTRL - F9", TOOLR9
223.      OPTION    "CTRL - F10", TOOLR10
224.      OPTION    "Main Menu",MAIN
225.      MEND
226. TOOLR:     TYPE "UTILITY 3 R80" ENTER
227. TOOLR1:    TYPE "UTILITY 3 R80 F1" ENTER
228. TOOLR2:    TYPE "UTILITY 3 R80 F2" ENTER
229. TOOLR3:    TYPE "UTILITY 3 R80 F3" ENTER
230. TOOLR4:    TYPE "UTILITY 3 R80 F4" ENTER
231. TOOLR5:    TYPE "UTILITY 3 R80 F5" ENTER
232. TOOLR6:    TYPE "UTILITY 3 R80 F6" ENTER
233. TOOLR7:    TYPE "UTILITY 3 R80 F7" ENTER
234. TOOLR8:    TYPE "UTILITY 3 R80 F8" ENTER
235. TOOLR9:    TYPE "UTILITY 3 R80 F9" ENTER
236. TOOLR10:   TYPE "UTILITY 3 R80 F10" ENTER
...
...
...
294. BEGIN
295. arkmenu:        MENU "Archive Options",6,30,2
296.      OPTION    "CANCEL"
297.      OPTION    "Erase Backup Files",                          ARK1
298.      OPTION    "Archive Changed Files Only",                  ARK2
299.      OPTION    "Erase Backups & Archive Changed Files",       ARK3
300.      OPTION    "Archive ALL Files",                           ARK4
301.      OPTION    "Erase Backups and Archive ALL Files",         ARK5
302.      OPTION    "Main Menu",                                   MAIN
303. MEND
304. ARK0:      TYPE "SET" 32
305. ARK1:      EXECUTE ARK0, ARK6, ARK0, ARK8, ARK11
306. ARK2:      EXECUTE ARK0, ARK7, ARK0, ARK9, ARK11
307. ARK3:      EXECUTE ARK0, ARK6, ARK0, ARK9, ARK11
308. ARK4:      EXECUTE ARK0, ARK7, ARK0, ARK10, ARK11
309. ARK5:      EXECUTE ARK0, ARK6, ARK0, ARK10, ARK11
310. ARK6:      TYPE "ERASE=YES"    ENTER
311. ARK7:      TYPE "ERASE=NO"     ENTER
312. ARK8:      TYPE "ARCHIVE=NO"   ENTER
313. ARK9:      TYPE "ARCHIVE=NEW"  ENTER
314. ARK10:     TYPE "ARCHIVE=ALL"  ENTER
315. ARK11:     TYPE "ARK"          ENTER
316. ;*************************************************************
317. BEGIN
318. parkmenu:       MENU "Shut Down Procedure",10,20,206
319.      OPTION    "CANCEL"
320.      OPTION    "Return to Main Menu",                 MAIN
321.      OPTION    "Park Drive Heads - Stop Operations",  STOP
322. MEND
323. STOP:      TYPE "SHIP" ENTER "Y"
324. BEGIN
325. utilmenu:       MENU "UTILITY MENU",6,30,36
326.      OPTION    "CANCEL"
327.      OPTION    "Mace", U1
328.      OPTION    "CopyIIPC", U2
```

```
329. OPTION     "PCTools", TOOL
330. OPTION     "Sideways", U4
331. OPTION     "Norton", U5
332. OPTION     "Printer Control", U6
333. OPTION     "Mouse Control Panel", U7
334. OPTION     "Main Menu", MAIN
335. MEND
336. U1:  TYPE "UTILITY 1" ENTER
337. U2:  TYPE "UTILITY 2" ENTER
338. TOOL:     EXECUTE toolmnu
339. U4:  TYPE "UTILITY 4" ENTER
340. U5:  TYPE "UTILITY 5" ENTER
341. U6:  TYPE "UTILITY 6" ENTER
342. U7:  TYPE "UTILITY 7" ENTER
```

up" in this instance. Positions on the screen are measured from the upper left corner, which is line 1, column 1.

Starting with Version 6, the mouse menu system will support a great many color combinations, not all of which are satisfactory. Some are obviously unsuitable, like red on red, but others like white on green have to be seen to be appreciated. Table VII lists some of the possible color combinations and my judgment as to their usefulness. If you are using an earlier version, color is not supported, but you have the choice of inverse video, bold and normal attributes.

What will appear on screen is indicated between quotes on the lines starting with the word "text" (lines 5 - 23). Everything must be included: headings, borders, and all text you wish to appear. The extended ASCII character set is used to draw boxes, lines, highlights, etc.

Many word processors will allow entry of the extended ASCII character set by using the ALT key and the numeric keypad. ALT-205, for example, will insert the double horizontal line character. I have found it helpful to make a file with several different size and style of boxes, then bring that file up in a window and copy portions over to the file under preparation.

The lines starting with "select" (lines 26 - 49) define which areas of the menu the highlight will appear in and what label will be called when a button is clicked. The "PEND" (line 50) marks the end of the popup menu.

Each menu should have one statement that allows you to exit the menu with no action. The first "select" statement (line 26) performs this function by virtue of there being no action label following the area parameters. In addition, on each submenu I included a call for the main menu. This eliminates an extra button click if you change your mind and wish to return to the main menu for any reason.

The area parameters on line 26, "4,2,30", indicate that row 4 of the menu area will be highlighted starting at column 2 and continuing for 30 columns. The highlight can appear only in areas that are specified by the "select" statement. Measurements within the menu area are from the upper left corner of the menu, not the screen, and start at line 1, column 1, as with the screen measurements.

There are 11 lines that define what happens in the left column and another 11 for the right column of the menu. The last statement (line 49) before the "PEND" selects a double wide area under the other two columns. When defining the areas, I found it best to leave a minimum of unselected space between columns. Otherwise, the mouse required larger movements to travel between columns which gave the impression of erratic movement. The final line of text that is to appear on screen is only a message and no "select" statement is needed; the cursor will not travel into this area. The two areas reserved for future use have their "select" statements commented out with a semicolon.

Following the end of the popup menu (the "PEND") are the labels for the commands to be executed. It is not necessary that labels immediately follow the menu description. Labels with a "TYPE" statement, such as line 55, will type the characters shown between quotes as though they had been typed at the keyboard. The "ENTER" performs the same function as pressing the Return key on the keyboard. Placing the menu highlight in the left column on line 9 and clicking a button will call the label "MP" (line 31) which will type "MP <ENTER>". MP.BAT will then execute its commands to call up Multiplan. The TYPE statement is limited to 31 characters (15 in Version 5) counting "ENTER" as 1 character.

Labels with an "EXECUTE" statement, such as line 52, can also cause another menu to appear. For example, clicking in line 13 of the right column will cause the label "UTILITY" (line 67) to execute the menu "utilmenu". The EXECUTE statement can also be used to work around the limitation of the TYPE statement. Up to 31 parameters can be used (16 in Version 5) to chain together almost 1000 characters. Surely enough to call any batch file!

The "utilmenu" is the simpler type of menu to design. It also starts with a "BEGIN" (line 324), but no button labels are needed since it is called by the main menu. The second line of the menu:

```
utilmenu:   MENU "UTILITY MENU",6,30,36
```

contains the label of the menu, "utilmenu", and the type of menu, "MENU", to distinguish it from the "popup". The borders will be provided by the program and the title, "UTILITY MENU", will be at the top, centered, with a border on all sides. The menu will start at screen line 6, column 30 and in color 36.

The lines starting with "OPTION" (lines 326 - 334) contain, between quotes, the text for the menu and the label to execute (U1, etc.). The text will be centered and in a single column in the order shown; no options here. There is a limit of 20 menu items for this type of menu.

The end of the "MENU" type menu is at the "MEND", line 335. Following the "MEND" are the labels for execution, lines 336 -342. Only one batch file is used, UTILITY.BAT. The number that is typed following "UTILITY" is used by the batch file as a replaceable parameter to select the particular utility to run.

Selecting PCTools brings up another menu "toolmnu", line 201. If the Memory Resident Option is selected (line 204), the menu "keyrmnu", line 210, appears on screen to allow setting of the "hot keys". The labels for "keyrmnu" start at line 226. Three replaceable parameters are used; the first selects PCTools (the 3), the second allocates memory for the program plus makes it memory resident (R80), and the last sets the hot key if the default CTRL-ESC is not selected.

How Do I Install It?

You should install your mouse per Microsoft's instructions so that at bootup the mouse driver is loaded by the CONFIG.SYS file, as shown in Table IV. The last line in the AUTOEXEC.BAT file, Table V, should call HELP.BAT, Table VI, which loads the menu with line 7. Be sure and include the path to MENU.COM, furnished with the mouse, in your PATH command. (The install program for the mouse puts everything in \MOUSE1.) The two files you will create to make the menu, one with the .DEF extension and the other with .MNU, plus MAKEMENU.EXE should also be kept in this directory as this will simplify making changes.

After using the menu to load a program, such as Multiplan, it is necessary to reload the menu upon exiting the program. This is accomplished by having the last command in each batch file you use being a call to HELP.BAT. The menu can also be called by typing "help" at the DOS prompt(1).

To complete the system, batch files are written that are called by the menu to run

Table II: WORDS.BAT File

```
1.        echo off
2.        cls
3.        c:
4.        if "%1"=="" goto BAD_END
5.        if "%2"=="" goto BAD_END
6.        rem %1 is \(dirname)
7.        rem %2 is VICKI or JACK
8.        rem %3 is LETTER.DOC or /L or null
9.        cd \light
10.       light
11.       envi d
12.       cd \word%1
13.       copy \word%1\%2.ini \word\mw.ini >nul
14.       word %3
15.       copy \word\mw.ini \word%1\%2.ini >nul
16.       if not "%2"=="VICKI" goto END
17.       ship
18. :END
19.       cd \light
20.       light/k
21.       cd \
22.       help
23. :BAD_END
24.       echo      {ESC}[1;31mSorry, no parameter or incorrect parameter
specified{ESC}[m
25.       echo  ^G
```

the programs. In the samples to be described, replaceable parameters and environment variables are used to reduce the number of batch files needed.

How Do The Batch Files Work?

My wife and I both use the same word processor, Microsoft WORD, but we use different printer drivers, program options and document subdirectories. WORD stores these options in a file called "MW .INI". A copy of this file is maintained for each of us in each document subdirectory. It is then copied to the WORD program directory before the program is started in order to preserve our individual choices. To handle these changes the batch file, WORDS.BAT, uses three replaceable parameters. Using replaceable parameters instead of separate batch files saves the time of maintaining several files and considerable space on the drive.

Selecting line 5 in the right column of the menu (set by line 39) causes the label "JACK" (line 62) to bring up "jackmnu" (line 132). This menu allows the subdirectory to be chosen. Selecting "Other" from this menu (set by line 134) will cause the label "OTHER", line 144, to bring up "jackmnu6" (line 172) to select the particular document to load. Selecting "Previous Document" will cause the label "JACKP6" (line 175) to execute. The TYPE statement is limited to 15 characters in version 5, so "JACKP6" uses an EXECUTE statement to call four other labels (WORDS, J, J2, V4) to type out the 20 character string:

```
WORDS \DATA JACK /L <ENTER>
```

In this fashion, the three replaceable parameters are passed to the batch file WORDS .BAT. The first parameter sets the subdirectory, the second parameter sets the option file to copy, and the third sets which document to load. In this instance, the document to be loaded is the last one loaded, so the switch "/L" is used. Note the use of the ASCII code 32 to represent a space character in labels J, J2 and V4.

One selection on each menu for word processing includes commands to WORD for displaying the directory of files. The label "DIR", line 131, inputs an escape (character 27) to WORD, which places the program in command mode, then a "T" to select "TRANSFER", an "L" to select "LOAD", and then the right arrow key (0,77) to list the files available. The right arrow key is represented by its extended keyboard scan code, "0,77". These codes are listed in the Programmer's Reference Manual.

The sequences in the batch files starting with "{ESC}" and ending with an "m", such as: "{ESC}[1;5;33;41m", are ANSI commands to control the screen attributes. This particular sequence sets a blinking, bold, yellow foreground on a red background. You must load ANSI.SYS with your CONFIG.SYS file to use these commands. It is not necessary to use ANSI.SYS to use the attribute commands in the mouse menu. More details on using ANSI commands can be found in Van Wolverton's book, "Supercharging MS-DOS". The ANSI command sequences are somewhat of a bother to type, but they do offer a simple method of controlling the display from within batch files. The {ESC} should be replaced with ALT-27 when typed or CTRL-V[if using EDLIN.

The glossary feature of WORD can be used to take some of the drudgery out of entering the ANSI codes. Type out {ESC}[32m (substitute ALT-27 for {ESC}) and save it to the glossary entry green. Anytime you want to start green on black, type green, press F3 and the ANSI code, {ESC}[32m, will be inserted.

The main menu selection, "Archive Files to Disk", uses environment variables instead of replaceable parameters to pass options to the batch file. The selections allowed by the sub-menu "arkmenu", lines 295 - 303, concern deleting backup files created by WORD, EDLIN, or other programs and backing up files on the hard disk to floppies using the program Fastback.

The menu sets two environmental variables that the batch file, ARK.BAT, Table III, uses to determine whether to delete unneeded files or to back up files on the hard disk to floppies. The environment variables (archive and erase) are used as flags by the batch file to select routines within the batch file to execute. The variables are cleared before exiting the batch file with lines 79 and 80, Table III. The menu will issue three command lines; two to set the variables and one to call the batch file. For example:

```
SET ERASE=YES
SET ARCHIVE=NO
ARK
```

Within the batch file, the environmental variable is identified by placing a percent sign, "%", before and after its name. They can be tested and used for substitutions just like command line parameters (%1, %2, etc.).

If you are using DOS 2.x, you may find you will run out of environment space, as it is limited to about 200 bytes. If so, you will get the error message "Out of Environment Space" when ARK.BAT attempts to set its flags. With DOS 3.1, you can increase the environment space to its maximum of 992 bytes by using the shell command on line 1 of the CONFIG.SYS file, Table IV. For DOS 3.2, change "e:62" to "e:<bytes>", where <bytes> is the size environment desired in bytes (minimum 160, maximum 32768).

Another difference between DOS 2.x and 3.x will concern you if your hard disk is 20M bytes or more. DOS 2.x changes the size of the clusters depending upon the size of the partition in use (not the disk size).

Table III: ARK.BAT File

```
1.        echo off
2.        cls
3.        c:
4.        cd \
5.        IF "%erase%"=="YES" goto RM_BAK
6.        IF "%erase%"=="NO" goto CHECK_ARK
7.        IF "%erase%"=="" goto BAD_END
8.        IF "%archive%"=="" goto BAD_END
9. :BAD_END
10.       echo      {ESC}[1;31mSorry, no parameter or incorrect parameter
specified{ESC}[m
11.       echo  ^G
12.       goto END2
13. :RM_BAK
14.       rem erase backup files
15.       echo      {ESC}[32mChecking for backup files.{ESC}[m
16.       echo      {ESC}[32mAnswer {ESC}[1;33mY{ESC}[m{ESC}[32m to delete or
{ESC}[1;33mN{ESC}[m{ESC}[32m to keep{ESC}[m
17.       clean *.bak
18.       echo
19.       echo      {ESC}[32mChecking for WORD temporary files.{ESC}[m
20.       echo      {ESC}[32mAnswer {ESC}[1;33mY{ESC}[m{ESC}[32m to delete or
{ESC}[1;33mN{ESC}[m{ESC}[32m to keep{ESC}[m
21.       clean *.tmp
22.       echo
23.       echo      {ESC}[32mChecking for FANCY WORD printer files.{ESC}[m
24.       echo      {ESC}[32mAnswer {ESC}[1;33mY{ESC}[m{ESC}[32m to delete or
{ESC}[1;33mN{ESC}[m{ESC}[32m to keep{ESC}[m
25.       clean fwdoc
26.       echo
27.       echo      {ESC}[32mChecking for PCTOOLS Overlay files.{ESC}[m
28.       echo      {ESC}[32mAnswer {ESC}[1;33mY{ESC}[m{ESC}[32m to delete or
{ESC}[1;33mN{ESC}[m{ESC}[32m to keep{ESC}[m
29.       clean pctools.ovl
30.  :CHECK_ARK
31.       if "%archive%"=="NO" goto END
32.       if "%archive%"=="NEW" goto START_ARK
33.       if "%archive%"=="ALL" goto START_ARK
34.       goto BAD_END
35. :START_ARK
36.       rem archive files
37.       cd\fastback
38.       if "%archive%"=="ALL" goto ALL
39.       rem check to see if all backup routine is called for
40.       cls
41.       echo {ESC}[1;33mThis program will now make an archive copy of all
{ESC}[m{ESC}[1;34mchanged{ESC}[m{ESC}[1;33m files.{ESC}[m
42.       rem start up for changed files backup
43.       echo
44.       echo {ESC}[1;33mMake sure you have the backup disk set ready.{ESC}[m
45.       echo
46.       echo {ESC}[1;33mThe program will ask for one by number.{ESC}[m
47.       echo ^G
48.       pause
49.       if exist fastback.cat goto safe
50.       rem if no catalog exists then a complete backup is needed
51.       cls
52.       echo ^G{ESC}[5;1;33;41mNo Backup Catalog exists. A complete backup
will occur.{ESC}[m
53.       echo
54.       echo {ESC}[1;33mPress CTRL-BREAK to cancel, or{ESC}[m
55.       echo
56.       echo {ESC}[1;33mhave a new set of backup disks (about 40) ready.
{ESC}[m
57.       echo ^G
58.       pause
59.       goto COPY
60. :ALL
61.       cls
62.       echo {ESC}[1;33mBe sure you have a new set of backup disks (about 40)
ready.{ESC}[m
63.       rem start up for all files backup
64.       echo  ^G
65.       pause
66. :COPY
67.       cd \fastback
68.       fastback c: \ Y *.* N
69.       rem command to backup all
70.       pause
71.       goto END
72. :SAFE
73.       fastback @\fb.cmd
74.       rem uses command file for backup of changed files
75.       rem command file should be in root
76.       pause
77. :END
78.       rem clear flags
79.       set archive=
80.       set erase=
81.       cd \
82.       help
83. :END2
```

Table IV: CONFIG.SYS File

```
1.   shell=command.com /p /e:62
2.   files=20
3.   buffers=20
4.   device=\BIN\ansi.sys
5.   device=\MOUSE1\mouse.sys
```

Table V: AUTOEXEC.BAT File

```
1.   echo off
2.   cls
3.   PATH=c:\BATCH;c:\BIN;c:\WORD;c:\LIGHT;c:\MOUSE1;c:\FW;c:\SK;c:\
4.   prompt $e[s$e[1;67H$e[32m$d$e[2;67H$t$h$h$h$e[u$e[1;33;41m$p$g$e[m
5.   rdclock
6.   help
```

Table VI: HELP.BAT File

```
1.   echo off
2.   c:
3.   cd \light
4.   envi h
5.   cd \
6.   echo
7.   menu \mousel\new_menu
8.   echo
9.   echo          {ESC}[1;34mCLICK A MOUSE BUTTON{ESC}[m
10.  echo
```

Conclusion

The mouse menu system was developed to fill a need and as a learning aid. With a PC at home and another at work being used by people with minimum DOS savvy, the menu has been very helpful. Developing the menu and the associated batch files helped my understanding of DOS' inner workings.

The cluster size sets the minimum space that a file can use on the disk. The smaller the cluster size, the greater the efficiency of file storage on the disk, but the speed of file lookup is reduced. On a floppy, the cluster size is 1K bytes or two sectors. So a 25 byte batch file actually takes up 1K bytes of space on the disk. For a partition size (not disk size) under 16M bytes, DOS 2.x uses a cluster size of 4K bytes or 8 sectors. However, if you exceed the 16M bytes partition size, DOS increases the cluster size to 8K bytes (16 sectors). DOS 3.1 uses a 2K byte cluster size for a partition larger than 16M bytes. That same 25 byte batch file on a 20M byte Winchester using DOS 2.x will take 8K bytes of space.

Consider a 20M byte Winchester with 1000 files on it. By reducing the cluster size to 2K bytes from 8K bytes and probably freeing 6K bytes of the last cluster per file would release up to 6M bytes of space (6K bytes times 1000 files) for additional files.

Deletion of files by ark.bat is handled by the utility clean.exe. It will search your entire hard disk for whatever filespec you show. For example, "clean *.bak" will search for all files on the drive with an extension of "bak". As each file is found the file name is displayed, including full path name, and you are prompted to respond Y to delete or N to keep. After all files meeting the filespec have been found, the total number of deleted files is indicated along with the number of bytes that were freed by their deletion.

This utility appeared in Volume 1, Number 1 of PCLIFE(2), a magazine furnished on disk. It has been uploaded to the Heath Users' Group Bulletin Board. Details on accessing the bulletin board can be found elsewhere in REMark. If you are unable to access the HUGBB and would like a copy of this utility, send a formatted disk along with a prepaid mailer and I will furnish you a copy. The utility is Copyright 1986 by Microstar Graphics, Ltd. and furnished with their permission. All Rights Are Reserved.

Table VII: Color Combinations

Foreground	Background	Color Code	Useable?
blue	black	1	fair
green	black	2	yes
cyan	black	3	yes
red	black	4	no
magenta	black	5	fair
brown	black	6	yes
white	black	7	yes
gray	black	8	fair
light blue	black	9	yes
light green	black	10	yes
light cyan	black	11	yes
light red	black	12	yes
light magenta	black	13	yes
yellow	black	14	yes
bold white	black	15	yes
black	blue	16	no
green	blue	18	yes
cyan	blue	19	yes
red	blue	20	fair
magenta	blue	21	fair
brown	blue	22	yes
white	blue	23	yes
gray	blue	24	yes
light blue	blue	25	yes
light green	blue	26	yes
light cyan	blue	27	fair
light red	blue	28	yes
light magenta	blue	29	yes
yellow	blue	30	yes
bold white	blue	31	fair
black	green	32	yes
blue	green	33	yes
cyan	green	35	no
red	green	36	yes
magenta	green	37	yes
brown	green	38	fair
white	green	39	no
gray	green	40	fair
light blue	green	41	fair
light green	green	42	poor
light cyan	green	43	fair
light red	green	44	fair
light magenta	green	45	poor
yellow	green	46	fair
bold white	green	47	yes
black	cyan	48	yes
blue	cyan	49	yes
green	cyan	50	no
red	cyan	52	yes
magenta	cyan	53	yes
brown	cyan	54	fair
white	cyan	55	no
gray	cyan	56	yes
light blue	cyan	57	yes
light green	cyan	58	fair
light cyan	cyan	59	fair
light red	cyan	60	fair
light magenta	cyan	61	poor
yellow	cyan	62	yes

bold white	cyan	63	yes
black	red	64	poor
blue	red	65	yes
green	red	66	yes
cyan	red	67	yes
magenta	red	69	no
brown	red	70	fair
white	red	71	yes
gray	red	72	poor
light blue	red	73	yes
light green	red	74	yes
light cyan	red	75	yes
light red	red	76	poor
light magenta	red	77	fair
yellow	red	78	yes
bold white	red	79	yes
black	magenta	80	poor
blue	magenta	81	fair
green	magenta	82	yes
cyan	magenta	83	yes
red	magenta	84	no
brown	magenta	86	fair
white	magenta	87	yes
gray	magenta	88	poor
light blue	magenta	89	fair
light green	magenta	90	yes
light cyan	magenta	91	yes
light red	magenta	92	fair
light magenta	magenta	93	fair
yellow	magenta	94	yes
bold white	magenta	95	yes
black	brown	96	yes
blue	brown	97	yes
green	brown	98	yes
cyan	brown	99	yes
red	brown	100	yes
magenta	brown	101	yes
white	brown	103	yes
gray	brown	104	no
light blue	brown	105	poor
light green	brown	106	yes
light cyan	brown	107	yes
light red	brown	108	no
light magenta	brown	109	fair
yellow	brown	110	fair
bold white	brown	111	yes
black	white	112	yes
blue	white	113	yes
green	white	114	no
cyan	white	115	no
red	white	116	yes
magenta	white	117	yes
brown	white	118	yes
gray	white	120	yes
light blue	white	121	yes
light green	white	122	fair
light cyan	white	123	yes
light red	white	124	yes
light magenta	white	125	poor
yellow	white	126	yes
bold white	white	127	yes

(1) Note: There is a bug in the mouse driver that will occasionally cause the mouse to lose contact with the computer. If you click a button and the menu does not appear, typing "help <CR>" to re-install the menu will usually lead it out of the maze. Disconnecting and reconnecting the cable will also work. According to Microsoft this problem with the serial mouse, "is scheduled to be fixed in an upcoming maintenance release of the mouse software".

(2) Available from PC LIFE, 1201 E. Fayette St., Syracuse, NY 13210, 1-800-448-5523; $29.95 for 6 issues (one year). *

EXPLORE
NEW WORLDS
WITH
HUG
GAME
SOFTWARE

C__Power

Part 7

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This issue of REMark will offer the reader a recap of the preceding articles on C__ POWER, as well as the source code for "HEXOUT", a troubleshooting utility. We will touch on some of the more interesting aspects of random records in "C". Numerous references will be made to code fragments extracted from previous "C__ Power" articles.

One aspect of programming in "C", which is not unique to random records, is the method used to input characters. We found that when an array of characters is declared, the dimensions become part of the declaration. We also found that "C" is very unforgiving of overrunning the boundaries defined in the declaration. Inputting an eleven character string into a space reserved for ten characters will cause the program to go berserk, with unpredictable results. There are a number of methods of combatting this problem, but the most successful is preventing the occurrence from happening by using an input routine such as gofor(string,length), which we developed in "C__Power — Part 1". This has the effect of making the character input foolproof. Another factor worth mentioning is the necessity of terminating all string input with the '\0' character. A requirement that must be met by any function that you may write for character input. However, with the addition of "gofor" to your "C" library of functions, you will probably not need additional input routines.

Most high level computer languages allow the programmer to incorporate machine language routines within a program, but in "C" (C/80, in particular), it is quite easy since the source code is first turned into Assembly language before compilation into machine language; thus allowing the writing of routines in Assembly language and subsequent insertion into the "C" source code, a very powerful feature. We have already seen one such example in Part 1 of this series and a much larger, more sophisticated example, accompanies this article. Ultimately, this means that you can accomplish anything in "C" that can be done in Assembly language, leading to very fast, tight programs that use a minimum of memory, ideal for the CP/M environment.

An aesthetically pleasing display is a necessity in any program developed for eventual commercial applications and certainly is an asset whatever the user target. The locate (row,col) function, developed in "C__ Power — Part 1", was used extensively throughout our program example to enhance output and clarify user input. The use of a prompt followed by a series of underline characters, indicating the number of characters expected, goes a long way toward user friendliness. The implementation of this type of display is made possible through the use of our new function.

In "C__Power — Part 2", we utilized one of the decision making functions in "C", the "case" statement in combination with a "do while" loop, to enable a menu selection, thereby eliminating a number of goto's, a much more "elegant" solution than afforded by BASIC. Now we are beginning to see why "C" lends itself to structured programming, enabling the reader to follow the logic in a much more concise way.

Some new users of "C" complain about having to declare all the variables at the beginning of the program, a requirement that actually does much to enhance the reading and understanding of a program, self documentation if you will. Another factor which contributes to ease of understanding is the use of names rather than one or two characters to represent a variable. The variable "city" does much more for self documentation than "$C". Just one more reason that "C" has become a very popular language among ardent programmers. Let me add that "C" is much like Pascall in its modular style and structured code. Quite an endorsement in itself.

In Part 3 of our series on "C__Power", we developed an input module that used most of our previously created functions in an effort to enhance the data input module for the example program. A little extra effort is required to implement such a routine, but the end result is an improved, nearly "bullet proof" program segment that does much toward making life easier

for the end user. Here, at the end of the input module, the reader was introduced to writing random records. We found that the "fprintf" function did much the same job as the field routine from BASIC. Giving us greater freedom in one area, while requiring more "housekeeping" in the other. The housekeeping mentioned is symptomatic of random records under "C", but is readily accomplished provided the programmer does not get careless. Anything less than meticulous attention to detail in this area will result in a resounding program crash, reverberating around your work area for hours (maybe it's just the exclamations that do all the reverberating)!

Those of you who have followed this series from its inception know about the source code included with C/80. Being able to modify and add to existing library routines is most certainly one of the reasons why C/80 has become so popular. This feature was utilized in "C_Power — Part 4" when we modified the "index" function to provide "jindex", a routine that employs a "floating" reference when searching for a substring within a larger string. The source code contained in "stdlib.c" provided, not only the logic, but also the nucleus for the "jindex" function. Another benefit derived from the examination and subsequent modifying of these library routines is the acquisition of good programming skills. Ultimately, the success of this program was dependent on routines which are now part of my "C" function library, some were created for use in this program and added to the library, others were modified to fit the job at hand.

Part 5 of this series touched on a rather unique aspect of "C", that of "opening" the printer before sending data in that direction. Merely a bit of strange terminology used in "C" protocol to set up a communications link with the printer. A result of this convention is that the printer is treated as just another file while making a contribution toward increased portability. Remember, "C" started life as a systems language with little or no need to communicate with a printer.

One benefit of this protocol is that after opening the printer, we can send data to it using the same routines as when sending data to any other file, possibly resulting in one routine which would otherwise call for two or more. Conceivably, a good area for experimentation by the reader. The benefit: tighter code, faster execution.

Another area for experimentation lies in the possible substitution of a different sort algorithm for use by this program. I was quite happy with the speed attained by the sort routine when dealing with a fairly small database, but admittedly did not explore to any great extent more sophisticated sorts. I've used this same program, with appropriate changes, to store membership data in a local shooting club. The program was modified to run under MS-DOS on a PC clone (Heath H-148, Winchester 20 mb hard disk). With a database that is currently approximately one hundred and eighty records, the sort executes within a low of ten seconds and a high of forty (excluding subsequent disk write operations). The execution time depends on the order of the database before the sort is initiated. I find this to be quite satisfactory for the case mentioned, however, the disk write operation which follows the actual sort is ripe for modification; taking, what I consider to be, an inordinate amount of time.

O.K., I promised you the code for a troubleshooting utility which helped me enormously when I was developing the database program that we have been studying. There is really no need for a utility such as this if the programmer makes no mistakes, either in his application of logic or in the implementation of it. However, such is not the case with most of us mortals and we need all the help we can get. When this utility is included in the program through the use of an include statement, all the programmer needs to do is add the statement hexout() to an appropriate breakpoint and then use the routine to examine the memory locations involved. I used this utility extensively when developing the routine for reading the name/zip/record number strings into memory in our program example, thereby making a significant contribution to the ease of program development.

Now, very carefully, enter the code for "Hexout", making sure you do not include any typos. Any mistakes that you make here will have some rather serious consequences, since most of you will not be accomplished programmers in Assembly language, resulting in a rather protracted troubleshooting session. Thankfully, there is an easy way to test the results of your keyboard input. The routine may be made into a standalone program by merely incorporating a "main" statement below the code you have just entered. In capsule form, your test program should look like this:

```
hexout()
{
#asm
body of routine from this article
#endasm
}
main()
{
hexout();
}
```

When testing, or later using this utility for troubleshooting, the program will display a short message. You will be asked for a "^" character followed by the address you wish to examine. Please be sure that you first enter a RETURN (as instructed) before actual address input. Hexout will subsequently display the contents of the address input, as well as the next 351 (decimal) memory cells. Use the same procedure (excluding the first RETURN) to examine as much or as little of the computer's memory as desired. There is no conversion of numeric input so be sure that you enter the desired address in Hexidecimal. For those of you who are not familiar with CP/M conventions, the starting address of your program will be 100 (hex). Global variables will be found near the beginning of the program code so you may want to declare the subject of your search global. A ploy that could result in fewer iterations of Hexout. As stated before, this routine comes to you through the courtesy of Sams Publications. More specifically, "Soul of CP/M" by Mitchell Waite and Robert Lafore. The modifications to the program which is called "Hexdump" in their book come to you through the courtesy of yours truly. Incidentally, this is an excellent book for anyone desiring a more comprehensive knowledge of Assembly language.

You may find another problem when attempting to use "Hexout" in determining the actual address to examine. I have no quick and easy answers for address identification. There are two things you can do to make this job a bit easier. First, load the target program from "DDT" which will then display the size of your creation in bytes, starting at 100 (hex). Then, exit "DDT" and run the program. Enter a series of "@" characters in the area you are attempting to identify, making sure you have inserted "hexout()" in a suitable breakpoint following the data entry module. Now you can use hexout to search the entire memory area where your program resides, looking for the series of "@" characters. When your patience is rewarded, use the corresponding address in the left column of the display and interpolation to arrive at the location of your string. Eureka, a window into the computer's memory.

You have just acquired a very useful tool that can be used to enhance program development within the confines of "C" and 8080 CP/M. Enjoy.

Until very recently, I have confined my programming efforts almost entirely to the CP/M environment. I took the "who needs it" attitude toward MS-DOS. Some would probably compare my attitude to that of the ostrich. Now I'm afraid I have a confession to make to the readers of this series. I have been involved with writing some software to run under MS-DOS (horrors!).

My first move was to convert the program example from this series to run under MS-DOS by changing the library routines and utilize a different compiler (16-bit). I was soon convinced that the move to the 16-bit environment was even more traumatic than I had anticipated. I encountered many obstacles, not the least of which was the time involved in compilation of the source code and the subsequent linking. I wound up spending most of my time in front of the computer waiting for it to finish the production of an executable file (or so it seemed). Often this would produce yet another version that needed still more alterations in the source code to do the same job that the CP/M version did with alacrity. Needless to say I was a little less than enchanted with the new environment. Perseverance finally paid off and I was able to convert our example program to run on an IBM PC compatible (Heath H-148 described earlier), but that is not the point to this little dissertation.

All the problems encountered with the conversion of the above program prompted me to find another vehicle for program development. As you may have guessed, I do a lot of my work with commercial applications in mind and time is often a compelling factor. Suffice it to say, my search for another vehicle led me to try Turbo Pascal even though I had NO experience with that language.

No, I'm not advocating that everyone scrap their "C" compilers and make the change to Pascal, but I did find something compellingly attractive about Turbo Pascal. The format of the compiler made program creation much easier. It has its own editor enabling the user to switch from the input mode to the test mode in seconds. The compile time is absolutely incredible, taking, by rough estimate, less than a tenth of the time of my old standby "C" compiler to produce an executable program. Furthermore, I was able to convert an existing program from its "C" source code and have it running under Pascal in about a week. This with no previous experience in the new language. Borland has done a terrific job with Pascal, but the real news is that they are about to release their own "C" compiler.

I have asked Borland to send me their "Turbo C" as soon as possible, and I will proceed to give it an objective test upon its arrival. The results of my tests will be the subject of the next "C_Power" article, contingent upon the timely release of Borland's product. I expect the quality of their new release to be comparable with other Borland products I've used and if this is the case, we will have access to a reasonably priced compiler that will do a superlative job. As you can tell by the tone of this message, I'm impressed by the quality of Turbo Pascal and very anxious to get my hands on the new "C" development tool.

I remain quite loyal to C/80 when writing programs to run under the CP/M umbrella, finding the 8-bit compiler a very good value as stated previously. My dissatisfaction was with a 16-bit compiler, intended for use with MS-DOS machines including PCs or compatibles. I will let the origin of this tool remain anonymous, preferring to say nothing about a product unless it is positive.

I intend to continue the current series of articles about "C_Power", exploring other facets of programming with this very powerful tool. Future articles will likely present a treatise on structures and linked lists. I've had some difficulty in understanding these concepts, so maybe we could learn together. A possible target program would be the building of an editor from the ground up. I expect to broaden the base of upcoming presentations by including a function library suitable for use on the PC and its compatibles, thus enabling the use of our example program and its successors on MS-DOS machines. I would appreciate any reader feedback on this or any other subject relative to programming in "C".

"C" you soon.

```
hexout()
{
#asm
BOOT    EQU     0
BDOS    EQU     BOOT+5
CIN     EQU     1
CR      EQU     0DH
LF      EQU     0AH
ESC     EQU     27D
RCONF   EQU     1           ;READ CONSOLE INPUT
WCONF   EQU     2           ;WRITE CONSOLE OUTPUT
CPRINT  EQU     9           ;ENTRY FOR CONSOLE PRINT
DIRECT  EQU     6           ;DIRECT CONSOLE I/O
CONOUT  EQU     02H
CONIN   EQU     01H
;GET ADDRESS FROM USER & INITIALIZE COUNTS
        LXI     H,0
        DAD     SP
        SHLD    SYSSP
        LXI     SP,STKTOP
        CALL    CLS
        LXI     D,MESS
        CALL    STRING
        CALL    DIRIN
        CALL    CLS
INLUP:  CALL    DIRIN
        CALL    PCHAR
        CPI     '^'
        CZ      HEXDUMP
        CPI     '*'
        JZ      EXIT
        JMP     INLUP
HEXDUMP CALL    HEXIBIN
        MOV     A,L
        ANI     0F0H        ;MASK
        MOV     L,A
        SHLD    ADDR
        MVI     C,16H
        CALL    PCRLF
;PRINT ADDRESS AND START NEW LINE
NULINE: MVI     B,16D
        CALL    PCRLF
        CALL    PHEX
        CALL    PSPAC
        CALL    PSPAC
;PRINT THE BYTES F0R THIS LINE
NUBYTE: MOV     D,M
        CALL    PBYTE
        CALL    PSPAC
        INX     H
        DCR     B
        JNZ     NUBYTE
        CALL    ASCII
        DCR     C
        JNZ     NULINE
        CALL    PCRLF
        RET
PCRLF:  MVI     A,0DH
        CALL    PCHAR
```

```
        MVI     A,0AH
        CALL    PCHAR
        RET
PSPAC:  MVI     A,020H
        CALL    PCHAR
        RET
PHEX:   MOV     D,H
        CALL    PBYTE
        MOV     D,L
        CALL    PBYTE
        RET
PBYTE:  MOV     A,D
        CALL    PRINT1
        MOV     A,D
        CALL    PRINT2
        RET
PRINT1: RLC
        RLC
        RLC
        RLC
PRINT2: ANI     0FH
        ADI     030H
        CPI     03AH
        JC      PDIG
        ADI     07H
PDIG:   CALL    PCHAR
        RET
PCHAR:  PUSH PSW
        PUSH H
        PUSH B
        PUSH D
        MVI     C,CONOUT
        MOV     E,A
        CALL    BDOS
        POP D
        POP B
        POP H
        POP PSW
        RET
HEXIBIN LXI     H,0
NEWCH:  PUSH    H
        MVI     C,CONIN
        CALL    BDOS
        POP     H
        SUI     030H
        RM
        CPI     10D
        JM      ADDTO
        SUI     07H
        CPI     0AH
        RM
        CPI     010H
        RP
ADDTO:  MOV     D,A
        MVI     C,4
SHIFT:  MOV     A,L
        RAL
        MOV     L,A
        MOV     A,H
        RAL
        MOV     H,A
        DCR     C
        JNZ     SHIFT
        MOV     A,L
        ANI     0F0H
        ORA     D
        MOV     L,A
        JMP     NEWCH

ASCII:  PUSH    B
        MVI     B,16
        LHLD    ADDR
        CALL    PSPAC
NEXTBYT MOV     A,M
        CPI     021H
        JC      PERIOD
        CPI     07EH
        JNC     PERIOD
        CALL    PCHAR
MOR:    INX     H
        DCR     B
        SHLD    ADDR
        JNZ     NEXTBYT
        POP     B
        RET
PERIOD: MVI     A,'.'
        CALL    PCHAR
        JMP     MOR
        RET
DIRIN:  PUSH B
        PUSH H
NXTRY:  MVI     E,0FFH
        MVI     C,DIRECT
        CALL    BDOS
        CPI     0
        JZ      NXTRY
        POP H
        POP B
        RET
        JMP     INLUP
STRING: PUSH B
        PUSH D
        PUSH H
        MVI     C,9
        CALL    BDOS
        POP H
        POP D
        POP B
        RET
        CLS     LXID,CL
        CALL    STRING
        RET

EXIT:   LHLD    SYSSP
        SPHL
        RET
MESS    DB      'Enter a "^" and the starting address you'
        DB      ' wish to dump',0DH,0AH
        DB      'Enter a "*" to exit to operating system',0DH,0AH
        DB      CR,LF,'Press <RETURN> to continue',CR,LF,'$'
CL      DB      ESC,'E$'
SYSSP   DS      2
LINE    DS      1
        DS      64
STKTOP  DS      2
CCOUNT  DS      1
ADDR    DS      2
BUF1    DS      1
        END
#endasm
}
```

*

Micronics Technology

SPEED MODS - H/Z 150/160 & H/Z 89
- H 89 Software Select 2/4 MHz. No Trace Curs! Z90A and Software Included.
- H150/160 Software Select 4.77/6.67 MHz Hardware Reset. Satisfaction Guaranteed.
- Prices: Assembled $34.95, Kit $24.95

H/Z 89 20 Meg Winchester ONLY $595
Boots from Hard Disk. ST225. For H150 - $350

SOFTWARE for H/Z 150/160, 100, 89, 8!
Perfect Funds $29.95 Perfect Money $19.95
Paycheck $39.95 Perfect Printer $19.95
Turbo Pascal $69 ** SMARTWATCH for 150 $39

Micronics Technology (904)-897-4257
449 Barbados Way, Niceville, FL 32578
Checks, VISA, MC. Shipping $2. Hard Disk $15

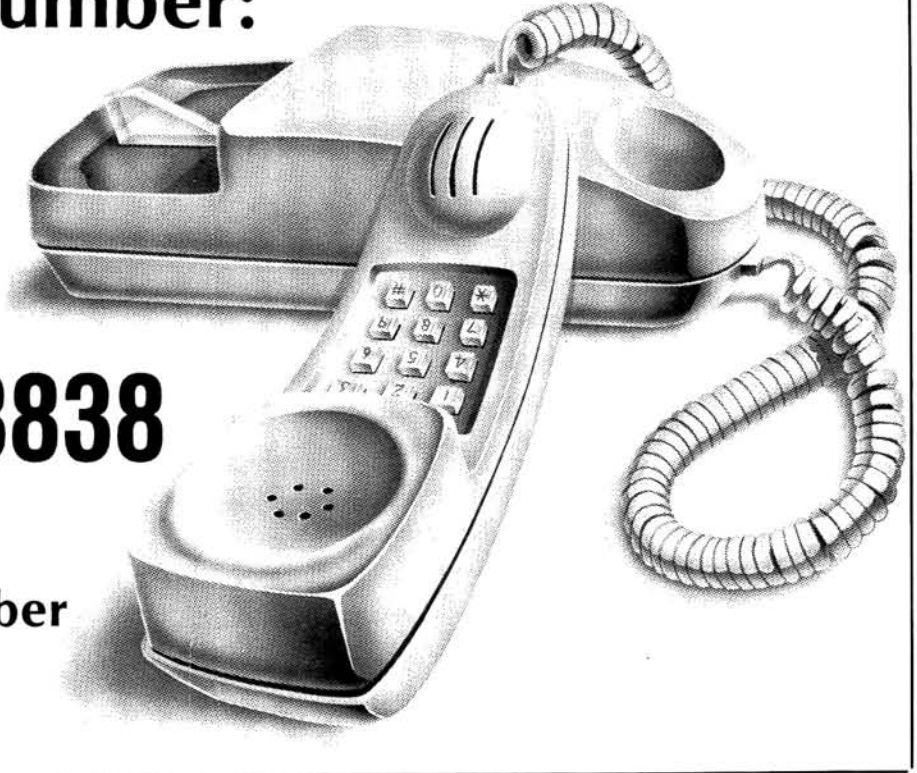
Starting September 1, 1987

This will be for all HUG product orders and correspondence.

HUG's New Address:

Heath/Zenith Users' Group
P.O. Box 217
Benton Harbor, MI 49022-0217

And Phone Number:



HUG Product Orders Only

(616) 982-3838

(616) 982-3463
Main HUG Info number

NEW PRICES!
NEW PRODUCTS!
NO SURCHARGES
SERVICE & SUPPORT

DYNAMIC RAM MEMORY

Includes Installation Instructions. **ONE YEAR WARRANTY.** Prices current 7/1/87 and subject to change; call toll free for current prices.

QUANTITY PRICES AVAILABLE ON REQUEST.

4164-150 : 64K 150 ns. DRAM..... **$ 1.40**
41256-150: 256K 150 ns. DRAM..... **$ 3.28**
41256-120: 256K 120 ns. DRAM..... **$ 3.55**
41256-100: 256K 100 ns. DRAM..... **$ 4.40**

AT COMPATIBLE MEMORY UPGRADES

All Memory Expansion Cards come with Hardware, Installation Instructions, LIM/EMS Software, and a **ONE YEAR WARRANTY.** Fully populated boards available from 2MB. to 16MB., for systems up to 16MHz. The following is a sample:

2 MB Memory Expansion Board: Fully populated, expandable to 4 MB. with optional 2 MB. Daughter Board. Compatible with systems up to 8 MHz ..... **$ 650.00**
Compatible with systems up to 12 MHz ..... **$ 725.00**
2 MB. Daughter Board..... **$ 50.00**

4 MB. Memory Expansion Board: Fully populated. Requires one slot only!
Compatible with systems up to 8 MHz..... **$ 725.00**
Compatible with systems up to 12 MHz ..... **$ 799.00**

6 MB. Memory Expansion Board: Fully populated with 1 MB. DRAM's.
Compatible with systems up to 16 MHz **$1650.00**

PC COMPATIBLE UPGRADE ACCESSORIES

All AST Memory Expansion Cards come with Hardware, Installation Instructions, DesqView and SuperPak Software, and a **ONE YEAR WARRANTY.**

AST RAMPAGE: EMS/EEMS. Expandable up to 2 MB. 64K Memory Installed..... **$ 269.00**

AST ADVANTAGE: EMS/EEMS, expandable to 1.5 MB. One Serial and One Parallel Port. 128K Installed ..... **$ 399.00**

FBE RESEARCH's SMARTWATCH: No Slot Clock/Calendar, 10-year lithium battery. Easy plug-in installation. Includes Installation Instructions, software with source code.
120 DAY WARRANTY..... **$ 44.00**

MICROSPEED'S FAST 88: Speed upgrade for PC's and Compatibles. **RAM Technology** guarantees that it will work in your H/Z 150/160 or PC, PC/XT series computer or your money back! Increases CPU speed up to 8 MHz. Speed is switchable via software or external speed switch module.
Includes Installation Manual, software, and hardware; no CPU included. **ONE YEAR WARRANTY**..... **$ 120.00**
With Optional 8088-2 8 MHz. Processor..... **$ 124.00**
With Optional NEC V20 8 MHz. Processor ..... **$ 135.00**

RAM Technology

All **RAM Technology** products include Hardware, Installation Instructions, and **ONE YEAR REPLACEMENT WARRANTY. No Soldering Required.**

Z-MAX 148: 704K Memory Upgrade for the H/Z 148 ..... **$ 19.95**

Z-MAX 150: 640/704K Memory Upgrade for H/Z 150/160 series computers.
Installs on your existing memory board..... **$ 24.95**

Z-MEG 150: 1.2 MB. Memory Upgrade for H/Z 150/160 series computers. Up to 704K of addressable memory and 512K RAM DISK can be installed on existing memory board. Please specify 640K EGA Compatible or 704K Version when ordering. RAM-DSK software included..... **$ 49.95**

Z-MEG 171: 1 MB. Memory Upgrade for the ZFL-171. Up to 640K of addressable memory and a 360K RAM DISK can be installed on your existing memory board. Software included. Developed jointly by **FBE Research** and **RAM Technology** ..... **$ 89.95**

Z-181 External 5¼" Disk Drive: 360 DS/DD 48 TP Disk Drive mounted in Half Height Cabinet/Power supply for the ZFL-181-92 ..... **$ 199.00**
For ZFL-181-93 or ZWL-183-92..... **$ 219.00**

INTEL PROCESSORS

Includes Installation Instructions. **FIVE YEAR WARRANTY.** Prices current 7/1/87 and subject to change; call toll free for current pricing.

QUANTITY PRICING AVAILABLE ON REQUEST.

8088-2 : 8 MHZ. Processor..... **$ 8.95**
8087-3 : 5 MHz. Math Co-Processor ..... **$ 119.00**
8087-2 : 8 MHz. Math Co-Processor ..... **$ 169.00**
8087-1 : 10 MHz. Math Co-Processor ..... **$ 225.00**
80287-6 : 6 MHz. Math Co-Processor ..... **$ 195.00**
80287-8 : 8 MHz. Math Co-Processor ..... **$ 269.00**
80287-10: 10 MHz. Math Co-Processor ..... **$ 325.00**
80387-16: 16 MHz. Math Co-Processor ..... **$ 595.00**

NEC V20: 8 MHz. 8088 replacement Microprocessor. Increases CPU efficiency 10-30%. Includes Installation Instructions, **ONE YEAR WARRANTY** ..... **$ 12.95**

CABLES

RAM Technology carries a large selection of quality molded cables in stock. The following is just an example of our product line. All cables come with a **ONE YEAR WARRANTY.** Special orders accepted; call us toll free for a quotation on your cable requirements.

QUANTITY PRICING AVAILABLE ON REQUEST.

Parallel Printer Cable, 6 ft..... **$ 18.50**
Serial Cable, DB25M-DB25F, 1-8 & 20, 9 ft..... **$ 15.50**
Serial Cable, DB25M-DB25F, 1-25, 9 ft..... **$ 18.50**
RS-232 Gender Changer, Specify DB25M-M or DB25F-F ..... **$ 15.50**
AT Serial Adaptor Cable (DB9-DB25), 2 ft ..... **$ 12.95**
Keyboard Extension Cable, 6 ft ..... **$ 9.50**
RGB/TTL Monitor Extension Cable, 6 ft ..... **$ 14.50**

Need a cable for your APPLE or MACINTOSH? CALL US!

DISKETTES

RAM Technology carries a full line of quality diskettes by NASHUA, SONY, MAXELL, 3M and other major manufacturers. Call us toll free for pricing on your diskette needs. Bulk diskettes available; call toll free for price and availability.

QUANTITY PRICING AVAILABLE ON REQUEST

NASHUA DISKETTES

Packaged in Boxes of 10. **LIFETIME REPLACEMENT WARRANTY.**

MD2D: DS/DD 48 TPI Soft Sector, 5¼"..... **$ 8.95**
MD210D: DS/DD 48 TPI Hard Sector, 5¼" ..... **$ 9.95**
MD2F: DS/DD 96 TP Soft Sector, 5¼" ..... **$ 14.95**
MD210F: DS/DD 96 TPI Hard Sector, 5¼" ..... **$ 15.95**
MD2HD: DS/High Density Soft Sector (AT), 5¼"..... **$ 21.95**
MF2: DS/DD 135 TPI, 3½"..... **$ 20.95**
FD2D: DS/DD Soft Sector, 8"..... **$ 20.95**

HUGCON SPECIAL
Seagate ST-251 Hard Disk Drive
40 Ms. Average Access Time
With AT Rails and Cable
$499.00
Offer Expires August 31, 1987

U.S. ROBOTICS MODEMS

Sportster, 1200 Baud External ..... **$ 129.00**
Password, 1200 Baud External ..... **$ 219.00**
Courier 1200, External ..... **$ 235.00**
Microlink 1200, Internal, with Telpac Software..... **$ 219.00**
Varmodem 1200, Internal ..... **$ 119.00**
Courier 2400E, External..... **$ 475.00**
Microlink 2400, Internal, with Telpac Software..... **$ 435.00**
Varmodem 2400, Internal ..... **$ 205.00**
Courier HST 9600, External ..... **$ 785.00**

Z100 UPGRADE ACCESSORIES

C.D.R. ZS-100, Speed Upgrade for 4.7 MHz. Z-100's.
Easily installed, no soldering required ..... **$ 44.95**

FBE RESEARCH ZMF-100a: Install up to 768K on old Motherboard Z-100's, #181-4917 or lower; no soldering required ..... **$ 59.95**

Z-MAX 100 768K Memory upgrade for new Motherboard Z-100's, #181-4918 or greater; simple plug-in installation, no soldering required ..... **$ 59.95**

UCI EASYRAM plug-in Memory board for Z-100 w/192K-768K. Expandable to 2 MB. 2/256K DRAM. With 0K ..... **$ 299.00**
RAMDRIVE Software ..... **$ 45.00**
With RAMDRIVE Software and 1 MB. RAM ..... **$ 459.00**
With RAMDRIVE Software and 2 MB. RAM ..... **$ 575.00**

Z-100Winchester Disk Drive Controllers: Includes Installation Instructions, Cables, Hardware, Software and **ONE YEAR REPLACEMENT WARRANTY**

C.D.R. 317 Controller (Z-217 Compatible) ..... **$ 550.00**
U.C.I. EASYWIN S-100 Interface ..... **$ 245.00**
With Winchester Controller ..... **$ 355.00**
External Hard Disk Sub-system: Cabinet and Cables, Add ..... **$ 139.00**

For a complete selection of Hard Disk Drives, please see HARD DISK section. Or Call Toll Free for assistance!

Z-100 1.2 MB External Floppy System: Utilize your Z-100's built-in 8" controller for high capacity storage and back-up. **ONE YEAR REPLACEMENT WARRANTY**
DRSZ101-12: One 5¼" 1.2 MB High Density Floppy Disk Drive, cables, external power supply and cabinet, and instructions ..... **$ 249.00**
DRSZ102-12: Two 5¼" 1.2 MB High Density Floppy Disk Drive system ..... **$ 439.00**

HARD DISK DRIVES & CONTROLLERS

All Hard Disk Drives and Controllers come with installation Instructions and a **ONE YEAR REPLACEMENT WARRANTY.** System Orders (hard disk & controller) come with Cables and Hardware. All controllers capable of handling two drives unless otherwise specified.

OMTI CONTROLLERS

5520: PC Half Card ..... **$ 105.00**
5527: PC RLL Half Card ..... **$ 145.00**

WESTERN DIGITAL CONTROLLERS

WD-1003-WA2: AT Hard Drive and Floppy ..... **$ 210.00**
WD-1003-RA2: AT RLL Hard Drive and Floppy ..... **$ 249.00**
WD-1003-RAH: AT RLL Hard Drive Only ..... **$ 231.00**

MINISCRIBE HARD DISK DRIVES

MS-3438: 30 MB. RLL, 65 ms., Half Height ..... **$ 325.00**
MS-3650: 30 MB., 28 ms., Half Height ..... **$ 480.00**
MS-6085: 71.4 MB. (Formatted), 28 ms., Full Height ..... **$ 990.00**

SEAGATE HARD DISK DRIVES

ST-225: 20MB., 65 ms., Half Height ..... **$ 299.00**
ST-238R: 30MB. RLL, 65 ms., Half Height ..... **$ 360.00**
ST-251R: 44 MB. RLL, 40 ms., Half Height ..... **$ 545.00**
ST-277R: 65 MB. RLL, 40 ms., Half Height ..... **$ 610.00**
ST-4038: 30 MB., 40 ms., Full Height ..... **$ 605.00**
ST-4053: 45 MB., 28 ms., Full Height ..... **$ 715.00**
ST-4096: 80 MB., 28 ms., Full Height ..... **$ 995.00**

HUGCON SPECIAL
Seagate 20 MB. Hard Disk Drive Kit
With OMTI Controller and Cables
$329.00
Offer Expires August 31, 1987

RAM Technology Hard Cards

OLHC-20: 20 MB., Hard Card featuring AUTO-START and AUTO-PARK heads, 65 ms ..... **$ 425.00**
OLHC-30: 30MB Hard Card featuring AUTO-START and AUTO-PARK heads, 65 ms ..... **$ 475.00**

HUGCON SPECIAL
Free Shipping Within the Continental United States on All Purchases During the Month of August

FLOPPY DISK DRIVES

All Disk Drives come with Installation Instructions, hardware and **ONE YEAR REPLACEMENT WARRANTY.**

MITSUBISHI FLOPPY DISK DRIVES

MF501A: 360K, 5¼" Half Height, 48 TPI ..... **$ 115.00**
MF504A: 1.2 MB., 5¼" Half Height, 96 TPI ..... **$ 159.00**

PANASONIC FLOPPY DISK DRIVES

PAN-360: 360K, 5¼" Half Height, 48 TPI ..... **$ 99.00**
PAN-120: 1.2 MB., 5¼" Half Height, 96 TPI ..... **$ 135.00**
PAN-720: 720K, 3½" ..... **$ 110.00**

TOSHIBA

3½" Disk Drive Upgrade: For PC's and Compatibles including all Z-100 PC and Z-200 PC series computers. Maintain compatibility with the new PS/2 and Portable software formats and increase storage capacity to 720K per diskette utilizing your existing floppy disk controller. Includes mounting hardware for 5¼" enclosures. Requires MS-DOS 3.2 or graters. ..... **$ 169.00**

MULTI-PORT SERIAL BOARDS

For applications requiring multiple serial ports, ie. Xenix, Unix, BBS etc. All boards include necessary hardware. Order Drivers Separately. **ONE YEAR WARRANTY.**

DBCOM4S: Four Serial Ports. Compatible with systems up to 16 MHz ..... **$ 409.00**
DBCOM8S: Eight Serial Ports. Compatible with systems up to 16 MHz ..... **$ 640.00**
DBCOM4I: Four Serial Port Intelligent Controller, 80186 Processor, On Board Buffering. Compatible with systems up to 16 MHz ..... **$ 825.00**
DBCOM8I: Eight Serial Port Intelligent Controller, 80186 Processor, On Board Buffering. Compatible with systems up to 16 MHz ..... **$ 995.00**
DBMSDOS: MS-DOS Device Driver ..... **$ 25.00**
DBMDV22: Microport V/286 2.2 Device Driver ..... **$ 35.00**
DBSDV22: SCO Xenix V/286 2.2 Device Driver ..... **$ 35.00**

SOFTWARE

Microport Unix V/286 Version 2.2
Run-Time System (2 User License) ..... **$ 180.00**
Software Development System ..... **$ 225.00**
Text Preparation System ..... **$ 180.00**
Complete System ..... **$ 495.00**
DosMerge 286 ..... **$ 135.00**
Unlimited User License ..... **$ 225.00**

SCO Xenix V/286 Version 2.2
Operating System (14 User License) ..... **$ 465.00**
Software Development System ..... **$ 445.00**
Text Preparation System ..... **$ 155.00**
Complete Xenix System ..... **$ 970.00**

RAM Technology carries a complete line of Software for PC and AT Compatible Systems. We also carry a complete selection of Unix and Xenix Application Software and Languages. Call us toll free for your software requirements or write for our free catalogue.

TERMS

Prices and specifications subject to change. Personal checks held 10 working days; money orders accepted as cash. Please add 2% (minimum $2.50) for shipping. COD orders accepted; cash or cashier's check only. VISA/MC accepted; NO surcharge. Purchase orders accepted from qualified businesses, government agencies, and educational instutitions.

HOURS OF OPERATION: Monday-Friday, 9:00 AM-5:00 PM EST

RAM Technology

427-3 AMHERST STREET, SUITE 265
NASHUA, NEW HAMPSHIRE 03063
ORDER LINE: 1-800-662-0070
INFORMATION: (603) 889-0633

MasterCard

VISA

The following HUG Price List contains a list of all products in the HUG Software Catalog and Software Catalog Update #1. For a detailed abstract of these products, refer to the HUG Software Catalog, Software Catalog Update #1, or previous issues of REMark.

Make the no-hassle connection with your modem today! ***HUGMCP*** doesn't give you long menus to sift through like some modem packages do. With *HUGMCP*, *YOU'RE* always in control, not the software. Order ***HUG P/N 885-3033-37*** today, and see if it isn't the easiest-to-use modem software available. Joe Katz says it was so easy to use, he didn't even need to look at the manual. "It's the only modem software that I use, and I'm in charge of both HUG bulletin boards!" says Jim Buszkiewicz. *HUGMCP* runs on ANY Heath/Zenith computer that's capable of running MS-DOS!

HEPCAT is here! *HEPCAT* is here! *HEPCAT* is here! So what is *HEPCAT*, you may ask? Why it's just another Pat Swayne SUPER-UTILITY. *HEPCAT* is an acronym for *HUG Engineer's and Programmer's CAlculation Tool*. Just what we don't need, another memory resident calculator, right? Wrong! With *HEPCAT*, you can throw away the rest and use the best. *HEPCAT* only uses two partial lines on your screen, and best of all, does NOT cause existing programs to stop executing! That means, while your computer is grinding numbers internally, you can be grinding them externally. Order ***HUG P/N 885-3045-37***.

Can't remember how to use the MS-DOS 'COPY' command? Forget the exact command line format for 'ASGNPART'. Too far to go for the MS-DOS manuals on the shelf on the other side of the room? Why not just type 'HELP' on the keyboard? You say it comes back with "Bad command or file name"? It wouldn't if you had HUG's ***HELP*** program. With *HELP* installed on your hard disk, all you need to do is type 'HELP' for a complete list of MS-DOS commands and transients along with a brief explanation of how each command works, as well as the format for its use. *HELP*, ***HUG P/N 885-8040-37***, works on *ALL* Heath/Zenith computers that run MS-DOS!

HUG Price List

PRODUCT NAME	PART NUMBER	OPERATING SYSTEM	DESCRIPTION	PRICE
H8 — H/Z-89/90				
ACCOUNTING SYSTEM	885-8047-37	CPM	BUSINESS	20.00
ACTION GAMES	885-1220-[37]	CPM	GAME	20.00
ADVENTURE	885-1010	HDOS	GAME	10.00
ASCRITY	885-1238-[37]	CPM	AMATEUR RADIO	20.00
AUTOFILE (Z80 ONLY)	885-1110	HDOS	DBMS	30.00
BHBASIC SUPPORT PACKAGE	885-1119-[37]	HDOS	UTILITY	20.00
CASTLE	885-8032-[37]	HDOS	ENTERTAINMENT	20.00
CHEAPCALC	885-1131-[37]	HDOS	SPREADSHEET	20.00
CHECKOFF	885-8010	HDOS	CHECKBOOK SOFTWARE	25.00
DEVICE DRIVERS	885-1105	HDOS	UTILITY	20.00
DISK UTILITIES	885-1213-[37]	CPM	UTILITY	20.00
DUNGEONS & DRAGONS	885-1093-[37]	HDOS	GAME	20.00
FLOATING POINT PACKAGE	885-1063	HDOS	UTILITY	18.00
GALACTIC WARRIORS	885-8009-[37]	HDOS	GAME	20.00
GALACTIC WARRIORS	885-8009-[37]	CPM	GAME	20.00
GAMES 1	885-1029-[37]	HDOS	GAMES	18.00
HARD SECTOR SUPPORT PACKAGE	885-1121	HDOS	UTILITY	20.00
HDOS PROGRAMMERS HELPER	885-8017	HDOS	UTILITY	16.00
HOME FINANCE	885-1070	HDOS	BUSINESS	18.00
HUG DISK DUPLICATION UTILITIES	885-1217-[37]	CPM	UTILITY	20.00
HUG SOFTWARE CATALOG	885-4500	VARIOUS	PRODUCTS THRU 1982	9.75
HUGMAN & MOVIE ANIMATION	885-1124	HDOS	ENTERTAINMENT	20.00
INFO. SYSTEM AND TEL. & MAIL SYSTEM	885-1108-[37]	HDOS	DBMS	30.00
LOGBOOK	885-1107-[37]	HDOS	AMATEUR RADIO	30.00
MAPLE	885-8005	HDOS	COMMUNICATION	35.00
MAPLE	885-8012-[37]	CPM	COMMUNICATION	35.00
MICRONET CONNECTION	885-1122-[37]	HDOS	COMMUNICATION	20.00
MISCELLANEOUS UTILITIES	885-1089-[37]	HDOS	UTILITY	20.00
MORSE CODE TRANSCEIVER	885-8016	HDOS	AMATEUR RADIO	20.00
MORSE CODE TRANSCEIVER	885-8031-[37]	CPM	AMATEUR RADIO	20.00
PAGE EDITOR	885-1079-[37]	HDOS	UTILITY	25.00
PROGRAMS FOR PRINTERS	885-1082	HDOS	UTILITY	20.00
REMARK VOL 1 ISSUES 1-13	885-4001	N/A	1978 TO DECEMBER 1980	20.00
RUNOFF	885-1025	HDOS	TEXT PROCESSOR	35.00
SCICALC	885-8027	HDOS	UTILITY	20.00
SMALL BUSINESS PACKAGE	885-1071-[37]	HDOS	BUSINESS	75.00
SMALL-C COMPILER	885-1134	HDOS	LANGUAGE	30.00
SOFT SECTOR SUPPORT PACKAGE	885-1127-[37]	HDOS	UTILITY	20.00
STUDENT'S STATISTICS PACKAGE	885-8021	HDOS	EDUCATION	20.00
SUBMIT (Z80 ONLY)	885-8006	HDOS	UTILITY	20.00
TERM & HTOC	885-1207-[37]	CPM	COMMUNICATION & UTILITY	20.00
TINY BASIC COMPILER	885-1132-[37]	HDOS	LANGUAGE	25.00
TINY PASCAL	885-1086-[37]	HDOS	LANGUAGE	20.00
UDUMP	885-8004	HDOS	UTILITY	35.00
UTILITIES	885-1212-[37]	CPM	UTILITY	20.00
UTILITIES BY PS	885-1126	HDOS	UTILITY	20.00
VARIETY PACKAGE	885-1135-[37]	HDOS	UTILITY & GAMES	20.00
VOLUME I	885-1008	N/A	SOFTWARE LISTINGS	9.00
VOLUME II	885-1013	N/A	SOFTWARE LISTINGS	12.00
VOLUME III	885-1015	N/A	SOFTWARE LISTINGS	9.00
VOLUME IV	885-1037	N/A	SOFTWARE LISTINGS	12.00
WATZMAN ROM SOURCE & DOC	885-1221-[37]	CPM	H19 FIRMWARE	30.00
WATZMAN ROM	885-4600	N/A	H19 FIRMWARE	45.00
WHEW UTILITIES	885-1120-[37]	HDOS	UTILITY	20.00
XMET ROBOT X-ASSEMBLER	885-1229-[37]	CPM	UTILITY	20.00
Z80 ASSEMBLER	885-1078-[37]	HDOS	UTILITY	25.00
Z80 DEBUGGING TOOL (ALDT)	885-1116	HDOS	UTILITY	20.00
H8 — H/Z-89/90 — H/Z-100 (Not PC)				
ADVENTURE	885-1222-[37]	CPM	GAME	10.00
BASIC-E	885-1215-[37]	CPM	LANGUAGE	20.00
CASSINO GAMES	885-1227-[37]	CPM	GAME	20.00
CHEAPCALC	885-1233-[37]	CPM	SPREADSHEET	20.00
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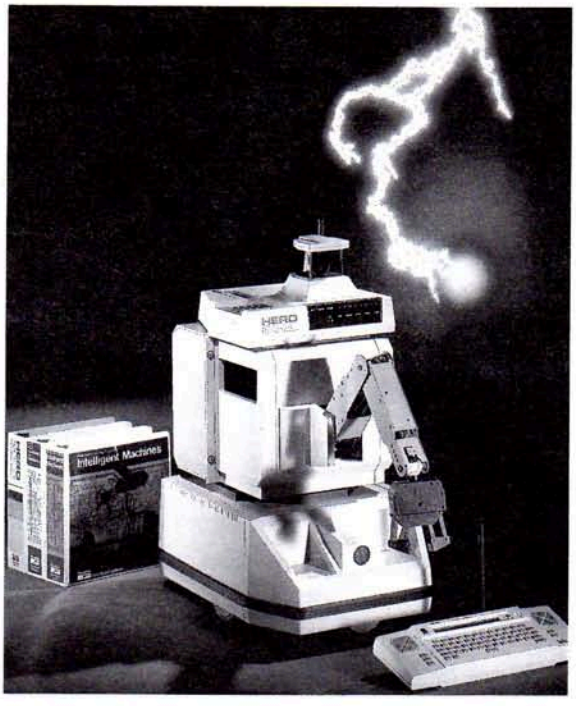

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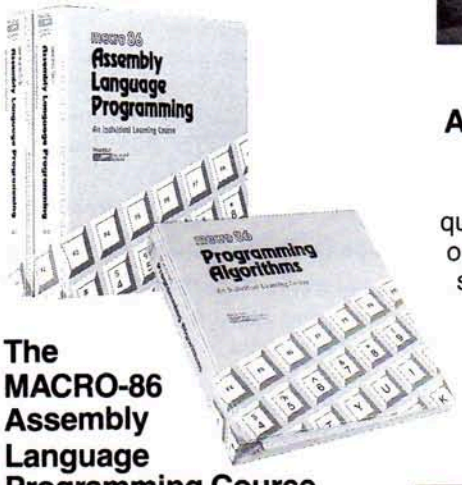

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Running A Bulletin Board System (BBS)

Jerry Furst
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San Antonio, TX 78247

I would hazard to guess that each day, somewhere in this country, Bulletin Boards are going up and coming down. There are as many reasons for taking a bulletin board down as there are for starting one up. The intent of this article is to hopefully give an insider's insight into this wonderful world of tele-communications. And, answer some questions on why bulletin boards go up and down as often as they do. I would particularly like to direct this article to you, the user of BBS's as you ultimately determine the success of a bulletin board. I would also like to direct it to would-be and future SYSOPs to help alleviate some of the frustrations associated with running a BBS.

First, some background...I have been the SYSOP (SYStem OPerator) for the San Antonio Heath Users' Group (SAHUG) since September 1985. I'm proud of the system we run, so I'll mention it now. We are currently running a Z-241 with a 70 Mbyte Winchester drive, 54 Meg of programs for download. We support both CP/M and MS-DOS for a variety of Heath computers (and non-Heath as well) in our download section. We are about to receive our 20,000th caller since the board went up, and currently host nearly 800 users. We typically run 60-65% activity in any 24 hour period, and prime time (5:00 p.m.- Midnight) usually is 85-100%. If this sounds a little chest inflating, it is! We SYSOPs are a proud bunch and I don't know of a quicker way to alienate yourself on a board than to belittle the work the SYSOP has done on it!

This leads me into my first point, the bulletin board's purpose. Running a board for a users group has the purpose built in, it's for the group. But boards that run as an extension of a users group are in the minority. Most boards don't have the support of a users group, but they do have a purpose. I mention this because boards without a purpose fail. If you set it up because it might be fun, or it's a good way to learn more about computers, or just 'because', don't bother posting your phone number around town...the annoying phone calls late at night will get tiresome after the 'fun' has worn off, and you've taken the system down. Don't get me wrong, there are boards that have been set up specifically 'for' fun. That is their purpose, to joke around, tell tall tales, play games, and they are successful at it. Each board takes on it's own personality, and the SYSOP isn't always the one that sets that tone. But, have an initial purpose in mind, and stick to it. Fill a niche that is either lacking, or non-existent in other boards around town. Try to avoid setting up a board that is everyone else's SIG (Special Interest Group). For instance, a programmer's BBS sounds like a good idea, but I see them come and go very quickly. Why? Because most boards have a programmer's conference SIG that users will use. And the old board has been around awhile, why use yours to do what they can do plus some?!

The second point I want to bring up is software. The initial choice of software is critical if you are just setting up a board. You may not mind setting up and editing 25 different directory files when you first start your BBS, but trying to add a new directory when you have a 1000 files available (not uncommon on popular boards) can be a nightmare! Try to use software that makes as few demands on your time as possible. Unless you are a glutton for punishment, and will enjoy maintenance time of three-four hours a week, set up the software to be self-maintaining where possible. Three to four hours a week doesn't sound like a lot of time, but this is maintenance time. You aren't answering mail, or using the BBS, you're copying files to and from sub-directories, or editing text files, very boring stuff. And, this is week in, week out, month after month...get the picture? The software we use on SAHUG is called BBS-PC and is written by Micro-Systems Software in Boca Raton, Florida. It is not a public domain package, but I have yet to find a PD package that can match it. The system is totally self-maintained, and with the exception of adding guest callers to the BBS (a single key-stroke) or moving files from the upload directory to general access (4 key-strokes within the program), the system could be left unattended for weeks at a time. I don't really have the space to do a proper review of the software, and perhaps will do one in a future article, but suffice it to say that it fits the bill of reduced maintenance time for the SYSOP. Another point that I want to bring up about software is that it will take time to get the system where you want it. I have written dozens of different menus (and you will too if your software supports it) to try and refine the menu system. Your menus are the heart of your BBS, and only time (and rewrites) will get them where you want them. Some BBS software follows a standard pattern with the menu structure set for you. If that's the case then one headache is eliminated, but so is the flexibility of adding new features, or refining them. I prefer a menu system that is flexible, because ultimately it will reflect the SYSOP, his users, and his board. One more point about menus, graphics are neat, keen, fun to watch (the first time), gee whiz bang...etc. etc., but most users will eventually turn them off (or ask to) because they slow things down. I had seven different graphics menus on SAHUG at one time, now I have none. The biggest reason for this again was time. If I wanted to add one little option, I had to make the change 7 different times. And writing ANSI graphics from the keyboard is very tedious. As an aside, when I killed all the graphics menus from the board, not one user complained about it.

The third point I want to bring up is time. And probably THE reason why most boards go down. The SYSOP just doesn't have the time anymore to devote to the

board, the board falters or goes into a lull period (even the most popular boards experience this), one thing or another happens and a reason to take the board down appears. You will spend a great deal of your time dedicated to your BBS, above any maintenance time. If the board is located in your home, you'll check it before work, at work (if you have access to a modem), after work, before bed...Weekends become menu rewrite seminars, or utility revision days. New updates are a headache as you always have to change something. And this on a board that's established, running well, and enjoyed by it's users. The new SYSOP is out scrounging for the 'best' software to make available on his board (don't let your wife pay the first 4 months of phone bills after you start a BBS!), and of course there is the testing before you bring up a new system that's required. If you run the BBS remotely, you sit for hours in front of the computer while the modem continues to dial, trying to get on so you can answer messages, or check on the new uploads. Your first vacation in SYSOPdom is pins and needles. A long distance call from Aunt Martha's 'just to see if the phone is busy, or I get a carrier'...oh god! What if it answers without a carrier, or just rings off the wall?! You laugh, but ask the Heath store guys here how many times I've called them on a Sunday afternoon telling them the board's down, and would they mind stopping by and restarting it (thanks Tim!). Time becomes a very important factor when running a BBS. Answering a new user's question about how to do a particular operation on the board for the 200th time requires the patience of a saint. Downloading files, which used to seem so important, takes too much time, and you'll find you rarely do it after a while. It's okay though, because if you have a good board, you don't have to do it anyway, your users will find those 'gems' and upload them. Help yourself out in the beginning, if your software allows for an on-line help system, use it. Explain each command in detail, assume everybody knows nothing, and write your help files that way. It will save you time in the long run. Also, even if you do have an on-line help facility, and especially if you don't, have a downloadable 'BBSINFO.TXT' file. Explain the whole board, each menu, and the rules of membership. Give each member an opportunity to become an expert on your system, they'll turn around and help the new users for you. Another essential file is a 'NEWUSER.TXT' for the novice modemer. This file explains utilities and programs necessary for BBSing. This might include library and archive utilities (a list of program names available from your board that can be downloaded), a brief introduction into the 'computer-eze' of telecommunications, and other tid-bits like recommended communications programs, etc.,all geared toward a new user. Anything that you can do to help them will help you save time with your BBS.

The last point that I want to bring up is support, user support. I think that most SYSOPs are reluctant to enlist support when they are first starting up their boards. Other than those people who are asked to test it at it's inception, the new SYSOP will probably try to take on the task himself of building the mechanics of the board. And this is not all bad, the SYSOP needs to be THE most knowledgeable person on the board concerning the BBS software. Sitting in front of the computer for hours when you are building the software is a good way to learn it. But, once the board is actually up, look for one or two good people to assist you. It can make your first BBS vacation more restful if you feel the board is being aptly taken care of in your absence. Another point here about user support is that you don't have to do it all. You don't have to answer all the technical messages, you don't have to look for all the newest files to upload, in fact you don't have to do anything but maintain the board. Keep the mechanics in working order, as it was. I was amazed when I overcame this particular hurdle that there were more files being uploaded when I stopped then while I was actively participating, perhaps I wasn't giving them a chance to do the uploading?! While I'm talking about programs, I want to let you in on another tidbit, an upload/download board is very boring, both from a users standpoint, but especially from a SYSOP's. You can only use so many programs, though I have some users who could certainly argue that one. An active message base will keep users coming back, and a user that reads the messages BEFORE going into the file section will always have a special place on my BBS. The software I use allows you to maintain any number of messages you want at any one time, with older messages being pushed off as newer ones are added, we keep the latest 500 messages available for reading. Some PD BBS software discourages a user from leaving messages on the board after they have read them, reminding them each time they log on that there is old mail. The intent here is to save space, but the message section can be by far the most interesting section of a board. Look for software that supports this philosophy. You too can influence the message section. Welcome each new user, answer their questions, and encourage replies. Help keep the 'communicate' in tele-communications! It's what it's all about, and an active message base can provide tons of entertainment.

With all of this, I've probably just scratched the surface of what it's like to run a BBS. I didn't talk at all about crank calls, you'll get them. You may even get a threat or two (I know some SYSOPs who have), just don't let it get to you. Some people, for whatever reason, enjoy seeing mud in print. And, you don't have to put up with it. Lock them out of your system. Don't be afraid to 'thump em' (disconnect the call with no warning) if they are doing something that they shouldn't. If they don't like it, they can call another board. You'll find that 'your' users will support you in this.

Since I've been running SAHUG for almost two years now, I guess I could be considered a veteran. There are a lot of boards that don't make it three months before they shut down for good, others last years and years. Ultimately, the users of a BBS will decide if the system stays or dies. The SYSOP's responsibility to the users is to provide good mechanics. Provide them with the tools to make the board a good one. The user's responsibility is a little more complex. Provide your favorite boards with your support, not just the latest in files, but information, suggestions for improvement, answering messages, etc. It's a two way street, and when both the SYSOP and the board users are working together, it's an unbeatable combination.

Would I do it again, knowing what I know now? You bet!!! Because through all the hard work, lost sleep, and countless dollars, it's been fun! I've met some excellent people through the boards. There's a real joy is meeting someone face to face that you've known for years on the boards. I've joined a debate or two that got my blood pumping, and even managed to change an opinion or two (ha). There's a pride that's hard to explain when someone takes the time to thank you for all your hard work on the board. Being a SYSOP is hard work, make no mistake about it, but it has it's own rewards, and I for one am here for the count. See you on the lines! *

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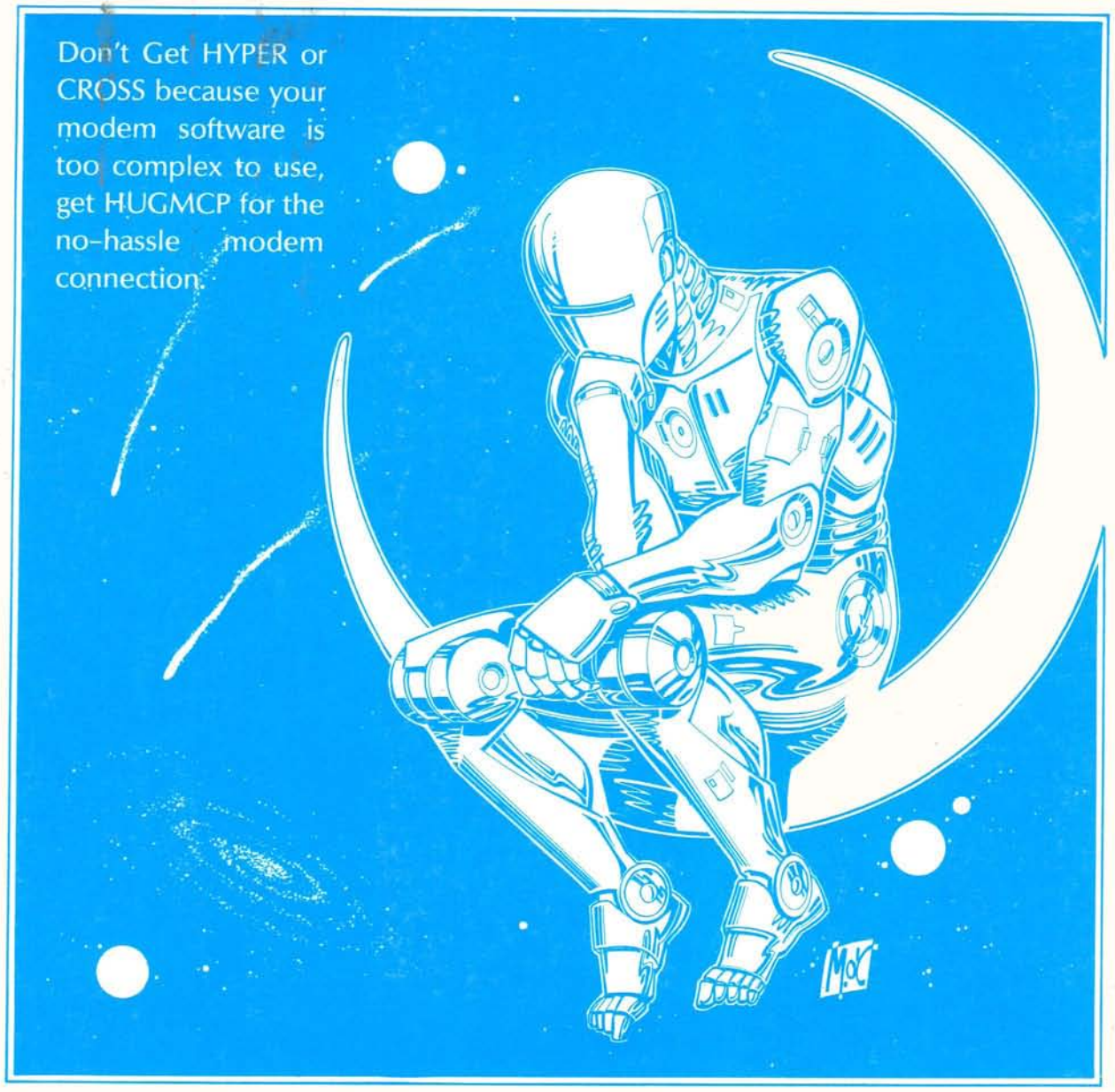

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