

THE MISOSYS QUARTERLY

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THE WAIT IS OVER: HARD DRIVES NOW SHIPPING



Volume IV.i

\$10

Fall 1989

TRS-80 Model I/III/4 Language Software from MISOSYS

Z80 RELocatable Assembler

MRAS [DOS 6.x M-21-083] [LDOS 5.x M20-083]

An advanced Z80 assembly package for the programmer who wants a powerful and flexible development system. It includes a macro assembler which generates either **relocatable object code** modules or CMD files directly, a linker, a librarian, a full-screen text editor, a utility for converting to/from line-numbered files, and a cross reference tool for directly generated CMD files.

MRAS generates M80 compatible /REL files. Supports REPT, IRP, and IRPC macros; nested includes, and a full range of nested conditionals. It has flexible output redirection of listing and symbol table.

MLINK supports virtual memory bit-stream buffering, REL and IRL library searching, zero disk space for DEFS in DSEGs and COMMONs, generation of program overlays, special link items: 0-3, 5-7, 9-11, 13-15.

Includes MLIB, our REL module librarian, and our SAID advanced **full screen text editor** which can be used to generate your assembler source code, C-language source code, or edit any type of ASCII file.

BASIC Compiler

EnhComp [DOS 6 M-21-072] [LDOS 5 M-20-072]

Released in 1986 and reviewed in the March 1987 issue of *80 Microcomputing* and October 1987 issue of *COMPUTER SHOPPER*. EnhComp has lots of great features; handles the bulk of Model III Microsoft BASIC and supports additional commands and functions. Standard is floating point with both **single and double precision** functions; random file access ("X" mode for recls to 32767), turtle graphics, pixel graphics, keyed array sort, multi-lined functions, user commands, REPEAT-UNTIL, line labels, and more.

A *supervisor* program automates the edit-compile-test phases inherent when using compilers; this makes using EnhComp almost as easy to use as your BASIC interpreter.

With its built-in **Z80 assembler**, you can **easily** create hybrid programs of BASIC statements and in-line assembly code which **completely eliminate** contorted string packing and DATA statement high-memory module techniques for your BASIC program to access a machine code module.

You'll have to edit *existing* BASIC programs, but the power and completeness of EnhComp make that an easy task.

RATFOR Compiler

RATFOR-M4 #M-21-073

RATFOR compiles to FORTRAN; is **fully structured** facilitating modification and debugging; comments are simpler and more versatile than in FORTRAN, simplifying self-documentation. This allows changes without the subsequent debugging tolerated when modifying FORTRAN. RATFOR *compiles* source code to an *object* of FORTRAN; use your existing FORTRAN compiler to convert this to executable.

RATFOR is an excellent language for general purpose use, but it is vastly superior to FORTRAN when working with a large number of modules without documentation, as is necessary when producing very large programs.

Extensions supported include the "arith" macro to perform binary arithmetic operations, read and print macros for short form READ and PRINT, and support of any valid FORTRAN expression for "switch" and "case" operands.

This package includes the language translator, a *batch* file to automate compilation, a language Reference Manual, an Installation Manual, application programs in source code on disk, and our LED text editor for source code preparation.

Z80 Assembler

EDAS [DOS 6 M-21-082] [LDOS 5.x M-20-082]

This powerful combined disk-based **line editor** and **Z80 macro assembler** assembles from nested source files or memory buffer; nested conditionals with ten pseudo-ops, nested MACROs with parameters both positional and by keyword, cross reference listings; and a separate **full screen text editor**.

If you are writing system software, support software, applications - big or small, EDAS will provide the power to make your job easier, faster, and more worthwhile.

Z80 Disassembler

DSMBLR [DOS 6 M-31-053] [LDOS 5.x M-30-053]

Provides direct disassembly from CMD disk files, automatic partitioning of output disk files, data screening for non-code regions, and **full label generation**. It even generates the ORGs and END statement - the complete ball of wax. You will find that the use of this disassembler - *even by a beginning assembly language programmer* - will be paying handsome rewards with the ease of its use and clarity of the documentation. It's a professional tool for your use.

The disassembler allows you to build a *screening data file* telling what segments of the program are to be interpreted as data regions. You enter the addresses of the "segments" after analyzing the target program's disassembly.

Output to **DISK** produces a file suitable for MRAS/EDAS and is automatically segmented into manageable file sizes.

REL Disassembler

UNREL [T80 M-30-054] [CPM M-32-054]

Decodes an M80-type relocatable object module and outputs an MRAS/M80 assembler source file. We bundle in SPLTLIB to split a library into separate modules and **DECODREL** to display the *bit stream* of a REL file.

UNREL assumes anything in a code segment is code, and anything in a data segment is data. It supports special link items: 0-3, 5-7, 9-11, 13-15.

UNREL should be the perfect professional assembler's tool for your bag of tricks.

Full C Compiler

MC [DOS 6.x M-21-064] [LDOS 5.x M-20-064]

If you are looking for a **full C compiler**, look no further. If you are looking for a well stocked UNIX System V standard library, look no further. **MC**, reviewed in the January 1987 issue of *80 MICROCOMPUTING*, is a complete C compiler which adheres to the standards established by Kernighan and Ritchie. The library of functions is extensive and System V compatible. The compiler generates Z80 relocatable macro assembler code (M80 or our MRAS). The libraries are files of relocatable object modules. **MC** is a full-featured compiler for the discriminating programmer!

MC supports command line *I/O redirection* for compiled programs, *wild-card* file specifications, parsing for UNIX "." extensions in file specifications, *overlay* support (requires MRAS), a full pre-processor, lots of options, and is designed for the programmer wishing the ultimate in C compilers. The package is supplied with the compiler, pre-processor, an optimizer, assembler macro files, C libraries, a Job Control Language file, the header files, and a 400+ page user manual. **MC** requires the use of either M-80 or MRAS (available separately), 2 disk drives, and upper/lower case.

Product Prices

Product	Price S&H
DSMBLR	\$24.95 \$2
EDAS	\$44.95 \$4
EnhComp	\$59.95 \$4
HartFORTH	\$49.95 \$3
MC	\$79.95 \$5
MRAS	\$59.95 \$4
RATFOR	\$59.95 \$5
UNREL	\$29.95 \$2

New price schedule effective 10/01/89. U.S. Add S&H. Canada use U.S. + \$1. Foreign S&H use U.S. * 3. M/C & VISA accepted. 30-day refund on product if not acceptable. Note: **Please specify Model I/III or Model 4.**

MISOSYS, Inc.
PO Box 239
Sterling, VA 22170-0239

FORTH Compiler

HartFORTH [DOS 6 M-21-071] [DOS 5 M-20-071]

HartFORTH is a **full FORTH** that conforms to the **79-STANDARD**. The Model I/III version is an indirect threaded version; the DOS 6 version is a direct threaded implementation providing greater execution speed of 10%-40% depending on the details of the actual program. The kernel contains some additional useful words and utilities which turn HartFORTH into a full-fledged development system.

HartFORTH is designed to **run under an operating system** which is totally transparent to the programmer or user. The virtual Memory that it accesses for storage and retrieval purposes is a normal DOS file that is requested by the FORTH system when it is first entered. Doing this has several advantages in that it provides for FORTH files to be used in other language application programs and vice-versa. Enhancements have been built into the kernel in the form of functions to call the operating system file handling routines so that other files may be created or accessed.

HartFORTH supports double length integers, string handling, cursor manipulation, graphics, random numbers, and floating point.

Load up at these new low prices!!!

The MISOSYS Quarterly is a publication of MISOSYS, Inc., PO Box 239, Sterling, VA 22170-0239, 703-450-4181.

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**THE MISOSYS QUARTERLY
subscription rate information**

Each issue of TMQ has information on MISOSYS products, programs and utilities, patches, significant messages from our CompuServe forum, and articles on programming. Not only that, TMQ will keep you up to date with information, news, and announcements concerning our entire product line and related machine environments. Subscription cost varies by rate zone as follows:

- A = \$25; United States via 3rd class bulk mail
- B = \$30; Canada, Mexico, or United States via 1st Class
- C = \$32; Columbia, Venezuela, Central America via AO Air
- D = \$35; South America, Europe, & North Africa via AO Air
- E = \$40; Asia, Australia, Africa, Middle East via AO Air

TMQ Toolbox

The MISOSYS Quarterly is published using the following facilities:

The hardware used for development of the "camera ready" copy consists of an AST Premium/386 computer (20 MHz) equipped with 5 Megabytes of RAM, a Seagate ST4096 80-Megabyte hard drive, a Colorado Memory Systems DJ10 tape backup device, a NEC Multisync II color monitor driven by a Video Seven VGA card, an AST TurboScan scanner (Microtek MS300), and a NEC LC-890 PostScript laser printer.

Text is developed, edited, spell-checked, and draft formatted using Microsoft WORD Version 4.0; Submissions on paper and letters are scanned and converted to text using Read-Right optical character recognition software by OCR Systems. Final page composition is developed using PageMaker 3.0 by Aldus. Cover art and clip art comes from CLIPPER, a product of Dynamic Graphics.

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Points to Ponder

Well folks, here I am again. There's certainly some important news to relate as far as the hard drive project goes: by the time you read this I will have commenced shipments. Details on the drive package appear later in The Blurb.

I began last issue with some complaints about trouble reports directed to MISOSYS concerning programs which MISOSYS has no responsibility for support. Let me touch on another aspect of trouble reports: the ineffective report.

I recognize that when someone has a problem with something, he or she certainly wants the problem fixed. But a report which provides no information whatsoever does nothing to satisfy a resolution of the problem; it only serves to waste the time of the person submitting the report as well as my time in trying to extract information when none is available. There are many folks out there who appear to lack the insight as to how to report a trouble. Here's a small sample of a representative report which cannot be resolved.

User: *I have had this LS-DOS 6.3 since 1987 and I can't get it to work.*

Me: *What do you mean, "you can't get it to work"?*

User: *Only the ID gets transferred.*

Me: *Can you tell me exactly what you did?*

User: *I followed the instructions in the manual.*

Me: *Please. Telling me that you followed the instructions gives me no information as to whether you followed the correct instructions nor does it tell me you understood what you read. Could you please tell me exactly what you typed and exactly what the results were?*

User: *I put the 6.2 disk into drive 0.*

The Blurb by Roy Soltoff

Me: *But the instructions said to put the 6.3 disk into drive 0.*

User: *That's what I meant.*

Me: *Okay, so the 6.3 disk was in drive 0 and the 6.2 disk was in drive 1. Then what did you do?*

User: *I typed the BACKUP command.*

Me: *Exactly what BACKUP command did you type?*

User: *I typed BACKUP 0 to 1 (S,I,OLD)*

Me: *Then what happened?*

User: *Nothing.*

Me: *You mean nothing happened? The cursor just sat there blinking at you?*

User: *No, the BACKUP command started to execute.*

Me: *Oh, then something did happen. Did the BACKUP copyright message appear on the screen? Were any files copied from 0 to 1?*

User: *I don't know.*

Me: *Could you please go back and follow the directions of the update documentation. Write down exactly what you type and what happens on the screen. Then call me back with your results.*

For those to whom this flame is directed, trouble resolution is as good as the trouble reporting. When you are experiencing a problem with whatever you are doing, before you even think about making a phone call or writing a letter, please have all your facts at hand. It is always important to provide as much information as possible. Even if you are not computer literate, there is at least some basic information which should be available. It is

very important to be able to relate exactly what you typed and what the response was - even if it takes many sheets of paper to write down the information. Reports such as "I followed the directions" serve no purpose whatsoever; such a report only points out that reporter is really not interested in what he or she is doing.

Many times it is important to submit a detailed written report with a disk, or disks, containing files which can allow the complete re-creation of the problem. In fact, submitting an example of the problem on disk actually saves you the time to print out a letter; you can just submit the letter on disk AS A PLAIN TEXT file.

If my readers think this is an isolated incident, you are mistaken. Day in and day out, MISOSYS receives reports such as the above. I sometimes wonder how well an automobile would be serviced if it was taken in to the repair shop with the complaint, "my car won't work". Question, "What's wrong with it?" Answer, "it won't work." But I doubt that such a dialogue happens. Perhaps the repair shop may get a confusing report such as "my car is making a funny noise". Question, "what kind of noise?" Answer, "it sounds like someone wheezing". Well that is actually useful information.

Maybe I'm all wet in this regard, but I think a little caring would help. I'm not asking everyone to become computer literate. What I'm asking is that folks take some time to precisely identify what they are typing, and what responses, if any, are being generated. Use your common sense.

I have from time to time been asked the question, "Any chance of ordering a subscription to DISK NOTES?" I have considered that issue, and I have determined that it would not be practical to do.

For one thing, publishing *THE MISOSYS QUARTERLY* is not a profitable venture. I do it for three reasons. One, I feel I must provide some vehicle for written support of MISOSYS products. Two, it provides a vehicle to present information and news four times a year. And three, it provides a means of advertising products which generates sales. From an economic standpoint, I can justify the expense in time and money for publishing TMQ only if I can capture enough product sales as a direct result of that effort. The coupon provided with TMQ helps with that effort. Most folks don't send in the coupon and order just DISK NOTES.

Another reason is that doing one more thing special about distribution would take up more time. Another flag to keep and maintain; another sort to do; another label run to prepare. There is just not enough folks interested to justify that effort.

Another few readers have asked, "Why don't these renewal invoices ever fit in the return envelope?" Hey, that's a good question. How about an answer?

The statement I use for invoicing TMQ renewals is a standard NEBS X9060-1 form. This form is 6.5" wide by 7" long with the perforations removed. The standard size return envelope available from NEBS is 3-7/8" by 6-1/4". The standard double window envelope used to mail the statement is 3-5/8" by 6-7/8". The standard double window envelope used to mail the statement is 3-5/8" by 6-7/8". There is a long return envelope at 3-7/8" by 8-7/8" which would fit into a double window envelope at 4-1/8" by 9". Costs of the larger size are more, but not significantly more. On the other hand, if you put a narrow statement in a long envelope, there is a tendency for the statement to slide inside the envelope. If that occurs, the addressee field could shift out of view; that would either delay receipt or result in non-delivery. Typically, the wider envelopes would be used for wider invoices. Does it really take that much effort to fold up the statement and mail it back? Or do some folks just have nothing else to complain about?

How about just taking a good look at your TMQ address label for the expiration date and send in your renewal without a statement? That will save me a few scheckels.

Bryan Headley forwarded word to me that the MAX-80 newsletter has finally died. This may impact but a few of my readers, but the newsletter was published by MAXIMUL, the MAX-80 user group. Those still with an interest in the MAX-80 may contact Bryan directly; note that he recently moved. His new mailing address is:

Bryan W. Headley
P. O. Box 4017
Northbrook, IL 60065

On the other hand, anyone with an input concerning the MAX-80, consider directing that input to *THE MISOSYS QUARTERLY*.

Here's an interesting item which appeared in the June 1989 issue of Seagate's RESELLER REPORT. The question, concerning itself with hard drive usage, was, "Which wears the spindle bearings more, continuous spinning or powering up and down every day?". The answer was, "There is no difference, with regard to spindle bearing wear, between continuous spinning and powering up and down every day. However, the power surge caused by turning a computer on and off is harder on the drive and computer electronics than if the computer remained powered on."

But the next question may be the answer to what has been on everyone's mind. "Does data add weight to a disc drive?" And the answer is... "Data bits on a disc drive are changes in the polarization of the magnetic flux on the platter. These changes in magnetization cause no weight change in the drive."

As a post script, this issue initiates the fourth year of publishing effort. I con-

tinue to make changes to the "look and feel" of TMQ. I am getting quite pleased with its appearance. Hopefully, its content is of benefit to my readers. Too bad the number of subscribers has not been a success. For all of the time and effort I put into this magazine, I certainly expect more than a thousand readers. Let me give it one more year. To all of you who are supporting my efforts, thanks for being there.

BBS' and Clubs

I set aside space in TMQ as a service to the Model I/III/4 community of users to publicize the following three things: a list of **phone numbers** of companies still servicing and supporting this market, a list of **public computer bulletin boards**, and a list of **computer clubs** which support the TRS-80 user. The responses received to date appear in the *Letters to the Editor* column (note that the list of 'Resource: Companies' was generated by me). Mail me any additions, deletions, or changes.

TMQ Schedule

Our target for mailing the *THE MISOSYS QUARTERLY* is the last week of the respective month as follows: Spring issue in February, Summer issue in May, Fall issue in August, and Winter issue in November. I slipped a little on this issue as you will (have) read about elsewhere.

Note that your mailing label usually has the expiration date of your subscription. For instance, those with "89/11" complete their subscription with this issue. If you want to save me the cost of mailing a renewal notice, send in your renewal fee quickly. I usually wait about a month after TMQ is mailed before sending out renewal notices.

TMQ advertising

If you are interested in reaching a dedicated TRS-80 audience, consider *THE MISOSYS QUARTERLY*. If you have a TRS-80 Model III or 4 related product to sell, you can reach these buyers by placing your advertisement in our publication. TMQ is read world-wide. Our subscribers are predominantly in the United States; however, we do have a significant number in Canada, Europe, and Australia.

Current space rates are as follows:

Full page	\$125
Half page	\$75
Quarter page	\$50
Ninth page	\$20

Note the ninth-page ad layout designated 'The Marketplace', which is the last page of this issue. I compose this so you have no artwork charge. Just submit your text. We accept only black & white ads; however, ads for our inside covers are printed in the same color as the cover (TMQ alternates between PMS colors: green 354, purple 266, blue 293, and red 199). If you would like to place your ad in *THE MISOSYS QUARTERLY*, give me a call.

Subscribers, please mention TMQ when you call or write to these advertisers; they deserve your support.

PD Software Librarian

Vic McClung has volunteered to be the librarian for the collection of TRS-80 public domain diskettes. Henceforth all requests and contributions be directed directly to him at:

Vic McClung
914 Crescent
Sikeston, MO 63801
USA

Note that if you upload a "public domain"

file to our CompuServe forum [PCS-49], and want it to receive general distribution, please also mail a copy on disk to Vic. There is no legal provision for downloading files from CompuServe and redistributing them. Some of our readers who do not have access to our forum have an interest in those submissions. So if you want to help out the most numbers of fellow users, don't limit your submissions to just one source.

DISK NOTES 4.1

Each issue of *THE MISOSYS QUARTERLY* usually contains program listings, patch listings, and other references to files we have placed onto a disk. DISK NOTES 4.1 corresponds to this issue of TMQ. If you want to obtain all of the patches and all of the listings, you may conveniently purchase a copy.

DISK NOTES is priced at \$10 Plus S&H. The S&H charges are \$2 for US, Canada, and Mexico, \$3 elsewhere. If you purchase DISK NOTES 4.1 with the coupon which accompanies this TMQ issue, you can save \$2.50; the cost then being only \$7.50 + S&H.

Out of print TMQ's available

For out of print issues, we are providing back issues of *THE MISOSYS QUARTERLY* via copier reprint. The price is \$12.50 plus \$2.75 S&H in the U.S. and CANADA. For foreign zone D, the S&H rate is \$5.50; zone E is \$6.50. The price for regular back issues still in print is \$10 + S&H. We are currently out of print on all issues of Volume I and Volume II. Here's a synopsis of past issues:

Volume I See the index in issue III.i.

Volume II See the index in issue III.iii.

III.i Reading NEWDOS/80 disks; An LB archival utility; Popup

Application Window; XMODEM in C; Getting into computer math, part I; TMQ Volume I index.

III.ii Getting into computer math Part2; Writing interactive RATFOR/FORTRAN programs; PRO-EnhComp: a review; Desktop publishing and the Model 4; A better TERM/APP; adding floppy drives; and a new XLR8er interface.

III.iii The CRC program; PG: a page display program; Locating high memory routines; FIXMA3; Jumbo tape backup for PC clones; New style for TMQ using Pagemaker; and an Index to Volume II.

III.iv Checking for a file from Model 4 BASIC; Surviving the Hard Disk crash; An "interview" with Niklaus Wirth; Keep your printer clean and oiled; On-line HELP with PRO-WAM; MISOSYS announces availability of Hard Drives; Logic in the C language.

New Product News

AB-25 and AB-36 Switchboxes

I have a small handful of the DB25-type switch boxes in stock; these can be used to switch your serial port between two devices. The box terminates in female DB-25 connectors. I also have AB36 boxes to switch two Centronics parallel printers. \$25 (\$4.50 S&H) gets you either one.

XLR8er Update

Don't forget the new lower price of the XLR8er boards. Pricing of the XLR8er board is as follows:

XLR8er with 0K RAM is \$150 + S&H
XLR8er with 256K RAM is \$200 + S&H

DED-86 Update

For you MS-DOS users, make note of the new lower price for DED-86. See our ad in this issue.

MISOSYS Hard Drive

MISOSYS is now shipping its long awaited hard drive package. Details on this package and its various options follow.

The drive case is 7" wide by 5.25" high by 15.5" deep; it is beige colored. The drive case holds two half-height drives, power supply and fan, controller, and host adaptor. The 60 watt power supply has an internal jumper plug to switch between 115 volt and 230 volt AC input. The front of the case has an LED indicator for power on. The rear of the case has a NEMA connector for the AC power cord, fuse holder for the AC power switch, and a 50-pin SCSI female connector for the host interface.

MISOSYS is shipping complete drive packages currently with a Xebec 1420 or an Adaptec 4000A hard disk controller. These two controllers are essentially equivalent in operation with minor variations between them concerning the formatting commands. Both of those controllers use a subset of Small Computer Systems Interface (SCSI). The Adaptec 4000 was used by Lobo Systems for the WIN series of hard drives associated with the MAX-80. Orders specifically for the MAX-80 will be provided a drive package using that controller.

A small (3.6" by 6.3") host adaptor circuit board interfaces the 50-pin expansion port of the TRS-80 (host) to the 50-pin SCSI port of the hard disk controller. The Host adaptor is designed and manufactured by MISOSYS or its contractors; uses a state of the art Programmable Logic Device (PLD) for address decoding and control. The board includes a four-position DIP switch of which one position is used to differentiate between the two types of controllers being provided. One position of the switch is read by the software to automatically adapt to either controller. Remaining positions, as well as a spare one-position jumper plug, are currently reserved for future use. Software provided with the host adaptor supporting the S1420 and 4000A controllers includes:

1) A low level formatter which formats the drive(s) based on the drive's characteristics input by the user. All complete

drive packages provided by MISOSYS will be low-level formatted. This process writes the drive's characteristics to the drive so that the installation program can read the parameters from the drive, thereby eliminating the need to re-enter that data during installation time.

2) An installation utility and driver used to connect the drive to the operating system and partition it into segments.

3) A high level formatter used to add operating system directory information after first verifying the high-level readability of each data sector.

4) A sub-disk partitioning utility used to create "floppy-sized" storage areas on the drive partitions which are used to emulate additional drives and expand the number of files which may be stored.

5) A utility to archive the hard disk files onto floppy diskettes.

6) A utility to restore archived files to the hard drive.

7) A utility to park the hard drive's read/write head to a safe area on power down.

At some near future date, MISOSYS will also supply a software installation facility for generic Xebec S1410A controllers. The Xebec S1410 was popular a number of years ago, and was used by VR Data, ARM, and others. It also is available as the Konan DJ10 and another manufactured by Scientific Micro Systems.

The host adaptor has provision for a hardware real time clock module. This option uses a Dallas Semiconductor DS1287 clock module. Its internal battery has a lifetime in excess of 10 years. Software is provided to update the operating system's date and time data areas from the time data stored in the clock. The clock module has an internal RAM area of 64 bytes, 14 of which are used by the clock. This leaves 50 bytes of RAM available for your use. The RAM is accessed by simple port I/O commands. Since the RAM is battery backed, it is non-volatile; its contents are retained even when the power is turned off.

Another option which is available is a joystick port and joystick. A Kraft MAZEMASTER joystick is provided with this option. The joystick is a simple 4-position switch action joystick with a fire button. The port interface is identical to the joystick available some time ago from Alpha Products; thus, any software which operated from that joystick will operate from this one. Additionally, MISOSYS is providing a keyboard filter which allows the joystick to generate five keycodes; one for each of the switch positions plus one for the fire button. The filter provides for dynamically changeable character repeat. A SETJS utility is also included which can be used to change the values of the generated "keystrokes" after the filter is installed. The option includes the joystick, a cable connecting the host adaptor header socket to a 9-pin D-subminiature socket, and an integrated circuit.

Twenty megabyte drive packages will be provided with a Seagate St225 half height hard drive. Forty megabyte packages will be provided with a Seagate ST251 28 millisecond 40 megabyte hard drive.

Drive packages will be offered as 'pre-assembled kits'. Your 'kit' will be assembled to order and fully tested; all you will need to do is plug it in and install the software. Drive kits require a 50-pin SCSI to 50-pin edgcard host connecting cable (see price schedule).

The following prices are currently in effect and are subject to change:

20 Megabyte kit: M3 or M4	\$495
20 Megabyte kit: MAX-80	\$450
40 Megabyte kit: M3 or M4	\$645
40 Megabyte kit: MAX-80	\$600
Hardware clock option	\$30
Joystick option	\$20
Host interface cable	\$20
Additional software interface	\$30

Note: shipping weight will be approximately 20 pounds per drive kit; freight charges are additional. Allow two weeks for personal checks to clear your bank.

The family corner

A few folks noticed that I omitted this column in the last issue of TMQ. I did get some letters asking what happened to it; that it was missed. I got no letters saying "glad to see it's gone." So here it is again. And I thought no one noticed... Have no fears, I'm not going to bring you all up to date by posting the happenings of the last six months. Let me just note some of the recent events.

We were supposed to take the week of August 6th off for vacation. Our original plans were to spend the time at Lake Anna, a large lake about 70 miles south of here. We have a small lot by the lake in a subdivision, and a small 15.5 foot tri-hull outboard boat. Unfortunately as luck would have it, the weekend before that, the boat's motor developed a problem and I had to take it in to the "shop" for repair. After being told there was no problem in having it ready in time for our vacation, we proceeded to wait. It's the 27th of August as I write this and the boat is still not ready!

So our vacation plans were fizzled. Al-

though we have a small travel trailer on the lot, since boating is the only thing to do, we decided to stay home. On the other hand, maybe fate was working for us as Brenda's maternal

grandfather took seriously ill and was hospitalized. We were at least home to get the news. Brenda decided to fly down to Lake Placid, Florida to lend support to her grandfather, mother and others in the family. I remained at home to take care of our three children; I also had planned to paint Stacey's bedroom - a job which I tackled and just about finished.

We were visiting with Pa and Grandmother over the 4th of July holiday (at least it's a holiday for us Americans). Although he was in very good spirits and everyone enjoyed the visit, I think we all knew he was going to be with us but a short time. We were all saddened that Pa passed away on August 15th. At least at 85 years of age, he did live a long and productive life. He will be missed by us all.

Brenda was away for over two weeks, which left me with my hands full trying to keep three youngsters occupied, as well as finish painting, and trying to get some office work done. Needless to say, TMQ fell behind, soft-

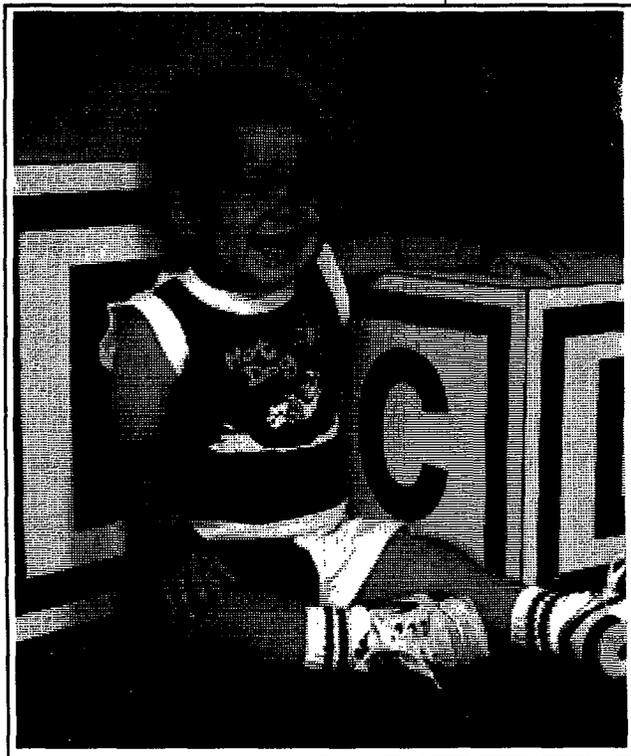


ware and documentation efforts for the hard drive fell behind, and I don't think I was able to answer but a few pieces of correspondence. I really got to appreciate the hardships of a single parent. My neighbor said "I bet you ate out a lot". To which I replied that it would take more effort getting three kids ready to go, more energy to keep them under control, than it would to make meals at home." Actually, I'm a pretty good cook.

Benjamin is growing like a weed. All four of his molars are through. He eats just about everything he is given. And he seems to be able to get into everything he shouldn't be getting into. Luckily he's not climbing out of his crib, yet. He'll be getting his 15-month checkup next month. My time does fly. He's very interactive.

Stefanie starts kindergarten next week and is going to a brand new school which was just completed in our subdivision. She and Benjamin get along great; they're always playing together. When they get older, I'm sure that the two of them will be good pals.

Stacey starts first grade next week at the same school as Stefanie. She's already reached 50 pounds and is almost four feet high. Over the summer, she has certainly become a reader. Stacey has always had a large speaking vocabulary; but I am surprised at how many words she is able to recognize now while reading.



Letters to the Editor

A reader's goodbye...

Fm Bill Gee: Dear Roy, I recently received the latest issue of *The MISOSYS Quarterly*, and noticed that my subscription expires with this issue. I thought long and hard about getting a renewal, and have finally decided not to. The main reason for this is that I no longer use my old Model 4. It has lived a long and productive life, and is now relegated to a retirement on the shelf of my garage.

The course of my career as a System Engineer with Radio Shack required that I keep up to date knowledge concerning the Model 4 and its software. Now that I have transferred to the GRiD side of Tandy, I find that I will probably never again have to tell someone why they cannot enter a date after 1987. Rather, I have to tell them why their favorite program will not run in the Compatibility (???) Box, better known as the Compatibility Coffin.

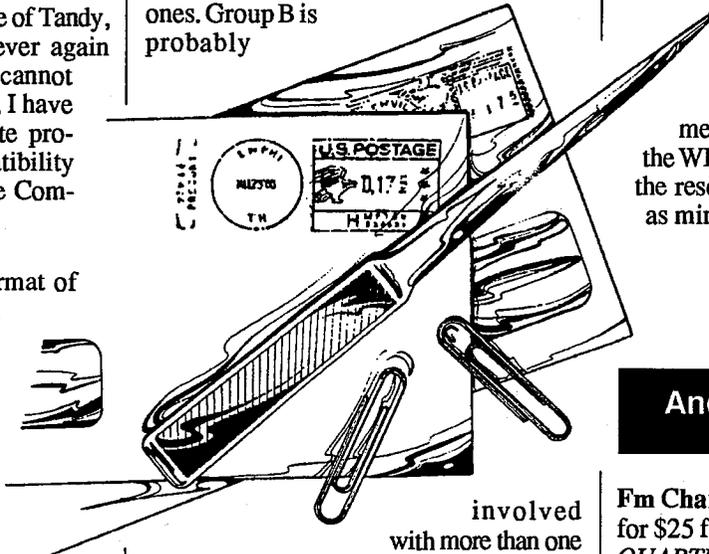
I have always enjoyed the format of TMQ. The family updates lend a "just folks" atmosphere to a publication that can too easily become bound up in flights of technical fancy. The reprinting of your correspondence helps to share the knowledge and experience of many and varied users to all your readers. I particularly enjoyed the volumes written about hard drives in this issue. The technical discussions are as clear and understandable as is possible in so complicated a field.

In the past few issues, I have noticed what looks to me to be some notes of frustration in your Blurbs. Much of this seems to stem from the lack of a 30 hour day. More appears to be caused by frustration over having to do Radio Shack's job for them (and for free, yet!) and uncertainty about

what the future holds for you and your company.

Please allow me the luxury of suggesting cadence to one who employs his own drummer.

The days of the Models 3 and 4 are numbered, and with low numbers at that. The remaining users will fall into two categories: (A) Those who have memorized the keystrokes necessary to produce a result without really knowing why it works, and (B) Those who know the machine and software intimately and are satisfied with the functionality it provides. Group A will never switch because that would mean abandoning old habits and having to learn new ones. Group B is probably



involved with more than one kind of system anyway, and has made an intelligent choice to remain where they are. As new opportunities are limited, my suggestion here is to keep tight control on how much time you invest in this area.

The software industry is dominated by big business, big egos, and big lawyers. They have pretty much taken over all the high end stuff. There is very little room for a small business to make a profit in this environment. Those who have no need of profit for whatever reason have

taken over the lower end of the MS-DOS world. Other operating environments suffer from either a lack of market penetration or a litigious and jealous parent. My only observation is that OS/2 is pretty much virgin territory. Large, full-featured applications are available (some in vapor form!), but what about the rest of us? I believe that the price of hardware will fall enough to put platforms capable of making good use of OS/2 within reach of most people in a year or two. Even now, you can buy a fairly decent OS/2 system for about what a 48K Model 3 cost 6 years ago.

As an aside, have you considered the potential within the world of OS-9?

"To thine own self be true." I cannot remember the source of the quote!

Thank you for allowing me the privilege of a soap box, if even for only a moment.

Fm MISOSYS, Inc: Bill, you have good perception. On the other hand, programming commercial applications for OS/2 or for the WINDOWS environment is beyond the resources of a small company such as mine.

And another's renewal...

Fm Charles H. Stones: Here's my check for \$25 for another year of *The MISOSYS QUARTERLY*. The "interview" with Niklaus Wirth in III.iv was worth (wirth?) more than the cost of a year's subscription. I'm looking forward to a continuation of the Soltoff computer math articles.

By the way, for the many fans of TED (the version that came with 6.3), you might include in some future issue of TMQ a crashproof means of invoking TED while in BASIC without having to return to DOS.

Fm MISOSYS, Inc: I had hoped to continue into the fourth article on the math series in this issue, but as you probably read in The Blurb, I was really overloaded. Things should be more normal by issue 4.2; look for it there.

There is no way to invoke TED/CMD from LS-DOS's BASIC as TED is not a "library-type" command file. Better to consider installing PRO-WAM and use the TED/APP which comes with the Mister ED application pac. That's the way to have a pop up editor with just about every feature I put into TED/CMD (which, by the way, was derived from TED/APP). TED/APP gives you a 32K editing buffer any time you can pop up PRO-WAM; you do need one free memory bank to get to TED/APP.

On Software Development

The following is excerpted from the article, "Experts expect DoD to get tough on software suppliers" which appeared in the June 29th issue of *Electronic Design News*.

The Defense Advanced Research Project Agency's Software Engineering Institute says it has trained groups within all three services in a tough new evaluation method for the trial-source selection of military-software suppliers.

The training is part of SEI's Contractor Software Engineering Capability Assessment (CSECA) project, but experts expect the DoD to quietly implement the method as a qualification screen within two years. The problem: Most software shops still employ "chaotic" programming practices.

Although the DoD would not comment on whether it intends to exercise the trained groups, sources in side the Software Research Center at Wright Patterson Air Force Base, OH, confirm that the DoD is considering additional requirements to MIL-STD-1803, a software development

integrity program approved last December.

The evaluation method, developed by the SEI at the request of the US Air Force ranks companies on five levels:

- Ad-hoc/chaotic software development
- Intuitive development based on experience
- Qualitative development employing metrics
- Statistical process control
- Automated software development.

Based on an SEI survey of 113 software-development organizations now doing business with the DoD, SEI found that 85% operate at the first level and 14% operate at the second. Only one organization operates at the third level.

Dying Software Support

Fm Bryan J. Barbalace 76010,2320: Will Radio Shack hire any DUMMY to sell computers?

This morning I went to my trusty Radio Shack dealer, in search of an editor/assembler program. This was the most depressing morning I've had in a very long time. The sales person laughed at me and told me to buy an MS-DOS machine. He told me they had a CUTE model on sale.

They had to pry my fingers from this IDIOT'S throat and told me never to come back. One consolation was when they were beating me trying to get me to release the salesman's throat, they hit me with THE SOFTWARE BUYER'S GUIDE. I am very fond of my Model 4 and after perusing this guide I became even more depressed.

Does anyone know where I can get an editor/assembler for my trusty Model 4. I would also like to get a copy of Vidtex. I remember seeing a version for the Model

4 but can't seem to find it in any catalog's any more.

Fm MISOSYS, Inc: Sales of computers are no different these days from sales of any other commodity merchandise (like planes, trains, and automobiles).

How's this grab you? I asked one of my DRAM suppliers about the quality of some "pulls". The remark was that "they are very pretty"! Incidentally, if you don't know, the term "pulls" means memory previously installed in boards where the chips were pulled for re-use. There are "pulls" and "trimmed pulls". The latter usually arises from the removal of soldered DRAMS which had the excess lead length clipped when the chips were first installed and soldered. But "pulls" being "pretty"?

Stay with your TRS-80

Fm Donald Shelton: My M4's (4 of them) do a lot of things better than MessyDos machines, thanks mostly to LDOS/TRSDOS 6. Every time I even look at MSDOS, I cringe at all the things it can't do compared to LDOS. Then I really cringe at thinking about learning a new computing environment, just to be "current". The hundreds of hours necessary to do that are hours I could be enjoying my M4.

So I just sit back and relax. My computers do everything I bought them for, and quite a few things that I didn't even know they could do. I laugh at people who are dumping their PC's for OS/2, to have the latest thing. They lightened their pockets by at least a couple of G's, but if I feel like another TRS-80 (4 isn't enough?), \$300 and I'm set. Software is cheap too. So there.

Roy, before you throw out those LDOS reference cards you mentioned in TMQ, I would be willing to distribute them to anyone who would send me a SASE, if you would want that done. I would rather help

find a good home for them.

Fm MISOSYS, Inc: If you want to pay for the shipping, I can send you all you want. I tried to give them away and got few takers. Anybody want an LDOS 5.1.4 quick reference card? Yours for a SASE (a #10 envelope with postage for two ounces - \$0.45 currently in US). Want a hundred? I'll box them up and send them. Want a thousand? You got it.

ANITEK PC-Set Problem

Fm Mark Mueller: Just a warning: I ordered "PC-Set" from Anitek and installed it on my non-gate-array 4P, according to the directions. It didn't work according to their test program. Upon investigation, I found that they had me tie the TRS-80/IBM character switching to port EC bit 6, which is the FAST/SLOW switch!!! In order to get TRS80 characters, the machine has to be in 2 MHz mode. It wouldn't even work with the LeScript 2.0 demo I got at the same time.

After a few hours of head scratching, I decided they wanted to be on the unused bit 5, so I moved the chip select wire to that pin, and guess what: It works fine. Lascript works, but the test program outputs the wrong values to port EC. I haven't had time to call them about it yet, but I will before the week is out. Just thought that anyone contemplating this mod on a non-gate 4P should know that the instructions are wrong.

More hard drive questions

Fm Henry A. Blumenthal: Dear Mr. Soltoff, Despite setbacks and modifications on your development of a hard drive for the Model 4, I continue to be interested — primarily because it will include an optional clock-and-calendar module.

But questions remain.

My wife and I do a lot of work that requires accurate time stamps in the directory, and we appreciate the convenience of booting up without having to answer the date and time prompts by using Alpha Products' Newclock 80 board in the I/O connector. Correspondence from various vendors has convinced us a Y adaptor would pose problems, were we to opt for a hard drive while continuing to use the board. That brings us to your hard drive. But here are my questions:

What will your policy be on service? Will the parts and interfacing be standard to allow the machine to be repaired locally after its warranty expires? Will its time module be similar to Alpha Products' board, or will I have to patch SYS0/SYS with different lines of code? Do I assume that, even if the hard drive is turned off, its clock will continue to serve the Model 4 in floppy mode using both LS-DOS and LDOS, as is the case now with the Alpha board? Finally, do I assume that the hard drive can be partitioned to put LDOS files in their own default logical drive, yet allow data to be transferred from one to the other if desired?

Fm MISOSYS, Inc: Dear Henry, in response to your letter of July 5th concerning our upcoming hard drive, let me respond to your questions.

It is for the very reason that you can't reliably connect more than one peripheral to the external bus that I decided to design the hardware clock and joystick port options into my host adaptor.

A drive package uses a case and power supply (standard item), hard drive (very standard item), connecting cables (standard items), hard disk controller (standard item but not necessarily repairable - usually replaceable), host adaptor (our own design and manufacture), and our software.

The clock module will not be identical to the Newclock: it is in fact a current technology device and freely available. Certainly, if you switch from a NEWCLOCK to some other clock, you will have to unpatch SYS0. As of this writing, I have-

n't decided on the totality of the clock software so I cannot say if you will need to patch SYS0. I have implemented a program which can be run from a startup JCL to read the clock and update the DOS storage areas. I'll probably also provide a patch to SYS0 for those wanting to avoid using a program to read the clock on BOOT. Additionally, I expect to provide a patch to SYS3/SYS to read the clock and update the system storage when a file is closed. This process avoids taking up any resident memory for clock processing; I don't believe in constantly reading the clock on an interrupt basis as that slows the processor down.

If the hard drive is turned off, then the host adaptor is not powered, and the computer will be unable to access the clock; however, if the hard drive is powered up upon booting, the accurate date and time will be loaded. Updating the time will then be performed by the DOS until the hardware clock again becomes available. The clock, itself, will continue to run for years; the internal battery is good for a minimum of 10 years.

The software for drive installation will be similar to other hard drive software we have generated; you will be able to partition the drive for more than one DOS.

Fm M.E. Easey, United Kingdom: Dear Sir, I am interested in purchasing a MISOSYS Hard Disk system for my Tandy Model 4P computer. My computer has been modified according to the January 1986 issue of 80 Micro to accommodate two extra drives; I have fitted two external Canon 210 DS drives.

Will you please advise me if you can supply a hard drive to run on the UK electricity system that will work with my current drive configuration. The U.K. electricity supply is 220/240 Volts at 50 Hz. My local Tandy Store can supply a 50 watt converter/transformer (Tandy ref 273-1401); as an alternative to a UK power supply unit - will the Tandy converter serve as a suitable power source? Can you also let me know the length of the connecting cable between the Model 4P bus and the hard drive casing. I believe I

have a late version of the model 4P - it has a clustered arrow set. I am interested in the 20 megabyte drive with LDOS 5.3, Montezuma 2.2 CP/M and LS-DOS 6.3 drivers that you are developing. Please let me know the price, shipping charges and if you accept MasterCard.

Fm MISOSYS, Inc: Dear M.E., This is in response to your letter of July 3rd concerning the MISOSYS hard drive soon to be available.

The power supply in our external hard drive case does have a jumper plug to switch to 230V; thus, you will need no converter to deal with it. On the other hand, the only power cable we will provide terminates in a standard American 3-prong plug. The case has a standard NEMA socket for the AC power cord. I would suspect plug adaptors are available locally, more so than in the States.

The host interface cable we are providing will be four feet long. This connects from the rear of the drive case to the rear of your 4P. It has a 50-pin edgcard connector on one end of the ribbon cable and a 50-pin SCSI connector on the other; a "SCSI connector" looks like what you know as a Centronics parallel printer connector but the SCSI is 50-pins.

At this time, we are not planning on CP/M drivers. If we receive sufficient requests, then we may consider implementing such a driver. However if I were you, I would not make a decision based on the speculation that we would at some time in the future have a CP/M driver available.

I am enclosing an excerpt from *THE MISOSYS QUARTERLY* issue 3.4 where pricing was noted. Assuming the shipping weight is 20 pounds, that would equate to approximately \$90-\$100 at air parcel post rates. I have not decided yet how we will be shipping foreign orders; perhaps Postal Union mailing is not the way to go.

As an alternative, you may wish to purchase less than a complete system. The drive is heavy (5 pounds), and various ST506-type drives should be available locally to you. That would cut down on the weight, the shipping charges, and, of course, the VAT. Pricing for individual

components will be announced soon.

We accept both VISA and Mastercard.

One program copy Multiple machines

Fm Lenox C. Smith: Dear sir, Please refer to invoice 89-11147. Thank you for your prompt service in sending the products to me. However I feel that I must return all the products for a refund because of the following reasons:

When I wrote you requesting information, I explained my system consisted of more than one model iv. No mention was made that your software would run on only one machine, nor was this indicated in any of the descriptions. A prime directive when using computer software is make backups. The same applies to computers. Don't try to do any serious work without a second or third computer as a backup. Of the three I have, one is working, the other two are in the repair shop. One has a blown memory-chip. The other has a broken drive. The turn around time is about two weeks. The software you sent looks like it would be very useful. However I am afraid to use it.

From the documentation it is indicated that the software will run on only one computer. It also indicates the data generated will not be portable either. It's a pain in the neck keeping track of what is on which disk. Keeping track of which disk runs on which computer is more than I am willing to endure. I cannot justify the time it would take to learn, test, and implement your software if the data and programs generated will run on only one computer. The extra \$60 for the "site/user" license package for LS-DOS 6.3 is reasonable, however the documentation does not say how much the cost will be for the other software on the invoice to be able to run on more than one computer. The documentation which came with LDOS 5.3 doesn't say that it will run on only one computer, but it will not run on more than

one computer. The same with the rest of the software listed on the invoice.

The one software package I was most interested in was quizmaster. It works on only one computer also. I can't justify the many hours it will take to write multiple choice questions and have them run on only one computer.

The products listed under the special sale price (although very reasonable) don't say whether or not they will run on more than one computer nor what the charge is if you want them to run on more than one computer.

Therefore what do I need to do to return all the products on the invoice? Do I need a return authorization number or what? Please advise.

Fm MISOSYS, Inc: First off Lenox, there is nothing in any software package sold by MISOSYS which prohibits you from making as many backup copies as you desire. But all copies are for your own use; backups are not to be provided to others. Thus, there is nothing which prevents your "prime directive" from being satisfied.

Secondly, if you maintain multiple machines for hardware backup purposes, I see nothing there which violates the "single user" license; Our software is licensed for use on one machine at a time. We have many users with a machine at work and a machine at home, legitimately using a single copy of a software package **because the use is limited to one copy at a time.** If you have multiple machines with multiple users, then that justifies the requirement for a site license, or multiple copies if a site license is not available.

There is nothing in Quizmaster which prevents its use on more than one machine; I am therefore puzzled as to your statement, "it works on only one computer also".

The wording specific to LS-DOS 6.3 is the licensing stipulations prepared by Logical Systems, Inc; MISOSYS interprets them to allow use on more than one machine but not **CONCURRENTLY**. This interpretation is in line with that dis-

cussed in point two above.

You will note from our flyer that any product (other than a closeout) can be returned within 30 days of the invoice date. No prior authorization is needed. If you don't care to honor our copyrights and don't want to use our software, then you may return the packages in "re-saleable" condition. Note that "The SOURCE" cannot be returned.

Can't use DOS in MemDISK

Fm Dale Parsons: Dear Roy, Thank's for your 6 March 1989 reply to my 2 March letter about problem's running Visicalc, and installing Memdisk as the system drive on a Cat 1069 Model 4 [see TMQ III.iv, page 32-ed]. The trouble was a sick PAL chip.

The answer came when I picked up a used Model 4 (initial 64K from factory) for a grandchild. Lo, it ran Visicalc perfectly. So did the old machine when the extra memory bank, was pulled and the original jumpers replaced. With a replacement PAL, the old machine is doing all the tricks I missed for so long.

I had forgotten the memory upgrade was performed before getting Visicalc. This came in a house cleaning "drop package" at a Radio Shack store in Clearwater Florida about February 1983. In addition the deal included TK-Solver, Assembly Language Tutor, the TRSDOS-6 Training Course and a couple of tape programs for about \$60.

TK-solver had been touted as the greatest math advancement after the discovery of fingers and priced at \$395 (or more?). A real bonanza, right? Wrong! That thing would set mathematics back five centuries. The training course wasn't much better but I did get some reusable disks. What prevented the same ending for Visicalc is one of life's little mysteries.

The assembly tutor and Hardin Brothers

series in 80 Micro constitute the sum total of my formal training in assembly language. After purchasing Pro-Create from you in August 1987, I finally made the first faltering moves early this year. I soon learned some things I didn't think I had to learn. One of the early programs gave the right answers but also decorated the screen and was stubborn about repeating as it was supposed to. Somewhere was a note about an OD terminator to "flush the type ahead buffer". This may not be THE solution - but it works! Ah-ha, maybe Visicalc too? Well, it did change the trash filling to a solid freeze up.

Although "The Source" is largely a deep mystery, I am having a heck of lot of fun with it. If you have any commercial deciphering publications available, would appreciate knowing about it.

Now for two questions in your letter: (1) No, I was not attempting to install Memdisk as single density and (2) have never tried the spooler utility. Finally, many thanks for your effort and renew my TMQ (TM?) subscription. And, oh yes, My rebuttal to Jane Layman is withdrawn,

Help for Tandy 2000 Users

Reprinted from PC/Computing April 1989

Fm David R., Westport Connecticut: Your December message of hope to orphaned computers, "Gone But Not Forgotten," threw the magnificent mongrel Tandy 2000 into the category, "gone and forgotten."

But the biggest user group for any one computer, the Tandy 2000 Orphans, is handling the questions and problems of almost 1,000 members, providing out-of-print documents and disks, and publishing its magazine, The Wimper.

Our members have learned to boost memory to a megabyte and hard drives to 142MB. We've adapted 3.5-inch drives and 20MB snap-in hard drives that cost \$60. And we

maintain a list of more than 500 commercial programs that run on our snobbish machine.

The Tandy 2000 Orphans can be reached by mail at 387 Main St., Westport, CT 06880

Help Needed

Fm Frank Gottschalk: Gentlemen, I recently bought an old Model III Motherboard as a backup and/or parts. It had another board piggybacked on it that I need information for.

It is numbered SP1-3 Rev A and was made by Process Control Technology in Stockton, CA in 1981-1983. I have been unable to make contact with them. Old ads in 80-Micro indicate it might be a versatile disk controller and/or a speedup kit.

My biggest problem is that the wire from Pad"A" was disconnected and I don't know where it should go. Does anyone have any documentation, installation info or description of such a board or know where the Pad"A" wire should go?

Any info would be appreciated. Send copies to: Frank Gottschalk, 785 Maya Court, Fremont, CA 94539, or call Collect to (415) 651-2313.

Response on XLR8er patches

Fm Michel Houdè, Compiègne, France: I'd like to answer a few questions about Michel's patches for the XLR8er. First let me tell everyone that I was aware of all the methods that would increase the theoretical speed of a HD64180 Model 4/4P. We all have the same reference book.

If someone was to design a new computer built around the HD64180 microprocessor running at 6.144 MHz, things would be easy. Unfortunately, we have to deal with Model 4/4P's built around the Z80 running at 4.055 MHz. It is a sad fact of life that we may have to choose between speed and reliability.

What strikes me when I read the discussions in TMQ III.iii is that very few people relate experimental facts and theoretical assumptions. Everyone is trying to push the limits by setting or resetting this bit into that port, claiming a (theoretical) percentage of speed increase. But no-one actually tried to measure the real values and show the unreality of the expected increase. Like no-one wants to see the relation between erratic behavior and so called speed increase!

As a researcher, I am accustomed to the scientific method. Which means that everything you write must be proven or provable. If experimental facts give different results than expected by theoretical computations, then you have to revise your model.

When I wrote that setting 1 wait state and refresh period to 40T instead of 0_ws and 80T, speed loss was only 8 %, the only reaction was: we must get rid of these 8 %. Nobody wondered why it was not 24 %, as predicted by theory.

Please have a look at the values in TMQ III.ii pages 79-80, and TMQ II.ii page 54. Nobody should believe that Rubin's test is the definite speed test for Model 4's. But it is short and easy to implement and as a rough test it should be OK. Note that the original program as published by Roy runs interrupts enabled, so as to use the internal clock as an automatic stop watch. I ran the original test to make direct comparisons with Roy's results, and the same with interrupts disabled to measure "pure speed" (2 convenient calls to @SOUND helped use of a manual stop watch).

All 3 tests with EI gave the same results as Roy's.

The first obvious remark is that all speed addicts should run their computer with

interrupts disabled. They would get a 5 % speed increase. I'm not sure it would be a good idea.

It is important to note that the times for standard Model 4 and 4P (108.0_s and 124.6_s) are exactly (within 0.5_s) the times predicted by theory: 107.6_s with no wait state and 124.1_s with one wait state (4.055_MHz). If you make your Z80 run at 6.144_MHz and no wait state, you should find 71.0_s.

If we follow the reference book and use the new duration of each instruction, we find that Rubin's test with DI, 0_ws, 80T or 40T should give 56.7_s or 58.7_s. With 1_ws, 80T or 40T, we should find 68.0_s or 70.5_s.

Who can tell me why my stop watch gives 68.3_s, 71.1_s, 71.2_s, 74.0_s, respectively ?

I can accept a 5 % difference between theoretical and measured times, (1_ws: 71.2/68.0 or 74.0/70.5), but who can explain the 20 % difference with 0 wait state ?

Everybody should be able to reproduce these values. For comparison purpose, please note that these values are obtained with Michel's patches installed. No FIXBANK nor HIBANK nor FIXALL.SETX/CMD is used, not SET180/CMD. Rubin's test is run interrupts disabled. Any other configuration settings may be used. Your numbers may differ slightly from mine but the ratios should be the same.

Now let's be serious. The patches as provided give a 46 % increase in speed, compared to a zero wait state Model 4, or a 68 % increase, compared to an older 1 wait state Model 4. These are real numbers, measured with a stop watch, not computed from a book! I tried other values. In some cases, my keyboard refused to work correctly, while in others, I got strange patterns on my screen. If anybody wants to set or reset bits to try to do theoretically better, do it! But please do not complain if anything should go wrong.

Why didn't I try to do what the FIXALL filter is supposed to do, i.e. temporarily reduce speed when the keyboard is polled?

Well, I did! but first I find it hard to believe that if something goes wrong with the keyboard, everything else should be right. To convince me, hardware hackers must also answer previous questions. Second, things are much harder to do than it seems. It is much more than a filter. You must take into account the possibility of leaving prematurely the interrupt handler when the BREAK key is pressed. To enter DEBUG or any other application that uses that genuine documented DOS function (SVC#103). You must think that the TASKER is re-entrant. Any call to ENADIS_DO_RAM re-enables interrupts. The serial port may generate interrupts while the TASKER is busy from the RTC. And what happens when an interrupt occurs while the keyboard driver is active? I think that interrupt driven tasks must be kept short, it seems paradoxical to slow CPU down. Anyway, I wonder what the real (read: measured) improvements would be.

DO NOT USE FIXALL/FLT with Michel's patches. It modifies the CBAR and CBR ports in a way that is strictly incompatible with new @BANK handler. Please don't tell me that you've been using it for weeks without any problems, as it only means you did not yet meet them.

The main purpose of the patches is to allow the use of extended memory via standard SVC DOS calls. On the other hand, I strongly advise against patching programs that are not "well-behaved". I am sorry to say that the patches to LeScript (TMQ, III,iii, 51) are worthless and dangerous! The program uses @BANK to check the availability of banks 1 and 2, in that order, but everything else is hard-coded. Which means that even if you replace the values in the initial test (as the patches do), and those banks appear to be free, the program will always use banks 1 and 2, via direct hardware access! I wonder what the expressions "these patches work fine" or "this patch has been tested" really mean.

There are two ways to boot an ERAM-DISK. The faster is to use ERAML.D, then ERAMDISK (... ,F=N, ...). It should be noted that it is possible to Dump and Load only those banks that actually contain data (that's why the directory is re-

stricted to cylinder #1). The other method is to format a single-sided floppy disk with the little known parameter (... ,D=1, ...), which means: put Directory on cylinder #1. Then, after installing ERAMDISK (Type=5), do a mirror-image BACKUP. The floppy and the ramdisk should have the same name, or a JCL will abort, but the cylinder count may differ. Don't forget to answer the question asked by BACKUP.

Which leads me to an undocumented restriction uncovered by John Coyle: ERAMDISK (Format=No) is supposed to be used after ERAMLD (L), with types #2 and #4. Type 5 is supposed to be used with a mirror-image backup. It was designed to be used with a standard Model 4 using 180k disquettes. Well, I admit that my reasons may not be everyone's. To allow (T=5,F=N), change the mask used when checking the GAT at x'33EF' from 01100111B to 01000111B (that's x'47' instead of x'67'). I'm sorry for the inconvenience this restriction may have caused.

More TRS-80 Computer Clubs

Fm Roy T. Beck: Dear Roy, Following are several TBS-80 groups active in the Los Angeles area:

Valley TRS Hackers' Group (VTHG)
Meets first Friday, 7:30 PM
Valley Plaza Recreation Center
12240 Archwood Ave.
North Hollywood CA
Eric Bagai, 818-982-0467 for info
This group caters to Models 1, 3 and 4

Valley TRS Users' Group (VTUG)
Meets third Friday, 7:30 PM
The Learning Tree
20920 Knapp St.
Chatsworth CA
Lance Wolstrup 818-716-7154 for info
This group caters to Models 1, 3 and 4

San Gabriel Valley TRS Users' Group
(SAGATUG)
Meets second Friday, 7:00 PM
Senior Citizens Bldg
405 So Santa Anita Ave, Arcadia CA
Dr. John Phillips 714-592-4178 for info
This group caters to all Tandy Models

Hope this helps a little bit.

More TRS-80 Bulletin Boards

Fm Ted Deller 75515,1456: If you're interested in BBS's that support Model 4/4P/4D software, along with MS-DOS, Model 100, C-64 (and even some model III stuff on occasion), check out the following:

REMS-80 #001 (505) 624-0811

DataServe (204) 239-7103

George Lee is the author of the BBS software in use on both these boards (REMS-BBS), and he is one of the most dedicated supporters of the Model 4 around. His REMS-80 #001 is the "mother board" for several others around the country, and there's a plethora of programs to be found online.

Fm Michael Stark, San Diego, CA: I've included a card with information about my Model 4 BBS.

8-Bit Tandy BBS, San Diego, CA
300/1200/2400 8/N/1
Model I/III/4/100/102/200/OS-9
619-571-6366 (24 hrs)

TRS-80 Clubs & BBS systems

Fm MISOSYS, Inc: In our issue III.ii of *The MISOSYS Quarterly*, I requested input from any club or BBS still serving the TRS-80 community of users. I wanted the information to start a section in TMQ which would list the known clubs and bulletin board systems. In this issue, I am publishing the two lists of responses I have so far received.

If you are a representative of a club or BBS catering to the TRS-80 users, and are not yet on my list, please submit your information.

In addition, I would be willing to include an ongoing list of company addresses and telephone numbers for those establishments still catering to the TRS-80. Advertising in TMQ is not a prerequisite to be included in this list. Contact MISOSYS to be included.

Resource: Bulletin Boards

The Midlands Plaza BBS
Columbia, SC
300/1200 24hrs/7 days 803-776-9600
TRS-80 Model I; 10-Meg HD

MOTHERBOARD:
(415) 352-8442
8/N/1 94545 (SIG #2 for TRS-80's)

West End BBS
300/1200 baud, 24 hrs,
914-858-8722.
Model III; 10 Meg HD; TBBS 1.3.

hello, world
(817) 840-2140
300/1200/2400 8N1
24 hrs/day, 7 days/week.

Stone Mountain, GA
(404) 292-7603
1200 baud, 8N1

Resource: Computer Clubs

Mid Cities TRS-80 Users Group
(MCTRUG)
P. O. Box 171566
Arlington, Tx 76803

HUB Computer Users Group (HUB-
CUG)
530 Buschman St.
Hattiesburg, MS 39401

National Amstrad Tandy & General
User Group
Oakfield Lodge, Broad Lane,
Ram Hill, Coalpit Heath, Bristol.
BS17 2TY. Great Britain

NYBBLERS
CHABOT COLLEGE
25555 Hesperian Blvd.
Hayward, CA

Adelaide Micro User's Group Inc.
G.P.O. Box 214,
Adelaide, South Australia 5001
AUSTRALIA

F.J.Seccull General Secretary
TRS-80 SYSTEM 80 COMPUTER
USERS GROUP INC.
41 Montclair Street,
Aspley, QLD 4034
AUSTRALIA

SYDNEY TRS-80 Users Group
PO Box 223
Bankstown 2200
AUSTRALIA

The Hobart Users Group Inc. (THUG)
PO Box 420
Moonah, Tasmania 7009
AUSTRALIA

Resource: Companies

Aerocomp, PO Box 223957, Dallas, TX
75212 [214-637-5400]

Anitek Software Products, PO Box 361136,
Melbourne, FL 32936 [407-259-9397]

Computer News 80, PO Box 680, Casper,
WY 82602

Computer Reset, PO Box 461782, Gar-
land, TX 75046 [214-276-8072]

Cornucopia Software, Inc., 1625 Beverly
Place, Berkeley, CA 94707 [415-528-7000]

GRL Software, Suite 209, 1051 KLO
Rd., Kelowna, BC V1Y 4X6, CAN-
ADA

Hypersoft, PO Box 51155, Raleigh,
NC 27609 [919-847-4779]

M.A.D. Software, P.O. Box 331323,
Fort Worth, TX 76163

Microdex Corp., 1212 N. Sawtelle,
Tucson, AZ 85716 [602-326-3502]

MISOSYS, Inc., PO Box 239, Ster-
ling, VA 22170 [703-450-4181:
Orders to 800-MISOSYS]

Pacific Computer Exchange, 1031
SE Mill, Suite B, Portland, OR 97214,
[503-236-2949]

Powersoft, 4951 Airport Parkway,
Suite 700, Dallas, TX 75248 [214-
458-1197]The File Cabinet, PO Box
322, Van Nuys, CA 91408

RANTECH Computer Systems, PO
Box 1101, Clackamas, OR 97015
[503-771-0390]

Storage Power, 10391 Oakhaven Dr.,
Stanton, CA 90680 [714-952-2700]

Tandy National Parts - Hardware [817-
870-5600]

T/Maker Research Company, 812
Pollard Road, Suite 8, Los Gatos,

CA 95030, [408-866-0127]

TRSTimes magazine, 20311 Sherman
Way, Suite 221, Canoga Park, CA 91306

Try-o-Byte, 1008 Alton Circle, Florence,
SC 29501 [803-662-9500]

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Allows you to set up two drives for two different DOS's and copy between them easily!

If you use a TRS-80 with disk drives, then this is a must-have program that you will wonder how you did without for so long! Super Utility has won numerous awards, has received many 5-Star reviews and this could be your last chance to purchase a copy at this unheard of price. Super Utility does so many things, you will never use its full potential, but it isn't that hard to use since it is completely menu-driven with the most common defaults built right in. It is configurable for all the popular TRS-80 operating systems and will even allow you to set one drive for one system and another drive for a different operating system and copy files easily between the two. Even between Model I and III or 4, regardless of density, track number, number of sides, or system used. We have thousands of letters in our files over the years about how Super Utility has saved the user from various problems. Super Utility removes or decodes passwords (strips them right off a disk in one pass), reformats a disk without erasing the data, fixes problems, backs up most protected disks, etc. This was the very best utility ever written for the TRS-80 and now is the time to get your own copy. Super Utility has over 65 functions and features. Too many to describe! A fantastic buy. Does not work on hard disks. Our ToolBox or ToolBelt has similar features for hard drive use, as well as floppy. SU+ does not support Newdos/80 double-sided disks. '86 price: \$79.95

Super Utility Plus (Mod III & I) - Disk repair, password removal plus 65 other functions with manual. \$34.95

Super Utility Plus 4/4P/4D (same as above for TRS-80 Model 4, 4P, 4D - Reads/Writes 4, III & I) \$34.95

The Model 4 version of Super Utility has all the features of the Model I/III version, but more! It uses the larger amount of memory for quicker operations, plus utilizes the three function keys. One key is even defineable by the user to go right to their favorite or most used function in Super Utility 4. Also, boots right up in a Model 4P without having to first load the ModelA/III rom file. Many other niceties for the 4 have been implemented in this version of Super Utility.

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LDOS ToolBox (Hard Disk Check, Repair, Modify, much more! Like a "SU+" for hard disk) \$24.95

> Original 1986 price: \$49.95 - by Kim Watt, author of Super Utility+, PowerMail+ and many more great programs!

If you own a hard disk and use LDOS, this is the perfect insurance policy for your data. The LDOS TOOLBOX is like a Super Utility+ for hard disks. Features Disk Check and Disk Repair, Sector Modification, plus many, many other useful utilities that makes using a hard drive even easier. Each program contains a built-in Help command, so many times you don't even need to look things up in the manual - just press <Enter> for help! A very wise buy for hard disk users.

Model 4 ToolBelt (same for Model 4 TRSDOS 6 use. OK for 6.3. Like a "SU+" for hard disk) \$24.95

> Original 1986 price: \$49.95 - by Kim Watt, author of Super Utility+, PowerMail+ and many more great programs!

This is similar to The LDOS TOOLBOX, except it is for the Model 4 TRSDOS 6 operating system (all versions).

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Back/Rest - Super Fast Hard Disk Backup and Restore. Saves hours of time! For I, III or 4. \$34.95

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Initially written for ourselves, BACK/REST has proven to be a great time-saver for thousands of TRS-80 hard drive users. When reviewed by *80-MICRO*, they gave it FIVE STARS - perfect! It saves hours of time and is very easy to use. BACK/REST can back up 10 megabytes in about 18 minutes and 20 meg in about 30-40 minutes. It also tells you how many disks to have ready. Works under LDOS or TRSDOS 6 (both versions on same disk). Great utility for hard disk users!

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PowerMail Plus (Please specify Model 4, III /I.) 5 Star mailing list-data system! \$34.95

> Original 1986 price: \$99.95

This program was also written for ourselves when all the other mailing list/data base systems couldn't keep track of all the types of data we wanted to keep track of. We needed speed, we needed hard drive support and we needed a crash-proof data structure. PowerMail+ was top-rated (5 stars) in several publications and has never been topped. Works on floppies or hard disk under all popular TRS-80 operating systems. Allows importing of data from several other once popular mailing systems to avoid re-typing. Written in machine language by the author of Super Utility, this program is FAST and sorts up to 10 levels very quickly. If you keep track of names and addresses along with associated data for any situation, this is the one to use. Many churches, organizations and businesses use PowerMail+ for all the different kinds of lists they need to pull from. Each record has 24 user-defineable "flags" to allow total customization for your exact needs.

Text-Merge Form Letter Module - Create customized "form letters" and labels with PowerMAIL+! \$15.00

This optional module for PowerMail allows you to create customized "form letters" or custom labels, lists, etc. with PowerMail Plus and any word processor that saves text in ASCII format. Very easy to use and really gets the effect you want. Allows completely defineable report generating from your PowerMail+ data.

PowerSCRIPT - A Major Enhancement for SCRIPSIT 4, III and I (not SuperScripts)

\$24.95

> Original 1986 price: \$39.95

One of our very best sellers, this modification for Radio Shack's SCRIPSIT program turns it into a POWERHOUSE! Our program merges with your copy of SCRIPSIT to create a new program that outperforms most other TRS-80 word processors without relearning a new program! PowerScript adds new features in two important areas. The first area is in the printer control. PowerScript allows you to add printer control codes directly in the body of your text! Now it is easy to add underlining, bold face, the different sizes of print, etc. Initially set up for the EPSON type dot-matrix printers, it is configurable to just about any printer during set-up. If you have more than one printer type, then just set up a copy of PowerScript for each printer you have. The second area of improvement is in disk and file control. PowerScript adds several neat features to SCRIPSIT, including the ability to see an alphabetized directory without exiting the program, seeing how much free space you have, and others. This has been one of our most popular programs and we have received many, many complimentary letters on its performance. It works on the Model I, III or 4 versions of SCRIPSIT. It will even make a Model I version of SCRIPSIT work on a Model III or 4 (in the III mode). Lastly, PowerScript removes the limited copy "feature" of SCRIPSIT so that you may make as many copies as you need or copy it to your hard disk without hassle.

PowerDraw (animated TRS-80 screen graphics! Easy to use. Great for kids or adults!)

\$19.95

> Original 1986 price: \$39.95 - by Kim Watt

INFOWORLD, 80-MICRO and 80-US magazines really loved this program when they reviewed it. It does many things and is fun to use as well. First, PowerDRAW allows you to create graphics (mixed with text if desired) and save them to disk. It also allows you to create up to 33 "frames" of animation and "play" them like a movie. It also allows you to save the graphics in several modes, including BASIC listings, CMD file format, and others. These can then be merged into your own programs, etc., either in BASIC or machine language! Many of PowerSoft's opening screens were created with PowerDraw. In fact, it even creates animated opening screens (like we use in Super Utility, PowerTool, etc.) to really pep up the program. It also allows you to print the screens on Epson-type and several other types of printers. Lastly, PowerDraw has the ability to load in many types of TRS-80 graphic's and convert them to BASIC listings like a BASIC program generator!

PowerDOT 2.0 for printers. Mix text with graphics - no problem. Build new fonts.

\$19.95

> Original 1986 price: \$49.95

This program is similar to PowerDraw, but quite different. It allows you to create "hi-res" type screen graphics combined with text, and allows you to create drawings much larger than your screen. The screen is a "window" to a much larger drawing area and you use the arrow keys to move about the drawing. In a way, it is similar to Macpaint for the Macintosh computer. It also allows you to create custom fonts for ads, etc. Many of our early ads were created with PowerDot. It creates the hi-res effect due to each TRS-80 block pixel being printed as a single dot. Please specify if EPSON, Okidata, ProWriter, or Radio Shack printer.

PowerDriver Plus for SuperSCRIPSIT and SCRIPSIT PRO and Epson printers

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Allows EPSON or compatible printers to be fully utilized with SuperScripts.

This is a replacement driver for the ones you got with SuperScripts. It fully supports the various Epson and Epson compatible printers to the limits of their capabilities. Model I, III or 4 is supported in the same package. Easy to install. Once installed, works without any extra thinking. Thousands of happy customers!

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Leo Christopherson TRS-80 Animated Game Disk with sound (*Leo's Greatest Hits*)

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This is one of the greatest values in games ever produced. Leo Christopherson wrote the very first animated game for the TRS-80 and the country went wild for it, *Android Nim*. To watch these life-like creatures will make everyone laugh as they shake their heads up and down or side to side and blink at you stupidly as it waits for you to make a move. Then Leo invented how to make the TRS-80 produce sound and added it to NIM. He then followed *Android Nim* with the other games, even getting Radio Shack to sell *Dancing Demons*, which is a real scream. It alone is well worth the price of this disk, but you get ALL of Leo's programs on one disk for one great low price. If you haven't yet bought this disk, do it now! It is a classic! Each one of these games originally sold for \$9.95 - \$19.95 EACH. The disk includes the famous games: ANDROID NIM, BEEWARY, DUELING DROIDS, DANCING DEMONS (once sold by Radio Shack for \$14.95), SNAKE EGGS and ANIMATED LIFE. All games feature full sound effects and some of them are even in 3-part harmony! You and your family will just love this disk! *Dancing Demon* even features saving your song and dance routines to disk and four of them are included! The possibilities are endless and it is always entertaining. A great way to "show off" what your computer can do and always fun.

KIM WATT GAME DISK - Space Colony, Symon, Capture, Horse Race Slots - 3 with Sound

\$ 7.95

Kim Watt, author of *Super Utility* and other famous programs wrote some games that Adventure International published back in the early 70's. They are interesting in that most people have never seen these, as by the time SUPER UTILITY was established in the market, these games, as well as Adventure, were gone. Originally these were sold on three separate diskettes (or tapes), but we have combined them all on one disk for you collectors.

LANCE MICKLUS' GREATEST GAMES - 3 Disk Set!

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This is a great collection as it features space games (*Space Trek*), adventure games (*Dog Star Adventure*), gambling games (*The Mean Craps Machine*, which also includes a Craps tutorial booklet on disk), board games (*Mean Checkers Machine*), as well as some darn useful programs that you might use for real purposes. Also has some educational games for the kids. You will enjoy owning this set of programs by one of the early pioneer programmers for the TRS-80, Lance Micklus.

Special! All 3 Game Disk Sets for only \$29.95! Five disks crammed full of games that you and your family will really enjoy! If ordering the single density, Model I version of game set, the price is \$34.95.

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- Four Text Editing Windows**. Work on four separate documents at the same time. Reference one file while working on another. Move or copy blocks of text from one window to another.
- Automatic **display of the Page and Line number** that your cursor is on. You don't have to guess what page you are working on or how far to the next page - LeScript tells you automatically.
- Print-to-Disk**. Route print output to a disk file instead of to the printer. Great for sending preformatted text to bulletin boards or for checking how LeScript is decoding your commands.
- Built-in warning** system alerting you if you try to exit LeScript before saving your text.
- Justification-off command for times when you don't want the between-word spaces to be changed.

LeScript 2.00 also includes built-in 70,000-word spelling checker, automatic footnoting for term papers, multiple columns for newsletters, key-word-search disk file directory for quickly finding files when you don't know their names, proportional space printing on over 250 different printers, and more.

LeScript 2.00 is only \$199.95 for IBM-PC compatible computers, and only \$129.95 for the TRS-80 models 1/3/4/4D/4P. Updates to version 2.00 are available to current registered LeScript owners for only \$40 from version 1.8, \$60 from version 1.7, \$70 from version 1.6, and \$80 from version 1.5 and earlier. Updates come with free instruction addendums, or you can purchase a new LeScript manual for only \$15.00.

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The Model I Corner

Ken Strickler
P.O. Box 773
Stanwood, WA 98292-0773

Dear Roy, Since you haven't had one lately, here is a MODEL-I article - hope you like it!

I love my MODEL-I, I always have! It is a great machine, the FIRST real entrance into the MICRO-COMPUTER field which offered the HARDWARE - SOFTWARE - TECHNICAL MANUALS which allows the computer buff to see how it really works. Many books have been written explaining the intricate details of the operations so if the desire was present, no stone was left unturned!

I bought my first Model-I on a closeout at \$499 (4K level I) which I immediately upgraded to a 16K level II (I can't remember how much, but over \$150.00). What a joy, isn't that CASSETTE interface interesting! Especially if and when it runs! FAST TOO (let's see COFFEE, LUNCH and hope that you don't have to reload!) I'll get a disk as soon as I can get the Expansion Interface, and the \$450 for the drive. Forget a R/S drive, got a TANDON DSDD-80 TRK and DOSPLUS 3.3 (later upgraded to 3.4 and 3.5) operating system. TRS-DOS already had a REAL REPUTATION for WEIRD OPERATION.

Since I used my machine in a REAL TIME (as related to the clock on the wall) ENVIRONMENT, I purchased another from a co-worker when he moved to his MS-DOS machine! What a buy - \$450 for the whole system including 3 disk drives, and a PERCOM Double Density Controller, BSR X-10 light controller with which I controlled lights in my house. I already had a Lower Case Modification, Alpha Products (remember them) Real Time Clock, Voice Synthesizer, Aero-comp Double Density Controller (still around), R/S Modem and a Holmes Engineering Speed-up kit raising my clock speed to 5.1MHZ, and 3 DSDD 80 track drives on my own system, Epson MX-100. We are

DOS Subjects



talkin' HOG-HEAVEN. I've got spare parts til the next century! I was buyin' software as fast as I could afford it, and even tried harder as the CLOSEOUTS came by. I have COPYART II (a fine early wordprocessor which handled GRAPHICS and MULTI-COLUMN, linked to ELECTRIC WEBSTER), the COLLECTOR (TRASHMAN) string garbage collector, the ANALYST (FASTER and BETTER) program which told the programmer which variables should be first for fastest operation, the PRODUCER for program WRITING, NEW-BASIC additions for BASIC allowing

SCREEN GRAPHICS, Z-BASIC for those really fast compiled programs, just to name a few! My Christmas list always had plenty of requests for SANTA to fill in the Software and Hardware arena! One Christmas I particularly remember, my wife had somehow saved the \$360 required for a DSDD 80 TRK drive from AEROCOMP. What a surprise, I never guessed! Here I sat with 2.1 Meg "ON-LINE", running at 5.1 MHZ! Not to mention the fine job of wiring. The UL would be proud, real nice surge suppressors and multi-socket ac plugs for the 3 disk drives, monitor, expansion interface, crt, main

unit, and oh yes the muffin fan that I discovered that I needed for reliable operation at 5.1MHZ due to the heat!

I didn't mind that I had spent over \$3000 total for all this stuff. After all, it was sure cheaper than a new car or a sailboat! It seemed that I was spending money faster than the National Debt, but after all it costs something to be on the CUTTING EDGE, right? It didn't bother me that everyone thought that I was a little weird, after all what do these people know! (Most of them have MS-DOS systems now!) I was in my own little world! I could live with a 64 by 16 screen display. (Did I mention that I had replaced my CRT with a LANGLEY-SINCLAIR amber screen?) So what that it took the better part of 4 hours to move the system from one room to another and set it up to run again, you don't move it that often, and it is MY COMPUTER, MY BABY! WATCH YOUR MOUTH !!! It's alright, everything is just FINE!

Then one night - Jenny (my wife) calls from the living room - HONEY, THERE IS SOMETHING WRONG WITH CHANNEL 4! I'll be right there. Sure enough, little bitty squares in the picture. Still easily viewable, but kinda looked like a digital picture. Must be having trouble at the station (I hope). Back to the computer for more work. Time Passes, and I finish and SHUT-HER-DOWN for the night. Catch a little TV before shut-eye, and I see that CHANNEL 4 is OK now. I wonder what it was. Couldn't be my computer, I mean let's see - 5.1MHZ - I know that I can get the audio for CHANNEL 6 around 88 MHZ on my FM receiver, and since CHANNEL 7 doesn't appear before I get to 108 MHZ, maybe. Oh well, a little interference, I can live with that. (Don't watch Channel 4 while I'm on the computer! - HA,HA,HA - THAT'S A JOKE, DEAR!) Well you can't expect the best (any?) EMI - RFI shielding on a MODEL I. (Remember when the car radios used to "buzz") THEN - ONE DARK AND STORMY NIGHT — the neighbor (my father) calls and asks if I see anything weird on channel 4? NOT ME, but let me check! Not only do I have interference, but whoops, it is leaving the house. That is real bad news!

My world is crumbling! RFI from my computer! New programs requiring 80 x 24 display screens! Old programs becoming VAPOR-WARE before my eyes! AND NOW SPORADICRE-BOOTS! I CAN'T TAKE IT ANYMORE!

It is, after all, a piece of history. One was given to the Smithsonian Museum in Washington, D.C.! (Maybe, that should be a clue!) Now I can buy a used Model 4 for \$400 or LESS! DON'T HIGH PRESSURE ME!!!

I wouldn't just turn it down without investigating it - so let's see:

	Model I	Model III	Model 4	Mod 3 Mode
64 x 16 display	yes	yes	no	yes
80 x 24 display	no	no	yes	no
internal disk drives	0	2	2	2
external disk drives	3	2	2 (except 4P)	
CPU speeds MHZ	1.77/5.1(3)	2/4	2/4/6(1,2)	2/4/6(1,2)
max memory size in K(2)	512	768	1024	1024
lower case	yes(3)	yes	yes	yes
speed up kit	yes(3)	yes(3)	yes(4)	yes(4)
currently supported OPSYS	no	yes(5)	yes(5)	yes(5)
hard drives available	no(3)	yes	yes	yes
easy to move	no	yes	yes	yes
RFI - EMI shielding	no	some	yes	yes
stock clock speeds	1.77 MHZ	2 MHZ	2 or 4 MHZ	2 or 4 MHZ

Notes:
 (1) XLR8er w/256K @ 6MHZ (MISOSYS)
 (2) ANITEK w/1024K (ANITEK)
 (3) after market kits - no longer available.
 (4) XLR8er(6 MHZ) (MISOSYS) or ANITEK(5/6MHZ)
 (5) LDOS 5.3 or LSDOS 6.3 (MISOSYS) - CP/M (Montezuma Micro) model 4

So the hardware is a little better, what software uses the extra memory for anything besides a SPOOLER or RAMDISK, what's the benefit of a Model 4?

ENHANCED VISICALC - SPREADSHEET - 128K gives approx 90K workarea.

TK/SOLVER - SIMULTANEOUS EQUATION SOLVER - approx 72K workarea.

ALL WRITE - wordprocessor - gives 2 additional 32K work areas.

LeSCRIPT - wordprocessor - up to 1000K workarea, 4 partitions.

(* LITTLE BROTHER - DATA BASE MANAGER - 64K storage for routines.

(* DoubleDUTY - (discontinued) - partitions into 2 - 64K, 1 system area.

(* PROWAM - WINDOW APPLICATION MANAGER - provides many helpful utilities.

note: * requires 128K minimum to operate.

So - BIG DEAL, I don't use those programs anyway! (Pssst! Hey buddy - what

are you running on your system?) T/MAKER is currently closing out the DELUXE EDITION (paperback will still be available) of their Integrated Software System for the Model 4, containing a WORDPROCESSOR, SPREADSHEET, SPELLING CHECKER, DATA BASE MANAGER, LIST PROCESSOR and BAR CHARTER (just to name a few) for \$49. While not being able to complete the large tasks of the dedicated software package like ALLWRITE or LITTLE BROTHER, there are immense capabilities available in the 457 page, 4 disk package.

You mean that I can get a used MODEL 4 for say \$400, and a NEW OPERATING

SYSTEM for \$40, and an integrated SOFTWARE SYSTEM for \$49 - THAT'S ONLY \$489 and I can't even WRITE a decent program @ \$10 per hour for that price! (that's only 48.9 hours - a little over a week)

I don't care, I LOVE MY MODEL I, I WON'T SELL IT! Maybe I'll start my own museum sometime! Maybe I'll just look into the Model 4 Deal. \$489 'Ya say

I'm still gonna stick it out with my MODEL I — OK, OK, OK —

The following sources still have MODEL I software :

Howe Software - 205-556-4070: Home Budget and Checkbook Analyst; Mailing List; System Diagnostics; Small Business Accounting w/Payroll; Small Business Management System; Assembly Language course for beginner; Typitall Word Processor w/Speller

MISOSYS, Inc. - 703-450-4181: Editor Assembler (EDAS); Relocatable Assembler (MRAS); Disassembler (DSMBLR)

ZEDCOR, Inc. - 800-482-4567: Basic Assembler (ZBASIC)

This is not a complete list, but gives an idea that the MODEL I still has plenty of support!

Those readers who also subscribe to CN80 have been following Christopher Fara (MICRODEX) and his excellent tutorial on assembly language, I trust. We Model I owners are, and should be really grateful for the support that has been shown by those companies and individuals that have continued to support the real early technology. We don't represent ANY VOLUME of business. Most early users that I know have at least upgraded to the MODEL 4 since it will run both MODEL III and MODEL 4 software. (like having 2 computers in one!) MISOSYS still supports operating systems for the MODEL III and 4, and STAND ALONE in operating system support!

But THAT IS NOT WHAT I WANT! I want someone who will SUPPORT MY SOFTWARE be it Operating System or

Application which I currently own, regardless of origin, or to WRITE CUSTOM SOFTWARE to do my particular application whom I can CALL upon 24hrs a day, 7 days a week to answer my questions, or explain the material written in the MANUAL which I HAVEN'T READ. YES - THAT IS WHAT I WANT, AND I WANT IT NOW!

SO DO I - AND I WOULD LIKE A WINNING LOTTERY TICKET TOO - GOOD LUCK !

TRSDOS 1.3 passwords

Fm Tony DeBari 73117,452: Does anyone out there know of a way to change the protection on a password protected file in TRSDOS 1.3? I want to get at a program I wrote several years ago and I can't remember the update password or even the access password. The program is written in Disk BASIC and has a protection level of 6 (execute only). Any help would be greatly appreciated. Thanks.

Fm Michael Strait 73500,2513: Tony, I don't know if anyone has helped you yet on your password problem and there may be an easier way of doing it, but if you have DISKZAP or other similar disk editor utility, find the directory track and sector where the filename is located. Example entry :

```
110300: 5E00 0000 0042 4153 4943 2020
2043 4D44 ^....BASIC  CMD
```

```
110310: EF5C EF5C 1400 0287 FFFF
FFFF FFFF FFFF ...^.....
```

The first 4 bytes on the line directly under the filename are the password bytes (2 bytes for each password). Change these bytes to EF5C and the password will be deleted, hope this can help. NOTE Be sure not to change anything else if you don't know the results of the changes, it could cause some nasty problems.

Cassette to disk

Fm Tom Rich 74656,260: Many years ago I used your helpful group and I hope I can do so again, How can I get a Basic Model III Cassette over to My 4P. My friend is a Programmer and has done Lots of Games on a Model III and I would like to get them to My 4P. Is it Possible?

Fm Adam Rubin 71320,1052: Hi, Tom! Yes, it IS possible to run Model III cassette BASIC programs on your Model 4P. (I was in the same situation a few years back.) You'll need to run them in your 4P's Model III mode, so you'll need a Model III DOS: TRSDOS 1.3, Model III LDOS, or any of several others.

You'll also need to find someone with a Model III or Model 4 (not 4P) disk system, and a cassette recorder. Bring the tape, a backup of your Model III DOS, and a few blank disks formatted by whichever Model III DOS you're using, over to this Model III or 4 disk system. When you get there, boot up your Model III DOS, set the cassette baud rate if necessary, and start up disk BASIC. Then, just CLOAD each program from the tape, and SAVE it to disk.

Repeat the CLOAD and SAVE for each program on the tape. Once you get home, just boot up your Model III DOS, start up disk BASIC, and LOAD whichever program you want.

Fm Tom Rich: Thanks for the ideas, but what the trouble is my friend only has a Model III cassette machine. And I only have the 4P or can use the 4D. Is there a way of wiring the Model III to the 4P using the 50pin Bus? Or any other way? Or is there a cassette Jack on the 4D? I have a friend that has one but says there isn't one. But he doesn't know much about hardware.

Thanks again for the other ideas. I do have a lot of Utilities to make the conversion once I get it over to disk.

Fm Jim Beard 71675,566: The cassette jack is a 9-pin DIN connector identical to those used in some stereo systems. This is a circular connector with the pins inside. The simplest thing to do is to buy a cassette cable, which has the DIN connector on one end and three phono jacks for the tape unit on the other. Then, go behind the computer, tip it up, and look for the jack to plug in the cable. On most regular Model 4's, it's on the left rear of the machine, facing toward the rear, near the line cord. The 4P doesn't have a cassette jack.

The simplest way to wire a cassette Model III to a Model 4 is through the RS-232, using a null-modem cable. With cassette VIDTEX on one end and LCOMM on the other, you could do some things. If the Model III doesn't have RS-232, you are out of luck.

I'm convinced that the way to go is to use the cassette input for the Model 4. Bring the cable and tape unit from the Model III with the tapes. Boot in the Model III mode and load up the BASIC programs from tape, then save them to disk. The /CMD files are tougher; you need a tape to disk utility. LDOS has a CMDFILE utility that will load cassette /CMD files so that they will execute from the Model III disk system. Otherwise, since cassette /CMD files load at 4300H and the DOS loads from there to 51FFH (disk /CMD files load at 5200H), you can't run cassette /CMD files directly from disk.

To convert short utilities, I would recommend disassembling, relocating, and converting the system calls to DOS calls for the Model III mode or SVC's for the Model 4 mode.

Fm Adam Rubin: According to the Radio Shack Computer Catalog, the 4D has a cassette jack. It's round, about 1/2" across, and is probably next to the AC cord. Your friend with the cassette Model III should be happy to show you what the cassette jack looks like, and the cable that connects it to the cassette recorder. You said all the programs were in BASIC, so if you can borrow his cassette recorder, cable, and the cassette with the programs, half

an hour or an hour at the 4D should do it. (Oh, and the diskettes I mentioned last time.) If you can bring your friend along, that might help too. (Tape loading gets tricky sometimes.) So, the 4D ought to do it!

HD Controllers; QIC40 tapes, etc

Fm Peter Hufnagel, Danbury, CT: Dear Roy, I have been reading your notes in TMQ about adapting a PC's XT-GEN Hard-Disk controller to the TRS-80, and am interested in knowing if you could supply me with some information on the controller to help me adapt it to work on a home-brew 68000 system. The 512-byte sector "problem" you mentioned for TRS-80's would not bother me in this application, and XT-GEN boards are very easy to come by in this age of "IBM Compatibility." I would be more than happy to pay for copying costs, shipping, and your effort if you could supply me with the information I need. Basically I just need programming info, since I won't be changing the sector size and I already have the "pin-out" diagram for the PC 8 & 16 bit expansion ports.

Another thought along these lines is the QUIK40 tape drive you sell for PC's. I would think that if it hooks up to a standard PC floppy-disk controller you could hook it up to a TRS-80 and write the appropriate driver software (a special backup utility I suppose) so it could be used as a backup for hard-disks on TRS's. Have you given this idea any thought as a possible product? You yourself were praising its usefulness as a backup device in the last issue.

If you have any information on QUIK40 tape drive programming I'd be willing to give it a shot. I'd even consider designing/building an add-on external floppy-disk controller so it wouldn't affect the normal drive cabling (for those of you with three drives mounted in your Model III/IV myself included). This is something I've been

giving serious thought to lately as my disk storage requirements don't seem to have gone anywhere but up over the past 8 years. I'd be willing to publish the code (and circuit schematic if needed) in TMQ if you're interested.

I was also very interested in the Model-I 5.3 patches that have been talked about quite a bit in the past few issues. I already own a copy of Model-III LDOS 5.3 (purchased from you when I got the Model-III about two years ago) and it would be nice to have a 5.3 update for my Model-I also. I spent a night (12/31/87 as a matter of fact) working up my own patch to make the initial bootup "Date?" prompt accept dates from 1980-1999. I didn't (don't) have any documentation on how the "/SYS" libraries are formatted (or how to use PATCH to patch them) so I couldn't patch the Library commands such as DATE, DIR, etc. I did disassemble quite a bit of SYS0 (it's somewhere on a disk in my library) so I suppose if I finished it I'd find the answer to how the libraries are formatted. I don't have the SOLE package, but I'm still planning on getting the patches just to check them out. I may adapt them appropriately to work without SOLE. I do have a "Doubler" for the Model-I but I prefer to avoid mixed-density disks so I would attempt to put the utilities on an LDOSXTRA disk and the actual DOS itself on the main disk. I may even attempt to disassemble/reassemble the affected modules (which boils down to writing LDOS 5.3 for the Model-I) to put the changes in. Would you be interested in selling it if I did?? Of course, supporting it might get to be a problem.

Its nice to see a TRS-80 oriented magazine such as yours. Over the past few years I've watched the TRS-80 community seem to fade away. I was programming the Model-I in 1979, and while I now work on PC's and Large Mini/Main-frame class systems I feel the TRS-80 was and is a well designed system. Thank you for your time, effort, and dedication to us "old-timer" TRS-80 folks Roy!

Fm MISOSYS, Inc: Peter, The programming of the XTGEN controller is documented in the IBM tech manual for the

PC-XT. The GEN is no different from any other XT-type controller. You will just ignore the on-board BIOS. Incidentally, the protocol is a subset of SCSI.

The QIC-40 tape drive can indeed connect up to any floppy disk controller. The interface for the QIC-40 uses only two lines: commands are sent to the drive via a timed stream of step pulses; status is read via the track 00 indication. Given time, I may explore a driver implementation.

All information on the Quarter Inch Cartridge standard is available from Freeman Associates, 311 East Carrillo Street, Santa Barbara, CA 93101 [805-963-3853].

I have entertained the question of a Model I 5.3 LDOS; I am not interested in doing it, selling it, supporting it, or providing it. I am one person trying to do what I can to support the maximum number of folks given my finite time availability. Anything associated with the upgrading of LDOS 5.1 to 5.3 for the Model I does not mesh with my priorities. However, I do still continue to support LDOS 5.1.4 for the Model II

Accounting software

Fm Howard Riel 72677,706: I have a model 4 pc that I use for a small business. I would like to obtain an accounting spreadsheet program. Where can these be found? I don't have a lot of money to spend on this, so think cheap. Thanks.

Fm MISOSYS, Inc 70140,310: Check T/ Maker Research. They still have some copies of T/Maker at a real cheap price (\$49+ S&H). That has a spreadsheet in it. Their phone number is 408-866-0127.

8080 versus Z80 compatibility

Fm Adam Rubin 71320,1052: Anyone remember about the only popular 8080 program that wouldn't run on the Z80?

Fm Pete Granzeau 72375,11: As I remember from reading, not experience, Altair BASIC (the early Microsoft BASICS) didn't run on a Z80 without being patched because of an obscure incompatibility in the parity flag between the 8080 and Z80 chips.

Fm Adam Rubin: Congratulations! You win one bootleg copy of Altair BASIC on paper tape, as soon as I find one.

Yep, that's the program I was thinking of (also from reading, not experience). On Intel's 8080, bit 2 of the flag register is only used to indicate parity. The Z80, however, uses this bit to indicate parity for logical operations, and overflow for arithmetic operations. I recently ran across a CP/M program that used LD A,7FH / ADD A,A to determine the processor being used. This will leave the P flag reset on an 8080 (0FEH has odd parity), but the P/V flag set on a Z80 (+127 + +127 <> -2). Ah, the wonders of history...

LS-DOS Tasker Help

Fm Bob Haynes 73075,77: Roy, I have a couple of questions on proper implementation of a background task (see below):

Assuming the task code is in module form, installed and protected in high memory, would this generally be correct?

Since the Task Processor links through the vector found at MYTCB anyway, this is probably a dumb question, but, where should the JR at MODULE branch to, or does it ever matter?

Should the word imbedded by the install code at MODTCB be a relocated version of MODULE, MYTCB, or MYTASK? (I think MODULE, but I'm really not sure.)

In attempting to learn whether the programmer or the system is responsible for preserving registers, I scanned through the tasker code in SYSRES and found that all the main registers ARE saved except IX -was there a special reason for that?

Thanks in advance for your counsel and patience, Roy. Responses from anybody else are welcome, too!

Fm MISOSYS, Inc: The code looks reasonable, on the surface. It doesn't matter where the JR branches to. It can even be a "JR \$"; it's not going to be used. The two words at MODTCB are really not needed. They would be used for drivers, but your task module is not a driver so nothing will

```

MODULE JR      MYTASK      ; branch around header
ENDBYT DW      $-$
MODNAM DB      5, '$TASK'
MODTCB DW      $-$          ; relocated TCB address here
        DW      0          ; required by DOS 6.x
;
MYTCB  DW      MYTASK
;          various and sundry data assignments here
;          optional subroutines, whatever
MYTASK
;          active task code here
ENDBYT RET
    
```

be using those words.

It is useful for one register to not be saved/restored by the task process. That's so a little time can be saved. Using index registers takes more processing power and interrupt routines should be short and quick. The one index reg available as a task control block (IX) should be sufficient. How much data do you need to access anyhow? So don't use IY. If you really must, then save it.

Fm Adam Rubin 71320,1052: Hi again! A few short comments on your task:

The label ENDBYT is multiply defined.

You might want to make your end-of-module label point to the byte after the last byte of the whole module. Otherwise, you'll have to calculate the length of the module as END-START+1.

The TCB can be anywhere between where you've put it (after the module name) and the end of the code.

If this task is used **only** while a particular program is running, the TCB and task code can be within the program, and no memory header is needed.

I realize these are general suggestions, but they may be useful.

Fm Bob Haynes: Oops! That second ENDBYT was supposed to be ENDMOD. Oh, well I think Roy guessed my intent. And all general suggestions gladly accepted; live and learn, right?

Take a peek at Roy's filter in I.iv, pg 69. I'm using ENDMOD much the same way as he does there, using it as a starting pointer for a LDDR instruction; my length value is formed by a LENGTH EQU \$-MODULE statement exactly where you suggested, one byte past the end of the module. Of course, that doesn't work too well under MRAS, but I'm using PRO-CREATE...

In my (Duane's, actually) program, a header is needed, since the module is sysgened into high memory. What I want to do is slim down Duane Saylor's SmartWatch task program - 303 bytes of high mem is too much. Actually, I'd prefer 100 bytes or less in low memory, but I don't think it can be done. The module must switch in the Boot ROM in order to access the chip - guess I need to study the details of memory mapping a bit more here. Comments welcome.

Stripping bit-7 to printer?

Fm Louis Self 74076,1273: I have a Toshiba p1340 "Centronics" parallel printer and want it to ignore the most significant bit (MSB) so I can send control codes to it with a word processor that can send characters above CHR\$(128) but not below CHR\$(32).

If I can get the printer to ignore the MSB I'll just send a CHR\$(155) and the printer will see it as a CHR\$(27) control code - (155 minus 128)

I tried insulating pin number nine on the printer plug, which is the pin for the MSB. My theory was, by disconnecting that lead, the computer could never let it go high. Thus causing the printer to ignore the MSB.

Alas, it did not work. The printer printed from its set of weird characters of CHR\$'s 128 bytes HIGHER than what the computer was sending rather than lower.

If anyone sees what I am trying to accomplish, please give me a hand. It will also come in handy for anyone else who wants to embed control characters in their text files.

Fm Bob Haynes 73075,77: Hi Louis, From a hardware standpoint you were close, but no cigar. The TTL input lines on your printer have pullup circuits which

force the signal high when left disconnected. This is standard with TTL circuitry. So what you now have is bit 7 always high rather than low. A technician could open up your printer, disconnect pin 9 and hardwire it low (through a low value resistor, 68 ohms or so) but that is permanent and the least desirable solution.

If you're driving the Toshiba under LDOS/LSDOS, the problem is easily solved using a printer software filter. LSI had one for LDOS called STRIP7/FLT in their Filter Disk #1 package, check with Roy. For LSDOS, there may be one floating about in the DLs here. If you strike out there, let me know. I'll hack out a version for you, it's pretty straightforward code. OK? What WP are you using that can't handle control codes 0-31?

[time passes]

Just for fun I sat down this afternoon and knocked together that filter I spoke of earlier. Works fine. I'm sending you a copy via EMAIL /binary. Just download it with your usual protocol software, naming it LOWPASS/FLT. Normally you would install it using the DOS SET command, but you can just type:

```
LOWPASS/FLT <enter> (w/o the SET command)
```

at the LS-DOS Ready prompt to get the explicit instructions imbedded therein. Hope this helps you.

Fm LDOS Support 76703,437: Disconnect the wire at the computer end of things, then tie the disconnected wire that now goes to the printer, to ground instead. A pull-up resistor in the printer is forcing the disconnected line to be seen as always high.

Doubled-sided drives

Fm John D. Williams 70441,1247: I recently got a double-sided drive for my Model 4 (original model). After installing it, everything seems to work OK in formatting & using SINGLE-sided disks, but I can't get FORMAT to format a disk as a double-sided one. After FORMAT reports formatting all 40 cylinders, it returns bad cylinder messages for EVERY track. Is there a patch needed to get LS-DOS 6.3 to view the drive as a double-sided one, or is the problem that the floppy controller is unable to handle double-sided drives? If the latter is the case is there anything that can be done to upgrade the controller?

Fm Pete Granzeau 72375,11: The problem is the drive cable in the Model 4. Look into the connector you attach to the drive, and you will see several pins are missing. One of those pins is pin 32, required for "side select". The other pins (the missing ones, that is) are used to establish the drive address. Hopefully, your DS drive has jumpers which permit you to establish the drive address. Set them, and replace the connector with a 34 position card edge connector with all positions present (Radio Shack cat. no. 276-1564, \$2.99). I am assuming you only replaced one of two drives. If you replaced both of your drives, you can try just turning the signal cable over, so all the missing pins are on the other side of the PC boards (all of them). The odd-numbered pins are all ground, so a few missing ones shouldn't hurt. Too much.

Fm MISOSYS, Inc 70140,310: John, Pull the orientation tabs off of each card edge connector and invert each connector into each drive and the motherboard. Then jumper the drives for the proper drive selects (DS0 and DS1 for 0-3, or DS1 and DS2 for 1-4). Tandy pulls the side select pins from their cable connectors.

DO needs SYS6/SYS

Fm A. Baracos, Winnipeg, Manitoba, Canada: Dear Mr. Soltoff, About a year ago, I purchased PROWAM from you and tried to use it with SUPERSCRIPSIT. As I had trouble installing SSFIX, I wrote to you, and on May 25, 1988 you kindly sent me further instructions. However, I still have not been able to get it to work as described.

I have had some success with Scripsit 01 00 09 installed on LS-DOS 6.3. The command DO SSFIX gave error message 07H, and the patches did not take. However I was able to install one-at-a-time, the 8 patches listed under SSFIX/TXT. The CTRL-Z activating code then worked, and I can now enter PROWAM from SCRIPSIT. However I can not QUIT SCRIPSIT after I use any BLOCK, for example to move a paragraph. When I press CTRL-Q, I get an error message "Logical Record Length Open Fault". I have been getting-by, by simply avoiding the use of any Block.

Can you please tell me if you have encountered this problem, and what the solution is.

I also found that SSFIX would not take on SCRIPSIT 01 02 00. I then tried applying the patches individually, but got a "Line Mismatch Error" when it came to applying the fifth patch listed under SSFIX.

On other subjects, do you have any new Software for the TRS 80 Model 4? The list I have is dated Jan 1988. Would you have a SCRIPSIT Driver for the TANDY DWP230 printer. I have been using the DPW210 driver for the DWP230 printer, but it will not handle BOLD on a proportional print wheel.

Fm MISOSYS, Inc: Dear A., The "Error 07" message you received when trying to invoke the DO command via "DO SSFIX", is simply explained. Quoting from *The Programmer's Guide to TRSDOS Version 6*, "This error indicates that a request was entered which required a system

overlay that had been purged from the system disk". The DO command, which handles Job Control Language (JCL) command compilation, is stored in SYS6/SYS. JCL execution is processed by SYS11/SYS. If either of those system overlay modules have been purged, then the error 07 message would be displayed.

When you applied the patches one at a time, perhaps you made a typing error? Perhaps if you go back and LIST the patched file (in hexadecimal), you can correlate the patched area with the SSFIX listing and confirm that the file(s) were correctly patched. I don't use SuperScripsit, never had, and probably never will. Thus, I would not have encountered any problem; I simply reported what had been provided as input.

I am enclosing the most recent flyer listing our products for the Model III/4 computer. I don't have SS printer drivers.

Doubling of files - revisited

Fm MISOSYS, Inc: The following dialogue is provided to bring my readers up to date concerning a problem reported some time ago. The problem appears as two or more instances of a file with the same name on a floppy diskette. Notwithstanding the comments of Mr. Ainsworth, my opinion is that the problem is experienced solely on a gate array Model 4, and has nothing to do with CPU speedup modifications or CPU replacements; it is a hardware bug.

I would suggest that anyone wishing to duplicate my experiments would kindly forward the results to me so as to produce additional empirical data. All that is needed is to run the test BASIC program proposed, after first creating a file of the name provided. Responses should include model number and serial number.

Fm Charles A. Ainsworth, Woodbr-

idge, VA: Dear Roy, During last year, we had a rather abundant correspondence on the troubles I was having with the XLR8er board. In summary, out of three 4D's of 1987/1988 vintage, one didn't work correctly and two did. Subsequently, another went on the blink, leaving only one with the XLR8er. I continued working that one.

One of the problems I had last year was doubling up of the same file on the same disk with the same name, and this was covered in TMQ III.i, page 67. The patches you provided for SYS2, SYS12 and BACKUP were duly applied by me (and included in Michel Houde's patches) together with a system configuration that includes DELAY.

I am attaching several printouts: A directory of a disk with a repeated file; a printout from DEVICE (B) showing delay turned on and three printouts from FED2 showing your patches applied.

I am forced to put this computer with XLR8er on ice pending any possible solution to file doubling up.

Fm Charles A. Ainsworth: As stated therein, my letter of March 23 explained that one of my 4D machines, the last one with an XLR8er, had gone on the blink and had been doubling up files on floppy. You replied on a return copy of my letter of April 12 "It's really a DOS problem! I'm looking into it."

I also stated that the machine with the XLR8er had been put on ice and that I had to borrow a machine to keep going, but that's a situation I can't maintain for long.

Now, it's over three months since I advised you of the problem. To date I have no solution. I can't keep the borrowed computer any longer. So which way do I go from here? Seems the only answer will be to yank and dump the only remaining XLR8er as I did with the other two I had.

Fm MISOSYS, Inc: Dear Charles, This is in response to your letter of June 26th

concerning my previous note relative to your multiple identical file names on one diskette" problem. In my previous note, I may have been a little hasty in claiming a DOS problem, but then my initial evidence suggested that. Let me bring you up to date on my findings.

Your problem, as well as that reported by a few other folks, seems to occur when a particular file is opened for writing a large number of times. Programs which open a file for output typically use the DOS @INIT service call. In order to understand the nature of the problem, let me first provide a brief dissertation on @INIT. This SVC first issues an internal call to @OPEN, in case the file is already in existence. The OPEN function checks for the availability of the disk first by calling @CKDRV. If @CKDRV succeeds, OPEN looks for the file on that disk drive so checked. It then reports success or failure back to @INIT. If OPEN can open the file, then the @INIT request is satisfied. If OPEN fails to open the file, @INIT then attempts to create a new file. To do that, it has to find an available diskette, which may in fact be a single drive if the file specification included a drive spec. If @CKDRV succeeds, then INIT creates the file.

Assume for a moment what would happen if the first @CKDRV called from OPEN fails to detect that a specific drive, targeted by the drive spec, did not contain a diskette even though a diskette was loaded; CKDRV reports the failure back to OPEN which reports the failure back to INIT. INIT then proceeds to create a new file. Further suppose that the second call to @CKDRV by @INIT succeeds in detecting the loaded diskette. INIT creates a second instance of the file specification in the directory; a multiple file is created.

The above scenario is not fiction; it is exactly what is happening in these cases of multiple files.

Okay, in order to confirm that operation, I ran the following BASIC program:

```
10 FOR I = 1 TO 300:PRINT
"Iteration ";I
20 OPEN "I",1,"TESTFILE/
DAT:1"
40 CLOSE 1
50 FOR J = 1 TO 10000:NEXT
J
60 NEXT I
70 END
```

With the "TESTFILE/DAT" previously created, all the program does is attempt to open the file, close it, then wait for about six seconds for the drive to de-select and turn off the drive motor. It then repeats the sequence. This bypasses the @INIT sequence, which I first used, but I subsequently narrowed the problem to a failure of OPEN. Note that during the operation of the program, the system drive is a MemDISK so that no disk access need be made to get the DOS overlays.

Starting from a cold machine, I was generally able to get through one run of 300 without failure. My test machine was a gate array Model 4P. However, I could not get through two runs. If I upped the loop counter tenfold to 3000, I could never get through a single sequence. Yes, that is punishing the drive!

Okay, that 4P had an XLR8er in it with the Houde patches which adjusted the @CKDRV timers to compensate for the increased speed. So I decided to try another machine, this time a Model 4D (obviously a gate array). The behavior was identical to the 4P. Running the same test program under Model III mode LDOS 5.1.4 and LDOS 5.3, I never got a failure. That's why I initially suspected the DOS; Both 6.3 and 6.2 failed the test program but LDOS 5.1 and LDOS 5.3 worked.

I subsequently used this machine for a detailed analysis. I dug into all of the code that was executed within @CKDRV, tracing through all of the calls into the system - including the floppy disk driver. The @CKDRV code uses the sensing of the index hole to confirm or deny the presence of a rotating diskette in a disk drive. It is a function of the disk drive to send the index hole status to the floppy disk controller. The FDC shows (or is supposed to show) a "1" bit in its status register when-

ever the drive is sending an indication that the index hole is over the detector. After a thorough analysis of the machine code and a calculation of its t-states (the actual number of clock cycles used), I was convinced that the floppy driver call to access the FDC status register used to read the index pulse was executed at least six times during the time period that the drive should be seeing the index hole during one revolution of the disk.

Incidentally, typical timing data for the index hole generation places the time between index pulses (per rotation) at 200 milliseconds plus or minus 150 microseconds; a single pulse generation can range from one to eight milliseconds, with two milliseconds being typical. LS-DOS 6.3 will check the index hole status three times per millisecond at its worst case; worst case being maximum @BANK bank switching code being executed.

With the above calculations in mind, I explored other tests. I evaluated the code executed in the Model III LDOS 5.3 mode and learned that the time consuming overhead of memory management in the Model 4 mode makes the CKDRV code over four times slower than that of the Model III mode; thus, over four times the number of index hole checks in the same time period are performed by Model III CKDRV over Model 4 CKDRV. The CKDRV code was changed by LSI starting in the 6.2 release from an interrupt driven timer loop to a countdown timer loop. I also tried 6.0 and 6.1, both of which also failed but not necessarily as severely as 6.2 and 6.3 releases. Nevertheless, the code showing up in 6.2 and 6.3 should work; something was going wrong.

I attempted to dig deeper into the problem. The only resources currently at my disposal are observations of the result of variations in the software. I tried keeping interrupts off while CKDRV was checking the index pulse. I still got failures. I upped the timer values and still got failures. I trapped the failure event and confirmed that each time a failure occurred, it was caused by a failure of the index pulse. I could not determine why. Under 6.3, CKDRV has to detect the three state sequence of no index, followed by index,

followed by no index, in order to confirm that the drive under test has a diskette in with the door closed and that the disk is rotating. Each state has a specific maximum time period for the test.

In order to expand my testing, I moved the test program over to another machine, this time a non-gate array 26-1069. Quite oddly, I experienced no failure. I ran the test program twice with the loop counter set to 3000 (running it during the day and overnight). No failure! I moved to another Model 4, 26-1069 non-gate array. Again, running two iterations of 3000 each in succession brought no failure. I have one more machine, an early non-gate array 4P. I am currently running the test on that machine. At this point, I am suspecting a hardware problem. My suspicion is that the index pulse is being suppressed in a burst mode short enough to impact the six observations per rotation executed by the Model 4 CKDRV code but not sufficient to impact the 24 observations per rotation executed by the Model III code.

I ruled out differences in the floppy disk drives themselves by using an external disk drive connected to the 4D which failed, and then subsequently connected to a 4 (non-gate array) which did not fail. Same drive, same cable, both machines!

Now what's different about the Gate array machines (like your 4D) and the non-gate array machines? As far as disk access goes, the floppy disk controller is different. The non-gate array machines use a Western Digital 1793 FDC, a WD1691 floppy support logic chip (except for the 4P 26-1080), and other discrete logic chips. The gate array machines (26-1069A, 26-1070, and 26-1080A) use a newer WD1773 FDC and other discrete logic chips. Perhaps its a defect in the FDC chip itself? I don't know, but I do know that the machines in my possession which have a 100% failure rate in my test program all use the 1773 FDC whereas the machines in my possession which have a 0% failure rate in my test program all use the 1793 FDC.

I certainly realize that you are unconcerned with where the problem lay, but are interested in a solution. Well I am

certainly interested in finding a solution. But I recognize that (1) the problem is certainly not restricted to use of the XLR8er, and (2) a solution can only be developed once either the root cause of the index hole suppression is determined, or until I stumble onto a code stream for the Model 4 DOS which is unaffected by the root cause. I am continuing to evaluate the situation. When a solution is forthcoming, I will so advise.

Fm Charles A. Ainsworth: Dear Roy, Many thanks for your letter of June 28 regarding doubling up of files on the same disk. Your time, effort and courtesy are much appreciated, as usual. This letter does not call for a specific reply and is only intended as comments.

Your explanation of the possible causes of the problem has, to a certain extent, gone way over my head. The nuances of DOS operation are not among the collection of weird and wonderful things that my tangling with modern technologies forces me to become involved in. Anyhow, I get the general trend, which is quite sufficient to follow your outline. However, I plead to be forgiven if, under such circumstances, I make what seem to be silly statements.

You show a Basic program for repeated opening and closing of an "I" modality sequential-access file from Basic at timed intervals and then refer to the number of times you could run "without failure". I'm not clear as to what sort of failure you have in mind. The failure I have complaints about is doubling up of the same file on the same disk. If you are testing in the Input modality, I don't see how you can generate any file duplication as no writing to disk is involved. I suspect that you were testing for something else, but I fail to see exactly for what. If I could understand it, I might run the program on one of my machines, but I would have to know what I am looking for. As I said, pardon me if that's a silly statement!

At the end of your letter you state that "...the problem is certainly not restricted to use of the XLR8er...". I won't argue with that, but I must definitely state that,

in my own personal experience, every instance of doubling up of a file on a disk has definitely occurred when using an XLR8er and never on a 4 or 4D in the original configuration as purchased, i.e., without XLR8er. I can imagine you exclaiming "Aha! and how do you know that you never had a file doubled up which you didn't notice?" The answer is that I have been using model 4 since its inception (about 1983) and switched to 4D's as soon as they came on the scene. Over those six years or so I have run about four machines very hard on ALLWRITE or largish data bases. I have ALLWRITE Autosave set to 50, which means relatively frequent saves to disk, and in a typical year some three million words get done on it, a very substantial bundle (no, I don't and couldn't do that lot myself, I hire help). The data bases are in an almost constant state of being run. So its anybody's guess how many saves to disk there have been, perhaps it wouldn't be too far out to talk in the hundreds of thousands.

I have a system which, in essence, boils down to this: Since I have had 4s or 4Ds in operation, I check the progress of work done each day and one of my indicators is the size of files on disk. Therefore, each work day a directory is printed out for each and every disk that has been written to or modified. Thousands of directory printouts have resulted, and I scan each one at the end of each day. As these things mean money to me (and enable me to weed out any hired help who may be a shirker) I examine these directory printouts with an eagle eye. If there ever were any file with its name appearing more than once I would catch it instantly. When working without an XLR8er on a machine there has never been a doubled up file.

I'm not claiming that my experience lays down any hard and fast rules, all I'm maintaining is that I have never had any problem running without an XLR8er.

I would also think that, if there were any chance of doubling up without an XLR8er, surely the (perhaps) half a million 4/4D users out there would have experienced it, and computer users being a rather vocal group, one would have read of it in TMQ,

80-Micro or wherever.

Anyhow, to boil things down to the essence: I'm still stuck with one 4D that I can't use, so here's hoping some solution will be soon forthcoming.

Thanks again for your valuable help.

Fm MISOSYS, Inc: Dear Charles, Apparently I did go way over your head when I tried to explain in a detailed technical manner the results of my analysis concerning the "multiple file phenomenon. Please forgive me, but due to the extreme detail and analysis contained in some of your letters to me, I just assumed that I would not be too deep. Let me try again in very simple terms, because its important that you (and other readers) understand what I have discovered.

Let's look at how two (or more) files of the same name can get on a single disk drive. The DOS has two system calls (SVC's) for initiating access to a disk file. These two are denoted OPEN and INIT. The difference between the two is that OPEN will only provide access to an existing file, whereas INIT will create the file if it is not found to exist. Now remember your little technique in BASIC for "Checking from Model 4 BASIC for the existence of a floppy disk file"? You used the BASIC statement, 'OPEN "I",1,"MYFILE...". That can only gain access to the specified file if the file already exists because BASIC uses the OPEN SVC in the DOS. If the file doesn't exist, then the DOS OPEN returns an error to BASIC, which reports it to the program. When you issue an 'OPEN "O",1,"MYFILE..."', BASIC doesn't use the DOS OPEN, it uses the DOS INIT service call. The thing about INIT is that it will create the specified file if it doesn't find it!

Okay, now knowing that INIT will not create the file if it finds it, what does it use to look for it? Well, OPEN, of course! This is the same DOS OPEN service facility that BASIC used for the 'OPEN "I",...'. When INIT completes, it returns a flag value indicating whether or not it had to create the specified file. The requesting

program could then know whether the designated file was "new" or "old".

Most programs which do not offer programming control over file access, use the DOS INIT service function to gain access to a file. So any file designated by the user will be created if, in fact, it wasn't available to the DOS.

In the case of a single disk containing more than one file of the same name, what had to occur was something like the following:

1. A program requested access to an existing file on a specific drive via the INIT DOS service call;
2. INIT called OPEN;
3. OPEN failed to find the file because the DOS CKDRV facility failed to detect the presence of a diskette;
4. INIT then attempted to create the file but this time, CKDRV detected the diskette;
5. A new directory entry was created for the "new" file resulting in a file duplicate in name to an existing file.

Once you recognize this as the scenario which generates the multiple files, you then should realize that the result (multiple files) is caused by a failure of DOS OPEN to reliably detect the presence of a diskette in a drive. Testing can therefore be restricted to OPEN, and testing of INIT can be dispensed with. That's why my test program was tailored to stop on a failure of 'OPEN "I",...'

The test program is a large loop, each iteration of which attempts to access the "known to be available" file. The loop has a delay time subsequent to the CLOSE of the file to give the drive an adequate time to deselect and for the drive motor to turn off. This "normalizes" the state of the drive. The loop repeats a "large" number of times. Theoretically, the program should run forever with a non-terminating loop; there should be no failure of the software or hardware to properly open the file unless there is either a software or hardware failure. If the program terminates

prematurely, then something has failed to behave in the expected manner. Given that I can cause the loop to prematurely terminate every time I run the program, then I can explore the root cause of the failure. But how big should the loop be; i.e. how many times should I be able to open the file without entertaining a failure? Everything has some failure rate. One in 10? One in 1000? Probably the failure rate should be a random event in the magnitude of 1 in 1,000,000 or 1 in 10,000,000. Thus, if I can obtain a failure with greater than a 1 in 300 chance, I do have a problem.

There are differences in Tandy machines. I have run this test program on five different machines at my disposal: One 4D (a gate array) 26-1070, one 4P (a gate array) 26-1080A, one 4P (a PAL machine) 26-1080, one 4 Rev C (PAL) 26-1069, and one early 4 (PAL). Note that loops of 6000 produced no failures on the PAL-based machines; I could not get any of the gate array machines to loop past 300. I am confident that the non-gate array machines would satisfy the expected error rate; but there is something wrong with the gate array hardware.

You may have been bashing on ALLWRITE for six years, but you most certainly were not using gate array machines all of those years. When did you get your first one (either a 4D 26-1070 or a 4 26-1069A)? That's when you could have first started seeing the problem. Granted, if you introduced a speedup to your machine and were using TRSDOS 6.2, then you were more prone to experience the problem because LSI switched to using CPU timed loops in 6.2's CKDRV; double the speed and you cut the detection time in half. Once I found that, I introduced the patches to SYS2/SYS, SYS12/SYS, and BACKUP; all of which have the same CKDRV code stream. That normalized the timing; but it didn't eliminate the problem for gate array users. That's why I say that the problem you are having has nothing to do with the XLR8er board. You have the same problem with or without it.

So what am I doing to correct the problem. Well first I am trying to find out exactly where the problem originates.

That's where I really got technical in my last letter. So there's no point in rehashing that issue; I can't bring that down to lay terms. What I can do is to advise you that there is a very specific difference in the floppy disk controllers of the gate array versus PAL-based machines. One difference is that the gate array machines use the Western Digital WD1773 Floppy Disk Controller (FDC) chip whereas the PAL-based machines use the WD1793 FDC chip. The second difference is that the additional controller circuitry which connects the floppy disk drive signal leads (specifically of interest is the INDEX HOLE status) uses gate array logic chips on the gate array machines and discrete logic chips on the PAL-based machines.

Needless to say, but my testing to date recognizes the problem as stemming from a failure to see the INDEX HOLE status for some finite period of time, sufficient for CKDRV to assume that the drive is not available. What I need to do now is find out specifically where the failure is occurring and find some workaround; I doubt that Tandy will admit to any problem, or rectify it if one is proven.

Model II LS-DOS; ALLWRITE stack

Fm John H. Mercer, Mortdale. NSW, Australia: Dear Roy, Belated congratulations on the successful arrival of Benjamin Charles. When last I wrote to you I had not taken time to dip into either of the last two copies of TMQ, so was unaware of the happy event. I trust that Brenda will now be able to get back to work. The lengths that people will go to to get time off! Sorry Brenda, I was really only joking, and can well imagine just how busy you must be with all you have on your plate. I pray that the children will be a continuing source of joy to you both.

Our group (SYDTRUG) has just recently been presented with two TRS-80 Model 2 computers, one of which has an external hard drive. They came with TRSDOS

2.0B and we are wondering if it is possible to get a version of LS-DOS which would suit these machines. Would you please advise if such a DOS is available and if so what is the cost? As a matter of interest, were the LSI produced DOSes for the Model 2 set up to require braces rather than parentheses to enclose the parameters of system commands? As one who has grown used, over nearly six years, to using LDOS and LS-DOS, it has proved traumatic to have to remember to enter commands in UPPER CASE ONLY and enclose parameters in braces. I imagine it will also take some getting used to, having to use the shift key to enter colons in BASIC programs. But then I suppose that as Confucius is alleged to have said, "A man can get used to anything; if he puts up with it long enough".

Browsing through Volume III.ii of TMQ I note the item "Fix for Allwrite and PRO-WAM". I was very interested to read of Brad Stiles' experience with the corruption of the DCBs by unnecessary use of the system stack. I have once or twice experienced this on seemingly random occasions while using ALLWRITE, but had not realized that ALLWRITE was the culprit. My version is 1.12 and the addresses concerned are different but I intend to patch it to conform to your suggestion.

I have one small query, brought about by my limited experience with "real life" assembly language programs. I can follow the reasoning behind loading the stack pointer with 26BBH so that ALLWRITE will use the memory below that address for its stack. However, I cannot grasp the intention behind the original instruction to save the contents of SP when entering the application program unless it was to ensure that if for any reason the stack became unbalanced (if that is an appropriate term), before control was passed back to the DOS, then the saved value could be loaded back into the SP prior to returning. Then things could carry on without any dramas. If this is the case, would it not cause confusion to save the address of the top of the NEW stack instead?

I begin to suspect that there is a serious flaw in my reasoning; but lack of knowl-

edge prevents me from seeing what it is. Well; that's my story anyway, and for now I'm sticking to it! Perhaps some other beginners in the assembly language field could also benefit from your further explanation of this point. I know I would greatly appreciate some mention of it in a future issue of TMQ.

Warmest regards, and please keep up the good work!

Fm MISOSYS, Inc: John, I still have available the LS-DOS 6.2 release for the Model II which LSI produced. It is a Model 4 TRSDOS 6.2 work-alike; thus, it uses parentheses, not braces, for parameter demarcation. There is also a hard disk driver and formatter available which supports 5, 10, 12, and 15 Meg Tandy drives. It doesn't support the 8 Meg drive since that used a different hard disk controller. The 6.2 DOS product is simply the 8" system disk with one sheet of information. The product implies ownership of the TRSDOS 6.2 manual. I used to sell the Model II LS-DOS 6.2 for \$49.95 + S&H; but these days, it can be had for 39.95 + S&H. The hard disk driver/formatter is TRSHD2/DCT and TRSFORM2/CMD; the files are supplied without documentation as they work identically to the TRSHD6/DCT driver and TRSFORM6/CMD formatter. Price for the two files is \$19.95 + S&H.

It is unfortunate that the Model II keyboard has the colon character as an upper case of the semi-colon. On the other hand, that is the standard layout of a typewriter, and is universal on MS-DOS PC keyboards. Perhaps you need to write a filter which can switch the two around?

As far as the ALLWRITE stack fix, you understood perfectly well the reason why a program would save the stack pointer upon its initial execution. But the "old stack pointer" was not saved in the new stack, it was saved to a particular word address in memory. It is correct programming procedure for a program to save the SP register contents if it is going to alter them, then restore the SP to its original value when the program terminates.

Accessing the video screen from BASIC

Fm Wayne Myers, Georgetown PEI, Canada: I'm having some trouble with some DOS SVC functions for the "new user interface to SVC's" BASIC command. For example, I can't get functions @GET or @VDCTL to return a character in register "A", which is ARRAY(0). All I get is an ambiguous number. Please note that many of these functions are working fine. So with that in mind, I do feel that I'm getting the entry parameters set correctly. In general, I find these SVC functions a little difficult to understand. So I'm writing to you for some help. Can you direct me to any useful material on these functions?

On another note, can you explain why the BASIC commands PEEK and POKE have been abandoned by LSI in reference to the keyboard and video? I realize that these functions are now performed by some SVC's. But I don't understand why POKE and PEEK can't be used also. You know, the best of both worlds.

I've done some tests like displaying some data on screen and then checking the video buffer to see if it's there. I couldn't find any of the data I sent to the screen. Why?

Fm MISOSYS, Inc: Attached to this letter is an illustration of two examples in one program. The examples illustrate (1) reading the contents of the entire video screen into 24 elements of a string array, and (2) reading the contents of one row of the video screen using a character at a time. Study the two examples; they work. If you are confused by any of the coding, then you will probably have to do more studying of one of the two references cited. Don't forget that the direct use of DOS SVC's is not documented in the TRSDOS 6 User manual; that information is considered technical in nature and is documented in technical manuals available at additional cost.

You cannot peek or poke directly into the

video or keyboard memory simply because video RAM and keyboard imaging are not in the 64K Z80 address space. That's a function of the hardware. In a Model III, the video RAM and keyboard image were addressed 100% of the time within the Z80 address space. Tandy designed the Model 4 devices to be port mapped. The DOS drivers map the keyboard and video into the Z80 address space during I/O under very precisely controlled memory management conditions. When any program is running, those two devices are just not available. That gives programs an additional 3K of RAM.

I can offer you no further direct assistance in using the USR11 SVC interface. The 6.3 documentation had one program with many examples; here are two additional. I published others in *THE MISOSYS QUARTERLY* to which you should consider a subscription; that's where folks keep up to date on their programming techniques.

Fm Jan Vanden-Bossche, Brussels, Belgium: I read your publication 'Required Reading' with great joy, but I didn't react to it, sadly. I have some questions regarding LS-DOS 6.3.

I noticed that JCL doesn't work as advertised in the manual. E.g. the //EXIT macro doesn't return to BASIC Ready when called as SYSTEM"DO=JCLFILE". Nor does //STOP, //ABORT or anything else. They all stop @ LS-DOS Ready. (DOS 6.1 and 6.2 did the same...)

I can't get my screen into 24 strings! It should be possible in the new BASIC. Actually, I've asked before. HOW DO I USE USR11 TO GET A SCREENLINE INTO A 80-CHR STRING? It really bugs me...

HOW do I tell LS-DOS 6.3 to double-step, thus reading an 40-track disk in an 80-track drive? Can you give me a patch or undocumented command to do this? If you can't, could you consider enhancing SYS8/SYS with the following command: SYSTEM (DRIVE=dn,DSTEP) —> to enable double-step and SYSTEM (DRIVE=dn,DSTEP=NO) —> to disable it.

I think it's a shame that both NEWDOS-80 on model I and MS-DOS on a PC can do it, but not the best, LS-DOS on the model 4.

Do you have a decent Turbo-alike Pascal-compiler? Because Alcor Pascal is so difficult to use on the TRS-80.

And I heard a rumor: in holland - a very active TRS-80 users group there - they told me that MISOSYS is about to release a hard-disk-controller for the model 4/4p, priced between \$50 and \$90, software included. Is this true? Whoopeeeeee, let me at it! Please send me additional information about this as soon as it is available. If I can hook up any PC-hard-disk to my computer...

How much is a subscription to *The MISOSYS Quarterly*, S&H to Europe included?

Finally, I am thankful that you still support the model 4/4P/4D with soft- and hardware. I hope that the model 4/4P/4D survives, and good support makes or breaks a computer. Please continue to do so!

Fm MISOSYS, Inc: Jan, Tandy did not document JCL properly in their manual. This was covered in *THE MISOSYS QUARTERLY* 3.4 (page 33).

A sample program which illustrates one technique of reading the video screen contents into 24 string elements follows this letter. This subject will be presented in TMQ 4.1 (you really ought to consider a subscription).

You can tell LS-DOS to "double-step" so as to read a 40 track disk in an 80-track drive by using the READ40 utility which is part of the LS-Utility disk. That's not something supplied with the DOS.

As far as a Pascal compiler, I don't have one. I had received word from some folks in England as to their Model III Pascal compiler being ported to Model 4 mode but they don't seem to respond to my letters.

You misheard the remark (or it was

misspoken) as to what we were getting ready to release. MISOSYS will be offering a HOST ADAPTOR priced somewhere in the \$50-\$100 range (price range narrowing to \$75). This H/A will support a Xebec S1410 or S1420 controller (or equivalent such as a Konan DJ10) or an Adaptec 4000 controller. I'll also be providing Xebec 1420 controllers for about \$95.

A subscription to TMQ to Europe is \$35/year (that's 4 substantial issues of approximately 80 pages each).

Brief overview of BASIC SVC access of video screen

The following program, DEMOSVC/BAS, provides a brief exposure to accessing the Model 4 video screen contents using the @VDCTL service call of DOS 6.3 and the USR11 interface provided in the LSI enhanced BASIC. Note that an understanding of SVC interfacing, as presented in either the *Radio Shack Model 4 Technical Reference Manual*, or *The Programmer's Guide to TRSDOS Version 6*, is required to understand the USR11 function requests.

Line 100 declares the integer array, J(5), used to pass Z80 register contents to/from the system SVC. The string array, S\$(24), is declared and will be used to store the 24 lines read from the screen.

Line 110 declares a string constant and initializes it so that it is 80 characters long. In order to use the line at a time video transfer function of @VDCTL, the user's buffer must be below X'F400', the address space of memory swapped out to perform video and keyboard access. Using a string constant guarantees that this 80-byte region will be sufficiently low in memory to avoid any address complications.

Lines 200 and 210 obtain the address of the string constant's DCB and adjust it to

a positive value, as required.

Line 220 obtains the actual address of the string constant as stored in memory; the low and high order address bytes are preserved so that they may be transferred to the integer array of data passed to the SVC. Too bad BASIC has no WPEEK function!

Line 250 clears the video screen and displays 23 lines of data so that we know exactly what is on the screen. This is done here for illustration purposes only.

Lines 300-370 form the loop to issue the @VDCTL SVC 24 times; each time a single screen line will be transferred.

Line 310 initializes the SVC number desired into the integer array.

Line 320 passes the desired row number into the integer array. Since the row number is stored in register H, we must shift the small integer 0-23 left by 8 bit positions to align the value into register H. This is done by multiplying the loop index value by 256.

Line 330 pokes the address of the string constant (our line buffer) into the integer array for the "DE" value.

Line 340 establishes the VDCTL request as function 9 (transfer an 80-byte video line) and specifies the direction to be screen to buffer.

Line 350 invokes the @VDCTL SVC by using the USR11 function.

Line 360 copies the result of the video line transfer into our string array which holds the 24 lines, each line a separate array element. Note that the LEFT\$ function is being used to force a copy of the characters. If the program used a simple assignment statement, such as S\$(K)=RX\$, only the string address pointer in the S\$ array would be altered since BASIC assumes that string constants are not going to be changed; new strings would not be generated and each array element would actually contain the same result - the last line transferred.

Line 400 simply displays the result of the

program's capture of the screen lines.

Lines 500-570 read the top line of the video screen by the single character "peek" function of @VDCTL and displays the result of each character read.

Current DOS Updates

Fm Dick Burwell, Gorham, NH: Dear LSI, I do believe I am a little late in sending in this registration card. When it was purchased February of 87 I guess I neglected it. Between then and now I haven't had the chance to do much of any computing. Now that I've begun again, I discovered the registration in the manual.

Last week as I was rereading CN80 I came across a mention of 6.3 updates, (in July 1988 pg5). It stated that the current was Level-L+ with file dates of July 7, 1987. My disk is labeled LSDOS63J with files dated 10 February 1987. Is it possible for me to get my disk updated?, and if so how do I go about it?

I would like to close with a compliment on 6.3. In the past, having learned with TRSDOS 1.3, I stayed with it and barely even looked at TRSDOS 6.x. And seeing what to me appeared to be complex updates I stayed away. The few times I did use it the Edit procedures made changes less than easy when compared to a screen text editor I was used to in TRSDOS 1.3. However, in the past week that I have started using your 6.3, TED is a welcome utility, as is DISKCOPY.

Fm MISOSYS, Inc: Dear Dick, in response to your letter of May 2nd to LSI, MISOSYS took over LS-DOS 6.3 in July of 1988. You can get your 6.3 master disk updated to Level L+ for a fee of \$10 + \$2 S&H. Send it to us at the address noted in the letterhead.

DEMOSVC/BAS

```

10 GOTO 100
20 SAVE"demsvc/bas:2":STOP
100 DEFINT J,K:DIM J(5), S$(24): REM S$ holds 24 screen
lines
110
RX$="012345678901234567890123456789012345678901234567890123456789"
200 IR=VARPTR(RX$): REM get location of buffer DCB
210 IF IR < 0 THEN IR = IR + 65536!: REM Adjust DCB loca-
tion
220 IL = PEEK(IR+1):IH=PEEK(IR+2): REM Get address of
string constant
250 CLS:FOR K = 0 TO 22: PRINT "This is a test of line
";K:NEXT
300 FOR K = 0 TO 23: REM Issue @VDCTL, function 9, 24
times
310 J(0) = 15: REM @VDCTL service call
320 J(1) = K * 256: REM Set row number into register H
330 POKE VARPTR(J(2)),IL:POKE VARPTR(J(2))+1,IH: REM Our
'buffer' into DE
340 J(3) = 9 * 256 + 1: REM function 9, video line to
buffer
350 X = USR11(VARPTR(J(0))): REM Invoke the SVC
360 S$(K) = LEFT$(RX$,80): REM Must use LEFT$ to copy
characters
370 NEXT
400 CLS:FOR K = 0 TO 23: PRINT S$(K):NEXT: REM Show what
we read from screen
500 FOR K = 0 TO 79
510 J(0) = 15
520 J(1) = K
530 J(3) = &H100
540 X=USR11(VARPTR(J(0)))
550 C=(J(-) AND &HFF00)/256
560 PRINT CHR$(C);
570 NEXT

```

Roundoff; FOR-NEXT loops

Fm James E. Bieker, Defiance, IA: Dear Roy, I would like first of all to say thanks for your fine support of TRS-80's. I truly admire your craft and guile concerning assembly language programming. It is in that vein which I am ordering EDAS.

Enclosed are a couple of things I have been meaning to send to you. The first is an algorithm I use in Model III basic. In the billing software we currently use, I

found it necessary to do rounding up and truncating beyond a penny when calculating a bill, especially sales tax. Perhaps there is an easier way, but I haven't discovered it.

The second item refers to the difference I've found among basics concerning for next loops and leaving off the variable in the next statement. Any comment?

1. Round & Truncate to 0.00 : X = ((INT((X+.005)*100))/100)

Loop	Type	III	XT	4/III	4	1000TL
Sngl	Next I	23	12	11	10	3
Sngl	Next	17	9	8	8	3
Int	Next I	15	8	7	6	3
Int	Next	10	5	5	4	3

Time in seconds

2. For I = 1 to 10000

```

1 IF
RIGHT$(TIME$, 1) <> "0" THEN 1
2 PRINT TIME$
3 FOR I=1 TO 10000
4 NEXT I
5 PRINT TIME$
    
```

Port access from BASIC

Fm MISOSYS, Inc: In the previous issue of *THE MISOSYS QUARTERLY*, I presented the solution to the computer lock-ups while trying to run certain high resolution graphics games on a machine equipped with an XLR8er. The problem was due to a conflict in accessing a port in the range 0-63. Unless register B for port indirect or register A for port direct operations was non-zero, the 64180 CPU would consider a port access in that range as internal to its chip. I recommended some code changes to ensure that register B or A was non-zero under those circumstances.

While writing some BASIC code to test out the joystick in the new MISOSYS hard drive host adaptor, I needed to investigate the exact code stream used by BASIC to handle the two statements, INP(portnum) and OUT portnum,value. As it turns out, Model 4 Microsoft BASIC evaluates the port number and converts the result to a signed integer. It then places the complete 16-bit value into the BC register pair. Thus BASIC actually accepts any port value from -32768 through +32767

inclusive! Taking advantage of this fact, it is easy to access the ports numbered from 0 through 63 from BASIC even if your machine is equipped with an XLR8er (or other means of a 64180 processor), by specifying the desired port value as portnum+256. For instance, INP(256), INP(512), INP(768), etc., all read input from port 0, but BASIC sets register B to 1, 2, 3, etc.

System drives; Memory upgrades

Fm Willi Hoffman, Oak Lawn, IL: Gentlemen, I am enclosing a coupon order for one 5.25" 360K two sided floppy, renewal for TMQ and disk notes 3.4 as well as some questions.

I do have, probably, the smallest system among your readership which consists of one 64K Model-4 #26-1069A, three one sided floppies and one COPAL SC-1200 printer.

Recently, I completed the installation and testing your XLR8er and Micro-Labs Grafyx Solution boards. Installation was fairly easy and they work very well. The DRAM chips I installed are "OKI M3764A-12" 120ns. They seem to work well so far. I had to buy 18 of them since they would not break them up.

I did receive your "LB" program I had ordered and then realized that my system was not of the right type. But after a good look at the LB files, I did install the LB on the "Ramdisk". It works fine and gives me the extra room needed on the files. I have been working on a program which I

wrote myself in BASIC; it had 5 print formats but not enough room for customer information. I work with Universal, blank, forms. With the "Ramdisk" installed, sys0, 5, 9, and 13 removed, and LB files backed up :1 :0, I have 24K left. I must say it is a three step procedure "DO SETUP", "DO CFGRD" and backup "LB:1 :0".

Now for my question 1, can the double sided floppy be used as a system drive if connected to the internal floppy cable? It seems to me that I read some place that the system drive must be internal on the Tandy computers.

#2, did any of your readers go 128K from 64K on a mode 4 26-1069A. I did look at the mother board and it seems that it is jumpered as per the #4 Gate Array specifications, but some are entirely in different locations. Does it need some chip replacement? Can anyone shed a little light on the subject? I did talk to Radio Shack people and they want \$90.00 plus labor which is not bad, but they want my model4 to keep 2 weeks in the shop; that I do not like. They do not sell the kit, since it must be installed by them, so they say.

I am sure you have more pressing problems, but any help will be appreciated.

Fm MISOSYS, Inc: Any floppy or disk drive can be the "system" drive be it internal or external; however, you can only boot from the floppy addressed as internal drive zero. BOOTing is controlled via the ROM, and in a gate array desktop Model 4, that ROM only will read drive :0. Once booted, you can switch the system to any other disk drive via the "SYSTEM (SYSTEM=d)" library command.

As far as the RAM upgrade goes, that was covered in *THE MISOSYS QUARTERLY*, issue I.iii, page 107. I'll repeat it for your benefit (and others).

Model 4 RAM upgrade

Fm John G. Gelesh: I just installed 4164 RAM Chips in my 64K Model 4 (26-1069A, green screen, redesigned keyboard). How do I access the extra memory?

Every time I try to use Memdisk I get a "cannot install Memdisk, requested bank in use." error message. What did I do wrong?

Fm David Huelsmann: If you have a non-gate array CPU, you have to remove the 4-position shunt from socket U72 and install the PAL chip. If your Z80 chip is in the upper left corner of the CPU board [26-1069A], you have a gate array CPU and no PAL chip is necessary but there are a few other goodies that have to be done in a gate array board: You need to move the wire jumper from U5 pin 16 that goes to C39 and disconnect from C39 and solder to U33 pin and 16. On even newer versions of the 4 (like the 4D) there is just a jumper to move (JMP13) from its present position to its alternate position.

Replacement for Anitek's SuperDriver Ramdisk Driver & Foreign characters on Model 4 and Tandy Printers

Fm Brad Stiles, Hemhofen, FRG: I am reading through Volume III.iii. I noticed that Ken Strickler (Vol. III.iii, p. 11) indicated that he benefitted from your solution to my problem with Pro-Wam and Allwrite stack over-flow. It is a good feeling to know that by requesting a fix to my problem, I have indirectly assisted other users. I would suggest that there are probably numerous users who occasionally suffer from this problem without recognizing it.

In regards to Roger Storrs' problem with Anitek's SuperDrive software (Vol III.iii, p. 6) for the Alpha Tech Memory Board, the solution to the problem is the RAMDRIV.LQR on the MISOSYS forum on Compuserve [PCS-49]. The RAMDRIV disk driver uses no high memory and abides by system conventions. It also creates a ramdisk that can be loaded with a mirror-image backup (LSDOS 6.3) from a specially formatted disk (Dir on Cyl 1, Cylinders chosen to match the size of the ramdrive) and directly SWAPPED into drive 0.

The problem for European residents is that accessing Compuserve is not easy or cheap (anyone know how to access Compuserve from Germany without great expense?). I had to have a state-side friend download the library and send it to me on disk. Perhaps Mr. McClung, PD Software Librarian (Vol. III.iii, p. 3) can help supply such software. If so, perhaps you could explain in the Quarterly, how a person would go about requesting such software from Mr. McClung.

I also noticed (Vol III.iii, p, 16) that Mr. Houde had trouble getting European characters on the Model 4. The Model 4 alternate character set includes most (if not all) of the European characters (decimal 192 - 254). The Tandy printers also contain all or some of these characters.

My DMP-200 has only the first half as decimal 160 - 191; My DMP-130 also includes the second half as decimal 192 - 222 [see chart]:

DMP200	
~	ä ç é ~ μ ° °
†	š ō ̄ ̅ ̆ ̇ ̈
¥	Ɔ Ɔ Ɔ ~ ä ö
ü	ß Ɔ é ù è " f.
DMP130	
ä	é î ò ù ~ ä ı
á	ı ó ú ; ñ ã ö
Æ	æ Å å Ø ø Ñ Ë
À	ı Ő Ū ı Ő È.

The obvious problem is how to get these characters translated down to the correct decimal values for printing. This can be done with the MAXLATE/FLT (MISOSYS product) or more conveniently with ALLWRITE. By including the translation command:

```
;tr 192,254,-32
```

in ALLWRITE's printer default file (eg. DMP400/DEF), all of these characters are translated down at the time of printing to the appropriate character on the printer. Thus the characters are correct on the CRT and also on the printed file (they are not correct on the formatted file when viewed on the CRT, ie., the ;VI or ;VS commands). I have also set several of ALLWRITE's programmable control keys to directly give me the European characters that I use most often.

I get the machine into the alternate character set with PRO-WAM's CHARSET command. In my Initialization file, which sets up the ramdisk, initializes PRO-WAM, etc., I have included a statement, "PRUN CHARSET". The response is to hit the <T> key (to toggle the charset) and the <BREAK> key (to exit CHARSET).

I appreciate your latest emphasis on user's groups and bulletin boards. We will be returning to the states in September, and I am looking forward to accessing such bulletin boards and also the Compuserve Forum. However, for many of us, MISOSYS (and TMQ) is in effect our user's group. In that regard, the above contributions may be published, at your discretion.

Fm MISOSYS, Inc: I've answered the question before about distribution of files which have been uploaded to our Compuserve forum. It is just not legal for anyone to download them and re-distribute them via some other medium. Compuserve is running a business and they derive income from the connect time used to download files. The solution lay with the original uploader. All he or she need do is to simultaneously submit a copy to Vic McClung. As long as there is an "official" copy placed in distribution via

other than CompuServe, then that other distribution channel can legitimately distribute copies as provided for by the originator.

Incidentally, Ralf Folkerts of Ganderhessee West Germany, accesses our CompuServe forum regularly. I'm not sure of how he accomplishes his access, perhaps he will provide an input.

Thanks for the input on foreign characters. Since my laser printer fonts cannot duplicate all of the characters you provided in your letter, I decided to scan them as graphics and merge the "picture" with this text.

What uses port 84H?

Fm Richard R. King, Raleigh, NC: Enclosed is the PRO-MC library diskette, which TMQ III.iv,70 tells me you are willing to update at no charge. I've enclosed \$1.00 to cover the cost of postage, a small price to pay for the service you are providing.

Now, I know you're busy, but could I hit you with a couple of questions?

The Mod 4 PAL chip, used to direct data between DRAM sets 1 & 2 (1st & 2nd 64k sets), has some crazy switching schemes based on bits 6, 5 & 4 of port '84'h. I'm sure you've seen them in the tech ref manual, especially since you say you were involved in the design of TRSDOS 6. **QUESTION:** Does TRSDOS6, LDOS or LS-DOS use any of these crazy combinations? Do you know of anyone who sold program(s) making use of the "feature"?

Is all of Mr Houde's XLR8er source code available? I ordered and received the special diskette mentioned in either II.ii or II.iii, but it contains only the HITACHI/ASM source. The remaining files are /CMD, /JCL or /FIX, but no more source. While I don't yet have an XLR8er (the first attempt to install one flopped, and on a Rev. C board, to boot). One of these days I'll be

trying again. In my case, I want to use the full 512k power of the chip which means I'd need to extend Michel's code some, as well as making hardware mods to accommodate 256k chips on the motherboard. The XLR8er can handle this as it switches all addressing below 256k to the main board. My big hinge is the true need for that PAL chip, which will hopefully be determined by your knowledge of the Model 4 and any insight you can provide. From all the talk in TMQ, it appears that no one uses the bank swapping (not switching) feature provided by the PAL chip, and maybe some regular gates would suffice.

Is the unused low mem address range (for the likes of Michel's code, memdisk drivers, and other things) between '0FF4'h and '12FF'h correct?

What is the address range of high memory for the remaining drivers et al.?

Fm MISOSYS, Inc: Richard, You ask a very interesting question concerning the memory switching facility of the Model 4. As you are aware, The stock Model 4 can have up to 4 banks of 32K of RAM. Port 84H provides the capability of imaging all four banks into the 64K address space of the Z80. If we designate the banks as A, B, C, and D, then we can have AB, AC, AD, CB, and DB imaged into the 64K address space; other combinations cannot be imaged directly. You also have the capability of placing the keyboard and video into either the Model III mode, or switched in and out of the Z80 address space in the Model 4 mode. Finally, the Model III ROMs can be switched out to be replaced by RAM.

The bank switching facility I designed into the Model 4 DOS uses the memory management port to construct the following images using B as bank 0, C as bank 1, and D as bank 2: AB, AC, AD. When a program requests a bank change using @BANK, the request is converted to a revised mask for the memory management port. Also, background processing (the task switcher), device I/O (@PUT, @GET, @CTL), and block I/O (disk requests received by the DOS are handled

by first re-installing bank 0, satisfying the request, then re-installing the previously resident bank. That permits successful memory operations regardless of which bank is installed in memory. It restricts device drivers and filters, as well as interrupt tasks to be resident in bank 0 or low memory.

So yes, the DOS does utilize some of the "crazy" combinations of port 84H.

Our Model 4 Hardware Interface Kit for LDOS 5.3 makes use of the Model III mode memory arrangement with the ROMs switched out and replaced with RAM. What it does is copy the ROMs' contents to high memory, change the mode to low RAM, then copy the copied contents back to low memory. This technique is essentially the same as what is currently being done in fast 386 machines so that the ROM BIOS code is accessed from fast RAM instead of slow ROM.

As far as other programs which use the feature, I suspect that LeScript is one. It is famous for going directly to hardware. Since it goes directly to hardware for the memory management of the Alpha Tech memory board, I strongly suspect that it does the same with the regular Model 4 memory. Double Duty may be another program which goes directly to hardware, but I can't say for sure since I have never seen the code. I personally doubt that other Model 4 programs exist which tweak that port.

As far as Michel Houde's source code, all of the files were placed on Disk Notes 3.2; if you got just the XLR8er interface disk, then you would have received only the "object" files.

Incidentally, the XLR8er does not switch all addressing below 256K to the main board; memory switching is a function of the software interface which translates bank requests to an appropriate memory construct. If you come up with a modification to expand the motherboard memory to any amount without affecting the operation of the XLR8er, you would still be able to write an @bank replacement which would use all of the motherboard memory and still have access to the XLR8er's 256K. All your modification

would need to do is to be able to image your motherboard RAM into the first 64K of address space.

Finally, a stock LS-DOS 6.3 disk currently has the address space from 0FF4H to 12FFH free for additional low memory drivers/filters. A stock 6.3 does not use high memory unless the user installs some optional module into that region (FORMS/FLT, COM/DVR, etc.).

More memory expansion schemes

Fm Hans G. Bongartz, Langenfeld, West Germany: Dear Mr. Soltoff, Upgrading my TRS-80 model 4 with more than 128 K of memory, I run into the usual problem to use this new area of memory efficiently. Looking for help, I took my batch of *80 MICRO* reading publications pertaining to my problem. Besides objects from Mr. Hardin Brothers "THE NEXT STEP", I saw your offer of patches to your DOS 6.3. Unfortunately, I don't have the review of the Alpha Technology's Supermem board written by Mr. Brothers (Jan. 1986).

This board, here distributed by Seatronics will be my finally choice with 512 K of memory. Until this will be installed, I finished the project 'ALL THE WAY TO 320 K' from *80 MICRO* #10, 1987 p. 60. This memory expansion replaces the upper 8 pieces of 64k chips with 256k chips. Switching of the new available four blocks of 64k memory is done in my model 4 by an OUT command to port '9C hex - other than the port '00' in *80 MICRO* - setting the value of the desired block of the new 64k part within the 256k chips by data bits D0 and D1. A startup or reboot always gives the value '00' to the added memory - LS-DOS 6.3 uses 128k as with Tandy's original 64k in upper sockets.

I did like to get your patches to LSDOS 6.3 to MEMDISK in order to use both the expansion boards I mentioned - Alpha/Seatronics and the homebrew type 320K

from *80 MICRO*. If there are problems between my 320k project switching four blocks by 64k with bits D0/D1 using port 9C hex and the patches which you have designed, please tell me: I'm able to redesign my add on electronic as well as I would be [able] to work on an assembler source code (with Tandy's ALDS package).

I think you should know my system's specifications = TRS-80 model 4 desktop with two double sided 40 track drives, add on RS 232 board, and memory control is done by PAL chip (U 72) for 128 k standard. My model 4 has a German 'QWERTZ' keyboard, and my DOS is LSDOS 6.3 with German 'QWERTZ' modification submitted from Tandy service after the company closed its computer centers. This LSDOS 6.3 responds to the 'ID' command with nothing but a carriage return and a 'Lsdos ready'.

To get your MEMDISK / LSDOS 6.3 patches, I send this letter to you enclosed with a minidisk, two address labels, and \$10 US of money for your expenses to ship everything back to me. Please tell me in case I have to pay for anything of the desired materials additional amounts of money. - Did you introduce a new SVC @EXMEM? There are unresolved difficulties to get running this SVC - presented by Mr. H. Brothers in *80 MICRO*. Do you still support the model 4 computer? Is the 'LSDOS QUARTERLY' publication still available? How much will it be with shipping to Europe?

Many thanks for your kindly help at this time! I'm looking forward to hear from you as soon as possible with best regards!

Fm MISOSYS, Inc: Sorry, but the AT patches were strictly for the Alpha Technology memory board, no others. We also discontinued that offer a few years ago. The patches are now on DISK NOTES 6. I copied that to your disk. With investigation, you may be able to revise them to your needs. A copy of *THE SOURCE* would probably help.

By the way, the patches may not work with your LS-DOS 6.3G. Also, check out

a subscription to *THE MISOSYS QUARTERLY*; the old LDOS QUARTERLY (what you referred to as 'LSDOS QUARTERLY' has not been published since April 1984.

CMD formats; diskDISK & Write Protect

Fm Lawrence C. Minder, North Babylon, NY: Dear Sirs, I have some questions that I hope you would answer in order to help me make some sound buying decisions. I am a currently licensed owner of LDOS 5.3 and LS-DOS 6.3, as well as many of your software packages. The questions I have are as follows:

I own your DSMBLR III software for the Model III computer. Since I am strictly using LDOS and LS-DOS on my Model 4D computer, and since the disk formats are the same between these two DOSes, can I then use the DSMBLR III software to disassemble LS-DOS/Model 4 "CMD" files? I am assuming that since both "machines" are Z80 machines that there really is only one way to disassemble Z80 code. Am I correct on this or am I missing the boat somehow, or do the two different operating systems impact this disassembly process?

Is my LDOS 5.3 operating system in need of updating? The serial number for my diskette is TCOA0887. The diskette has a creation date/diskette date of 02/05/87 and the last entry in the README/TXT file is dated 04/02/87? I know I have seen some fixes in the TMQ, but I am not sure of their overall impact/need. If I do need to upgrade, how much does this cost?

I am using the Model III version of the diskDISK software package on my Radio Shack 15 meg hard disk, with your RSHARD hard disk driver. After successfully placing a software Write protect on my diskdisk logical drive via "SYSTEM (DRIVE=3,WP=ON)", I found that I was able to "KILL" a file within this diskDISK drive and I was able to update files with

my Superscript software package, files that were already resident on the diskDISK logical drive. Am I misunderstanding the use of the software write protect function or does it not apply to diskDISK drives? If you feel I have encountered a bug, please let me know what other documentation you would need to look into this problem. My diskDISK software came on a diskette with serial number 200208 and displays version 1.0.1 on the screen when DDFORM or DD are executed. These files were dated 11/15/83, the same date of the diskette. Additionally, I applied the patch "DDFORM53/FIX" from TMQII.i, page 102, in order to change diskDISK to use the new LDOS 5.3 date/time-stamping mechanism. My RSHARD software came on a diskette with serial number 00141 and a date of 02/11/87. The last entry in the README/TXT file is dated 10/20/87.

Besides a Model 4D computer, I also own a cassette based Model III computer. I have been saving to upgrade the Model III to a disk based machine. I already have the expanded memory (48K) installed, as well as an RS-232C board, as I had extensively used this machine prior to purchasing the Model 4D. I would like to try adding internal 3.5" drives (2) to the Model III computer but am concerned as to whether this will really work or not. I will also be obtaining an external 3.5" drive for connection to my Model 4D computer, so as to be able to create the system and software diskettes needed for the Model III computer, as well as to expand my disk storage capabilities. Will the Model III computer and LDOS 5.3 boot from a 3.5" internal drive? Are there any other pitfalls I should watch out for? The 3.5" drives will be 720K drives.

I am enclosing a stamped and self addressed envelope to facilitate your reply.

Fm MISOSYS, Inc: Lawrence, the Model III DSMBLR can be used to disassemble both Model III and Model 4 "/CMD" programs; there is absolutely no difference in the file record format of the two files. Only the programming interface to DOS is different. It's true that there is a one-to-one correspondence between Z80

object code and its source code, although there are many different techniques of achieving the reversing process.

All fixes for LDOS 5.3 have appeared in *THE MISOSYS QUARTERLY*. You have them; they can be easily applied. If you want, you can return your diskette for a refresh. The charge is \$10 + \$2 S&H.

Whether your "write-protect" experience with diskDISK is a bug or a act of design not documented, I can't discern. Certainly, the behavior of diskDISK is exactly as you describe. Looking at the source code, I can see a clear design action to return the write protect status of the "host" drive, and no coding whatsoever to deal with software write-protect of the diskDISK drive. I may contemplate an alteration to the current behavior as I would expect the ability to software write protect a diskDISK should be one of its capabilities.

Finally, the 3.5" 720K drives look exactly like 5.25" 80-track 2-sided drives as far as the software interface. Therefore, they will connect exactly like the 5.25" drives; they will format as 80 track, 2-sided drives. There are no pitfalls to watch out for other than the portability of media from one machine to another.

If FORMAT doesn't work

Fm Rev. C. R. Conner, Pulaski, VA: Dear Sir, Enclosed are my original LS Dos 6.3 disk. Along with it I have included a disk that I formatted using the LS Dos format command.

I have tried several times to format and use the diskcopy command with little success on the format command and no success on the diskcopy command.

I reverted to my old TRS Dos 6.21 and it works perfectly on the format command and I use the backup command to copy.

As per our conversation I do not regularly

use my Model 4 except for word processing and some spreadsheet work. I recently had my computer upgraded to 128K and had a new disk drive put in. I am sure that my machine is working properly and I have had no other problems with it until now.

Thank You for looking into this and if there is any charge please send me the bill.

Fm MISOSYS, Inc: Rev. Conner, There is nothing wrong with your disk; it is a perfect replica of the master. The 6.3 disk formats without problem on my machines. There was a change in the formatter effective with the release of 6.2.1; however, you said that 6.2.1 works for you. Thus, I fail to understand the cause of your problem, unless you were really reverting to 6.2.0 release.

The formatted disk which you sent me does indeed have errors. It appears that at least one sector on each track is in error. I suspect that either the drive is rotating much too slow, or there is a problem in the floppy disk controller.

What I have done is to diskcopy (using your copy) your master to the extra disk you supplied. I then have patched the FORMAT command to use the old format pattern which was in effect with TRSDOS 6.2.0. See if this patched version works. If it does, then it confirms a problem with your controller. Perhaps you reverted to your old "6.2.0" and not "6.21" as you stated.

In case others have this problem, the patches to FORMAT and DISKCOPY of LS-DOS 6.3 to revert to the old format pattern are as follows:

```

      F62/FIX
D05, 84=14; F05, 84=20
D05, A3=4E 17; F05, A3=FF 11

      DC62/FIX
D06, E7=14; F06, E7=20
D07, 06=4E 17; F07, 06=FF 11

```

MSDOS and Environment space

Fm Jim Beard 71675,566: I know that this question has been treated before, so a pointer to a DL file or whatever would suffice if you know of one. My problem: "Out of environment space" during AUTOEXEC execution on boot.

I tried "command /p /e:384 /c" with no success. Doing a "set >temp.txt" and doing a hex listing on temp.txt shows that the environment is less than 384 bytes. It seems that after going over 256 bytes, using "set" or "path" will give that error, regardless of environment size. I am using Tandy MS-DOS 3.20. The version of GBASIC supplied does support the graphics and sound modes of my 1000A properly, so it is not an early release.

Fm Kerry Wilson 71006,440: I am getting an "Out of Environment Space" error message when I boot my 1000TX (during the AUTOEXEC.BAT execution). I assume there is a way to increase the amount of allocated space. Could you please elaborate on how to do this?

Fm MISOSYS, Inc: Use a command in your CONFIG.SYS file of the form,

```
SHELL=path\COMMAND.COM/E:512 /P
```

The "path" is the path leading up to COMMAND.COM, say "C:\DOS", for example. The "512" would represent the environment size in bytes. The "P" is absolutely necessary which says to keep that instance of COMMAND.COM resident. My hunch is that it also winds up keeping the second instance of the resident portion of COMMAND.COM in memory. Why MS-DOS does not allow you to establish an environment size irrespective of COMMAND.COM is a mystery to me. But that command line in CONFIG.SYS will get you going.

Fm LDOS Support 76703,437: Jim, There is a difference in the /E:nn option between 3.2 and 3.3, for the latter you specify the number of sixteen byte paragraphs rather than the number of bytes. My CONFIG.SYS

```
file for 3.2 ends in "SHELL = C:\COMMAND.COM /E:512 /P"
```

Fm Jim Beard: Joe, Nothing like upward compatibility in MS-DOS 3.2 to 3.3, huh? My impression was that environment space came in 128-byte granules. Apparently they decided to formalize 16-byte granules.

Fm Kerry Wilson: Jim, What is the default amount of space for the environment? What does the /p mean?

Fm Shane Dawalt 71076,511: Kerry, /p tells the shell not to exit to any other higher shell. In effect, this implies that the shell invoked with /p is your "login shell". For example: say you are working in your favorite editor and you want to run another program for some reason. Normally, you will select an option that "Shells to DOS". This spawns another instance of your shell program. After you have completed your work in the shell, you type EXIT to return to your editor. This terminates the second instance of the shell and returns you to the editor. If you type EXIT in your "login shell", it will be ignored because it IS the top level shell in your environment.

I don't recall what happens if you do not specify the /p flag on your top level shell and you attempt to EXIT. On my machine, I believe the DOS reinvokes the standard shell without complaint. It has been a long time since I played with this topic.

Fm Jim Beard: Kerry, The default environment space size is 128 bytes.

Fm LDOS Support: Roy, Shell in CONFIG.SYS doesn't cost you a second copy of COMMAND.COM, but you do lose a memory block for the "old" environment size, not too bad at 128 bytes. It is possible to patch COMMAND.COM directly to alter the default environment size, and this was quite common before SHELL and /E parameter came in (became documented) with the 3.x DOS versions.

COMMAND.COM "owns" the "master" environment as a hold-over from DOS 1.x and 2.x, as in those versions the program

loader (for both COM and EXE) was contained in the command interpreter. DOS 3.x moved at least some of the necessary support code to the kernel, but I would imagine that it is far too late. I remember reading somewhere that IBM had a spec on the maximum size of the system kernel for the original versions of DOS, and Microsoft couldn't make it with the system loader resident. Had to support those 64K IBM machines.

Fm Jim Beard: Joe, My experiments with shell=command.com /e:256 /p is that the environment size doesn't change. That is, a CHKDSK shows the same amount of user memory. I use 3.2.

Fm LDOS Support: Jim, The action of the environment size change is DOS version dependent. If your version of DOS expects the argument in paragraphs, it may decide that 256*16 is too big, and not change your environment at all. For example, I'm running Tandy's MS-DOS 3.20 (banner report on boot), and changing my config.sys statement from shell=c:\command.com /e:384 /p to /e:512 drops my CHKDSK reported memory by exactly 128 bytes. Removing the shell statement entirely regains 272 bytes, so it appears that there is a sixteen byte overhead for extending one's environment beyond the default 128 bytes.

Fm Jim Beard: Joe, Apparently there is an environment on a lower level that increments itself in paragraphs on boot. I'll bet that it depends on what you put in your CONFIG.SYS file.

Fm LDOS Support: Jim, Well, the master environment is maintained by the shell, not by the part of DOS that reads CONFIG.SYS, and nothing that goes into CONFIG.SYS ends up in the environment other than what comes out of the execution of the shell, i.e., COMSPEC and the size of the environment itself. COMMAND.COM may shrink the "original" environment memory block to a single paragraph, and then fill it with some sort of flag that indicates an alternate memory block is in use, and any necessary pointers. Without disassembling COMMAND.COM (which would be interesting in itself), I don't think we'll know.

ARRAY LOAD ROUTINE

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Random access and sequential files are great for saving string data or numeric data which needs to be appended to. But what about numeric files of a constant length? Currently the only way to transport data from one program to another is:

- 1) use data statements which must be appended to a program.
- 2) save the data to disk as a text file.

Both of these take time and waste disk space. Why not just dump the array to the disk, then it could be loaded whenever needed. TRSDOS has the ability to DUMP data from memory to disk, however it won't allow you to load it back in if you want to load it in a location different from that which it was saved.

The advantages of dumping an array to disk are that the file size is smaller and disk access time therefore is shortened. Plus it saves the work of having to code the disk input routines into your program. Using a single precision array as an example, BASIC reserves six bytes per number. A typical single precision number would be saved to disk in a text file as eight or more characters. Already you could save 25% in file space if you would have dumped the array.

The assembly language program I have written allows you to load or save array data files in their compressed format. It also provides error checking so that you can't load an integer array of 100 elements into a single precision array of 20 elements and cause basic to lock up. The routine uses the CALL function to pass the location of the first array variable and the filename. The actual starting point of the array is then calculated and the array name is then stripped away. Removing the name allows the data to be loaded into any array of appropriate type and dimen-

Applications for the User



```

*****
Save it Fast
Robert C. Stone
*****
;svcs used:
@CLOSE EQU 60
@DSPLY EQU 10
@ERROR EQU 26
@EXIT EQU 22
@FNAME EQU 80
@FSPEC EQU 78
@HIGH$ EQU 100
@HEX EQU 99
@INIT EQU 58
@OPEN EQU 59
@READ EQU 67
    
```

sion without the worry of creating a duplicate array.

An array in Model 4 Basic is slightly different from Model I and III BASIC. The first byte is the array type. The second and third bytes are the first two characters in the array name. The fourth byte is the number of additional characters in the array name. If there are additional characters in the name they follow next with their high bits set. The remaining bytes are the same as the other BASICS. Two bytes for the file length, one byte for the number of dimensions and two bytes each for every dimension. This means that there is a minimum of nine bytes between the beginning of the array and the first element.

The program as written loads into high memory, then resets HIGH\$ to protect itself. Type INOUT to load the program and move it to HIGH memory. The starting address is displayed on the screen as well as stored at 02FE-FFH. A sample BASIC program allows the routine to be evaluated as well as compare execution times between loading and saving files. The program as written will only accept singly dimensioned arrays, but it may be changed as required. Cataloging the disk will also show the disk space saved.

Understanding The Program

The CALL routine is defined on page 2-81 of the Model 4 Disk System Owner's Manual. The first element of the array is pointed to by the HL register pair and the filename descriptor is pointed to by the DE register pair. The LOAD/SAVE flag is pointed to be the BC pair. The routine first verifies the array type. The first byte of the array must be either 2, 3, 4, or 8. The index register (IX) is decremented until a byte is found which matches the type character. Assuming that this is the first byte of the array, succeeding bytes are checked to see if they meet the specifications for the header record. Byte 1 must be an uppercase letter, byte 3 must be between 0 and 38 and if byte 3 is not zero then byte 4 must have its high bit set. Any of these tests which fails decrements the index register and returns to the TYPE

```

@REMOV EQU 57
@VER EQU 73
;
;
SVC MACRO #NUM
LD A, #NUM
RST 28H
ENDM
;
;*****
;
ORG 3000H
;*****DEFINE ARRAY IN MEMORY*****
START LD (FILE), DE ;FILE NAME DESCRIPTOR
(LENGTH, ADDRESS)
RL01 EQU $-2
LD (FILLN), HL ;ADDRESS OF 1ST ARRAY ELE-
MENT
RL02 EQU $-2
LD (DATA), BC ;ADDRESS OF LOAD/SAVE FLAG
RL03 EQU $-2
PUSH HL
LD A, (BC)
LD (INOUT), A ;SAVE LOAD/SAVE FLAG
RL05 EQU $-2
XOR A
LD (BC), A ;CLEAR LOAD/SAVE FLAG FOR
ERROR MESSAGE
POP IX
LD BC, -9 ;BEGINNING OF ARRAY AT
LEAST 9 CHARS ;BEFORE FIRST ELEMENT
ADD IX, BC
TYPE LD A, (IX+0) ;START CHECKING FOR BYTE #0
CP 2 ;IS IT AN INTEGER
JR Z, NAME
CP 3 ;IS IT A STRING
JR Z, NAME
CP 4 ;IS IS SINGLE PRECISION
JR Z, NAME
CP 8 ;IS IT DOUBLE PRECISION
JR Z, NAME ;FIRST CHAR IN ARRAY MUST
BE 2, 3, 4 OR 8
TYPE1 DEC IX ;NO MATCH , DECREMENT IX
JR TYPE ;AND CONTINUE
NAME LD A, (IX+1) ;CHECK IF >=A AND <=Z
CP 'A' ;SECOND CHAR MUST BE LETTER
A TO Z JR C, TYPE1 ;IS CHARACTER LESS THAN A
CP '['
JR NC, TYPE1 ;IS CHARACTER GREATER THAN
Z LD A, (IX+3) ;# OF CHARACTERS IN EXCESS
OF 2 CP 38 ;MAX OF 40 CHARACTERS AL-
LOWED JR NC, TYPE1 ;NOT CORRECT BYTE, CONTINUE
SEARCH
    
```

routine.

You probably have already noticed that I have skipped over a lot of data and therefore might falsely define the starting point of the array. I thought so too until I tried to create an array which would not work. This array needs a minimum of five dimensions since the routine starts checking nine bytes before then first element. The minimum integer array which meets these requirements has these dimensions A%(0,0,0,0,64,511) which gives a byte pattern of 00 02 41 00 00 00 00 00 00 00 before the first elements address. This array takes up over 33280 bytes, more than would be available after basic and the utility routine are loaded.

After the array is located it is checked to see if it is a string. String arrays will not work as only the address pointers are stored in the array not the actual data. The array name is stripped away leaving the index register pointing to the array length.

Now the file name and data file are checked. For the SAVE routine, an existing file is purged from the disk. For the LOAD routine the file must exist else the program aborts. Errors created by the programmer (i.e. using a string array or loading a non-existing file) result in an error message and the filename being nulled. Control returns to the calling program.

If all is well, then either data is saved onto the disk or loaded from it. The SAVE routine saves a file beginning with the array length. The array type and name are not saved. The type is not needed as only one type of array can match an array length/dimension combination. The name is not saved to allow loading the same data into arrays of different names. The LOAD routine first checks to see if the array size and dimensions for the file and program are identical. If they don't match then an error is returned.

The error type is returned using the variable used for the LOAD/SAVE pointer. It is assumed that it is an integer. The following errors are returned:

0 - No error occurred

1 - Operator tried to save a string

```

CP      0      ;NO ADDITIONAL CHARACTERS
JR      Z,ADDRESS
LD      A,(IX+4) ;FIRST ADDITIONAL CHARACTER
BIT     7,A      ;HIGH BIT SET ON ADDITIONAL
CHARACTERS
JR      Z,TYPE1  ;BIT NOT SET, CONTINUE
SEARCH
ADDRESS LD A,(IX+0) ;FILE TYPE LOCATION (BYTE
#0)
CP      3      ;IS IT A STRING
JR      NZ,ADDRESS1 ;NO, THEN CONTINUE
LD      A,1     ;ONLY NUMERIC DATA ALLOWED
JP      QUIT    ;EXIT TO BASIC WITH ERROR
FLAG
RL07   EQU    $-2
ADDRESS1 LD BC,3 ;IX IS START OF ARRAY
ADD     IX,BC   ;INC TO # OF CHARACTERS
LD      C,(IX) ;# OF ADDITIONAL CHARACTERS
INC     C      ;INCREMENT TO FILE SIZE
LOCATION
ADD     IX,BC   ;FILE SIZE
LD      (ADDSAVE),IX ;ADDRESS OF FILE SIZE LOCA-
TION. THIS IS
RL08   EQU    $-2 ; FIRST BYTE TO BE SAVED
;*****PREPARE DISK FILE*****
BEGIN  LD      IX,(FILE) ;LENGTH OF FILE NAME
RL09   EQU    $-2
LD      C,(IX+0) ;LENGTH OF FILE NAME
LD      L,(IX+1) ;LOW BYTE OF FILE NAME
ADDRESS
LD      H,(IX+2) ;HIGH BYTE OF FILE NAME AD-
DRESS
LD      DE,FILE2 ;OUTPUT RECORD
RL10   EQU    $-2
LDIR   ;TRANSFER DATA
XOR    A
LD      (DE),A ;INSURE LAST BYTE OF FILE
NAME IS NULL
LD      HL,FILE2 ;VERIFY THAT FILE NAME IS
GOOD
RL11   EQU    $-2
LD      DE,FCB ;FILE CONTROL BLOCK
RL12   EQU    $-2
SVC    @FSPEC
JR      Z,F2OK ;IF FILE NAME VALID?
LD      A,4 ;BAD FILE NAME
JP      QUIT ;EXIT TO BASIC
RL14   EQU    $-2
F2OK   LD      DE,COPY ;SAVE COPY OF FILE NAME
RL15   EQU    $-2
LD      HL,FCB
RL16   EQU    $-2
LD      BC,32
LDIR   ;
LD      DE,FCB ;OPEN DISK FILE
RL17   EQU    $-2
LD      HL,BUFFER ;BC = 0 FROM LDIR INSTRU-

```

array

2 - The array being loaded does not make the one defined in basic.

3 - The filename used is not acceptable to DOS

4 - A DOS error has occurred.

For known applications this routine could be shortened to save some of the high memory used or it could be loaded in the overlay region if this area is not going to be used.

This routine was originally written (by me) for an 'inventory' type program on an APPLE II+ computer. It resulted in a significant time savings since the arrays used were either 6 x 250 or 1200 elements in length. It also saved on the wear and tear of the diskettes and disk drive.

CATALOGING FLOPPY DISK FILES WITH A WORD PROCESSOR

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Sooner or later, floppy-disk users may accumulate a quantity of disks and find it necessary to locate exactly on which disk(s) a certain file is, for patching, changing, superseding, etc. At such times a disk catalog can come in very handy.

The method presented here is applicable to the model 4; with some adaptation it could probably be used on other computers. It requires a word processor with programmable command keys and global search and replace, but no other software. I show how to use it with ALLWRITE and am adding details of key coding which may allow it to be used on other machines or WP programs with similar capabilities

```

TION
RL18 EQU $-2
      SVC @OPEN
      LD A, (INOUT)
RL21 EQU $-2
      JR Z, OPENED ;ERROR, FILE NOT OPENED
NOTOPEN CP 1 ;SAVE FILE?
      JR Z, SAVE ;NO FILE. GOTO SAVE ROUTINE
      LD A, 3 ;ERROR - FILE DOES NOT
EXIST JP QUIT ;CAN'T LOAD FILE WHICH DOES
NOT EXITS
RL19 EQU $-2
OPENED CP 1 ;SAVE FILE?
      JR Z, KILLIT ;KILL OLD FILE TO MAKE ROOM
FOR NEW ONE
      JP LOAD ;GO TO LOAD ROUTINE
RL20 EQU $-2
KILLIT LD DE, FCB ;REMOVE EXISTING FILE TO
MAKE
RL24 EQU $-2
      SVC @REMOV
      JR NZ, ERR ;DISK ERROR
      LD HL, COPY ;MOVE COPY OF FILE CONTROL
BLOCK
RL25 EQU $-2
      LD DE, FCB
RL26 EQU $-2
      LD BC, 32
      LDIR
SAVE LD DE, FCB ;CREATE NEW DATA FILE FOR
OUTPUT
RL27 EQU $-2
      LD HL, BUFFER
RL28 EQU $-2
LRLCOM LD B, 0 ;LET LOGICAL RECORD LENGTH
= 256
      SVC @INIT
      JR NZ, ERR ;DISK ERROR
      LD DE, FILE2
RL29 EQU $-2
      LD A, (FCB+7) ;GET DIRECTORY ENRTY CODE
RL30 EQU $-2
      LD B, A
      LD A, (FCB+6) ;GET DRIVE NUMBER USED
RL31 EQU $-2
      AND 7 ;LOSE ALL DATA EXCEPT DRIVE
NUMBER
      LD C, A
      SVC @FNAME ;LET SYSTEM PRODUCE FILE
SPEC
      LD IX, (ADDSAVE) ;FIRST BYTE OF OUTPUT FILE
RL32 EQU $-2
      LD H, (IX+1) ;HIGH BYTE OF FILE SIZE
      LD L, (IX+0) ;LOW BYTE OF FILE SIZE
      INC HL ;ADD 2 TO FILE SIZE
      INC HL
      PUSH HL ;SAVE ON STACK

```

by suitable changes, once the principles of operation are understood.

In brief, this method creates a disk catalog file from DOS with the ROUTE command to send the printer output to the file; then uses the DOS CAT command with the P parameter to get a listing of cataloged disk contents into the file. Once that has been done on as many disks as need cataloging (subject to any space limitations imposed by the WP software), the file is closed with RESET *PR, the WP program is called and subsequent operations take place there, eliminating unwanted spaces and characters and highlighting disk names for easy reading.

When one wishes to search for all occurrences of a specific file, the catalog file is called up from the WP program and the search commands are used, which show the desired file under the heading of the disk name. New disks can be added to the catalog by repeating the procedure.

Details are as follows:

1. To use this system (or any other catalog system), obviously disks must be given meaningful and distinctive names, avoiding repetition. Disk names can be changed with the DOS ATTRIB command and the NAME parameter.

2. From DOS, enter the command ROUTE *PR filename/ext :dr#, where filename/ext is the name of the catalog file, then CAT :dr# (I,S,P) which will list the disk contents to the file. Omit I and/or S if invisible and/or system files aren't wanted in the catalog. Avoid error situations such as omitting to place the disk in the drive, leaving the drive unlatched, etc., which would display an error code that would also get into the catalog file needing to be weeded out later by deleting. 3. A number of disks can be cataloged in sequence by changing the disk and repeating the CAT command, on the model 4 with CTRL R.

4. When all disks have been read, issue RESET *PR. THIS IS IMPORTANT, as the omission of it would leave you with an incomplete and unclosed catalog file. (However, accidents do happen sometimes, and if a file were to be left unclosed, you would have to use the

```

FIRST LD      A,H           ;CHECK HIGH BYTE OF FILE
LENGTH
      CP      0             ;IF 0 THEN <256 DATA
      JR      Z,LESS256
      LD      HL,(ADDSAVE)
RL33  EQU     $-2
      LD      DE,BUFFER     ;OUTPUT BUFFER
RL34  EQU     $-2
      LD      BC,256        ;LENGTH
      LDIR                     ;MOVE DATA TO OUTPUT
BUFFEER
      CALL   BUFSAVE        ;SAVE DATA TO DISK
RL35  EQU     $-2
      LD      HL,(ADDSAVE)  ;INCREMENT TO NEW BLOCK OF
DATA
RL62  EQU     $-2
      INC    H
      LD      (ADDSAVE),HL
RL36  EQU     $-2
      POP    HL             ;RECOVER FILE LENGTH
      DEC    H             ;DECREMENT REMAINING LENGTH
      PUSH   HL            ;SAVE FILE LENGTH ON STACK
      JR     FIRST        ;CONTINUE
LESS256 LD    B,0          ;CLEAR BUFFER FOR LAST
RECORD
      LD      HL,BUFFER
RL37  EQU     $-2
NEXT  LD      (HL),0       ;CREATE BUFFER OF ALL ZEROS
      INC    HL
      DJNZ  NEXT
      POP    BC            ;RECOVER REMAINING FILE
LENGTH (WAS HL)
      LD      HL,(ADDSAVE)  ;LAST PARTIAL RECORD
RL38  EQU     $-2
      LD      DE,BUFFER
RL39  EQU     $-2
      LDIR
      CALL   BUFSAVE        ;SAVE LAST RECORD
RL40  EQU     $-2
EOF   LD      DE,FCB       ;CLOSE FILE
RL41  EQU     $-2
      SVC   @CLOSE
      JR    NZ,ERR         ;DISK ERROR
      RET
QUIT  LD      HL,(FILE)    ;RECOVER FILE NAME
RL42  EQU     $-2
      LD      (HL),0       ;NULL FILE NAME
      LD      HL,(DATA)    ;GET LOAD/SAVE FLAG ADDRESS
RL04  EQU     $-2
      LD      (HL),A       ;RETURN ERROR CODE
      RET                 ;EXIT TO BASIC
ERR1  POP    HL           ;CLEAR STACK BEFORE EXIT
ERR   LD      A,5         ;ERROR - DOS MESSAGE
      JP    QUIT
RL23  EQU     $-2
;*****READ DATA FROM DISK*****
LOAD  CALL   BUFSAVE      ;READ FIRST DISK RECORD
RL43  EQU     $-2

```

TRSDOS6/LSDOS command RESET filename/ext:dr# to close it, and then go to ALLWRITE to check what the situation is, whether any text has been lost and clean things up accordingly.)

5. Go to ALLWRITE and call the catalog file created as above. You will find many blanks between entries that take up a large proportion of file space; also attribute abbreviations especially on invisible and system files, which are good in normal use of the CAT (or DIR) command but might cause confusion in this application.

6. At the ALLWRITE editor, press CLEAR, keep it held down, press key 1 (coded as below) and keep it held down, which will create a repetitive cycle; at a given point, you will be informed there are no more items found (by an error code which is really only a statement) so release CLEAR and "1" and press ENTER to exit this phase. Then press CLEAR and release it, press key 2 (also coded as below) and release it. That will give you a compressed file as unneeded material and spaces will have been removed. The file you started with, created by the ROUTE command, will have shrunk to perhaps less than half its original size, and file names are displayed four-across in easily readable form. As soon as you have your compressed file, you must of course save it to disk, using the same filename/ext as in item 2. Key coding and operation are explained below.

Use these two keys in the correct sequence, first "1" then "2". The reverse sequence would upset operations.

7. ALLWRITE has an Autosave feature which saves to disk after a preset number of lines and/or changes have been entered; I keep it at a low value (50) for normal word-processing as it is important I lose as little text as possible in case of power failure. However, when using this system you may find that too low a setting causes frequent interruptions in processing for saving to disk and you may decide to set it somewhat high. For this method, from the editor I set Autosave at 1000

```

LD HL, (FILLN) ;FIRST BYTE OF FILE
RL44 EQU $-2
LD BC, (ADDSAVE) ;FIRST DATA ELEMENT
RL45 EQU $-2
SBC HL, BC ;LENGTH OF HEADER RECORD
LD B, L ;ASSUME HEADER RECORD IS
LESS THEN 256
LD HL, (ADDSAVE) ;HEADER RECORD CREATED BY
PROGRAM
RL46 EQU $-2
LD DE, BUFFER ;HEADER RECORD FROM DISK
FILE
RL47 EQU $-2
EXISTS2 LD A, (DE) ;COMPARE DATA
CP (HL)
JR NZ, WRONG ;EXIT IF HEADER RECORDS DO
NOT MATCH
INC HL
INC DE
DJNZ EXISTS2 ;CONTINUE TO END OF DATA
TEST LD HL, (BUFFER) ;LENGTH OF FILE ON DISK
(LESS 2)
RL48 EQU $-2
INC HL
INC HL
PUSH HL ;SAVE FILE LENGTH
FIRST1 POP HL ;RECOVER FILE LENGTH, BUT
DON'T LOSE IT
PUSH HL
LD A, H ;CHECK HIGH BYTE OF FILE
LENGTH
CP 0 ;IF 0 THEN <256 DATA
JR Z, LESS25L ;LESS THAN FULL BUFFER OF
DATA LEFT
LD DE, (ADDSAVE)
RL49 EQU $-2
LD HL, BUFFER ;INPUT BUFFER
RL50 EQU $-2
LD BC, 256 ;LENGTH
LDIR ;MOVE DATA TO MEMORY
CALL BUFREAD ;SAVE DATA TO DISK
RL51 EQU $-2
LD HL, (ADDSAVE)
RL52 EQU $-2
INC H ;NEXT ARRAY LOCATION
LD (ADDSAVE), HL
RL53 EQU $-2
POP HL
DEC H ;DECREMENT FILE LENGTH
PUSH HL
JR FIRST1 ;continue
LESS25L POP BC ;REMAINING FILE LENGTH (WAS
HL)
LD DE, (ADDSAVE) ;LAST PARTIAL RECORD
RL54 EQU $-2
LD HL, BUFFER
RL55 EQU $-2
LDIR ;TRANSFER REMAINING DATA

```

with the command BREAK AUTO 1000 ENTER (for temporary use) or it can be entered as a parameter from ALINSTAL/ CMD when the ALLWRITE system disk is set up (for permanent use from that specific disk).

8. Probably the most frequent application of disk catalog files is to find on which disk(s) a particular file is located. ALLWRITE's search is fast and it does it very well. To use the file catalog go to ALLWRITE, call up the catalog file and enter the search command for the file name you want to locate, which you will find under the appropriate disk name(s), the latter highlighted with asterisks. To repeat the search for other locations of the same file, press CLEAR F. The special soft keys are not required for this search and any ALLWRITE setup will serve.

9. To delete a file name, use the ALLWRITE search command (and CLEAR F if necessary to repeat the search) and delete when found with the "delete word" command, CLEAR W. To add a file to a disk, search for the disk name and insert the file name below it. To delete a cataloged disk, search for the disk name and delete disk name and contents with the block delete command. If the changes to a disk are extensive, it might be simpler to delete the disk name and contents entirely and then add the revised disk per item 10.

Whenever searches are made, remember that ALLWRITE searches after the cursor (unless other special instructions are given), so get to the top of the file initially with CLEAR T.

10. To add further disks to the catalog, proceed exactly as when you created the original file (items 2/4). ROUTE *PR to your existing catalog file, without the REWIND parameter, which would overwrite (and cause the loss of) the existing file. Without REWIND new material is appended to the file and you then go to ALLWRITE and proceed as before (item 6) to process the added items with the specially coded soft keys. Again, remember to RESET *PR before leaving DOS!

11. When cataloging a number of disks, keep an eye on the space you will have

```

                JR      EOF                ;CLOSE FILE AND EXIT
WRONG CALL      EOF                ;CLOSE FILE. HEADER RECORDS
DON'T MATCH
RL56 EQU        $-2
                LD      A,2
                JR      QUIT          ;ERROR - WRONG ARRAY TYPE
                JR      QUIT          ;JUMP TO ERROR ROUTINE
BUFREAD LD      DE,FCB              ;READ DATA FROM DISK
RL58 EQU        $-2
                LD      HL,BUFFER
RL59 EQU        $-2
                SVC     @READ
                JR      NZ,ERR1       ;DISK ERROR
                RET
BUFSAVE LD      DE,FCB              ;WRITE DATA TO DISK
RL60 EQU        $-2
                LD      HL,BUFFER
RL61 EQU        $-2
                SVC     @VER
                JR      NZ,ERR1       ;DISK ERROR
                RET
;*****DEFINE VARIABLES*****
FILE  DEFS     2
FILE2 DEFS     32
FCB   DEFS     32
COPY  DEFS     32
BUFFER DEFS    256
ADDSAVE DEFS   2
FILLN  DEFS   2
INOUT  DEFS   1
DATA   DW      0
FLTEND EQU    $-1                ;End of filter
FLTLEN EQU    $-START            ;Length of filter
;
;
;*****
;
;      Installation section
;
;*****
;
;      Reset HIGH$ and prepare to relocate filter
;
INIT  LD      HL,0                ;Get current value
      LD      B,L                ;B=0 >> select HIGH$
      SVC    @HIGH$
      LD      (OLDHI),HL         ;Save in filter
header
      JR      Z,RELOC            ;Go of no error
      LD      HL,NOMEM           ;HL==> No memory msg
      SVC    @DSPLY
      LD      HL,-1
      SVC    @EXIT
;
;      Move filter to high memory and protect
;
RELOC LD      IY,RELTAB           ;IY==> Relocation
table LD      DE,FLTEND          ;DE==> End of filter

```

available at ALLWRITE. The addition of too many disks at once may cause memory overflow but adding fewer at a time will help; as soon as a batch of disk contents has been processed with the special soft keys, the space taken up is appreciably compressed. You can check available and used space from the ALLWRITE editor with the STATUS command, or, knowing the overall size of your WP buffer (also from STATUS), you can make an approximate estimate from DOS with DIR.

12. If you have a sizable pile of disks to catalog, which might not fit into a single ALLWRITE file, you could put them in two or more files using the ALLWRITE append and backward commands (;ap filename/ext and ;ba filename/ext) to link them together. You would then apply the special soft keys to each file individually. When searching in such appended files, you would shuttle between them, an easy matter involving only two keystrokes, with the advantage that ALLWRITE carries the search string along when shutting.

13. The resultant catalog can be printed out from ALLWRITE but as it lacks the ";pp" Paragraph delimiters it will print out right across the page and may look a bit crowded (unless you use the print-time option ";CO OFF"); it can be printed out from DOS with LIST and the (P) parameter. Printouts in this system aren't much use for locating which disk(s) a file is on, as file names are grouped together under the disk names and searching visually through such a printout would be laborious.

14. The following shows how to code what ALLWRITE calls "soft keys", which are shifted or unshifted numerical keys ("X", "Y" and "Z" may also be used) which work after the style of DOS KSM and issue commands to ALLWRITE when pressed with or after the CLEAR key. ALLWRITE users will find further details in the manual, chapter 4, under Soft Keys.

```

XOR      A                ;Reset carry Flag
SBC      HL,DE            ;Calculate distance
to move
PUSH     HL                ; and transfer to
POP      BC                ; BC register pair
RELOC1   LD      L,(IY+0)  ;Get address to
change
LD       H,(IY+1)        ; in HL
LD       A,H              ;Pick up MSB
OR       A                ;IS it 0?
JR       Z,MOVE          ;Yes - go
LD       E,(HL)           ;Move contents
INC      HL                ; of address to
LD       D,(HL)           ; DE,reg. pair
EX       DE,HL            ;HL has value to
change
ADD      HL,BC             ;Add the offset
EX       DE,HL
LD       (HL),D           ;Put it back
DEC      HL                ; in the
LD       (HL),E           ; program
INC      IY                ;Bump IY to next
INC      IY                ; entry in tablr
JR       RELOC1          ;Repeat until done
;
; Move module to high memory and protect
;
MOVE     LD      DE,(OLDHI) ;DE==>Destination
address
LD       HL,FLTEND        ;HI==>Current end of
filter
LD       BC,FLTLEN        ;BC = length of
module
LDDR     DE,HL            ;Move it
EX       DE,HL            ;Move new HIGH$ to HL
LD       B,0              ;Select HIGH$
SVC      @HIGH$          ;Set new HIGH$ value
EX       DE,HL
INC      DE
LD       (DCB25),DE       ;Save address for
BASIC
LD       HL,LOWADDR
SVC      @HEX
LD       HL,SUCCESS      ;HL==> Success message
ERR_OUT  SVC      @DSPLY
LD       HL,0              ;Show success
SVC      @EXIT            ;Exit to TRSDOS
;
; Messages
;
NOMEM    DEFM      'High memory not available for installa-
tion'
DB       CR
SUCCESS  DEFM      'Installation sucessfully completed'
DB       LF
DEFM     'Use '
LOWADDR  DS        4
DEFM     'H as the CALL address'

```

Abbreviations for ALLWRITE model 4 soft-key coding:

Press key shown but do not type “[]” which are for readability only.

[F1] Press function key F1

[BK] Press Break key

[SP] Type one space

[EN] Press Enter key

[RA] Press right-arrow key

[LA] Press left-arrow key

Soft-key coding entered at the ALLWRITE “define key” prompts:

Notes:

If you're puzzled by “RIVE” and “[LA]” in key 1, they're explained later.

“(“ and “)” in these codes are names of keys, shifted “8” and “9” respectively, not syntactical parentheses, and should be typed in as shown.

Spaces have been included in these codes solely for readability, but should not be typed in. The only time the space bar should be pressed is when “[SP]” is shown.

Notes on soft-key coding:

Unshifted keys (“1” and “2”) are the only ones normally used by the operator. The rest are shifted to reduce the possibility of one being pressed in error, which could disturb the normal sequence of operation.

Soft-key coding is initiated from the editor. [BK] is pressed and at the “CMD” prompt one enters, for example to code key “1”, the instruction KEY 1 [EN]. The screen clears and prompts for the key definition to be typed in.

Model 4 ALLWRITE uses either CLEAR or F1 as control key for the editor but when setting up soft keys, F1 only must be used.

```

DCB25  DB      CR
      EQU      02FEH          ;Use end of DCB to
save program                  ; starting address.
;
; Relocation table
;
RELTAB  DEFW    RL01,RL02,RL03,RL04,RL05,RL07,RL08
      DEFW    RL09,RL10,RL11,RL12,RL14,RL15,RL16
      DEFW    RL17,RL18,RL19,RL20,RL21,RL23,RL24
      DEFW    RL25,RL26,RL27,RL28,RL29,RL30,RL31,RL32
      DEFW    RL33,RL34,RL35,RL36,RL37,RL38,RL39,RL40
      DEFW    RL41,RL42,RL43,RL44,RL45,RL46,RL47,RL48
      DEFW    RL49,RL50,RL51,RL52,RL53,RL54,RL55,RL56
      DEFW    RL58,RL59,RL60,RL61,RL62
      DEFW    0000
OLDHI   DW      0
CR      EQU      0DH
LF      EQU      0AH
;
      END      INIT
    
```

CATDISK soft key codes for ALLWRITE

```

KEY 1:
[F1] T [BK] SE [SP] RIVE [SP] : [EN] [LA] ***** [F1] !

KEY 1:
**** [RA] [RA] [RA] [RA] [RA] [RA] [RA] [RA] ***** [F1] )

KEY ):
* [F1] L [EN] [F1] Q

KEY 2:
[F1] T [BK] C / [SP] IP [SP] / / * [EN] [F1] ^ [F1] Q

KEY " :
[BK] C / + / / * [EN] [BK] C / [SP] SIP [SP] / / * [EN] [F1] #

KEY #:
[BK] C / *P / / * [EN] [F1] A [F1] Q

KEY & :
[BK] C / [SP] P [SP] / / * [EN] [F1] & [F1] Q

KEY & :
[BK] C / [SP] S [SP] / / * [EN] [F1] ( [F1] Q

KEY ( :
[F1] T [BK] C / [SP] [SP] / (SP) / * [EN] [F1] ( [F1] Q
    
```

Some keys don't have enough space to code a given task, due to the ALLWRITE limitation that no more than 22 characters can be used for one key, so keys are chained together whenever necessary to continue, with [F1] and the name of the next key. For example key "1" calls key "!" which in turn calls key "(") to accommodate the necessary characters.

When the code for a key is typed in, one quits the "define key" mode at the end of a definition, either automatically by entering the total allocated 22 characters (as in key "1") or by entering [F1]Q for "quit", as in keys), 2, #, %, & and (, which merely tells the system that coding for that key is complete but has no effect when the coded key is used later.

When coding soft keys, typing errors cannot be corrected. If any error occurs, there is only one thing to do: Type spaces or anything to get to the end of the definition and out of the "define key" mode, and redo the same key.

Incidentally, don't be surprised at the unusual characters which may appear on screen as you code a key, which are quite normal for the coding system.

If you were changing an existing file of coded keys and found you wanted to simply eliminate a key and leave it uncoded, you can do so by entering [F1]Q at the "define key" prompt.

A search is instituted by [BK]SE[SP] and the search string, followed by [EN]. (SE=search).

The command [BK]C/this/that/*[EN], (where C="change" and *="everywhere") changes "this" to "that" at every occurrence after the cursor (global search and replace), as in key "(" which changes two consecutive spaces to one wherever found on each pass. If there is nothing instead of "that" in the command (second and third slashes together) then "this" gets wiped out, i.e. Changed to nothing as in keys 2, ", #, % and &.

[F1]T puts the cursor at the beginning of the file, as in keys "1" and "2", as searches and search/replace occur after the cursor.

BASIC PROGRAM ILLUSTRATING ARRAY LOAD ROUTINE

```

400 PROG = PEEK(&H2FE)+256*PEEK(&H2FF)
500 IF PROG=0 THEN PRINT "INOUT ROUTINE NOT LOADED":END
900 DIM CTIMES(3,1),OTIMES(3)
1000 'TEST INOUT PROGRAM
1100 MENU$(1)="SAVE FILE"
1200 MENU$(2)="LOAD FILE"
1300 MENU$(3)="COMPARE FILE TIMES"
1400 MENU$(5)="INTEGER ARRAY"
1500 MENU$(6)="SINGLE PRECISION ARRAY"
1600 MENU$(7)="DOUBLE PRECISION ARRAY"
2000 MENULOW=1:MENUHIGH=3:GOSUB 9000:FIRSTMENU=A:IF A=0
THEN END
2100 MENULOW=5:MENUHIGH=7:GOSUB 9000:SECONDMENU=A:IF A=0
THEN 2000
2200 CLS
2220 PRINT "Enter size of length of array to create in
memory";: INPUT MEMLENGTH
2230 PRINT "Enter file name";: INPUT
FILENAME$:FILENAME$=FILENAME$+" "
2240 PRINT "Test in progress....."
2500 IF SECONDMENU=1 THEN DEFINTE Z
2510 IF SECONDMENU=2 THEN DEFSSNG Z
2520 IF SECONDMENU=3 THEN DEFDBL Z
2540 DIM ZARRAY(MEMLENGTH)
2550 ON FIRSTMENU GOTO 2700,2600,2800
2600 'TEST LOADING ROUTINES
2610 C%=2:CALL PROG (ZARRAY(0),FILENAME$,C%)
2630 IF C%<>0 GOTO 7000:'ERROR ROUTINE
2640 PRINT "TEST COMPLETED":INPUT "DEPRESS RETURN TO
CONTINUE";A$:ERASE ZARRAY:GOTO 2000
2700 'TEST SAVE ROUTINE
2710 PRINT "CREATING ARRAY.....": FOR I=0 TO MEMLENGTH:
ZARRAY(I)=I:NEXT
2720 C%=1:CALL PROG(ZARRAY(0),FILENAME$,C%)
2730 IF C%<>0 GOTO 7000:'ERROR ROUTINE
2740 PRINT "TEST COMPLETED":INPUT "DEPRESS RETURN TO
CONTINUE";A$:ERASE ZARRAY:GOTO 2000
2800 'COMPARE FILE LOAD AND SAVE TIMES
2805 PRINT "CREATING ARRAY.....":FOR I=0 TO
MEMLENGTH:ZARRAY(I)=I:NEXT
2810 C%=1:PRINT"SAVING ARRAY MY
WAY":CTIMES(0,0)=TIMES:CALL PROG
(ZARRAY(0),FILENAME$,C%):CTIMES(0,1)=TIMES:IF C%<>0 GOTO
7000
2820 C%=2:PRINT"LOADING ARRAY MY
WAY":CTIMES(1,0)=TIMES:CALL PROG
(ZARRAY(0),FILENAME$,C%):CTIMES(1,1)=TIMES:IF C%<>0 GOTO
7000
2830 PRINT"SAVING SEQUENTIAL FILE":CTIMES(2,0)=TIMES:OPEN
"O",1,"A"+FILENAME$:FOR I=0 TO MEMLENGTH:PRINT
#1,ZARRAY(I):NEXT:CLOSE:CTIMES(2,1)=TIMES
2840 PRINT "READING SEQUENTIAL
FILE":CTIMES(3,0)=TIMES:OPEN "I",1,"A"+FILENAME$:FOR I=0
TO MEMLENGTH:INPUT
#1,ZARRAY(I):NEXT:CLOSE:CTIMES(3,1)=TIMES

```

Characters such as the asterisks in keys "1", "!" and ")", not covered by any specific command, simply print on screen as if entered from the keyboard, overprinting anything in their path.

What the keys do

The key "1" chain changes headings generated by the DOS CAT command, eliminating disk data and leaving only the disk name highlighted on both sides by asterisks. It does this by overprinting text and spaces with asterisks at the beginning of the line, skipping over the disk name with the eight right arrows, adding more asterisks, blanking out the rest of the line with [F1]L (line delete) and adding [EN] to replace the one lost by line deletion, to prevent lines running together.

Key "1" searches for "RIVE". We want to search for "DRIVE" to locate the heading created by DOS CAT, but ALLWRITE only searches after the cursor, and as there is one case of DRIVE at the very beginning of the file, it wouldn't be found as the cursor would be on the "D". However, "RIVE" is after the cursor so we can search for it (which puts the cursor on the "R") and then backspace with the left arrow in key 1 to get back to the "D". There is no danger of "RIVE" being found as part of a cataloged file name, as a space and a colon are included in the search string.

The operation of key "1" and its chained keys "!" and ")" will become clearer if you simply call for CAT of a disk from DOS and observe the first screen line.

Originally I planned to make the key "1" chain self-repeating by having the last key, ")", call key "1" making the operation entirely automatic; however, self-repeating keys in ALLWRITE are allowed a finite number of repetitions and an operation might stop in the middle of a cycle when the repetitions are exhausted, creating some confusion. So I chose a non-repetitive cycle which, however, can do its job by being forced to restart by holding down CLEAR and "1" throughout the procedure, without any endless loop in the key itself.

```

2850 GOSUB 8000
2860 GOTO 2000
7000 'DISPLAY ERROR ROUTINE
7100 IF C%=1 THEN PRINT "ERROR #1, ARRAY IS A STRING"
7200 IF C%=2 THEN PRINT "ERROR #2, WRONG ARRAY TYPE"
7300 IF C%=3 THEN PRINT "ERROR #3, FILE DOES NOT EXIST"
7400 IF C%=4 THEN PRINT "ERROR #4, BAD FILE NAME"
7500 IF C%=5 THEN PRINT "ERROR #5, DOS ERROR HAS OC-
CURED"
7600 INPUT "DEPRESS RETURN TO EXIT",A$:END
8000 'CALCULATE TIMES
8100 FOR I = 0 TO 3
8110
HR1=VAL(MID$(CTIME$(I,0),2)):HR2=VAL(MID$(CTIME$(I,1),2))
8120
MN1=VAL(MID$(CTIME$(I,0),4,2)):MN2=VAL(MID$(CTIME$(I,1),4,2))
8130
SC1=VAL(MID$(CTIME$(I,0),7,2)):SC2=VAL(MID$(CTIME$(I,1),7,2))
8140 HR=HR2-HR1:MN=MN2-MN1:SC=SC2-SC1
8150 IF SC<0 THEN SC=SC+60:MN=MN-1
8160 IF MN<0 THEN MN=MN+60:HR=HR-1
8170 OTIME$(I)=RIGHT$("00"+STR$(HR),2)+":"+RIGHT$("00"+
STR$(MN),2)+":"+RIGHT$("00"+STR$(SC),2)
8180 NEXT
8200 CLS:PRINT".....THE RESULTS
ARE....."
8201 PRINT @(5,10),"FILE TYPE ";MENU$(SECONDMENU+4)
8202 PRINT @(6,10),"FILE SIZE ";MEMLENGTH
8210 PRINT @(10,0),,"START","END","DIFFERENCE"
8220 PRINT "SAVING MY
WAY",CTIME$(0,0),CTIME$(0,1),OTIME$(0)
8230 PRINT "SEQUENTIAL
FILE",CTIME$(2,0),CTIME$(2,1),OTIME$(2)
8240 PRINT
8250 PRINT"LOADING MY
WAY",CTIME$(1,0),CTIME$(1,1),OTIME$(1)
8260 PRINT"SEQUENTIAL
FILE",CTIME$(3,0),CTIME$(3,1),OTIME$(3)
8270 PRINT @(20,10),"DEPRESS RETURN TO CONTINUE";:INPUT
A$:ERASE ZARRAY:GOTO 2000
8300 CLS
8999 END
9000 'DISPLAY MENU ROUTINE
9100 'MENULOW = SMALLEST MENU ITEM TO DISPLAY
9200 'MENUHIGH = HIGHEST MENU ITEM TO DISPLAY
9300 CLS
9400 FOR I = MENULOW TO MENUHIGH
9550 PRINT @(10+I-MENULOW,10),I-MENULOW+1;:PRINT MENU$(I)
9600 NEXT
9650 PRINT @(19,10),"Depress <ENTER> to exit"
9700 PRINT @(17,10),"Select Menu Option";
9800 A$=INKEY$:IF A$="" THEN 9800 ELSE IF A$=CHR$(13)
THEN A=0:RETURN
9900 A=VAL(A$):IF A<1 OR A>MENUHIGH - MENULOW +1 THEN
9700
10000 RETURN

```

Key "2" and its chain will stop after each change and prompt for [EN]; you may, if you wish, hold down [EN] during the whole procedure. These keys delete the mod flags, "+", and a number of attribute abbreviations that the CAT command generates, namely, IP (key 2), SIP (key "), *P (key #), P (key %) and S (key &). Except for "1" and "*P", these might be found in a file or disk name which would be mutilated; to prevent this, the search string includes [SP] on each side, which must not be omitted. (I have assumed no one will use filenames like IP, SIP, P, etc. without slash or extension. If they did, my arrangement may require changes, and the filenames could become confused with file attributes.)

The deletions performed by keys "2" through "&" are the ones I found necessary; if you need any other deletions, you can change the chain at the end of key "&" to call one or more unused key(s) instead of "(", including it/them in the chain and ending with a call to "(" which should be the last key called in this chain as it is self-repeating and is exited with [BK]. ALLWRITE allows, in addition to numerical (shifted or unshifted) soft keys, the use of shifted or unshifted "X", "Y" and "Z" (each of these letter keys is the same whether shifted or not). Avoid using shifted zero which is the upper/lower case toggle, like "CAPS".

The last key in the key "2" chain, "(", calls itself with "[F1]" and sets up a self-repeating loop to eliminate unwanted spaces by globally changing two consecutive spaces to one until only single spaces remain, which requires several passes; each time around, ALLWRITE tells us how many changes have been made and prompts for [EN]. When it has told us that zero changes have been made, we can exit the loop with [BK], held down until it stops. This will cause the editor to flicker between the "CMD" and the edit modes. Press [BK] once again to return to the editor if you happen to stop at the "CMD" mode. In the case of key "(" I found that the limitation on number of repetitions (as in key "1") is no problem, as empty spaces can be easily eliminated within the allocated number of repetitions.

```

;FUNDAT/ASM - File Update
;      TITLE <FUNDAT - LS-DOS 6.3>
;
;
*GET  SVCMAC          ;SVC Macro equivalents
;
;      ORG      2600H
;
;      Save stack & call reset code
;
FUNDAT LD      (SAVESP+1),SP ;Save Stack ptr
CALL   FUNDAT1 ;Call fundat routine
LD     HL,0     ;Init successful
JR     Z,SAVESP ;Z - Exit clean
;
;      I/O Error Processing
;
IOERR  LD      L,A     ;Error # to HL
LD     H,0
OR     0COH      ;Abbrev, return
LD     C,A
@@ERROR
JR     SAVESP     ;P/u stack & return
;
;      Internal Message Exit
;
SPCREQ LD      HL,SPCREQS ;"Filespec req..."
@@LOGOT
LD     HL,-1      ;Set abort code
;
;      P/u stack & clear any pending <BREAK>
;
SAVESP LD      SP,$-$   ;P/u stack ptr
@@CKBRKC ;Clear any Break
RET
;
;      Fundat1 - undate a Filespec
;
FUNDAT1 LD      DE,FCBFIL ;Get file/device spec
@@FSPEC
JR     NZ,SPCREQ ;Must undate something
LD     A,(DE)    ;Can't do for a device
CP     '*'
JR     Z,SPCREQ
;
;      undate the extended date/time
;
@@FLAGS ;Get flag table pointer
SET   0,(IY+'S'-'A') ;Inhibit file open bit
@@OPEN
RET   NZ        ;NZ - I/O Error
LD   A,(HL)    ;Make sure access level
AND  7         ; is at least UPDATE
CP   5
LD   A,37     ;Init "Illegal access..."
RET  NZ       ;NZ - I/O error
LD   BC,(FCBFIL+6) ;Get drive/DEC
@@DIRR
RET  NZ

```

Storing the soft keys

The special soft keys may be stored in a version of the ALLWRITE editor defaults file, AL/DEF, with the command [BK]KEY SAVE AL/DEF(EN). This would be done on a system disk specifically assigned to this job to avoid upsetting the regular AL/DEF file used for normal word-processing. Furthermore I would suggest you give this file a different name, to avoid it being called automatically when ALLWRITE starts up, as AL/DEF is. Any slipup with that might cause you to accidentally use the changed AL/DEF in error on a WP text file where global changes or deletions might ruin valuable text. I prefer calling it something else, like CAT/DEF which requires, from the editor, the command [BK]KEY LOAD CAT/DEF[EN] to configure the soft keys to the special coding; slightly more effort but much safer.

As soon as you have coded the soft keys, be sure to save them to your /DEF disk file before you leave the ALLWRITE editor (AL/CMD), otherwise they will be lost.

File undating - FUNDATE

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In *THE MISOSYS QUARTERLY* Volume I, issue iv, Luis Garcia-Barro presented a program called "UNDATE" which was written for LDOS 5.3. That program converted an entire disk from the 5.3 format back to the 5.1 format; it did this by reversing the operation of the DATE-CONV command. If you wanted to move a single file, for whatever reason you had, you had to make a backup of a disk, then UNDATE the backup.

```

        PUSH    HL
        POP     IX          ;Pointer to IX
        LD      (IX+18),96H ;Stuff "blank" "user" pass-
word
        LD      (IX+19),42H ; in extended date/time
fields
        @@DIRWR
        RET          ;Return with condition
;
; Data area
;
SPCREQ$ DB      'Filespec required',CR
FCBFIL DS      32
;
        END      FUNDAT

```

```

/* FLIPFLOP/CCC - A utility to facilitate the exchange of
text files between TRS-80 and UNIX (or Amiga) systems.
*/

#include <stdio.h>
#option ARGS OFF
#option FIXBUFS ON
#option MMAXFILES 2

char c;

main()
{
    fputs("Working... \n",stderr);
    while ((c = getchar()) != EOF) {
        if (c == '\x0A') {
            C = '\n';
            fputs("C",stderr);
            putchar(c);
        }
        else if (c == '\n') {
            C = '\x0A';
            fputs("L",stderr);
            putchar(c);
        }
        else putchar(c);
    }
    fputs("\nDone!!\n\n",stderr);
}

```

I have occasionally been asked how to reverse the date conversion procedure for a single file under the LS-DOS 6.3 release. That brings me to the file undating program, FUNDATE, presented here. I touched on this program back in TMQ III.i4 on page 36 [see "Moving files from LS-DOS 6.3 to TRSDOS 1.3]. My original intention was to put FUNDATE in that issue, but I ran out of time and space. So here it is. Enjoy.

By the way, please note that macro invocations of the form:

```
@@LOGOT
```

are use a macro definition of the form:

```
LD    A, @@LOGOT
RST   28H
```

Page Display PRO-WAM Application

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Jacques has submitted a program called "PG2/APP" (see the PAGE2/ASM source file). This program is a small PRO-WAM application which is used to page through either of two data files. The data files need to be named "DATA1/TAB" and "DATA2/TAB".

PG2/APP is based on Dan Velting's PG/CMD which was presented in Issue III.iii of *THE MISOSYS QUARTERLY*.

```
;Page/ASM - 08/17/87
;****
;****
      TITLE    '<Page    Export>'
      OPTION  +CI
ETX   EQU     3
CR    EQU     13
UP_ARR EQU    11
LF    EQU     10
LT_ARR EQU     8
SUP_ARR EQU   1BH
SDN_ARR EQU   1AH
BUFFER EQU   2600H
TEXT  EQU   2700H
@CLOSE EQU    60
@ERROR EQU    26
@FLAGS EQU   101
@LOC   EQU    63
@OPEN  EQU    59
@POSN  EQU    66
@READ  EQU    67
@SOUND EQU   104
@VDCTL EQU    15
SCR_WIDTH EQU EQU    33
SCR_LEN EQU    10
HT     EQU    09H
FS     EQU    1CH
SPA    EQU    20H
BREAK EQU    80H
@DIV8 EQU    93
@DSP   EQU     2
@DSPLY EQU   10
@EXIT  EQU    22
@FSPEC EQU    78
@GET   EQU     3
@KEY   EQU     1
;      Establish macro
;****
SVC   MACRO  #NUM
      LD     A, #NUM
      RST   40
      ENDM
*LIST OFF
*GET WINDOW/MAC
*LIST ON
;****
;      The following is the header protocol
;****
      ORG   2700H           ;Forces START to 2800H
      DB   'PROWAM'
      DB   'Page', 3
      DC   13, 0
      DW   IROW, ICOL
      DC   .HIGH.$ .SHL.8-$-48+256, 0
      DATE
      TIME
      DB   'Copyright (c) 1987 MISOSYS, Inc.'
*LIST ON
```

This is DATA1/TAB
it is written with TED/CMD
and can be seen thru PROWAM
using PG2/APP.If not include
in WAM0/APL, use Prun/cmd

30 col. are possible in this
sample if you want a larger
window change line # 970.
length of file his not limited
with data2 you will see data
written with a Basic program
a long time before ,I had this
usefull PROWAM .
I don't have a lot of papers
on my desk any more.
Card/app do this better but
I can't use card0/dat in my
program/bas
29100,Sample one., 50, 55
29400,Batch two , 150, 10
29500,Car , 250, 2
29550,Item # 25 , 15000, 5
last line of DATA1/TAB
push BREAK to end.

55801,Sample of DATA2/tab
55901,could contain anything
55902,even Help line for progr.
16029,this one is use to
16030,introduce an explanation
26319,of the number in front.
26318,
85601,Code for paiements
85701,Code for S&H.
46023,
46024,
46027, and many more
46030,Water
61110,Power
61111,Cloths
61112,Bank account
61113,Loan
or could be translation
MERC1, thank for help
HOUSE, maison
61200,End of DATA2/TAB.
Hit BREAK to end.

**Using Profile 3 Plus
under LDOS**

by Joseph Kyle-DiPietropaolo
reprinted from LSI Journal, April 1984

Profile 3 Plus and LDOS are a very powerful combination. There are, however, several things that can cause trouble if you are not careful. Let's take them one at a time.

```

;***
; This is where the program starts
;***
IFNE $,2800H
ERR 'Something is wrong in the header
ENDIF
START LD HL,2.SHL.8+36 ;Origin NW corner at
IROW EQU $-1 ; row 1,
ICOL EQU $-2 ; col 40
LD DE,5.SHL.8+20 ;Window to have 5 rows, 20
columns
@WCREAT ;Function to open a window
JR Z,ENTRY ;Go if we were able to open
it
LD B,00.SHL.4+02 ;No good, set up parms for
beep
SVC @SOUND ;Beep the speaker and return
RET
;pg
ENTRY @WDSPLY PROMPT$
SVC @KEY ;entree choix
CP '1'
JP Z,NONO
CP '2'
JP Z,COMPTE
NONO LD HL,NORA
JP CLOSEA
COMPTE LD HL,CPTAB
JP CLOSEA
CLOSEA PUSH HL
@WCLOSE
LD C,00H ;exit
@WCREAT 1,44,10,34 ;window at 1,4 10 rows ,34 col
POP HL
GETFILE LD DE,FCB
SVC @FSPEC
LD HL,FILEBUF
LD B,0H
SVC @OPEN
JP NZ,DSKERR
;
GETLINE LD HL,BUF
LD DE,FCB
LD B,SCR_WIDTH
;
GETC SVC @GET
JP NZ,ENDFILE
AND 7FH
LD (HL),A
INC HL
CP CR
JP Z,R_DONE
DJNZ GETC
R_DONE LD (HL),00H ;add 0 at end of line
LD HL,BUF
LD A,1
LD (COL),A
PUTCHAR LD A,(HL)

```

First, what version should you have? Well, the only version that will run under LDOS is the "Hard Disk" version. Don't let that phrase scare you, as it works quite well on floppy disk also. At least two drives are required, and if you are going to do any fancy sorting, three would be better. Double-sided and/or eighty cylinder drives can be used if you have them.

In terms of actually running Profile 3 Plus, there are three things to keep in mind:

1) If you have the *KI driver installed, all references to the <clear> key in the Profile documentation should be changed to <shift><clear>. If you are using math fields, do not use type-ahead, as Profile does not seem to calculate properly if <shift><clear> is struck before the calculation is complete.

2) Profile checks the printer status by looking directly at the hardware. This means that if you are using the spooler, the printing rate will not really improve much. This can be corrected by searching through all the EFC programs (and RM/CM) for the byte sequence 3A E8 37 and replace it with 3E 30 00. This is a good excuse to learn how to use FED (included with the LDOS 5.1.4 and 5.3 releases). Making these changes will disable the check of printer status. Since the system printer driver (which contains its own "Printer BUSY test") is used to actually output the data, there will be no conflicts. Also, you will be able to route printed reports to a disk file without having a printer ready and on-line.

3) Lastly, contrary to what the manual says, Profile will **not** work with "DO files" under LDOS. This is because of the way keyboard input is requested by Profile. This difficulty is neatly fixed by using the TYPEIN utility from the Utility Disk #1 (Order L-32-070, \$19.95 + S&H direct from MISOSYS).

When creating a file of commands to be used with TYPEIN and a Profile user menu, put the entire command sequence in the data file. This includes the EFC line. Build the file by putting in the exact keystrokes you would type if performing the procedure by hand. Then, invoke the

```

OR      A
JP      Z,W_DONE
CP      HT      ;backspace ?
JP      NZ,NOT_TAB
JP      CONTINUE
NOT_TAB LD      C,A
@WDSPE
LD      A,(COL)
INC     A
LD      (COL),A
CONTINUE INC    HL
JP      PUTCHAR
W_DONE LD      A,(NLINES)
DEC     A
LD      (NLINES),A
OR      A
JP      Z,TTYIN
JP      GETLINE
TTYIN  SVC     @KEY
CP      SPA      ;Space
JP      Z,PAGE
CP      CR      ;ENTER + 1 line
JP      Z,LINE
CP      BREAK   ;BREAK to end
JP      Z,FCLOSE
CP      ETX
JP      Z,SORTIE ;to see end of data
JP      TTYIN
PAGE   LD      A,SCR_LEN-1
LD      (NLINES),A
JP      GETLINE
LINE  LD      A,(NLINES)
INC     A
LD      (NLINES),A
JP      GETLINE
;
ENDFILE CP     FS
JP      Z,SORTIE
;
DSKERR LD      C,A
SET     6,C
SVC     @ERROR
;
SORTIE LD      DE,FCB
SVC     @CLOSE
SVC     @KEY
@WCLOSE
RET
FCLOSE LD      DE,FCB
SVC     @CLOSE
LD      C,00H
@WCLOSE
RET      ;return to program
PROMPT$ DM     LF,' 1... Data1/tab ',LF,LF,' 2... Data2/
tab ',CR
NORA   DB      'Data1/tab'
CPTAB  DB      'Data2/tab'
NOMFICH DB     12

```

procedure with TYPEIN. Do not attempt to pass the name of a DO file to the EFC module by placing it in parenthesis as stated in the Profile manual; it will not work.

For example, let's say that we want to be able to expand our existing data file by 100 records by pushing one key. First, create a user menu that has an entry called "Expand the MAIL file by 100 Records". Set up the user menu so that this entry is executed by pushing "E". When "E" is pushed, it should execute the command: TYPEIN EXPAND/KYS. The TYPEIN data file you would have to build (with the name EXPAND/SYS) is given below. Note that <enter> means the depression of the key marked "ENTER".

Contents of the file EXPAND/KYS:

```
EFC7<enter>
MAIL<enter>
100<enter>
```

LED, the LDOS text EDitor (L-30-020, \$19.95 + S&H) is an excellent tool for generating and maintaining these keystroke files for TYPEIN. LED also has a special HEX mode that will allow you to insert the <shift><clear> code (X'1F') directly into a TYPEIN keystroke file. This character is needed to terminate "extended mode" functions.

If you must use BUILD, and you need to get a <shift><clear> keystroke into the TYPEIN file, do the following: Make sure that KI/DVR is installed when doing the BUILD. When you get to the point at which you need to insert the <shift><clear> keystroke, actually put a <clear> <shift> <enter> character there. That character is produced by pressing the <clear> key, and while still holding is down, press the <shift> key, and while still holding both of them, press the <enter> key and then release them all. A Plus/Minus symbol will appear on the screen. Now continue with the remainder of the key data. Whenever you need to execute this kind of a TYPEIN procedure, use the format: TYPEIN SELECT/KYS (X1=X'7F1F'). Each <clear> <shift> <enter> will now be translated to the required <shift><clear> when executing. This TYPEIN command can, of course, be placed in a user menu.

```
BUF DS SCR_WIDTH+1
COL DS 1
FCB DS 32
FILEBUF DS 256
NLINES DB SCR_LEN-1
TABSTOP DB 4
;***
; Standard memory overflow check
;***
IF $.GT.3000H ;Check on memory overflow
ERR 'Memory overflow!!!'
ENDIF
;***
; Zero last sector of application file - patch space
;***
IFLT $,3000H
DC .HIGH.$ SHL.8-$.+256,0 ;Zero remainder
of sector
ENDIF
END START ;START must be 2800H
```

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diskDISK

diskDISK's DIR/SYS size

From Peter Besenbruch, Ft. Leonard Wood, MO: Dear Roy, I have recently converted to a used Tandy 15 meg hard drive. I use your RS-Hard drivers and diskDISK to organize it. I set up the /DSK files as pseudo 360k floppies (I specified 2 sides and went with the rest of the defaults when using DDFORM). I soon discovered that DDFORM did not make a total replica of a floppy disk on my hard drive. I had several "k" more to play with. Doing a mirror image backup from diskDISK to the floppy gave me the extra "k" on the floppy, too.

I have received a trial version of Lscript II. It shows promise, but crashes when reading these "enhanced" disks, particularly trying to take a directory from within the program. Allwrite, Shell (a PD DOS shell), and the DOS had no problem. I assumed Lscript was at fault and called Peter Ray of Anitek.

He took me on a tour of the diskDISK created floppies. I learned that they are not strictly images of the floppy. For one thing, the directory is on track 1. The second item is more interesting: The last two sectors of the directory track do not contain directory information as far as I can tell. DiskDISK appears not to zero any of the previous information on the hard drive when creating a pseudo floppy except for the first 34 sectors of the directory. Lscript attempts to read the entire directory track and crashes when it encounters the last two sectors. Peter Ray tells me that Lscript looks for sector 3, byte 0205H to see how large the directory is. Zapping several diskDISK DIR/SYS files shows 24H at that location. That translates to 36 decimal. Decreasing the

MISOSYS Products' Tidbits



byte by two (to 22H) solved the problem. I have the following questions:

1. Does it, in fact, solve my problem, or am I setting myself up for worse trouble?
2. Is this a bug in diskDISK's DDFORM module, or is Lscript not "playing by the rules?"
3. Is there a quick patch to DDFORM to zero the rest of the directory track, or decrement the byte mentioned above.
4. Why does the DOS have no problem with the diskDISK pseudo floppies?

Setting up the hard drive with diskDISK

was a remarkably easy job, even fun. I realize that there are advantages to configuring a diskDISK pseudo floppy exactly like a real one, but I like the few extra "k" I get this way. I hope that whatever solution evolves that I will get to keep them.

From MISOSYS, Inc: Peter, I researched your suspected problem and came up with a solution. DiskDISK does indeed establish the ending record number (ERN) of the DIR/SYS entry as equal to the number of sectors per cylinder. But in the case of a 2-sided double density "image", that comes out to being two records larger

```
. DDFORM5A/FIX - 05/23/89 - Patch to DiskDISK DDFORM/CMD
Ver 1.0.1
. Patch corrects DIR/SYS ERN entry on diskDISKs created
. with a cylinder in excess of 34 sectors.
. Apply via, PATCH DDFORM DDFORM5A
D02,0C=CD EE 58
F02,0C=11 00 01
D03,2B=00 00 00 00 00 00
F03,2B=3A 47 57 32 5C 55
X'58EE'=32 5C 55 11 00 01 C9
. Eop

. DDFORM6B/FIX - 05/23/89 - Patch to LS-DiskDISK DDFORM/
CMD Ver 1.0.1
. Patch corrects DIR/SYS ERN entry on diskDISKs created
. with a cylinder in excess of 34 sectors.
. Apply via, PATCH DDFORM DDFORM6B
D02,02=CD F0 2C
F02,02=11 00 01
D03,56=00 00 00 00 00 00
F03,56=3A 49 2B 32 87 29
X'2CF0'=32 87 29 11 00 01 C9
. Eop
```

than what is actually in effect. Neither the DOS nor most programs have any problem with that; the DOS generally accesses the directory first via the hash index table (HIT) for which there is a corresponding directory record for each HIT entry. Other utilities which access the directory per se, calculate what has to be read.

DiskDISK does correctly calculate the length of the directory but uses that figure only to determine how many directory sectors to zero out. I am enclosing two patches to correct this minor bug; the DDFORM5A/FIX is for the Model III version while the DDFORM6B/FIX is for the Model 4 version.

Incidentally, zapping the 24H to a 22H did solve your problem and set you up for no further problem; 22H is the correct value - which indicates a maximum sized directory.

EnhComp

Proper FOR-NEXT loops

Fm John L Sullivan, North Highlands, CA: Gentlemen, I recently purchased your Pro-EnhComp BASIC compiler. I have found the compiler to be as advertised. I have compiled almost all of my interactive BASIC programs by simply editing the interactive version to conform to EnhComp standards, recording the program back to diskette in ASCII format then loading it into the "S" program on the EnhComp diskette. After a little more editing, I make a final compilation which works as well as did the old interactive version.

I have been having a devil of a time with one program which works beautifully in the interactive mode but fails in the compiler mode. The compiled version will not make

a decision where a Yes or No (Y/N) prompt is located.

I have marked three of these BASIC statements in green, lines 3220, 4360 and 11560

When either "Y" or "N" is pressed, the computer simply hangs up. Sometimes strange characters such as Japanese characters or graphic characters will appear on the screen in no particular pattern. Sometimes the system or lower drive will spin and the LS-DOS logo will reappear.

I thought at first that the INKEY subroutine was at fault, although it works on other, similar programs. I rewrote the statements involved using a simple input of "Y" or "N" after which the ENTER key is pressed, but the same thing happened, the computer hung up with scattered foreign characters dotted here and there on the screen.

I even rewrote the whole listing directly into the "S/CMD" part of the compiler and the program wouldn't even compile although I checked the TEMP/BAS version with previous ones entered from ASCII from modified interactive programs.

I have written other, similar programs, one being a mail list program, where there is absolutely no problem with Yes or No decision prompts. I have even used fresh copies from the master disk you sent to no avail. I need help.

I have enclosed three listings, one the original interactive listing after being edited, the other being the listing from EnhComp's supervisor. I have also included the listing from the Mail-list programs which works beautifully. The EnhComp diskette is also enclosed.

While I have had strange, unaccounted for hangups at times with other programs, I found that I could get around these by modifying the program slightly. Unfortunately, in this case, Yes-NO decisions are fundamental programming structures. I would appreciate any assistance you can give.

Fm MISOSYS, Inc: John, I did manage to fix up the problems you were having compiling the program you supplied. Here's what I found:

Although I'm not sure that all of your FOR-NEXT constructs would have worked properly, I did alter most of them. Compilers have a funny habit of crashing when you jump out of a FOR-NEXT loop. Many of your loops were like that. For example,

```
4310 FOR I = 1 TO 60
4320 IF MID$(TIT$, I, 1) = "+"
THEN 4340
4330 NEXT I
4340 ...
```

was changed to,

```
4310 FOR I = 1 TO 60
4320 IF MID$(TIT$, I, 1) = "+"
THEN I1=I:I=60
4330 NEXT I
4340 ...
```

The proper construct to prematurely leave the scope of a FOR-NEXT is to alter the index variable to equal (or exceed) the upper limit. In other cases where you wanted to know the terminating index, I altered the code to assign that value to another variable prior to readjusting the index variable.

On the other hand, I fail to see why you are not using the INSTR\$ function for all of your examinations of the type just mentioned. For example,

```
I = INSTR$(TIT$, "+")
```

not only is the better solution, but it is much faster.

But the real culprit of the lockup (and/or crash) was a problem caused by a limitation of EnhComp which you were really not aware of. The current implementation of EnhComp does not permit multiple DIM statements. There can be only one DIM (I may correct that in the future). Once I moved the dimension of PUBTYPE\$ from line 1080 to line 1070, I also got the program working. I then also had to remove the extraneous DIM at line 1250;

note that NORD\$, although dimensioned, was never used for anything.

The compiled program thought it had seven string arrays, but only six were dimensioned. The GOSUB 10030 in line 11040 was the first encounter of string substitution where the string storage area needed to be moved. EnhComp has a routine to adjust the pointers of all strings below the move point. When it started to check the seventh, nonexistent, string array, it was examining garbage. That's because the compiler counted seven string variables but only six were DIM'd. That's really a bug in the compiler which should have trapped your multiple DIM statements as being an error in the current implementation.

So keep from branching out of FOR-NEXT loops and use only one DIM statement - for the time being. The revised program was placed back on your disk under the name TEMP1/BAS.

EnhComp and DIM statements

Fm Michael Dauphin 76010,3262: Is the following use of ALLOCATE, CLEAR, & DIM valid in EnhComp?

The program works if an argument is not specified on the command line. And it works with an argument IF the DIM statement is removed. If the DIM is left in and an argument is specified - CRASH. The manual says that ALLOCATE may only be executed once in a program. But, I found it SEEMS to work, and is necessary after a CLEAR. The GETARG\$ function is a modification of the one ROY had in TMQ III.i, page 51. This one is for a multi-char argument. This is just a test program. I am trying to check memory and DIM arrays and CLEAR string space based on available memory and arguments on the command line.

```
10 CLEAR 1000 : PRINT "PROGRAM START"
30 ALLOCATE 1
31 A$ = !GETARG$ : PRINT A$
40 PRINT "PROGRAM BODY"
50 CLEAR 2000 : ALLOCATE 1 : DIM A$(100)
80 PRINT "ARRAY SPACE ALLOCATED"
90 FOR X = 1 TO 1000 : NEXT : END
FUNCTION GETARG$ (X%, Y%, X$, Y$)
Z80-MODE
LD HL, (@@BCSV) : ` Get BC -> beginning of COM line.
LD (&(X%)), HL : ` Load w/ start of COM line
HIGH-MODE
Y%=0 : X$ = ""
REPEAT
  REPEAT
    INC Y% : Y$ = CHR$(PEEK(X%+Y%))
  UNTIL Y$ = " " OR Y$ = CHR$(13)
  IF Y$ = " "
    REPEAT
      Y$ = CHR$(PEEK(X%+Y%)) : INC Y%
    UNTIL Y$ <> " "
  ENDIF
  IF Y$ <> CHR$(13)
    REPEAT
      X$ = X$ + Y$ : Y$ = CHR$(PEEK(X%+Y%)) : INC
    UNTIL Y$ = CHR$(13)
  ENDIF
UNTIL Y$ = CHR$(13) : RETURN X$ : ENDFUNC
```

time passes...

I finally got the example program to work. Some time spent looking at the compiled EnhComp code with DEBUG and FEDII gave me an idea as to what was happening. I said, 'idea' because I don't really know what is going on within the code - I just sort of have a 'feeling.' It seems that EnhComp sets up some pointers to various data areas. If more than one CLEAR or DIM statement is used some of the pointers used by EnhComp are destroyed. The problem is that 'some' and not 'all' are destroyed. With a second DIM, EnhComp has some conflicting pointers. The solution, at least for the example program, is to completely reset the pointers by using both CLEAR and DIM twice. For example, the program will work if the following changes are made;

```
Line 30 -> DIM A$(1) :  
    ALLOCATE 1
```

```
Line 50 -> CLEAR 2000 :  
DIM A$(100) : ALLOCATE 1
```



Golden Oldies



GO:CMD ZCAT bug

Fm Jane A. Layman, Waukesha, MI:
Dear Roy, Am in receipt of both GO:CMD and Michel Houde's XLR8er interface package and am extremely pleased with both. I believe I have, however, encountered a minor bug in ZCAT when using the <S>earch option. If I search a /CAT

file for a specific extension (e.g., "/DAT"), the search command appears to find only those files whose filestem does not exceed 7 characters.

You can easily reproduce the above mentioned behavior by creating a disk with 3 files such as SPACE6/DAT, SPACE07/DAT, & SPACE008/DAT; cataloguing it; and then searching for "/DAT". This search will only find SPACE6 & SPACE07/DAT, while a search with "SP" will find all three files.

Am enclosing a SASE in the hope a quick fix is available.

Fm MISOSYS, Inc: Jane, This is in response to your letter of January 25th concerning GO:CMD's ZCAT utility. I know, this is kind of a late response. You would not believe my desk. Your letter was in a stack which was part of one heap; I have many heaps.

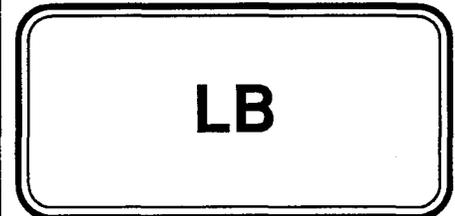
In any event, I tracked down the problem with search in the new ZCAT. The bug was a little more elaborate than what you suspected. It involved file specifications which were greater than nine characters long considering the name and extension. Also, the date of the file(s) had to be past 1987. Filespecs of 11 characters were impacted if their dates were 1988 through 1995; filespecs of 10 characters were impacted if their dates were 1996 through 1999.

I was a little sneaky in coding the extended date support in this version of ZCAT. Since I wanted to be totally backward compatible with ZCAT 1.0 catalog files, I could not extend the data structure; in fact, I really didn't want to since that would have reduced the available number of files in the list when read into memory. So I used bit-7 of the last two file specification character bytes to hold the fourth and fifth bits of the extended year. All display routines were corrected to strip those bits; however, I overlooked correcting the search routine which has to match one string against another.

Enclosed is a small patch which corrects the bug. Sorry for the delay, but this

business has insufficient profit to provide the level of personnel which can immediately jump onto every input I get. It may take a little time, but I get around to most things.

```
. GOZCAT1/FIX - 05/26/89 -  
Patch to GO:CMD ZCAT/CMD  
2.0.0  
. Patch corrects file  
search  
. Apply via, PATCH ZCAT  
GOZCAT1  
D06,8E=DD 96 00 C8 E6 7F  
C9  
F06,8E=00 00 00 00 00 00  
00  
D08,1F=CD 6A 36  
F08,1F=DD BE 00  
D16,57=31  
F16,57=30  
. Eop
```



LB



LB data to LB-86

Fm Pete Betz: I have a question about LB. Will LB-86 and Model 4 LB readily accept files that are Hypercrossed back and forth between the two machines, or are their datafile structures not that compatible?

Incidentally, I've been experimenting with PC-Four, and promptly discovered that SAID is hopeless under PC-Four. Luckily, my favorite workhorse, Allwrite!, works great with PC-4 (after you learn a few tricks), which has made this whole 1400LT experiment work out pretty well. Anyway, I've been wondering if you have done any experimenting with PC-4. I'm so pessimistic about LB working on it that

I haven't even tried it, but have no real reason for such an attitude.

Fm MISOSYS, Inc: The data file structure of LB is IDENTICAL in both the Model 4 and MS-DOS versions. Any set of LB data files moved between the two environments are directly usable. Make sure that you move them as BINARY files, not ASCII. Reason is that TRSCROSS, and possibly Hypercross, may convert the binary PASSWORD to something you will not be able to access.

I have not used PC4; I don't own it.

LB and FORMS

Fm William Newman, Sanford NC: I have a church directory - several pages enclosed. I want a header of three lines, text of fourteen lines, and footer of three lines. Pages one and two of directory printed okay but then pages three and four started to add extra blanks at the top of the page. I have installed FORMS using SET *FF FORMS; FILTER *PR *FF as recommended.

Fm MISOSYS, Inc: William, This is in response to your letter of May 2nd concerning the printing problem with LB. This is the print of "Form #3" in which you had generated four records (of 14 lines each) per page. To be honest, I see nothing wrong with your print screen definition, on the surface.

The "Printed lines per page" in the print parameters is the number of lines you want printed before page ejecting. A line in which the data is blank still counts as a line. With your 3-line header and footer, four 14-line records should fit exactly at 62 printed lines. At page eject, LB would send a FORM FEED character since the "Physical Lines per Page" and "Printed Lines per page" are not equal (see LB

manual, page 24, para 3). Since the FORMS filter is installed, and FFHARD is not specified, the FORMS filter will translate a form feed character to repeated line feeds, as many as are necessary to complete the page (according to its settings). With FORMS set to 66 and 66, it should translate the form feed to four returns, assuming that its internal line counter was set to zero prior to the start of the printing. If your DMP130A printer supports form feed, then you should set FFHARD with the FORMS command of the DOS. Of course, if the FORMS counter was the culprit, I would expect page two to be off in addition to succeeding pages.

In order to be able to understand what is happening in your case, I would need to see a copy of your associated data base files so that I can run the report here. I would have to direct the printout to a disk file and examine exactly what is being sent from LB. Depending on your skill at interpreting disk dumps, you could try that first. Here's how. Before entering LB, issue the command ROUTE *PR FORM3/DAT. Target a hard drive partition which has plenty of free space (I don't know how big your report is). Then enter LB and print the report. Then exit back to DOS and RESET *PR. Examine the resulting FORM3/DAT file at the demarcation between page 2 and 3. That's what I would do.

LB and mail/merge

Fm MISOSYS, Inc 70140,310 to Jim Beard 71675,566: Jim, Can you confirm the mail-merge structure for SuperScript? ScripsitPRO? From PROFILE documentation, it appears that the merge file is LRL=1, contains the code words surrounded by AT signs (@), then has the code variables following in the same sequence as the code words with each variable also surrounded by @'s. Each group separated by one blank line and the merge file terminated with two blank lines.

The Model II SCRIPSIT mail/merge format is identical except that uses braces

“{“ & “}” surrounding code names and variables. I'm considering adding the merge file creation capability in LB2.x release.

Fm Gary Phillips 72425,354: Roy, I use mail merge in Superscripts regularly. It doesn't care what the LRL is (usually I use LRL=256 because the merge document is created with SAID in my case) and the bracketing characters surrounding each variable can be anything that does not occur in the text. Note, however, that you must use the same bracketing character both at the beginning and the end. Thus "@" is OK, or "{" used both before and after, but not "{" before and "}" after. Why not just let the user select a bracketing character as an option? If that isn't feasible, I'd suggest either "@" or "~" as brackets unlikely to appear in the actual text.

Fm MISOSYS, Inc: I have no problem with the user setting the bracketing character. Since I don't use SS (and have not seen the manual), the only documentation I have on the mail merge capability was a Model II SCRIPSIT manual, and the PROFILE manual. Thanks for the input.

Fm Jim Beard: Roy, The merge file can be either ASCII or written in the word processor format (either Super Scripsit or Scripsit Pro). You select a character and use it as the marker in both the main text and the merge text. Here is a simple example:

FORM LETTER:

Dear /NAME/
You /PRODUCT/ has arrived. Come
and get it before we /ACTION/.
Signed, /US/

MERGE FILE:

```
/NAME/
/PRODUCT/
/ACTION/
/US/
```

```
/Knucklehead/
/junk/
/throw it out/
/Tandy of Goforth, TX/
```

```
/Sir/
/Merchandise/
/Lose it/
/Radio Shack of Yuppie Mall/
```

Fm Spence Mabry 76615,2071: Roy, Sorry this is later than the others, but finally got back up and running. But to answer in some more detail our question re: merges with SuperScripts/Scripts Pro

Profile creates an ASCII file with @'s as the "variable delimiter". The way Jim Beard laid out is correct. The only thing is that the "variable delimiter" has to be unique for both the form letter & the merge document. Since I do merge from Profile 4 + to Scripsit Pro (actually Allwrite with Electronic Webster & Dotwriter), I tend to use the @ character. One of the reasons I don't use LB (though I happen to own it) all that much is because of the lack of this merge feature. Glad you're adding it.

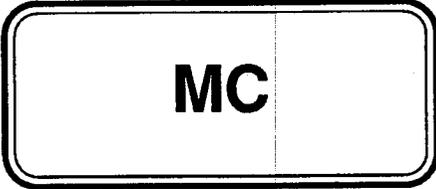
Fm MISOSYS, Inc: Actually, even with the current LB, it wouldn't take but a few minutes to create a "print screen" which would generate the form letter data file! Just put the "header tags" as a print header, then do the line by line data with what ever surrounding character you choose. Nothing complicated about that - once you know what the requirements are.

Make use of the LS-DOS redirection facility by typing prior to invoking LB,

```
ROUTE *PR MERGE/DAT:d
```

Run the "report" in LB, exit, then close the merge file with,

```
RESET *PR
```



PRO-MC, Printer Output

Fm Rick D. Jones 75130,354: I purchased PRO-MC a few weeks ago. The manual I got doesn't have ANYTHING about STDPRN, the printer. Can anyone help.

Fm Les Mikesell 70010,266: Rick, STDPRN is an MSDOS concept, not 'C'. On the model 4, just open() or fopen() the printer device "*PR" and use the returned fd or fp.

Fm Shane Dawalt 71076,511: Rick, I don't believe PRO-MC has stdprn. The only compilers that I know of which have stdprn (and stdaux on some) are in the MSDOS area. If you want to get to the printer, define a file pointer for the printer stream (I'd call it "stdprn"). Use the fopen() call to open the stream for writing like so:

```
if ((stdprn =
fopen("*PR", "w")) == NULL)
```

You should provide error trapping in the event fopen() fails. You can use stdprn just like stdin/stdout/stderr. I find this most convenient. Of course, if you're going to port this to MSDOS, you can always comment out the above if construct ... stdprn will be correctly used.

Fm Rick D. Jones: Les, STDIN, STDOUT, STDERR are standard I/O files for PRO-

MC. STDPRN and STDAUX are two additional I/O files in ANSI C (MicroSoft C). I just figured out how to go around not having STDPRN on my model 4, just open a file stream called 'STDPRN' to the *PR device.

Fm MISOSYS, Inc: Better to use a construct such as:

```
#ifdef DOS
if ((stdprn =
fopen("*PR", "w")) == NULL)
abort("Some error
message");
#endif
```

In that way, you have to comment out nothing. PRO-MC predefines the identifier "DOS", while MS-DOS compilers, such as Microsoft C, predefine the identifier, "MSDOS". The typical method to write high-level language for portability across environments is through conditional code, which is no different than writing assembly language source files to assemble to various operating environments.

HiRez C library

Fm Rick D. Jones 75130,354: Where can I get a High Rez Graphics library for PRO-MC?

Fm MISOSYS, Inc: If you have the R/S hires board along with the GRLIB (FORTRAN graphics library), then issue II.ii of *The MISOSYS Quarterly* has an interface between MC and GRLIB.

PRO-WAM

PRO-WAM query

Fm Edmund L. Wilkins, M.D., Bowling Green, KY: Gentlemen, Please send me more detailed information on PRO-WAM as advertised in CN-80. Does it have the ability to generate windows from BASIC programs like earlier ads for PRONTO would suggest? Can it be used to generate shells around or pop-up windows in Visicalc, Scripsit/Powerscript and the like?

Fm MISOSYS, Inc: Dr. Wilkins, This is in response to your letter of June 26th concerning our PRO-WAM package. I am enclosing a brochure of our product line which has a small description of PRO-WAM.

To answer your specific questions, the following may be beneficial. The memory resident module of PRO-WAM has the capabilities for supporting windows from any language - including BASIC; however, we have separated out the technical aspects of programming to the PRO-WAM interface into a separate package called the PRO-WAM Programmer's Toolkit. It's available for \$29.95 + S&H. It requires the use of PRO-WAM to begin with.

PRO-WAM is not a shell language; you cannot use it to create a menuing system. Actually, the standard Job Control Language (JCL) of the DOS can be used in that manner to some extent. However, you can pop-up PRO-WAM applications while running other "behaved" programs such as Visicalc, Scripsit, BASIC, and

any other application which uses the DOS keyboard driver.

PRO-WAM currently comes with the following applications: ADDRESS, AFPCALC, BRINGUP, CALENDAR, CARD, CARDX, CARDXF, CHARSET, DIALER, DOLOAD, DOSAVE, HEAD, PHRASE, RPNALC, TERM, TODO, and TYPER. Applications are stored in a library to minimize directory space. The product includes a data file sort facility and a help module.

PRO-WAM uses for the programmer

Fm Bob Haynes 73075,77: I find PROWAM very useful, especially while working in assembly. Say I'm in SAID, editing a source file. Two quick taps on F1 gets me a windowed, searchable library of all the LSDOS SVCs, WAM programming functions, and various programming rules. F2 gets me a table of characters 0-255, with conversion to hex or decimal values. Shift F1 gives me a programming calculator; Shift F2 a RPN calculator. F3 gets me any other application I need; Shift F3 gives DOS lib functions. My, my. You couldn't use any of that? And that's only a glimpse! Gotta tell you, trying to disassemble and analyze a program w/o WAM on-line is like going on safari without an elephant gun and machete!

PRO-WAM WHAMMY

Fm Gary Phillips 72425,354: Roy, received PRO-WAM yesterday. Thank you for your usual efficient service. I can see that I was remiss in taking so long before picking this one up. You really outdid yourself (and S***K**K, that "other" product) when you put this one together. If I'd had this sooner, I might not have

broken down and spent a couple of grand for genuine multitasking. Not to fear, I will still be using the 4P's as I love the beasts too much to retire 'em till they die of old age.

I notice that the documentation mentions a "programmer's toolbox" for writing PRO-WAM applications, though I don't recall ever seeing you advertise anything but PRO-WAM and Mr. ED. At a guess, I'd say that any program that can use an svc interface can invoke PRO-WAM window management by calling svc 124, right? But true PRO-WAM/APP's must be in a special format and have to load in the 2400-3000H region of memory, no? Not that I can think of any /APP I need to write, since you've provided so many powerful and flexible ones, but I was wondering how hard it might be to change the spot the standard applications choose to locate their windows on the screen. Seems like a judicious little patch should be able to do it. Are the window locations in a standard header or some such? Or do they appear wherever the code gets around to invoking svc 124 to open the window? In any case, thanks as always for another very fine product. (Note: PRO-WAM's CAL and BRINGUP applications work better than the desk accessory CALENDAR I have on my Mac II at work. The Mac program sometimes "forgets" appointments for no reason that I can determine.)

Fm MISOSYS, Inc: The PRO-WAM Programmer's Toolkit was noted in *THE MISOSYS QUARTERLY* when the toolkit was released. It is also covered in the blue flyer which accompanied your order. You are right with all of your assumptions. I believe it's the second line of the header record which has four pointers to the APP. The objects of the pointers are the originating coordinates (NW corner) of the window. The four pointers are used to designate these coordinates for up to four windows in the APP. It's an easy matter to FED in the change.

That "structure" was in the first design of PRO-WAM (1.0) in anticipation of a utility which would allow you to "dynamically" relocate the window in real time (i.e. the utility would examine the APP, place a corresponding window on the

screen, allow you to move it around via the ARROW keys, and then acknowledge the new position). Never wrote that application. Why not do it yourself? It's just a little facility! Great for a TMQ article???

Fm Gary Phillips: Thanks for the tips on PRO-WAM /APPs. I'll take a look and see if I can't come up with something like that utility, possibly for TMQ. Perhaps the utility should be an /APP itself, huh?

Fm MISOSYS, Inc: Incidentally, there are limitless other PRO-WAM Applications that could be written. Most probably fall into the area of vertical integration. For instance, how about a pop up valence chart, or periodic table of the elements (chemistry)? I can envision a pop up periodic table where you could position the cursor to any element, then hit a button that pops up a screen of details about that element. There are tons of "card-type" applications for pop-up data retrieval.

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grams! It's friendly, fast, and great for writing notes when you are right in the middle of a program you can't interrupt.

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M-51-028

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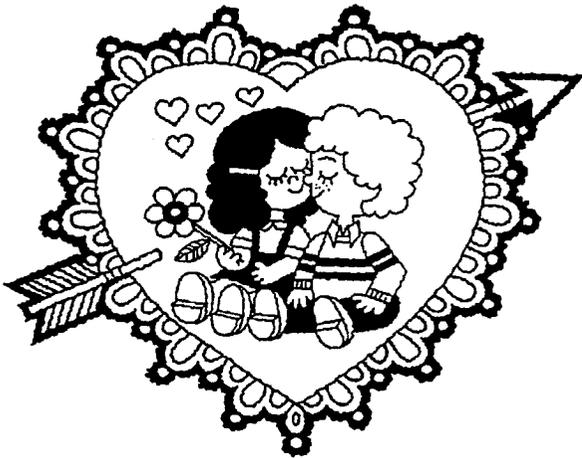
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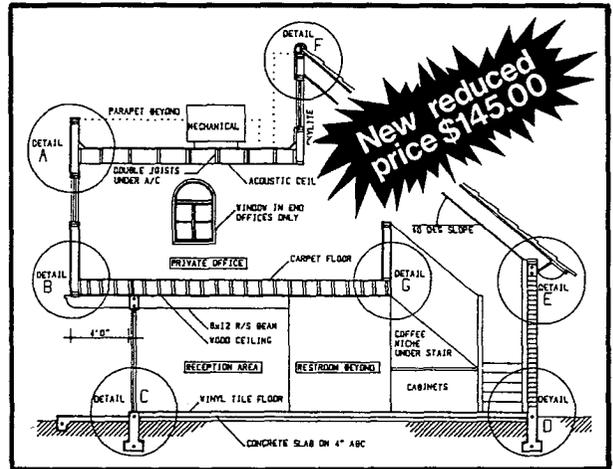
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MICRODEX

XLR8 and GT-180 PART 1

Jeff Joseph
270 8th St #3A
Wheeling IL 60090

This spring my tax refund afforded me an opportunity to finally latch onto one of those exotic toys I've never been crazy enough to get before: the fabled GT-180 graphics board from The Micromint Inc. The GT-180 is an add-on intelligent graphics board that provides for 4096 color displays in 640 by 480 resolution, and it's accessible through the expansion connector on the MISOSYS XLR8 accelerator card for the Model 4. But before I get into the GT-180, some background.

The September 1985 issue of Byte magazine featured Steve Ciarcia's SB-180 single board CP/M computer. This computer, a forerunner of our XLR8, used the Hitachi 64180 Z-80 compatible CPU clocked at 6.144 Mhz. What's important to us Model 4 owners is the XBUS expansion connector that Steve built into the SB-180. Over the following months, he presented several projects that attached to this bus, the GT-180 being among them in December 1986. These projects are commercially available from the Micromint.

Fortunately, the designers of the XLR8 took notice of these developments and incorporated the XBUS into the XLR8 as an inexpensive option kit. Knowing this, only the purchase of a GT-180 could put an end to my incessant drooling!

Because I haven't yet purchased a suitable monitor, this will have to be a two-part report. I should mention that the GT-180 is not inexpensive. I paid \$600 for mine (pricing depends on current DRAM costs). A monitor worthy of the GT-180's capabilities doesn't come cheap, either. In this installment I will describe the GT-180, its documentation, and some ideas

The Hardware Corner



on how to best implement it on the Model 4.

The GT-180 comes on a 5" by 8" board and is intended to mount directly over the SB-180. Thus it's quite simple to run the 40-conductor ribbon cable from the XLR8 behind the Model 4's logic board to the GT-180. The GT-180 draws current from the XBUS but the entire board is implemented in low-power CMOS. Then the video cable (not included) needs to be routed out of the TRS-80 to a suitable monitor. Any VGA or multiscan, digital or analog monitor will work, however a lower-bandwidth CGA or EGA monitor can be accommodated by changing a crystal on the GT-180. The potential of the GT-180 can only be realized by using a high frequency analog RGB monitor.

The next consideration is the port addressing for the board. The GT-180 re-

quires eight contiguous I/O addresses. The lower four are actually for the graphics system; the upper four are for a PC-style keyboard adapter intended for use with the SB-180 (which normally uses a standalone terminal for display). Four base addresses are jumper selectable, they are E0H, E8H, F0H, and F8H. As shipped, E8H is the default address. Also, the software provided with the board requires the E8H base address.

Of these four base addresses, only one provides eight addresses that don't conflict with the Model 4's port assignments - F0H. E8H through EBH are available, but the next four conflict with the Model 4's MODOUT control buffer. Since these four are used only with the PC-keyboard connector, there should be no problem. That's fortunate, because it would be wise to test the GT-180 for proper operation first with the included software. The other

two base addresses will clobber the Model 4's RS-232 and printer port assignments.

The documentation consists of a 27 page folder that adequately describes the GT-180 hardware, installation, schematics, and theory of operation. The manual for the GT-180's Hitachi HD63484 graphics processor is included. The discussion in the manual is necessarily detailed and it's aimed at the engineer, but is the only source of information for the programmer as the Micromint documentation doesn't go into programming the board. Prior experience with complicated display systems is helpful to understanding the Hitachi documentation.

The GT-180 comes with a demonstration disk, and can be ordered with a version of Borland's Turbo Modula-2 and Graphix Toolbox specially configured for use on the 64180 CPU and GT-180. Being intended for use with the SB-180, this software functions under CP/M, and so should work under Montezuma CP/M on the Model 4. The Graphix Toolbox is a set of Modula-2 procedures used to program the GT-180. There is no support for programming the board from other languages or assembler. As an aside, Borland's manual claims their Modula-2 "dynamically re-configures the 64180's MMU registers to allow object programs exceeding the 64K logical address space". It would be nice to see such software on the XLR8 under LS-DOS!

The supplied software is adequate for testing the GT-180's installation, but I dislike using CP/M and dislike even more the thought of learning Modula-2. I hope to work up a graphics driver for use under LS-DOS. So I'll now describe the board from the programmer's perspective. This is the good stuff!

The GT-180 hardware is extremely powerful and makes the programmer's job much easier. The Hitachi HD63484, a programmable intelligent graphics controller, is implemented with 512K of display memory, a color palette controller, and three highly integrated VLSI 'glue' chips. The 63484, which actually contains 3 separate 16-bit processors on a single chip, responds to 38 microcoded graphic drawing commands including

LINE, POLYLINE, RECTANGLE, CIRCLE, ELLIPSE, ARC, PAINT, COPY, PATTERN, ZOOM, WINDOW, and POLYGON. There are three big advantages to having these algorithms built into hardware: 1) software development is just a matter of sending graphics commands to the 63484 2) the execution speed of the drawing algorithms is much faster than even machine code and 3) the drawing algorithms don't occupy any 64180 memory space (a vital consideration under LS-DOS).

The 63484 contains 200 bytes of on-chip registers that are accessed on the GT-180 simply by sending the correct bytes OUT the GT-180 base address. Base address plus one provides access to the 63484 status register. The 63484 manual describes these registers in great detail. The 38 graphics and control commands have many parameters that modify their behavior; once the function of these registers are understood, it shouldn't be too hard to write an LS-DOS driver that passes the correct commands out the I/O ports.

The 63484 also eases the burden on the programmer by accepting logical x-y coordinates; they are transparently converted to physical frame buffer memory addresses. There are dozens of other parameters that, once set, are handled automatically for the programmer.

And now for the performance figures! The GT-180 can display 16 colors out of a palette of 4096 with a resolution of 640 horizontal pixels by 480 vertical pixels. Note that the palette colors can be changed at the end of any scan line, allowing many more than 16 screen colors. (Palette colors are passed to the GT-180 via base address plus two and three) The 512K frame buffer is large enough accommodate multiple screens of graphics data. The GT-180 can draw two million pixels per second. In comparison, the highly acclaimed Commodore Amiga is rated at only one million pixels per second!

Soon I hope to have some presentable software for LS-DOS that will put all this graphics power to use!

XLR8er, TRSDOS 1.3, and 13 Ghosts

Fm Thomas Crompton 76430,135: Is there something on the lines of special XLR8 software needed to run in the model 3 mode on the model 4 equipped with the XLR8er board. All of my TRSDOS 1.3 disks (system) when I run them they just re-boot the system. If I try to run any /cmd TRSDOS 1.3 file it re-boots and when I try to run SCRIPSIT model 3 mode using TRSDOS1.3 it re-boots. What's the problem?

Also 13 GHOSTS LDOS 5.1.4 updated to LDOS 5.3 won't work any more. Your response is appreciated and your response to my message to Frank Slinkman about installing the MICRO-LABS graphics board in the computer with the XLR8er already install will be a help. I don't know but I may need to order a new (longer) connector cable (7 1/2).

Are you in the business of doing or re-doing Micro-Smart's HD Driver or how can I start to learn to re-write it myself. What aids for this type of project (software hacking) is available thru MISOSYS. I bought a new driver from them thinking it was smaller but it's over the 500+ mark. But one thing is that it did not give me the bad header in low memory and it also relocates to hi-mem. So much of my problem was indeed solved that way. But the driver is still to large and I would like to re-write, have it re-written, or purchase a smaller driver.

Fm Thomas Crompton To Mark Mueller: I'm having a problem with 13 GHOSTS and TRSDOS13 programs using the XLR8er. When I run 13 GHOSTS after the fanfare it locks up. When I TRSDOS 1.3 /CMD or Scripsit it re-boots. How do I run my TRSDOS 1.3 programs with the XLR8er installed. Your help and explanation would be appreciated. I put a TRSDOS 1.3 boot disk in drive #0 and it boots ok. But when I run a /CMD or Scripsit it re-boots.

Fm MISOSYS, Inc: There is an LDOS interface disk for the XLR8er. TRSDOS 1.3 requires patches; they were published in TMQ II.i; a SASE gets you a Xerox (or actually a Toshiba). It's also reprinted in this issue.

If memory serves me, you have a non-gate array. That won't work with a longer interconnect cable for the XLR8er. What you need to do is what I did for my installation. Check out page 48 of TMQ III.iii; that's where I noted my work-around by relocating the graphics board.

I am not in the business of re-doing MicroSmart's HD driver. My hunch is that your desire to learn how to redo it yourself would be a road to hoe. Nothing against your abilities, but you first have to become skillful with assembly language. Writing a hard disk driver is not fools play. Correction, writing a GOOD hard disk driver is not. Apparently MicroSmart thought otherwise. I can't offer any good recommendation re that driver; all I could say is to shove the thing back to MicroSmart and get your money back. Then come back to me and get my 20 Meg drive.

Fm Mark Mueller 73100,2413: Thomas, TRSDOS 1.3 uses undocumented Z80 machine language calls which the 64180 in the XLR8er cannot properly execute. This is a fault of TRSDOS, and causes a reboot most times a file is opened. Files are opened when you run a program — so you can see what happens. There is a patch in one of the download libraries to fix this problem in TRSDOS 1.3, but you may be better off in the long-run to get LDOS 5.3 and use that. It is a much better operating system and is still supported by MISOSYS (the people who sponsor this forum), and runs almost all model 3 programs. Scripsit will run fine. I'm not sure about 13 Ghosts, but I will pull my copy out and see if works. I know of troubles with the "Monty" games (monopoly & scrabble) due to strange use of overlays and machine language, but I have patches to overcome that, too. Sorry for the delay in answering your message. Illinois Bell just this morning managed to clear up my phone line which for a month has had an

incredible amount of line noise.

Fm Adam Rubin 71320,1052: Thomas, Could it be the same problem that Roy described in the current (III.iv) TMQ? 13 Ghosts uses a few IN A,(0) instructions to check the joystick port.

Fm Adam Rubin: Roy, As I mentioned elsewhere, I suspect the problem with 13 GHOSTS and the XLR8er is the same one you found in Tournament Chess. There are three spots in 13 GHOSTS that look something like:

```
LD A,(38xxH) ; read
the keyboard
LD B,A ; save it
for a moment
IN A,(0) ; read the
joystick
```

and if no keys were pressed, it's IN A,(0) with A=0, reading the 64180's internal ports instead of the joystick. I don't have an XLR8er, though, so I can't test my hypothesis.

Fm MISOSYS, Inc: That will probably fail for the same reason as I had documented in TMQ. If you examine the code stream preceding the LD A,(38xxH), check out the state of the accumulator prior to it. Then see if the order of kbd and j/s could be reversed.

**Another satisfied
XLR8er owner...**

Fm M. E. Thow, Rosny, Tasmania, AUSTRALIA: Dear Roy, Further to my letters dated December of last year, I wish to report that the XLR8er Board has been installed and all my Model 4 systems converted to LSDOS 6.3. The result is

fantastic. I have a number of big projects on which I have been working, on a voluntary basis, for organizations in which I am interested. I did expect some increase in speed but I must admit it is far beyond what I expected.

I have experienced the same problems as others with RAPIDOS Chess and Model III programs. This is of no real concern to me, but it is upsetting my grandchildren. It is probable that some of their programs have undocumented Z80 instructions. However, I must find out.

Will you please send me: (1) The patch for RAPIDOS Chess. (2) The patches for TRSDOS 1.3. (3) The LDOS interface disk. These are the items written up on Page 42 of Volume III.iv of the MISOSYS Quarterly. You will note that I am now reading your publication as I promised in my previous correspondence.

Fm MISOSYS, Inc: Perhaps it's time to reprint those TRSDOS 1.3 patches so anyone not seeing them in issue II.i of *THE MISOSYS QUARTERLY* may have a current look. Here's a reprint of that portion of Gary Phillips article on the XLR8er and the 4P.

Fm Gary Lee Phillips: Now what, you may ask, about TRSDOS 1.3? I hope none of our readers are still dependent on this very weak DOS for their model 3 mode operations. However, TRSDOS 1.3 does have one or two useful features. In particular, I have used it when I had to get files from a model 1 diskette without destroying that diskette (remember, if you use the REPAIR command of LDOS or LS-DOS, the model 1 can't read the diskette any more). You can do a two-step conversion, moving the files first to TRSDOS 1.3 and then to LDOS or LS-DOS, and the original diskette will remain unchanged.

However, TRSDOS 1.3 has some definite problems with the XLR8er. TRSDOS 1.3 contains instructions that will not execute correctly on the HD64180 CPU, causing the system to reboot when you try to

```
PATCH *2 (ADD=4EBF, FIND=FD2EFFE1, CHG=FD21FF42)
PATCH *2 (ADD=4EC3, FIND=F1F1FD2642, CHG=E1F1F10000)
PATCH *7 (ADD=5284, FIND=DD2662DD2E24, CHG=000000000000)
PATCH *7 (ADD=528A, FIND=DD7E00, CHG=003EFF)
```

execute a program, or use the BACKUP command. These instructions are of the type that "split" the index register IX or IY, loading the two halves separately. They are not standard Z80 instructions, but they do work on every Z80 chip I've ever tried them on. Tandy apparently used them in TRSDOS 1.3 as a "security" measure to make it harder to disassemble. I am aware of two places in TRSDOS 1.3 that contain these instructions. The following patch commands will eliminate them (note that this is a TRSDOS 1.3 patch, and NOT an LDOS patch, so please execute it under model 3 TRSDOS!)

The patch to SYS7, by the way, also eliminates the limited backup feature of TRSDOS 1.3. Once these patches have been applied, TRSDOS 1.3 appears to execute normally on a 4P equipped with XLR8er. If you find other places where a patch is required, please let us all know!

Repair of old XLR8er boards?

Fm Durward Boyles, Brent, AL: Greetings Roy, I have a problem, can you help? My XLR8er board with 256K Ram has been in repair more than it has worked in my computer. Hi Tech has sent it somewhere for repair. Do you have it? If I can get it returned to me, can you repair it or exchange it? I wanted to use it in my 4p, #26-1080A, Serial # 010869 where I have had it, but do you believe it would work better in my Model 4, #26-1069A, Serial # 008482?

Greetings to all who has or is considering buying an XLR8er board: I ordered mine from H.I. Tech, Houston, Texas in Oct

1987. I could not get the memory banks to work. I returned it for repair in December. I received it back April '88. The XLR8er card worked great until Oct 88 when I returned it for repair. I have made two calls... nothing... They will not return my calls or talk to me about the card. I'm now sending a letter by certified mail. Have you had troubles with your card or getting it repaired?

Fm MISOSYS, Inc: Dear Durward, This is in response to your letter of May 5th concerning your XLR8er board purchased in October 1987. To begin with, MISOSYS does not have your board. I did assume the exclusive sale of the XLR8er boards in January, or so, of last year; however, that action assumed no warranty of boards sold by HiTech. If you have not received your board back from them, then either they still have it, or its repair was farmed out elsewhere. First, you have to see about getting your board back. I have found only a couple of bad boards, ones which did not work at all. These were returned. I have had only one board fail in the field and that was a processor which went bad (or was shorted out by mishandling).

At this stage of the business, I have acquired my last 100 boards from the original board manufacturer. I can make no arrangements to get boards repaired. When, and if, I have a problem with a board, I would test it for memory and processor functionality. If I found a bad CPU or memory device, I would swap it out; otherwise, I would swap the board. If you get your board back, I would be willing to test it here; but understand, I have no responsibility to repair or replace it without charge. If you do send it to me, it would be wise to send your cable as well so that could be tested.

As an aside, the XLR8er should work equally in your 4P or your gate array desktop (1069A). The desktop installation uses a 6" cable.

XLR8er docs on 4P installation

Fm Frank E. Mitchell, Jr., Omaha, NE: Dear Roy, I received the LDOS 5.3 software and RAM for my XLR8er and am running fine in the model III mode. There are a couple of things I ran across during the installation that I thought might be helpful to pass along. Could be I just missed something but maybe this could be of benefit to someone else.

First, the socket numbers on my model 4P did not match the manual. The Z80 was in socket U-45 vs U-47. Also, the orientation was such that I couldn't match pin one of the plug with pin one of the socket and match the cable arrangement in Figure 1.3. The 74LS245N in U-118 near the RAM was soldered in rather than in a socket. U-70 and U-86 had 74LS245N chips in sockets but they were both near the Z-80 rather than near the RAM; also the instructions said to replace that chip if necessary but I couldn't find any explanation of the replacement criteria. I presumed that if I don't have any keyboard problems, I don't need to replace the chip.

Second, I made a bit of a false start in using the ramdisk. I first formatted a 40 track ramdisk and attempted to do a mirror image backup from a floppy drive. The result was a GAT error at the end of the backup and an unusable ramdisk. I have not yet replaced some of the 200ns RAM, so I slowed the XLR8er down as slow as it would go but the result was the same. I subsequently did a backup by class and it works fine. I reread the manual and did not see anything about mirror image backups; are they supposed to work or not?

I have taken advantage of a couple of your recent software discounts in TMQ and

plan on continuing to do so. The discount in the last TMQ is too large to pass by. I hope the response justifies continuing those kind of deals.

Fm MISOSYS, Inc: Frank, The differences in nomenclature between your 4P and the XLR8er manual are easily explained. The manual was written for the original 4P; I suspect that its text was finalized prior to the release of the gate array 4P. You have a gate array (GA) 4P. Checking over my service manual, it does appear that the Z80 CPU is in socket U45 of the GA and in U47 of the non-G/A (NGA). However, the service manual shows both sockets to have identical orientation. They also both appear to be in identical positions on the board; thus, I cannot understand why you could not match up the 7.5" XLR8er cable to the orientation reflected in Figure 1.3 of the manual. I have an XLR8er in a gate array 4P.

The equivalent NGA U117 74LS245 chip in the GA board would be at U118. If that was soldered into your board, then you cannot easily change it.

As far as the RAMDISK and "GAT error" are concerned, you will have to provide more information. There are two software RAMDISK drivers provided: ERAMDISK/CMD and RAMDISK/DCT. Which were you using? And how did you establish a 40 track RAMDISK since both deal with banks, not tracks? When you are reporting an error, complete details are usually necessary. The default configuration of both RAMDISK drivers is not the creation of a 40-track DDEN floppy disk emulation. Each creates 16-sector tracks. Mirror-image backups are fine only when both source and destination are exact configurations.

XLR8er Installation Procedure for Type 2 Motherboards: gate-array (26-1069A & 26- 1070) Model 4 e/w hires graphics

General:

Because the location of the hires graphics board installation interferes with the normal location of the XLR8er connected with a 6" ribbon cable (and vice versa), the XLR8er manual provides a revised method of mounting the XLR8er behind the motherboard and connected via a 7.5" ribbon cable "draped" over the top of the motherboard. My experience is that some gate array machines will not work properly when the XLR8er is connected with a 7.5" cable but will when connected with a 6" cable; thus, some other mounting arrangement was explored.

A Model 4D at MISOSYS was used to evaluate a different XLR8er installation using the "normal" 6" cable. This procedure placed the XLR8er board to the rear of the motherboard, but facing it (component side towards the motherboard). The 6" ribbon cable was draped around the left hand side of the motherboard. The installation worked perfectly. The following details the installation procedure used to install the XLR8er with a 6" ribbon cable where the gate-array motherboard has a graphics board installed. The procedure should be sufficiently detailed for all to follow.

Procedure:

A: Perform steps 1-4 on pages 6 and 7 of the XLR8er *Operator Manual*.

1. Remove the two screws holding the keyboard cable shield to the left of the motherboard. Then unplug the keyboard cable (please don't bend any pins).

2. Remove the one remaining video cable and ground lead at the upper right of the motherboard; remove the cassette cable at the right hand side.

3. Remove the floppy cable connector at the bottom left of the motherboard.

4. Remove the nine (9) screws holding the motherboard. The least obvious screw is located 3" from the bottom and 2" from the right.

5. Pull the motherboard straight up and remove it. Place on a flat surface.

6. Plug one end of the 6" ribbon cable into the XLR8er. The XLR8er header connectors are pointing down; you are looking at the component side of the XLR8er; the 6" cable extends to the right.

7. Carefully remove the Z80A CPU chip from socket U1. A letter opener is a good tool to use for this. Slide the opener down from the top between the chip and its socket. Slight rocking of the opener will pry out the Z80A chip.

8. At this time, remove the 74LS245 in the socket at U77 and replace with the 74HCT245 provided with the XLR8er (note: the supplied chip may be marked "74SC245").

If you are replacing the 200 ns RAM chips on the motherboard with 150 ns RAM chips, do so at this time.

9. Plug the free end of the XLR8er cable into socket U1 (where the Z80A was removed) so that the cable exits to the left of the motherboard.

10. Wrap the cable (with the XLR8er attached) around to the rear of the motherboard. Place the motherboard component side down onto the flat surface.

11. Flip the XLR8er over so that the component side is towards the rear of the motherboard and the headers are to the left. The cable is between the XLR8er and motherboard. This creates a 90 degree bend downward in the connecting cable about 1-5/8" in from the right. Tape a small piece of cardboard (about 1" by 4.5") to the rear of the motherboard at the area where the header connectors will press. This keeps the XLR8er from shorting out. Now use 2-sided foam tape to tape the cable to the rear of the motherboard. Also use a piece attached to the

lower RAM chips. This should keep the XLR8er in place.

12. Insert the motherboard back into its enclosure; the left hand screw support may temporarily block the XLR8er's free motion. Gently guide the XLR8er board behind the support. Reinstall the nine screws inserting the upper left one first as it is quite close to the XLR8er connecting cable.

13. Re-install the floppy connecting cable.

14. Re-install the keyboard connecting cable and then re-fasten the keyboard cable shield with the two screws previously removed.

15. Install the graphics board.

16. Re-install the upper right video connector, the ground lead, and the cassette cable.

17. Re-install the motherboard shield using the six screws previously removed.

18. Install the top-middle power connector.

B: Continue with steps 13-15 of the XLR8er Operator Manual.

Curtis Clip on 4P

Fm Adam Rubin 71320,1052: I decided to make a big hardware splurge, and bought a Curtis Clip for my 4P. Then, I discovered the top of the 4P's case is only 10" above the desktop, which means the bottom of my 11" (or occasionally 14") pages will be lying on the desk, instead of hanging neatly. I really don't want to have to fold each page, and flip it over halfway through. Any suggestions on a more elegant solution would be appreciated very much. Thanks!

Fm MISOSYS, Inc: Why did you buy a

Curtis Clip? Didn't you know that I was giving them away with the last TMQ coupon? Of course, you needed to have an order for at least \$50 worth of stuff <grin>. I do have a few boxes left of them.

One solution for the 4P's low profile on the desk is to stack it on top of a hard drive. That's how I have mine <grin>. A phone book could suffice. Or only use the clip on short notes...

Fm Bill Brandon 76701,256: Adam, Assuming you can get the clip off the case, I'd make an extender out of 1/8" Plexiglas (TM). Re-stick the clip to one end. On the other end, put a patch of Velcro (TM). At a convenient spot on the 4P case, put a patch of the other kind of hook-n-loop tape. Press the extender to the case and type away. You might have to experiment with the amount of Velcro(TM) tape: I'd guess that two dots or three (in a triangle) would give you a more stable attachment than one big block of the stuff. I use a lot of hook-n-loop tape for stuff like this; you can buy it cheaper at a sewing supply or fabric store than at Radio Shack, by the way, and in more sizes and colors, too.

Fm Adam Rubin: Thanks, Bill! (How come I couldn't think of that?) That should solve the problem nicely. I was waiting to attach the clip until I'd found an answer to this, but getting it off the case is no problem; it's held to the top of the monitor with — guess what — Velcro (R) brand fastener, a 1" by 3" strip. That stuff is indeed handy for all sorts of things. I have one dumb question, though: "make an extender out of 1/8" Plexiglas (TM)" — that's four or six pieces, glued together to make a box? (My specialty is software, not hardware <grin>.) Thanks again for your advice on this!

Fm Bill Brandon: I dunno - I was picturing more of a flat plate, velcro'd to the side of the 4P. Maybe I don't understand how the clip attaches, but I can't see it taking a box-like construction to do the

job. If the clip needs a right-angle bracket to attach to, like an inverted L, then I'd use heat to soften the Plexiglas so it could be bend around a form (such as the edge of a workbench or a 2 X 4). The long part of the L would be attached with Velcro to the side of the 4P, leaving the other part sticking up in the air above the top of the computer. Would that work, or do I have the wrong picture here?

Fm Gary Phillips 72425,354: Adam, On your Curtis Clip problem, do you have your 4P sitting right on the desk top? I find that is too low for comfortable viewing, especially if the surface is the correct height for typing. I put the cover of the 4P open side down on the desk top, and set the monitor part of the machine on it so that it is raised and tilted slightly back. That might both improve your viewing angle/posture and give the clearance you need.

Fm Adam Rubin: Roy, Of course I noticed the TMQ coupon! (And I even filled in the "date received" field, too — 3/6/89, if you're curious.) At the moment, however, I'm trying to persuade myself that I ought to learn C, and that purchasing Pro-MC (and Pro-MRAS) would be the best way to go about it. (I'm also kicking myself for having missed last Fall's sale on these.)

At the moment, the desk isn't even deep enough to let me pull the 4P's keyboard completely out of the computer, so it'd be hard to raise the 4P. Meanwhile, the HD is under the printer stand. (Rubbermaid didn't call it a printer stand, but I do!) I'm not sure how much a phone book would do... after all, you have "DC Suburbs", which is close to 3". "Poughkeepsie, NY" is just under an inch.

Anyway, as I mentioned elsewhere, everyone's suggestions have inspired me... if I build a platform to hold the keyboard in front of the desk, that'll put the keyboard at a better height, and then I can raise or tilt the 4P. Hopefully that'll solve several problems at once. (Sounds like a hardware project, though. <grin>) Thanks for

all your suggestions!

PS "Short notes"? What're those? <grin>

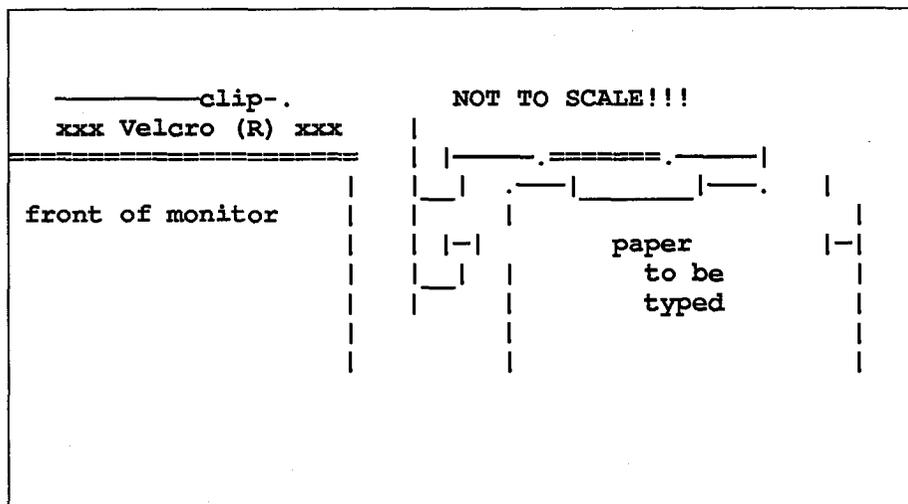
Fm MISOSYS, Inc: Don't kick too hard. Hope you took advantage of last issue's [III.iv] TMQ coupon which had another language sale.

And yes, I have a "rasher" of phone books here. There's a Maryland suburbs, A DC book, a Northern VA book, TWO yellow pages (A-K and L-Z), and then the Loudoun Book. In addition, Southern Bell is trying to hawk a single yellow pages for the metropolitan area. I have to have a bookshelf just for the phone books. One of these days they'll be releasing them on CD-ROM. Give me back "The Bell System"!

Fm Adam Rubin: Well Gary, Your suggestion about the best height for the keyboard and the monitor gave me an idea. The 4P is indeed on top of the desk, which is about 31" above the floor. ("Ordinary" desk, not a "computer desk".) The desk is only 17" deep, not enough to pull the keyboard out all the way, so the far end of the keyboard is stuck into the 4P and I can't tilt the monitor the way things are now.

Also, either the chair is about 4" too low or the keyboard is too high. So... why don't I solve everything at once? Build a platform to support the keyboard below the front of the desk... that means I have the whole desk for the 4P, which I can then tilt up (I never thought about it before, but you are right)... and tilting the monitor should solve the Clip problem. Some plywood and a few scraps of lumber ought to do it. Hey, I think I found a solution for everything all at once! (Hope I wasn't rambling too much here.) Thanks very much for the suggestion that inspired all this!

Fm Adam Rubin: Bill, I think I figured out how to solve a few problems at the same time (details are in my previous



message), and I may not need to build an extender after all. In any case, the Curtis Clip attaches to the monitor like that shown above.

It's an inverted L-bracket, attached at the top of the monitor and extending down the side. The second piece fits in like those mechanical wall-mounted can openers, so it can swivel easily. In this "drawing", it would swivel toward you (until all you saw was its end) or away from you, so the entire second part would be alongside the monitor. There's a plastic spring clip to hold the paper to be typed. The mirror image of this "drawing" (i.e. mounted on left side of monitor) is also possible.

Does that clarify how it attaches to the monitor? Again, thanks for your suggestions on this. Without all the suggestions, I'd still be stumped!

Fm Gary Phillips: Adam, You're most welcome. Thanks for sharing so many of your own ideas from time to time. My desk is an "L" shaped secretary desk, with a lowered wing for the computer and typewriter, and works fine with the 4P on that wing. However, the A2000 is 18" deep plus keyboard AND mouse. Now I've got a problem finding space for all that, too. (The typewriter wing where the 4P stands now is only 18" deep total, and I'm not planning to give up the 4P yet anyway.)

Double-Sided Dilemma

Fm Robin Repas 76407,3336: I am looking for someone who can help me with a hardware upgrade to my TRS-80 Model 4.

I have the older non gate-array model. I am attempting to install double sided disk drives in it. The drive I am using is a Chinon. It is from an IBM XT clone. I understand that it is necessary to replace the connector on the ribbon cable so that all of the drive select lines and the head select line (pin 32) is made available to the drive. No problem, all went well there. But, when I try to use TRSDOS 6.2.1 to access the drive it comes back with "No Disk" as if there isn't a floppy in the drive. Is there some type of patch or command used to tell TRSDOS 6 that it is a double-sided drive? I also use Montezuma Micro CP/M. I booted CP/M, went into CONFIG, told CP/M it was a double-sided drive, and all worked well. I could format, read, & write double-sided diskettes. But not in TRSDOS. Can anyone help please?

Fm Jim Beard 71675,566: Robin, TRSDOS 6 and LS-DOS will recognize double sided disks and drives. You use FORMAT (SIDES=2) to format in a double sided drive. If you are getting "no disk", try formatting a disk in the drive and see what happens. If FORMAT doesn't rec-

ognize that you have a working drive with the door closed, etc., then there is another problem.

CP/M may not check the drive door switch or other signals. It is sometimes possible to check a drive by simply setting motor on and looking at the read head.

Fm Robin Repas: Jim, Thanks for the reply. I discovered what the problem was last night. As you probably realize, when the Model 4 pulls the motor activate line low all of the drive motors turn on simultaneously. TRSDOS pauses for a duration when it first accesses any drive. This gives the drive time to come up to speed before TRSDOS attempts a read or write. The drive that I installed was not set up to activate its motor via the motor activate line. Instead it used the drive select line to trigger the motor. So when I typed "DIR :1" TRSDOS first went to the system on drive zero and then to drive one to read the directory. TRSDOS paused to allow drive zero to come up to speed, but since drive one doesn't turn on until it is selected for a read or write it (drive one) was not up to speed by the time TRSDOS attempted the directory read. TRSDOS probably checks the index hole sensor to see if it is pulsing meaning there is a disk rotating in the drive. Since the drive was not yet spinning the index sensor was not pulsing and TRSDOS thought that there wasn't a disk in the drive. Hence the "No Disk" error. To make a long story short (whew!) I changed a jumper on the drive so that the motor now activates on the motor activate signal and not on the drive select signal. All works great now!! Thanks again for the help though. I don't call Compuserve all that much but if I can ever be of any help on this forum I will sure try.

Fm Jim Beard: Robin, Try us first, when you are getting ready to do something. The "head load on motor on" jumper setting is well known here.

Fm Robin Repas: Jim, the jumper I changed is not the same thing as the "head

load on motor on" jumper that I think you are referring to. Drives like some of the Teac's need to load the head before access. This is different from the motor activate line itself. The Chinon drives that I am using do not pull the heads away from the diskette media the way Teac and some other drives do. I actually had to change where the motor turn on signal comes from. The drive was set up to get its motor turn on signal from the drive select lines. My modification changed it so that the drive gets its motor turn on signal from the motor activate signal on the floppy bus cable (pin 16). To make this modification on these particular Chinon drives I had to unsolder a small surface mount device from one location and resolder it into another location. Do you know how much fun it is to work with SM devices? I'll give you a hint: Don't sneeze!! <grin> Thanks again for your reply.

Fujitsu 360K floppy drives

Fm David G. Stern 71555,370: I have a Model III and a 4P. Are the double sided drives mentioned for (\$75 + S&H) directly replaceable? What other changes are required to let the system know they are now in place?

Fm MISOSYS, Inc: The 2-sided 360K drives are directly replaceable. But they are half height drives. Thus, replacing the internal III drives would leave a gap in the front panel. In the case of the III and the 4P, you need to do something with the cable connecting the floppy disk controller (FDC) to the drives. Tandy's cables have the head select pin pulled; thus, you need to either make up your own cable or add some connectors to the present on. You may be able to just "turn over" the cable in the III.

Making a 2-sided floppy cable

Fm Ron McLain, Parchment, MI: Dear Roy, Received the 3.5" drive by UPS today. Thank you for the promptness in shipping.

HELP!!HELP!!HELP!! I am really new to this computer thing and have a lot of "beginner" questions.

1. When I talked to you on the phone regarding the external drive, I mentioned to you that I had purchased a cable from my RS dealer here locally. It appears that the cable from RS will support up to four external drives. You mentioned something on the phone about removing pins??? from the cord. Is any of this connection information available in written form?? Also, you said something about reversing the drive cable as it exited the computer case. Any back issues of TMQ cover all of this??

2. Can you clarify again the procedure to use since I have replaced the faulty drive one with a DSDD drive so that I can access both sides of the disc?? Here again, I think you said to reverse the connection between the FDC and the drive.

Thanks again for your help.... and your patience. I appreciate having someone I can call on for help.

Fm MISOSYS, Inc: Dear Ron, The Tandy cable which you have that has five connectors on it is a standard Model I floppy cable. It doesn't support four external drives on the Model III or 4; the hardware only supports a maximum of two external drives. But you can still use that cable.

As I previously noted, to use that cable with 2-sided drives, you have to invert the cable from its normal installation procedure. If you look int to center part of any one of the edge card connectors, you will see a thin plastic tab located between pin pairs 3/4 and 5/6. This orientation tab restricts the connector so that it can be

plugged in to a card edge in only one position as the tab correlates to a slot cut into the card edge. This tab is removable; just pull it out with a pair of needle-nose pliers. If you so desire, re-insert the tab between pin pairs 29/30 and 31/32. If you look closely at the connector, you will see that the tab slides snugly into very thin slots on either side of the connector. Do this for all connectors on the cable. Then use the cable; it will function properly. But remember that each drive you plug the cable into must have one and only one drive select jumper left intact.

All of the odd-numbered wires carry ground returns while the even numbered wires are reserved for carrying signals. Notice that the odd and even numbered wire leads are on opposite sides of the connector. Tandy pulls all of the drive select pins except for one at each cable position, as well as pin 32 which is for side select. In this way, they can keep all of the drive select jumpers intact at the drive; the drive select depends on the position the drive is connected to at the cable. But since all of the ground returns are intact, inverting the cable provides a signal path for all drive selects at each edge card connector.

Model 4 Repair

Fm Walter P. Sullivan 71210,3670: I have a Model 10-103-5 inch Triggered Sweep Oscilloscope -DC to 10 MHZ, a VTVM, a Digital Multimeter, a TV Post-Marker /Sweep Generator, and some other "odds and end", all of which were Heath built before I got a computer. I am desirous of putting in a Graphics board (it did not have one). I have the Model 4 Technical Reference Manual (26-2110) which is of some help, but it doesn't instill confidence in me. I usually don't take the cover off anything unless I am pretty sure I know what's inside. My question is where can I get some service, technical, or repair manuals for the Model 4, without going to Tandy. Any suggestions would be helpful.

Fm Bob Haynes 73075,77: Hi Walter, Tandy sells service manuals for just about everything they make, including all of their computer products. The trick is to bypass the local stores and order direct from R/S National Parts in Texas. Get the exact model # from your unit and call them at 1-817-870-5662 with plastic in hand. I've found them quite responsive. I have manuals for my 4P, 1200HD, and 15M hard disk, which are quite extensive, with schematics, theory, part #s, the whole deal. They averaged about \$35 each, I think.

Multiple hard drives

Fm Dennis Earl Copeland 74406,554: What are the connection changes and taps that need to be made to the controller card on a TM502 to make it serve as a secondary hard drive with my TM503 primary hard drive. I have RS's own host adapter card and cables, cabinet, the two drives and 2 power supplies, and a Model 4. Tandy is no help at all and won't even let me see the manuals for such, citing "proprietary info". I bought the equipment. There should be no such thing as "proprietary", especially in view of their refusal of knowledgeable assistance. Any help that you can provide will be DEEPLY appreciated. I'm an electronics service technician and have been hacking my own stuff for a number of years.

The Color Amber

Fm Robin Repas 76407,3336: Does anyone know where I can get an amber replacement CRT for my Model 4 (white screen) at a reasonable price? Langley-St. Clair is still asking \$99.00 for their replacement CRT. That's just the tube. You can buy a whole IBM compatible mono-

chrome monitor for less than that. That brings to mind another idea... Is it possible to substitute an amber tube from an IBM style monochrome monitor? If so, has anybody done it?

Help needed for 2110 printer

Fm Doug Mayfield 74106,761: HELP, I am trying to locate any PD, shareware or otherwise low cost downloadable fonts for my Radio Shack 2110 printer. This will use the same fonts as the Radio Shack 2100P printer. Both are made by Toshiba and use the same fonts as the Toshiba printers. I have heard that Toshiba retailers sometimes give away fonts with the purchase of their printers, however I have been unable to get any help from my local dealers. One service person at a local dealer did imply that there were a few BBS's that had fonts on them but he was either unwilling or unable to supply any information about their names or numbers. If anyone has had any luck getting any fonts for these printers, please get in contact with me, I am really desperate to get these.

HD/Dbl Density

Fm Chuck Thomas 70015,103: I just took my old TRS-80 model I out of the closet (I currently have an XT compatible) and would like to add a hard drive to it. I have a version of LDOS that supports hard drives but am looking for a controller or a way to interface say an IBM or Adaptec controller to work for it. Can anyone help?

Also am on the lookout for a double density controller and/or schematics, for the floppy drives. I have looked at computer shows but have never seen anything to do with Hard disks or double density controllers for the model I.

Fm MISOSYS, Inc 70140,310: Chuck, Aerocomp has about the only double density controller around for the Model IE/I. Try them at 800-527-0347. Their ad # AD P1 in CN80 shows the controller at \$99 + \$4 S&H. On the other hand, before I would spend \$99 for a DDEN controller for a Model I, I would look around for a used model III or 4. You could probably find a working model III for just a little more than the \$100. In the case of the hard drive, I'll be shipping drive packages for the Model III and 4. But since the Model I uses a different bus interface, I'm not supporting that. If you can get ahold of Tandy's Model I HD interface cable, that would probably do the trick. But again, you are having to spend more just to get to some point. If you can find a used dden controller, then that may be cost justified. Our hd host adaptor supports the Adaptec 4000 and 4000A controllers, as well as Xebec 1420 (or 1410A and equivalent, such as the Konan DJ10).

Graphics tablet

Fm Kent Fasick 73137,3251: I need information on the GT-2000 Tandy graphics tablet. Specifically, is it compatible with any of the graphics tablets currently on the market? Now that I've bought one I need to find a driver that will let me use it. The Tandy tech support people tell me there was only one program released that had drivers included for it, and that was called LUMINA, now out of stock. HELP!

BTW, I'm wanting to use this on a 'generic' XT clone (generic as in no two components in it are from the same company)

Fm Frank Slinkman 72411,650: Kent, Micro-Labs sells an interface (\$99.95 at last look) which they claim will work for joysticks and graphics tablets. Perhaps you should give them a call (214) 235-0915 — and see if their interface will work with this particular tablet.

Video and PCZ

Fm Mark P. Fishman 73127,617: Jim, Two things, totally unrelated to each other.

(1) I was wondering what the latest word was on the whereabouts of PCZ.ARC or TXT or whatever. I'm still very interested in that hardware/software. I'd rather keep running LSDOS on an IBM PC clone bus than be stuck with MSDOS-ware.

(2) Since you have an "erector-set" Model 4, I was wondering if you knew the relative merits of the RCA video board in Model IIIs vs. whatever was in Model 4s. I have a Model III with less than satisfactory focus, and it has the RCA video. I have tweaked it, and it does go "through" focus all over the screen, but at best it's a bit fuzzier than I'd like. Is it possible just to drop in a Model 4 video board, and would that get me better focus? Or would I have to work on something else? Any suggestions about where to look?

Fm Jim Beard 71675,566: Mark, PCZ.ARC is still in the twilight zone of the SYSOP bit bin. Joe hasn't checked in lately, which is pretty unusual. He travels on his day job and may have a problem there, although he usually takes along his Compaq/TAPCIS and maintains the SIG on the road. I have absolutely no idea why Joe is ipse dixit right now. I'll let you know if you reply to this message so I have a hook when I log on tomorrow or Thursday.

The PC-Z isn't an IBM PC clone at all—it just goes in the same box and uses the expansion cards. It's a 10 MHz Z80 machine with Z-system, a CP/M port, in ROM (instant boot!). From there, the ROM also supports loading another DOS into shadow ram and transferring control, which is the hook for a patched LS-DOS. A general rule of thumb is that software that runs under Model II LS-DOS should run under any patched LS-DOS.

Memory cards won't work until the Z280 card comes out, and a PC-type power supply (+12, +5, -12) is necessary to power

the expansion slots for most cards. The PC-Z itself runs from +12 unregulated (a 1958 Volkswagen lighter outlet, for example).

Some RCA video setups can be tweaked pretty well; my original one was good that way. Some can't, like my present one. Focus is a function of the tube, the yoke, the focus magnets/ion trap, deGaussing, and the video board. For best results, change the top cover and everything that goes inside it. Any old green-screen Model 4 will do, even a cassette version; they all have the same top cover.

Fm Mark P. Fishman: Jim, I meant, of course, running *inside* a PC clone. Thanks for the brief description.

I'm going to play with the video some more. Unfortunately, adjusting focus is best <grin> done with the high voltage live.

Fm Jim Beard: Mark, Adjusting the focus is done *ONLY* with the high voltage live, unless you go with the polaroid/warmup cycle. It isn't a safety issue with the Model 4, because the HV lead is totally insulated, at least until someone outside Tandy takes it off the tube and doesn't paint it when it is put back. Don't forget to move the yoke and ion trap magnets; rotate the magnets and move the magnets and the yoke back and forth within their available movement. Combine these adjustments with the board focus adjustment to get best focus across the screen.

Fm Mark P. Fishman: Jim, I was going to hope that it was safe to move the yoke with power live, because I will be very careful (one hand in pocket!) and do it that way. I used to work on televisions, but there were focus magnets as well as centering magnets and focus adjustments on those. I'll just see what each piece does.

Fm Jim Beard: Mark, You have exactly the right idea, the right attitudes, and the right experience. I found the Tandy CRT to be neater and safer than the TV's that I have seen.

Hi-Res and Screen Problems

Fm Ted Haigh 73327,442: I have noticed that my model 4 with the RS Hi-Res board will sometimes cause the screen to shrink, then enlarge, shrink, enlarge..., as long as it is scanning, i.e. drawing a picture. I have taken the power supply out and resoldered the power in/out connectors, this did not fix the problem. I would like to know if anyone else has had this same problem, and is it a power supply problem, or just the way Radio Shack designed its board? Please give me some insights on fixing this, or minimizing this problem, I find that it is very annoying to watch the screen do this as it draws.

Fm Ken Stiefel 72305,1303: Ted I can't claim to be an expert on the inside of these beasts, but I have the RS Hi Res card in a model 4, several 4P's and a 4D and the only time I saw any movement in the display was when we lost a power supply. You can check the output voltage on the power supply to see if you have any variation as you rewrite the screen. It almost sounds if you have a bad filter or regulator.

Fm Ted Haigh: Ken, I will check the PS very soon, I am now in the process of getting the RAM in working order. I suspected that the PS was going on me, so now I will give it the once over, and let all know the problem(s), if I find any. I have guessed that it might be the PS just does not have the juice to run all the doodads I have put in this old Mod4, XLR8er, Extra Drives, & Hi-Res (Radio Shack board).

Fm Bob Haynes 73075,77: Ted, my gate-array 4P is doing similar things. The whole screen shrinks and expands both horizontally and vertically perhaps 1/81/4" in a very erratic tremor. It only happens after the machine is WELL warmed up (2-3 hours at least). Problem comes and goes, and is particularly triggered by the power drain of a floppy drive access. FYI, I have no internal modem, XLR8er or high-res board, but some time ago replaced both floppies with Tandon TM-65 1/2 height ds drives, which do pull a slightly heavier surge when they start than the original Tandon TM-50's.

After 3 different power supplies (both Tandy and Astec) and resoldering every joint on both p/s and vid board, and every pin connector in between, and monitoring both +5 and +12 volt lines with a scope for hours, and after a long dialogue with one of our resident hardware experts here (Fred Oberding) I'm convinced I've got thermal breakdown in the video flyback transformer. Until the transformer is replaced, I'm running the thing with the housing off. The cooler environment makes it useable at least.

This probably doesn't help you much, but at least you know you're not alone!

Fm Michael Strait 73500,2513: Ted, I used to work for Radio Shack Service and serviced many model 4/4p computers with similar problems. I found that the usual cause to the problem was with the Tandy power supply, Radio Shack had nearly a dozen modifications released for this supply, I had poor results with these modifications and found the best fix to be to replace the Tandy supply with an Aztec supply. This cured the problem in all of my cases. My own model 4 is running an internal hard disk and controller, 2 80 tk thinline floppies and an internal modem all on an Aztec 35 W and an Aztec 65 W power supply, the only problem I've had with this is the connector to the video supply was going bad, I solved this by soldering the video supply wires directly to the power supply board. I haven't had any problems since, still going after 3 years.

Fm Ted Haigh: Bob, If you look in the Mod4 Tech. Svc. Man. there are a few minor modifications you can make to the Power supply to get a bit more out of it. I have replaced the part labelled VR3, Voltage Regulator #3 originally a A79M12, with a A7912, this will dissipate slightly more power, if you heat sink it well, the 79M12 will dissipate about 4W where the 7912 with a big sink dissipates about 6W. I replaced the part and the screen behaves a bit better, not as much <<<shaking>>> as the computer draws. This might help some folks with a similar problem, but again check the voltages: V1 +5.05VDC, V2 +12VDC CRT, V3 +12VDC DISK, V4 -12VDC. The current draws should be as follow: (ModIII use) all listed Min/Max Current; V1 1.35A/4A, V2 0.6A/1.5A, V3 0.4A/2.1A, V4 0.005A/0.1A, for Hard drive use: V1 2.5A/5A, V3 0.75A/2A, V4 0.005A/0.1A. Check the current on the supply using the listed values to see if you are overpowering the Supply, the next alternative is to adapt a MS-DOS PS to the Mod4, a 100W job??

Fm Bob Haynes: Ah, but that's on the -12v line. With all your add-ons, I can see you might have to beef that up a bit, but on mine, only the RS232 drivers use it, so not much current is really required. My power problem is with +12v, which the fan, the video and floppies all use. I even tried installing a 120v ac fan instead, but the noise drove me nuts. The original is much quieter. But the screen breathing on floppy access is relatively minor, I'll get those offending drives changed out one of these days; the intermittent tremor is the real problem - that flyback's gonna go pretty quick, no doubt. (All voltages are rock steady when no drive access is happening). Appreciate the ideas and info.

BTW, using an IBM type ps might actually make problems worse - switching supplies can have a MINIMUM current draw requirement too; anything below that results in poor regulation!

Hard drive noise problems

Fm David Mandeville 71171,2074: I have a RS 5-meg drive that is getting kind of noisy. Sometimes it is a chirping sound, sometimes a squeal, sometimes it's quiet. I did check the fan and it's quiet. What's going on in there? I'm thinking about installing a 10-20 meg drive in there if this one is on it's way out and I would appreciate any information on how, what brand to use, where to get one.

Fm MISOSYS, Inc: Sounds like the bearings starting to go. Too bad they are not "oilable".

Fm Daniel L. Srebnick 72216,520: David, That is your drive telling you it is about to fail. The best suggestion would be to buy one of the Seagate ST-225 20 meggers that MISOSYS is selling at a reasonable price. They printed the instructions for

making the conversion in the most recent quarterly. They may be reached at 800-MISOSYS.

Fm David Mandeville: Roy, I found out what makes that noise in the drive. It turns out to be a graphite contact that rides on the bottom of the drive. I spoke to one of our local electronics wizards and he said that if you file that sucker flat that it will stop making the noise until it wears another indentation. I left it alone, having found out what it was was enough for me. The piece is soldered in place and I didn't really want a lot of conductive dust floating around in there.

Fm MISOSYS, Inc: Thanks for the info. Although sometimes a noise described as you did, does indeed turn out to be bearings.

Fm LDOS Support 76703,437: David, You can also bend the contact a bit to change the contact point, that usually

helps. Another tact is to stick a few pieces of electrical tape over the contact and the surrounding PC board to dampen the vibrations. A few folks recommend a dab of GERTV silicone compound (again, on the outside to dampen vibrations, not on the contact area), but you've got to get the right kind. Many silicone compounds emit acetic acid when curing, you don't want that kind.

Fm David Mandeville: Joe, Thanks for the hints. Since I found out what the noise is it doesn't seem to do it as much. Either I did something to while I was poking around in there or it just doesn't worry me any more.

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- ✓ Keep sectors & clusters for writing to a file; Great for partial file recovery
- ✓ Edit bytes in hexadecimal or ASCII, zap in 0s; Undo last edit!
- ✓ Search your disk drive, a file, or memory for ASCII or hexadecimal strings
- ✓ Touch a directory file entry with your date and/or time
- ✓ Obtain complete disk statistics in one screen; includes usage data
- ✓ Alter file attributes: archive, system, hidden, read
- ✓ Save/Restore sectors to/from auxiliary buffers; for moving data around
- ✓ DOS subshell available while using DED86 lets you shell to other programs
- ✓ Handles 5.25" & 3.5" drives & RAM disks; even large partition drives

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diskDISK LS-diskDISK ...	L-35-211	L-35-212	3	\$29.95
DSM51 / DSM4	L-35-204	L-35-205	3	\$49.95
DSMBLR / PRO-DUCE	M-30-053	M-31-053	2	\$24.95
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EnhComp / PRO-EnhComp ...	M-20-072	M-21-072	2	\$59.95 D
Filters	L-32-053	n/a	4	\$14.95
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GO:System Enhancement ...	n/a	M-33-200	S	\$59.95 F
GO:Utility	n/a	M-33-300	S	\$59.95 F
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Lair of the Dragon	same	M-55-021	3	\$29.95
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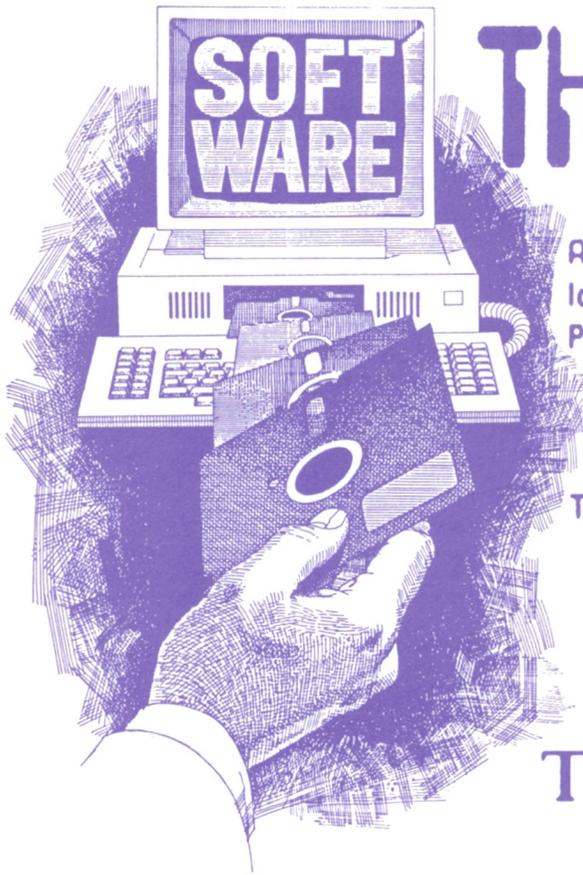
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