# THE MISOSYS QUARTERLY

In this issue:



When its Winter up North,

Its Summer down South


**Volume III.iii** **$10** **Winter 1988/1989**

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## THE MISOSYS QUARTERLY

### subscription rate information

Take an *LDOS QUARTERLY*, an *LSI Journal*, and a *NOTES FROM MISOSYS*. Blend them together into a professional magazine format filled with the latest information on MISOSYS products, programs and utilities, patches, significant messages from our Compuserve forum, and articles on programming and what do you have? Why *THE MISOSYS QUARTERLY*.

Each issue of TMQ has a significant product special available only to subscribers. That means, you will invariably recover the cost of a subscription by taking advantage of these specials. 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

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# The Blurb by Roy Soltoff

## *Points to Ponder*

It's a shame that Jerry Pournelle has already used the term, "computing at Chaos manor", because that's what this place has been like lately. I'll have to find another word that describes "chaos"! The WORD thesaurus popped up a big list of words, of which "*madhouse*" was my choice.

In case you were wondering why this issue of TMQ has arrived a wee late, I'm here to give you the answer. I recently made another acquisition to enhance the appearance of *THE MISOSYS QUARTERLY*. The text in this issue was prepared using MS-WORD. Following that, we used Aldus' *Pagemaker* to generate the page compositions. This gave me the ability to effortlessly merge graphics and other artwork into TMQ's text composition. It also gave me the ability to precisely define the appearance of each page - if I wanted to.

The result of Pagemaker's capabilities can be seen throughout this issue. I tried to avoid overdoing it, yet I wanted to introduce some of the graphics effects that go to make a publication more pleasing to the eye. Recognize, though, that some headings use varied backgrounds. Although I expect to narrow the choice of styles to a few, I wanted to pepper this issue with variation so that my readers would let me know what they find acceptable. Needless to say, I'm sure I don't have to ask for your input.

A number of readers have asked for listings expanded to take a full page width. That to me was wasteful, although I admit that the half-page style previously used made a listing difficult to read. With PM, I switched to a three-column format, stretching the listings to cover two columns. This provides a reasonable compromise. Listings also include a 10% background shade, as they are in many other magazines. I have also used background shading for fix listings and name and address boxes.

All of this took considerably more time to implement than in the past. Previous TMQ's went to press directly from WORD output. I may have run two drafts, at most. I guess that I may have spent another week just playing with Pagemaker. True, as I get more experienced with it, it will take me less time to utilize to do a given job, but I did have to take considerably more time than before. Meanwhile, other things piled up.

The kicker came when one by one, the family was hit by the flu or other such debilitating illness. The flu hit strong in Loudoun County during early February. School attendance was down 15%. Benjamin was the first to come down with something; he had the runs which lasted for about five days. The washing machine could barely keep up with his clothes. That started on a Friday. By Sunday, Stacey came down with the flu. Sunday night I felt a tickle in my throat, which told the story for me. I was miserable by Tuesday, and was running a fever of about 102. Stefanie came down with the flu. We thought it was a good thing that Benjamin was getting better, because Brenda was also coming down with it. I was forced to close up for three days, as many who called here found out. Stacey and Stefanie felt better later in the week, but we kept them out of school due to a slight fever. By Saturday, my fever had gone, and I was left with the drips. Yesterday, Benjamin came down with a fever. Last night Stefanie came down with a nose bleed. Today, Monday, I'm back at work trying to crank out this column so I can get the winter issue out before spring. It has been a rough February...

My 386 machine now sports an 80 megabyte drive, which was needed to load and use the new software. Aside from PM, I also got MS-Excel. But I have not had the opportunity yet to utilize it. I have a copy of Windows/386 but can't load it yet until I add more memory to the machine. My hunch is that for 1989, mid year will be the right time for acquiring four megabytes of SIMMs. With the larger drive capacity, it became evident that backing up to floppies was definitely not the way to go. Wanting a reasonably priced alternative that was relatively hands free operation, I chose to install a Colorado Memory Systems DJ10 Jumbo tape drive. This is a 40 megabyte drive which uses the DC2000 tape cartridge. Backups are pure heaven now. How anybody in the MS-DOS world can still waste hundreds of dollars on a BACKUP program such as Fastback, when the Jumbo is available for less than $300 with fancy software, folks have got to start seeing the light. My accolades for the tape drive have nothing to do with the fact that MISOSYS is now selling them. Jumbo works! If you have a PC with a hard drive, and you don't investigate the acquisition of a tape backup such as Jumbo, then don't come crying to me when disaster hits your hard drive.

## *Curtis Clip TMQ Giveaway*

Forget about every other copy holder you have ever seen. The new Curtis Clip is it. This low-cost ($6.95 list) device easily attaches to either side of your monitor with a Velcro fastening strip, included with the clip. When you're not using it, you just swing it back against the side of the monitor. Works just dandy with a Model 4 case.

I have about 100 of these clips to give away as the TMQ coupon special. Here's the deal: The TMQ coupon in this issue returned along with an order for MISOSYS product in excess of $50 gets you a free Curtis Clip while supplies last.

## *Replacement ROMC*

I received an inquiry from a party associated with the TRS-80 concerning the availability of a replacement ROMC. Let me know if you are interested in a replacement ROMC for your desktop Model

4 or 4D which would among other small features, permit booting directly off of a Tandy hard drive, and would permit replacement of the firmware-driven CRT controller with a fully-programmable one. Let me know interest and what you would be willing to pay. The ROM is already available. The degree of interest is needed before I can commit to handling it. Input please?

## *BBS' and Clubs*

As reported in my last issue, I'd like to set aside some space in TMQ as a service to the Model 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. Most of the responses received to date appear in the *Letters to the Editor* column, because I wanted to initially publish more than just names and addresses. Note that not one company wrote to ask for listing of their phone number! So don't call me up on my 800 number and ask for Prosoft's or Powersoft's phone number! MISOSYS is not directory assistance. In future issues, I'll migrate the appropriate data from the Letters column into its own section somewhere within TMQ.

## *TMQ Schedule*

Our target for mailing the *THE MISOSYS QUARTERLY* is the last week of the respective month as follows: Winter issue in February, Spring issue in May, Summer issue in August, and Fall issue in November. This schedule may place your TMQ late in the season based on the cover date; however, it follows from the mailing of issue I.i on August 19th, 1986. Note that your mailing label usually has the expiration date of your subscription. For instance, those with "89/05" 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. The few companies remaining in the TRS-80 market have chosen not to advertise in TMQ. There may be many reasons. Perhaps they look upon MISOSYS as a competitor and wish to support us. They may also consider our rates too high. I can't counter the former, but to set aside the latter, I am going to reduce advertising rates for the next issue. Revised space rates are as follows:

| | |
|---|---|
| Full page | $125 |
| Half page | $75 |
| Quarter page | $50 |
| Ninth page | $20 |

Note the new ninth-page ad layout. I will be composing this so you have no artwork charge. Just submit your text. A sample ninth page is the last page of this issue. 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.

## *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

## *DISK NOTES 3.3*

Each issue of *THE MISOSYS QUARTERLY* contains program listings, patch listings, and other references to files we have placed onto a disk. DISK NOTES 3.3 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 3.2 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 except II.iii, III.i, and III.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 (this issue).

**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 Part 2; 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.

## *Hard drive update*

I have good news and bad news. The bad news comes first. After all this time, I have finally discovered that the information Western Digital provided me concerning the programmability of the SDH

register of their WD-XTGEN controller proved to be false. You cannot software select the sector size. Needless to say, that created a great big problem for my hard drive project. The good news is that there are always alternatives, and I am "feverishly" working on them.

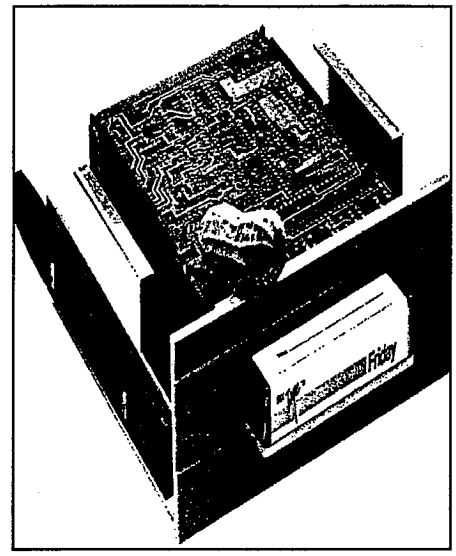
One alternative is to use the controller as is and utilize a 512-byte sector size. This would require a very large driver since I would have to incorporate a 512-byte sector buffer for buffering I/O in addition to the extra overhead for cache control. I don't think a driver in the range of 1K would be acceptable. Another alternative is to modify the utility of the GEN controller by additional circuitry on the host adaptor. The reason that the GEN doesn't support sector size programming, is that the SDH register latch enable isn't wired to anything: it deadends at a pin of the controller microprocessor. I'm in the process of getting the schematics of the controller to ascertain the feasibility of connecting to that lead and driving the latch externally. I have a local engineering company now involved so that I am able to get a reasonably timely response to the work.

Another alternative is to explore other controllers. I have made the rounds and located one short card XT-type controller that would be perfect; it has an on-board jumper to select a 256, 512, or 1024 byte sector size. That is an Omti 5510 controller made by Scientific Micro Systems. The problem is that I have located only one. They no longer manufacture it. Now if I can just locate a few hundred 5510s...

Since its best not to rely on a discontinued part, I'm placing my bets with the GEN modified by additional circuitry. The additional cost of the H/A may be offset by the reduced cost of the new GEN2 controller. Believe me, I had hoped to be able to report more definitive information by now, but it just wasn't in the cards. Hang in there.

## *DJ10 Jumbo Tape Backup*

I just popped a 40Meg tape drive into my 386 machine. That's what I'll be using for backup. We are selling them now - the Colorado Memory Systems Jumbo DJ10 tape drive. Pops right into a XT or AT. Has a 3.5" form factor with a 5.25" face plate. Uses the DC2000 cartridge and is QIC40 compatible. Comes with nice software. Just plug and chug; the Jumbo plugs into a PC floppy controller slot. If your machine configuration already uses all available floppy slots, there is a tape adaptor board available which interconnects both the DJ10 and your floppies to the controller thereby gaining a slot. The board is also used to power and control an external tape drive. The Jumbo easily converts



from an internal unit to an external unit with an available drive housing. When the new 300 foot DC2000 cartridge is available, the capacity jumps to 60 Meg. It's 1989: floppies are out, tape drives are in.

| | | |
|---|---|---|
| DJ10 Jumbo ($5S&H) | R-TD-D10 | $295 |
| AB10 Tape Adaptor ($3S&H) | R-TD-A10 | $75 |
| DC2000 cartridge ($2S&H) | R-DC-02K | $22.50 |

## *AB-25 Switchbox*

I don't normally carry the DB25-type switchbox, but I made a small purchase at a special price. We have a small handful of these boxes in stock that can be used to switch your serial port between two devices. The box terminates in female DB-25 connectors. $25 ($4.50 S&H) gets you one.

## Family Update

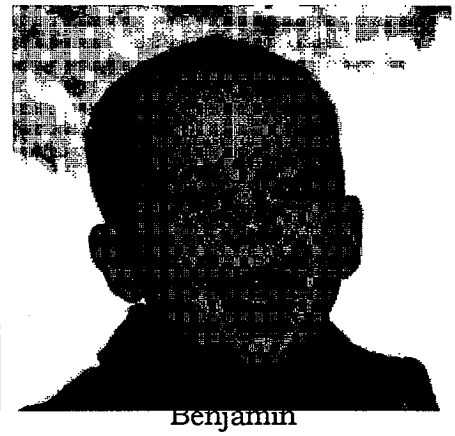
***by Roy***

I cannot close without saying a few words about the family. I'll keep it to a minimum because I am once again going to try printing some scanned photos of the kids.

Aside from the bout of flu, we're all coming along nicely. The three little ones, who are no longer little, are growing fast. Benjamin is crawling, standing (while holding on to objects and moving about the room), and just started climbing steps. He's going to take after Stacey when it comes to steps.

Stacey broke 50 pounds not too long ago. But she still has not yet decided what hand is to be her dominant hand. Brenda and I are now starting to insist that she choose her left or her right, and be consistent about it. Stefanie has been a confirmed "rightie" for some time now.

I recently received a letter from a reader who remarked that "family" includes more than just children. That's true, and perhaps next time I'll address that issue further. Since I'm still a little foggy from the flu, I'll just close this column off with a scanned photo previously mentioned.



Benjamin

# Letters to the Editor

## *Science Marches On...*

**Fm Frank Slinkman:**

Taken from the "Science Notebook," *Washington Post*, December 12, 1988, p A6.

*Feed, Animal Flatulence and Atmosphere*

Among the burdens Earth's atmosphere must endure is gas emitted by animals. Flatulence is more than malodorous; it contributes in a large way to the potentially catastrophic warming of the globe, the "greenhouse effect."

A Colorado State University professor who has spend 20 years studying cow flatulence — among other topics — has found that as much as one-quarter of the methane gas cows produce might be cut by additives to the cows' feed.

Each cow emits 200 to 400 quarts of methane per day. The world's cows alone contribute about 50 million metric tons of methane a year. Other major methane producers include sheep, water buffalo, goats, camels, llamas, deer, elk and caribou. The average person gives off about a liter a day.

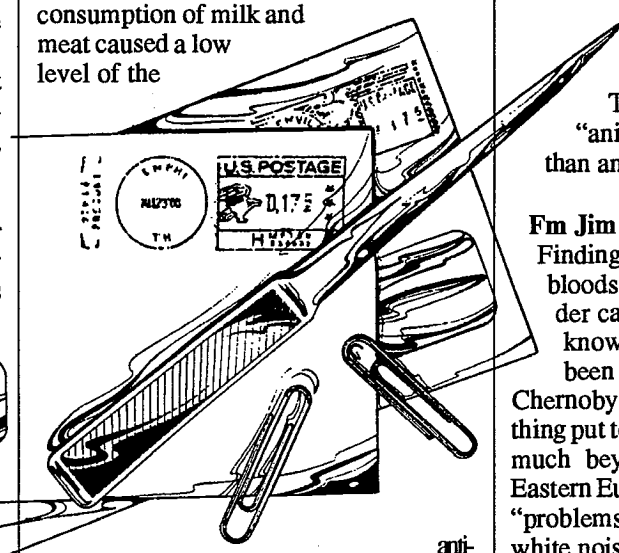
The methane rises in the atmosphere and is converted to carbon dioxide, which acts like glass in a greenhouse, allowing the sun's radiation through, but preventing the Earth's heat from escaping.

Ruminant animals put off large amounts of methane because microbes in their stomachs digest their food. While most of the digestion results in useable nutrients, the bacteria convert about 6 or 7 percent of the food to methane gas.

Donald Johnson, a specialist in animal nutrition, has for years used closed experimental chambers to measure all of the heat and gases put off by cows and sheep. If antibiotics are mixed with feed, some of the bacteria that produce the methane are killed and the animals can use their feed more efficiently. Their methane output is cut by up to 30 percent.

Johnson said that diet modifications, using some commercially available feed that contains antibiotics — or by some other method — could be used to reduce significantly the amount of methane put into the atmosphere.

**Fm Jim Beard:** Frank, Antibiotics were routinely used in animal feed at one time, until it was discovered that human consumption of milk and meat caused a low level of the




antibiotics in people. This can lead to cumulative toxic reactions in susceptible individuals, evolution of resistant bacteria in the world at large, and other undesirable effects, so the practice was discontinued.

Whether the practice is resumed, albeit with more preparation and prudence, is probably dependent on a determination of the degree of the effect of cowf***s on the atmosphere. Unburned hydrocarbons tend to break down in the stratosphere and generate smog, and the molecular weight of methane is 16, as compared with the mean atomic weight of air at about 28.8 or so.

A more likely solution is installation of appliances on the cows which capture and burn off the methane, similarly to the gas flues you see burning off excess gas at oil refineries.

Remember, when the horseless carriage first appeared, it was widely accepted because it provided an alternative to the pollution given off by horses. A horse ate like, well, a horse. An Olds would run on cleaning fluid at 10c a gallon, or even on bad whiskey in an emergency.

**Fm jeff brenton:** Jim, Another thing to consider - animal farts aren't a recent discovery; they were doing it long before we domesticated cows and other animals. So, if the effects are so dire to the future of the planet, why weren't they seen back in the days when MILLIONS of buffalo roamed the wilderness?

To say the least, concern over "animal flatulence" is little more than an ill wind....

**Fm Jim Beard:** jeff, Yeah, you said it. Finding out that 20% saccharin in the bloodstream of a rat will give it bladder cancer didn't correlate with any known problem, either. Fallout has been an issue since 1951, but when Chernobyl released more of it than everything put together since 1944, nobody did much beyond emergency measures in Eastern Europe for a few months. A lot of "problems" are just politics or even just white noise.

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## *TRS-80 Clubs & BBS systems*

**Fm MISOSYS, Inc:** In our last issue 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 responses I have so far received. In future issues, the appropriate names and addresses will be moved to a continuing list. So if you are representative of a club or BBS catering to the TRS-80 users, and are not yet on my list, please submit your information.

**Fm Ralf Folkerts:** Roy, I'm thinking about operating a Model 4 BBS so the European TRS users may have a BBS to communicate with and especially exchange Public Domain Software. If you think this idea is not too bad, could you please ask in the next TMQ if anyone is interested in a Model 4 BBS to exchange SW/INFO? Those ones interested could leave me a MSG at that BBS. If you print that question in TMQ I would start a 'trial' operation at the day I receive my TMQ. Operation hours will be from about 19:00 to 07:00. [note from editor: Since Ralf is located in the Federal Republic of Germany, I suspect that those times are approximately Greenwich time.] I will use FastPlus during the trial phase. If the users accept that bbs I will change to FastPlus II. Let me know what you think about that idea.

The number the BBS will operate: It's FRG 04223/2632 rep. 04223/2632 in the FRG.

**Fm Kevin R. Parris:** The Midlands Plaza BBS (300/1200 24hrs/7 days 803-776-9600) is now beginning its SIXth year of service to the TRS-80 users. The system still runs on a TRS-80 Model One computer, and has a ten-megabyte hard drive. There has not been much activity lately from TRS-80 folks in the local area (Columbia, SC); it seems there are not too many of us left in these parts. But there is an upload/ download area and message section for TRS-80 systems. New users cannot download or post messages until after being validated, but may read messages and see the list of items available for downloading. I have been SYSOP since July 6, 1988.

**Fm Lloyd Evans, MCTRUG Pres.:** Please include our computer club in your list that supports the TRS-80 user.

Mid Cities TRS-80 Users Group
(MCTRUG)
P. 0. B08 171566
Arlington, Tx 76B03
Lloyd E. Evans 817-461-3989
David Dalagar 817-460-6204

**Fm Samuel J. Wells:** Dear Roy, Received the TMQ vol III.ii in good shape the day after Thanksgiving. As usual I found a lot of useful reading. Since you requested info on BBSs and user Groups supporting TRS 80s I submit the following:

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

We are an eclectic group of owners of several brands. At present we have two members, including myself, who offer TRS 80 mod 3 & 4 support. We have a limited public domain library and also respond to software and hardware trouble calls in our area of south Mississippi. We exist in a small university town and have input from several levels of expertise. We support one BBS (HUBBUB; 601-264-2394; 300 baud; 8, none & 1; online from 3:30 pm to 08:30 am) which is club sponsored and offers messages only. We are about to go 1200 baud in the near future. We charge dues of $15 a year and meet at the local downtown Trustmark Bank (nice hall!) 7:30 pm every 2nd Tuesday. The public is welcome. Hope this helps get your list underway.

**Fm Roger Storrs:** Dear Roy. In response to your request for information on organisations supporting TRS8O, you will, of course, please include us.

National Amstrad Tandy & General User Group
Hon. Treasurer and Membership Secretary : Roger Storrs
Oakfield Lodge, Broad Lane, Ram Hill, Coalpit Heath, Bristol.
BS17 2TY. Great Britain (0454) 772920

Membership of NATGUG is by subscription to our current Newsletter which is published monthly, as you know. For members from the USA the fee is £21 a year and please, I must insist on Sterling. The easiest method of payment is by Visa or Mastercard. A dollar cheque costs about £1.00 to exchange. And we still have the difficulties of the variable exchange rate. I can back date membership and will be quite happy to quote new members for the back issues.

I now have two XLR8ers one in an early green screen 4P and the other in an early 4 with The N/C motherboard. I have no difficulty running CP/M which I use for my essential database. The database runs with the machine at full speed and I am sure it would hold its own or even beat a MSDOS machine with hard drive. LS-DOS is however a different matter. On the old Four Lescript has to be run at less than full speed (I=1). Visicalc is however OK at full speed. On The 4P both go at full speed. John Coyne's Fixbank6 which I need to use to operate DDUTY causes the keyboard to go haywire on the FOUR. I have therefore been forced to use the 4P as my main machine, which upsets me because my FOUR has four internal drives and is therefore the machine)I want set up in my work station. The 4P belongs in the boot (trunk) of my car. I have not as yeT managed to acquire a working copy of HIBANKS, so I do not know how that would work. If you care to add a copy to the enclosed disk it would be appreciated. A friend managed to type in the original code but we could not make head or tale of the modifications in the later issue.

I have been asked to request your help in providing an alternative to SUPERDRIVE (for the ALpha board) which obeys normal DOS convention. I do have an alpha board myself, but eventually came to the conclusion it was not compatible with the N/C motherboard. It is however possible that the problem was superdrive. The system checks suggested by Anitek all passed muster, but the machine would lock up fairly soon whatever it was being used for. I do get this problem with the XL8er on both machine, particularly if I leave the machine idle in the Dotwriter portion of Dduty.

I am very concerned that since we have lost 80 Micro we, in England, no longer have easy knowledge of the TRS8O products available in the States. I do read

TRSTimes and TRSlink filters over, but very late. I need for instance to know what Montezuma are at present offering. It would be very useful if you could persuade all TRS8O suppliers to advertise in *The Misosys Quarterly*.

**Fm Frank Gottschalk**: Dear Roy, Your TMQ, support of TRS-80's, and downright good deals are commendable! Anyone who gives me a credit for one program, after prepayment for two, because they were going to be offered "next month" as a 2 for 1 offer, certainly deserves everyone's support!

In response to your request for TRS-80 Clubs and Bulletin Boards, I submit:

NYBBLERS
CHABOT COLLEGE
25555 Hesperian Blvd.
Hayward, CA
MOTHERBOARD:
(415) 352-8442
8/N/1 94545 (SIG #2 for TRS-80's)

This club has been around since the early Model I's and still going strong, expanding with the new MS-DOS world, but still twice monthly meetings of avid model 1,III, & 4 users. It has been a great help to me for many years.

Another question: Can't find anyone with LB4 (or is it LBMU-4?). Anyway: Could I print out a 28 line invoice with it, without having to switch to page 2 as I have to now with PROFILE 4+?

**Fm MISOSYS, Inc**: LBMU-M4 is the product which can construct a new LB data base and populate it with data from an older one. We use LB to generate the bills for TMQ subscription renewals. Although LB provides only a 20-line print screen for defining your printout, the screen has a virtual width of 208 columns. Since you can embed newline controls into the screen, you can, in fact, construct a printout for much larger than 20 print lines for a single record. The restricting factor would be the combination of length and width. With your 28 line invoice, I don't see much of a problem; it's probably not even an 80-column format.

**Fm Mostyn H. Lower**: Dear Sir, I have been asked by our Editor, Rod Stevenson, who still receives T.M.Q., to advise that your magazine is much appreciated within our group which covers members in South Australia and quite a number who are from other Australian states who reside remotely from their Capital City. We represent users of Tandy Models I to IV & other Tandy Machines. About 50% of Members use Models I to IV still and many run these as PCs. Our membership and equipment list is updated periodically on a Model I.

Mostyn H. Lower, Hon. Secretary
Adelaide Micro User's Group Inc.
G.P.O. Box 214,
Adelaide, South Australia 5001
AUSTRALIA

Personally, I am involved in Analog to Digital Conversion for a variety of weather instruments I have made and use a Model I & a Model IV because of the very good Input/Output information written around these Machines by various people some years ago and still available. I use Model IV for filing rainfall and other weather data, for W/Processor, Hires Graphics for Real-time weather and to run an Amateur Radio Packet station.

In the 70's I bought my Model I for my Consulting Engineering business, writing programs for hydrology and hydraulics and now am setting it up for I/O operations including control of Solar-heated swimming pool.

Hoping this shows that your continued support is very much appreciated.

**Fm F.J.Seccull**: Dear Sir, Our group would like to become subscribers to your magazine, would you please let me know your Air Mail subscription rates. We would also like to know if you have back numbers available and if do, the cost per copy and issues available.

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

**Fm Richard VanHouten**: Roy, I just received my last order. One problem: I ordered BSORT for LDOS and received BSORT for DOS6. I have a 4P, but most of my work is still done on my 3. Maybe someone there thought I meant the 4 version because I ordered The Source at the same time. I can perhaps use BSORT4 in the future, but what I wanted was BSORT3.

By the way, in the last TMQ you requested BBSs supporting TRS-80s. I run the West End BBS 300/1200 baud, 24 hrs, supporting the I/III/4 (among others) at (914)858-8722. Uploads, Downloads, free access, online games, all running on a Model III with a 10 meg hard drive under LDOS 5.3 and TBBS 1.3.

**Fm MISOSYS, Inc**: We had to guess. The correct name for the Model III product is BSORT51. The full name for the Model 4 product is BSORT/MOD324, but we usually abbreviate it to BSORT. Since we usually sell Mod 4 products to Mod III products at 9:1 ratio (or more), our best guess was for the Model 4 version - especially when ordered with THE SOURCE. If you want to return it, do so and we will replace it.

## *The Model I is not dead!*

**Fm Peter J. Fournier**: Hello, It's been many moons since I've been here [on the LDOS forum on CompuServe]. The latest issue of *The Misosys Quarterly* has reminded me of what I've missed. I'm afraid to admit that I've done the unthinkable! I've put JJKD's old (and venerable) Model 1 in a (gasp) IBM PC clone case! Forgive me, it was out of sheer desperation. My wife needed to use an editor at work (school dept) and I couldn't see her connecting up two disk drives, monitor, EI and keyboard. To admit the truth, it came out pretty good. I have the CPU, EI two disk drives and a clone power supply inside the case. My wive loves it but has to try and stop people from trying to run MS-DOS in it! They don't have any idea of the history in that box. By the way Joe how do you get a M1 to boot up in lower case? You did it on all your boot disks but you left no clue as to how.

## *TMQ subscription price?*

**Fm Malcolm Franklin:** What is the current subscription rate for TMQ?

**Fm MISOSYS, Inc:** TMQ subscription is $25/year for 3rd class bulk mailing and $30/year for 1st class (both rates are US). Foreign rates vary from $30/year to Canada and Mexico to $35 for Europe and other zone D areas to $40/year for zone E places such as Australia and Japan.

## *What's a VLSI?*

**Fm Pete Betz:** Could someone please tell me what VLSI means? Specifically, the term in question is "VLSI microcomputer technology"... I've seen the term before, but can't remember what it is.

Further, is there any book or back issue of a magazine that anyone can recommend that contains a good glossary of all these infernal acronyms, abbreviations, and contractions for various systems, languages, hardware, etc.? I'd appreciate it.

**Fm Ray Pelzer:** Pete, VLSI is an acronym for Very Large Scale Integration, a term referring to the extreme density of "components" within a single integrated circuit chip. This is the next step up from LSI, which isn't "Very". A good example might be that a "calculator-on-a-chip" could be considered LSI technology (reasonably well-packed number of transistors on that single chip), while a computer microprocessor like a Z-80 (or more obviously, an 80386) would be considered VLSI.

**Fm Adam Rubin:** Pete, SSI (small scale integration), MSI (medium scale integration), LSI (large scale integration), and VLSI (very large scale integration) refer to the density of the circuits on one IC (integrated circuit, or "chip"). The following table is from Radio Shack's "Understanding Computer Science" book (1981); things have progressed since, but at least it's a starting point.

| Integration Level | Logic gates per chip | Period |
|---|---|---|
| Small scale | 12 | Early 1960s |
| Medium scale | 100 | Late 1960s |
| Large scale | 1000 | Early 1970s |
| Very large scale | 50000 | Late 1970s |

Most of the chips in the Model 4/4P/4D are LSI, although some of the simpler ones (74xx series) might be MSI. I hope someone more knowledgeable will expand on this, as I'm not positive exactly where the boundaries fall, which category current chips fall into, and how close the next stage (ELSI, I think, extremely large scale integration) is to production.

I'm not really familiar with dictionaries or glossaries of terms. Your local bookstore will probably have a few to choose from, though.

**Fm MISOSYS, Inc:** I believe that the 80486 has in excess of 300,000 transistors in the chip.

## *Odds and Ends*

**Fm Barry Thrippleton** [Morwell VIC, AUSTRALIA]: Dear Roy, Please find enclosed my original LS DOS 6.3 disk. Since purchase of this software I have acquired another Model 4P computer. Would you please update this disk so that I can use it on both of my Model 4P's. Any charges for this modification can be made on my Mastercard - details of which you hold on file.

I have also enclosed my XLR8er Installation Utilities disk. As suggested on page 77 of TMQ III.ii please convert this to a "special" software interface disk. The article by Michel Houde is outside my range of comprehension and I hope relevant instructions will be included with the revised disk.

In April '88 I Purchased PRO-WAM from you. I have tried to use it for a name and address file. While this works admirably for US and AUS addresses (or at least most of them) it does not cater for UK addresses. Unfortunately most of my addresses are in UK so rather than have some in the black book and some in PRO-WAM I keep them all in the black book. I believe you receive copies of the NATGUG magazine and if you look at the committee's addresses you will understand why they can't be used in PRO-WAM. In case you don't receive the magazines I have enclosed a photocopy of an inside front cover. If there is a means of overcoming this problem please advise. This problem is aggravated when you are addressing mail overseas and require a country field.

Talking about NATGUG reminds me that I have sent a 4 part review of LB to them for possible publication. I hope my review is accurate and prompts others to purchase this programme which I find very good indeed especially when used in conjunction with the XLR8er and loaded into memory as a RAMDISK.

Thank you again for the service you have with regard to my XLR8 board. The replacement board was received with no tax payments etc necessary and it is up and running. I am very happy with it.

In the Fall TMQ just received (this feels strange as we have just started Summer) there is an announcement relating to "GO" new products. Is it possible to have further details on these Products please?

I have seen a number of references to hardware modifications to pin 7 of U3 (TMQ's Vol III.i & ii). Is this modification worthwhile?

I have also been reading the articles on HIBANKS by R Rasham (TMQ's Vol II.iii & iv). In the "revised HIBANKS" article on the 23rd line of page 96 he refers to an EQU for INTADDR. I have searched both articles and cannot find the reference. Was it omitted in error or have I misread the reference?

I purchased in April an XLR8er Installation Utilities for use with CP/M. At that time I only had CP/M 2.2 so the board's use was a little restricted. However I have since purchased CP/M 2.3 and together with the XLR8er I have improved facilities when using Multiplan, for example. I noticed in TMQ Vol III.i, p13 in your response to RM Doerr that you believe "Multiplan already makes use of the extra 64k to allow about a 90k spreadsheet". I

realize this is probably not a fair question to ask but here goes. When I use Multiplan with CP/M the available data memory is about 11K only. Even with the use of the XLR8 board and putting all the programmes onto the RAMDISK (M:) I cannot improve this memory capacity. Do you know of anyone that can help with a "patch" that will enable me to increase the 11K? It may be that I require an updated version of Multiplan (mine is Dales version 1.06). My Model 4 Visicalc programme allows about 90K but this is a bit archaic compared to Multiplan.

PS You are quite correct. G'day it is. That goes for all of us "cobbers" from down under.

**Fm MISOSYS, Inc**: Barry, Although I answered some questions on the phone, I have gotten around to your letter in the stack; perhaps I can expand on the response.

There is no update of a 6.3 to "permit" its operation on more than one machine at a time. The only "multi-machine" version of 6.3 is a "site-licensed" version at $99.5 minus credit for one existing 6.3. It may be cheaper to acquire a second copy.

Applications programmed for PRO-WAM are quite specific, once they are designed. The ADDRESS/APP application was designed to mimic the record structure of PowerMAIL, a very popular mailing program from PowerSoft. As such, it was not designed to support user-defined fields, as would be a database product like our LB package. I have considered bringing out an application similar to ADDRESS but with a record format controlled by the user - within limitations. Perhaps one day I may do that if I see that I can justify the development work based on expected sales.

All of the programs included with the GO: products are or are derived from older products previously discontinued. I am not going to supply detailed information on the programs as its just a rehash of older material; hopefully, you have one of the older catalogs that detailed the products. Space permitting, perhaps I can expand on the contents in a TMQ issue.

As far as the hardware modification to pin 7 of U3, I have not done it. I therefore cannot attest to it being worthwhile, although it has made the rounds. Check out another modification in this issue for 5 MHz - for those machines which can handle it. The thing to look out for in any speedup modification is whether the expanded memory banks can hold executing code. Test out a sped-up machine with the SPOOLer in a expanded memory bank. If it works, you generally have reliable operation, memory wise.

I think it was an editing error which deleted the reference to INTADDR. The value is 39H. That's the address of the jump vector associated with the CPU interrupt at 38H.

My reference to Multiplan using the extra 64K memory was relating to the TRSDOS version of Multiplan. I would doubt that a CP/M version of Multiplan would use any extra memory since there is no standard of expanded memory addressing under CP/M. Your 11K of spreadsheet probably is all that's available from your TPA.

**Fm Michael Rogers** [FREMANTLE, W.A. 6160, AUSTRALIA] Roy,

Please find enclosed my Mister ED disk for refresh with the new TED/APP. Also the revised 5.5" x 8.5" documentation (very nice it is too!) mentions REGENBU2/BAS. Could I also have this put on the disk? I was only supplied with the original REGENBU/BAS designed for use with PRO-WAM release 1.

Running "WINLINK/BAS", the demonstration program included with the PRO-WAM Toolkit M-51-225 has caused the computer to reboot after the "this is a test" sequence got to line 25. On further examination of the manual, I found the following on P.44 under, "Window execute - Function 12":

The following statement illustrates a use of WEXEC to invoke the CAL application from the WAM0/APL library used when installing PRO-WAM.

```
155 PRINT#1,CHR$(1);CHR$(12);"CARDX"
```

Assuming that perhaps "CARDX" was an error I changed it to "CAL" in line 155. The computer rebooted as before. Still suspecting line 155 I "remarked" it out for the next run. This time the program ran more or less as described with no reboot.

.

O.K. you say, what sort of weird configuration were you running at the time? Old Model 4 with 512k Alpha Tech board and pin 7 on U3 removed. LS-DOS 6.3 (Level K). PRO-WAM 2.01a. WAM0/APL with everything in it including Mr. Ed Utilities. Basic 6.2 plus. (Micro Systems enhanced version of Basic) Superdrive. (Anitek's ramdisk emulator, taking up 12 32k banks, running as the system drive and having BASIC, WAM0/APL on it.) Forms filter installed, KSM active. All of the preceding is usually well behaved, with all the PRO-WAM applications running fine.

As an experiment I went back to a plain version of the DOS (a copy of my original level LS-DOS 6.3 - with FIXBOOT applied, Basic 1.01.02, high memory at FFFF, no added filters or drivers of any sort) and a copy of the original PRO-WAM disk. Same result, a reboot after "this is a test 25" appears in the window.

I went back to 6.2 (with FIXBOOT applied, BASIC 1.01.01) same result! By the way, 6.2 or 6.3 without FIXBOOT applied just locks up after "this is a test 25" appears, no reboot.

As a final check to eliminate me and my system as the cause instead of some cacto blastus (famous bug) in WINLINK/CMD or WINLINK/BAS, below are my exact steps in trying to run WINLINK/BAS.

1. Install PRO-WAM.

2. Install WINLINK - message, "*WL device is now installed" appears. 3. Load BASIC.

4. Load WINLINK/BAS.

5. Run WINLINK/BAS.

Now appears, then "this is a test x" appears, when "this is a test 25"

appears, there is a very short pause and then a reboot.

Finally there is a line included at the end of the disk version of WINLINK/BAS which does not appear in the printed version.

9999 SAVE"winlink/bas:6": REM Save the program

What is the meaning of this?

Investigations here in Australia reveal a considerable variety of SEAGATE hard drives available. I know that if I went to buy one and say that I wanted to use it on a Model 4, I would get blank looks. (Probably the blankest if I asked at a Tandy store). Incidentally, Tandy still operates in Australia. Some stores still have Model III and 4 software, but basically only what is left on the shelf. Owners in Australia who happen to be travelling about should check stores in smaller cities and towns as you can still occasionally find old III/4 software at bargain prices. Also this year the service center in Melbourne did a good Job on servicing my drives, realigning the video display and replacing the on/off switch. However Tandy Australia never imported the Model 4D and "ran out" the Model 4 line in September 1986. I registered my copy of 6.2 with Software Registration in Fort Worth, I got no notification of 6.3 from them, I only knew about it from 80 Micro. If you could get hold of all those 6.2 registration cards from Australia (and probably elsewhere that Tandy never followed up) you could tap into a new source of customers.

Back to the hard drives, I hate buying anything that doesn't quite work. I understand that your hard drive project will protect us diehard Model 4 users who don't want a hard time upgrading to a hard disk system. What I propose is the following, (and it should be of interest to all your customers in Australia)

1. Purchase a SEAGATE 20MB drive, controller and power supply local ly.

2. Purchase the host adaptor, cabling and software from Misosys.

Can you tell me exactly which model SEAGATE drive and controller are suitable for use with your kit?

Next, what would the cost of the host adaptor, cabling and software be?

Finally are there any complications in installing your kit with an off the shelf SEAGATE hard drive, primarily intended for a PC compatible? For instance, should the hard drive be purchased formatted OR unformatted?

The current release of LeScript 1.8 no longer appears to work properly with PRO-WAM (or DOUBLE-DUTY for that matter). With PRO-WAM loaded any attempt to print to screen or printer causes a lockup. The same thing happens with DOUBLE-DUTY. In fixing bugs in the spelling checker they seemed to have impinged on the area of memory used by PRO-WAM. Maybe they should get some advice from you before any more revisions are made? it's a pity because LeScript is so nearly a great program.

Well that's about all for now. You may use any of the above in TMQ. Actual articles (paid) I will supply on disk in ASCII, otherwise I hope your scanner can cope with my daisy wheels.

**Fm MISOSYS, Inc**: Michael, As far as "Mister ED", I don't recollect the history of that last order as to whether you sent in the disk for "refresh", but the ED disk sent with the letter is the "older one". I'll refresh this one for you. The REGENBU2/BAS will be on it.

The problem you are having with "WINLINK" was due to your PROWAM 2.01a not having the WAM23/FIX installed. That appeared in TMQ issue III.i page 58. But I can't fault you for not applying the patch as I don't think you received the issue by the time you sent your letter. This whole issue may be after the fact by now. But that was the problem. Incidentally, the 9999 program line you referenced is something we usually add to a program during development. It makes it easy to save a copy by typing "RUN 9999" rather than the more elaborate "SAVE" command. It just got left in there; no harm.

On to the "HARD DRIVES" question/comment. Let me clear up one item. There is no such thing as a hard drive being particular to a computer other than the latest "card" drives. But then they are not just a hard drive. You may confuse a hard drive package with the drive itself. In order to work with a computer as an external drive, you need a hard drive, controller, case, power supply, host adaptor (where necessary), connecting cables. Some computer systems have a hard disk controller internally; thus, they wouldn't need an external controller. All systems provide software to format a hard drive; they never come formatted from the manufacturer.

In order to make our hard drive package inexpensive, I am planning to use components designed for PC clones. Those components are cheaper because there's millions of them, and lots of competition. That brings into play the economics of large scale production. The hard drive itself is relatively inexpensive. One of the most popular drives around is the Seagate ST225. This has a capacity of 20 Megabytes. That's what we'll be using. You can get it from us or obtain one locally. Next, controllers designed for PC clones don't readily connect to a TRS-80 I/O bus. Most are just unusable because the sector size supported is fixed at 512 bytes. According to Western Digital, their controllers can be programmed to set the sector size. We have selected the WDXT-GEN controller to use. A host adaptor is needed to interface the WDXT-GEN controller to the TRS-80 I/O bus. As the host adaptor design is particular to that controller, that's the only one which will work with our host adaptor. I have also selected a specific hard drive enclosure which supports two half height drives, has a 60-watt power supply, and also has a "slot" underneath the drive mounting space where a circuit board can be placed. The WDXT-GEN fits there. As it doesn't take up the entire length of the slot, the host adaptor will be physically designed so that it meets the controller edge to edge. The controller has an edge designed to plug into a PC bus; thus, our h/a will be designed to have a PC-type edge card socket which the h/a plugs into.

I intend to sell parts piecemeal, as noted in TMQ, specifically because of the overseas folk who may have local access to drives and controller. Knowing all of this, you can obtain the drive and controller

locally. If you choose to provide your own enclosure, you will have to be concerned with the physical mounting arrangement for the controller and host adaptor. Finally, I can't provide the cost at this time for our host adaptor and software as the controller is not complete. That makes it difficult to arrive at a cost. When it is complete, I will certainly announce everything at that time.

On LeScript and PRO-WAM, I have never received any inquiry from Anitek. I wouldn't expect any at this point in the game.

**Fm Ken Strickler:** Dear Roy, Well, here it is the NEW YEAR an I am already a member of the "BEHIND CLUB". I am BEHIND in EVERYTHING! Correspondence, Programming, THANK YOU'S and if I don't HURRY, I'll be a member of the "WAY BEHIND CLUB"!

But enough of that! I read the article from Michel Houde, and couldn't wait to try the patches. NEEDLESS TO SAY, THEY ARE VERY, VERY IMPRESSIVE! I feel that the system is visibly and audibly FASTER. (It looks and sounds as though it is running faster.) I left the speed at M=1 and R=40 as he did. It was not clear if I would have to use the FIXALL/FLT if I wanted to go faster. I do NEED the ROOM in MEMORY, and the slight slow down is a good trade off for the MEMORY. IF YOU HAVE AN XLR8ER CARD, THIS SEEMS TO BE A MUST PATCH. I WOULD LIKE TO ADD MY THANKS TO MICHEL FOR THE SUPER JOB. I AM LOOKING FORWARD TO THE OTHER PROGRAMS ON THE DISK NOTES. (See ORDER)

There were so many great articles in the TMQ I hardly know where to start. I really enjoyed the answers Jim Beard gave for reading an MS-DOS disk (FORMAT :1(Q=N)) and "HOW DO I EXIT BASIC WITHOUT CLOSING FILES?" (SYSTEM"BOOT") what a RIOT. The description of the requested "SUPPORT" from HARDIN had me laughing so hard I was crying. Who said support wasn't FUNNY. (I suppose to the person in TROUBLE it is very serious! I don't mean to be FLIPPANT!)

I am glad to see that you have released new versions of some of your great utilities. I have them in the MARK IV COLLECTION, and the MARK III COLLECTION, but will BUY them again as the GO SERIES. (See Order) I hope that when you release another LDOS/LSDOS version that I won't have to get them again! (I think that I will like the 5.5 x 8 format, although I am currently using 8.5 x 11 in one of those MASTER CATALOG racks.)

Many thanks to BRAD STILES for the PRO-WAM / ALLWRITE patch for the stacks, and thanks to you to ROY for helping BRAD. Might FORWARD a copy to the PRO-SOFT people for their next VERSION.

Roy, your article on BINARY MULTIPLICATION is GREAT! I'm waiting for the rest!

Roy, do you know if there are any patches to make DOSTAMER compatible with PRO-WAM ? I have changed to invoke key to <cntl><W> but still have to watch how I load DOSTAMER and PRO-WAM to avoid the conflict. (Maybe George Fischer would be interested in putting a header in DOSTAMER so that it shows in memory as something other than 'unknown') It is a very powerful shell for the operating system.

In October I had the opportunity to attend the NORTHCON (Computer Convention) at the Seattle Center. Some 1700 exhibitors were there and seminars were held all 3 days. Of the 9 seminars that I attended, several would have a bearing on the current state and future state of micros. (As you would expect at a microcomputer convention.) There was an excellent presentation on Desk-Top Publishing presented by several of the manufacturers. All of the presentations revolved around the WHAT-YOU-SEE-IS-WHAT-YOU-GET (WYSIWYG - wizzy'wig') format, and as such required either a very fast 80286 or 80386 computer as the hub. Laser printers are now or will very soon be available to produce 90 pages per minute. Sounds GREAT, of course all of this SOFTWARE and HARDWARE is real CHEAP as you can imagine. (HA - if you consider $12-$17000 for software and hardware CHEAP!) Well, EXCUSE ME, you must have mistaken me for someone WITH BIG BUCKS. The other type of Desktop Publishing is of the TEXT FORMATTER type, as performed by Allwrite, LeScript, Scripsit and the like, the type of word processors which will operate nicely on OUR little ol' machines.

The article by Lee C. Rice, PhD. in the TMQ (v III.ii) was EXCELLENT and considering the cost of the NEW and IMPROVED? WYSIWIG, I too will be remaining with ALLWRITE linked to ELECTRIC WEBSTER and DOTWRITER. DOTWRITER offers many more FONTS than any of the WYSIWYG systems that I have seen. It is true that you can BUILD your own FONTS, but that is available in BOTH SYSTEMS. DOTWRITER already has some 50+ disks with an average of say 6 FONTS per disk for 300+ FONTS. (That OUGHT to be ENOUGH!) If you only skimmed the article, YOU MIGHT WANT TO READ FOR CONTENT!

Another seminar covered the technology of the NEW machines soon to be released. We all think that the 80486 is going to be HOT STUFF. That processor, was NOT EVENED MENTIONED, until I asked INTEL about it after the seminar! Apparently the 80486 is an 80386 with an 80387 on the same chip. (A co-located math coprocessor!) The seminar revolved around the new RISC (Reduced Instruction Set Computer) class of machines. While we talk in terms of CYCLES per INSTRUCTION (ie 4 to 6 cycles to complete a microinstruction) the NEW machines will perform say 4 to 6 INSTRUCTIONS per CYCLE. ( YOU READ THAT RIGHT - INSTRUCTIONS PER CYCLE! ) The new computers will have a cycle speed in the 40 to 50 MEGACYCLE RANGE, allowing 200+ MILLION INSTRUCTIONS PER SECOND! (Let's see now, the Model 4 with XLR8ER at 6 megacycles divided by 6 cycles per instruction equals 1 MILLION INSTRUCTIONS per second, so folks we're looking at 200 times faster.) The CHIPS were the 80960 by INTEL and the 88100 by Motorola. AMI also has a chip, but I have forgotten the number. This of course boils down to the fact that I would be able to utilize my computer .000000000000001% of the time

instead of the .00000001% that I currently use! Naturally, all of the new stuff is REALLY CHEAP - HA! (Maybe I could get a GOVERNMENT GRANT!)

In the Exhibitors Hall, CDC was demonstrating some of their new HARD DISKS. Saw a nice 790Mbyte, 5.25, 28ms (or was that 19ms) unit. Great for YOU ROY, now let see, at 360K(720K) per diskette, that's 2000+(1000+) disks for backup! Shouldn't take too long - call me NEXT MONTH! (I couldn't FILL it ANYWAY) Another BIG $$$ item. Sorry, YOU MUST HAVE ME CONFUSED WITH SOMEBODY ELSE!

With all of the new computers on their way, it makes sense to GET ALL OF THE SOFTWARE THAT YOU MIGHT NEED, BEFORE THE GOOD PROGRAMMERS MOVE ON! (That is unless you are going to move on also. In that case I'LL SEE YA' AROUND 'cause I'm STAY'IN HERE! In an article in PC WORLD one of the writers discussed that most of the computer users use only 1 or 2 programs, and that the NEW (CHEAP) computers have not made the great impact that the manufacturers had hoped for. (ie - companies are not rushing out to buy them!) The BATTLE between IBM's Microchannel and the other manufacturers Extended Bus (EISA I think) makes me happy to have remained a TRS-80 user.

On another NOTE, TANDY has installed MS-DOS in ROM chips for some of their new machines. That OUGHT to make PATCHING the OPERATING SYSTEM easy! (Of course, AS LIMITED AS THAT SUCKER IS - WHO CARES!) I guess MICROSOFT is MOVIN' on to the NEW STUFF. Aren't you all glad that 'ol ROY is still here, along with the contributors to the TMQ!

Recently I purchased another HI-RES graphic card and ALL of the associated HI-RES software from MICRO-LABS. Much of the really neat HI-RES software is provided on a disk that contains RAPID-DOS. RAPID-DOS is NOT compatible with the XLR8ER card, (causes COMPUTER LOCKUP), and doesn't support MEMDISK, in addition to being a VERY WEAK OPERATING SYSTEM. Needless to say, I only use RAPID-DOS for those programs requiring that OP.SYS. Fortunately, I have several (make that 6) model 4p's in various configurations, so other that the inconvenience of have to use a different machine, I can still run the programs. The programs which require RAPID-DOS are Tournament Chess, Backgammon, 3D Tic-Tac-Toe, Fractals, Reversi, 3D-Plot, Math-Plot, Life Experimenter, Surface Plot and Slide Show. I'm not sure that I have listed them all, but you get the idea. I suspect that RAPID-DOS doesn't use standard calls in order to speed up the computer. (NO, I WON'T TRADE MY XLR8ER CARD, THANK YOU ANYWAY!)

Now to the good stuff! You'll notice that this letter is attached to the BLUE card for discounts. (Not enough ROOM for ordering on BLUE CARD.) Any money saved by BULK SHIPPING, I would like applies to a GIFT CERTIFICATE or SUBSCRIPTION EXTENSION or SOFTWARE or SOMETHING for MICHEL HOUDE in appreciation for his XLR8ER programs. (I hope that they will be on the DISK NOTES disk!)

I have RAMBLED long enough now, and will get this on its way. The DISK has this letter on it, so that you can edit/publish the parts you would like to (if any!)

I hope that you and yours had a wonderful Christmas, and the NEW YEAR is the BEST EVER.

**Fm Martin Pollard** [May 26, 1988]: Roy, I received your advertising brochure in the mail the other day, and I must say I am pleased to see MISOSYS and the other companies who still support my Model 4 band together to keep us TRS-80 users informed. I also noticed your 40% deal on any one language product, a deal that came just in time! I am the system operator/programmer of a Tandy 6000 XENIX system where I work, and am learning C. I was planning to purchase PRO-MC at full price (I picked up M4 FORTRAN real cheap, so MRAS is not needed, but I still may purchase MLIB), but this deal is too good to pass up.

Now, on to the questions (did you even doubt I had some <grin>):

I read with interest LSI's statement that they are leaving the TRS-80 market, and handing sales and support of LS-DOS 6.3 over to you. Personally, I think that is wonderful, as you are the author of LDOS, it's kind of like "the offspring have returned to the nest", so to speak. (I also feel better about dealing with a company that trusts its customers more than LSI does [did.) As you now have responsibility of 6.3, here's the obvious question: Did the "hardware lock" protection ever really exist, and if so, is it going to remain in place? Naturally, I can understand if you cannot comment before the transition of 6.3 from LSI to you takes place, but perhaps a mention in TMQ, if that's the case? I'm really curious...

Your ad for the XLR8er makes no mention of H.I. Tech. Do they still exist? (Mine is on the fritz and needs fixing.) If so, are you their main distributor now? If they have left, who is now in charge of repairs?

One of my on-going projects is disassembling LS-DOS 6.3 into EDAS source code (for my own use only), with help from "*THE SOURCE*". (This is what made me skeptical about the "hardware lock" that LSI claims exists, as my disassemblies of LOWCORE and SYSRES show absolutely no evidence of it, other than the Serial and customer service numbers and the checking routine in SYS3.) In trying to take PATCH/CMD apart, I noticed a nice chunk of pages missing from Volume 3; guess where the pages were located! Is this true of ALL copies of Volume 3, or did I just get a bad copy? (I bought my current set from you a few years ago.)

I have read so much about MC that I have decided to purchase it, for that and other reasons. However, I do have one small question: How close is it to the proposed ANSI 1988 standard for C? (This was prompted by my purchase of K&R's "The C Programming Language, Second Edition", which has been changed to reflect the changes in the proposed ANSI C.)

To help expedite a speedy response. I have enclosed an SASE. I thank you in advance, and look forward to your reply.

**Fm MISOSYS, Inc:** Martin, It sure didn't take long for the question about LSDOS 6.3's "hardware lock" to get asked. I was expecting it sometime, but you didn't waste any time. I would prefer not to address that issue yet in a private letter. I do think I will cover that topic in a future issue of TMQ (or TMR, which may be its new name). That's the best place for the topic. Let me get organized here first.

H.I.Tech is still in business as a company. They just have no involvement in selling the XLR8er board. Due to the fourfold price increase in RAM chips, it was no longer attractive for them to continue the sale of the board. We wanted to keep it alive, so we arranged to take over all distribution of the board. However, until further notice, if you purchased your board through them, then you need to deal with them for repair. I'm not sure that boards will be repaired; they are currently wrangling that point with the manufacturer (the actual fabrication and assembly was done by yet another company). The outcome may be that if the problem is other than plug-in chips, the board will be scrapped and the plug-in chips transferred to a new board. I really don't know what the cost of that will be.

THE SOURCE omitted nothing except that which was stated as being omitted (BASIC, hard disk drivers, etc.). If your Volume III was missing pages covering PATCH/CMD, that was just that particular copy. Let me know what pages you are missing and I will get replacements to you. No one here is trying to hide anything.

Now the "closeness" of MC to the proposed ANSI C can't be answered because that's a subjective topic. Also, the ANSI C has not been finalized. Some things which MC does not have (nor will it ever) is function prototyping, "const" storage assignment, "volatile" specifier, and anything which has to do with hierarchical directories. I'm sure there are other differences. But you'll find MC quite complete in its library implementation.

**Fm Martin Pollard** [September 20, 1988]: Roy, Thanks for the prompt response (your letter of 06/02/88) to my earlier correspondence. I'm sorry I couldn't be as prompt, but other things forced my attention elsewhere; I am sure you can understand that, with LS-DOS 6.3 support and a third child to take care of (congratulations, by the way!).

First off, TMQ. I do have some things I am working on — or have already finished — for TMQ. They are BANKRES/CMD (same concept as ALTRES but can load to any bank between 1-127), VDISK/DCT (an enhanced RAM disk driver that works through @EXMEM and allows very flexible configuration), and patches to LS-DOS 6.3 to integrate XLR8er support (eliminating the need for FIXALL and FIXBANK or HIBANKS, plus adding your @MUL8/@MUL16 patches and a few other goodies). Also, I can understand you being a bit rushed to get TMQ out the door, but the perfect binding on TMQ III.i fell a little short of being "perfect", as the glue is giving out and pages are falling out! Do not get the impression that this is a "flame"; I'd just like to know if things really were that rushed in June/July/August. Finally, you mentioned that TMQ may become TMR. What's TMR?

Secondly, I agree with your position regarding LS-DOS 6.3. In fact, I was hoping that you would put your response into TMQ in the first place, for all to see and finally know, one way or another. (Software-wise, there are no changes — other than the enhancements and the serial & customer service numbers checking [which I have no problem with] — that could amount to "hidden code". Plus, given the various disk formats that 6. 3 can be transferred to, hardware checking sounds more and more implausible all the time [and Model 4's are not **that** different from each other!].) I would hate to think that a well-known and respected company such as Logical Systems Incorporated was lying to its customers in its attempt to cut down software piracy and increase their profits. (On the other hand, if it's all true, then LS-DOS 6.3 will go down in history as the first copy-protected microcomputer disk operating system — a dubious honor at best!)

Thirdly, and on your advice, I have sent my XLR8er to H. I. Tech to see if they can do anything with it. Since it has a 1-year warranty, I shouldn't worry too much, right? As soon as I get it back, I'll be testing those XLR8er patches, and I'll send them right off to you.

Fourthly, the missing pages from THE SOURCE Volume III are 271 through 286, detailing pages 2 through 17 of the listing for PATCH/CMD. Frankly, I wasn't sure I would be able to get those pages, since I purchased THE SOURCE so long ago. Also, I knew that the listings for BASIC and HELP were not included — I didn't expect them to be. My question wasn't a flame, or an implication of wrongdoing — simply my out-of-control sense of humor.

Fifthly, I have discovered a tiny bug in @EXMEM. As you know, double buffering is performed through DIRBUF$ at 2300H, which also happens to be the buffer used by @GATRD and @GATWR. The problem popped up when I was testing VDISK/DCT. I could create, read from, and write to the RAM disk, but when I would REMOVE a file, the HIT sector would overwrite the GAT sector! Here' the chain of events: @REMOV reads the GAT sector into DIRBUF$ and the HIT sector into SBUFF$ at 1D00H; the file is removed through the removal process; the HIT and GAT sectors are written back. The trouble is, since @EXMEM is controlling disk I/O (and performing its double-buffering), DIRBUF$ now contains the HIT sector, not the GAT sector. @REMOV does not check for this, but then again, it never had to. I solved this problem (and cut down the chance of similar problems occurring) by modifying @EXMEM to perform double-buffering only if the user's buffer is above 7F00H. (Also, since I tightened up the driver code by moving MOVSTAK to @EXMEM's entry point, the loaded driver is a bit smaller than the previous version, even with the added code!) If you like, I can shoot the source and object files over to you if and when I make another TMQ submission.

Sixthly, I am glad to hear that EDAS will be enhanced with the HD64180 instruction set, in addition to MRAS. EDAS serves my assembly needs just fine, as does M80 for my MC programming. I look forward to reading the announcement of the enhanced EDAS and DSMBLR

in a future TMQ.

Seventhly, my statement about the "closeness" of MC to the proposed ANSI standard for C stemmed from the fact that I have the second edition of K&R, and whenever K&R is referenced I usually had to hunt all over that darn book to find the reference. (I have since purchased the original K&R, so all is well.) You are right, though; MC is very complete, and I understand your position about enhancing MC — and most of your other TRS-80 software — any further.

Lastly, I would definitely like to have advance notice of your TRS-80 hard drive package; it sounds like something I would sell my Tandy unit for! However, I agree with Gary Lee Phillips (TMQ III.i) in hoping you will design the unit with a write protect switch. It's one of those things I'll miss when I switch to an MS-DOS machine; you can't imagine how handy that little red button is during program development!

Sorry to ramble on so long, but since I don't have CompuServe (yet), I am trying to fit in as much as I can at one time. I have enclosed an SASE, in case you wish to reply during your copious free time <ha ha>. You my also print this and your reply in a future TMQ, if you wish.

P.S. If you haven't seen it yet (and that's doubtful), I whole-heartedly recommend 'Who Framed Roger Rabbit" as good, clean (for the most part) movie entertainment for you and your family. No time, you say? Well, darn it, take a few hours off, turn on the answering machine, and go see this movie with your family... you deserve it!

**Fm MISOSYS, Inc**: Well you certainly sound like you have been busy. By now you're aware of the overlapping contributions from Michel Houde in the area of the XLR8er patches, but your BANKRES is certainly new; there are many TMQ readers who could profit from that.

When I comment on "rushing TMQ", I'm not talking about the printing. I certainly do not do that in-house. I utilize a large printing company. The printing, collating, and binding is all an automated process. Perhaps the glue machine had a momentary clog. And I was considering a new name for TMQ. The "TMR" logo was an acronym for "The MISOSYS Record". Now here's the big IF. If TMQ were to go to a bi-monthly publication cycle, the name *THE MISOSYS QUARTERLY* would be in conflict. So we were thinking in advance for a new name.

As you see, I have decided to publish your previous letter, sans the product order, to address your second issue. The point I have to make is that MISOSYS does not OWN the LS-DOS 6.3 product; we have obtained the right to distribute and service the DOS. We can also make changes, read as enhancements. But it would be inappropriate for me to comment on the issue you have requested. Suffice it to say that the DOS is protected by Copyright. Also, the first DOS to my knowledge that did have a sophisticated embedded backup protection scheme was VTOS 3.0 developed by Randy Cook. That scheme was, in my estimation, the only reason VTOS 3.0 did not become the dominant DOS of its day; the scheme turned off too many folks, even though it was eventually broken. That's why I would never imbed any kind of protection scheme in my software; it makes it too cumbersome for the legitimate owner.

As far as the XLR8er goes, I am currently negotiating with them for manufacturing of the final 100 boards. If, and when, that comes to fruition, MISOSYS would then be the source for board repair. But I will probably not know if and when for a few more months.

If we manufacture a defective product, we make it right. I'll get those pages missing from *THE SOURCE* to you. I've done it before even with folks who bought the books from LSI.

I am aware of the bug in @EXMEM when it is used as the I/O driver for a RAMDISK driver; Michel pointed that out to me. I just haven't had the time yet to go back to that code. Since you have, why not just pop a disk back to me and I'll get it into the next TMQ.

I had hoped I would have gotten around to the EDAS source to insert the 64180 assembly code by now, but it hasn't happened. I even haven't finished up MLINK, so the revised MRAS is not yet complete. We just have too many irons in the fire. But I'll be getting to that one day.

As far as the hard drive project goes, I expect to have some important news in The Blurb which gets written later, but I can comment on a write protect switch here. It won't happen. In order to be able to keep the price below $500, I have to use off the shelf components. I also have to ensure that they are directly re-usable in a PC-clone. The modifications to the drive, controller, and host adaptor required to accomplish the write protect switch, as well as the chassis modifications needed to incorporate a switch into the front panel of the case, render such a feature as too costly. Don't forget that SYSTEM (DRIVE=2,WP) exists in software to provide the write protect operation. And if you want to be able to easily write protect the entire drive, I could easily add another software write-protect facility in the driver, alterable only via a utility command, to guard against programs under test which may twiddle the DCT's software write protect bit. That should be sufficient.

By the way, I haven't seemed Roger Rabbit yet, but I did take Stacey and Stefanie to see *The Land Before Time* (excellent movie), and my in-laws took them to see *Lady and the Tramp*.

**Fm Gordon Collins**: Roy, Having now purchased a hard disk drive, and catching up on some reading to be able to use it fully, I have seen comments that this could be booted directly, by holding down a function key on resetting when using a Model 4P prior to LS-DOS 6.3. What has happened with LS-DOS 6.3 that this will now not work and is it possible for that function to be reinstated?

I recently purchased an XLR8er board from MISOSYS through a third party, for use on a gate array Model 4P. Are all the XLR8er boards the same please? If not, which board can be used where? I ask this as I am now contemplating taking the board from the 4P, to be used on a Model 4 Gate array machine. Again acceptable to read answers to this only in TMQ.

I note in TMQ II.iv, page 5, under Market Research, you have requested response of interest in hard drives. Roy, my feeling is that to import these to the U.K. would make the price prohibitive. As a general rule we just change the Dollar sign for a Pound sign on any printed price. Import duties, delivery charges and Value Added Tax all push the price up. But, what I do write to ask, as Editor of NATGUG News, is that NATGUG to have some details of construction, and to be able to obtain parts in the U.K., Misosys supplying those parts which may not be obtainable in the U.K. I have to leave details on parts open to yourself, as I do not know what is entailed. Could you please let me have parts required and prices. I appreciate that your first thoughts may be that we are trying to cut Misosys out of earning the full amount of profit on each unit, but as I know the imported price is going to be far to high, I am making the above suggestion so that at least Misosys has the opportunity of making some extra profit for all the work carried out.

**Fm MISOSYS, Inc**: There is nothing official from LSI concerning booting LSDOS directly from a hard drive on the Model 4P. According to LSI, they were willing to implement the boot changes for Tandy, but were unable to reach agreement on the price. The 4P is different from other Model 4s as its BOOT ROM has provisions for reading the boot sector off of a hard drive. I recollect that Bob Snapp once posted a message on CompuServe as to how to adapt the 4Ps BOOT ROM into the Model 4 (which would then negate Model III operation). Also, one of our forum sections has the details on patching the BOOT/SYS file to accomplish that. But that kind of patching was probably release dependent. Since I never looked at the posted file, I really don't know. Someone else reading my response can probably comment on that. Also make note to read The Blurb; I have (will) included a note a revised ROMC available for the Model 4.

All XLR8er boards are the same regardless of intended target machine installation. The thing which is different is the mounting arrangement. That then determines the length of interconnecting cable and whether a replacement shield is provided.

I have published in TMQ 3.1 and 3.2 the list of piece parts available for a hard drive assembly. As soon as I can determine the availability of the host adaptor, I will provide pricing for that.

**Fm Jeff Joseph**: Roy, I'm very pleased with the revised docs for the XLR8er. Sure beats the daylights out of the original HI Tech docs. If only all your products came documented in this format...

I hadn't heard of your hard drive project until I got TMQ 3.1. Just letting you know I'd be first in line to buy one or two IF I could stuff it inside my 4Ds.

If any of your other readers are looking for ideas for new LSDOS hacking projects, I have two that are beyond my programming capabilities:

(1) A DoubleDuty-like program that is capable of using multiple banks of the XLR8er. As a bonus it might even use less high memory than DoubleDuty. (Am I dreaming or what?)

(2) A new HELP/CMD that runs in the library overlay region. Such a HELP could be invoked inside an application via PROWAM. I get by for now by using DoubleDuty to do this, but it takes up highmem and an entire external bank of RAM. Using the overlay region seems a more elegant approach, if it would fit the bank?).

## *Update on Model I LDOS 5.3*

**Fm T. J. Hodges**: Roy: Please change my address in your files. I am moving to a new home in mid-December 1988. My new address is:

T. J. Hodges
6204 Erman Court
Burke, VA 22015

For your information I've included my current address label.

I am the person that wrote to you about Model 1 modifications for LDOS 5.3. To date I have received about two dozen requests for my FIX files. Since I am moving I would appreciate it if you would put my address in the next issue of TMQ. Only the people I've dealt with recently are aware of the address change.

I didn't realize that international mail is so slow. The most recent inquiries came from Europe and Australia. Their letters were dated just a week before I received them but each person said he just read the Spring issue of TMQ where my letter appeared.

The deal that I have offered model 1 owners is that they must send a disk and return postage with a mailer to receive a copy of the patches. Alternatively, they can send $10, and I will supply the disk. mailer and postage within the USA. Naturally a combination of both alternatives is welcome. In order to use the patches they need copies of LDOS 5.3 (Model 3), LDOS 5.1.4 (Model 1) and SOLE.

Another way to get the FIX files for LDOS 5.3 is to log on to one of the bulletin boards that carries TRS-LINK magazine. The patches are contained in the August and September issues.

During my recent home search I looked around Sterling among other places for a new home. I was impressed with the neighborhoods and people that I met. It must be a wonderful place to live. Unfortunately, I could not find a home, within my price range, that would accommodate my family of eight.

## *On ANSI (and other) bugs*

Charles A. Ainsworth
P. 0. Box 2107
Woodbridge, VA. 22193

Dear Roy, I read, with boundless pleasure and the deepest interest, Joe's and Jim's sage dissertation on computeristic entomology in TMQ III.ii, pages 40 and 41, which greatly enriched my vast and widely-acclaimed programming expertise. I had often wondered about the taxonomic classification of those nasty pests. The illustrations, prepared so painstakingly, are of great value to the serious researcher, and the artists are most worthy of commendation.

However, I note that Joe, probably due to an involuntary oversight, employed an expression sometimes used by the non-programming hoi polloi but seldom if ever by the wizards (who eschew plebeian language), by stating the number of a specimen's legs in a quaint and mostly forgotten numbering system, referred to in ancient scrolls as "decimal". I beg leave to suggest that Joe's statement "No go, bugs gotta have six legs", would have been more elegant and more in keeping with approved modern usage if stated thus: "No go, bugs gotta have X'06' legs". Now, in all fairness, I must add he did get it correct in the calendar he sent you (same issue, page 11), which, I am informed, you intend to include in PROWAM.

Joe also atoned for his lapse in great measure by describing the species with the fiendishly menacing pincers, so skillfully portrayed by Jim. By a remarkable coincidence, that's precisely the variety that at times sees fit to be my unwelcome visitor, which prompted me to pore and ponder many long hours deep into the night over entomological treatises, in order to learn more. My main source of reference was the famous work by the noted Dr. Gofly Akite, Professor Emeritus, Summa cum Laude, of the university of Getl Ost, Krankistan.

I located the species under the nomenclatural denomination (in Latin, as is usual in these disciplines) of "bugus programus terribilis". It is described as having a marked tendency to infest environments abounding in silicon, semiconductors and magnetic oxides; contrary to many present-day biota varieties, it is not an endangered species but proliferates astonishingly well. The description of the jaws impressed me as it agrees substantially with the one proposed by Joe and Jim. It is further stated that this creature's formidable mandibular configuration enables it to inflict most painful, virulent and toxic bytes.

I could not refrain from smiling weakly, sadly and wanly at a footnote added by Dr. Akite:

*As the program is test run, the "bugus programus"*
*Becomes alarmingly busy,*
*Like a torrent it rushes, rampages and gushes*
*At a pace that makes everyone dizzy!*

Still according to the treatise, many efforts have been made to extirpate this pest, and some workers, in sheer despair, have even attempted with varying measures of success, to exorcise it with spells of magic, one of which is known as DEBUG, but which requires elaborate incantations in arcane languages, thus necessitating assiduous and arduous efforts to conjure up. Perhaps the Sorcerer's Apprentice at the NATGUG wizards' meeting place, TMQ III.ii, page 64, (the one located in a remote realm beyond parsecs of Atlantic billows) may pity us and care to contribute some helpful and valuable assistance, or even perhaps plead imploringly on our behalf with the great and powerful Sorcerer himself for potions, spells, charms, talismans, amulets or other forms of potent magic to rid long-suffering programmers of such an obnoxious scourge.

## Words from Michel Houdé

**Fm Michel Houdé**: Dear Roy, I was very proud to see my name printed so many times in the latest TMQ. I am really pleased to know that I have been able to bring help to a few people.
As you probably already know, there are two errors in the XLBOOTA/FIX patch as printed page 80. As it is mandatory to use (O=N) when applying the patch, I did not notice it. The "find" lines were included as documentation, and are not necessary. The origin of the error is the offset between sector numbering and memory pages, as I mentioned, I used FED/APP to generate hex pairs.

Now I would like to make things clear about French arithmetics: 512 divided by 32 equals 16, not 8 as I wrote page 78, 2nd column, 2nd paragraph. I actually meant 256 divided by 32 equals 8, as everyone guessed.

I must confess that there is a minor cosmetic bug in ERAMDISK. When optional parameter (VERIFY) is invoked, and a memory error is found, ERAMDISK, like MEMDISK, displays a message: "Verify error in bank n at location x'nnnn'. Well, I only allowed one character for the faulty bank number. Which means that banks 10 and up will be signaled as bank : ; < = > ? @ A B C ... The idea of displaying this message was taken from MEMDISK. Although the verify function is handled rather differently, some portions of code are identical, because there aren't so many ways to perform some elementary jobs. In the process of developing the program, I became aware of the need to use 2 characters, but then forgot about it, as it was not very important. If really needed, there is a 50 bytes patch area, starting at X'35FD'. The VERIFY parameter is intended as a rough checking, not a comprehensive memory diagnostic program.

Now the final words. The package I sent you last September was my last contribution to the TRS-8O world. In October '88, I bought an AT compatible Singapore clone. No TRS-80 word processor can do what Microsoft's WORD 4 does! I am currently writing a thesis in Chemical Engineering and I really appreciate the outliner capabilities of Word, and style sheets, and Table of Contents building and so on...

The subject is: "Design and operation of a three-phase fluidizised bed reactor. Application to the synthesis of organometallic reagents." I hope to be a Docteur (something equivalent to your Ph.D.) before my 42th anniversary (i.e. before the 10th of October, 1989).

One last favour: I know you could not know it, because I never told you, but my name is actually spelled with an **é** as the last letter. I used to always type my name in capital letters, to avoid the problem of the acute accent, which looks so strange to English speaking people. But now, thanks to IBM character set #2, I can spell my name correctly. For those interested, the pronunciation of "Michel Houde" is something like: **mee shell u day.** The letter **H** is not pronounced, the pair **OU** is pronounced like an American **U**, not like a British **U** (i.e. no diphthongization), and the letter **I** is like your **E** (remember the Beatles' song, Michelle?).

# DOS Subjects

## LDOS and LSDOS Topics

### System Library File's extents

**Fm Patricia Mansfield:** I upgraded to LDOS 5.3 in June when my students had left school for the summer and thought I had had a successful upgrade. I only have a 5 Meg disk so I used your built in JCL and all went smoothly. I have a network 3 system and can boot up all my stations, load and save Pascal, BASIC, programs get directories, etc. The HOST, on the other hand, is going crazy when you use it as a standalone. I can load and run Pascal and BASIC programs from the host, but the DOS programs aren't working. This is what is happening.

DIR is OK. LIST either locks up the system or gives a scrambled directory. COPY does the same as LIST. I have to use BACKUP to copy files - some of the files I tried to copy are old files, others are newly created with 5.3. KILL is OK. PURGE is OK. FORMAT is OK. CONV is OK.

I don't use a lot of utilities, so I don't know if there are any other problems. I guess the main question I have is about COPY and LIST.

Could these two programs be bad on the source disk? Please advise me as to what you think I should do.

**Fm MISOSYS, Inc:** Sounds like one of the library files went to more than two extents. For the files SYS6/SYS and SYS7/SYS, the column heading "DE" must be either a "1" or a "2". If "3" or higher, then PURGE the "bad" file and re-copy it from the floppy. Use the BACKUP command for that. Then recheck the number of extents taken up by the library file. If still more than "2", then it may be necessary to back up all the files from that drive partition, re-format the partition, move the DOS back onto the partition, then restore all of the files.

### Date not current?

**Fm Lloyd Evans, MCTRUG Pres.** I have just became the librarian for the clubs I,III,4 library and am having some trouble with 6.3's Backup by class function. If bit 4 in Dir+1 gets set certain Backup commands will not find it. BACKUP filename/ext:s :d will not work nor will any backup command other than a mirror image backup. 5.3 does work as expected.

Both tech manuals say that a + sign should be in the date field of the Dir if this bit is set. This was true for 5.1.4 but not 5.3. As far as I can tell TRSDOS 6.x.x has never used the + sign in the date field.

One of our club members has written a short basic program to check this bit, reset it, and date the file with the current date if necessary. He is using a SVC in a packed string for a dir write and it works fine. I have found no other way of turning this bit off other than killing the file and rewriting it.

I will be able to find the affected files with 5.1.4 and correct them with the basic program but it would be a lot nicer if the + sign in the dir worked. If there is a simple way to do this, please let me know.

If 6.4 and 5.4 ever see the light of day this is my wish list for new features. (1) Make the "+" sign work. (2) Add a REDATE library command to redate and flip the bit. It should work on disk level as well as by files. (3) Add UNKILL as a library command. (4) Add the LIST scroll - no scroll to Mod 4. (5) Add a SYSTEM (SWAP) for the Mod 4

Thank you for two fine DOS's and keep up the good work. I can't help but wonder how good they would have been if TANDY had turned you loose to do as you saw fit.

**Fm MISOSYS, Inc:** Lloyd, the problem you stumbled into concerning bit 4 of DIR+1 has nothing to do with its use as a flag for indicating the "date is not current". Under LDOS, that bit behaved as you described. When LS-DOS 6.0 was developed, the "date not current" function was considered un-necessary. There was also a need to integrate into the DOS some form of modest file copy protection; it was a need which originated from software contracts Tandy had with some of their suppliers. Remember that TRSDOS 1.3 had a limited form of BACKUP protection for selected products. That was not because of Tandy's requirements, but of the restrictions placed by the suppliers. Thus, if "limited BACKUP" programs were to be ported to DOS 6, the DOS had to have some kind of limited BACKUP protection.

Since DOS 6 supports hard drives and various sized floppy media, and LSI refused to inhibit the COPYing of "limited BACKUP" files to various media, DOS 6 integrates a file COPY protection limited to permitting the COPY of "protected" files, but not the mass duplication provided by BACKUP . The DIR+1 bit is associated with the file protection. It indicates that the particular file so flagged should not be BACKED up, but can be COPY'd along with its protection status. Other parts of a diskette indicate the level of BACKUP permitted on a mirror-image duplication. To my knowledge, only certain suppliers of Tandy-marketed software used the file protection facility. At this point in time, I see no harm in disclosing this information.

Incidentally, I don't intend to promulgate any rumor of further DOS enhancements. Although some folks are interested in additional features, the level of complications associated with a DOS upgrade impact considerably on my temperament and render such a venture too costly. You want an "UNKILL"? It's available as an "UNREMOVE" in our GO:MTC package. A paged LIST is available in this TMQ issue. A SWAP is available in

GO:SYS, along with quite a few DOS enhancements.

## *Memory Bank switching*

**Fm Peter Van Caeseele:** I read in one of Hardin Brothers' articles that an unpatched version of TRSDOS/LSDOS can support up to 7 banks of memory. Can you elaborate on this? I installed the 256K upgrade published in 80 Micro and it works without a hitch. The only real thing I use it for is a ramdisk.

I am writing a hi-res graphics editor for my hires board and epson compatible and would like to use the additional banks as storage. I can access all the banks myself but would like to do it through DOS as well.

I'm also stumped on how to take a DIRectory in TRSDOS 1.3 and copy it into a ram buffer. I typed in a program from 80 Micro and it didn't work (isn't that surprising). The program used a RST 28H (in TRSDOS 1.3) to copy the directory to a buffer. Unfortunately, my computer crashes when it gets to that instruction.

**Fm Joe Kyle-DiPietropaolo:** Peter, TRSDOS 6 supports mapping of lots of additional ram, but the built-in @BANK code doesn't know how your particular modification works. You'll need to write your own version of @BANK. A copy of *The Source* would be invaluable for this, as it contains the complete commented source code to the current version of @BANK, along with almost all the rest of TRSDOS 6.2 for the Model 4. You can get a copy from MISOSYS (703) 450-4181. Cheap at twice the current price, and a lot of copies were sold at a lot more than the current asking price. Give them a call to find out the current bargain price for more than eleven hundred pages of beautifully detailed and commented source code.

**Fm Peter Van Caeseele:** I have written an @BANK patch to access the extra memory on the 80 Micro Memory board (256K via port 0). All the tests that I have run pass but I am unable to use any bank higher than 2 (standard in 128K) for the DOS spooler. According to *"The Source"* the spooler will support up to bank 7 as is. Does anyone have the technical knowledge to debug the software or have any ideas why it doesn't work. I have tested all the @BANK functions with my patch and they all work properly. The spooler installs properly, but leaves the bank requested to spool to resident on exit, causing havoc with the high resident interrupt routines.

**Fm Shane Dawalt:** Peter, Residency of the interrupt routines in bank 0 is governed not by what bank is selected, but, by the interrupt processor or system driver code. Whenever these pieces of the DOS are executed, bank 0 is automatically enabled. After interrupt processing and/or driver execution has concluded, the system restores the original bank being accessed. Didn't the 80 Micro article say that RAM upgrade was to be used for storage only and not to be executed in? The spooler stores code in the bank it occupies and runs that code when needed. (There was a thread about this a while back. Unlike your problem, the person had placed new RAMs in the 2nd bank on the motherboard. Even though he could run MEMDISK and such, he couldn't run the spooler. It was traced down to the spooler running code in those banks. A PAL chip which distributes the critical timing signals to the RAMs couldn't handle the CPU timing during op-code fetches.)

**Fm MISOSYS, Inc:** Peter, You probably haven't interfaced your memory board with the interrupt handler and the ENADIS_VIDEORAM routine. The DOS has to do its own hardware memory management at three points in the system. If you only patched into @BANK, then your patch is not complete. Best you check out the code in either my AT patches (old TMQ), or Michel Houde's patches for the XLR8er board. His ASM file in DISK NOTES 3.2 is fully commented.

## *Wrong Disk Timeout*

**Fm Theodore Masterton:** Just got betrayed by my trusty 4p and favorite DOS! I was working on a very last minute funding request for my agency, put on the last touches, grabbed a disk and pushed it into drive 1, and tried to save my report. Must be that the darn disk was formatted MSDOS instead of TRSDOS. I got a lot of M-word disks around these days. Anyway, drive 1 spun and spun and sweat beaded up on my brow. I snapped open the drive door to try to get a LSDOS disk in the drive; no luck. It timed out, and I could not get the machine to do anything. At last, I just turned it off and then home. The request went in late. The new Unix/80386 multi-user system may be nought but a fleeting fantasy.

This is something I have lived with before; the problem has never by so dramatic in effect. What happened? What should I have done to assure that no lock-up occurred? Is this perhaps a patchable problem?

**Fm MISOSYS, Inc:** MS-DOS disks use 512-byte sectors. The LS-DOS disk driver is designed to not time out on an{ything past 256-byte sectors. The system would generally crash anyway if it did read it since the 256-byte buffer would be overwritten. Your best bet would be to make sure all of your disks are labeled. As another method, consider using a particular COLOR of diskette for one environment. That's a good reason to consider Centa Technology diskettes in a rainbow of colors available.

**Fm Joe Kyle-DiPietropaolo:** Theodore, What you did wrong is to yank the disk out. If you have left it, you would have eventually gotten control back with a disk error.

**Fm Shane Dawalt:** Theodore, Sometimes, the floppy disk controller chip gets screwed up by certain patterns on the disk. So it hangs. One thing that usually works for me is the following:

(1) Pull the offending disk out. (2) Wait for drive to stop running. (3) Insert known good disk formatted in appropriate OS format. (4) Press SHIFT-BREAK to restart the disk motors.

If the system hasn't crashed, the motors will turn on, the FDC will see something it can use and disk I/O will occur soon after.

**Fm Theodore Masterton:** Joe, Thanks. Ever since that 80286 moved into my life I have become so darn impatient.

**Fm Shane Dawalt**: Roy, I thought the disk buffer was page addressed, i.e., modulo 256? It couldn't possibly overflow.

**Fm MISOSYS, Inc**: On page 48 of "*The SOURCE, Volume I*", I see an INI operation. That increments the HL register pair. Note that an I/O buffer need not be on a page boundary, but on any contiguous 256 bytes.

For most programming, it is better to origin an I/O buffer on a page boundary since buffers are 256-bytes in length and indexing into a buffer can be more easily (read that shorter code implying faster) done when it is on a page boundary. If you look at that code, you will see that the disk driver reads 256 bytes then loops until the FDC busy bit is dropped. But busy doesn't drop if the sector size is greater than 256. If the driver made use of the NMI available on motor timeout, then it would be able to recover. If the driver always read a track's sector header before reading a sector, then it could determine that the sector size was wrong and pass back an error code. All of that coding takes space.

LS-DOS (and earlier TRSDOS 6) was not designed to be terribly flexible in reading different media other than what it was designed for. That's why it's important in a mixed machine environment to readily label your disks.

**Fm Shane Dawalt**: Joe, Not all the time (he says ducking). I've found floppies with "garbage" on them that the M4 cannot break out of. It just sets and stares at the disk with great patients. I've let it mull it over for at least a minute before screaming. Somewhere I read that the FDC will sometimes encounter codes on the disk which causes the FDC to loose it (go nuts if you will). It won't return.

I've found that yanking the disk and placing a correctly formatted disk in then pressing <SHIFT><BREAK> will get the system back up correctly. This has occurred with MSDOS disks too. (When I let MSDOS disks get mixed in with M4 disks. What a mess that was.)

**Fm Shane Dawalt**: Roy, Oh geez. You make me feel like dirt. I didn't expect you to run to "*The Source*". Gee, I could have done that too if I dig deep enough. I was speaking from memory. I do remember that buffers may be anywhere. I was speaking of the system loading buffer however. OTOH, INI can only load 256 bytes anyway (as you pointed out).

My reasoning for saying <SHIFT><BREAK> would work is this: If the FDC gets confused, it will simply set and stare. It's looking for a specific code or pattern of codes. After pulling a disk while the drive is selected, the FDC still sets there and stares. If you place a format which the FDC recognizes and press the <SHIFT><BREAK> to start the motors running again, the FDC will see patterns it recognizes, return something or simply reset it's busy signal and allow the system to continue with what it was doing.

If an error occurs, LSDOS normally retries the operation. If not, the application will attempt to recover. (Or LSDOS will print an error message on the screen after the command line entry.) Either way, the system will return. What happens after that depends on what error is returned by the FDC and/or DOS.

**Fm MISOSYS, Inc**: Actually Shane, INI only reads ONE byte. It depends on the surrounding code as to how many bytes are going to be read. If the INI instruction is repeated, then the number of times it is repeated will equal the number of bytes read. In the FDC driver, it is looped via a DJNZ instruction. The B register was initially zero, therefore, that results in a repetition of 256 INIs; thus, only 256 bytes are read. Another routine which loops the INI until data transfer is complete would read as many bytes as were in the sector. Now depending on how things time out, would depend on whether SHIFT-BREAK would be able to recover. It can't always.

**Fm Joe Kyle-DiPietropaolo**: Shane, In most of the cases that I've run into, if the FDC and disk driver get so confused as to let the drive time out before returning an error, then <shift><break> won't bring it back either.

In any case, yanking the disk while it is still selected is generally going to get you nowhere, you are right that if you are going to try swapping, you should generally wait until the drive times out.

**Fm Shane Dawalt**: Roy, Yeah, INI does read only one byte. So sorry. INI loads location HL with an input from the port defined by reg C. Then HL is automatically incremented and B is decremented. When B hits zero,zero, the Z flag is set. Now ... let me find "The Source" so I won't sound like such an egghead.

I found it and I (humbly) disagree with ya Roy. Certainly, INI will read B bytes from the media. The read loop then falls through to the code which tests the BUSY status until BUSY becomes inactive. If the motor times out, everything hangs up. No extra code is read in. In the worst case, the motor will simply time out. In the 'best case', BUSY will be released before a time out and the error detection code will test the FDC which should have the "DATA LOST" error set as the last 256 bytes of an MSDOS sector were never read. These 256 bytes were being read by the FDC during the time the busy code was looping waiting on the BUSY flag to become inactive.

If the motor did time out before BUSY became inactive, <SHIFT><BREAK> should work correctly. The only three cases where it wouldn't restart the drive motors would be if the interrupts were disabled prior to disk I/O or if the SELECT or <SHIFT><BREAK> code segments were corrupted by some external force or if there is a hardware problem with the FDC itself. Barring those three cases, <SHIFT><BREAK> should always recover. Whether an error is reported or not is dependent on the state of the system at the time.

**Fm Joe Kyle-DiPietropaolo**: Shane, note that the interrupts are always off after the second byte has been transferred. Without looking at *The Source* (a bargain at the current price of $40. Anyone at all vaguely interested in this thread who doesn't already have it should get it.), I don't recall exactly when they get turned back on, but I seem to recall that was one of the things you had to remember about disk I/O - even if you have interrupts off, calling the disk driver with a successful result will

always return with interrupts on.

**Fm Shane Dawalt**: Joe, you're absolutely right (he says as reaching for his copy of *The Source*). Hmmm. Well then how does <SHIFT><BREAK> work then? I placed a MSDOS formatted disk in my M4. I requested a directory. I heard the head be moved to the alleged directory track then moved back to track 0 and back to the directory track (which was a reseek from track 00). Finally, I heard the head go back to track 00 which should have been LSDOS attempting to read the boot sector for the directory track info. That's where everything hung up. Do you suppose it never actually GOT to the sector read in code. Perhaps the FDC got stuck when it was searching for track 00? I don't see any interrupt disable commands in the track seeker in The Source. Then again, this is also a wild hair too.

**Fm Joe Kyle-DiPietropaolo**: Shane, The interrupts are not turned back on until the FDC goes not busy. If the FDC always stays busy, you're stuck. WD says that we'll get a "lost data" bit set when we don't get the 257th byte, but doesn't explicitly say when busy gets cleared.

**Fm Shane Dawalt**: Joe, It's been a while since I read the WD specs (and even longer since I played with that data), but it seemed when error info was gathered, the FDC automatically released BUSY to notify the external processor it was finished so the processor could test the error bits.

**Fm MISOSYS, Inc**: Another point to be made, Shane, is that the floppy disk driver does NOT count down its retries on lost data errors because it assumes they are experienced due to interrupted data transfer before the DI is processed. So if you try to read that MS-DOS 512-byte sector, the driver will experience infinite retry. Thus, even if it is possible that the data transfer READ request is completed (by the lost data error and drop of the busy bit), the disk driver will just blindly go and issue that same read request again. There is no way to recover from that.

If this is a problem with you, what you can do is alter the disk driver to not timeout on lost data errors. But you best not have drives too closely aligned to 300 rpm or you will be subject to a great deal of lost data errors. Perhaps in that case, turning SMOOTH on would be the salvation.

I still think the best overall solution is to color code your disks from "alien" systems to avoid mixing them in with your Model 4 disks. Then you can get the best performance from your DOS. If you want it to be fail safe against all alien media, then it will take a larger floppy driver (less available user space), and a slower overall system.

As a for instance, if the floppy driver always tested the media by issuing a "read header" FDC function, it could then check the sector header data read to ensure that the sector size was 256 bytes.

## *Convert 4 to 3*

**Fm Dayton Sumner**: The documentation that came with my Model 4-D told how Trs-Dos 6.2 could convert a Mod 4 file to Mod 3 by formatting a 35-track pseudo Mod 1 disk and then using the Mod 3 CONVERT utility to translate it. I've been trying to do that with a couple of files written in Mod 4 Superscripsit. But when I try the conversion the Mod 3 reports: filespec NOT CONVERTED (Protected File). I've tried to remove protection or passwords with ATTRIB. But, so far, no luck? Who wants to tell me what I'm doing wrong?

**Fm Joe Kyle-DiPietropaolo**: Dayton, I answered this over on PCS-21, but for everyone else, the problem is that Model 3 TRSDOS 1.3's CONVERT utility is mistaking the extended dating for a password. Just go ahead and format the 35 track disk under TRSDOS 6.2, that will make an "old format" disk to which you should be able to copy the file and do the conversion.

**Fm Dayton Sumner**: Joe, Worked like a charm! Thanks. The reason I wanted to do it was so I could use my Mod 3 Proofread Dictionary to check the text. If any one else wants to move a Superscripsit file To or FROM either Mod 3 or Mod 4, you have to correct the print driver spec. Otherwise Scripsit can't find the file.

## *DEBUG print to file*

**Fm Adam Rubin**: Roy, I ought to mention it. I had *PR routed to a file, and was using DEBUG (E) option. When it came time to allocate more disk space to the file, the system crashed rather violently.

A bit of digging disclosed that when disk space needs to be allocated, the system reads the GAT into x'2300', which clobbers the tail end of SYS5. I suppose the best work-around would be to pre-allocate the file (as with LDOS), or avoid sending DEBUG's output to a disk file. As no one else seems to have run into this so far, I don't think it's worth worrying about.

**Fm MISOSYS, Inc**: There are a few problems in dynamic allocation of space when things are routed to a disk file and the file needs to grow. You came upon one of them. Try generating an error message while you have an active job log and the message just happens to traverse a granule boundary causing the job log file to grow. I'm not worrying about it. The solution is to add a few more I/O buffers. But who wants to lose 256 bytes of memory for each additional file buffer needed? I sure don't.

**Fm Adam Rubin**: Roy, your example with *JL and an error message at a granule boundary also caused strange results, but I agree it's not worth losing 256 bytes for such relatively rare occurrences. I was just a bit surprised to run into this problem, though, as I thought all the problems with dynamic file allocation had been solved when 5.x's SYS8 was moved into 6.x's resident OS. Shows you what I know about operating systems, I guess.

**Fm MISOSYS, Inc**: Adam, That's why you need ZSHELL for redirection. It adds its own file buffers.

## *Hard Drive Got Slow*

**Fm Theodore Masterton**: Several months ago I was having trouble with my reconstituted 15 meg Tandy Hard Drive. Several people here were very helpful. Finally, I took the unit into the local Tandy shop. Service took it apart, diagnosed the problem as terminal and/or hideously

expensive, and screwed it all back together and gave it back to me. It has worked perfectly ever since. My bet is that the folks who gently insisted that the cable connections were the problem were probably right.

Anyway, since then I purchased my 80286 and started a slow and loving migration of applications to MSDOS. I still use the 4p/15meg for about 1/4 of my work. During this transition, I have been noticing not how fast the 80286 was, but how SLOW the 4p seemed to become. For weeks I have been chuckling about Subjective Experience of Performance and Relative Time, until finally last night, I decided the disk access on the 4p/15meg was Just Too Slow. So out with the stopwatch and some floppies.

Sun of a Gun! Using Monte Micro CP/M, several of my favorite applications are taking 10% more time to draw files of floppies than off the Hard Disk! The drive just seems lazy, not a bit erratic, and there are NO errors and no inconsistencies. Just a BEEP BEEP (pausepause-pause-pause) BEEP BEEP etc kind of read.

Any thoughts? Could it be as simple as needing a Defragment? Or is this, again, the Voice of Hardware Doom whispering to me on a cold December Night.

**Fm Bernie Skoch:** Theodore, If it were me, I'd do a reformat and see what happens.

## *Help-DOS error*

**Fm Michael Dauphin:** I Have a 15 meg RS HD hooked up to my 4d. I use Roy's drivers (RSHARDx) for interfacing. The HD is partitioned into 6 drives, one surface per drive - nothing fancy. Sometimes I get the Dos error msg - "Attempted to read system data record." I say "sometimes" , but once I get the error msg, it tends to "stay with me" until I use a different drive spec (:d) or a different filename. A quick look at the free space map showed a directory track on cyl.

```
76: - - - ........ DDDDDDDD ........ —
```

Unless I am wrong. (I usually am {oh-well}) There are eight grans per track. I then looked at a listing of DIR/SYS (list dir/sys:d (hex). The listing showed a GAT value of 01Fh for byte 04Ch. A value of 01Fh would seem to indicate that only the first 5 grans (01Fh = 00011111b) of track 76, the directory track, are locked out. This would lead the OS to try to use those grans for data, resulting in the system data record error. Any thoughts, comments, or suggestions. Thanks - Mike.

**Fm MISOSYS, Inc:** Sounds like something de-allocated those granules. If you have a MAPPER utility (such as is found with our GO:MTC package, check if any file is allocated to that space. If not, set the value to FF with either FED, DEBUG, or some other utility.

## *DIM & Mod 4 BASIC*

**Fm Dave Spiceland:** I'm writing a program to retrieve data from a PROFILE database and manipulate the data. It works with a lot of records (at least 800 at this point) and I'm having problems with the DIMension statement.

The program is written in Model 4 BASIC. I've already DIMensioned two arrays and I need to DIMension at least two more. Halfway in the program I get an "Out of string space" statement. Do I have to free up more memory? Would the CLEAR statement work? Is there anyway to "Un-DIMension" an array? Any help would really be appreciated!

**Fm Daniel L. Srebnick:** Dave, The out of string space message indicates that you do need to reserve more string memory using the clear statement. Even if you dimension string arrays, the space must also be cleared.

**Fm Dave Spiceland:** Daniel, How much room can I or should I clear? I've already got a statement CLEARing 10,000. Is that not enough? Can you CLEAR too much?

**Fm Frank Slinkman:** Dave, I don't think it will allow you to clear more than 32767 bytes anyway. And if that's not enough, perhaps you could set up a RAMDISK file to store the data which would give you 50K+.

**Fm Adam Rubin:** Dave, From Radio Shack's "Disk System Owner's Manual", Appendix E, Item 11: "You do not need to allocate string space with the CLEAR statement."

In Model 4 BASIC, all allowable memory is always available for string space, so an "Out of string space" error means your program and your variables take up more memory than Model 4 BASIC can provide. Here's a few quick suggestions that may help free up some memory:

(1) If you no longer need an array, use the ERASE statement to remove it. See the description of this statement in your "Disk System Owner's Manual".

(2) Don't DIMension your arrays as any larger than they need to be. If you need to store 700 strings, DIM ARRAY$(1000) will just waste memory.

(3) You don't have to DIMension every array in the first line of your program. For example, if line 240 calculates that you will need to store X% strings, line 250 can be DIM Y$(X%). This is especially useful if you can ERASE an old array before using the new array Y$.

I hope these are helpful. If these suggestions don't do the trick, just holler. (Oh, and you'd only need to CLEAR string space if you were using Model III BASIC. Model 4 BASIC and GW-BASIC (MS-DOS) users don't have to worry about such things.)

**Fm Daniel L. Srebnick:** Dave, Disregard my previous statement on CLEARing space. I am still stuck in the models I/III mode. CLEAR in a model 4 environment sets high memory and stack space, according to page 2-74 of the BASIC section in the TRSDOS 6 manual. That CLEAR 10000 should be removed.

**Fm Dave Spiceland:** Adam, Thanks for the ERASE statement. I'd never used it before & is obviously what I need to reallocate memory space. I'll try it!

**Fm Dave Spiceland:** Daniel, Got your note on CLEAR & the Model 4. Takes a bit of re-learning to use Model 4 BASIC.

## *Multiplan recalculation*

**Fm Gary Phillips:** Using Multiplan on a model 4 has generated a couple of questions for me. The program comes up by default with the automatic recalculation option set to YES. Since recalculation can take a lot of time, it's a nuisance to forget to reset this option to NO before loading a spreadsheet to revise a few figures. Has anyone figured out a zap to cause this option to default to NO? (Probably a one byte change, but finding the spot would be the drag.)

Also, with version 1.07 which uses the alternate 64K memory for larger spreadsheets, everything runs much **SLOWER.** Since I don't need that extra space, I use BANKER or turn the spooler on before starting MP to force it to stay in the base 64K of memory. Interestingly enough, I've noticed that even though MP reports that the extra memory is not available, it will put a reserve on any bank that is not in use. It leaves this reserve active even after it exits. Now that qualifies as a <bug> in my opinion. (If allowed to use both banks, then MP does release them when it ends.) If I need those banks later, for use with SAID, for instance, I have to use BANKER to free them up. Anyone else notice this? Maybe I should be using version 1.06 to avoid these problems?

## *Left Margin Printer problems*

Charles A. Ainsworth
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Roy, I am sending you three printouts. Number one is the directory of my distribution XLR8er disk, updated by you recently. Note the dates on this. Looks like someone is going in for time travel! (grin).

Number two is the directory of your distribution disk for GO/MTC. Note that DCT/CMD is missing, although included in the manual. This confirms my phone call some time early December.

Number three is a toughie. It is a printout of the same directory as number two, but which was afflicted by something I have been encountering lately: unexpected and totally erratic margin changes in printout. I get this on a model 4D under LSDOS 6.3 equipped with an XLR8er board. Incidentally, this is similar to the problem described in my writeup "The mystery of the meandering margin, or, keep your printer clean and oiled" I sent you with my letter of November 29 last. However, the writeup described the problem caused by a slack printer drive belt, but the attached has nothing to do with that and the problem occurs on two different DMP430 printers which have been tested thoroughly and satisfactorily on other computers and setups.

As you will see from attachment number three, the margin changes suddenly towards the right. It always does this after execution of a carrier return. I don't know whether the character at the beginning of the displaced line, just to the left of "SIP", may have anything to do with it, but it does show the presence of a spurious character generated somewhere. It occurs when printing out from DOS, such as the attached, from BASIC or from ALLWRITE.

I fully realize that this may be quite a toughie to run down to earth. I have thought that perhaps, somewhere, something is getting into RAM that shouldn't be there. For years I have been using a power strip that powers up the computer, my four all-external floppy drives, and the printer. The computer is powered from the strip outlet marked "CPU" and the printer from one marked "Peripherals". I am also wondering whether there may be any possibility of inductive kickbacks between printer and computer at the moment of powering up. After all the "sage" advice in hardware suppliers' manuals, one is left guessing as to just what's right and what's wrong. Many, perhaps Tandy themselves, may tell you to power up peripherals first and then the computer, but then they cheerfully sell a power strip for switching everything on together. Ah, well.

I never had this problem with 4s running in their native 4 MHz mode, but only on 4s equipped with the XLR8er.

My main purpose in writing is to ask you if you know or have heard of such a thing, and if so if you could point me in the right direction. Meanwhile, I am experimenting along the lines of my suspected kickbacks between printer and computer at power up. I plan to do it the following way which has just occurred to me: At power down, leave the printer and drives on, cut the computer at its own power switch, then cut off at the power strip main switch. At power up, switch on at the power strip first, leaving the computer, as yet, powered down. That would avoid any computer-printer interaction. Then put the printer off line and power up the computer and go through the bootup process. Then put the printer on line.

As this fault is so devilishly difficult to reproduce and only happens, on an average, about once in an hour of printout, it would probably be of little help for me to send you a disk with affected material, besides which I have a hunch it's somehow hardware related.

Coming back to my letter of November 29 with a group of articles: I note that, in a couple of things of mine you have published, my address doesn't appear, whereas other contributors' addresses are shown. I have absolutely no objection for my address to be published (not my phone number) in case any of my material were to interest anyone who might wish to write me with questions or comments.

**Fm MISOSYS, Inc:** Charles, This is in response to your latest of January 2nd.

As far as the XL8er disk, it was made up when I was using an intermediate version of IFC (which had a bug in the dating). I did correct that on a disk but apparently the disk which I loaded onto the duplicating station was not corrected. Perhaps that's an omen that the files will last that long (the ones into 1999).

As far as the left hand margin problem goes, I suspect that your printer has a programmable left hand margin. For instance, I have a C. Itoh Model 1550 printer which uses the sequence "ESC L n2n1n0" to set the left margin to the column designated by "n2n1n0". The printout demonstrating the error was missing the characters "BOOT/SYS"; it printed a glitch (unknown value) graphics character. I suspect that something at the beginning of the line garbled to the printer and was

"seen" as the control sequence to set the left hand margin. Check your printer manual for that operation. Perhaps "BOOT/SYS" has some value of characters which may establish the margin. I also wonder if there would be a rare problem of the printer prematurely resetting its BUSY STATUS after a carriage return line feed sequence. If it did that, the computer would send the first character of the line (the "B" which could get garbled to the start of the "set left margin" sequence. Since the problem always happen (when it happens) after a carriage return, it could be because either (1) your printer only accepts such an escape sequence to set the left margin only immediately following a return, or (2) it is a problem in BUSY STATUS timing on executing the carriage return line feed physically.

Your DOSTART JCL shows use of the FORMS filter. Let's assume that you always use it. The TRS-80 end of line convention is a carriage return; this assumes that the printer will automatically perform a line feed on carriage return. FORMS sends a CR when a CR is PUT unless the line counter is zero, at which time it sends a LF. That works the same even if you didn't have FORMS installed. I don't suspect RAM as the problem, I do suspect corruption of the data. So check your printer manual for left margin programmability. That's a start. Also check your printouts for any other "garble", especially after a carriage return.

## *Need for SYSTEM (SMOOTH)*

**Fm Elain Hewitt**: I am writing to you as I don't know who else to turn to. I have purchased a copy of LS-DOS 06.03.00 for my Model 4 computer. Everything was working fine with LS-DOS; and my Model 4, until one of my disk drives died. I replaced it with a Tandon TM100-2A so that I could have a double sided drive. (I also replaced the drive connector, as the original connector would not let me access both sides of the drive.)

After I installed the new drive as Drive 1, I noticed that frequently when I want to access Drive 1, the computer would hang up for several seconds, sometimes up to 30 seconds or longer. The drive light would stay on and the head would not jerk but just sit there. Thinking there must be something wrong with my new drive, I took it to a technician who checked it over and said it was in excellent shape.

I then noticed that if I used the command SYSTEM (SMOOTH), the problem went away. I also noticed that I could use other DOSes with no problem. (One solution to this problem is simply to leave SMOOTH on, but I'm used to typing while the drive is accessed and I'd rather have SMOOTH on, if possible. I suppose I could have the technician alter my drive and get it to work, but I'd rather not do that since he said it was in fine shape. Is there any patch I could make that would allow me to use my new drive and still leave SMOOTH off?

Thank you very much for listening to my problem, and I appreciate any help, advice or comments you could give me concerning this problem.

**Fm MISOSYS, Inc**: Without getting into the technical aspects, SYSTEM (SMOOTH) solves the problem of drives "going to sleep" when they are precisely aligned to 300 rpm. The other DOSes don't have the problem because they don't have type-ahead. No other patch will suffice. Your drive may not be speed adjustable; some use a phase locked loop and are precisely 300 rpm. If you can adjust yours, align it to 301-302 rpm. You can then turn SMOOTH off.

## *Source for "Mod 4 by Jack"*

**Fm Stan Slater**: Roy, First thanks for the advertising. Second thanks for the plug for *Mod 4 by Jack*, Fm James L. lopez, page 17, TMQ III.ii.

If anyone wants to know where they can get a copy of *Mod 4 by Jack*, we bought the copyrights to this manual last fall and have been reprinting it, and it has been available all this year from us in an 8-1/2 x 11 large type format and in a three ring binder. $17.95 ea plus $4.00 Shipping and Handling.

For the non-technical user, it certainly is easier to understand than Tandy's Manual.

Computer News 80
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## *Kermit is not always a frog!*

**Fm Lee C. Rice**: It might be of interest to know that there is a complete version of Kermit available for TRSDOS/LSDOS6. One of my colleagues in New York located it on one of the BITNET nodes there in the public domain area, and sent me Retrieve information. The original version for the Model 4 appears to have been done in the mid-1980s, and has been updated several times.

When I retrieved the associated files via BITNET, lo and behold! - not only an updated version for TRSDOS6, but ALSO a rather recent version for LDOS5.

I downloaded them from our central system onto TRSDOS floppies (3 SS floppies), and am sending them on to **Vic McClung (914 Crescent, Sikeston, MO 63801)**, the person whom you mentioned as a TRS80 software archivist in the last issue of TMQ. The first disk contains all of the Model 4 software and some of the Model 3 software, the second disk the balance of the Model 3 software, and the third disk the full documentation and manual for Kermit. All Model 4 programs begin with "M4", all Model 3 begin with "TRS", and the documentation begins with "KERM".

The disks contain all of the assembly code, help files, and headers (/SRC, /HLP, /EQU) so that either version may be assembled (or customized and then assembled) under EDAS. For those who do not program in assembler, there are also HEX files and BASIC programs to create the necessary /CMD files from them.

The documentation was originally in NROFF format (the UNIX formatter), but we converted it to Allwrite source code consistent with both Model 3 and Model 4 Allwrite. Finally, on the third (documentation) disk, I included a vanilla Ascii version of the documentation (by ZSHELLING to disk from within the Allwrite formatter).

For those who do not know Kermit, it is a very powerful terminal and file-transfer utility. We customarily use Omniterm here at Marquette, with XMODEM protocol for file transfer. Kermit's native protocols seem to be faster, and are noticeably faster at 9600 baud (we have eight Model 4 systems directly connected to the central VAX system via multiplexor at 9600 baud). Kermit also supports full batch and wildcard transfer of multiple files, which is not implemented for XMODEM.

The default terminal emulation for both LSDOS6 and LDOS5 is VT52, which is not a full ANSI standard, but appears to work well enough on our VAX. It probably would not be difficult to modify the assembler code for VT100 emulation. I have found no bugs at all in the LSDOS6 version, but have not had time to try the LDOS version.

I hope that this information may be of use to any TMQ readers who may be in need of some excellent communication software for LDOS or LSDOS.

## *2-sided Prompt Patch*

**Fm MISOSYS, Inc:** I was recently asked to supply a patch to LS-DOS 6.3 so that FORMAT would prompt for the number of sides to format if the parameter was not entered on the command line parameter string. Here's the patch:

```
PATCH SYS0/SYS.LSIDOS
(D00,81=11:F00,81=31)
```

## *Update on LesCRIPT*

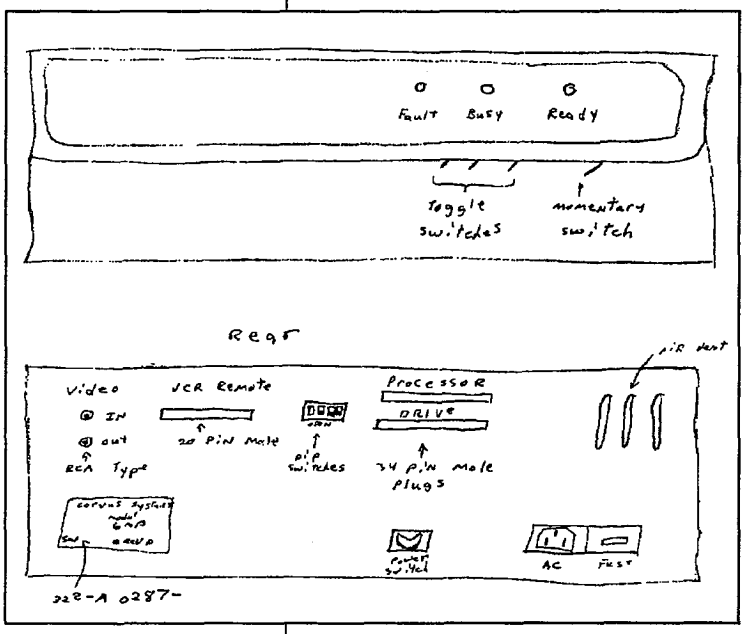
**Fm Michael Rogers:** Regarding "LeScript", version 1.81, release date 11/23/88 again works with PRO-WA. However, as the date really appears as 11/23/80, I'd say that Anitek could be a potential customer for LS-DOS 6.3.

## *Help needed for Corvus hard drive*

Leroy R. Klein
724 Chestnut
Grand Forks, ND 58201

Sirs, As you are about the only source of information on TRS-80 equipment I can trust I am hoping you can help me.

My brother, who is blind, uses a Model 4D with an Alpha Products speech synthesizer. He received a donation of a Corvus hard disk, but did not get any information with it. The ID label on the rear states that it is a 6mb model and rev D (serial # 322-A 0287-). With it came two cables the first with three female 34 pin connectors, one at one end and the other two on the opposite side at the other end. Of the two at one end one of the connectors is larger than the others and does not fit any of the connectors on the drive. The other cable has a 34 pin female connector on one end (keyed to fit the drive) and male centronics printer connector on the other end.




I see no way of connecting these to a TRS-80 and am wondering if he was sent the wrong cables. Enclosed is a crude drawing of the front and back of the drive, I hope this helps.

I have a 5mb drive that came from Total Access (according to the box) it resembles the drives that Aerocomp sells. It came with Montezuma Micro drivers. I have this set up as drives 0 - 3 with only LS-DOS 6.3 on the disk. I am looking to purchase a larger drive, but have read that if you save many small files you waste much of the drive space because of the allocation scheme used to format the disk. Are there better drivers and do you carry any kind of hard disk test program.

I have 1 final question, I have an AT memory board installed in my 4P and want to know if there are any drivers or programs (other than LeScript) that work with it (I have the Superdrive program that allows it to be used as a memdisk).

Thank you for your time and I hope to hear from you soon.

**Fm MISOSYS, Inc:** I am not familiar with that Corvus drive; there was one a long time ago that worked only under NEWDOS80. Corvus drives generally worked in a network; they also had a backup device which was based on a video cassette recorder, so that's probably what the video in/out is for. But I'll post your query in TMQ to see if any of my readers can offer some assistance.

As far as your 5 Mb drive goes, you ought to use our diskDISK facility to circumvent the small file problem. Also, our Alpha Technology patches printed in TMQ (Volume I, issue ii) provide for interfacing that AT board through the @BANK supervisor call of LS-DOS. With that, it opens up that memory to other programs, such as PRO-WAM, or SAID.

## *Memory bank problems need help*

**Fm MISOSYS, Inc:** I have received word from two recent purchasers of our XLR8er speedup and memory expansion board that after installation, the extra 64K of memory in the standard Model 4 has trouble "remembering" its contents. One reporter noticed, by using the PRO-WAM

MED/APP facility to examine memory banks 1 and 2, that the memory contents would start to lose bits after a few seconds. It appears to me that the memory cells are not being properly refreshed.

Any of you hardware hackers ever hear of this kind of problem? No problem with the lower 64K of memory was apparent in either of these two cases. Both were in relatively new gate array machines: one a 4P and one a 4D. Let me know if you recognize any particular event common to both these cases.

# MSDOS Topics

## *Printer Compatibility*

**Fm Charles Riddle**: Hi there, I'm new to this forum and actually I'm not even sure if you will be able to help me, but here goes.

I have a Radio Shack DMP200 printer and an IBM compatible computer. The printer works perfectly in any kind of normal printing mode but I can not get it to work in Graphics mode with applications such as Lotus or Dollars and Sense.

I have tried setting up the control codes etc., but apparently I need some kind of converter file. I have gone to Radio shack computer centers, but they have been no help. Is there anything you can suggest?

**Fm Joe Kyle-DiPietropaolo**: Charles, There are two possibilities for most of the Tandy dot matrix printers, and you can determine which is true from your particular printer's manual.

(1) The printer has only Tandy graphics modes. In this case, unless a program has specific support for the Tandy printer, you are out of luck.

(2) The printer has a selectable graphics emulation mode. In this case, there will be a DIP switch somewhere on the printer that is described as "IBM Mode" vs. "Tandy Mode". Power the printer down, flip the switch and power it back up. At this point, you can install/configure the software as communicating with either an "IBM Graphics Printer" or "Epson MX-80" and it should fly.

My guess is that the printer is old enough to fall into category #1, which means that things don't look good. A few folks have experimented with "graphic translation" programs, but the results are generally poor at best unless they are implemented (an implemented well) in the printer itself.

## *Fatal GWBASIC & Leading Edge*

**Fm Theodore Masterton**: So here I am feeling like I have at least a responsible working knowledge of microcomputers and WHAM I get the dumbs!

I am converting the old Radio Shack Advanced Statistical Analysis program to run on my new Leading Edge D2 and first run shows that TRSCROSS converting the SETs to PSETs. Unfortunately, the PSET (10,I) command returned an error. So I open the GWBASIC reference and it tells me that the error results from having the wrong SCREEN environment.

So's I dive in and add a SCREEN x where x is the digit for a Herc monochrome card and its no go; the same error. But that ain't all. The system hung up and my reboot resulted in a frightening message about Wrong Configuration! I switched to a bootable floppy that should have had my configuration on it but NO HARD DRIVE C was apparent to the system. With sweat on my brow, I ran setup, changed nothing, exited, and the next attempt to reboot everything is back to normal!

I cannot stand going back to the days when I knew nothing about how the machine did its thing. Can someone explain what happened? What did I do? How did I do it? Is it dangerous to program in GWBASIC?

**Fm Joe Kyle-DiPietropaolo**: If your GWBASIC says it has a SCREEN mode that supports Hercules Graphics, it is an unusual copy of GWBASIC indeed, but I would expect as much from Leading Edge.

I'd check the program for any form of POKE or USR statement - could be that a runaway CPU trashed your CMOS RAM for no particularly good reason.

**Fm Theodore Masterton**: Joe, Is your reflection that you would "expect as much" from Leading Edge a positive or a negative? I have a least one friend who provoked a siege of Buyer Dissonance when he commented "Oh, Leading Edge. I hear they aren't really IBM compatible..."

Yep, here it is: Screen 3 - For a CGA equipped computer or a MDA equipped computer with a monochrome monitor. Resolution is 640x200 unless MDA is detected, then resolution is 720x348.

Where is the system configuration stored in MSDOS? IS there an equivalent to TRSDOS/LDOS config/sys?

**Fm Joe Kyle-DiPietropaolo**: Well, LE has always been weird when it comes to video and video support. I've really only come across one or two LE incompatibilities that mattered in the real world, so it really isn't a positive or negative, let's call it a push.

In a MS-DOS machine, there really isn't any direct equivalent of the CONFIG/SYS file at all. All drivers, filters and so forth are loaded in pieces at boot time by entries in your CONFIG.SYS and AUTOEXEC.BAT files. Sorta like having an AUTOed JCL that builds your system configuration on every boot.

Sure can be inconvenient when on floppies, as you have to carry around all the baggage of the individual files, install code, error messages and so forth. With a hard disk it isn't so bad, at least you have more space to waste!

Producing the equivalent of CONFIG/SYS for an MS-DOS machine would be possible for some circumstances, but there are a few things that would bite you. Some TSRs (Terminate and Stay Resident programs, the equivalent of our drivers and filters) do some hardware setup of write-only devices when they are installed. There'd be no easy way to get a hold of this initialization in the general case. The necessary tool was available in the LDOS/TRSDOS 6 environment (the @ICNFG

vector), but even then some folks ignored it.

For simple programs it could be done, but I'm not sure it's worth the effort.

## RLL drives

**Fm Shane Dawalt:** I seem to recall a small thread a couple of months ago which dealt with RLL HDs. Well, a friend of my is having a 'small' problem. He has an MSDOS machine (believe he said it's motherboard is DTE or DTA), XT class nonetheless. The drive in question is a 40Meg Seagate RLL drive. His drive is acting rather nasty. His machine will display "Booting Error" at times, but not every time (usually 2 out of 20 boots). Cold or warm boots doesn't matter. He is also having spurious access problems with random sectors on the HD. In fact, he has used a disk maintenance utility to check sectors in which he is having problem. He will lock them out. After a couple days, when he runs the disk maintenance utility again, the sectors will check ok, but other sectors will appear bad.

So far, the shop from which he bought the system (only a couple months old) has replaced the HD controller board (Western Digital) and has tested the power supply which supplies the HD ... no problems found. The HD doesn't fail diagnostics. He has noted this sector screwup problem is most active when the machine is warm. Any ideas on this situation? I think the HD should be replaced, but the tech who services the equipment says that if it doesn't fail diagnostics then the hardware is fine.

Any info will be appreciated. (He is ready to scream.)

**Fm Joe Kyle-DiPietropaolo:** First off, WD RLL controllers are generally pretty reliable. The original Adaptec 2070 was awful flakey, but subsequent controllers like the 2072 and 2372 are fine.

Exactly which Seagate hard drive is he using? There isn't one that formats to forty megs under RLL that I know of. The ST238R is a little over thirty meg formatted, there is a ST157R which should be about forty-five megs, but that's a three and a half inch drive (available in a five inch frame, so I guess that's a possibility).

If it is really a ST238R, a few precautions to take after backing up everything and calling up to order a copy of Steve Gibson's SpinRite:

(1) Take the drive out and flip it over. Loosen all the screws. Tighten them all barely snug with the 'driver, except the one in the front which you finger tighten only. Put a tiny dab of nail polish on the edges of them all to keep them from loosening with vibration. Copy down the factory bad track info.

(2) Reinstall the drive, but only use three of the four screws. Check the controller if it is a WD 27X (probably), and remove the sector translation jumper if it is in place. I don't know the number, but the dealer should have/have provided documentation.

(3) Do a low level format after the machine has warmed up for about twenty minutes with the case on. Make sure that you enter the factory bad track info you read off the drive in step one. Re-do the FDISK and high level FORMAT, re-install DOS.

(4) Now, before you put your software back on, run SpinRite on the drive.

5) Restore the software and things should run fine unless the drive is defective.

The reason for the above rigamorole is that the low end Seagate's appear to be very sensitive to stress. Loosening the logic board screws prevent uneven thermal expansion between the board and casting to apply torque. Same goes with not putting in all four mounting screws - a minor misalignment in the case holes or distortion when the outer case is screwed down can otherwise be transferred to the drive casting.

It is also very important that the low level format be applied with the drive in its final resting place and conditions, including temperature, for the same reasons.

**Fm Daniel L. Srebnick:** Shane, I have had poor experiences with the Western Digital RLL controller. I do use an Adaptec RLL on my Seagate ST277R with no problem, however. The Seagate drives are the most reliable around, so perhaps the problem is in the controller.

**Fm Daniel L. Srebnick:** Joe, do you really consider the WDs to be better than the Adaptec? My experiences have been just the opposite. In fact, even the ROM low level formatting s/w in the WD board is a lot flakier than the Adaptec. The WD rom plays all kinds of games with the cyl counts to adjust for RLL, whereas the Adaptec does not.

**Fm Joe Kyle-DiPietropaolo:** The WDs are only better than the original "awful" Adaptec, I believe it was the 2070A or some such. That controller combined with the Seagate ST238 did much damage to the reputation of RLL. Newer Adaptec controllers are great, like the 16bit 2372 for AT use, and I believe the newer 8bit 2072 for XT use - these are better and certainly more available than the equivalent WD product (for the AT at least, the WD1006-RA2). The WD 27X sector translation can and should be disabled with a single jumper.

**Fm Shane Dawalt:** Daniel,They've already swapped a controller board. They even went so far as to place the board in different slots to check the edgecard connectors. Still the same problem persists. He's gonna do what Joe said. If that doesn't work, he said he's fed up with RLL drives. Oh well. What can I say? It's his machine.

## Need a MSDOS route

**Fm Bob Haynes:** Another MSDOS question: Has anyone been able to implement the equivalent of LSDOS's ROUTE *PR PR/TXT under MSDOS? Perhaps a there's a small PD utility floating about which can do this? I've come across a useful program which has help windows that I want stuffed into an ASCII file for re-edit, and Shift-PrtSc just isn't gonna cut it...

**Fm MISOSYS, Inc:** Check out PRN2FILE in an issue of PC Magazine last year. It's also available on their forum here on Compuserve.

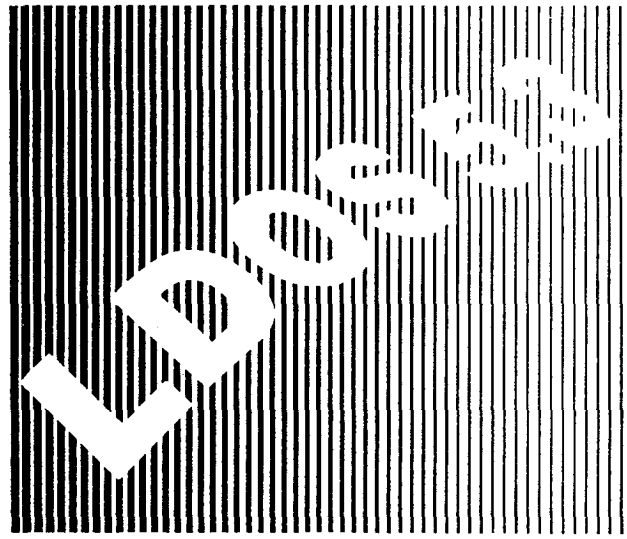
**Fm Ray Pelzer:** Bob, There are several little TSR programs floating around on the BBS's which allow you to route your printer port to a disk file. I think there are a couple over on the IBM forums, and if I can wade through the stuff on my 60 meg hd, I might be able to find one if you can't.

**Fm Hardin Brothers:** Bob, The problem with Prt-Scrn is that it doesn't use the PRN or LPTx device at all (try doing a Prt-Scrn while something else is printing!). There are screen-grab utilities and stdprn rerouting utilities around CIS. If no one here can suggest a name, GO IBMHW and ask there.

**Fm Joe Kyle-DiPietropaolo:** Bob, There are at least a half-dozen different schemes/programs for doing that (routing printer data to disk). Each works or fails in different circumstances, so you get them all and try each until you find one that works with this particular combination of CPU, DOS, TSRs and applications software. BRO the Libs over on IBMHW and IBMSYS for the various programs. I think that there's a fairly good one over on CLM332 also.

I think that there are a few specifically for the screen capture application, try CTLALT, plus I think I just saw a new one recently, and there's one included with Dan Briklin's DEMO program.

**Fm Joe Kyle-DiPietropaolo:** Hardin, PrtSc does go through INT 17, which can be routed to any hardware parallel printer by rearranging the base addresses, but, as you say, you must intercept INT17 (or INT5 if all you care about is PRtSc) to do **logical** device routing, like to a disk file.

The LDOS 5.3 upgrade kit is now available to take your Model III or 4 (in 3 mode) to the year 2000. LDOS 5.3 provides complete media compatibility with LS-DOS 6.3, the newest Model 4 DOS released by Logical Systems, Inc. With LDOS 5.3, you can add 12 years to the life of your software. Just look at these improvements over version 5.1.4!

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# Applications for the User

*The following programs, although shown in their respective source code language, are nevertheless applications which may be directly usable by the non-programming user. All you need do is obtain the assembled/compiled program from the DISK NOTES 3.3 diskette which is associated with this issue of THE MISOSYS QUARTERLY.*

## The CRC program

Hans de Wolf
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The Netherlands

The problem is common: you have a number of files with the same name, but you are not certain if the contents is the same: which versions are they, and which patches have been applied? Maybe there are even some files with different names but with the same contents! At the moment you want to find out, you know you should have managed you files better and listed all installed patches in a history file. But in real life you sometimes forget to patch a copy of a file, you lost the history file or you got the file in a collection from someone else.

What can you do to find out to check your

```
#include <stdio.h>
#include <ctype.h>
#ifdef MISOSYS
#include <sgtty.h>
#option WILDCARD
#endif
 /*
 *
 */
char  *documentation[] = {
"CRC version 1.4 - (C) 1988 by Hans de Wolf",
" ",
"CRC computes the 16-bit CCITT Cyclic Redundancy Check
for ",
"the files given as argument. Wildcards are supported.",
" ",
"Execute by:",
" ",
"   crc [flags] filelist",
" ",
"The filename will be printed in the output if multiple
files are processed.",
" ",
"Flags are:",
" ",
"   -c  disable crc calculation (can be used to create -f
argument file)",
"   -f  read names of input files from files given as
argument",
"   -h  display this help text",
"   -n  reverse printing of filename",
"   -s  display file size in bytes",
0 };
#define LMAX 512
#define PMAX 256
#define XOR ^
#define AND &
int   crc;
int   sflag = 0;
int   fflag = 0;
int   nflag = 0;
int cflag = 1;
int   nfile = 0;
char  *pp;
#ifndef vms
char  file_name[81];
#endif
char  lbuf[LMAX];
char  pbuf[PMAX];
/*****************************************************/
main(argc, argv)
char *argv[];
{
    register char   *p;
    register int    c, i;
    int             gotcha;
    FILE       *f;

#ifdef MISOSYS
```

files? The first thing to do is look at the directory information: if the files are of different size then they surely are different. But when a file is changed by means of the D-type patches, the size does not change. This means you need another method. The most certain way to check is run a program that compares the files byte by byte, such as COMPARE/CMD that was sold on the LDOS Utilities disk. The result is something you can rely on, but the problem with such programs is that you can compare only one pair of files at a time, and that the differences (if any) come out as a long list of mismatching bytes. If you have more than two files, you must compare all combinations, and you still cannot check easy which files are identical.

A solution for this became obvious when I remembered an option of the DIRectory command on the DEC-10 mainframe I had worked with: by means of a special command switch you could have a checksum calculated for each selected file.

I decided to create a similar program for my model 4P. This was a good opportunity to learn more about the C language - it should be the perfect language for a job like this. But as this was the first non-trivial C program I developed, I did not intend to start from scratch. I had learned Z80 assembly language by modifying existing source code (up to the point that the original could no longer be recognized) and wanted to use the same method to learn C. Also, reusing existing software is considered to be good software engineering practice...

The resulting CRC program is based upon two already existing pieces of C source code I had available: a public domain listing of GREP from DECUS (DEC users group) and a 16-bit CCITT Cyclic Redundancy Check algorithm used in Kermit. To create the CRC program I deleted the kernel from the GREP source, leaving me with a shell to process switches, display 'usage' information and handle filename arguments. The Kermit CRC algorithm was put in this shell (of course adjusted from 7-bit to 8-bit characters).

The result ran almost at once. The checksum was calculated and displayed, but the

```
    struct sgttyb sg;
      option(O_KBECHO,TRUE);
/*  Allow BREAK key to set EOF-condition: */
    ioctl (STDIN,TIOCGETP,&sg);
    sg.sg_control |= IO_BREAK;
    ioctl (STDIN, TIOCSETP,&sg);
#endif
    if (argc <= 1)
         usage("No arguments");
    if (argc == 2 && argv[1][0] == '?' && argv[1][1] ==
0)
    {
        help(documentation);
        exit(0);
    }
    nfile = argc-1;
    for (i=1; i < argc; ++i)
    {
        p = argv[i];
        if (*p == '-')
        {
              ++p;
              while (c = *p++)
            {
                  switch(tolower(c))
                {
              case 'c':
                      case 'C':
                          -cflag;
                          break;
                      case 'n':
                      case 'N':
                          ++nflag;
                          break;
                      case 'h':
                      case 'H':
                          help(documentation);
                        exit(1);
                          break;
                      case 's':
                     case 'S':
                        ++sflag;
                        break;
                      case 'f':
                     case 'F':
                        ++fflag;
                        ++nflag;
                        break;
                      default:
                          usage("Unknown flag");
                  }
              }
              argv[i] = 0;
              -nfile;
        }
    }
    if (nfile == 0)
        if (fflag ==0)
            filecrc(stdin, 0);
```

switches behaved strangely. A hint for everyone who compiles public domain C source code with MC: if the program does not run properly, try to relink using MLINK's "initialize to zero" switch. If that solves the problem, you must look for uninitialized variables. In this case the switches were not properly initialized. When this problem was solved I added some improvements: an option to count bytes and to display the CRC value also in hexadecimal. Thanks to the wildcard option in MC it was easy to add support for wildcard filenames.

The current version of CRC will compile with MC without problems. The "initialize to zero" switch is no longer necessary with MLINK. The special options for the MC compiler are enclosed in an "#ifdef MISOSYS" block, so do not forget to define MISOSYS when you recompile CRC. In order to do that, I have changed MC/JCL to add the -dMISOSYS switch automatically when the MCP preprocessor is invoked (I thought that an identification like this was created automatically by MCP, but I could not find any reference to it in the manual). CRC should also compile without with other compilers, the only possible problem areas are the support of wildcard file specifications and the detection of end-of-file (with a binary file you should not rely on the character input function returning the EOF value).

In order to run CRC, you type:

```
CRC [-switches] [filelist]
```

The switches are optional. If CRC is invoked without any arguments, it displays a 'usage' message, telling you how to invoke it. More detailed information is displayed when you enter "CRC -h": (See cut-out box.)

It is allowed to use wildcards in the filelist (using a "?" for any character or a "*" for part of the filename) but the wildcard scanner does not include system or invisible files. The output can be redirected to any other file or device by means of ">destination" or ">>destination". During output redirection, CRC will display a ">" for every file processed. If the -f flag is given, the name of every argument file is displayed.

```
        else
            filescn(stdin,0);
    else
    {
        nflag = nflag ^ (nfile > 1);
        for (i=1; i < argc; ++i)
        {
            if (p = argv[i])
            {
                if (fflag == 0) /* files given as argu-
ment */
                {
                    if ((f=fopen(p, "rb")) == NULL)
                        cant(p);
                    else
                    {
                        filecrc(f, p);
                        fclose(f);
                    }
                }
                else /* files are given as list in argu-
ment files */
                {
                    if ((f=fopen(p, "r")) == NULL)
                        cant(p);
                    else
                    {
                        filescn(f,p);
                        fclose(f);
                    }
                }
            }
        }
    }
}
/*******************/
file(s)
char *s;
{
    char *p;
    p = s-1;
    while (*++p)
        *p=toupper(*p);
    fprintf(stderr,">");
    printf("%-24s ", s);
}
/*******************/
incfil(s)
char *s;
{
    char *p;
    p = s-1;
    while (*++p)
        *p=toupper(*p);
    fprintf(stderr,"\nIncluding %-24s\n",s);
}
/*****************************************************/
cant(s)
char *s;
```

```
CRC version 1.4 - (C) 1988 by Hans de Wolf
CRC computes the 16-bit CCITT Cyclic
Redundancy Check for
    the files given as argument. Wildcards
are supported.
     Execute by:
        crc [flags] filelist
     The filename will be printed in the
output if multiple files are processed.
     Flags are:
     -c  disable crc calculation (can be
used to create -f argument file)
     -f  read names of input files from
files given as argument
     -h  display this help text
     -n  reverse printing of filename
     -s  display file size in bytes
```

The flags can be entered as one argument (-xxx) or as separate arguments (-x -x -x), and have the following functions:

-c: disables the CRC calculation. This speeds up the process if you only want to have the file sizes or filenames.

-f: this flag indicates that not the files given as arguments must be procecessed, but that these argument files contain the names of the files that must be processed. A list like this can be created by means of the -c flag.

-s: crc shows also the number of bytes in a file. This information is of course also available in the directory, but it must be calculated from number of records, record length and number of bytes in the last record. Typing "CRC -cs file" is simpler.

-n: Determines printing of filenames. If only one file is given as argument, then the filename is not printed in the output, but when more than one file is given as argument the file name is printed. The -n flag reverses this behaviour. If the -f flag is used, filenames are always printed.

For two files (FORMS/FLT and BREF/CMD) both CRC value and file size are zero: it is not possible to access the files because the password was not supplied. Files that do not exist (incorrect argument) are not listed in the output, but a "cannot open" message is displayed. This can be used for a quick compare of disks to check if the same files are present: put the first in drive 1 and type:

```
CRC -c */*:1 >disk1/crc:0
```

Put the second disk in the drive and type:

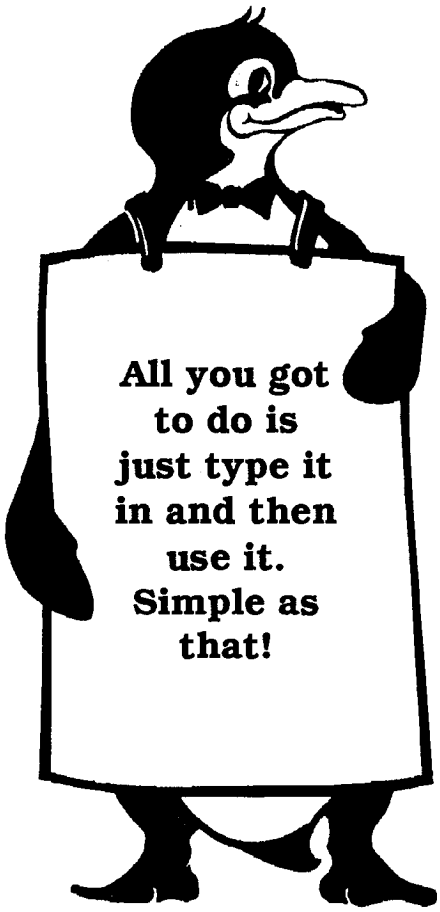
```
CRC -fc disk1/crc:0
```

CRC will now display an error message for every file that was present on the first disk and missing from the second.

```
{
   fprintf(stderr, "%s: cannot open\n", s);
}
/*****************************************************/
help(hp)
char *hp;
/*
 * Give good help
 */
{
   register char   **dp;
   for (dp = hp; *dp; dp++)
      printf("%s\n", *dp);
}
/*****************************************************/
usage(s)
char  *s;
{
   fprintf(stderr, "CRC error: %s\n", s);
   fprintf(stderr,
      "Usage: crc [-cfnhs] [file ...].  crc -h for
help\n");
   exit(1);
}
/*****************************************************/
filecrc(fp, fn)
FILE     *fp;        /* File to process        */
char     *fn;        /* File name (for -n option)  */
/*
 * Calculate the CRC for one file
 */
{
   unsigned int crc, q;
   unsigned long int count;
   int i;
   char c;
   crc = 0;
   count = 0;
   if (nflag && fn) file(fn);
   if (cflag || sflag)
   {
      while ((i=fgetc(fp))!=EOF)
      {
         c = i;              /* type conversion */
            ++count;
         if (cflag)
         {
               q = (crc XOR i) AND 15;
               crc = (crc>>4) XOR (q*4225);
               q= (crc XOR (i>>4)) AND 15;
               crc = (crc>>4) XOR (q*4225);
         }
      }
   }
   if (cflag) printf(" CRC = %5u (X'%04X')",crc,crc);
   if (sflag) printf(" size: %8lu bytes", count);
   printf("\n");
}
/*****************************************************/
```

Although CRC will probably evolve further (maybe wildcarding invisible or system files), the current version is doing basically what I wanted it to do: it produces an overview of the files with an identification that can be used to determine the version of a file. A suggestion to Roy: is it possible to list the CRC values for Misosys software in TMQ so everyone can check if all patches have been applied?

**Fm MISOSYS, Inc:** Hans, It's certainly possible, but wih all I have got to do around here, it would take some time to collect all of the data. I'll put it on the drawing board.




```
filescn(fp,fn)
FILE     *fp;        /* File to process        */
char     *fn;        /* File name (for -n option)  */
/*
 * Read the file list from file and call filecrc for the
entries
 */
{
    char   *filspc [23];
    FILE   *fc          /* file to CRC */;
    if (nflag && fn) incfil(fn);
    while (fscanf (fp,"%s",filspc) != EOF)
    {
        if ((fc=fopen(filspc, "r")) == NULL)
            cant(filspc);
        else
        {
            filecrc(fc, filspc);
            fclose(fc);
        }
    }
}
/*****************************************************/
error(s)
char *s;
{
   fprintf(stderr, "%s", s);
   exit(1);
}
```

**The output from CRC looks as follows:**

```
SYS0/SYS.LSIDOS:0        CRC = 23450 (X'5B9A') size:     4529 bytes
SYS1/SYS.LSIDOS:0        CRC = 44362 (X'AD4A') size:     1337 bytes
SYS2/SYS.LSIDOS:0        CRC = 31203 (X'79E3') size:     1289 bytes
FORMS/FLT:0              CRC =     0 (X'0000') size:        0 bytes
MEMDISK/DCT:0            CRC = 65015 (X'FDF7') size:     3007 bytes
DOS/HLP:0                CRC = 13661 (X'355D') size:    20691 bytes
FLOPPY/DCT:0             CRC =  4295 (X'10C7') size:      673 bytes
BREF/CMD:0               CRC =     0 (X'0000') size:        0 bytes
```

**LISTING1/BAS**

```
100 CLS:PRINT"BUILDING 'FIXMA3/CMD'":RESTORE
110 OPEN"O",1,"FIXMA3/CMD":L=160
120 CS=0:L=L+10
130 READ A$:IF A$="END"THEN CLOSE:END
140 IF LEFT$(A$,1)<>"-"THEN
A=VAL("&H"+A$):PRINT#1,CHR$(A);:CS=CS+A:GOTO 130
150 IF VAL(MID$(A$,2))=CS THEN 120 ELSE PRINT"CHECKSUM ERROR
IN LINE"L:END
160 '' DATA AREA ''
170 DATA 01,11,00,30,4D,4F,44,45,4C,41,2F,
49,49,49,3A,31,03,00,00,01,-877
180 DATA 33,20,30,11,00,30,21,00,30,06,00,
3E,3B,EF,20,1B,ED,4B,06,30,-1068
190 DATA 79,E6,07,4F,3E,57,EF,20,0E,E5,23,
23,23,36,FB,E1,3E,58,EF,21,-2157
200 DATA 00,00,C8,F6,C0,4F,3E,1A,EF,3E,15,
```

## FIXMA3/CMD

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This is in regard to the problem with MODELA/III on LS-DOS 6.3 having an incorrect EOF offset byte value (ref: TMQ III.i, page 67). Here is an easy fix for those who do not have DED, FED, UTILITY4, Super-Utility, or any other Disk/File editor. This short program will search for the MODELA/III file on Drive :1. If it finds it, it uses the Directory Entry Code (DEC) and Drive Code stored in the File Control Block to load the proper Directory Sector via @DIRRD, correct the EOF byte from X'F0' to X'FB', execute @DIRWR to store the corrected directory sector to the disk, and then exits. A text report will be given if an error ocurrs. If all went OK, then only the LS-DOS Ready line will return.

My program is called FIXMA3/CMD. The way to use it is to place a system work disk containing FIXMA3/CMD in Drive zero and place a target system disk that contains MODELIII/A in drive one.

Execute the file by entering FIXMA3 from the DOS ready prompt.

The source code for FIXMA3/CMD is provided in two forms. Listing 1 is a BASIC program that will create FIXM3A/CMD. Listing 2 is the Assembly source code for those who wish to use an assembler. Hope this is of help. The files are:

LISTING1/BAS = ASCII-saved BASIC
LISTING2/ASM = ASM file

**LISTING2/ASM**

```
;FIXMA3/ASM
;Fix EOF byte of MODELA/III on LS-DOS 6.3
;David Goben - August 27, 1988

        ORG     3000H
FCB     DB      'MODELA/III:1'      ;file to search for
        DB      3                   ;mark end
;-----------------
        ORG     FCB+32              ;code area
MAIN    LD      DE,FCB              ;open file
        LD      HL,FCB              ;FAKE buffer
        LD      B,0                 ;LRL
        LD      A,59                ;@OPEN
        RST     28H
        JR      NZ,ERROR            ;error!
        LD      BC,(FCB+6)          ;set DEC to B,
        LD      A,C                 ;  and DRIVE to
        AND     7                   ;  C
        LD      C,A
        LD      A,87                ;@RDDIR
        RST     28H                 ;read dir record
        JR      NZ,ERROR            ;UH-OH!
        PUSH    HL                  ;else save address
        INC     HL                  ;point
        INC     HL                  ;      to
        INC     HL                  ;         EOF offset
        LD      (HL),0FBH           ;insure proper offset
        POP     HL                  ;recover pointer
        LD      A,88                ;@WRDIR
        RST     28H                 ;write dir record
        LD      HL,$-$              ;OK exit flag
        RET     Z                   ;all OK, so go DOS
ERROR   OR      0C0H                ;else set error mask
        LD      C,A
        LD      A,26                ;@ERROR
        RST     28H                 ;report problem
        LD      A,21                ;@ABORT
        RST     28H
;-----------------
        END     MAIN
```

```
; NAME
;       pg - file perusal filter for soft-copy terminals
;
; SYNOPSIS
;       pg [ -t8 ] file
;
; DESCRIPTION
;       The command pg is a filter that allows the examination of a
;       file one screenful at a time on a soft-copy terminal.  Each
;       screenful is followed by a pause.  If the user types a
;       space, another page is displayed; if RETURN is pressed, the
;       next line of the file is displayed; and pressing the BREAK
;       key or ctl-c exits the program.
;       Normally tab stops are set to every four columns; this can
;       be changed to every eight columns with the optional switch.
;
; POLICY
```

# PG

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PG/S is the source code for a tool used for browsing through text files; I use it often for browsing source files. To use the program, type

```
pg file
```

at the DOS prompt. PG reads the named file and displays it on the terminal one screen-full at a time, waiting for a response after each screen before continuing. Typing a space displays the next screen-full; pressing ENTER displays the next line of the file; the BREAK key or ctl-c exits the program early if the end of the file has not yet been reached. If the file contains tabs, the tab stops are normally set to every four columns, but this can be changed to every eight columns by using an optional switch — type

```
pg -t8 file
```

at the DOS prompt.

PG/S is written in Microsoft MACRO-80 3.44 (M80) for the TRS-80 model 4 running under TRSDOS 6.2 or LS-DOS 6.3. I welcome anyone's comments or questions about this program.

I find PG more convenient for its intended purpose than the DOS command LIST — having to press <SH><@> to stop scrolling, then any character to continue, is a nuisance (not to mention it's hard to stop at just the right point).

```
;       [ set tab stops from command-line ]
;       get input file name from command-line and open file
;       while reading a line from input file is successful, do
;           display line on terminal
;           if a screenful has been displayed
;               pause for a response from user to continue or quit
;
; SYSTEM
;       machine         TRS-80 model 4
;       DOS             TRSDOS 6.2 | LS-DOS 6.3
;       assembler       Microsoft MACRO-80 3.44
;
SCR_WIDTH   equ     80              ; width of screen
SCR_LEN     equ     24              ; length of screen
ETX         equ     03H
HT          equ     09H
CR          equ     0dH
FS          equ     1cH
SPA         equ     20H
BREAK       equ     80H             ; BREAK key
@CLOSE      equ     60              ; close file
@DIV8       equ     93              ; 8-bit divide
@DSP        equ     2               ; write character to terminal
@DSPLY      equ     10              ; write line to terminal
@ERROR      equ     26              ; write error message to terminal
@EXIT       equ     22              ; exit to DOS
@FSPEC      equ     78              ; move filename into FCB
@GET        equ     3               ; read character from file
@KEY        equ     1               ; read character from terminal
@OPEN       equ     59              ; open file
;
svc         macro   x               ; expand DOS supervisor call
            ld      a,x
            rst     28H
            endm
;
            dseg
buf:        defs    SCR_WIDTH+1     ; input data buffer
col:        defs    1               ; column-count
fcb:        defs    32              ; file control block
filebuf:    defs    256             ; file I/O buffer
nlines:     defb    SCR_LEN-1       ; line-count
tabstop:    defb    4               ; tab stops every 4 columns (de-
fault)
;
            cseg
;
; get the optional switch and the input file name from the command-line
;   and open the file
;
entry:                              ; when LS-DOS transfers to the
entry point
                                    ; of the program, the hl register
pair
                                    ; points to the external buffer
containing
                                    ; the command-line argument
            ld      a,(hl)
            cp      '-'
            jp      nz,getfile
            inc     hl
            ld      a,(hl)
            cp      't'
            jp      nz,usage        ; z flag reset = bad command-line
argument
            inc     hl
            ld      a,(hl)
            cp      '8'
            jp      nz,usage
            ld      a,8             ; change tab stops to every 8
columns
            ld      (tabstop),a
```

Note: The following is a reprint from the *LSI Journal*, April 1984

## Locating high memory routines under LS-DOS 6.x

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A short while after my Mod 4 came rolling in, I got the tech manual and turned to the SVC section to find out how to convert my Mod 3 subroutines. One of the first SVCs I looked for was the one to get USTOR$, the LDOS 8 byte storage area allocated to the user. I store the addresses of my subroutines there so that I can find them from LBASIC. Unfortunately, I never found the SVC, because there isn't one. So I plunged in to find out how to locate my routines.

LSI has adopted a convention for a header to precede high memory routines. Using this header allows an SVC to locate the routine for you. Listing 1 demonstrates the technique by fetching the address of INKY4.

DE is loaded with the address of the name of the routine you want to find, and A with the number of the SVC (in this case 83). The name must be in UPPER CASE characters and terminated with a character whose code is in the range 0-31. After executing the SVC with RST 28H, the starting address of INKY4 is in HL, and the Z flag is set (NZ if it wasn't found).

Of course, that doesn't entirely solve the problem of how to get this address into BASIC so that you can CALL (or USR) the routine.

The method I chose involves passing a parameter to the routine, and sending the address back in the parameter. The key to finding the routine is to know where to find the name of the routine (so it can be loaded into DE), The program is shown in listing 2. The parameter passed to this program is the ADDRESS of the program itself.

That is the secret to finding the location of the name of the routine you wish to locate,

```
            inc     hl
            inc     hl
getfile:    ld      de,fcb
            svc     @FSPEC
            jp      nz,usage        ; z flag reset = bad command-line
argument
            ld      hl,filebuf
            ld      b,0H            ; set logical record length to 256
            svc     @OPEN
            jp      nz,dskerr
;
; read a line from the input file
;
getline:    ld      hl,buf
            ld      de,fcb
            ld      b,SCR_WIDTH     ; set up counter to read at most
SCR_WIDTH
                                    ; characters into buf
getc:       svc     @GET
            jp      nz,endfile
            and     7FH             ; ensure character is ASCII
            ld      (hl),a
            inc     hl
            cp      CR              ; if end-of-line is reached,
            jp      z,r_done        ;   stop reading
            djnz    getc
r_done:     ld      (hl),00H        ; terminate line with a NULL
;
; write the line to the terminal
;
            ld      hl,buf
            ld      a,1             ; set column-count to 1
            ld      (col),a
putchar:    ld      a,(hl)
            or      a               ; if a null character is encoun-
tered,
            jp      z,w_done        ;   stop writing
            cp      HT
            jp      nz,not_tab      ; if character is a tab,
            call    expand          ;   expand to spaces
            jp      continue
not_tab:                            ; else
            ld      c,a             ;   write character to terminal
            svc     @DSP            ;
            ld      a,(col)         ;   increment column-count
            inc     a
            ld      (col),a
continue:   inc     hl              ; increment buf pointer
            jp      putchar
w_done:
;
; check if a screenful has been written and if so, get response from
user
;
            ld      a,(nlines)      ; decrement line-count
            dec     a
            ld      (nlines),a
            or      a               ; check if zero (i.e., end of
'page')
            call    z,ttyin
            jp      getline
;
; convert tab character to spaces
;
expand:                             ; repeat
                                    ;   write space to terminal
                                    ;   increment col
                                    ; until col modulo tabstop = 1
            ld      c,SPA
            svc     @DSP
            ld      a,(col)
            inc     a
```

The program is exactly 18 bytes long, Therefore adding 18 to the address of the program (the parameter we passed) gives us the location of the name of the routine we are searching for. That is the purpose of the LD HL,18 and ADD HL,DE instructions. The 18 instructions can be loaded into an integer array as shown in the BASIC program in listing 3.

On line 16, X is set to the location of X(0) in memory. It is both the location of the routine CALLed in line 17 and the parameter passed to it. The integer INKY4 is the location of the high memory routine.

There is one more secret to success. You have to translate the name of the high memory routine into integers. The letters I,N,K,Y, and 4 are represented in memory by the ASCII codes, 3, 78, 75, 89, and 52 respectively. To find out what integers to use, let's look at I and N, Those two letters make up one integer. Set I%=O. Then poke the codes for the letters into I%: POKE VARPTR(I%),73:POKE VARPTR(I%)+1,78. Then PRINT I% and you will find that I%=20041. The value for NK is 22859, and the value for 4 + carriage return (code 13) is 3380. Those are the last three values in the DATA statement at line 15.

If your routine name has an even number of characters you can terminate the name with an integer value of 0-31 (assuming an extra byte of value 0 following the terminating character). I just use 13 from habit.

## High Memory Headers

None of this is possible without the proper header. My header for INKY4 is shown in listing 4. The first two bytes jump to the start of the actual routine. Next is a two byte integer with the address of the highest byte of memory occupied by the routine. Then one byte which gives the length of the name of the routine, 5 in this case - INKY4. There follows two byte reserved for the address of a Device Control Block if the routine is associated with a device and two bytes that are reserved for I don't know what. [editor's note: those remaining two bytes were reserved for future enhancements]

```
            ld      (col),a
            ld      e,a             ; divide column-count by tabstop
            ld      a,(tabstop)
            ld      c,a
            svc     @DIV8
            ld      a,e             ; compare remainder to 1
            cp      1
            jp      nz,expand
            ret
;
; process response from terminal
;
ttyin:                              ; read terminal until a space,
RETURN,
                                    ; BREAK, or ctl-c is typed
            svc     @KEY
            cp      SPA
            jp      z,page
            cp      CR
            jp      z,line
            cp      BREAK
            jp      z,fclose
            cp      ETX
            jp      z,fclose
            jp      ttyin
page:       ld      a,SCR_LEN-1     ; set up to write the next 'page'
            ld      (nlines),a
            ret
line:       ld      a,(nlines)      ; set up to write the next line
            inc     a
            ld      (nlines),a
            ret
;
; report 'usage' error message and exit
;
usage:
            dseg
errmsg:     defm    'usage:  pg [ -t8 ] file',CR
            cseg
            ld      hl,errmsg
            svc     @DSPLY
            svc     @EXIT
;
; check if error was EOF
;
endfile:    cp      FS              ; value returned from @GET on end-
of-file
            jp      z,fclose
;
; report fatal disk error
;
dskerr:     ld      c,a             ; store error code in register c
            set     6,c             ; set register c for short error
message
            svc     @ERROR
;
; close file and exit
;
fclose:     ld      de,fcb
            svc     @CLOSE
            svc     @EXIT
            end     entry
```

## Do it Again

You can reuse the routine in lines 14-17 in the same program. Line 18 would reset US(9) to (11) or however many elements after US(8) need to be changed.

For example, let's find the routine FLASH. Line 18 would be US(9)=19526:US(10)=21313:US(11)=72 (I terminated 'FLASH' With a 00), followed by X=VARPTR(US(0)):

CALL X(X):FLASH=X. You can do it as many times as you need in the same program. And since you can wipe out arrays in BASIC under LDOS (TRSDOS) 6.X, you can ERASE US when you're done to reclaim its space and have the addresses of your routines in the integers INKY4 and FLASH (and whatever else).

Be sure to put x=VARPTR(US(O)) before each CALL X. BASIC moves things around dynamically and the address of US(0) might change between calls to X. And be absolutely certain that X is an integer. I can promise you from experience that you will not like the results if X is not an integer.

That's all there is to it. Simply MERGE lines 14-17 with your BASIC program, then remove the last three integers and replace them with the name of the high memory routine you are looking for.

Look at those listings!

**Listing 1**

```
START:   LD      DE,FSPEC     ;header to find
         LD      A,83         ;GTMOD
         RST     28H
         .
         .
         .
FSPEC:   DEFM    'INKY4'
         DEFB    0DH
```

**Listing 2**

```
         PUSH    HL           Save the parameter address
         LD      E,(HL)       ;Load the actual parameter
         INC     HL           ;itself into DE
         LD      D,(HL)
         LD      HL,18
         Add     HL,DE        ;Add 18 to de
         EX      DE,HL        ;Address of 'INKY4' to W
         LD      A,83         ;SVC number
         RST     28H
         POP     DE           ;Recover parameter location
         EX      DE,Hl        ;Move Routine location to N
         LD      (HL),E       ;Move LSB to parameter
         INC     HL
         LD      (HL),D       ;Move MSB to parameter
         RET
         DEFM    'INKY4'
         DEFB    0DH
```

**Listing 3**

```
14 DIM US(11):FOR X=0 TO 11:US(0)=0:NEXT X
15 DATA 24293,22051,4641,6400,16107,-4269,-5167,9075,-
13966,20041,22859,3380
16 FOR X=0 TO 11:READ US(X):NEXT X:X=VARPTR(US(0))
17 CALL X(X):INKY4=X '** SAVE INKY4 ADDRESS **
20100 '- INKEY ROUTINE -
20105 CALL INKY4(Z)
```

**Listing 4**

```
;************
;** HEADER **
;************
BEGIN:   JR      START
         DEFW    LAST-1       ;HIGHEST MEMORY BYTE
         DEFB    5
         DEFM    'INKY4'
MODDCB:  DEFW    $-$
         DEFW    0
```

# MISOSYS Products' Tidbits

## DiskDISK

### *diskDISK hard drive partitioning*

**Fm R. H. Hollenbeck:** Roy, Congratulations on the latest addition to the Soltoff family! I can not figure out where you're finding the time and energy to put out TMQ. Wherever you're finding it though, keep going back, because you're doing a great job!

Latest TMQ (III.i) arrived today and I was happy to note that the PRO WAM Programmer's Toolkit is now available. My order is enclosed.

Thought that as long as I was writing, I'd ask about a minor aggravation I've had with LS-diskDISK's directory. The last time I wrote regarding a problem - you straightened me out, real quick. Hope you can do the same this time! If not, no sweat, I can live with it!

I'm running a 128K, 5 meg model 4. Three LS-diskDISK files have been installed on the hard drive as "drives 5, 6, and 7." They work like a champ!

I've just noticed that on "drive 7's" directory, 1988 dates are coming up 1980. I've enclosed a printout of the directory.

I suspect that I've missed a patch somewhere - but I couldn't find it. At any rate - if there is a fix, I'd like to hear about it - if there is no fix, forget it. It's not all that important.

Keep up the good work (and have fun with baby Benjamin).

**Fm MISOSYS, Inc:** You need to DATECONV the diskDISK. For newly created diskDISK's, make sure you have applied the DDFORM63/FIX file listed in TMQ Volume II.i, page 102. I believe that the fix was also added to the DiskDISK production diskette; but if you have had the product for some time, you may not find the fix on the disk. In any event, diskDISK's created with DDFORM prior to the patch application will have to be DATECONV'd. That's the easy solution.

### *Assigning diskDISK to active drive slots*

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Hampshire, GU35 9PX
England

I have been using diskDISK for some time now and only recently, through being a little careless, came across a problem. I can install a DD drive on top of an active drive! Of course when I disable DD I also lose original drive configuration. No problem reactivating the drive through the system command, however, I did not think DD should allow this. I have checked for any patches in TMQ but cannot find any, although it is possible I may have missed them. I would certainly feel more at ease if I knew the software would not allow me to trample over an active drive.

Looking at the code of DD there appears to be no check that the destination drive is actually free. The software takes the drive number and simple overwrites anything in the DCT slot. I have worked up a patch that checks for an active drive. Would you please cast your expert eye over it and see if it is suitable. I have used a patched DD (and packed by Pro-cess) for a little while and it seems to be OK.

I hope you find the patch helpful.

**Fm MISOSYS, Inc:** It's true, John, that DOS drive installation facilities, such as $/DCT programs will not let you install a driver over top of an active drive. That design was incorporated into every driver supplied with the DOS that either MISOSYS or LSI supplied. And I believe it is a useful function. It guards against disrupting the operation of a drive if the operator types a wrong drive designation.

Now diskDISK was designed by LSI and is a *finished* product I took over from them, but I can surmise that the operation you have experienced is the operation intended by LSI. Judging from internal documentation, LSI wanted to make it very easy to attach a diskDISK to a drive slot. They also wanted to be able to reassign a diskDISK to an active drive slot without fussing with the `SYSTEM (DRIVE=d,DISABLE)` parameter first. Seems just like a desire to shorten the number of keystrokes. Remember that the DD :d (DISABLE) command actually attempts to remove the diskDISK linkage from memory. So its easier to just install a new diskDISK over an existing one;

Although I haven't looked at where your code fits in, if it satisfies you to alter the installation procedure of a diskDISK, then it's fine with me. I printed your code (see next page) so others with the same considerations could use your patch.

## *EnhComp*

### *EnhComp BASIC compiler review*

**Fm Charles A. Ainsworth:** Roy, This letter does not call for a specific reply, rather it is written in case it may be of interest, together with your reply, to TMQ readers.

I enjoyed Mark Allen Reed's review of EnhComp in TMQ III.ii. A pat on the back to Mark; it was well written and quite comprehensive while short enough to be interesting. I also feel that's an excellent way of presenting features of your products that might otherwise pass unnoticed by your readers.

```
MISOSYS MRAS-1.0, 12/27/88 15:11:00 diskDISK Page 00001

                00001 *LIST OFF
                00585 *LIST ON
28D8'   CDA42E' 00586  CALL    INUSE   ;Check use & get DCT slot
                00587 *LIST OFF
                01117 *LIST ON
                01118 ;
                01119 ;*=*=*
                01120 ;
                01121 ;Checks for drive slot in Use
                01122 ;Is called from = X'28D8
                01123 ;On error jump to = X'2624
                01124
                01125 ;*=*=*
                01126
2EA4'   CD842E' 01127 INUSE    CALL    GTDCT   ;get selected DCT slot
2EA7'   3AB128' 01128  LD      A,(PARMRES)     ;check Disable, if yes skip
2EAA'   B7      01129  OR      A       ;next bit as disable expects
2EAB'   C0      01130  RET     NZ      ;the slot to be in use
2EAC'   FD7E00  01131  LD      A,(IY)  ;IY => to first Char in DCT
2EAF'   FEC3    01132  CP      0C3H    ;X'C3 = in use
2EB1'   C0      01133  RET     NZ      ;drive not in use
2EB2'   21B82E' 01133  LD      HL,DVRUSED      ;error message
                01136 ;
2EB8'   44      01137 DVRUSED  DB      'Drive already in use!',00DH
        72 69 76 6s 20 61 6c T2
        65 61 64 79 20 69 6E 20
        75 73 65 21 0D
                01138 ;
                01139 *LIST OFF
00000 Total errors
34733 Free space

DD1/FIX - Patch DD to recognise an in use DCT
.
X'28D9'=A4 2E
X'2EA4'=CD 84 2E 3A B1 28 B7 C0 FD 7E 00 FE C3 C0 21 B8
X'2EB4'=2E C3 24 26 44 72 69 76 65 20 61 6C 72 65 61 64
X'2EC4'=79 20 69 6E 20 75 73 65 21 0D
.eop
```

I have been using Pro-EnhComp almost from day one and, after some initial buglets were exterminated, find it very interesting. However, there is just one thing that, on certain jobs, tends to keep me away from it in favor of straight interpretive Basic.

I handle a number of data bases in interpretive Basic; most of the programs are quite long and elaborate. Invariably, my programs are written so when writing to disk, it is done in duplicate, one write to the working disk and one to the backup. A typical program is arranged so a number of entries are made and a save command is given by the operator when finished; however, if the number of entries exceeds a certain figure, say 300 for instance, the program stops the operator and saves. This establishes a compromise maximum that can be in RAM at any given moment, to avoid excessive loss in case of power failure while avoiding wasted time due to over-frequent saves to floppies.

When one gets into long and complex programs, there are numerous errors to be considered, together with how to get around them when they occur. Perhaps the perfect program should have sufficient ON ERROR GOTO traps to cover them all. The problem is that it isn't always easy to foresee all possible errors and that, even if one did, the program would perhaps become so cluttered with error traps it would be hard to read or revise. I tried it once, and on a 300-line program had to add about 80 lines of error trapping.

But there is an easy way the wideawake interpretive Basic programmer-operator can use when an error doesn't have a trap: When Basic jumps out of a program due to an error, one can pull out a hard copy of the program and, after a little pondering, issue instructions to Basic from the keyboard to solve the problem. For instance, in the case of one of those data bases, if the program is saving to drive 1 and there is an error, such as a floppy drive left inadvertently unlatched or a disk fault, when the program stops and reports an error the operator can take stock of the situation; if the drive was left unlatched it's a simple matter to latch it and tell Basic to GOTO a certain line where the save to that drive begins. If it was an I/O error, perhaps due to a bad disk, the operator may decide to bypass the save to drive 1 and tell Basic to close the file and GOTO the line for initiating the save to drive 2; then terminate the run normally and backup as necessary to get the material onto the drive 1 disk (or a new copy). Note that the data which was so laboriously input, has not been lost.

However, as far as I see it, EnhComp does not allow such things and, in the event of such errors, it reports the error and jumps to LSDOS Ready, leaving one wondering just what to do and, very especially, how to recover that half hour or hour of hard work which was expended inputting material from the keyboard for addition to the data base. As far as I am aware, and I may be wrong, the only way to get up and running again is to call the EnhComp/CMD program once more and begin entering one's material from the start. Or is there some form of warm restart, without data loss, that I don't know about or may have missed somehow?

Turning now to another aspect: One advantage of EnhComp I have found quite useful as compared to interpretive Basic is that, although EnhComp produces a /CMD file substantially larger than the file

written originally for compilation, in the aggregate one ends up with less disk access time than with interpretive Basic where two stages are involved: loading BASIC/CMD and then the Basic program. Anything that helps me to load faster from floppy drives has my blessing. Floppy drives, as you may have noted, are those cute mechanical-electrical-electronic gadgets that whisper, purr, growl, rumble, grumble or grind and that seem to take from now to the end of eternity to load a few KB of file while seemingly meandering all over the disk, with fitful starts and stops, to find and read it, while I while away the time serenely munching tranquilizer pills to stop me going into orbit through the ceiling. (Yes, I know, don't tell me, I should get a hard drive, but that means a bundle of shekels.)

**Fm MISOSYS, Inc**: Charles, you just described one of the major reasons for installing an UPS or standby power system. Anyone who is as concerned over data loss due to power failure as you are, should keep that machine powered through an UPS or SBS. That was a major concern of mine. Our location seemed to be hit be unplanned short power outages which became a problem when the invoicing program was being run. An outage prior to closing out the program required the reentry of all invoices that were keyed in during that session. That's why I have an SBS on my 386 machine and on the 286 machine used for accounting, invoicing, and which houses our customer and 6.3 data bases.

On the other hand, I don't necessarily agree with your perspective as to what an OPERATOR (my emphasis) can do to recover from some unforseen problem. I could never expect an operator to dig out a listing and start GOTOing all over the place to circumvent a program abort. I would expect that of a programmer, though. But I think I know where you are coming from; your operator would probably grab you to dig out the listing, etc.

The difference between an interpretive program and a compiled one (be it EnhComp, BASCOM, FORTRAN, etc.), or one assembled to a CMD file, is that the BASIC interpreter is designed as an interactive facility. If something goes wrong, the program stops and you are at the controls. All compiled programs have to totally predict all errors which could occur and provide all means of recovery. Most compiled programs can only strive to reach that level of error handling.

I recollect that the difference between a BASIC program without a single ON ERROR GOTO trap and one with many, is the difference between a beginning programmer's programming and an expert's. I would also expect the commercial program to be classified as "bulletproof". But we all know that the bulletproof program is one to strive for. No amount of programming can account for every possible thing which could go wrong. The closer the developer comes to that ideal, the longer it takes to get the product out. The level of perfection is most likely asymptotic with a logarithmic curve.

There is no way that I know to generalize data recovery in a compiled program which has aborted. That's why the developer tries to second guess what could go wrong. I recommend that you re-look at the environment of error trapping.

What you may also want to explore is a method used by a commercial program available for MS-DOS (and one which is available from us for the Model 4). I forget the name of the MS-DOS program, but its thrust is recovery from catatastrophy. What it does is store every keystroke which is entered and writes that out to disk (don't ask me what it does when it gets a disk error). If you have to recover at some point later in time, you can play back all of the keystrokes. If you don't need all of the keystrokes, just edit the file.

I believe that you have our GO:SYS package. One of the programs in that package is KISTORE/FLT, designed as a front end for ZSHELL. KISTORE is used to capture all keystrokes and send them to a file. The purpose of the file is to re-play the entire sequence of keystrokes via ZSHELL for total automation of the job. It may be interesting for you to give that a try.

## *EnhComp bug in LSET/RSET*

**Fm MISOSYS, Inc**: Paul Evellyn provided a telephone bug report he experienced with EnhComp. Here's my answer. Paul, This is in response to your telephone report of January 11th concerning a suspected bug in PRO-EnhComp. I used the example program you provided to confirm your report and to find the root cause of the problem.

As it turns out, the bug was in the compiler. An incorrect test was made in the code common to LSET and RSET. This placed an address to the presumed scalar field variable into the execution stream, regardless of whether or not the fielded variable was a scalar or an array element. The test was incorrectly coded. Now since two extra bytes appeared in the execution stream, the result at runtime could vary according to the interpretation of those two bytes. Apparently, my test program was such that the result at runtime was inconsequential.

I have developed a short patch to the compiler which will correct this bug.

```
. BC55/FIX - Patch to EnhComp 2.6
. Correct "R" files with array fields
. Apply via, PATCH BC BC55
D01,D3=61
F01,D3=20
D05,8E=E6 03 FE 03 C9
F05,8E=00 00 00 00 00
D26,73=47 CD 76 5B
F26,73=E6 03 FE 03
D26,7B=78
F26,7B=7F
. Eop
```

```
. BC65/FIX - Patch to PRO-EnhComp 1.6
. Correct "R" files with array fields
. Apply via, PATCH BC BC65
D01,CD=61
F01,CD=20
D05,90=E6 03 FE 03 C9
F05,90=00 00 00 00 00
D26,82=47 CD 78 2F
F26,82=E6 03 FE 03
D26,8A=78
F26,8A=7F
. Eop
```

# HartFORTH

## *FORTH Compiler*

Peter Knaggs
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Wiltshire. SN15 3NH
England

I have been interested to see a discussion on FORTH in your last TMQ. This prompted me to buy a copy of your PRO-HartFORTH. Please find enclosed a brief discussion on the merits of the language as I see it. I then go on to talk about my current research in the Forth area. I am a research assistant currently looking into concurrent object Forth. I feel that this may be of some interest to your readers.

I was interested to see a discussion on FORTH in a recent TMQ. This has prompted me to give, my views on the matter of the FORTH language.

The main attribute to FORTH's success as a "rapid prototyping" language lies in it's unique combination of interactive, unrestricted low-level access to the hardware, and the unlimited flexibility of the language. The only other high-level language which offers equivalent levels of machine access is C, and a good Forth programmer will have finished and gone home while the C programmer is still wadding through the "edit, compiler, link, load, run" cycle. It allows me to tailor the language to my own requirements. If that means defining a operation that will draw a line on the screen, then I just write the code for it and call it, say, LINE. I can even add a CASE statement to the compiler if I wish, or anything else.

The thing that really separates FORTH from any other language, is that it is interactive. This means that if I want to test an operation (say move a robot arm up 10 mm) then I can simply type the command at the keyboard (10 UP), as opposed to C in which I would have to create a test environment, and indeed a test program for each and every routine. This is of course not forgetting the other interactive languages, such as Basic, Lisp, Prolog, etc. However, it is the only language that lets you develop your code and ideas in such a free and easy way, and use the code in a sensible manner afterwards.

I find Forth particularly useful for development of ideas, as I can see how to implement an idea in Forth, that would take simply ages to workout in C. In many ways it is similar to Machine Code. At least it helps if you can think in Machine code terms. However, Forth, allows a grate deal of abstraction, that M/C does not. As a for instance, I can implement, from scratch, a Multi-Tasking system in Forth, in two days at a maximum. Having developed the code I can simply use it. There is no need for me to know how the Multi-Tasking is being performed. This information is hidden. To do the same in C, would require a savage re-write of the C base program. This could take up to several months if it is a good C system!

A final note on this is a recommendation of a good book for anyone wishing to learn FORTH, my suggestion is "*Starting Forth*" by Leo Brodie (Prentice-Hall, 1981). I would also suggest contacting FIG (Forth Interest Group).

Since writing this I have received a copy of Pro-HartFORTH. This is a Forth package for the Model 4 (HartFORTH is a Model I/III version). From first impression this appears to be a good healthy Forth package. There are however three things wrong with it in my view. a) it is a '79 standard system, I would have liked it to be an '83 standard, b) I would like to have some form of multi-tasking, and easy access to the extra memory, and c) the lack of an assembler will make 'fine tuning' very difficult, maybe to a state that I won't bother! These are three faults that are fixable. Indeed I might even give them a go myself. However, all in all, this is a very good Forth package.

Now we come on to the interesting bit.

I am currently involved with developing an Object-Oriented system in Forth. This can be a relatively simple problem, or a difficult one, dependent on how you view objects and what that should be able to do. Treating an Object as a complex data type, to which you send your messages, has already been handled by Dick Pountain in his book "*Object-Oriented Forth (Implementation of Data Structures)*" (Academic Press, 1987). However, treating an object as a far more intelligent device, capable of performing complex calculations, creating other objects, and generally having a chat with other Objects has not yet been tackled (in Forth at least). It is this that I am looking into.

This work is going to be specified in the Formal Notation known as Z (zed). This has it's base set firmly in mathematics set theory, and as such is (in theory at least) proverbial using standard mathematics. The notation itself was developed by the Programming Research Group at Oxford University. An initial standard for the Z notation is given in J.M. Spivey' s book "*The Z notation: a reference manual*" (Prentice-Hall, 1988), although a true standard is being developed, it will be several years before it is complete.

It is my intention to continue this work on to allow (and implement) concurrent objects working in unison. This will be on different logical and physical processors. All of the objects in this system will have to be able to send messages to each other.

This work is being developed on a PC clone, with two FB4016 novix Forth boards. The novix chip is the predecessor to the Harris RTX chip.

I would like to hear from anybody who is interested in this work. You can help by simply letting me know how you view an object. I hope that the above is of use to somebody. If you have a comment (of any kind), please contact me, I am interested to hear from anybody, about anything to do with this work, no matter how small you think it might be, let me know.

I can be contacted at:

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# Golden Oldies

## *Golden Oldies:IFC*

**Fm John Coyne**: I have not had the chance to try all of the utilities from the 'GO' collection, but I am impressed with FED and especially IFC. The 'O' function is a real asset for comparing a working disc with a backup. It certainly saves the laborious chore of manually comparing what needs to be copied. I sometimes wonder how much more can be squeezed out of the utilities we already have, and where do you get all the ideas from? I suppose you have a never ending wish list on the wall of the office and we (your customers) keep on adding to it. (Psst.... is there a patch for the verify in IFC to default to on?).

**Fm MISOSYS, Inc**: Ask, and ye shall find. Understand that the VERIFY facility in IFC is considerably more demanding than the simple VERIFY of the DOS. IFC's does a total Cylic Rendundanc Check (CRC) of the destination file against the source file during a file COPY. All that the DOS's VERIFY operation does is see if the sector being written is readable. If there was a memory corruption, DOS VERIFY would probably not find it. If a subsequent sector write corrupted a different sector on the diskette's track due to head bounce (rare), DOS VERIFY would probably not discover it because each sector is verified immediately following its write. IFC divides available memory into two buffers (about 10K-20K each); thus, many sectors are read after they are written.

But CRC checking is slow. That's why I added the option to inhibit it in IFC. If you want to alter the default so that version 4.0.0 IFC's VERIFY is ON, apply the following patch:

```
PATCH IFC (D12,CE=FF:F12,CE=00)
```

Similarly, you can default INV to ON with the patch:

```
PATCH IFC (D02,36=FF:F02,36=00)
```

I see no sense in supplying a patch to change the default of the PRINT option.

## *Golden Oldies:DOCONFIG*

**Fm John Coyne**: Roy, I have just tried DOCONFIG, more than once, and each time my system ended up in a mess, not always in the same mess, but most times unusable. I will try and give you some immediate symptoms and I hope to have a closer look later. First my system, model 4p with LS-DOS 6.3 L+ running an XLR8 with Michel's patches, 4 floppies and a hard drive. The patches do not cause the problem because I have tried running the basic unconfigured L+ with the same results.

1. Trying to save the current configuration on drive 0

```
DOCONFIG filespec:0 (s)
```

Doconfig response: "Warning drive contains no system files User configuration built" or (once only) "Illegal drive number".

As it was the system drive that seemed a strange answer, also, for some reason the hard disc was accessed during the 'build'. Checking drive 0 I expected to see the newly created $/CFG file; it was not there, instead my config/sys file seemed to have been changed. The date and time corresponded to when Doconfig was doing its bit. My suspicion was confirmed when I booted the disc with the apparently changed config/sys; it crashed when the system tried to load the configuration.

2. During the brief testing, although there was not $/CFG file on disc, I tried:

```
DOCONFIG filespec
```

Doconfig response: "Program not found", "Internal error".

The system was now unpredictable and in both cases my config/sys is corrupt and the system would crash after rebooting. I hope you find this little bit of information some help. If you require more detail please let me know and I will be happy to help.

By the time you receive this letter the festive season will have past, but I hope you have had an enjoyable one.

**Fm John Coyne**: Roy, Further to my letter of the 28th December 1988 regarding the problems with DOCONFIG. I have had a look at the code and it appears the gremlins got into the program. There appear to be two bugs, both in the same area, so once the first was found the second one did not take long to find.

If you look at the code around the loop at X'2A43 where the filespec is parsed for the drive number in the FCB; once the ':' is found, DOCONFIG jumps out of the loop to the routine which pokes the drive number into the sysgen module. At this stage HL is pointing to the ASCII drive number, but AF still contains the ':', whereas the next module expects it to contain the ASCII drive number. The next instruction ands AF with X'07 which should give a binary drive number, however, as AF contains X'3A we always end up with drive £2 which is poked into the sysgen module; hence DOCONFIG always warns there is no system on the drive. The instruction AND 07H should be preceded by LD A,(HL).

The second bug is the one which messes the system up. Two instructions from the above (AND 07H) DOCONFIG calls a routine to find the location of the drive number in the sysgen module. At this stage DE contains the address of the config/sys.ccc in the sysgen module which will be replaced by our filespec. However, when returning from the drive address locating routine DE has changed. When DOCONFIG tries to place our filespec into the sysgen module it ends up overwriting part of itself at X'2C88. It seems a PUSH DE and POP DE is missing before and after the call.

I have patched DOCONFIG and it now seems to work. I have used the following patch code:

```
X'2A4F    CALL    2F26H
X'2F26    LD      A,(HL)
          AND     07H
          PUSH    AF
          PUSH    DE
          CALL    2C6CH
          POP     DE
          POP     AF
          RET
```

**Fm MISOSYS, Inc**: Thanks for the report, and a double thanks for the investigatory work done to cure the problem. I checked the code and don't know how that happened because I specifically tested the operation of DOCONFIG having uncovered a problem in invoking it from a running BASIC program (and correcting that).

I took your suggested patch and melded it into the NOP'd area reserved for patches. Here's my official patch to cure the problem.

```
. DOCO201/FIX - Patch to DOCONFIG/
CMD 2.0.0
. Corrects problem in handling the
drive spec
. Apply via, PATCH DOCONFIG DOCO201
D00,7E=7E E6 07 D5 CD 5F 2E D1
F00,7E=E6 07 F5 CD 6C 2C F1 77
D03,C3=31
F03,C3=30
D04,2E=F5 CD 6C 2C F1 77 C9
F04,2E=00 00 00 00 00 00 00
. Eop
```

## *Golden Oldies:PDS(PURGE)*

**Fm Mike Harro**: Roy, there seems to be a problem with PDS(PURGE). It appears to be trashing the member directory. The APPEND command will fail (after a PURGE) giving the error:

Reading PDS MEMBER directory
End of file encountered

The squeeze function works alright though ... so after a file kill I've been using SQUEEZE as mentioned in the GO:SYS manual. I couldn't find anything in back issues of TMQ's to indicate this was the case with previous versions of PaDS. The purge function could probably be eliminated altogether since SQUEEZE is just as effective. Purge is mentioned in the manual so you may get other reports of this problem (if you haven't already.)

**Fm MISOSYS, Inc**: Looks like you are absolutely correct. I introduced the bug into the new version. Seems like the old mind just got a little foggy. There is a big difference between an INC and a DEC. Here's the patch to correct that booboo.

```
. GPURGE61/FIX - Patch to PDS/CMD
of GO:CMD package
. Fixes bug in PDS(PURGE) which
corrupts the PDS directory
. Apply via, PATCH PDS.PDS
GPURGE61
D21,41=2B 2B 2B 2B 2B
F21,41=23 23 23 23 23
. Eop
```

## *Golden Oldies:SWAP*

**Fm Charles A. Ainsworth**: Roy, Here's a little problem I hadn't noticed before with the XLR8er, which could be quite a nuisance on occasion. I'm not expecting a specific answer to this letter, but you may wish to consider it for a reply in TMQ.

First I'll describe my setups: Setup #1 is a stock unaltered 4D in native 4 Mhz mode, LSDOS, with four floppy drives, numbers 2 and 3 ENABLEd; FORMS/FLT and KSMPLUS2/FLT installed; typeahead off; VERIFY on; SETKI (W=10,R=1).

Setup #2 is another 4D, LSDOS, with 150 ns chips and the complete XLR8er hardware, operating under Michel Houde's files and with his patches applied to the distribution disk LSDOS files. (Incidentally, the problem I am about to describe is exactly the same with Rex Basham's HIBANKS). The RAM disk is first set up as #4, as part of my bootup JCL, and then there's a SWAP :0 :4 command, so the original drive zero becomes drive #4. SYSTEM (DELAY) is SYSGENed.

In setup #1, whenever I give the DEVICE command, the drives are scanned in succession, and if a drive has no disk I get, as expected, NO DISK for that drive. If I misspell a command (e.g. FRMAT or BCKUP) or call in error for a non-resident file, the system scans all drives and reports Program not found. All of which is correct and as it should be.

With setup #2, if I issue DEVICE, misspell a command or call for a non-resident file, all while a disk is in drive 4 (ex-0), I get the same as with setup #1. But if drive #4 (ex-0) is unlatched or doesn't contain a disk, when I issue DEVICE the drive-select lights go on in succession, an unlatched drive #1, #2 or #3 is quickly bypassed and reported as NO DISK and things stall at diskless drive 4 (ex-0), where the drive-select light goes on nothing happens, there is no NO DISK statement, the drive times out, the light goes off and the computer locks up and I can only get going again by rebooting. The same lockup occurs on diskless drive 4 with a misspelled command or a call to a non-resident file (also with multidrive commands, e.g. DIR or FREE).

Just in case SWAP/CMD has anything to do with it, the version I am using is your latest, Nov. 17, 1988.

Incidentally, I get exactly the same problem as with setup #2 if I boot up with setup #1 and, from DOS, call ALTDISK as drive 4, backup system files to it and then SWAP :0 :4.

Somehow I have a sneaky feeling there's something I may be overlooking or doing wrong, but however much I twist my brain around I just can't put my finger on it.

One of the beauties of the XLR8er is bundling system and program files up there in RAM and having four physical floppies available for data disks, a great advantage to me as I work large data bases. So the bootup disk gets removed from drive 4 (ex-0) as soon as system setup is complete. But that drive, if left empty, is a trap waiting to catch me and freeze up the computer. Admittedly, I don't use DEVICE (or non-drive-specific commands such as DIR or FREE) all that much, but my fingers, all thumbs at times, may misspell commands or file names.

Just in case I haven't made myself clear in anything regarding my setup, the following is an excerpt from my notes for creation of my XLR8er system disk:

Copy/backup LSDOS system files from distribution disk, also utility, program and XLR8er files (Michel Houde version).

PATCH, using XLR8er distribution disk patches (disk updated 12/88 by MISOSYS): SYS0, XLSYS0A/FIX, BOOT/SYS, XLBOOTA/FIX, SYS2, XLR8S2/FIX, SYS12, XLR8S12/FIX. BACKUP, XLR8BU/FIX.

Configure system disk as follows:

```
SYSTEM (DRIVE=2, ENABLE)
SYSTEM (DRIVE=3, ENABLE )
SYSTEM ( DELAY )
CAPS key in upper case.
VERIFY
PEXMEM
SYSGEN
AUTO DO = DOSTART/JCL [Text below]
```

Text of DOSTART/JCL :

```
. DOSTART/JCL for setting up SYSTEM
disk for XLR8 BOARD
ERAMDISK (D=4,T=5,B=1,S=10) [Patched
0C,59, to name of system disk to
allow mirror image backup]
BACKUP :0 :4 [Mirror image. System
disk is single-sided, 71 track,
DIR=1]
SWAP :0 :4
SETX (M=0,I=1,R=80)
REMOVE SYS0/SYS.LSIDOS:0
REMOVE ERAMDISK/CMD:0
REMOVE PEXMEM/CMD:0
REMOVE SETX/CMD:0
REMOVE CONFIG/SYS.CCC:0
REMOVE SWAP/CMD:0
SET *FF FORMS/FLT
FILTER *PR *FF
FORMS (C=85,I=0,L=55,M=2)
SET *DS KSMPLUS2/FLT LSDOS/KSM
(S=100,E="+")
FILTER *KI *DS
SETKI (W=10,R=1)
SYSTEM (TYPE=NO)
//EXIT
```

Now with regard to IFC, which I recently got as part of your new GO:CMD package. I greatly enjoy using it and have been kicking myself for not having discovered it earlier, as it's an enormous help in putting new and elaborate system disks together; I wish I'd discovered it years ago as it would have saved me many long hours moving files around from disk to disk.

I invariably run all my system disks with VERIFY turned on, and note that IFC defaults to off, unless one remembers to change it to on with the "(" (alter parameters) command. Aye, there is the rub, I have to remember! I have also noted, when using IFC from a system disk that's SYSGENed to VERIFY on, that if I use the "Q" command and query DOS for DEVICE it tells me that VERIFY is on, at the same time that IFC tells me it is off. Does IFC, in defaulting to VERIFY off, turn off the DOS VERIFY I SYSGENed? And perhaps turns it back on when returning to DOS?

If my system disk will guarantee that VERIFY will be on, via SYSGEN, whatever the status of IFC, then I have nothing to worry about and can just forget it. However, if what counts is what IFC is telling me, then some patch would be very welcome to make IFC default always to on.

Since I assume there's no extra charge for wishes [grin], here is another wish. That IFC be able to handle SYS/SYS files in addition to invisible ones accessible from the "(" command. Or perhaps the No-No on COPYing system files rules out such a possibility?

**Fm Charles A. Ainsworth:** Supplementing my previous letter re problems with drive 4 (ex-0) acting up and freezing the computer, I have managed to make a few additional tests. You will recall that the problem originates when drives zero and 4 are interchanged with SWAP/CMD. I tried all setups by avoiding SWAP and using instead SYSTEM (SYSTEM=4), and things worked as they should and drive 4 (ex-0) operated correctly and was recognized by the system either with a disk or without, and without freezing the computer. This might indicate some bug in SWAP.

Of course, avoiding SWAP forces one to interchange drive designations as the very last item of a JCL, which aborts after a changeover with SYSTEM (SYSTEM=n), so the use of SWAP has many advantages for me which I would dislike to lose.

**Fm MISOSYS, Inc:** Charles, This is in response to your letters of December 16th with the follow-up dated the 20th (that's the one that gave me the real insight). I have a solution to the first problem.

After duplicating your startup scenario on my 4P without the hard drive, I experienced the same problem as you did. Note that no machine here operates without a hard drive, so I wasn't able to duplicate the problem otherwise. It turns out, the problem is not just in this version of SWAP, but existed in the old SWAP since the release of TRSDOS 6.2 way back in time. LSI added a bit in the Drive Control Table which could be used to inhibit the @CKDRV routine (that checks for the existence of a diskette). Seems that since 6.2, LSI defaults the :0 drive to inhibit @CKDRV, I guess because it has to have a disk in there anyway. They revised the SYSTEM (SYSTEM=d) library command to re-engage the @CKDRV test when drive :0 was swapped with another; SWAP did not. So what happened was when you SWAPped :0 and :4, drive :4 then had to have a disk in it. I have developed a patch to SWAP which fiddles with the DCT @CKDRV bit.

Actually, it didn't matter whether your machine had an XLR8er board or not; the problem would always happen if you used SWAP to switch drives :0 and another. The patch fixes up the problem. I am providing you a paper copy of the patch; the enclosed disk has the patch installed as well as includes a revised copy of PDS/CMD. I am putting your missing DCT/CMD on that disk also.

By the way, note from my response to John Coyne that the VERIFY of IFC has nothing to do with the VERIFY facility of the DOS, other than having the same name. IFC supports a full CRC error checking of the copied file to its source.

## *Little Brother*

### *Working with the LB beta 1.1*

**Fm Charles Harris:** Roy, I have been fussing as a beta user with LB and find that normally the PFL file defaults to drive 0.

After defining the file format I can send that to any drive I want, unless I am using diskDISK or an Alpha board. Then everything seems to default to drive 0.

Then to add data, I get a message that I must first have the database name, and when I do that (#1) I get a message "data base file missing" and then I go in circles. The same sort of thing happens when I try to define a screen. Hope this is helpful.

**Fm MISOSYS, Inc**: Charles, This is in response to your letter of December 30th concerning LB 1.1 (beta).

If you have an existing database already defined, then just use menu command 14 (view/modify path settings). Specify the drive numbers containing the database, screen, printer files, and what drive you use for the temporary files (such as those created as needed during sort/select).

If you are defining a new file, the Define file format command will prompt you for the drive numbers similar to the view/ modify command.

You will have a problem if you try to first specify command 14 without defining the data base file. That's because the define module will then give you an error message because it thinks the file is existing but not available.

Follow this advise and you will have no problem. Don't forget that if you change the drive assignments for the data base, et al, after establishing the path settings, you will have to modify them using View/ Modify. If you have the database on a diskdisk, that needs to be assigned to the same drive number each time you use it.

Now why did we add this? Because we believe that it will speed up the search time LB used to take to initially access a data base when you had many drives on line. Note also that the PFL file will be created on the first available drive which is usually drive 0, unless write protected. After a PFL is created, it can be copied to another drive and removed from 0, but if it is on a high-numbered drive, LB then has to search for it.

# MC C-Compiler

## *Printing from MC compiled programs*

**Fm Gene Szedenits, Jr.**: I am having trouble writing to my printer from a ProMC program. I can 'fopen' it and 'putc' the bytes fine, except that sending a large block will overflow the printer's buffer. The usual 'feof' and 'ferror' do not seem to indicate anything amiss. Also, I can not detect whether or not I have remembered to turn the printer on. I would rather not resort to '@CTL' to check printer status, if there is some portable solution in C.

**Fm MISOSYS, Inc**: You can't use feof() on a character device. How are you able to "overrun" your printer's buffer? If it gets full, it should issue a busy status. Fopen()ing *PR will use the standard DOS printer driver. That wait's on a busy. I can't imagine your printer being continuously busy to cause a timeout of the driver (that's ten seconds). How about noting some more details of the problem you are having.

# MRAS Assembler

## *PRO-MRAS's SAID Fix*

**Fm Daniel L. Srebnick**: I noticed while installing MRAS and PRO-MC that a fix, MSD65/FIX, had never been installed to the copy of SAID on my MRAS diskette. I got it from you about two months ago. Thought you would like to know.

**Fm MISOSYS, Inc**: Could be. I'll check that out. Looks like it isn't on the master PRO-MRAS disk. That patch dated back to 10/24/86. I just went and added it to the master. I'll also reprint it here for those who may need it.

```
. MSD65/FIX - Patch to PRO-SAID
V1.1 - 10/24/86
. Patch corrects crash when META-
EXTERNAL is selected and
. no external memory banks are
available.
. Apply via: PATCH SAID MSD65
D14,E6=47 0E 31 DD 21 9C 4D E1 C8
F14,E6=C8 47 0E 31 DD 21 9C 4D E1
. Eop
```

# PRO-WAM

## *PRO-WAM Application Manager*

**Fm Pete Granzeau**: Roy, I have the Pro-WAM 2.0 installed and working well. I am wondering about the "Mr. ED" stuff I bought with Pronto. How do I get them to run now? Or am I going to have to buy a new Mr. ED, too?

**Fm David Huelsmann**: Pete, I use the original "Mr. ED" stuff with no problems with PRO-WAM 2.0.

**Fm Pete Granzeau**: David, How? It doesn't seem to want to run "/APP" files.

**Fm David Huelsmann**: Pete, Since its been a long time since I crossed that hurdle and since I can't find any docs or notes in my files relating to it, let me do a little more checking on just what is necessary.

It's amazing what comes back to you when you read the manual. PRO-WAM expects its applications to be in WAMx/ APL and that is where it looks when you use universal. Just move your /APP's using WAMLIB to your library and they should work fine. Alternatively, once you install PRO-WAM, you can use PRUN to invoke a single application, like MED as follows:

PRUN MED (A)

The (A) signifies that the application is a single file.

**Fm MISOSYS, Inc**: Pete, Just add the / APP files to a WAMLIB. That will get all of those MrED applications available.

**Fm Pete Granzeau**: David, Light bulb! I kept wondering why I couldn't get most of the applications to run! They were all in WAM1/APL! I just erased WAM0/ APL, renamed WAM1/APL, added the MrEd stuff, and voila! Thank you. I hadn't figured that out yet. Roy needs to draw pictures for people like me in the documentation, e.g., "Pro-WAM Version 2.0 runs applications from a library named WAM0/APL instead of the individual /

APP files it formerly used.", possibly as the first sentence in the book.

**Fm David Huelsmann:** Pete, The bad thing is that I have been using PRO-WAM for quite a while, even upgraded from Pronto and I still couldn't remember that without going back to the manual!

**Fm Pete Granzeau:** Roy, you didn't draw a picture in the manual for dunderheads like me. I hadn't figured out I had to run stuff from the /APL files, and you didn't exactly say that emphatically enough for me in the docs. Sorry 'bout that!

I could have upgraded my Pro-WAM Version 1? You don't read Easyplex, I don't register software (unless the registration has postage paid). How much money could I have saved?

**Fm MISOSYS, Inc:** Sorry, but you forgot to read some of the sentences in the manual. Invoking applications tells you that applications are read from memory, or from UNIVERSAL, or from PRUN. UNIVERSAL says that, "Thereafter, any UNIVERSAL requests will be satisfied from that library on the drive where the library was found..." Was that not clear?

As far as notification of the upgrade, I don't care whether you do or do not register software. We advertised the upgrade for many months in 80 Micro before they folded. We advertised the upgrade in *THE MISOSYS QUARTERLY*. We sent a letter to all registered owners of PRO-NTO/PRO-WAM release 1. If you did not fall into any of those categories, then you were not in the know. Wait... One more category. It was discussed here on our CompuServe forum, as well; you must have seen some of the messages. So you had four ways to find out. At this time, the upgrade costs $39.95 + $5 S&H and return of the old PRO-NTO/PRO-WAM disk.


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# The Hardware Corner

## *Drive 1 troubles*

**Fm Peter Amschel:** I am keeping my model 4's going as best I can. I have a BBS system running on one of them at all times (Fastplus, by Mel Patrick) and I use the other one to do bookkeeping - Versa-Ledger general ledger and payroll. I have had some trouble with one of my machines, though. It appeared that drive 1 was acting up so I took it to the RS for repair and then when I got it back, the thing would not format disks in drive one. Every try would show 2 - 15 flawed grans and backups would be rejected! I took it back to RS and they said they could find nothing wrong with it but now I have it back and it will still not format disks in drive 1. I can format and backup in drive 0.

**Fm Joe Kyle-DiPietraopola:** Peter, The tech doesn't know what they are doing. Keep taking it back and have them re-do it for no charge. For labor anyway, they may try to charge you for any parts they didn't replace the first time around - you shouldn't pay if they are (admit to) replacing the same part more than once.

Most likely cause is the head load pad or load pad compliance is bad (fixable), followed by low head amplitude (not fixable - or at least cheaper to get a new drive). It is not an alignment problem, though the alignment should be checked after the actual problem is fixed.

**Fm Shane Dawalt:** Peter, I had the same problem a year ago. (Drive 1 too!) After the 3rd return trip, they were ready to make me pay the $100 for a new drive. That's when I quit taking the entire machine to RS repair. I opened the drive up to take a looksee and found the head bearings were warped. Never have gotten it fixed. Actually it needs to be replaced.

## *4P boot problem*

**Fm Mark Honeycutt:** I have a 4P that will only boot in Model 3 mode, which works fine. If the machine is booted under 6.x or CP/M, drive 0 runs for about two seconds and then stops. I had a similar problem with a 4 a few years ago that was, from what I could pry from the service tech, a minor adjustment and possibly a bad chip. This cost me around one hundred bucks, and if possible, I would like to fix this one myself (I have a decent solid-state/IC background). Could anyone assist me to the cause of this problem? Any help would be greatly appreciated.

**Fm Joe Kyle-DiPietraopola:** Mark, what operating system are you booting in Model 3 mode? If TRSDOS 1.3, try LDOS if you've got it. If TRSDOS 1.3 will go but LDOS and LS-DOS won't, the problem might be index pulses from the drive not making it to the controller.

Another thing you can try right off is to swap drives zero and one, to see if the problem follows the drive.

***Getting down to the nuts and bolts of expanding your Model 4***

## *General XLR8er queries*

**Fm Michael Dauphin:** Roy, We all know the upside of the XLR8 - but what is the downside? (If any) Can a Model 4 with an XLR8 run without any drivers or filters? I know from reading TMQ that some filter and/or driver is necessary to take advantage of the XLR8 features. Will the 4D run 'normally' without the driver and/or filter? Could I boot up my 4D with my original, write-protected, never modified copy of LDOS 5.3 and never know that the XLR8 was installed? Will self-booting software work, or would I have to remove the XLR8 and re-install the Z-80 chip? I'm not happy with the wording of these questions, but I think you can get an idea of my concerns from them.

Oh - one more thing. I look forward to your Computer Math column in each issue of TMQ.

**Fm MISOSYS, Inc:** With an XLR8er board installed, your machine will run slower at boot up until the software switches the board to higher speed. That should not present a problem with "self booting" software. But you will probably observe the effect. All software interfacing that is needed is provided. I recommend you use the interface provided by Michel Houde in TMQ (and provided on the DOS-6 software interface disk).

Other considerations are that you will need to open up your machine; if under a service contract, that may void your warranty. Why Tandy continues to utilize a ridiculous paper tab over one of the screws sealing the case is beyond me.

With no interfacing software installed, your machine will not be able to take advantage of the extra memory. You will be able to alter the speed of the CPU without adding to memory.

**Fm Michael Dauphin:** I was just about to pop the hood on my 4d to check for 150ns RAMs before I order the XLR8er. I noticed Item #6 under TYPE 2 MOTHERBOARDS on page 72 of TMQ II.iii which states; ... Check the 74LS245P chip ... and replace with 74HCT245 if necessary. My question - What do I check the 74LS245P for?

**Fm MISOSYS, Inc**: Don't even worry about that. The 74HCT245 is a little faster than the 74LS245 and helps to eliminate keyboard problems on most machines. We automatically supply a 74HCT245 chip to replace the 74LS245 chip used as the buffer on the keyboard matrix.

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## *64K 150ns DRAMs*

**Fm Michael Dauphin**: Roy, My 64K memory chips are 200ns types. Looks like I'll have to order 128k of 150ns chips with the XLR8er. What are your prices for 128k.

**Fm MISOSYS, Inc**: Mine are $0 since I don't sell them. Ever since the price of DRAM skyrocketed, I gave up stocking 64K DRAM chips. Try Microprocessors Unlimited in Beggs OK at 918-267-4961. But look for 128-row refresh chips - not 256 row refresh (7-bit instead of 8-bit). According to Joe, chips manufactured by Toshiba, NEC, Hitachi, or Motorola should work. Ones from TI should not.

---

## *XLR8er and Hires Graphics*

**Fm John Tollini**: Roy, I have a question about the XLR8er patches in the new TMQ (3.2). It appears that XLSYS0A/FIX and XLBOOTA/FIX are mutually exclusive with MLT1/FIX & MLT2/FIX from TMQ 2.3. Also, I did discover one typo in XLBOOTA/FIX: on the fifth line of patch data that starts **f06,d6=** that should be **f04,d6=**. I have applied these on my system and they seem to work fine. No conflicts. BTW, an order is on the way. (couldn't resist the special).

**Fm MISOSYS, Inc**: They are mutually exclusive to the MLT fixes as they incorporate them. If you already have the MLT fixes in, then either use the O parm, or start with a stock master DOS disk.

Now I'm looking at that XLBOOTA/FX and I see what you are talking about. I also don't know why that period is on the 4th patch line. I did edit out the comments so that period is probably a carryover. And yes, I guess that f06,d6 should be a f04,d6. I'll double check the source.

**Fm Fred Oberding**: Roy, Ref. XLBOOTA/FIX in TMQ 3.2; there appears to be a couple of oddities. In the second line the "d04,c9" patch appears to be a rewrite of the first line of the MLT1/FIX in TMQ 2.3; is that correct?

In the fourth line there is a "period" in front of the "d04,d6" patch, implying an optional patch, but I can't find any explanation in the text. In the fifth line, the "find line" for the above patch starts out as "f06,d6". It should be "f04,d6", but there is no such hex string anywhere in BOOT/SYS. However, if "f04,d6=7b c9" is substituted for "f06,d6=30 03", the rest of the "find line" would be correct; at least for my version of BOOT/SYS.

I thought I would try out these new patches, but since I'm running without any glitches using Rex Basham's revised HIBANKS from TMQ 2.4 at 0,1,80; I will wait for your reply before trying them.

By the way, since I have a gate array 4 & R/S Hires board, my XLR8er is mounted on standoffs behind the main logic board & I have routed the cable to the left, instead of over the top, as the instructions state. Makes a neater installation and the cable can be cut down an inch or so.

**Fm MISOSYS, Inc**: Remove the period. Change the f06 to a f04. The MLT patches are part of the fixes. Thanks for the info on the re-routed location of the XLR8er in a gate array board. I'll get some time here to try that arrangement.

**Fm Daniel L. Srebnick**: Roy, Some time back I promised you details of my XLR8er/Graphics board installation. Things have been quite hectic, so pardon the delay.

As you may recall, I originally attempted to install the XLR8er and Graphyx Solution Board into my gate-array 1069A model 4 using your instructions. I found that the XLR8er would not operate properly using the 7" ribbon cable which allowed mounting on the reverse side of the motherboard. I decided that rather than use a long cable with the XLR8er, I would use the shorter one used in the non graphics installation, and attempt to instead install the Graphyx Solution board on the reverse side of the motherboard, via an extension cable.

I made up a thirty four conductor ribbon cable with the proper 34 pin plug on one end and a 34 pin socket connector on the other. The cable was long enough to allow it to pass over the top of the Model 4 motherboard on the right hand side. I plugged the Micro Labs board into the socket connector and then cemented the shell of the socket onto the metal rail that runs across the top of the Model 4 RF cage. I used Weld It adhesive, which secured the socket and board nicely. I also added some insulation between the top of the graphics board and the RF shield. The back of the graphics board faces the back of the M4 motherboard. By placing the graphics board in the right hand corner of the cage (as seen facing the computer from the rear), you can easily connect that clip to U11, running that wire over the top of the motherboard.

I found it necessary to use some aluminum foil as a shield on the 34 pin ribbon cable to make the extension cable work reliably. I then taped over the foil and cable with masking tape to prevent the foil from shorting.

The RF shield cover fits back on nicely, as the Graphics board just clears the top of the cage. I have used this installation for over a month now, with no problems.

**Fm MISOSYS, Inc**: Sounds like a winner to me. The gate array board has added flexibility since the RS232 interface and Floppy Disk Controller are on the motherboard. That leaves additional space behind the motherboard where the two separate boards are positioned on the 26-1069 machine.

The set the record straight, I have now installed the MicroLabs graphics board into my test machine - a 26-1069 Rev C oldie - along with the XLR8er. What I did was make up an 8" 34-pin cable with male/female header connectors at the same orientation (i.e. both connectors point to

the same side of the cable). The cable was wrapped in aluminum foil, then taped securely to completely cover the foil with something of insulation caliber. The cable plugs into the graphics connector and is oriented so that the ribbon points upward. The cable is then folded back on itself at a 45 degree angle so as to make a 90 degree turn towards the keyboard connector.

The graphics board is placed vertically with the connector towards the top and is positioned into the area between the floppy drive cage and the rear of the motherboard cage; the trace side, with connector, is towards the motherboard. The free end of the 34-pin extender cable is then plugged into the graphics board. This requires that the metal bracket screwed into the motherboard cage at the location of the keyboard connector is unscrewed and bent back. I tacked on a long piece of wire to the graphics board to extend the micro clip wire. The graphics board can be held in place by double sided tape. The adventuresome can take the entire machine apart (remove floppy cage, remove FDC board and motherboard, then drill a few holes into the motherboard cage at a position to utilize some appropriately sized standoffs. Tape is sufficient unless you want a really professional job; but then you wouldn't want to use aluminum foil over the ribbon cable.

---

## *Help with Tournament Chess*

**Fm Dr. K .W. Arntsen**: May I pass on a little information which you may wish to follow up as I see you are now marketing the XLR8er board. I installed such a board in my 4P and have so far discovered only two major problems. Firstly, in the Model III mode my trusty old standby "AIDSPLUS" has an arithmetic module that is not compatible with the new processor. Any non-numeric fields operate as before but fields listed as numeric generate garbage. It is unlikely that this warrants any work as there are bigger and better(?) databases available.

Secondly, in the Model 4 mode, "Tournament Chess by Micro-Labs inc., also has a problem. The disk boots, the first menu appears and the instructions can be addressed without trouble but when you select "G" for a game the chessboard and all the pieces appear but the CURSOR remains locked in the original position. No amount of pressing of any of the arrow keys, space bar or <U> frees it from the starting block. The Rapidos operating system and all the utilities seem unaffected. I notified Micro-Labs of this problem in March and suggested that they contact users through "TMQ" but received no acknowledgement. I see, however, that they are still advertising this program in the same issue in which you are offering the XLR8er board. Perhaps you can persuade them to investigate and offer a patch for the hard core of TRS-80 users still hanging on out there? I do not know if there is any problem with any of their other high resolution packages.

---

## *XLR8er in a 4P*

**Fm Hans de Wolf**: Roy, I have received the XLR8er board, about which I have a few questions:

In my gate-array model 4P, I located the 74LS245P chip mentioned in the installation manual. According to this manual I must replace it by the 74HCT245 chip provided with the XLR8er kit - but I cannot find this chip, except on the XLR8er board itself. Is the manual wrong here, or was this chip missing from the kit?

Do you sell any documentation about the HD64180 instruction set (like the Technical Data Book mentioned in the installation manual). I would like to construct some macros for EDAS/MRAS to use the new instructions.

My model 4P is equipped with a Radio Shack high resolution board. Although an appendix of the installation manual is called "Use with Graphics Boards", it only discusses the Micro-Labs' board. Is there anything special I should do?

I have found some points where the installation manual is not clear - maybe something for TMQ: When I had my 4P open, I could not find the Z80 - until I found it hidden by what I assume to be the graphics board (connected to the J7 connector). According to the disassembly instructions for the 4P in the installation manual 4 screws on each side of the pan assembly must be removed in order to install it. I discovered that on one side also a screw connecting a grounding strap from the keyboard had to be removed before the pan assembly could be pried open. I discovered also that it is very easy to disconnect the dark brown (power?) connectors at the corner below the power switch by accident when the pan assembly is opened or closed. The symptoms: blank screen/ no floppy action on power-up. Probably these points would not trouble an experienced hardware hacker for a moment, but they cause confusion to 'the rest of us'.

Finally, another suggestion for a product I would be willing to buy. It came to my mind when I read about your hard disk package using an adapter that makes it possible to connect an IBM-PC controller and hard disk drive to a TRS-80. Could the same system be used to bring color graphics to the TRS-80 by means of an adapter to any of the IBM graphic cards (CGA/EGA/...)?

**Fm MISOSYS, Inc**: Hans, I had been advised by some folks that the 74LS245 chip was not socketed in the 4P motherboard; thus, we stopped supplying the replacement chip to save the cost when the slower chip couldn't be removed. Apparently that is not the case with all 4P boards. It may be far simpler to just get the chip locally as it only costs about $1.

I don't think there is anything special between the MicroLabs graphics board and the Tandy board. But they both do cover up the Z80 chip. You're right about the 4P instructions, though. I may have to work up an addendum to clearly address all of the disassembly issues of the 4P. But I don't think that screw with the grounding strap needs to be removed; it doesn't hold down the clam assembly. You only have 4 screws on each side. But you do have to unscrew the top plate and remove it. The instructions omitted that part.

We had a small supply of the 64180 manual but are now sold out. I have already made programming changes to MRAS to support the 64180 OP codes. But I am not ready to release it because of some changes to the linker which I want to make. I suspect it may be available in a few months.

Lastly, it would be rather difficult, if not impossible, to adapt a PC-type CGA or EGA card to the TRS-80. Our host adaptor doesn't need much magical to adapt to the PC bus since the controller is an 8-bit device and doesn't use the host's RAM memory. PC-video is memory mapped; thus, an adaptor to that would be out of the question. On the other hand, with your XLR8er, you have the capability of connecting a full-featured color video card. Check out the one from BYTE magazine designed by Steve Ciarcia. That can connect up to the XLR8er's external I/O bus. I don't remember the issue; it was a few years ago.

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## *4P with XLR8er, graphics, and modem!*

**Fm Donald A. Singer**: Dear Roy, As usual I've held off until the last minute to send in this order and take advantage of the enclosed card, in part because I was debating getting an XLR8er board as well. While I'd like to take advantage of the hardware discount, I decided that I still have too many questions about the XLR8er to order one. If you could enclose answers with my order or answer these questions in the next TMQ, I'd appreciate it. First, is it compatible with my old, non gate array Model 4P, (black and white screen, no clustered arrow keys)? Second, can it be mounted internally so I can keep using my Teletrends internal modem? Third, how much difficulty can I expect booting under LDOS 5.3 with XBOOT? The article in TMQ II.1 suggests even with XBOOT there may still be problems with cold booting LDOS. Is this true, and if so, how bad are the problems? Also, I often go from Model 4 mode to Model III mode and back. Is it true that I should experience no trouble booting LDOS this way? Finally, I've reviewed every TMQ article I could find about the XLR8er, and am somewhat confused about the extent of problems, incompatibilities, need for patches (to its software or to other programs, etc. If you or some other knowledgeable individual could summarize pros and cons of using this board, with a list of all known, required patches, you might do a great service for many of your readers. I'm particularly concerned about LE SCRIPT and PROFILE 4+. I know these are not well-behaved programs, and I might be willing to give up LE SCRIPT to get the benefits of the XLR8er. However, I like PROFILE and want to keep using it. It does everything I want very well, and I have a lot of data committed to it. (I would like to find the patch to EPC9/CMD mentioned on page 72 of TMQ II.1. If you or a TMQ reader can furnish this or help me find it, I'd appreciate it. Perhaps you could print this request in TMQ?

Thanks for your help and for continuing to support the TRS.80.

**Fm MISOSYS, Inc**: The LDOS software interface disk available with the XLR8er provides a program to allow easy booting of a Model III disk when up in Model 4 mode. That probably is 100% reliable as it does the loading of the BOOT ROM image file. So going back and forth would be relatively painless.

I think it would be rather difficult to summarize the pros and cons of the XLR8er as the only problems appear in machines that the XLR8er has not worked in. Since that doesn't include any particular model, its best to just try it out if you have the interest. As with all add-ons, it is always best to operate on a replaceable set of data until you can assure the reliability of the equipment after making a major change such as an XLR8er addition.

The XLR8er should work with your 4P. Check out the next letter concerning the use of it with a TeleTrends TT512P modem installed (note that MISOSYS has taken over that modem and is manufacturing it now).

**Fm Scott Toenniessen**: Roy, I would like to personally thank Michel Houde for supplying the XLR8er software interface which was printed in the TMQ VIII.ii. I am not yet using this interface, but am eagerly waiting for interface disk upgrade you offered to arrive.

For your readers who use a 4P and an XLR8er like myself, it is possible to also have a modem board and a high resolution graphics board installed. Using a 6" cable instead of the one provided by H.I. Tech, I was able to move the board into the compartment inside the 4P which contains the CRT. After removing the 4P's plastic case and removing the motherboard, I plugged the 6" cable into the Z-80 socket on the motherboard and folded the cable so that it made a 90 degree turn toward the back of the motherboard (the side with the I/O ports). I then installed the graphics board (mine is by Micro-Labs) and installed the modem board (mine is by TeleTrends) in its card slot. After re-installing the motherboard, leaving the 12" cable hanging out the back of the computer, I plugged the 6" cable into the XLR8er board. Then I taped card board squares slightly bigger than the XLR8er board to the front and back of it to keep the board from shorting out on the metal in the 4P's case. I then placed the board into the compartment of the 4P which contains the CRT. Even though it would probably be better to mount the XLR8er board on something, I didn't, I just laid it in there. Then I screwed the back metal plate of the computer on and re-installed the computer in its plastic case. I have been using my computer this way for 2 years with no problems. If you would be interested in having pictures showing how I rigged this setup let me know, I could send you some.

For those readers of yours who are looking for Radio Shack Model 4 Fortran, they might as well not bother trying to get one from Tandy. I have called Express Order and was told it is no longer available. I think the only way to get it now will be to try and buy a used copy of it.

I noticed you are now selling the TeleTrends modem for the 4P. This is a super product, I've had mine for a little over a year and really like it.

A little word of warning for your readers who after reading your article in TMQ

VIII.ii on adding drives to a Model 4 are ready to use an 80 track drive as drive 0. If they use an 80 track drive for drive 0, any self booting disks they have such as Super Utility, Copy Cat, or many games disks will be unusable in this computer.

As far as your hard disk project goes, I was glad to hear you are proceeding with it. I already have a Radio Shack 5 meg. drive with a 10 meg. bubble installed, but there is a definite possibility I will be interested in purchasing one of yours. While on the issue of hard drives, do you or any of your readers know if the Bi-Tech Multiplexor is compatible with the Radio Shack hard drive? Will your hard drive be compatible with the Multiplexor?

If you know of anyone who wants to use a Radio Shack Hard Drive with a Model 1, they can try to order a Model 1 Hard Disk Adapter, catalog number 26-1132 ($39.95) from Radio Shack. It includes an adaptor to hook the hard drive to the Model 1 Expansion Interface 40 pin I/O bus, LDOS 5.1.3, and the drivers. I managed to get one last July, they may still be available.

If possible, I would recommend making your hard drive host adaptor use the same 50 pin I/O port address lines as the Radio Shack Hard Drive. This would make it compatible with existing drivers and other hardware such as the Model 1 adaptor, the Micro Labs Joy-Mouse Interface, and the VS-100 voice synthesizer.

For your readers using LeScript version 1.7 or VisiCalc version 02.09.02 with an XLR8er board, I have included patches to enable these programs to use memory banks other than 1 and 2. These patches work fine, but have not been extensively tested. The LeScript patches work with the print spooler and PRO-NTO (PRO-WAM), but I don't know about other programs. The VisiCalc patches bomb most of the time with PRO-NTO (PRO-WAM), but I don't know about the print spooler or other programs.

Finally, I am interested in knowing if any Double Duty like programs that would work from a PRO-WAM window have been written or if such a program is feasible.

```
. LESBANK/JCL
.    By Scott Toenniessen (72057,3415) 1988
.
. This /JCL changes the alternate RAM banks used by Lescript v1.7
.  From banks 1 and 2 to banks 5 and 6
.  To use other banks, change the 05 and 06
. to the two banks you wish to use
.
. *** Warning: Use only on a backup copy of Lescript ***
. ***** This patch has been tested, but use it at your own risk *****
.
patch lescript/cmd (D04,3A=05:F04,3A=01:D04,43=06:F04,43=02)
//exit

. VISBANK/JCL
. By Scott Toenniessen (72057,3415) 1988
.
. This /JCL changes the alternate RAM banks used by VisiCalc v2.9.2-
T84
.  From banks 1 and 2 to banks 7 and 8
.  To use other banks, change the 07 and 08
. to the two banks you wish to use
.
. *** Warning: Use only on a backup copy of VisiCalc ***
. ***** This patch has been tested, but use it at your own risk *****
.
patch vc/cmd (D01,35=07:F01,35=01)
patch vc/cmd (D01,42=08:F01,42=02)
patch vc/cmd (D02,56=07:F02,56=01)
patch vc/cmd (D02,6A=08:F02,6A=02)
//exit
```

**Fm MISOSYS, Inc**: Thanks for the input; I just know that some folks are going to be interested in those patches.
I am not familiar with the Bi-tech multiplexor, but Powersoft appears to be selling it now. Perhaps one of my readers who is intimately familiar with the multiplexor can address those questions.

On the subject of our intended hard drive, it will be bus compatible with the III/4 computers; however, just because a hard drive plugs into that bus doesn't imply that existing hard disk drivers will work with it. No driver other than the one we will be including with the host adaptor will work with it.

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## *Houde's XLR8er Software Interface*

**Fm Frank Slinkman**: Roy, I have gone through the new patches, etc., for the XLR8er, and still have a BIG question: I notice that in all the patches and in SETX, the REFW bit (bit 6 of RCR [36H]) is still being left set. As far as I can determine, the wait state this bit inserts into the refresh cycle is totally unnecessary. Resetting it to 0 would cut the refresh cycle to 2T from 3T. It seems to me, especially now that we're using refresh intervals of 40T instead of 80T, that gaining 1 cycle out of every 43 would be a good way of regaining some of that 8% lost speed. Can you or anyone out there tell me why this bit is being kept set?

**Fm MISOSYS, Inc** I can't. Perhaps Michel assumed that the alteration is not appropriate to every machine. Maybe he'll drop me a note. Other's more familiar with the hardware side of the Model 4 and 64180 may also have some insight. But if it works for you, utilize it.

**Fm Fred Oberding**: Roy, After installing Michel Houde's new patches for the XLR8er, I am having a problem accessing the additional memory on my XLR8er, with my hard drive initialized. Can not initialize ProWam nor Ramdisk w/o lockup or scrolling error messages. Also a MEMDIR does not show the 121 byte XLR8 module. However if I boot my initialization floppy with

<CLEAR><ENTER> held down, preventing initialization of the HD, I can use the extra memory. Also while in floppy mode, MEMDIR does show the 121 byte XLR8 module & ProWam as well as Ramdisk work as advertised. The HD drive 0 and floppy have the identical patches installed. It appears that on initialization of the HD, the system forgets that it has the extra memory, although it will pass a memory test Ok. Boy, that's a lot of initializations!!!

Roy, do I have my head up and locked again or have I stumbled onto a bug. Everything worked fine with Rex Basham's revised Hibanks but Michel Houde's patches seem like the best way to go.

**Fm MISOSYS, Inc**: What you have neglected to do is to re-install your hard drive after the patches have been applied. If you already have a configuration file with low memory used, you have to re-do anything you had installed. I pointed this out on the revised disk, but I don't think I highlighted that as an issue in the TMQ. The patches add code immediately following the floppy driver. That's why you have to rebuild your low memory configuration. There's no bug in Michel's code - at least not any I have found yet. He's also been using that software interface for about 9-10 months.

**Fm Fred Oberding**: Roy, Disregard my previous message. I woke up this AM with a clearer head and have re-applied RSHARD6 + all my other sysgened files and all is well again. I am not too sure why, as I had already tried re-sysgening, although not from a disk w/o a sysgened file.

By the way, will there be any patches to change Michel's default of 1,1,40 for those of us that can handle a faster 64180? I presently am running SET180 to change the speed after bootup.

**Fm MISOSYS, Inc**: If you get Disk Notes 3.2 or the revised interface diskette, you will get the source code to the software interface which generated the patch. With that you could easily tweak any of the initialization code to adjust to your situation.

**Fm Frank Slinkman**: Fred, One thing you can do to get about a 2.3% increase in speed is to patch SETX and fix XLBOOTA so that they AND 0BCH instead of AND 0FCH before the OUT0 A,36H command. The 6th (REFW) bit in RCR (36H), when set, specifies a 3T refresh cycle, and, when reset, specifies a 2T refresh cycle. Resetting this bet will gain you 1T out of every 43 — a worthwhile speedup, if your machine can handle it. Mine has been running a couple of months with REFW reset, with no problems.

**Fm Fred Oberding**: Frank, thanks for the info. I don't have the source code yet, but have looked at SETX with LSFEDII and believe the patch should be:

```
D00,C0=BC:F00,C0=FC
```

You say to fix XLBOOTA, but don't you mean XLSYS0A. There is a AND 0FCH in it but not in XLBOOTA. I can't find an OUT0 A,36H with LSFEDII in either SETX, nor BOOT/SYS or SYS0/SYS after the patches have been applied.

By the way, have you experienced any unexplained re-boots while using SETX. My computer does not seem to like SETX, I guess I could be having a memory problem where it loads. I haven't seen the problem while using the computer, but if I leave it idle for a few minutes, it will reboot itself. No problem while using SET180. Oh, and thanks for the speed-up patch for it, you left on this SIG.

**Fm Frank Slinkman**: Fred, I wrote my last response to you off the top of my head, without the listings in front of me. You are quite correct, the changes should be made to XLSYS0A, not XLBOOTA. The patch line code at starting at 10,37 (in the D10,2E= line) should be BC F6 03 (changed from FC F6 02) to remove the extra wait state from the refresh cycle and to change from a 40T to an 80T refresh interval.

This will change the instructions from `AND 0FCH OR 2` to `AND 0BCH OR 3`. Your patch to SETX is correct.

No, I have had absolutely no problems with SETX. It seems to me that if you were having memory problems in the area beginning at 2600H, which is where SETX loads, you'd be having problems with a lot more than just SETX. Besides, once either SETX or SET180 make their writes to the internal ports, the code is not used again. Therefore, assuming the right data is being written to the internal ports, it should not matter whether you use SETX or SET180 to write it.

Since you were running 0,1,80 previously with no problems, the speed is probably not causing the problem. Could it just be coincidental? Perhaps you're getting power spikes or something. You don't operate an arc welder while the computer is idling, do you? Or have a teenage son who likes to play practical jokes? Or a toddler who likes to press orange buttons?

Seriously, though, why not reassemble SETX at 7000H, run it, and see what happens? That will put the bad memory question to the acid test. If the problem persists, then maybe you need to re-check the patches or create a new system disk and apply the patches to that. If that doesn't do it, slow the computer down to 1,1,40 and enable the refresh cycle wait state and see if maybe the speed is the problem after all.

**Fm Fred Oberding**: Frank, thank you again for your input. I have SYS0/SYS patched now so my computer boots up with 1,1,80. I hope Roy can get my order out before he goes off for the holidays, as I would like to go through the source of the XLSYS0A patch, to change it to boot up with 0 memory wait states.

Still having problems with SETX over SET180 and I'm still not sure why. I suspected memory as it is the only variable. I could be wrong but it could just be one bit in one chip that is corrupting a piece of code. Then again, this time of year with the furnace coming on & off it could be a spike from the hot air blower motor.

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## *FIXALL revisited*

**Fm Gary Phillips**: Roy, Yet another question (sorry) for which you may have an answer. I've been running my 4P with

XLR8er for two years without FIXALL. I used the FIXBANKS provided with the board when I first ordered it. I have never encountered any problems that I could blame on the absence of FIXALL, or that looked like a bank-switching error during interrupts. My software usage is a lot of Superscripsit, communications, and some language/development with F80/RATFOR and Alcor Pascal mainly.

After reading in TMQ about the dangers of leaving FIXALL out, I tried to install Rex Basham's substitute. It crashed when I loaded SAID. Then in TMQ II.iv there were revisions to correct this problem, so I tried adding those. It still crashes when I load SAID. I have continued to operate with the original FIXBANKS and no FIXALL, and normally run with the RAMDISK active. No problems yet.

Now we have Michel Houde's code to replace the whole mess, but I'm reluctant to install this because 1) it patches BOOT/SYS and would require me to rework my direct from the HD booting patch, 2) I'm uncomfortable with extensive mods to the DOS itself because they are difficult to keep track of if you have lots of floppies, and 3)the documentation for Houde's work is sketchy at best. I understand how the original FIXBANKS and HIBANKS work in theory. But this new approach has me thoroughly confused as to what I need and what it does.

Should I be able to get HIBANKS to work, or is it a waste of effort? Are Houde's patches really reliable or have there been problems reported? One of the confusions that arises is that I'm not really sure how much of his stuff has to do with European keyboards and how much is really just XLR8er-related. Will we get a clarification in the next TMQ?

**Fm MISOSYS, Inc**: First off, you probably did not utilize the corrected HIBANKS, or did not make the corrections properly. The revised HIBANKS does indeed work. Also, if you obtain the source to Michel's fixes, available on either the appropriate DISK NOTES, or I believe the revised Mod4 interface disk, you will observe, with clarity, what Michel's patches are doing. Yes, you would have to redo your driver boot facility. Running FIXBANKS without FIXALL will cause problems with things such as running the SPOOLER in one of the XLR8er banks, or swapping text banks (3-10) while in SAID, or any background operation with the extended memory banks when interrupts are not disabled by the application switching the banks. If you are using the extra 256K strictly as a RAMDRIVE, then you would have no problem because that 256K would never be switched in with interrupts ON. But I do recommend moving over to Michel's fixes because they take up so much less low memory. Also, since less twiddling of 64180 ports are performed, there would be a very slight improvement in switching speed - probably not noticeable. But these days, some folks try to tweak every last cycle out of a CPU.

**Fm Frank Slinkman**: Gary, None of my business, but between the latest TMQ and the DiskNotes for same, I'd say Houde's work is rather well documented. Do you have the disk notes disk? One publication which will really let you understand what Houde has done is Hitachi's hd64180 Hardware Manual (different from the Users Manual) which really goes into detail on the really fantastic features of the chip.

**Fm Gary Phillips**: Frank, I have the Hitachi manual and the DiskNotes disk. I'm still not satisfied with the explanations and comments, which are pretty weak by my own standards. (And I really am a system programmer with years of experience.) In any case, it still wouldn't resolve the problem that Houde's patches conflict with those I already have in place to allow me to boot directly from the hard disk.

**Fm Frank Slinkman**: Gary, Sorry. I forgot about the hard disk aspect. I'm still waiting for the Soltoff Special, living with the fact that I've got more core than I can (conveniently) dump do disk. I look at what Houde has done as something he did for himself and then did us all the favor of sharing with us. Therefore, I don't expect the docs and explanations to be the same as if I had paid real $ for the product.

I pretty much understand what he's done, and why he did it, although I have no trouble running at 1,1,80 instead of 1,1,40, and have patched my system accordingly. Hopefully, when the Soltoff Special finally becomes a reality, the drivers, etc., for it will be compatible with the Houde code (hey, that rhymes).

**Fm Roy Soltoff**: Gary, First off, you probably did not utilize the corrected HIBANKS, or did not make the corrections properly. The revised HIBANKS does indeed work.

Also, if you obtain the source to Michel's fixes, available on either the appropriate DISK NOTES, or I believe the revised Mod4 interface disk, you will observe, with clarity, what Michel's patches are doing. It would help to have a copy of THE SOURCE, as that is the bible for Michael did in patching the DOS. His patches were also modeled after those that I published quite some time ago for the Alpha Technology memory board - at least as far as interfacing to add additional memory banks.

Yes, you would have to redo your driver boot facility. But then I assume that you understand those patches with the clarity you find missing from the new XLR8er software interface.

Running FIXBANKS without FIXALL will cause problems with things such as running the SPOOLER in one of the XLR8er banks, or swapping text banks (3-10) while in SAID, or any background operation with the extended memory banks when interrupts are not disabled by the application or module switching the banks. If you are using the extra 256K strictly as a RAMDRIVE, then you would have no problem because that 256K would never be switched in with interrupts ON.

But I do recommend moving over to Michel's fixes because they take up so much less low memory. Also, since less twiddling of 64180 ports are performed, there would be a very slight improvement in switching speed - probably not noticeable. But these days, some folks try to tweak every last cycle out of a CPU.

## *@EXMEM & ERAMDISK*

**Fm David Huelsmann:** Roy, I have been trying to install Michael Houde's ERAMDISK software to utilize with my AlphTech 1 meg board and find a problem I can't explain. The software installs fine and I can write to the ramdisk OK. When I purge or kill a file from the ramdisk, a DIR shows all kind of problems showing up. A little exploration reveals that the directory HIT sector was written back twice to the directory. Once in the appropriate HIT and again in the GAT sector. I've looked through the driver code and don't find anything obvious, so far. I haven't done enough exploration yet to determine if every write to the ramdisk causes a duplicate sector write.

**Fm MISOSYS, Inc:** Are you using the page extended memory manager? You can't use EXMEM until it is revised to suppress double buffering when un-necessary. EXMEM works great until you try to use it as the focus of a RAMDRIVE. Suggest for now that you use PEXMEM. Unless you already are?

**Fm Mark Mueller:** Roy, Does this mean that I can't have both @EXMEM and @PEXMEM installed at the same time? The TMQ info on @PEXMEM says it used both SVC 108 and 125. Do you know if that infers that a call to SVC 108 will invoke @PEXMEM? I have about 8 BASIC programs operating that use @EXMEM through USER11 calls and the thought of going through them and changing them to 125 does not appeal to me. BTW, I experienced the same directory (HIT/GAT) scramble mentioned before...)

**Fm MISOSYS, Inc:** You can have both installed, but ERAMDISK will first use EXMEM, if installed, and then it will use PEXMEM if installed; but that would be wasteful. It would be better to just rewrite EXMEM to ignore double buffering when not needed. I can't get to that right now. But you have the source to EXMEM, and the source to PEXMEM is on DISK NOTES 3.2, so it would not be a tough job to integrate Michel's test into EXMEM.

**Fm Mark Mueller:** Addendum: this morning I tested the system without @EXMEM installed. The problems with ERAMDISK disappeared. However, without it installed a call to SVC 108 produces the deadly ERROR 2BH SVC error. Changing the call to SVC 125 solves the problem, but as I mentioned above, it would require the changing of a bunch of programs which is not practical. Can anyone please tell me at least how to vector 108 to 125 for the time being?

**Fm David Huelsmann:** Mark, The TMQ write-up was a little confusing. ERAMDISK will use EITHER SVC 108 or 125. If 108 is available, it will use that SVC whether or not 125 is available! I solved my problem (I too need to have EXMEM resident) by reassembling ERAMDISK without the calls to 108, thereby having both bank page utilities able to be resident until such time as the EXMEM is modified to recognize need for double buffering. Since you may not have the capabilities of re-assembling, let me work up a patch of NOP's for you that should solve your problem in the same way.

The promised patches to ERAMDISK/CMD follow. They are pretty short but you will probably want to create a file to use so that you can reverse these patches once @EXMEM is updated. Once you install these patches, both @EXMEM and PEXMEM can be resident without worrying about what ERAMDISK will use.

```
. ERAMP/FIX by David Huelsmann 12/
13/88
. Usage: PATCH ERAMDISK/CMD USING
ERAMP
. Patch to force ERAMDISK by Michael
Houde to use PEXMEM SVC_125 bank
. page utility even when @EXMEM
SVC_108 is present.
. Modifies version from 2.0 to 2.P
D05,C7=00 00 00 00 00 00 00 00
F05,C7=11 44 3B 3E 53 EF 28 0B
D06,C3=50
F06,C3=30
. eop
```

**Fm Mark Mueller:** David, Actually, I do have MRAS, so reassembling would be no real problem, but I'm sure that a patch or two would benefit the most people. That's what makes this place so useful. Thanks for the help!

**Fm Mark Mueller:** Roy, You read my mind. I screamed help when the work system went down, and needed a quick fix to get it back up again. Fixed it is, and into EXMEM I go.

**Fm David Huelsmann:** Mark, No problem. If you should take the time to modify @EXMEM to check whether it needs to double buffer, I am sure we would all like to share your efforts to our benefit.

**Fm Ken Strickler:** Roy, I have implemented the PEXMEM and ERAMDISK from M. Houde, and have found that NOW I CAN HAVE 'OD', 'PRO-WAM' and 'ERAMDISK' all-together. (I think that I am about 4 bytes short of getting 'ZSHELL' in there too. NEEDLESS TO SAY, I AM MORE THAN A LITTLE EXCITED! I may go to 'ALTRES' again, since I have patched it per TMQ to work in Bank 10. I Would lose the use of the BUFFERED DRIVES, but the programs that I WRITE, OPEN and CLOSE the DISK FILE on EACH OCCURRENCE of ACCESS to prevent an UN-CLOSED FILE. (This applies to WRITE FILES). I have found a 14% increase in speed in listing a file, but I will have to load OD outside of BANKS 1,2 in order to RESERVE those banks for applications. If you have a 'QUICK-N-DIRTY' to force OD above BANK 2, I would SURE BE GRATEFUL!

I have also started to experiment with 'MINIDOS' enabled, and so far (not much testing yet) the SIFT-CLEAR combination passes without affecting (or is that effecting - maybe BOTH) anything else in the system! I will let you know how it goes.

**Fm MISOSYS, Inc:** I sure wouldn't close a file after every write access, just to have to re-open it again. If you're that afraid of lost data, I would recommend you install a Standby Power Supply to guard against power failures. Also, if you just append an exclamation point to the file specification string when a file is to be opened, the DOS will automatically update the directory anytime the file is extended. That would be less disk overhead in your example, if you are dealing with sequential files. If you are dealing with random-access files, you have less to be concerned with.

Sorry, I have nothing for OD, perhaps one of my TMQ readers has...

**Fm John Coyne:** Roy, I must say, Michel Houde has done a fine job with the new XLR8 utilities. It provided so much space in low memory that I didn't quite know what to do with it all! Previously, during the system configuration, I had no difficulty in forcing the hard disc driver into high memory; this time I really had to work at it. Perhaps there is no longer a need to move it into high memory with all the space below. We shall see.

I had a little problem with ERAMDISK, it would not allow a warm boot. ERAMDISK had a problem determining that the ramdisc was already formatted. Without the source code I was not able to check whether I just had a bad copy or not. As it is likely to be another month before DISK NOTES 3.2 arrives I thought I would have a look to see if the problem could be cured. Back tracking the problem rather than disassembling ERAMDISK, I came to the point where a check was being made between the default GAT + X'CD in ERAMDISK (X'08 @ location X'3C1A) and the setting in ramdisc. The algorithm, using X'08 as a base, would always come up with the wrong answer. Changing the default to X'C8 seems to cure the problem. Whether this is the correct approach I am not sure, but it works. I look forward to seeing the source, until then will leave the byte @ X'3C1A at X'C8; this gives me a working copy.

## *XLR8er interfacing*

**Fm Daniel L. Srebnick:** I want to write a filter to use with Michel Houde's new patches that will allow me to run at zero memory wait states and allow for my slow keyboard. More or less like Fixall, but with out the other memory management that Fixall performs. It seems that I must somehow intercept the keyboard driver just before it scans the keyboard, insert one wait, read the keyboard, and then remove the wait. Is that how Fixall functioned?

Now the above is easy. How do I interface all this to the keyboard driver. I have reviewed some of the material in the TRSDOS and LDOS manuals on writing filters, but they seem to focus on only filtering the output of a device, not patching in to an existing driver. Could you refer me to a good explanation of how this is accomplished?

I am sure that my fellow XLR8er users could benefit from the completion of such a project. I have Michel Houde's patches installed and they function flawlessly at 1,1,80, but would like to be able to operate at 0,1,80 as I could with Hibanks and Fixall. Sure is nice to have the extra lomem, though. Now is the time to order PRO-WAM!

**Fm MISOSYS, Inc:** FIXALL trapped the interrupts. Since keyboard scanning is usually done by an interrupt handler (you're using type ahead?), trap the interrupts. That gets a little hairy; it insists that your filter be in low memory. You may want to just examine THE SOURCE and patch directly into the keyboard handler. If you haven't read *THE PROGRAMMER'S GUIDE*, then that's another reference for filtering. But you need to deal with the interrupts because its not the fetching of the character, it's the scanning of the keyboard.

**Fm Daniel L. Srebnick:** Roy, Sounds tough! I'll have to give this some more thought. Perhaps it's time to order *The Programmers Guide* before I decide.

## *Cheap M4 scanner*

**Fm Frank Slinkman:** Well, I finally did it. Some of you may recall a thread on the LDOS forum dealing with importing graphics images into the Model 4. I finally gave up on the TV project. Even with the XLR8er board, the poor M4 just can't keep up with the rate data is transmitted on TV. Fortunately, about the same time as I threw in the towel on TRS-80 TV, I fell heir to an old Xerox Telecopier which was about to be thrown out. Since this machine only scans 26.25" per second, the data rate is a bit more manageable, to say the least.

The Telecopier serves reasonably well as a scanner. The horizontal (8.5" dimension) sample rate (and therefore, resolution) can be just about anything you want it to be. The vertical resolution for these machines is either 64 or 96 lines per inch.

I've found that 240 x 96 dpi resolution gives very readable character images of all but the smallest type faces; so the next challenge is to teach my Mod 4 to read.

For those who are interested, I have uploaded CATBUG.RLE [to the LDOS Compuserve Forum - PCS49], a scanned image of one of my 8-year old daughter's drawings. It not only shows what a super cheap scanner (about $20 worth of parts for the board) can do, but displays the work of a very talented young artist. You'll need an RLE decoder such as GUTIL.CMD which you can find in one of this SIG's libraries, or M4RLE.CMD and PM4RLE.CMD, which you can find in the Encoder/Decoder library over in the graphics forum (GO PICS).

If any of you can scrounge up an old Telecopier, I will be happy to supply you with a schematic of the board, and some assembly language software to make it work. My software takes advantage of the HD64180's internal Programmable Reloadable Timer; so those with stock M4's will have to modify it by writing your own delay loops to wait the correct intervals between samples. Other than that, the concepts are very straightforward.

**Fm Dave Spiceland:** Frank, Glad to see someone is working on graphics for the Model 4!! I'm too busy working on my graduate program to do much with my computer but write papers!

By the way, have you ever finished a GIF decoding program? I think you said some time ago that you had been working on it.

**Fm Frank Slinkman:** Dave, After I fix up my SLOTMOD4 program so it'll accommodate RS graphics boards, which I have just learned run at about 40% of the speed of uLabs boards in this particular application, the GIF decoder is the next project — especially now that I have a source of graphics to want to transmit.

**Fm Doug Mayfield:** Frank, I also would

be interested when you get a GIF decoder running. There are a lot of great graphics out there that we just can't see on our poor model 4's.

**Fm Frank Slinkman**: It's on the list. I'll brag about it on the forum if <hopefully, when> I get one working.

**Fm Joe Kyle-DiPietraopola**: Ooh, neat! Those are sorta like the old drum style fax machines, right?

**Fm Frank Slinkman**: Right, that's what they are. If you can find any, they should be VERY cheap, if not free. And they work great with the M4.

## *4P Video question*

**Fm Gary Phillips**: Joe (or Jim Beard, if you're listening), one of my 4P's seems to be developing a flaky video. The brightness occasionally jumps up and down at random, though nothing else may be going on at the time. The picture doesn't shrink or shift, just varies in intensity. My first thought was that it was the infamous power supply defect (R15 opening up) but that doesn't seem to be the problem. My guess is it's something flaking out on the video board. This sounds vaguely familiar—haven't there been discussions about brightness problems with model 4/4P machines here before? What was the resolution? (I better look through my TMQ back issues and see if it got in there...)

**Fm Fred Oberding**: Gary, I believe you stated in a previous message that you do get the TMQ. If so check page 75 of the latest, volume III.ii; Roy reprinted a message from me to a Steve Lorenz, on his problem with a 4P video. Since you say the problem occurs only in 80 character mode, you have a video phase lock loop circuit problem. The TMQ re-write explains how to fix it. If you haven't gotten the latest TMQ, I'll re-upload it for you.

**Fm Gary Phillips**: Fred, Sounds like you've got the cure I need, Fred. Thanks. Going straight to that issue of TMQ from here...

**Fm Frank Slinkman**: Gary, There's another frequent problem with the M4 power supply. Seems the solder joints develop hairline cracks, and the first symptom is video flickering. I've got an article on it somewhere if you're interested.

**Fm Fred Oberding**: Frank, I would be interested in seeing a copy of the article on hairline cracks developing in the solder joints of M4 power supplies.

**Fm Joe Kyle-DiPietraopola**: Gary, The video board is a good possibility, check the big power resistors for signs of imminent failure. Another possibility is just a plain ol' dirty or worn contrast or brightness pot. Try a shot of the "red can" Radio Shack B&W TV Tuner and Control cleaner in each. Loose/dirty connections to the pot leads is also a possibility, I think they used cheap slide on connectors as Radio Shack is want to do. Won't they ever learn to spend the few extra cents for **good** connectors? That's been haunting then since Model 1 days.

**Fm Frank Slinkman**: Fred, I have just uploaded [to the LDOS Forum on Compuserve - PCS49] the article on hairline cracks developing in Model 4 power supplies to LIB 0 under the name M4SLDR.TXT. It was taken from the 12/88 NCTUG Journal, who picked it up from the 1/88 SMUG Newsletter; so you may have already seen it.

## *VS-100 speech synthesizer*

**Fm Dave Spiceland**: I've got a VS-100 speech synthesizer and have a problem which I hope someone can help me with. I put a speed-up chip in my Model 4 (one of the older non-gate array, non green screen models) which takes the speed up to 5 Mhz. As much as I like the extra speed, it causes a problem with the speech synthesizer and "clips" the speech. I know I can slow down the clock in the Model III mode while in BASIC. Does anyone know if it's possible to slow down the clock speed in the Model 4 by software? Any help would be appreciated!!

**Fm Jim Beard**: Dave, the HELP DOS SYSTEM command lists FAST and SLOW as arguments.

**Fm Dave Spiceland**: Jim, I've discovered that the problem getting the VS100 voice synthesizer to work is NOT the clock speed, but the fact that I'm running it off the edge card protruding out of the Joystick-Mouse interface sold by Micro-Labs for their high res board. It plugs into the Model 4's I/O bus. It may be a hardware problem. Is there any way I could install a "Y" connecter on my computer's I/O bus and plug BOTH units into the I/O bus?

## *4 internal floppy drives*

**Fm Jim Beard**: My Model 4 is what I call an Erector-set computer. It is made up of parts from a cassette Model III, a cheap floppy upgrade, over the counter parts, Tandy parts, etc. A summary follows:

The case, keyboard and main board are from a cassette Model 4. The memory chips are from JTC or some such in Silicon Valley. The disk chimney is a pair of identical angle irons from a cheap disk upgrade. I recommend that you make your own. I added ALL the shields from Tandy; they are excellent, and the critical ones are Mu-Metal. I have two 38-watt Astec power supplies; one came with the old Model III (as did the RS-232 board) and the other I bought from Tandy National Parts (or did it come out of the cassette Model 4???). One supply runs everything except the floppies. The other runs all four of the floppies. This guarantees no screen breathing.

The FDC card is a Tandy unit, old style with the three trimpots, set up by myself. I modified the bus by using cuts and jumpers so that the internal bus was the standard 34-pin floppy bus, using advice from —jjkd— as follows: Pin 1 of U17, a '02, goes to TP16. Cut the trace at the IC and solder a 2.2K pullup from TP10 to the +5 bus, which is identifiable as 0 ohms from TP1. This forces permanent internal disk drive select.

You can enhance the internal 34-pin bus to the standard bus by jumpering pins 10 and 12 on J1 (the external bus) to pins 14 and 6, respectively, on the internal bus. This gives the internal drives the disk

select signals for drive 3 (pin 14) and drive 4 (pin 6). Be careful not to let solder run onto the card edge connectors.

If you have the newer FDC board with no trimpots, cut the trace between pin 1 of U20 (the '02) and pin 1 of U19 and tie pin 1 of U19 to +5 with the 2.2K resistor. The +5v bus is available near the resistor bank R7 between the two chips; it is tied to one end of all the resistors in the bank.

Make a new cable using 34-pin ribbon cable and five 34-pin card edge connectors. Pull no pins anywhere; this is the same bus used on the IBM PC and other computers. Use the stripe on the cable for pin 1, and read the numbers on the connectors to match up pin 1 on the FDC board with pin 1 on each of the FD drives. I used a 1/4 lb hammer and cardboard to tap the connectors together. Tuner cleaner on the card edges and in the connectors prevents intermittent problems later; do this on ALL card edge connectors. Good luck, and keep us posted.

## *Memory &HiRes Graphics*

**Fm Timothy Sewell**: I have a older Non-Gate Array Model 4 in which I have recently installed an Alpha Tech memory board that I received from Anitek for review purposes. I also have a high resolution board which I moved via about 5 inches of ribbon cable. I have also installed a speed up kit from Anitek which brings the computer up to 5 Mhz.

I am now experiencing problems using the high resolution board. Lines don't fill in properly causing painting to bleed all over, "spots" and "blotches" appear at random when viewing and drawing pictures.

Has anybody here encountered this problem and does anybody have experience in correcting it. I would appreciate all replies.

**Fm Daniel L. Srebnick**: Timothy, I have installed my graphics board in much the same manner. To eliminate the spotty video, shield the ribbon cable in aluminum foil, and then insulate the foil so that it does not short if it comes into contact with the mother board. This solves the problem nicely.

**Fm Timothy Sewell**: Daniel, I did that and there was no improvement. Do you have any other suggestions?

**Fm Shane Dawalt**: Timothy, I believe someone had a similar problem with installing the XLR8er board in the model 4 with a hi-res board installed. The graphics board was moved and, apparently, the problem was caused by using unshielded ribbon cable to connect the graphics board to the CPU board. Noise is absorbed by the ribbon cable which trashes the signals being sent to and from the graphics board. The solution was to use a piece shielded ribbon cable (or in some way shield the cable being used now).

I suppose another problem could be that 5MHz is too fast for your hi-res board. If you board is a MicroLabs, it probably is ok to use at 5MHz as MicroLabs apparently uses static RAMs which are normally faster than the DRAMs used in Tandy hi-res boards. OTOH, after looking at my Tandy hi-res board, the DRAMs used are of the 150ns variety, so they should handle 5MHz ok unless the gate array used for timing gets grouchy at and above 4MHz.

Don't you just love straight answers? I think I'd try shielding the cable before suspecting hardware limitations.

**Fm Frank Slinkman**: Shane, Hi-res boards work fine with the XLR8er, which runs at 6.144MHz; so the problem almost has to be shielding.

**Fm Timothy Sewell**: Roy, I have tried shielding the cable as noted and there has been no improvement. I thought the new clock speed might be the problem but when I did a SYSTEM (slow) there was still no improvement. I'm wondering if there is a way to move the memory board as opposed to the High Rez board. Any suggestions?

**Fm MISOSYS, Inc**: SYSTEM (FAST) or (SLOW) don't affect the speed with an XLR8er board installed; perhaps they also don't affect the speed with Anitek's speedup board. How long is your video interface cable? Where do you have the hires board positioned? Where do you have the video cable positioned? Perhaps you may try to ground the "aluminum foil shield".

**Fm Daniel L. Srebnick**: If the shielding did not help then you will have to make do with a shorter cable.

**Fm Dave Spiceland**: Tim, haven't seen the other replies, but I have the 1-Meg board installed in an OLD Model 4 with the MicroLabs board and I've been able to use the ML board fine. The problem I had was extending the Hi-res board away from the bulky 1-Meg board. MicroLabs sold me a small extender to take care of that.

This response might not be exactly what you needed, but it could tell you that the configuration you've got DOES work for someone. Let me know if I can tell you more!

**Fm Timothy Sewell**: Thanks for the reply Dave. I will have to check with them. Was the extender a specially shielded ribbon cable? I have been trying to find shielded ribbon cable in my area (Southern California) but have had no luck. Anybody know of a source?

**Fm Dave Spiceland**: Tim, The extender was NOT a cable. It was something which literally extended the board an extra inch away from the CPU and Alpha board. I got mine from MicroLabs directly.

**Fm MISOSYS, Inc**: I have a source for the 34-conductor shielded ribbon cable. Unfortunately, it's available only in a 100 foot roll for about $250. I don't need 100 feet. If anyone wants some of it and is willing to go along on a "group purchase", please let me know. I'm looking for folks who may want 10 foot "hanks".

## *Need an EPROM Programmer?*

Glen A. Dobbs
Box 291
APO New York 09210-5360

Roy, I received TMQ just in time to decide what I wanted for Christmas. Thank goodness my wife is understanding and one of my two girls is almost out of college. Please send all three Golden Oldies: Maintenance, System Enhancement and Utility. With the 30% off coupon I even have a bit left to treat the rest of the family. Have a nice Christmas and best wishes for the new year. I'm including this next item for anyone who might be interested.

Wait, hold the press. I better get this finished and sent to you before this product evaporates also. I just received the latest Jameco Electronics catalog and the ART Programmer (read on) is being closed out for 10% off the normal price. It was already a good price and now it's better, but better hurry or no more will be available. With the TRS-80 market slowly drying up, it becomes harder to find suitable hardware products for system development. However, an EPROM Programmer I recently found, offered by Jameco Electronics, 1355 Shoreway Road, Belmont, CA 94002, (415) 592-8121, works great and also offers portability to the MS DOS/IBM world if and when one ever decides to join the rest of the crowd following Big Blue's lead. If you are interested you can order their Applied Reader Technology (ART) EPROM Programmer for $199.95 plus shipping and handling. ($179.95 closeout price now)

Personally I like my TRS-80 Model 4 and will probably still be using it and learning from it long after the current MS DOS standard is but a passing fancy. Of course I, like many, use IBM computers and clones (including a Tandy 1000 SX), but the Model 4 just feels better to me and is easier to use. The ART EPP-1 EPROM Programmer is imported from Holland and will program all current EPROMs from 2716's to 27513's plus some EEPROMs. It works by using the RS232 interface and transfers data at 1200 baud for all devices. IBM compatible software is provided to operate the EPP-1,but any communications software will work satisfactorily. I personally use TRSDOS62 and the system COM/DVR and COMM/CMD programs to handle communications between my Model 4 and the EPP-1. MEMDISK is used to send and receive all Hex files so the 1200 Baud doesn't cause a problem (if you try to read/write files directly to normal disk files at 1200 baud the COMM/CMD software will drop characters).

Setup for the Model 4 goes like this:

(1) `SYSTEM (Drive=7,Driver="MEMDISK") [CR]`

to install a standard memdisk.

(2) `SET *CL TO COM/DVR [CR]`

to install the filter.

(3) `SETCOM (QUERY) [CR]`

answer prompts to setup the RS232 as follows:

(a) `BAUD=1200`
(b) `WORD=8`
(c) `PARITY=NO`
(d) `RTS=ON`
(e) `CTS=ON`

all other parameters take defaults.

(4) `COMM *CL [CR]`

(5) `[CLEAR] 6 [CLEAR] 9`

will output FILE=? so answer:

FILE=`EPROM/TXT:7`

(6) At this point, with the EPP-1 connected to the RS232, plug in the programmer and

```
ARTepp, ver 870808
*
```

will appear on the screen to let you know the EPP-1 is functional.

(7) Type `8E21s [CR]`

at the (*) prompt to set the EPP-1 for a 2716 type device, then with an EPROM loaded in the ZIF socket, type:

`[CLEAR] [6] [CLEAR] [:]`

to set up for receiving a file and ...

`*R [CR]`

to receive the file from the EPROM.

(8) After reception of the file is complete, type:

`[CLEAR] [SHIFT] [-]`

to exit the COMM/CMD program to DOS. You can then copy the EPROM/TXT:7 file from MEMDISK to another more permanent file on disk.

To program an EPROM requires that you have a text file Saved in the correct format (see the instruction book that comes with the EPP-1) and after setting up the EPP-1 as before, you use the COMM/CMD transmit commands (see DOS manual) to send the file from Memdisk to the programmer. Be sure to include `W [CR]` as the first line of the file to write to the EPROM.

One final caution regards 24 pin versus 28 pin EPROMs. Make sure to install them in the socket to the bottom and not to the top. There is a line marking by the socket which shows the top, but nowhere in the manual did I find any reference to the placement so I just experimented to find the correct method.

## *Speed a Model 4 to 5 Meg!*

**Fm Frank Gottscllalk:** Keep up this great publication! Some of it is way over My head, but read it cover to cover anyway as soon as I get it. Lots of it is fascinating and much of it helpful.

Was reading about the Model 4 speedup. I have one GATE-ARRAY machine with Alpha Tech's (now Anitek) Megabyte of memory installed. Have yet to actually measure the clock speed, but expect it to be the usual 3.3 Mhz. Have heard there is a way to jumper the clock to the RS-232 clock at 5 Mhz. Don't have all the detailed pin numbers yet, but trying to find a schematic to figure it out. I've been told that it won't boot at that speed, and wonder why.

Just installed the Megabyte of memory in my other NON-GATE ARRAY Model 4, along with their 5Mhz speedup kit (new U3 PAL and a new Z0OB). It runs at 4.6 MHz. Tried lifting pin 7 of U3 PAL,, but still 4.6 MHz.

Understand the Model 4 doesn't need the WAIT states (whatever they are). Also read somewhere (1st article about speedup in TMQ?) that the newer PAL chip at U3 was designed around it? Perhaps my new speedup PAL has been, but why not the full 5.0 MHz yet?

By the way, while trying to go to 128K from 64K, I had great problems with garbage every time I put RAM in the 2nd row of sockets. Finally traced it to an unsoldered resistor joint way down in the corner under the RAM sockets at R210 and 211. A touch of solder and it works great. Those joints were never soldered. Might pass this Along for others having problems with RAM installations.

Can I get some clarification on the speedup picture?

**Fm MISOSYS, Inc:** Hey, see the letter which follows. Maybe it will work in your case.

Andrew M. Kunz
220 Sixth Street
Colonial Beach, VA 22443

Dear Roy (and family), I read with much interest in the last TMQ (page 10) about speeding up an early 4 to run at the true 4.05 MHz speed, since mine is about as old as they come (Rev A). It was running at 3.3 or so until I made the modification as you printed it, but I wasn't content with that either. I knew that the RS232 uses a 5 MHz clock, so I tapped that for the CPU clock. It now ZIPS along at 5.0688 (50% better than stock), and only cost $2.25.

First, a word about my machine, since it isn't stock. It was a used 16K cassette (26-1067) when I got it. I installed a Jameco 128K set (16 150ns 4164's) and an Aerocomp floppy controller with a Teac 360K drive. It now has two of them, plus a Toshiba 3.5" 720K drive, all internal. Whether the 150ns RAMs have anything to do with 5 MHz success I don't know — RS used 200ns chips.

Here's how to get the 5 MHz speed: Pull U3 and bend up pin 19. If you have bent up pin 7 to get 4.05 MHz, attach it to a resistor (1K or so) attached to +5V. It's NECESSARY to prevent noise at the higher speed! Install a 1" piece of tinned 22AWG wire (old printer cable) into the U3 SOCKET hole 19. Re-install U3. Solder the loose end of the wire to U3 pin 17 (RS232CLK). Now pull U57 (Z80A, it may say Mostek 3880) and replace with a Z80B (from Jameco, BG Micro, JDR Microdevices, etc). Presto — a 5.0688 MHz Model 4 (Model 5!?)

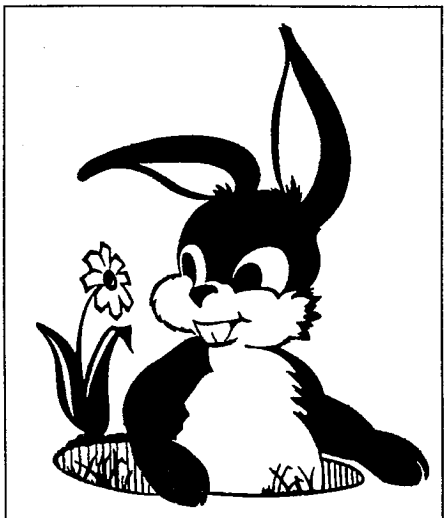
I know there are other Rev A boards out there craving to run faster, and this might just be the ticket, since (I understand) the XLR8 won't go on a Rev A. It's certainly cheaper, but you don't get a 256K ramdisk.

Now for three questions (note SASE): 1) Where can I get instructions for adding Radio Shack's "SmartWatch" to my 4? In TMQ III.i page 70 Dave Krebs mentions he has done it. If you could put me in touch with him I would appreciate it. 2) What BBS do you get the TMQ material from, and how can I subscribe? 3) Where can I get the Alpha memory board (with patches for 6.3)? I have only seen references to it, but no advertisements.

**Fm MISOSYS, Inc:** SmartWatch information is on our LDOS forum on CompuServe (PCS-49). I believe that Duane Saylor originally developed the installation procedure as well as the software interface, which is "shareware".

The Alpha Technology memory board is available from Anitek, publisher of LeScript; patches are available from us in Disk Notes 6 ($10 + S&H).

And the XLR8er will work in some old Rev A Model 4s. It's just that we cannot say that it will work in every one.



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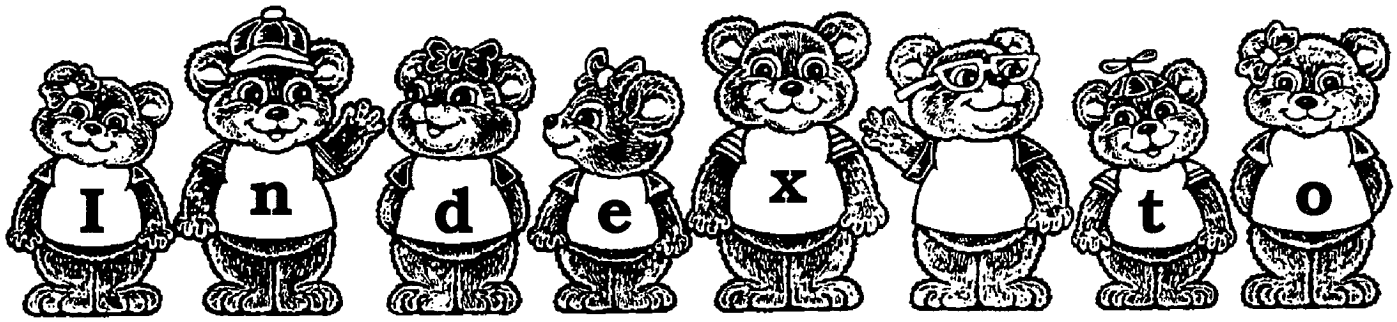


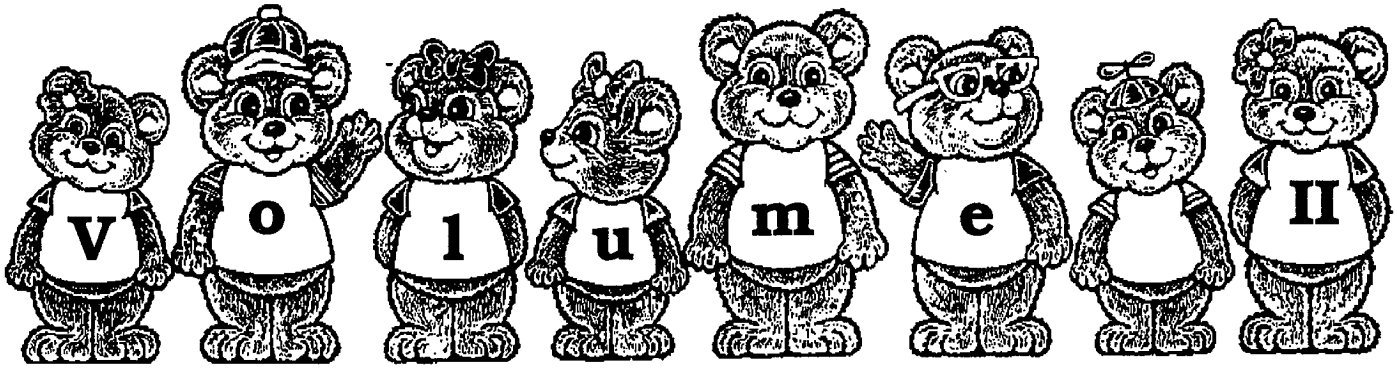

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