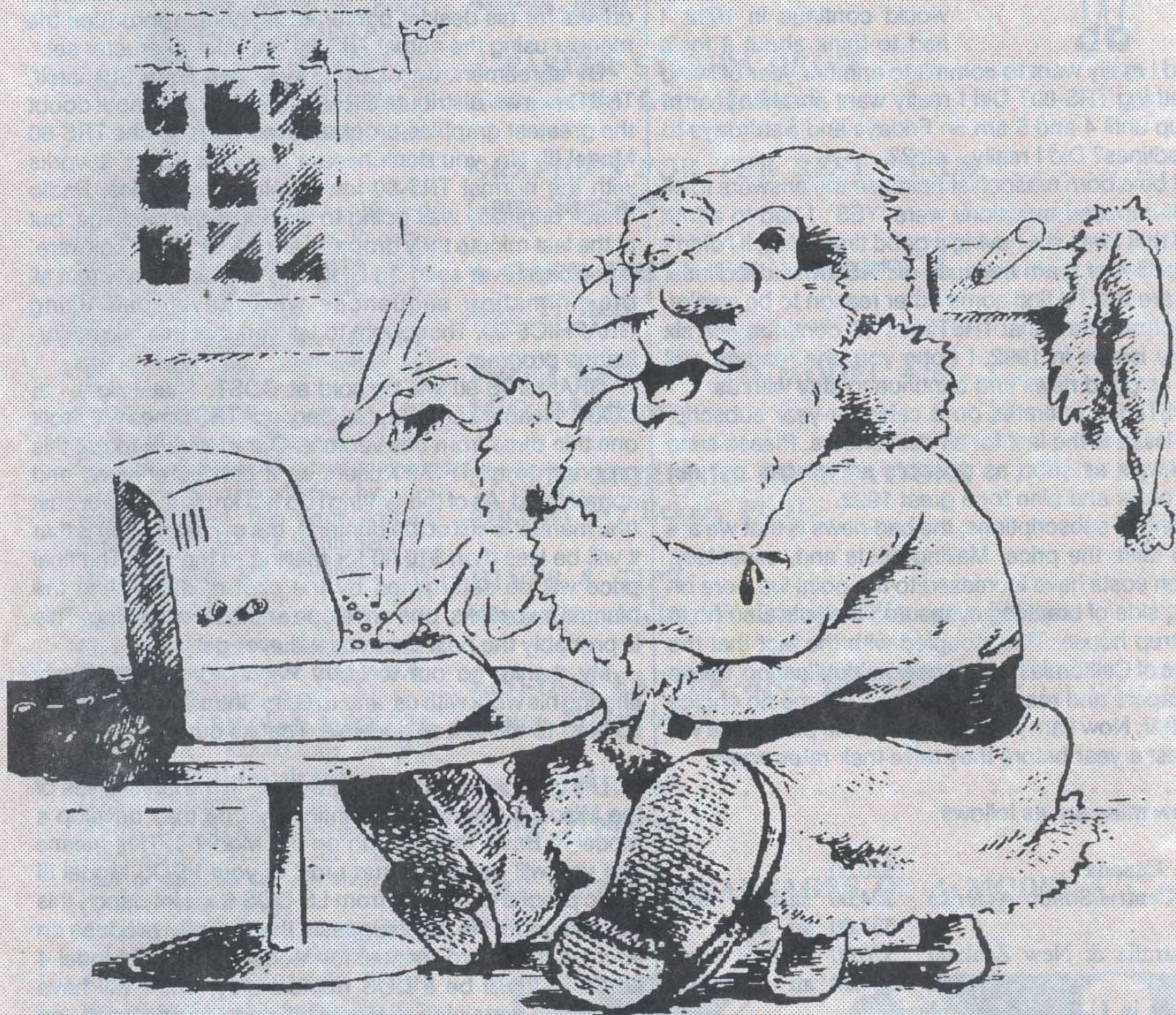


TRSTimes

Volume 4. No. 6. - Nov/Dec 1991 - \$4.00



HAPPY HOLIDAYS TO ALL

LITTLE ORPHAN EIGHTY



Well, here we are again - the end of another year of TRSTimes, our fourth. We have lasted longer than most of the TRS-80 publications that were launched during the heyday of the machines.

Four years is a long time for a magazine so, when the letters and phone calls came in asking if TRSTimes would continue in 1992, I had to think about it for a

while. Did I really want to commit to another year of living and breathing TRS-80? Did I really want another year of staying up until 4 and 5 am on Fridays and Saturdays to meet deadlines? Did I really... etc??

I must be a born masochist because the answers to all these self-imposed questions were 'YES'. I had to admit to myself that I was still having a good time. Also, if I didn't stay up until 4 or 5 am because of TRSTimes deadlines, chances are that I'd find some other reason to be awake. So, the bottom line is that TRSTimes will continue with six bi-monthly issues in 1992. I hope you, the readers, will view this as good news and continue to stay with us.

As TRSTimes operates on a calendar-year subscription, this issue is the last for all subscribers. Please send your renewals as soon as possible so we can get our books in order and plan for a great 1992.

Speaking of subscriptions, the bad news is that we are forced to raise the price. Mailing costs and, especially, duplication costs have increased to the point we were on the wrong side of breaking even - and that's is a no-no at the Wolstrup house. This, coupled with the fact that the great state of California has imposed a 'publication' tax on all newspapers and magazines, simply left me no choice in the matter. Now I am just hoping that the post office will wait at least a year before they raise their rates again.

The new rates are as follows:

U.S. and Canada	\$20.00	
Europe, Central/South America	\$24.00	surface mail
	\$31.00	air mail.
Asia, Australia & New Zealand	\$26.00	surface mail
	\$34.00	air mail.

All funds in U.S. currency, please.

Now that we have gotten that out of the way, let's talk about some of the exciting things that are happening in the TRS-80 world. Yes, even though our machines have long ago been abandoned by Tandy, there are dedicated people still creating new things for our favorite machines.

One of the most dedicated TRS-80 fan that we know is Gary Shanafelt. Not only has he written many articles to TRSTimes, CN80 and the Misosys Quarterly, he has also gone out of his way to procure and update software just so he can share it with the rest of us.

This is exactly what he has done with GRAPHICS-90, which is written about and advertised elsewhere in this issue. He spent countless hours (just ask his wife) disassembling and patching the various modules so it would work with LDOS. He then tracked down the author, Larry Payne of the Software Affair, and managed to get permission to distribute the software package. Gary also wrote drivers for his deskjet printer so he could reproduce the manual using the actual TRS-80 graphics character set.

By agreement with Larry Payne and Gary Shanafelt, TRSTimes will distribute GRAPHICS-90. It is without doubt the greatest graphics program ever made for the TRS-80 Model III. No, you don't need a graphics board, it works with the normal TRS-80 low-resolution graphics. Radio Shack originally was going to distribute the package, but at the last minute they dropped all new Model III software. If you have ever seen '13 GHOSTS' let me just say that all the animation sequences were developed using GRAPHICS-90. That ought to tell you that this is a major-league program.

GRAPHICS-90 will be sold at COST. That's right - at COST. Neither Larry Payne, Gary nor TRSTimes will profit one thin dime from this venture. Our motive is to get this program to all TRS-80 users so it can be enjoyed and appreciated. As of this writing I do not know the exact cost (the manual is still at the printers), but my estimation is that it will be less than \$10.00 for mailing to the U.S. The final price will be determined by the cost of duplicating the manual, two disks, one envelope and cost of mailing. This is probably the best deal you will ever get.

My thanks go out to Larry Payne for so graciously sharing his work with us, and to Gary Shanafelt for working so hard to make it all possible. Thanks guys.

The other news is that Roy Soltoff, in the latest issue of the Misosys Quarterly, is hinting that he may develop a Model III Basic that will run on the Model 4. This means that you will be able to run most of your LDOS Model III Basic programs directly from LS-DOS 6.x. Hot dang - this sounds good. He also suggests that he may produce an accross-the-board manual for Model I/III LDOS/Model 4 LS-DOS. It will be a DOS manual only, but it will have everything pertaining to Model I/III and 4 in one book - no more searching for the various updates. I hope he follows through on both projects. Write him and let him know you are interested.

And now - welcome to TRSTimes 4.6 - and stay with us in 1992.
Lance W.

TRSTimes magazine

Volume 4. No. 6. - Nov/Dec 1991

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Article submissions from readers
are welcomed and encouraged.
Anything pertaining to the TRS-80
will be evaluated for possible pub-
lication. Please send hardcopy and,
if at all possible, a disk with the
material saved in ASCII format.
Any disk format is acceptable, but
please note on label which is used.

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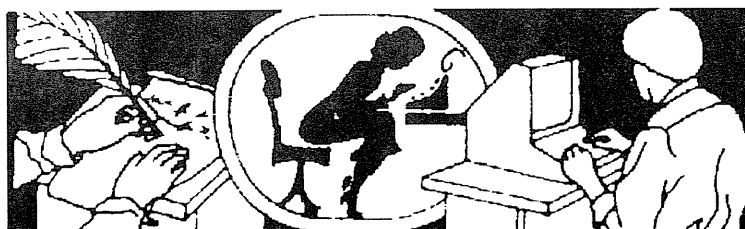
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THE MAIL ROOM



FROM CRAFT-80

Thanks for placing our ad in the Jul/Aug 1991 of TRSTimes. We are proud to tell you the ad has had its impact on your readers. Even before our copy of the magazine reached us, a Canadian subscriber was the first to order a copy of the Special '90 diskette. We shipped it the same week an almost couldn't wait for TRSTimes 4.4 to fall into the mailbox.

By now we have had more people ordering the diskette and most of them have received their copy within three weeks. Even more people might have ordered one if an unforeseen problem had not shown up.

We wanted your readers to include a Travelers Cheque worth \$10, but they seem to be unavailable. The next higher cheques are worth \$20 and must be bought in packages of 10. We can't blame people for not doing this, just to send us one. So we need a better way. Most people who have ordered the Special '90 diskette so far have just included a \$10 bill in a standard envelope, along with a letter stating their name and address. This seems to be working well for all parties involved, including the International Postal Services..

We encourage your readers to write to us concerning problems with their TRS-80's in general, and NEWDOS/80 in particular. We are always happy to help.

CRAFT-80 GROUP
POSTBUS 73
4854 ZH BAVEL
THE NETHERLANDS

CORRECTION TO NEWDOS EDTASM FOR MODEL 4

I received the latest issue of TRSTimes today and was pleased to see my patches for EDTASM/CMD in it. Unfortunately the article omitted to point out that the last patch, allowing lower case, is NOT optional, as without it the <BREAK> key does not work.

M.C. Matthews
Dorset, England

MODEL I

I know that most of the TRSTimes readers have Model 3 and 4's and that you therefore devote most of the magazine space to these machines. But since I only own an old Model 1, I would like to see more articles about it. Please don't forget about your Model 1 subscribers.

H.D Ploughman
Rochester, MN

As you correctly point out, the majority of the TRSTimes readers have Model III & 4's. Since we are dependent on reader article submissions, the bulk of what we receive is for these machines. Now, we don't purposely neglect the Model I. We would certainly like to cover this machine much more than we have done in the past - so, all you Model I fans - get your word processor going and send us some material..

By the way, do notice that this issue has several articles geared for the Model I.

Ed.

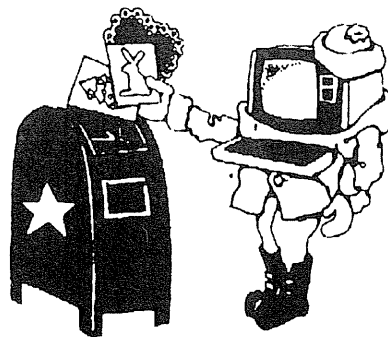
VISICALC

I would like to echo Mr. Melchior's desire for more VISICALC coverage in TRSTimes. It is a popular and very powerful program. While I do not use PROFILE or SUPER SCRIPSIT, you can add me to the list of readers wanting articles about VISICALC.

Duane T. Walker
Anderson, IN

As I replied to Frank Melchior's letter (Jul/Aug 1991), we will gladly publish articles about VISICALC (as well as PROFILE and SUPER SCRIPSIT). Unfortunately, we haven't received any submissions dealing with these programs. So, let me once again encourage the readers to send us articles about your experiences with these three TRS-80 classics. Meanwhile, I think I have twisted Jim King's arm sufficiently for him to come up with some VISICALC stuff in a future issue.

Ed.



A FASTER SYSTEM DRIVE

MEMDISK/GRAFDISK FOR LS-DOS 6.3.1

MODEL 4 with 128K

A super tip from Holland



Note from the Editor:

It has happened again. We received a nice letter from Holland containing the information presented below. It has been slightly reworded to make it easier for the readers to implement the author's idea. Unfortunately, the author did not give us his name; he signed the letter, but we cannot make out the signature. So, to another unknown TRS-80 aficionado, thank you for a super article - and please let us know who you are so we can give you due credit.

Referring to the MEMDISK article on page 22 of the May/June 1991 issue of TRSTimes (A FAST SYSTEM DRIVE), you are right - it is a great help - but it takes some time, especially the instruction `BACKUP /SYS:0 :6 (S)`.

However, you can speed up this process by preparing a second disk with, for example, the SYS files along with `FORMAT` and `BACKUP`, or the SYS files and `BASIC`, and then using it as a MEMDISK 'boot' disk.

This does get a little tricky, so let me go through the process step by step.

1. Format a 35 track, double density disk in drive :1. Make absolutely sure that the directory is placed on track 1, and that the name of the disk is MEMDISK.

```
FORMAT :1 (name = "MEMDISK",mpw = ,dden,cyl = 35,
dir = 1,q = n,abs)
```

2. Copy all the /SYS files from drive :0 to drive :1.
`BACKUP /SYS:0 :1 (S)`

3. Remove the unneeded /SYS files from DRIVE :1.
`REMOVE SYS0/SYS.SYSTEM6:1`
`REMOVE SYS13/SYS.SYSTEM6:1`

If you are not going to use `DEBUG`, you may also
`REMOVE SYS5/SYS.SYSTEM6:1`
`REMOVE SYS9/SYS.SYSTEM6:1`

4. If you removed the above four system files, you will have used 51K of the disk in drive :1. You may now copy any files to drive :1 - as long as the total lengths of the files do not exceed 12K. For example:
`COPY FORMAT/CMD.UTILITY:0 :1`
`COPY BACKUP/CMD.UTILITY:0 :1`

This completes the preparation of the MEMDISK 'boot' disk.

5. Set up MEMDISK.
`SYSTEM (DRIVE = 2,DRIVER = "MEMDISK")`

6. Select 'Banks 1 and 2'.
D

7. Select 'Double Density'.
D

8. Format MEMDISK.
Y

9. Backup the MEMDISK 'boot' disk in drive :1 to the actual MEMDISK in drive :2.
`BACKUP :1 :2`

10. If you have done each step exactly as written, you will now get the message: 'Cylinder count differs - Attempt mirror-image backup ?'
Y

You will find that the backup is now done in mere seconds because it is done track by track rather than file by file.

11. Make the MEMDISK the SYSTEM drive.
`SYSTEM (SYSTEM = 2)`

12. Set up drives so original drive :0 becomes drive :1, and original drive :1 becomes drive :2.
`SYSTEM (DRIVE = 2,SWAP = 1)`

The MEMDISK is now set up and ready for use. However, you surely do not want to perform these steps each time you boot, so label the 35 track disk 'MEMDISK BOOT' and reboot the machine.

Now use TED to write the following JCL file and save it as STARTMEM/JCL to drive :0.

```
SYSTEM (DRIVE = 2, DRIVER = "MEMDISK")
D
D
Y
BACKUP :1 :2
Y
SYSTEM (SYSTEM = 2)
SYSTEM (DRIVE = 2, SWAP = 1)
```

Whenever you boot your Model 4, insert your 'MEMDISK boot disk' in drive :1 and, from the 'LS-DOS Ready' prompt, you can now type **DO STARTMEM** to set up your MEMDISK configuration. It is fast.

GRAFDISK

If you have a graphics board installed, you will no doubt want to take advantage of the extra memory afforded by this board (RS board adds 32K - the Microlabs board adds 24K). This was described in the article 'A FASTER SYSTEM DRIVE PT. 2' on page 11 in the Jul/Aug 1991 issue of TRSTimes.

While the method presented in the Jul/Aug TRSTimes was fast, using a slightly altered version of the MEMDISK method from the previous page is even faster.

1. Format a 35 track, double density disk in drive :1. Make absolutely sure that the directory is placed on track 1, and that the name of the disk is GRAFDISK.

```
FORMAT :1 (name = "GRAFDISK", mpw = , dden, cyl = 35,
dir = 1, q = n, abs)
```

2. Copy all the /SYS files from drive :0 to drive :1.
BACKUP /SYS:0 :1 (S)

3. Remove the unneeded /SYS files from drive :1.
REMOVE SYS0/SYS.SYSTEM6:1
REMOVE SYS13/SYS.SYSTEM6:1

If you are not going to use debug, you may also
REMOVE SYS5/SYS.SYSTEM6:1
REMOVE SYS9/SYS.SYSTEM6:1

4. If you removed the above four system files, you will have used 51K of the disk in drive :1. You may now copy any files to drive :1 - as long as the total lengths of the files do not exceed 43.5K (31.5K for Microlabs). For example:
COPY FORMAT/CMD.UTILITY:0 :1
COPY BACKUP/CMD.UTILITY:0 :1

```
COPY TED/CMD.UTILITY:0 :1
COPY BASIC/CMD.BASIC:0 :1
COPY BASIC/OV1.BASIC:0 :1
COPY BASIC/OV2.BASIC:0 :1
```

(if you have the RS board and have copied everything listed above to the GRAFDISK, it is now full - if you have the Microlabs board, do not copy the BASIC files).

This completes the preparation of the GRAFDISK 'boot' disk.

5. Set up GRAFDISK.
SYSTEM (DRIVE = 2, DRIVER = "GRAFDISK")

6. Select 'Banks 1, 2 and Grafmem'
B

7. Format GRAFDISK
Y

8. Backup the GRAFDISK 'boot' disk in drive :1 to the actual GRAFDISK in drive :2.
BACKUP :1 :2

9. If you have followed each step exactly as written, you will now get the message: 'Cylinder counts differs - Attempt mirror-image backup ?'
Y

10. Make the GRAFDISK the SYSTEM drive.
SYSTEM (SYSTEM = 2)

11. Set up drives so original drive :0 becomes drive :1, and original drive :1 becomes drive :2.
SYSTEM (DRIVE = 2, SWAP = 1)

The GRAFDISK is now set up and ready for use.. However, as with MEMDISK, you surely do not want to go through these steps each time you boot the machine, so label the 35 track disk 'GRAFDISK BOOT' and reboot the machine. Now use TED to write the following JCL file and save it as STARTGRF/JCL to drive :0.

```
SYSTEM (DRIVE = 2, DRIVER = "GRAFDISK")
B
Y
BACKUP :1 :2
Y
SYSTEM (SYSTEM = 2)
SYSTEM (DRIVE = 1, SWAP = 2)
```

Now, whenever you boot your Model 4, insert your GRAFDISK 'boot' disk in drive :1 and, from the 'LS-DOS Ready' prompt type DO STARTGRF to set up your GRAFDISK configuration..

Editor's note: GRAFDISK/DCT is available on TRSLINK #26. It will also be available on TRSTimes on DISK #8.

GRAPHICS

-FOR-THE-REST-OF-US-

Gary W. Shanafelt, History Department, McMurry University, Abilene, TX 79697

In the September/October issue of this magazine, I presented some zaps to a Model III program called Graphics-90. I also said that a project was underway to increase the availability of the program, since most readers had probably never heard of it. That project, I'm happy to announce, is completed. You can now run Graphics-90 under LDOS as well as the original TRSDOS, with conditional use under other DOSes. You can also get a new version of the 100-page manual printed on a 300-dpi DeskJet printer (mine). In addition to the original program modules, there are several new utilities. All this can be had at cost from TRSTimes. Cost is \$6.75 for two disks and the manual, plus \$3.00 for shipping and handling to the U.S and Canada. Add \$6.25 for air mail to Europe and \$4.25 for surface mail. Asia, Australia and New Zealand add \$7.25 air mail and \$4.25 for surface. You should specify whether you want the programs on TRSDOS 1.3 or LDOS 5.3 formatted disks, though both contain the same programs.

If you don't know enough about the program to know whether you want it or not, then read on.

The TRS-80 is capable of some pretty fancy graphics with the optional hi-res board, and a growing number of programs are available which take advantage of it. But the board costs \$100 and most people don't have it. You can get some outstanding graphics, however, just from the block characters built into your Model III or 4. A number of programs have been written to manipulate the low-resolution TRS-80 graphics characters, but none comes close to Graphics-90. Graphics-90 was created by Software Affair, the producers of 13 Ghosts and the Orchestra-90 music system, and specifically by Larry Payne. It actually allows a few tricks not available in any of the hi-res drawing programs, and proves that, finally, there are graphics for the rest of us without the fancy add-on boards. (Of course, if you do have a hi-res board, as I do, Graphics-90 is simply more icing on your cake).

What sets Graphics-90 apart from other TRS-80 graphics programs (aside from the fact that it is basically free except for the cost of copying the disks and manual)? Two words provide the answer: "BASIC" and "animation."

A number of TRS-80 graphics programs allow drawing on the screen with the block graphics characters. And you can generally print them if you have a dot matrix printer. But all you end up with are a few stand-alone pictures that you can't do much with beyond occasionally calling them up from the DOS and looking at them. Graphics-90, however, allows its fancy graphics effects to be incorporated into normal BASIC programs, which most any TRS-80 user can write. So, instead of simply creating a pretty picture on the screen, you can use that picture (or many other pictures) in creative ways in large, complex BASIC programs. In short, it links the graphics to practical applications in the real world through BASIC. It does this by providing a program called ABASIC -- short for "Animation BASIC" -- which patches additional animation/special effects commands into normal disk BASIC. ABASIC allows literally hundreds of pictures and special effects to be strung together in full animation frames for stunning displays, even with the low-resolution block graphic characters standard on the Model III.

I mentioned "animation." This is the other unique feature of Graphics-90. Other programs make some animation effects possible, but nothing like those of this one. The screen editor allows not only normal drawing features (circles, lines, movement of blocks, etc.) but a special "rubberband mode" which permits you to take any image and enlarge or shrink it, or just stretch it in different directions using the cursor keys. You can combine several images together as "frames" in a larger display, then display them instantly one after the other,

and your display comes to life in an explosion of movement. Just as ABASIC provides a practical way to interface hundreds of graphics images (as many as can be stored on a disk), the other program utilities make creating those images to begin with as easy as possible.

If all this sounds like hyperbole, the authors provide a demonstration program, CARTOON/BAS, created with the Graphics-90 package and running under ABASIC. It accesses over 400 graphics screens stored on disk to show just what low-resolution graphics on a Model III, good software, and a bit of imagination are capable of. The TRS-80 won't ever be in the VGA graphics league, but you'll never be embarrassed with your graphics capabilities after you've seen this demonstration.

What do you get in the Graphics-90 package?

The original program worked only with TRSDOS 1.3, Radio Shack's standard Model III operating system. It still does. But you can now run all the utilities under LDOS 5.3. Most work without alteration; when they don't, you'll find separate versions for TRSDOS and LDOS.

The utilities are all written in FAST machine language code. The main one is EDIT/CMD, which allows you create graphics screens. Its functions include drawing lines, boxes, squares, circles; moving blocks of graphics; reversing the screen or parts of it; and, most impressively, sizing or distorting images. You can also enter text. There are enough text editing commands for a small word processor: deleting letters, deleting lines, adding lines, moving backward and forward, etc. You can also enter the TRS-80 special characters (codes 192-255). Further, you can edit lines of BASIC code, so long as you save and load them in ASCII format. You can save the whole screen or blocks of it in special "key" files, to be recalled wherever you put the cursor. Finally, there is extensive on-line help; all you do is press <CLEAR> <H>. There are separate versions of the program for TRSDOS and LDOS.

The editor is just the beginning. It is supplemented by COMPILE/CMD, a utility that compiles big picture files consisting of many frames of pictures into a special compressed format to save disk space. (The commands to set up individual frames are input into a file by the editor before the file is compiled). ARUN/CMD is a run-time utility that allows you to view a the sequence of frames in a picture file from the DOS. G120/CMD is a special printer driver which supports printing files in the editor (or any other file with block graphics, for that matter) on a Radio Shack DMP-120 printer. The SCREEN/CMD utility dumps the contents of the screen to a specified disk file for future editing. Finally, GENERATE/CMD converts graphics picture files into normal BASIC strings for printing on either the screen or a printer. The latter two utilities can be used

with any Model III program, not those in the GRAPHICS-90 package.

The program that takes advantage of all these utilities is ABASIC. The new commands which ABASIC adds to normal Model III disk BASIC make it possible, through BASIC, to load in any picture file you want and, in fact, to display the individual frames within it in any order that you want. You can even specify one frame as "background" and then have other pictures displayed on top of it in the "foreground." And, of course, all the normal BASIC commands for pauses or loops or user input are available so that you can manipulate the graphics you create with EDIT/CMD in just about any fashion that you wish, subject only to the amount of memory you have and disk space for storing picture files.

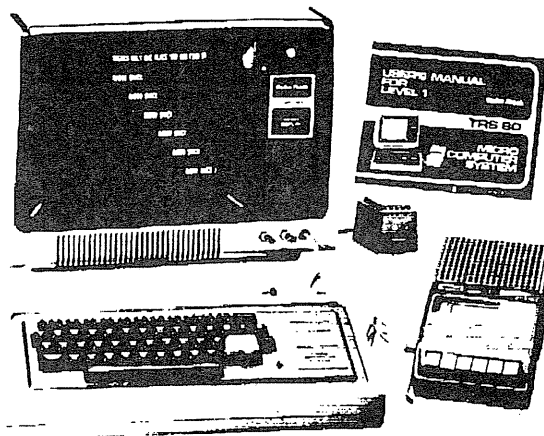
The original Graphics-90 had only one version of ABASIC, for TRSDOS 1.3. This package provides versions for several other DOSes as well: LDOS 5.3, NEW-DOS80 2.0, MULTIDOS 1.71, and DOSPLUS 3.5. That means that, though all the utilities have been tested only under TRSDOS 1.3 and LDOS 5.3, a program you create with one of these DOSes can be linked with the requisite version of ABASIC to run under any of the major Model III disk BASICs. And of those "untested" utilities, my experience with LDOS indicates that if you are running them under one of the other non-Radio Shack DOSes, you'll probably find them all compatible except for a few commands of the editor.

Not very many people have DMP-120 printers anymore. So, to keep up with the modern world, this new version of Graphics-90 adds Hewlett-Packard LaserJet and DeskJet support. That support comes in the form of a HP printer driver/font downloader, and a special TRS-80 soft font which it sends to the printer when you load it. The font is a 10-point elite fixed-pitch font which looks similar to HP's line draw fonts. Unlike the HP version (or any other font so far in existence), it includes all the TRS-80 block graphics characters from codes 128-191, and the TRS-80 special characters from 191 to 255. If you can display it on your screen, you can print it with this font. (The font should, incidentally, work with any word processor that supports elite pitch letters, not just Graphics-90). The package includes separate versions for the LaserJet and for the DeskJet. It is this font that was used to print the Graphics-90 manual, which is filled with illustrations using the TRS-80 block characters and so can't be printed on most available printers. And as you've probably guessed, it was also used to print the masthead for this article.

I think Larry Payne did an outstanding job when he put together the Graphics-90 package nine years ago. If you've never heard of it, you've really missed out on a treat. Now, hopefully, this new issuance of the program and its manual will finally let Graphics-90 gain the audience that it so richly deserves.

A Hard Drive on a Model I?

By Roy T. Beck



I presume most of you know it is possible, in most cases, to run a Hard Drive on a Model I with good results. Or do you?

In any event, I have long known this was possible, but I never got around to doing it until a couple of weeks ago.

HARDWARE

First off, what hardware is required? A very good question, that. Not all Model I's are equal, which I'm sure you veterans all know. But some of you with hand-me-down Model I's may not know.

Radio Shack produced several versions of the Model I keyboard and two versions of the Expansion Interface. The keyboards varied in their internal arrangement, but it was not until the owner added an Expansion Interface that he discovered the critical differences. The early Expansion Interfaces had problems; many of them were unreliable in operation. You could have a "freeze-up" occur without warning, and probably lose whatever you had in memory at the time. Radio Shack went through a series of fixes, but finally gave up and redesigned the Expansion Interface PC board from scratch. The new design was good and works without trouble.

I will identify the various versions by a type letter. No one else did this so don't quote these letters outside of this article, they won't mean anything to anyone else.

Type A

The original setup was any version of the keyboard and the original Expansion Interface joined by a 40/C ribbon cable. Some of these worked OK, some didn't.

Type B

The first attempted fix by Radio Shack was the DIN connector version. In this case, Radio Shack did some cutting and patching on both the keyboard and the old Expansion Interface and then added a small cable between the two enclosures. The small cable had a pair of DIN connectors in the middle which had to be plugged together when you connected the 40/C ribbon cable to the keyboard and Expansion Interface. This worked OK with floppies, and Radio Shack claims it works OK with hard drives.

Type C

Another version is the "pregnant cable" arrangement. In this fix, Radio Shack added a small plastic box about 2.5" square in the middle of the 40/C cable between the keyboard and the original Expansion Interface. Again, this worked OK with floppies, and Radio Shack claims it works OK with hard drives.

Type D

Finally they came out with the new Expansion Interface, as described above. The problem is that outwardly you cannot distinguish this good, new Expansion Interface from the bad, original Expansion Interface, as they shared the same enclosure.

Type E

Still another version to be aware of is the LNW Expansion Interface, designed by three fellows in Orange County, California. This was another good board, but because they did not originally offer an enclosure for their board, it got installed in all sorts of peculiar housings. The LNW board won't fit in a Radio Shack Expansion Interface enclosure, so you won't find that combination. If you see "LNW" on the PC board of your Expansion Interface, it's a good one, as they only made one version of it.

How do you know what you have? The B and C types are obvious, so no further mention is needed. Next, check the serial number on your Expansion Interface. I was told, although I won't swear to it, that the new Expansion Interfaces began with serial number 32,000. If your number is higher, you should have the new board, and therefore have a type D setup. But having a lower serial number is not conclusive. Radio Shack upgraded many obstinate early boards by simply removing the original expansion

interface board from the external case and dropping a late model board into it. The boards were designed to be mechanically interchangeable.

The sure way to distinguish a type A from a type D Expansion Interface is to peer into the ventilating slots on the bottom of the Expansion Interface. There will be two rows of memory chip sockets, 8 sockets per row. If the axis of the row of sockets runs parallel to the long axis of the case, you have the type D; if the two rows are oriented across the long axis of the case, it is the original type A.

My reason for identifying all these different versions is not just to show off my historical knowledge. The Model I hard drive adapter kit, Cat 26-1132, advises that the type A Expansion Interface will not work with a hard drive, and I believe them. Any of types B, C, or D is supposed to work OK. Type E is a question mark since of course Radio Shack never recognized the LNW design, and I personally have not tried an LNW with a hard disk. I believe it will work, since the LNW design was bug free, but I don't know for sure.

Also needed, regardless of the type designations above, is the previously mentioned adapter kit, Cat No. 26-1132. It contained an adapter cable to convert the 40 line Model I bus to the 50 line hard drive cable. This took the form of another "pregnant cable". The assembly had a small plastic box in the middle with about 3" of 40 conductor cable exiting one side and a 50 line edge connector on the other. This cable plugs into the "Screen Printer" connection of the Expansion Interface, which was really just the bus of the Model I machine. The 50/C ribbon cable from the hard drive plugs into the edge card side of the adapter.

Since these adapter kits were never that widely available, I have made up a schematic of the adapter. Mostly, the adapter simply interconnects the appropriate wires of the 40/C and 50/C cables. The only thing remotely tricky about it is the presence of two transistors and two resistors. These form a "wired OR" circuit to work the Model I interrupt system, and are simple to connect up. The transistors are the 2N2222 variety, easily obtained. I will supply a schematic to anyone who is interested and sends an SASE.

Of course, a hard drive is required, and it must be a master unit. Any of the Radio Shack family of Model III/4 hard drives will work, including the 5, 12, 15, 35 and 70 Meg hard drives. Avoid the 8.4 Meg unit.

SOFTWARE

The software included in the adapter kit was LDOS V 5.1.3 and the TRSHD1/DCT driver. This setup would only work with the 5 Meg drive.

In early 1991, Art McAninch of Borger, Tx and a friend of his, Dan Yertzell, went to work on the Model I with a view to using other, larger hard drives.

Art and Dan ran into several problems as they researched. First, the included drivers were only written for the 5 Meg hard drive. Between them, they completed patched versions of the TRSHD drivers to allow use of larger drives, specifically the 15 Meg. Rather than continuing to patch the old drivers, they then turned to the much better MISOSYS drivers, the RSHARD series for the Models III and 4. As a result of clever analysis and patching, they completed a version of RSHARD5 for the Model I with LDOS 5.1.4 which do the job properly.

Their efforts are all documented in an excellent article in Computer News 80, Volume 4 (1991) No.5 (May), including the requisite patches.

Art and Dan's efforts have brought the Model I quite a ways towards the present, but there is still another stage to go. That is LDOS V 5.3.1, recently released by MISOSYS after Soltoff had publicly stated he would never do an upgrade of LDOS for the Model I!

With the new LDOS V 5.3.1 in hand and Art and Dan's patched RSHARD5 for the Model I, I tried tonight (with Ye Olde Editor's Deadline staring at me) to operate the new LDOS with the newly patched RSHARD. I wish I could report success, but alas, it was not to be so. The partitioning command appeared to function correctly, and the formatter appeared to do its thing, but DIR reported the new partition as an "illegal drive" and would not access it. FREE ignored it. For the heck of it, I attempted to backup the new LDOS to the partition, which appeared to work, but the DIR and FREE commands still won't admit it is there. A clear, classic case of "Close, but no segar!"

CONCLUSION

Sorry I can't report total success at this stage, but between Lance, Dan and Art, and myself, I believe we will be able to finish the patching of RSHARD so it will work successfully with the new LDOS V 5.3.1. However, we do have the hard drive working successfully with LDOS V5.1.3 and V 5.1.4 and with the interim version of RSHARD.

If you have a reliable Model I (no random reboots, etc) of types B, C, D or E and a Radio Shack hard drive, why not consider combining them into a system? It sure is a pleasure to operate a Model I with a hard drive, and it is FAST! The only hangup is availability of the adapter cable assembly. You will have to buy, find, or make that yourself, but with a little spirit of adventure, you can do it!

GOODIES FROM ENGLAND

FROM NEWDOS TO MODEL 4 pt. 2

USE NEWDOS DISASSEM ON YOUR MOD 4

By M.C. Matthews

The Sep/Oct 1991 issue of TRSTimes brought you patches to convert Newdos/80 EDTASM to work flawlessly on Model 4 LS-DOS6. This installment will focus on converting another of the great NEWDOS/80 utilities, DISASSEM, so that it will work on Model 4.

DISASSEM/CMD was included on the NEWDOS/80 master disk and, for anyone interested in assembly language, it was a gem. As a matter of fact, it is still a gem.

In order to make DISASSEM/CMD work with Model 4, the first order of business is to copy the program to a disk that LS-DOS can read. This can be done in several ways, but the easiest is probably as follows:

1. Boot up your Model 4 in Model III mode with NEWDOS/80 v2. (It is assumed that you have the Model III version of NEWDOS/80. If you have the Model I version, you obviously cannot boot a Model 4 in III mode. Hopefully, in addition to your Mod 4, you will have a Model I. If so, boot the Mod I and follow the rest of the instructions.)

2. Configure drive :1 to read and write a standard 35 track, single-density diskette.

```
PDRIVE,0,1, TI = A, TD = A, TC = 35, SPT = 10, TSR = 3,
GPL = 2, DDSL = 17, DDGA = 2, A
```

3. Insert a blank diskette in drive :1, then format it.
FORMAT,1

4. Copy DISASSEM/CMD from the NEWDOS/80 disk in drive :0 to the data disk in drive :1.

```
COPY DISASSEM/CMD:0 :1
```

5. Remove the NEWDOS/80 disk from drive :0. Insert an LS-DOS6 boot disk and reboot. (The Mod I people need to remove the data disk created on the Mod I. Boot up the Mod 4 with LS-DOS6, then insert the data disk into drive :1).

6. Make sure your copy of DISASSEM/CMD is good.

```
DIR :1
```

Check the directory display carefully - this is very important - if the filename (DISASSEM/CMD) is followed by a question mark, it means that the file was not closed properly by LS-DOS6 standards during the copy procedure. As this will most likely happen, don't worry, simply issue the command to close the file properly:

```
RESET DISASSEM/CMD:1
```

7. Check the status of the file again.

```
DIR :1
```

The question mark following the filename should now have disappeared, indicating that the file is OK. If the question mark is still there, go back to step 1 and do everything again.

When DISASSEM/CMD has been transferred successfully, it is recommended that you copy it to your LS-DOS disk in drive :0

Keep in mind that you should not attempt to execute DISASSEM now or at any time from LS-DOS. It is NOT a Model 4 program and it simply will not work. At best you'll get an error message - at worst your house blows up!

Making any Model I/III machine language program work on a Model 4 requires patching. There are two distinct ways of patching such a program. The first method is the 'direct patch'. This is the method we used to modify EDTASM/CMD in the last issue; that is, the program is altered once and for all, directly from the DOS command line.

The second method is the 'loader patch'. This is an interesting and effective way of doing things. In essence, the program is stored on the disk in its original format. It will not work as is, so a 'loader program' has to be written. The 'loader program' loads the original program into its normal memory locations and then proceeds to modify the incompatible code right in memory. Finally, the 'loader' will transfer control to the modified program.

Method #2 is what we'll use to get DISASSEM/CMD up and running on the Model 4. The 'loader' program is called DISSEM/CMD and it can be generated by typing in and assembling the listing to DISSEM/SRC shown below.

DISSEM/CMD actually begins with the MOD4EA routine in line 380. Here the stack pointer is saved to SPSAVE. Then IY is made to point to the FLAGS table and saved to FLAGS.

The HIGH routine finds HIGH\$ and stores this value in MEMEND.

Line 500 contains the LOAD routine. DISASSEM/CMD is loaded to memory at its normal transfer address. Then (line 540) the transfer address is saved on the stack.

Once loaded, the PATCH routine in line 560 takes over. The address of the NEWDOS keyboard routine is altered to point to the KBD routine found in line 1080.

The address of the NEWDOS display routine is changed to point to the DSP routine found in line 1120.

The addresses of other vital NEWDOS routines are modified to point to their respective Model 4 routines found in lines 1190 through the end of the listing.

Finally, the RET in line 1060 transfers control to DISASSEM/CMD.

Type in and assemble DISSEM/SRC and enjoy a great disassembler on your Model 4.

DISSEM/SRC

```

00100 ;DISSEM/CMD. Program to run
00110 ;DISASSEM/CMD on Mod 4.
00120 ;M.C.Matthews
00130 ;
00140      ORG      3000H
00150 ;
00160 ERR      OR      0CH
00170      LD      C,A
00180      LD      A,1AH
00190      RST      28H
00200 ;
00210 EXIT      LD      SP,$-$
00220 SPSAVE    EQU      $-2
00230      LD      IY,$-$
00240 FLAGS     EQU      $-2
00250      LD      A,$-$
00260 KFLSAV    EQU      $-1
00270      LD      (IY + 10),A
00280      LD      HL,0H
00290      RET
00300 ;
00310 EADCB     DEFM      'DISASSEM/CMD'
00320      DEFB      0DH
00330 CBDFNL    EQU      $-EADCB
00340      DEFS      32-CBDFNL
00350 ;
00360 MEMEND    DEFW      00H
00370 ;
00380 MOD4EA     LD      (SPSAVE),SP
00390      LD      A,65H
00400      RST      28H
00410      LD      (FLAGS),IY
00420      LD      (KFLSAV),A
00430 ;
00440 HIGH      LD      A,64H
00450      LD      B,0H
00460      LD      HL,0H
00470      RST      28H
00480      LD      (MEMEND),HL
00490 ;
00500 LOAD      LD      DE,EADCB
00510      LD      A,4CH
00520      RST      28H
00530      JR      NZ,ERR
00540      PUSH     HL
00550 ;

```

```

00560 PATCH    LD      HL,KBD
00570      LD      (5CE2H),HL
00580 ;
00590      LD      HL,DSP
00600      LD      (5E95H),HL
00610 ;
00620      LD      HL,PRT
00630      LD      (5E77H),HL
00640 ;
00650      LD      HL,KEYIN
00660      LD      (5DADH),HL
00670 ;
00680      LD      HL,KEY
00690      LD      (5CD4H),HL
00700 ;
00710      LD      HL,DELAY
00720      LD      (5D98H),HL
00730 ;
00740      LD      HL,EXIT1
00750      LD      (5D0AH),HL
00760 ;
00770      LD      HL,ERROR
00780      LD      (5CF0H),HL
00790 ;
00800      LD      HL,INIT
00810      LD      (5A43H),HL
00820 ;
00830      LD      HL,OPEN
00840      LD      (57F9H),HL
00850 ;
00860      LD      HL,CLOSE
00870      LD      (59C1H),HL
00880      LD      (59CDH),HL
00890      LD      (5A08H),HL
00900 ;
00910      LD      HL,READ
00920      LD      (58C5H),HL
00930 ;
00940      LD      HL,VERF
00950      LD      (59EFH),HL
00960      LD      (5AD4H),HL
00970 ;
00980      LD      A,21H
00990      LD      HL,(MEMEND)
01000      LD      (563DH),A
01010      LD      (563EH),HL
01020 ;
01030      LD      A,18H
01040      LD      (5751H),A
01050 ;
01060      RET
01070 ;
01080 KBD        LD      A,08H
01090      RST      28H
01100      RET
01110 ;
01120 DSP        PUSH     BC
01130      LD      C,A

```


01140	LD	A,02H
01150	RST	28H
01160	POP	BC
01170	RET	
01180 ;		
01190 KEYIN	LD	A,09H
01200	RST	28H
01210	RET	
01220 ;		
01230 KEY	LD	A,01H
01240	RST	28H
01250	RET	
01260 ;		
01270 DELAY	LD	A,10H
01280	RST	28H
01290	RET	
01300 ;		
01310 EXIT1	LD	A,16H
01320	RST	28H
01330 ;		
01340 ERROR	PUSH	BC
01350	LD	C,A
01360	LD	A,1AH
01370	RST	28H
01380	POP	BC
01390	RET	
01400 ;		
01410 INIT	LD	A,3AH
01420	RST	28H
01430	RET	
01440 ;		
01450 OPEN	LD	A,3BH
01460	RST	28H
01470	RET	
01480 ;		
01490 CLOSE	LD	A,3CH
01500	RST	28H
01510	RET	
01520 ;		
01530 READ	LD	A,43H
01540	RST	28H
01550	RET	
01560 ;		
01570 VERF	PUSH	BC
01580	LD	C,A
01590	LD	A,49H
01600	RST	28H
01610	POP	BC
01620	RET	
01630 ;		
01640 PRT	PUSH	BC
01650	LD	C,A
01660	LD	A,06H
01670	RST	28H
01680	POP	BC
01690	RET	
01700 ;		
01710	END	MOD4EA

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CONFIG=Y/N	CREATES CONFIG BOOT UP FILE	DATE=Y/N	DATE BOOT UP PROMPT ON or OFF
TIME=Y/N	TIME BOOT UP PROMPT ON or OFF	CURSOR='XX'	DEFINE BOOT UP CURSOR CHAR
BLINK=Y/N	SET CURSOR BOOT UP DEFAULT	CAPS=Y/N	SET KEY CAPS BOOT UP DEFAULT
LINE='XX'	SET *PR LINES BOOT UP DEFAULT	WP=d.Y/N (WP)	WRITE PROTECT ANY or ALL DRIVES
ALIVE=Y/N	GRAPHIC MONITOR ON or OFF	TRACE=Y/N	TURN SP MONITOR ON or OFF
TRON=Y/N	ADD an IMPROVED TRON	MEMORY=Y/N	BASIC FREE MEMORY DISPLAY MONITOR
TYPE=B/H/Y/N	HIGH/BANK TYPE AHEAD ON or OFF	FAST	4 MGHZ SPEED (MODEL 4'S)
SLOW	2 MGHZ SPEED (MODEL III'S)	BASIC2	ENTER ROM BASIC (NON-DISK)
CPY (parm,parm)	COPY/LIST/CAT LDOS TYPE DISKS	SYSRES=H/B/'XX'	MOVE/SYS OVERLAY(s) TO HI/BANK MEM
SYSRES=Y/N	DISABLE/ENABLE SYSRES OPTION	MACRO	DEFINE ANY KEY TO MACRO
SPOOL=H/B.SIZE	SPOOL is HIGH or BANK MEMORY	SPOOL=D.SIZE='XX'	LINK MEM SPOOLING TO DISK FILE
SPOOL=N	TEMPORARILY DISABLE SPOOLER	SPOOL=Y	REACTIVATE DISABLED SPOOLER
SPOOL=RESET	RESET (NIL) SPOOL BUFFER	SPOOL=OPEN	OPENS, REACTIVATES DISK SPOOLING
SPOOL=CLOSE	CLOSES SPOOL DISK FILE	FILTER *PR.ADLF=Y/N	ADD LINE FEEDS BEFORE PRINTING 0DH
FILTER *PR.IGLF	IGNORES 'EXTRA' LINE FEEDS	FILTER *PR.HARD=Y/N	SEND 0CH to PRINTER (FASTEST TOF)
FILTER *PR.FILTER	ADDS 256 BYTE PRINTER FILTER	FILTER *PR.ORIG	TRANSLATE PRINTER BYTE to CHNG
FILTER *PR.FIND	TRANSLATE PRINTER BYTE to CHNG	FILTER *PR.RESET	RESET PRINTER FILTER TABLE
FILTER *PR.LINES	DEFINE NUMBER LINES PER PAGE	FILTER *PR.WIDTH	DEFINE PRINTER LINE WIDTH
FILTER *PR.TMARG	ADDS TOP MARGIN to PRINTOUTS	FILTER *PR.BMARG	ADDS BOTTOM MARGIN to PRINTOUT
FILTER *PR.PAGE	NUMBER PAGES, SET PAGE NUMBER	FILTER *PR.ROUTE	SETS PRINTER ROUTING ON or OFF
FILTER *PR.TOF	MOVES PAPER TO TOP OF FORM	FILTER *PR.NEWPG	SET DCB LINE COUNT TO 1
FILTER *KI.ECHO	ECHO KEYS to the PRINTER	FILTER *KI.MACRO	TURN MACRO KEYS ON or OFF
ATTRIB:d.PASSWORD	CHANGE MASTER PASSWORD	DEVICE	DISPLAYS CURRENT CONFIG INFO

All parms above are installed using the new LIBRARY command SYSTEM (parm,parm). Other new LIB options include DBSIDE (enables double sided drive by treating the "other side" as a new independent drive, drives 0-7 supported) and SWAP (swap drive code table #s). Dump (CONFIG) all current high and/or bank memory data/routines and other current config to a disk data file. If your type ahead is active, you can (optional) store text in the type buffer, which is saved. During a boot, the config file is loaded back into high/bank memory and interrupts are recognized. After executing any active auto command, any stored type ahead data will be output. FANTASTIC! Convert your QWERTY keyboard to a DVORAK! Route printer output to the screen or your RS-232. Macro any key, even F1, F2 or F3. Load *01-*15 overlay(s) into high/bank memory for a memory only DOS! Enter data faster with the 256 byte type ahead option. Run 4MGHZ error free as clock, disk I/O routines are properly corrected! Spool printing to high/bank memory. Link spooling to disk (spooling updates DCB upon entering storage). Install up to 4 different debugging monitors. Print MS-DOS text files, ignoring those unwanted line feeds. Copy, Lprint, List or CATALOG DOSPLUS, LS-DOS, LDOS or TRSDOS 6.x.x. files and disks. Add top/bottom margins and/or page numbers to your hard copy. Rename/Redate disks. Use special printer codes eg: LPRINT CHR\$(3); toggles printer output to the ROUTE device. Special keyboard codes add even more versatility. This upgrade improves date file stamping MM/DD/YY instead of just MM/YY. Adds optional verify on/off formatting, enables users to examine *01-*15, DIR, and BOOT sectors using DEBUG, and corrects all known TRSDOS 1.3. DOS errors. Upgrade includes LIBDVR, a /CMD driver that enables LIBRARY commands, such as DIR, COPY, DEBUG, FREE, PURGE, or even small /CMD programs to be used within a running Basic program, without variable or data loss.

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Recreational & Educational Computing

Stupid Moronic Recreations - Just for Fun

by Michael W. Ecker, Ph.D. Contributing Editor

Welcome once again to Recreational & Educational Computing. This issue's column is somewhat unlike others, so maybe I should apologize for it in advance. That's because it's a no-brainer. No solid challenge, no elegant graphics, no mathematical conundrum, no puzzling teaser.

Yet, sometimes a little brainless activity on a TRS-80 is just the thing to chase away the blahs, while away a little time, and maybe have some fun gambling without the risk. And speaking of gambling, I'll have a special free offer for a blackjack program at the end of this column as a thank you for reading.

With few changes needed for MSDOS, Sanyo 555, or Macintosh, the TRS-80 program lets you play the world's most primitive slot machine. As a teaser, I invite you to be the first to identify the significance of the four symbols used in the data statements instead of the usual bars, cherries, and other fruits.

To make this program run on a PC, Sanyo 555, or Macintosh, the only real change needed is the line with the RND(4) call -- to INT(5*RND).

```
10 CLS: PRINT: PRINT "PRIMITIVE SLOT MACHINE, by
Dr. Michael W. Ecker"
20 PRINT: INPUT "UP TO $1000, HOW MUCH DO YOU
WANT TO BEGIN WITH"; STAKE
30 IF STAKE > 1000 OR STAKE < = 0 THEN 20
40 MOOLAH = STAKE
50 PRINT: PRINT "TO WIN, YOU MUST GET 3
MATCHES IN THE FIRST 3 COLUMNS."
60 PRINT "- THAT PAYS 10 TO 1.": PRINT
70 PRINT "BUT IF YOU GET ALL 4 OF A KIND, THAT
PAYS 30 TO 1!"
80 PRINT: PRINT:
INPUT "Ready to begin (Touch ENTER)"; Q$
90 CLS: PRINT: PRINT
100 INPUT "HOW MUCH DO YOU WANT TO BET"; BET
110 IF BET < = 0 THEN PRINT "MANAGEMENT
REQUESTS THAT YOU GET SERIOUS!":
GOTO 100
120 IF BET > MOOLAH THEN PRINT "YOU DON'T
HAVE ENOUGH!": GOTO 100
130 MOOLAH = MOOLAH - BET: CLS
140 FOR SYMBOL = 1 TO 4
150 FOR X = 1 TO RND(4)
160 READ A$(SYMBOL)
170 NEXT X
180 RESTORE
190 PRINT TAB(10*SYMBOL); A$(SYMBOL);
200 FOR DELAY = 1 TO 100:NEXT
210 NEXT SYMBOL
```

```
220 PRINT:PRINT
230 IF A$(1) = A$(2) AND A$(2) = A$(3) THEN
GOSUB 310
240 COUNT = COUNT + 1
250 PRINT:PRINT:PRINT
260 PRINT "STATUS --- You started with "; STAKE; "
and now at hand #"; COUNT
270 PRINT "you are worth "; MOOLAH; "DOLLARS."
280 PRINT:PRINT:PRINT
290 IF MOOLAH < = 0 THEN PRINT "YOU'RE
BROKE!!!": END
300 GOTO 100
310 REM ***** Payoff Subroutine *****
320 WIN = 10*BET
330 IF A$(4) = A$(3) THEN WIN = 30*BET
340 PRINT " YOU WON "; WIN; "DOLLARS JUST NOW!"
350 FOR DELAY = 1 TO 500:NEXT
360 MOOLAH = MOOLAH + WIN + BET: WIN = 0
370 RETURN
380 DATA "#", "$", "%", "!"
```

In the TRS-80 version (shown), it is not necessary to re-enter a new bet each time if you don't change the amount of your bet. Merely touch ENTER. Readers with PCs or Macs may enjoy the easy challenge of emulating this by the use of a temporary variable or other means.

If you don't want to type this in, I have versions for TRS-80 Model III (or IV in III mode), PCs, and Macintosh. I'm glad to share this and the following program free if you'll send a formatted diskette for TRSDOS 1.3 Model III, any PC/MSDOS, Sanyo 555, or Mac, plus postage-paid mailer with 75 cents postage affixed. Otherwise, please send \$2 to cover my costs for disk, postage, etc., but please specify your computer and disk format required. Either way, you'll get at least these two programs, and maybe a few more that I may scrounge up.

There are actually many points worthy of mention for the above "no-res graphics" slot machine. Do note, however, that when programming to keep track of MOOLAH, you must add not only the winnings, but return the player's bet if he wins. I've seen several packages flawed by this oversight.

String Manipulation & Program Diversion

Here's a silly little program I wrote two years ago in GWBASIC for MSDOS, but which probably will run exactly as is for all TRS-80s. It's one of those trademarked MadLibs kind of activities. Fill in the blanks and the computer composes a silly story that I'll leave to you to make better.


```

10 CLS
20 PRINT "REC-Libs, copyright 1989-91, Dr. M. Ecker
30 PRINT "I will ask you for words. Type them in. Then
we'll have a story...
40 PRINT
45 FOR K=1 TO 10: READ A$(K): NEXT
50 FOR K=1 TO 10
60 PRINT "I want a "; A$(K): INPUT F$(K)
70 NEXT
100 CLS: PRINT
110 PRINT "Once upon a "; F$(1); " there was a "; F$(2);
120 PRINT " who liked to "; F$(3); " all of the time."
130 PRINT: PRINT "Well, one day he decided to have
some "; F$(4)
140 PRINT "and "; F$(5); " it. He did this until he wanted
not so much
150 PRINT "to "; F$(5); " as he wanted to "; F$(6); " it.
160 PRINT: PRINT "So, he just made a sandwich of ";
F$(7); " "; F$(8); " and"
170 PRINT F$(9); " -- which he ate with just two big
gulps!
180 PRINT: PRINT "After that he got so sick that he had
to "; F$(10)
190 PRINT "all the way home.
200 PRINT: PRINT "But the "; F$(2); " learned his lesson
and he never wanted to
210 PRINT F$(3); " ever again, nor to eat "; F$(7); " ";
F$(8); " and "; F$(9)
220 PRINT "ever again.
1000 DATA singular noun, singular noun, verb infinitive,
noun, transitive verb, transitive verb, noun, noun, noun,
verb infinitive

```

For the program, an infinitive verb form is "to" plus verb, such as to go, to run, to hit, etc. Note that it is not necessary to input the "to" portion when prompted for an infinitive.

By the way, this is how programs work to address you by name. Once they ask your name, the program prints out text plus the input strings. One TRS-80 program I recall used to go further and check for popular obscenities. Comedian Robert Klein mentions playing with an Apple II in this way, but it would be - alas! - inappropriate to repeat that humorous episode here.

MAIL

A reader wrote in about the fraction addition program and the fact that it could have been made more friendly. Specifically, how should one enter a fraction as an input? I just wanted to reinforce that he's right, and I thank him for the reminder.

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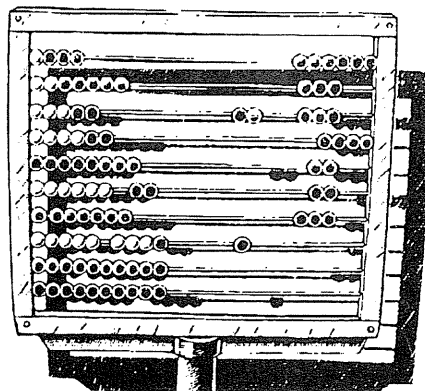
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Dr. Michael W. Ecker
TRSTimes' "Recreational Computing"
909 Violet Terrace
Clarks Summit, PA 18411

Until next time, Happy Recreational TRS-80 computing! Mike

Dr. Michael W. Ecker is a Penn State University math professor as well as a computer writer-reviewer and columnist with 300 publication credits. Mike is also Editor/Publisher of Recreational & Educational Computing (REC) and the TRS-80 columnist for Vulcan's Computer Monthly, the only major computer magazine with a TRS-80 column.

REC, from which these articles have been adapted, is in the middle of its sixth year and is available for \$27 per calendar-year of 8 issues, prepaid. It focuses on "mathemagic" and computer recreations. Readers are invited to try a trial subscription of three issues for \$10, creditable toward subscription, or better, the special offer this issue.



HINTS & TIPS

VOLCANO HUNTER AUTHOR DISCOVERED

An update by Gary Shanafelt

In my article on the Volcano Hunter in the July/August issue, I said that I had no idea what had happened to the game's author, David Smith. Scarcely had the issue been printed, then I found out. He had uploaded an MS-DOS version of Volcano Hunter to CompuServe, created by taking the TRS-80 version and modifying it with a new MS-DOS TRS-80 emulator which had also recently been uploaded there.

David says he began Volcano Hunter in December of 1982 and finished it around January of 1984, cutting class at Mississippi State University to work on it and almost not graduating as a result. "I came up with the idea for the game," he writes, "while working at a nuclear plant while on a summer job after my first year in college. The game was originally going to be played in a sewer system with the (DRUTs < > TURDs) chasing you through the sewer. All the guys in the high score list were my roommates in college and my beta test team. If they didn't like something, they wouldn't quit bugging me until I fixed it."

One of David's major programming challenges was to fit all the game into just 16K of memory, since otherwise he would have lost the whole non-disk TRS-80 market. He hoped to do more TRS-80 programs, but never found the time. He now works for a government consulting company specializing in document imaging systems and is writing a shareware MS-DOS business application on the side. His address is David Smith, Informative Technologies, 1718 M Street N.W., Suite 292, Washington, D.C. 20036.

David's letter follows:

Dear Gary,

Thanks for the letter and article on Volcano Hunter. I can't believe that someone would have spent so much time hacking a game. I'm glad that Volcano Hunter still lives because I put a lot of work into it. I just about didn't graduate because of it; I cut classes to work on it a lot. I didn't sell a lot of copies like the other game companies of that era. I discovered that I made about 50 cents an hour working on it; mostly because I was about a year too late on releasing it. When I saw the TRS-80 emulator on CompuServe, I was excited that I could give Volcano Hunter a new life. I hacked the emulator to get it working because I didn't have access to the BIOS chips it says are needed. I also had to type in 16K worth of hex codes because I only had a print out of the Volcano Hunter listing.

I'm sure you would be interested in some Volcano Hunter trivia, so let me see what I can dig up.

I started writing it in December 1982 and finished it

around January of 1984. I came up with the idea for the game while working at a nuclear plant while on a summer job after my first year in college. The game was originally going to be played in a sewer system with the (DRUTs < > TURDs) chasing you through the sewer. All the guys in the high score list were my room mates in college and my beta test team. If they didn't like something, they wouldn't quit bugging me until I fixed it. That really helped Volcano Hunter develop.

There are a couple of differences between the disk version and the tape version. The disk version has about 15-25 ? (I think) more screens. Some of the animation sequences that exist in the disk version are absent from the tape version. (Like when a Drut spins as it dies.) The instruction screens are also missing from the tape version.

The fuel cells that Kelly found you can't reach are part of the Druts Nuclear Reactor. If you get to that area of the volcano you will notice the fuel cells are under a layer of water (like a reactor) and there are more fuel cells stored near by to be loaded into the reactor.

If you've made it past the reactor area and you emerge to the surface, you are in the Drut's religious area. There is a sacrificial pit, a temple, a sacrificial altar, and a floating obelisk.

If you go past the religious area to the left, you reach the farthest screens of the game. These screens are almost impossible. There are two screens of moving platforms, both moving against you. You have to run across these platforms while jumping to the next one. If you make past these, then you have essentially won the game. I didn't have enough memory left after I finished writing the game to have something signify the game was won. Actually I ended up a couple of hundred bytes over the 16K limit and I spent several weeks tweaking things to get it to fit.

There is a place in the game that I call Drut Heaven. It is where all the Druts go when they die. Looking at the map you sent me, if you go to the left tower over the peak of the volcano and jump off the end of the pier into the volcano, the first screen you pass through is Drut Heaven. The Druts may attack you and lock up the computer if you pass through their heaven screen.

If you go to the right side of the volcano at the very top and jump off, you can fall through about 12 screens before you hit bottom.

I had plans to come out with different games for the TRS-80 based on Volcano Hunter by changing the land/screen definitions, but the market had already died for TRS-80 games. A 48K version would have been great (1500+ screens). I could have done an entire planet. I would like to do another game but my time is so limited. I may still do one though. I would like to take a video camera and digitize a bunch of people and objects to use in a game with a similar format to Volcano Hunter. Also let

people play each other across a network or modems; working together like a two player Volcano Hunter. And it wouldblah blah blah....., I just don't have the time.

My TRS-80 conked out a couple of years ago and I ended up just throwing it away. Volcano Hunter was my first and last program written for the TRS-80. Volcano Hunter was also the first assembly language program I wrote.

The two shareware programs that I have now are business related. I released the first one last November and the second one in April. Registrations are starting to pick up but it will be a long time before I can quit my day job. My ultimate goal is to do shareware full time.

My day job is working for a government consultant company (ADVANCE, Inc) specializing in document imaging (scanning paper documents into the computer and storing them in optical disks). I ended up with a degree in Computer Engineering from Mississippi State.

The map that is enclosed is not the map I meant to send out. I made a 11x17 one from all the various pieces that I had printed out in 1984 and now I have lost it just a few weeks ago. I've torn up my house looking for it but I haven't found it yet. I've also enclosed a copy of the original screen design sheets that you might find interesting.

Sincerely,
David Smith

MEMDISK TIPS

By Karl Mohr

When using Archive4/cmd, if you put the file to BE archived, or the /Arc file to be UN-archived into Memdisk first, this will not only save a lot of disk running and wear, but is also somewhat faster.

Should you accidentally press the reset button and wipe out Memdisk, the files that were stored there aren't really lost. Initialize Memdisk again, with:

System (Drive = n, Driver = "Memdisk")

But, DO NOT format memdisk. A directory of the Memdisk drive should show that all your files are still there!

ANOTHER TRSDOS 1.3 PATCH

By Lance Wolstrup

Now that the non-standard directory structure has become even more non-standard with the release of LDOS 5.3.1, converting files from Model I disks to TRSDOS 1.3 can be a chore.

LDOS 5.3.1 made several changes for the better - amongst them were changes in the directory structure to

incorporate dates to 2011, as well as a time stamping feature. LDOS 5.3.1 no longer supports the "access" password - and herein lies a problem when trying to copy files to TRSDOS 1.3. The CONVERT/CMD utility on TRSDOS 1.3 absolutely chokes on the time stamp, thinking it is a password, and thus refuses to copy the file(s).

I ran up against this problem recently by having sent out copies of TRSTimes on DISK copied on LDOS 5.3.1. I received a sack of mail telling me that the disks wouldn't CONVERT to TRSDOS. (Dang it - I just plain forgot!)

Well, it was time to fix this problem anyway, so I got out a 1.3 and patched SYS2 (*2) to disregard passwords.

PATCH *2 (ADD = 4ED4, FIND = 20, CHG = 18)

While this patch works beautifully on everything else in TRSDOS, it simply had no affect when using the CONVERT utility - I was still told that my LDOS files had passwords - hmmm!!

There was no way out but to disassemble CONVERT/CMD. I turned on my Citizen printer and let the disassembler rip through the code.

As anyone who has ever disassembled anything will attest to, it is not a fun job - even a short file produces a huge stack of hard copy. This file, of course, was no exception. And wouldn't you know it - I ran out of tractor-feed paper somewhere in the middle of the file (yes, we are always prepared here at TRSTimes), and I had to 'single-sheet it' to the end of the file.

Finally, with printout in hand, I sat down at my desk and began to plow through the code, thinking that the author would have benefitted greatly by taking lessons from Roy Soltoff. From a DOS standpoint the code is repetative and clumsy, thus giving credence to the myth that TRSDOS 1.3 is S-L-O-W.

Sure enough, rather than going through the password check in the SYS2 (*2) overlay, CONVERT/CMD carries its own password-protect code. It would have been much more elegant (and easier for me to patch) had the author used the overlay (I know, easy for me to say in 1991).

Anyway, to disable the password-check in CONVERT/CMD, install the following three patches:

PATCH CONVERT/CMD

(ADD = 53A7, FIND = 28, CHG = 18)

PATCH CONVERT/CMD

(ADD = 5416, FIND = CD1B02, CHG = 000000)

PATCH CONVERT/CMD

(ADD = 5425, FIND = 21275B06, CHG = AFC33554)

I have run 15 different LDOS data disks through the patched CONVERT/CMD and everything has worked smoothly - BUT - as always, install the patches at your own risk. There is always the slight chance that your disks will crash, your house will burn, and/or your wife will leave. No guarantees, just my word that it has worked fine for me - so far.

MODEL I LDOS 5.3.1 PATCHES

from Misosys, Inc.

This letter provides four patches for the Model I version of the LDOS 5.3.1 system recently released. Although the letter is being sent to all recipients of Model I 5.3.1, some disks will already have the first two patches applied. Please confirm this by noting the contents of the README/TXT file found on the LDOSXTRA diskette.

FDUBL1: This is applied to FDUBL/CMD to permit it to operate properly with a Percom-type doubler; FDUBL works correctly when used with a Radio Shack doubler. I recommend it to be applied even if you are using a RS-type doubler for uniformity.

```
. FDUBL1/FIX - Patch to Model I 5.3.1 FDUBL/CMD
. Patch corrects installation for FDUBL (Percom)
. Apply via, PATCH FDUBL.DRIVER FDUBL1
X'5265' = CD 74 55
X'5574' = 3E 2C OD 54 21 14 54 C9
.Eop
```

SOLE1: This is applied to SOLE/CMD to enable it to properly install the booting driver for a Percom-type doubler. SOLE works correctly when used with a Radio Shack doubler. I recommend it be applied even if you are using a RS-type doubler for uniformity.

```
. SOLE1/FIX - Patch to LDOS I 5.3.1 SOLE/CMD
. Corrects installation when using Percom-type doubler
. Apply via, PATCH SOLE.UTILITY SOLE1
D00,8D = 55
F00,8D = 52
D00,8F = 08 56
F00,8F = 04 52
.Eop
```

SOLE2: This alters SOLE so that the entire cylinder 0 is shown as allocated after the double-density booting driver is installed. This must be applied if you are using SOLE. After the patch is applied, you must re-SOLE your double-density booting disks to guard against overwriting the boot driver at some future time when your system disk gets full.

```
. SOLE2/FIX - Patch to Model I 5.3.1 SOLE/CMD
. Fix alters SOLE to force cylinder 1 fully allocated
. Apply via, PATCH SOLE.UTILITY SOLE2
D01,15 = CD 2C 54 1E 02 CC
F01,15 = FD 56 09 1E 02 CD
D01,41 = 45
F01,41 = 2C
D02,6B = FD 56 09 1E 00 CD 45 4B 36 FF CC 18 53 C9
```

```
F02,6B = 50 68 61 73 65 20 32 20 69 73 20 6E 6F 77
D02,8F = 20
F02,8F = 0A
.Eop
```

SYS011: This is a mandatory patch to SYS0/SYS. I cannot understand how the error caused by an addressing problem during program generation escaped detection; it appears to have been masked by a quirk in the Z80 CPU which caused execution of an invalid Z80 instruction in a manner consistent with a valid Z80 instruction, but under only certain circumstances. In any event, apply the patch, then reboot for it to take effect.

```
. SYS011/FIX - Patch to Model I 5.3.1 SYS0/SYS
. Apply via, PATCH SYS0/SYS.SYSTEM SYS011
D05,EF = CB 4B
F05,EF = FF 46
D0A,B9 = FD E9
F0A,B9 = 00 00
.Eop
```

ALLWRITE TIPS

By Karl Mohr

As many of us use ALLWRITE, here are some tips that might be helpful to some people.

Create the following JCL file, installing Memdisk and followed with copying the files as indicated to Memdisk.

```
.Install Memdisk
System (Drive = 2,Driver = "Memdisk")
D
D
Y
.Copy files to Memdisk
Copy Al/cmd:0 :2
Copy Al/def:0 :2
Copy Alf/cmd:0 :2
Copy (printer)/def:0 :2
Copy (printer)/tab:0 :2
Al
//stop
```

Now each time you boot the Allwrite working disk, after the date is entered, Memdisk will be installed and 5 files copied to it, then ALLWRITE will be RUN! You will find the speed up between Editor and Formatter significant. Unfortunately, there is not room in Memdisk to copy SYS0/SYS to it, which would allow one to make Memdisk drive 0 and make the system truly efficient.

For those of you that program in BASIC, you may find that using a word processor to write or modify basic programs a big help! Especially when moving data or lines

around, which can be achieved using the Block command, plus the many other useful features that Allwrite provides.

In order to be able to load the Basic program into Allwrite, one simple change must be made first to the Basic Program. It must be changed into ASCII format. In order to do this, go into Basic, load the basic program that you want to work on and then save it in the following manner:

Save "filespec",A

Using the 'A' after the basic SAVE command is what saves the Basic program in ASCII. Now you may load the program from Allwrite by giving it the program name. You may want to use a different name for the program while you are modifying it, as Allwrite will overwrite the original program file. Sometimes when modifying a program gives surprising results, so you may want to refer back to the original!

When the basic program is finished, you should save it in Non ASCII format, as this saves space and also loads the program faster. This is done by loading the program from Basic, then SAVING it but leave OFF the ',A'.

Here's an Allwrite command you may have missed. Try pressing the BREAK key, then when you see the CMD = > prompt, type a question mark ("?) followed by ENTER. You'll see that the LAST editor command you entered is redisplayed, and you can edit and/or re-execute it. If you just want to repeat the previous command without re-displaying it first, use an equals sign ("=") instead. This little goodie is hidden away on page 123 of the Allwrite manual.

Pressing the CLEAR key plus the 1, 2, or 3 keys respectively generates a ;pp, ;pa, or ;ce code. However, there's actually a bit more to it than that. Pressing one of those soft keys actually generates the following sequence:

<CLEAR> <N> <;> <p>

<CLEAR> <n> <SPACE> <BACKSPACE>

Translation: <CLEAR> + <N> is the "new blank line" editor control key. <;> + <p> + <p> is the actual ";pp" code (this could of course be ";pa" or ";ce" instead, depending on which soft key is depressed). Another <CLEAR> + <n> forces another new blank line, and the <SPACE> followed by a <BACKSPACE> gets rid of the carriage return character on the new line.

Now this is all well and good, but I have found that sometimes I wish to use one of these soft keys to insert one of these control codes, and the code winds up one line BELOW where I really want it. If your sense of logic is also confused by the way these keys operate, try redefining them as follows:

<SHIFT-BACKSPACE> <CLEAR> <N> <;> <p>
> <p> <ENTER> (use ;pa or ;ce for keys 2 and 3 respectively). Remember to terminate each line with a <CLEAR> + <Q>. I have found that this tends to make these three particular soft keys work in what seems (to me, anyway) to be a more logical manner.

While I was at it, I redefined soft key "" (SHIFT-7) as <BREAK> <q> <u> <i> <t> <ENTER>. This is the

former definition of soft key ")" (SHIFT-9). So why did I move it? Well, because I redefined soft keys "(" (SHIFT-8) and ")" (SHIFT-9) as follows: Soft key "(" (SHIFT-8) was changed to <CLEAR> <;> <0> <9> <1> and soft key ")" (SHIFT-9) was changed to <CLEAR> <;> <0> <9> <3>. Now if you press CLEAR plus SHIFT plus 8 or 9, you get square brackets that corresponds to the parentheses mark on that key. Makes square brackets easy to enter (and easy to remember which key to press!).

Finally, I defined soft key % as <CLEAR> <;> <1> <2> <4>, which gives me a vertical "stick" character which I like to use as a tab delimiter. In any event, once you have finished re-defining your soft keys, and are sure you are satisfied with them, press BREAK and type:

KEY S AL/DEF

to save your new soft key definitions. Now enjoy your new, easier to use soft keys!!

You can't sub/superscript in the proportional mode on the Epson FX-80, but you can do it in any other mode. So print your text in proportional and your subscripting in another pitch. You can do this because changing pitches in Allwrite! does not cause a control break. You can print each letter in a word in a different pitch, if that's what rings your bell. For example, to print the word H₂O with the 2 subscripted, you would have the following lines in Allwrite!

...the formula for water is H

;pi 16

@-2@ =

;pi 0

O and the formula of...

Condensed is the best choice for scripting with the proportional mode. Condensed is not proportional, but it is small enough not to be noticeable.

IMPORTANT INFORMATION: If you are going to use PRO-NT0 with ALLWRITE and TRSDOS 6.2, you will need to apply a patch to the BOOT/SYS system file of TRSDOS 6.2. This patch is recommended for all users as certain other application programs may also result in a system stack conflict. The patch was recommended by Logical Systems. Please apply the patch to your working TRSDOS 6.2 system disks as follows:

PATCH BOOT/SYS.LSIDOS

(D06,2C = 40:F06,2C = 60)

It will be necessary to re-BEOT your system disk after you have applied the patch for it to take effect.

Tips on Diskette Storage

By Debra Allison

Do not to close the drive doors after removing a diskette. This can cause the plastic on the read heads to chip, resulting in diskettes being scratched and destroyed.

When leaving the computer, leave the disk drive doors open. If the computer is being moved, insert an old diskette or the cardboard insert shipped with the computer to reduce the chance of damage. The same is true of drives that are single-sided. The felt pad that rests up against the head can scratch the head and will damage your diskettes.

The quality of diskettes is determined by the size of the metal oxide chips on the diskette, their composition, the quality of the lining, material in the jacket, and the evenness of the lubricating coating. Higher quality diskettes can better detect magnetic pulses.

Be careful about inserting the diskettes into the drive. Be sure you have it fully inserted before closing the drive door. If the diskette is not fully inserted, you can mash the disk and lose your data. Hub rings help guard against this.

Most people know that diskettes should not be stored near a magnetic source. Did you know that includes telephones, calculators, the CB antenna with the magnetic mount you keep in your car trunk, and your bottom disk drawer? (Seems the vacuum cleaner motor generates enough magnetic force to wreak havoc on your data!)

If strange things have happened to your data, consider the following causes:

a) Apparently, all color monitors and some green screen monitors generate enough RF (radio frequency) interference to disrupt the disk drives and the data on your diskettes (see Ed Nilsley's article "Don't degauss Your Diskettes" in the March 1984 edition of "EXCHANGE"). This has especially been a problem when the monitor sits directly on top of the disk drives. One way to test for RF interference is to use an AM hand-held radio tuned to a part of the AM band where nothing is being broadcast. Move the radio around the computer and listen for interference. If you hear interference, keep your diskettes away from that part of the computer. You might want to investigate how to restrict emissions of the RF noise.

b) Disk drive head can easily get out of alignment. Trouble reading the data on a diskette used in more than one disk drive is a symptom of alignment problems. The data is read as long as it is used in a single drive, but when moved to another drive, problems occur. You may get garbled data or get DOS error messages. You will need to do additional testing to determine which drive is out of alignment.

JCL Files

By Karl Mohr

There are many uses for /JCL (Job Control Language) files, ranging from simply installing Memdisk to compli-

cated uses such as installing a program like AllWrite. All files are created to make your computer more user friendly and to take the drudgery out of repeated manual keying of instructions. The article will deal with creating and using a small JCL file to install Memdisk in a Model 4 with 128k RAM.

A JCL file is nothing more than an ASCII file giving a set of instructions that are compiled automatically when the file is 'run'. The file may be created with any program that will save the file in ASCII, by the BUILD command, using a word processor, or even using BASIC! The instructions given in the JCL file must be given in such a manner that the interpreter can follow the instructions. For example, to install Memdisk manually, the following instructions are given:

```
System (Drive = 2, Driver = "Memdisk")
```

The program then asks for which banks of memory to install, this is usually answered by 'D'. The program then asks for 'single/double' density, this is usually answered by 'D'. Then you are asked if you wish to format the memory, and this is also usually answered by 'Y'. That would complete the installation of Memdisk and make it available as drive (2) with 57K free space.

Using the 'Build' command in creating a /JCL file, give the following command: BUILD MEMDISK/JCL or BUILD MEMDISK (JCL will be appended), and enter the commands given above, each on its own line, followed by pressing <ENTER>, as follows: (Do not type in <ENTER> after each line.)

```
System (Drive = 2, Driver = "Memdisk")
```

```
D  
D  
Y
```

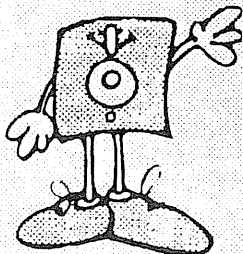
Now press the <BREAK> key, and the file will be written to disk. To implement the file, give the command: DO MEMDISK/JCL or DO MEMDISK, (MEMDISK/DCT *MUST* be available on disk!) and memdisk will be installed via the Memdisk/JCL file! To make any comment lines within the JCL file, the line must be preceded by a '.' (period), this line will only be written to screen and not acted upon in the JCL file, for example: the first line in our JCL file may read as follows:

```
. Install memdisk via the command DO MEMDISK/JCL
```

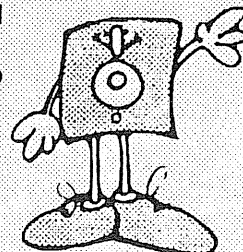
Again, this is only printed to screen, and not acted upon in any way. To verify that the file was written correctly, give the command: LIST MEMDISK/JCL, the file should appear on screen exactly in the manner it was written above. This is an actual working /JCL file that will install Memdisk and make it available as a drive using the 2nd bank of memory in a Model 4 with 128K of ram installed.

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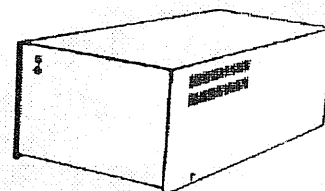
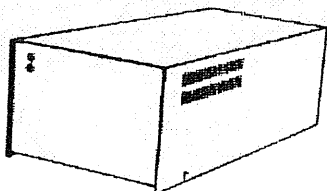
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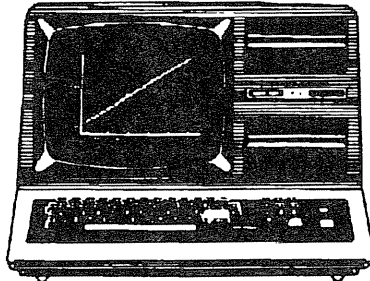


L(S-)DOS FASTER AND BETTER

TRICKS FOR LS-DOS 6.3.1 AND LDOS 5.3.1

MODEL I/III & 4

By Lance Wolstrup



of LS-DOS 6.3.1, we will include these in our discussion.

Incidentally, the L in LDOS and the LS in LS-DOS stand for LOGICAL SYSTEMS, the company which originally wrote and distributed the DOSes. Now that LOGICAL SYSTEMS is no longer active in the TRS-80 world and ownership for these DOSes has been transferred to Mi-Sosys, wouldn't it be appropriate to change the DOS name to MS-DOS? Well, just thought I'd ask!

Let's get started by looking at a command that most everyone that has ever used a DOS knows, DIR.

DIR <ENTER> will display the visible files on ALL available drives containing a readable disk.

DIR :dn (where dn is the drive number) will display the visible files on the diskette in that particular drive only.

There are two important parameters that can be appended to the DIR command. They are S and I. If added, the S parameter will also display the system files of the chosen drive.

DIR :0 (S)

The I parameter will also display the invisible files of the chosen drive.

DIR :0 (I)

The S and I parameters can be combined to display each and every file on the disk in the selected drive.

DIR :0 (S,I)

Well, so far - so good.

Many people who have switched to MS-DOS have come back to me and bragged that they are now able to use wild-card characters with many of the commands to speed things up. I always tell them that they were able to do that on their TRS-80 machine also, had they only known how.

The wild-card capability is the key to the tricks featured in this installment, so let's proceed to look at just what we can do with it.

There are two types of wild-card characters. The first is the slash (/). It is the filename delimiter, the character that

separates the filename from its extension. When used as a wild-card character, the slash means 'ALL'.

For example:

DIR /:0 means 'display ALL the visible files on drive :0.'

DIR C/:0 means 'display ALL the visible files on drive :0 starting with C'.

DIR C/B:0 means 'display ALL the visible files on drive :0 starting with C that has an extension starting with B'.

DIR CH/CM:0 means 'display ALL the visible files on drive :0 starting with CH that has an extension starting with CM'.

DIR /SYS:0 (S) means 'display ALL the visible and system files on drive :0 that has the extension /SYS'.

Hopefully the five examples make it obvious that the slash wild-card character allows us to select specific files by using the beginning characters of the filename and/or the beginning characters of the extension. Sometimes we may not know what the beginning character(s) are, so we have the second wild-card character. It is the dollar sign (\$).

The dollar sign wild-card character means 'ANY'. That is, it is a replacement for ANY character at its position in the filename or extension. For example:

DIR \$\$P/:0 means 'display the visible files on drive :0 where P is the third character of the filename'.

DIR \$E\$A/\$D:0 means 'display the visible files on drive :0 where E is second character of the filename, and P is the fourth character of the filename, and D is the third character of the extension.

As you can see, the slash and dollar sign wild-card characters form a powerful means to select a series of files that have certain portions of their filenames and/or extensions in common. This, coupled with the DIR (or CAT command on the Model 4), gives us the ability to perform mass copy and mass delete (just like on the IBM).

How many times have you needed to copy a bunch of files to another disk? Rather than using the COPY command to do this one file at a time, we will use the other file transfer utility supplied on the DOS, the BACKUP utility.

LDOS and LS-DOS provide the finest and most flexible BACKUP utility of any TRS-80 DOS. Not only does it do the normal track-to-track copying as is done on all the rest of the DOSes, it is also capable of doing file-by-file copying. Even better, it is capable of doing file-by-file copying of files selected using wild-cards.

A good example of this is found in the MEMDISK/GRAFDISK article elsewhere in this issue. There we need to copy all the system files from drive :0 to drive :1

First, as I will do before doing anything employing wild-cards, I will take a DIRectory using the same wild-cards to be used with the BACKUP utility. Using the example from the MEMDISK/GRAFDISK article, I type:

DIR /SYS:0 (S)

Looking over the filenames now displayed on the screen, I make sure that these are indeed the ones I want to transfer to the other disk. In this case the wild-card mask is correct, so I proceed with the mass file copy. I type:

BACKUP /SYS:0 :1 (S)

Another example might be if we wanted to copy all the Basic program files that had P as the first character and T as the third character in the filenames from drive :0 to drive :1. First, to take a look at what we would be copying, type:

DIR P\$T\$\$\$\$\$/BAS:0

If we are satisfied that these are indeed the files we wish to copy, type:

BACKUP P\$T\$\$\$\$\$/BAS:0 :1

So, the MS-DOS converts had to grudgingly admit that the TRS-80 is, indeed, capable of mass-copying. "But", they retorted, "we have mass-deletes, you only have the REMOVE or KILL command. You have to delete files one at a time!"

Wrong again. Sure, we can delete files one at a time with the Model 4's REMOVE command (or the Model I/III's KILL command), but we also have a built-in DOS utility that is more powerful than the MS-DOS DEL command. Our mass-delete powerhouse is called PURGE.

The PURGE command has the same wildcard capabilities as BACKUP. It can be used in many ways, so let's look at each in turn.

To remove ALL the visible files from the disk in drive :1, type:

PURGE :1

This will display each filename, one at a time, and ask you if wish to remove it. If so, type Y - if not, type N.

This, of course, is mass-delete the hard way. You had to confirm or reject the deletion of each file with a keystroke.

If you are absolutely SURE that you want to get rid of all the visible files, you can make purge skip the confirm/reject prompts by adding the Q = N parameter to the PURGE command (Q = N means NO QUERY). Type:

PURGE :1 (Q=N)

Should you wish to remove all the visible and invisible files from the disk in drive :1, you can use the I parameter (I stands for invisible files); type:

PURGE :1 (I)

As above, you will be asked to confirm or reject the deletion of each file. To skip the prompts, type:

PURGE :1 (I,Q=N)

Next, to remove ALL files from the disk in drive :1, you have to include the S and I parameters (S stands for system files); type:

PURGE :1 (S,I)

Again, it is necessary to confirm or reject each file deletion. To skip the prompts, type:

PURGE (S,I,Q=N)

As mentioned above, PURGE has the same wildcard capabilities as BACKUP. If you can find some common denominator in the names of the files you wish to delete, you can get rid of them in one sweep. Keep in mind that it is especially important to first use the DIR command to look at what files the wildcard mask will remove. If you don't, you will most likely end up regretting your actions at one time or another.

For example, to PURGE all the CMD files on the disk in drive :1, first type: DIR /CMD:1

Assuming that the directory display contains the files (and only the files) you wish to delete, type:

PURGE /CMD:1

You will be asked to confirm or reject each file deletion, one at a time. However, the best and fastest way to mass-delete these files is to append the Q = N parameter to the command line. This causes the deletions to be performed automatically. Type:

PURGE /CMD:1 (Q=N)

The example used in the BACKUP section, where we wanted to copy all the Basic program files that had P as the first character and T as the third character in the filenames from drive :0 to drive :1, can be used to demonstrate the wildcard capability of PURGE.

Assume that we want to remove ALL the files meeting the above specification from the disk in drive :1, we can do it by typing:

PURGE P\$T\$\$\$\$\$/BAS:1

To bypass the confirm/reject prompts and thus cause an automatic mass-delete of the specified files, type:

PURGE P\$T\$\$\$\$\$/BAS:1 (Q=N)

I cannot emphasize enough that if you are going to use PURGE with wildcards to perform automatic mass-deletes you MUST first use DIR with the same wildcard mask to make sure that you do not cause a bunch of trouble for yourself. PURGE is a powerful command and should be used with caution.

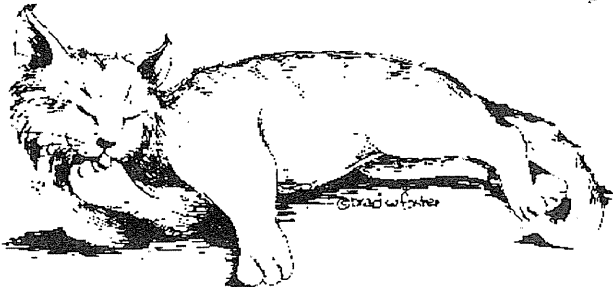
My MS-DOS friends, having seen what our old, 'antiquated' computers can do, are for the moment quiet. I am sure, though, that they will find something in their DOS that will make them try to convince me of the superiority of MS-DOS. Well, we'll see!!

CAT UTILITY

MODEL I - LDOS 5.3.1

Model III LDOS 5.3.1 with changes

By Lance Wolstrup



LDOS 5.3.1 is a wonderful addition to my Model I. This DOS should fast become the standard for Mod I, thus ending all the useless and time consuming file transfers between the various, often incompatible DOSes.

Further, LDOS 5.3.1 gives us a direct link to both Model III and Model 4. These machines will read the Mod I LDOS disk directly. Model I LDOS will read Mod III & 4 disks directly if the drives are compatible. That is, if you have 35 track single-sided, single density drives hooked to your Mod I you will only be able to read III/4 disks made to that specification. This really ought to give you an excuse to go out and buy a couple of modern 40 track double-sided, double density drives. As the PC-clone world no longer use these drives, they are cheap. Probably around \$40 for a new drive, and somewhere around \$15-\$20 used

Since I also work extensively with Model 4 LS-DOS 6.3.1, it is especially wonderful that the command structure of the two DOSes is nearly identical. Sitting down to do a bit of work on the Mod I is now almost like being in front of a Model 4.

However, there is one thing that I do miss on LDOS 5.3.1. When I want to see the names of the files stored on my disks on the Mod 4 I use the built-in library command CAT. This command, unfortunately, does not exist on 5.3.1.

So, rather than do without a CAT command, I got out my editor/assembler (EDAS from Misosys) and wrote a short, 30 byte program that will do the job. CAT/ASM (see listing) assembles to CAT/CMD, which will display the files of the chosen drive four across on the screen

The program is invoked from DOS by typing

CAT :dn

where dn is a valid drive number.

Note that the colon delimiter is optional and may be omitted; that is, the program can also be invoked with

CAT dn

If the drive number is omitted, if the selected drive does not exist, if the selected drive is not ready, or if the selected drive contains an unreadable disk, the program returns to LDOS, displaying DOS error 32, 'Illegal drive number'.

Admittedly, CAT/CMD is not quite as versatile as the LS-DOS 6.3.1 library command. It does not display the filenames in sorted order and it does not allow wild-card parameters. But you didn't really expect that in 30 bytes, did you?

CAT/CMD is a handy utility which I use frequently. I hope you will find it useful.

CAT/ASM

```
00070 ; CAT/CMD
00080 ; for Model I
00090 ;
00100          ORG          7000H
00110 TOP      LD          A,(HL)    ;get drive #
00120          CP          ':'         ;is it a colon ?
00130          JR          NZ,TOP1    ;jump if not
00140          INC          HL         ;next character
00150          LD          A,(HL)    ;get drive #
00160 TOP1      SUB          30H      ;strip ascii bias
00170          CP          8          ;is it = 8 ?
00180          JR          NC,BAD      ;if so - jump
00190          LD          C,A        ;drive # to C
00200          CALL         44B8H     ;is drive is valid
00210          JR          Z,CAT      ;jump if valid
00220 BAD      LD          A,224     ;error # 20h
00230          CALL         4409H     ;display error
00240          RET                ;return to ldos
00250 CAT      LD          B,0       ;send to screen
00260          JP           4463H     ;@dodir & return
00270          END          TOP
```

Model III

Getting the program to work on Model III LDOS 5.3.1 requires only the two changes listed below:

```
00200          CALL         4209H     ;is drive valid
00260          JP           4419H     ;@dodir & return
```

Model 4 Public Domain Disks

M4GOODIES#1: day/cmd, day/txt, gomuku/cmd, llife/cmd, llife/doc, writer/cmd, writer/doc, writer/hlp, yahtzee/bas

M4GOODIES#2: arc4/cmd, arc4/doc, cia/bas, etimer/cmd, index/cmd, index/dat, mail/bas, mail/txt, trscat/cmd, trscat/txt, util4/cmd, xt4/cmd, xt4/dat, xt4hlp/dat

M4GOODIES#3: convbase/bas, dates/bas, dctdsp/cmd, dmu/cmd, dmu/doc, dskcat5/cmd, dskcat5/doc, editor/cmd, editor/doc, fedit/cmd, fkey/asm, fkey/cmd, fkey/doc, hangman/cmd, m/cmd, m/src, membrane/bas, miniop2/cmd, miniop2/src, move/cmd, move/doc, othello4/bas, scroll4/cmd, scroll4/src, setdate6/cmd, setdate6/doc, setdate6/fix, spaceadv/bas, taxman/bas, utilbill/bas, utilbill/doc

M4GOODIES#4: WORD WIZARD disk #1 of 3

anima/bas, archi/bas, autos/bas, battuere/bas, captus/bas, convert/bas, curro/bas, dico/bas, ducere/bas, eulogos/bas, facere/bas, fluere/bas, gradi/bas, jacere/bas, kata/bas, male/bas, metron/bas, naus/bas, startup/bas, startup/jcl, stig/bas, tangere/bas, wordmenu/bas

M4GOODIES#5: WORD WIZARD disk #2 of 3

cognos/bas, frangere/bas, juris/bas, medius/bas, mitere/bas, monos/bas, numbers/bas, orare/bas, pandemos/bas, para/bas, pathos/bas, pendere/bas, philanth/bas, phongrap/bas, polynom/bas, prefix1/bas, prefix2/bas, premere/bas, sal/bas, startup/bas, startup/jcl, statuere/bas, wordmenu/bas

M4GOODIES#6: WORD WIZARD disk 3 of 3

bible/bas, french1/bas, french2/bas, french3/bas, italian/bas, latphras/bas, lit1/bas, lit2/bas, myths/bas, places/bas, plicare/bas, spanish/bas, stagnare/bas, stare/bas, startup/bas, startup/jcl, synpath/bas, televid/bas, tenere/bas, vaco/bas, valere/bas, vox/bas, wordmenu/bas

M4GOODIES#7: calendar/cmd, castladv/bas, civilwar/bas, crimeadv/bas, dctdsp/cmd, ed6/cmd, ed6/doc, edittext/bas, fedit/cmd, mail/bas, mail/txt, scramble/bas, states/bas, textpro/cmd, time4/bas, wizard/bas, wizard/doc, worldcap/bas

M4GOODIES#8: books/bas, books/doc, dmu/cmd, dmu/doc, hamcalc/bas, hamhelp/bas, network/bas, network/doc, pirate/bas, pirate/doc, vmap/bas, vmap/doc, vmap2/bas, vmap2/doc, zork1/doc, zork2/doc, zork3/doc

M4GOODIES#9: ft/cmd, ft/doc, pterm/cmd, pterm/doc, r/cmd, r/doc, scrconv/bas, scrconv/doc, video4/asm, video4/cmd

M4GOODIES#10: checker/cmd, crossref/cmd, crossref/doc, ddir/cmd, diskcat/cmd, diskcat/doc, division/bas, division/doc, getput/bas, getput/doc, host/cmd, hv/bas, maszap4/cmd, maszap4/doc, park/cmd, profile4/doc, protect/bas, protect/doc,

rename/bas, replace/bas, restore/bas, rm/bas, scrndump/bas, scrndump/doc, super/hlp, vers/cmd

M4GOODIES#11: benchmrk/bas, bigcal/bas, bigcal/doc, birthday/bas, dearc4/cmd, dezip2/cmd, dname/cmd, docufil/bas, docufil/doc, docufil/mrg, escape/bas, mem4/cmd, million/bas, nomad/bas, password/bas, password/dat, password/doc, password/jcl, roman/bas, sixtymin/bas, startrek/bas, trekinst/bas

M4GOODIES#12: awari/bas, buyimg/bas, crasher/bas, curvfit2/bas, gradebk/bas, mortcost/bas, mortcost/doc, print/bas, print/doc, reiman/bas, square/bas, starlane/bas, staybus/bas, sunrise/bas, synonym/bas, timezon1/bas, timezon2/bas, travel/bas, vmap2/bas, vmap2/doc, weekday/bas

M4GOODIES#13: calndr1/bas, calndr2/bas, calndr3/bas, formltrs/bas, invloan/bas, limerick/bas, martian/bas, mission/bas, moneymkt/bas, munchmth/bas, numbrfun/bas, smith/bas, smith/doc, star2000/bas, starfind/bas, starfind/dat, starfind/doc, starfind/jcl, states/bas, wallst/bas

M4GOODIES#14: alphahex/bas, bowlchng/bas, bowlcrea/bas, bowlDET/bas, bowlfin/bas, bowling/doc, bowlmenu/bas, bowlprnt/bas, bowlrcap/bas, bowlrecd/bas, bowlrecp/bas, bowlsched/bas, bowlscor/bas, bowlsort/bas, buscheck/bas, calculat/bas, chekform/bas, deprec/bas, futrdate/bas, membran/bas, minimath/bas, normalz/bas, numconv/bas, pcbdest/bas, pcbdest/doc, pcfom/bas, pcpm/bas, pcpm/doc, pcpm/jcl, utscan/bas, yagibeam/bas, zeller/bas

M4GOODIES#15: laughs/bas, laughs/dat, laughs/doc, laughs1/dat, laughs2/dat, laughs3/dat, laughs4/dat, laughs5/dat, laughs6/dat, laughs7/dat, laughs8/dat, laughs9/dat, laughs10/dat, laughs11/dat, laughs12/dat, laughs13/dat, laughs14/dat, laughs15/dat

M4GOODIES#16: trivia/bas, trivia/doc, trivia1/dat, trivia2/dat, trivia3/dat, trivia4/dat

M4GOODIES#17: acrs/bas, amorloan/bas, clockmod/bas, compound/bas, dcform/bas, decide/bas, easyword/bas, editno/bas, epslabel/bas, esckey/bas, expect/bas, funct1/bas, funct2/bas, gasform/bas, hexprint/bas, hexsay/bas, lostgold/bas, mathfunc/bas, mpgcalc/bas, neclabel/bas, nicelist/bas, nonlin/bas, nonlin/rem, payback/bas, peekprnt/bas, percent/bas, prntcall/bas, proverbs/bas, randseed/bas, savings/bas, speech/bas, tasklist/bas, tempconv/bas, weightfm/bas

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Model I & III Public Domain Disks

PD#1: binclock/cmd, binclock/doc, checker/bas, checker/doc, chomper/bas, cls/cmd, dduty3/cmd, driver/cmd, driver/doc, drivtime/cmd, mazeswp/bas, minibase/bas, minitest/dat, mx/cmd, piazza/bas, spdup/cmd, spdwn/cmd, vici/bas, vid80/cmd, words/dic.

PD#2: creator/bas, editor/cmd, maze3d/cmd, miner/cmd, note/cmd, poker/bas, psycho/cmd, supdraw/cmd, vader/cmd

PD#3: d/cmd, trsvoice/cmd, xmodem/cmd, xt3/cmd, xt3/txt, xthelp/dat

PD#4: cobra/cmd, disklog/cmd, flight/bas, flight/doc, narzabur/bas, narzabur/dat, narzabur/his, narzabur/txt, othello/bas, vid80x24/cmd, vid80x24/txt

PD#5: eliza/cmd, lu31/cmd, sq31/cmd, usq31/cmd

PD#6: clawdos/cmd, clawdos/doc, cocoxf40/cmd, dskrnas/bas, menu/cmd, ripper3/bas, sky2/bas, sky2/his, space/cmd, stocks/bas, trs13pat/bas, vid-sheet/bas

PD#7: cards/bas, cities/bas, coder/bas, eye/bas, heataudt/bas, hicalc/bas, life/bas, moustrap/bas, ohare/bas, slots/bas, stars/cmd, tapedit/bas

PD#8: craps/bas, fighter/bas, float/bas, hangman/bas, jewels/cmd, lifespan/bas, varidump/bas, xindex/bas, xor/bas

PD#9: bublsort/bas, chess/bas, finratio/bas, homebudg/bas, inflat/bas, mathdril/bas, midway/bas, nitefly/bas, pokrpete/bas, teaser/bas

PD#10: ltc21/bas, ltc21/ins, lynched/bas, match/bas, math/bas, message/bas, message/ins, portfol/bas, portfol/ins, spellegg/bas, storybld/bas

PD#11: alpha/bas, caterpil/cmd, cointoss/bas, crolon/bas, cube/cmd, dragon/cmd, fastgraf/bas, fastgraf/ins, lunarexp/bas, music/bas, music/ins, planets/bas, volcano/cmd

PD#12: baccarat/bas, backpack/bas, backpack/ins, doodle/bas, dragons/bas, dragons/ins, king/bas, sinewave/bas, snoopy/bas, wallst/bas, wallst/ins

PD#13: atomtbl/bas, boa/bas, chekbook/bas, conquer/cmd, dominos/bas, morse/bas, mountain/bas, quiz/bas, signbord/bas, sketcher/bas

PD#14: autoscan/bas, checkers/bas, craps/bas, ducks/bas, isleadv/bas, nim/bas, rtriangl/bas, sammy/cmd, typing/bas, wordpuzl/bas

PD#15: budget/bas, corp/bas, corp/ins, fourcolr/bas, fullback/bas, grapher/bas, illusion/bas, jukebox/bas, ledger/bas, maze/cmd, reactest/bas, shpspre/bas, states/bas, tapecntr/bas, tiar/bas, tiar/ins

PD#16: amchase/bas, constell/bas, filemastr/bas, foneword/bas, geometry/bas, heartalk/bas, hidnumbr/bas, lgame/bas, marvello/bas, powers/bas, scramble/bas, speed/bas, subs/bas

PD#17: conundrm/bas, eclipse/bas, esp/bas, esp/ins, hustle/bas, jacklant/bas, mindblow/bas, othello/bas, pleng/bas, rubik/bas, trend/bas, ufo/bas, veggies/bas

PD#18: backgam/bas, chess/cmd, cosmip/cmd, distance/bas, hexpawn/bas, music/cmd, stokpage/bas, texted/bas, texted/ins, trex/bas, twodates/bas, wanderer/bas

PD#19: banner/bas, cresta/cmd, lander/bas, medical/bas, moons/bas, par/bas, parachut/bas, pillbox/bas, readtrn/bas, replace/bas, ship/cmd, solomadv/bas, space/cmd, survival/bas

PD#20: bomber/bas, bumbee/cmd, ciaadv/bas, dice31/bas, dice31/ins, diskcat1/bas, firesafe/bas, flashcrd/bas, hitnmiss/bas, mazegen/bas, mazes-cap/cmd, roulette/bas, seasonal/bas

PD#21: aprfool/bas, catmouse/bas, d/cmd, escape/bas, header/bas, kalah/bas, mathwrlld/bas, nameit/bas, note/cmd, photo/bas, read/cmd, syzygy/bas, timeshar/cmd, timeshar/doc, trace80/cmd, trsdir/cmd, worm/bas, yatz80/bas

PD#22: arcade/bas, cube/cmd, eclipse/bas, lcd/bas, leastsq/bas, medical/bas, million/bas, pwrplant/bas, round/bas, subway/bas, tapeid/bas

PD#23: artil/bas, artil/ins, baseconv/bas, crushman/bas, dissert/bas, huntpeck/bas, jungle/bas, jungle/ins, messages/bas, monitor/bas, monster/bas, moons/bas, ohmlaw/bas, stockpage/bas, tictacto/bas

PD#24: baslist/asm, baslist/cmd, baslist/doc, cleaner3/cmd, cleaner3/doc, difkit1/bas, difkit1/doc, dirpatch/asm, dirpatch/cmd, e/cmd, ei/doc, i/cmd, newmap/bas, newmap/doc, varlst/asm, varlst/cmd, varlst/doc

PD#25: copy/bas, copy/doc, dirpw/asm, dirpw/cmd, dirpw/doc, dskfmt/bas, dskfmt/doc, himap/asm, himap/cmd, hurricane/bas, hv/bas, hv/doc, keydemo/bas, keyin/bas, keyin/doc, lazyptch/asm, lazyptch/doc, salvage/bas, salvage/doc, wpflt/asm, wpflt/fit

PD#26: constell/bas, divisor/bas, frame/bas, heatfus/bas, heatfus/doc, hicalc/bas, mathlprt/bas, mathquiz/bas, molecule/bas, morscode/bas, phyalpha/bas, phyalpha/doc, remaindr/bas, usa/bas, wiring/bas

PD#27: engine/bas, fraction/bas, geosat/bas, grades/bas, julian/bas, lunarcal/bas, mailist/bas, metabolism/bas, musictrn/bas, perindex/bas, potrack/bas

PD#28: chainfil/bas, citoset/bas, convnum/bas, cursors/bas, cursors/doc, datamkr/bas, deprec/bas, gmenuii/bas, ledger12/bas, menui/bas, menuii/bas, minives/bas, ninteres/bas, refinanc/bas, regdepo/bas, rembal/bas, rndbordr/bas

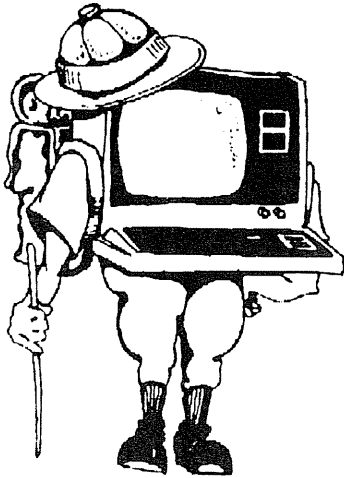
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THE MANY ADVANTAGES OF A MODEL I

by David K. Berg



It doesn't have that corporate look, of a spotless white plastic keyboard with 110 keys, and a color monitor with the latest in ultra-phenomenal high resolution.

It doesn't have a built-in OEM 40 MB hard drive nor the latest in 3 1/2 drives.

You won't find software, hardware, or anything at all for it in the mainstream slick, glossy computer

magazines or advertisements. It's as if it never existed, never was, even in Tandy/Radio Shack computer centers.

To a somewhat lesser degree, the Model III has been similarly excommunicated. Even the Model IV, perhaps the most versatile computer ever made in that it can be a III, a IV, and a CP/M machine, no longer makes its appearance in the latest Radio Shack catalogs.

The Way It Looks

The Model I is gray and black. It has less of a corporate business look and more of a Darth Vader or Star Trek look. It looks like a computer. All those cords, cables, and switches -- you have to know something even to set it up. If you take care of it, take a damp cloth and wipe it off occasionally, it may look almost as good as that long ago day when you first took it out of the box.

No offense, but the aesthetic design of the Model I seems better than many later models in the Z-80 and IBM/Compatible worlds. I don't mean electronic design or other aspects of engineering. I'm referring to the spacing, the shape of the monitor, keyboard, and expansion interface, the way the parts interlock together, the empty spaces created between the physical parts.

If you've ever taken an art course, you may have heard of "negative space." A full-fledged Model I set-up with expansion interface and external drives has a lot of good negative (or empty) space. Artistically speaking, the negative space is every bit as important as "positive" space, as in an oil painting, for example. The compacting of units into one piece as in the Models III and IV greatly simplified connections and hookups, but vastly reduced the amount of negative space.

Disk Drive Repair

All disk drives on a Model I are external. This is an advantage if repair work needs to be done. An external drive is much easier to get to. It's right there, out in the open. If you have to send it in to a repair shop, you don't have to send the whole computer, just the drive which easily disconnects. And if you have software for a memory disk, such as Anitek's SuperDrive, then you even have a replacement "drive" in the interim.

Screen-Blanking

I've heard a lot about screen-blanking programs lately, programs to prevent letters and words from "burning in" or leaving permanent marks on the screen if the computer is left on and unattended for rather long periods of time. Well, on the Model I, no such programs are necessary. Each piece of the system has a separate switch. Simply turn off the screen. The rest of the computer set-up remains on, still working. Simply turn the monitor back on when ready to continue.

No Passwords Necessary

As far as I know, password protection schemes for the Model I are the same as for the Models III and IV. I've never used them except for the default (eight blank spaces) which, of course, is automatic. Why not?

Well, in setting up my Model I computer, I place it on a special cabinet I built. This cabinet can fold up for traveling. Underneath the top of the cabinet is an 8-plug line filter made originally for the Model I or color computers. You don't see eight plug-ins on a line filter very often even in the latest technology-type catalogs. Anyway, after plugging in the cord from the line filter to a wall socket, I start plugging in cords from the CPU and EI power supplies, the video, the floppy drives, the hard disk, and the line printer. Then four ribbon cables need to be plugged onto card-edges on the EI, to the CPU/keyboard, floppy drives, line printer, and hard disk. If you want a modem connection, then make that five ribbon cables. Plug in two 5-prong DIN plugs, from the CPU power supply and video to the keyboard.

Ready to go? Well, first turn on nine switches. The line filter, the three disk drives, the line printer which has two switches, an on-off and an on-line/off-line. Then the video, the EI, and the CPU/keyboard.

Ready to go? Well, put the system disk in drive 0. Now push the reset switch (Make that ten switches now). Now the system boots up.

Ready for action? Well, first you have to type in the date. If you make mistakes, you must do it over.

What is the point, and what has this to do with passwords? Well, who is going to know how to set up your computer, much less read your files?

What if the computer is already set up?

All right, turn on the nine (ten?) switches -- in the right order, please.

You know TRSDOS, LDOS, MULTIDOS, NEWDOS? How about DOSPLUS? Well, that's TRSDOS 2.3, single-density. It can't read that TRSDOS 2.7DD disk, nor any of the others for that matter, just its own.

Single density? Yes, believe it or not, it has some advantages. The disk isn't packed so tightly so maybe there's less chance of a disk error.

If there are no drivers in high memory then it won't mess up the disk that formats the hard drive.

Files on the hard drive? Well, here's a special floppy disk (yes, single-density) when you want to use the hard drive. It also has a JCL file to make a diskDISK on hard drive four into the system :0 drive. Only it stops and you have to type in SYSTEM (SYSTEM=2) and diskDISK drive :2 on hard drive four becomes system drive :0. Floppy drive :0 becomes drive :2.

Got that? Then you'll be able to read the files on the hard drive. No, it's not TRSDOS 2.3 or 2.7DD.

It's LDOS . . . you know . . . for the hard drive.

A Tinkerer's Computer

If you're the type of person who likes to tinker with things, do your own repairs, upgrades, adjustments, soldering, then the Model I is for you. Art McAninch, in the July, 1990, CN80 article, "Model I Modifications", says that "It is still the most gratifying computer for a hardware hacker to get it to do things its producer never intended."

It doesn't come with double-density capability. If you want it, you have to obtain a double-density board which is about 5" x 4". Putting it in involves (I believe) unplugging the single-density FDC chip in the expansion interface, plugging the double-density board into that socket, and returning the original FDC chip to a new socket on the double-density board. I could be wrong, but I believe that is about all there is to it. I had a Radio Shack repair place install mine. That was before I realized that I could learn how to do some of that stuff myself even though I am not a technical person.

The Model I doesn't come with lower-case capability either. I purchased an "EC-1," a small EPROM board which

replaces the Model I character ROM, from the ELECTRONIC CLOSET; 8187 N. E. Blakely Court W.; Bainbridge Island, Washington 98110. This was in late 1987. The kit also included a 2102 chip to modify the video RAM. It involved replacing Z29 with the EPROM, piggybacking a socket onto Z45 for the 2102 chip, and running a wire from one pin on the socket to a pin on Z60.

Another variation: In July of 1987, I obtained a reprint of an article in 80 MICROCOMPUTING (from March of 1980) which explained how to do a lowercase conversion which involved installing a toggle switch so that you could have original (non-lowercase) operation or lowercase. I was able to get the toggle switch and resister needed, but not the 2102 or 7486 IC's (the Radio Shack Computer Center said that they could not be ordered anymore).

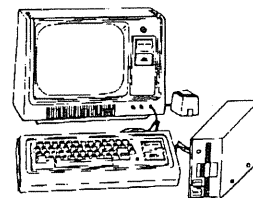
Still another variation: In the July, 1991, issue of CN80, page 29, D. G. (David Goben?) explains another way to make a lowercase modification. It involves getting a 2101A chip which, he says, hopefully can still be ordered from Radio Shack.

You can install additional memory in the Model I, up to 512K. I purchased this memory board from Alpha Technology, Inc., in February, 1987. I believe that now this memory upgrade is distributed by Anitek Software Products; P. O. Box 361136; Melbourne, FL 32936. It involved the removal of 11 components, 9 trace cuts, and the soldering of 9 wires. Directions were good, and even though I am not a technical person, I was able to install the board myself (with a lot of initial fear).

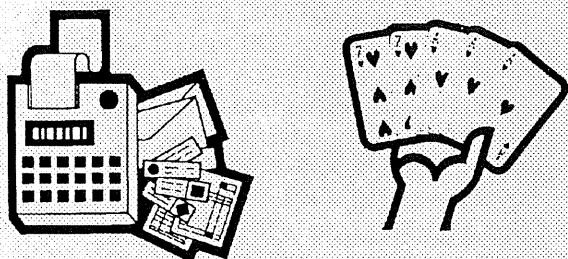
Gold Plug connectors can still be obtained from E. A. P. Company; P. O. Box 14; Keller, TX 76248; (817) 498-4242. These connectors fit over the oxidation-prone tin card-edge connectors on the expansion interface, CPU unit, and external drive connections and are soldered in. I like to solder and really enjoyed putting them in.

The fragile, breakage-prone interconnect cable between the CPU circuit board and the keyboard circuit board can be modified so that it can be unplugged. As far as I know, this was an original idea of mine and is explained in the May, 1989, issue of CN80, "Plug-in Interconnect Model I", pages 21-22.

These things are fun to do, and I'm almost sorry when everything seems complete and no tinkering is needed. But then my 1/! key keeps repeating itself, and must need repair . . .



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LDOS 5.3.1: the support continues

- ☆ The DATE command, "Date?" prompt on boot, and the @DATE SVC now support a date range of 32 years; from **January 1, 1980 through December 31, 2011**; time-stamping, too.
- ☆ **Double-density BOOT support for Model I** with embedded SOLE and FORMAT (SYSTEM). Supports mirror-image backup, too. Reworked FDUBL driver eliminates PDUBL and RDUBL and takes less memory; enhanced resident driver eliminates TWOSIDE.
- ☆ Model III version auto-detects Model 4 for installation of KI4 keyboard driver; supports CAPS, CTRL, and function keys.
- ☆ SYSTEM command supports removable and reusable BLINK, ALIVE, and UPDATE memory modules.
- ☆ The TED text editor now has commands to **print the entire text buffer**, or the contents of the first block encountered. Obtain directories from TED, too!
- ☆ The SPOOL command offers Pause, Resume, and Clear parameters. (OFF) attempts to reclaim memory used.
- ☆ **Alter the logical record length** of a file with "RESET filespec (LRL=n)"
- ☆ Specify "RESET filespec (DATE=OFF)" to restore a file's directory entry to the old-style dating of pre-5.3 release. Specify "RESET filespec (DATE=ON)" to establish a file's directory date as that of the **current system date and time**.
- ☆ Both Model I and Model III support similar commands: all features of Model III 5.3.0 are in Model I 5.3.1. That includes such facilities as DOS and BASIC help files, SETCOM and FORMS library commands, TED text editor, BASIC enhancements, etc. All DOS commands have been groomed for Model 4 LS-DOS 6.3.1 syntax where possible.
- ☆ Best of all, **a 5.3.1 diskette is available as a replacement for your 5.3.0 diskette for \$15** (plus \$3 S&H in US and Canada, \$4 elsewhere). There's no need to return your current master.
- ☆ The 5.3.1 diskette(s) come(s) with a 30-day warranty; written customer support is available for 30 days from the purchase date. Versions for the Model I and Model III are available. **If you do not already have an LDOS 5.3.0, order the 5.3.1 Upgrade Kit with 30 days of customer support for \$39.95** (+\$4 S&H). Some features require lower case or DDEN adaptor.

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