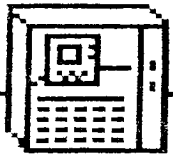


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# QB MONITOR

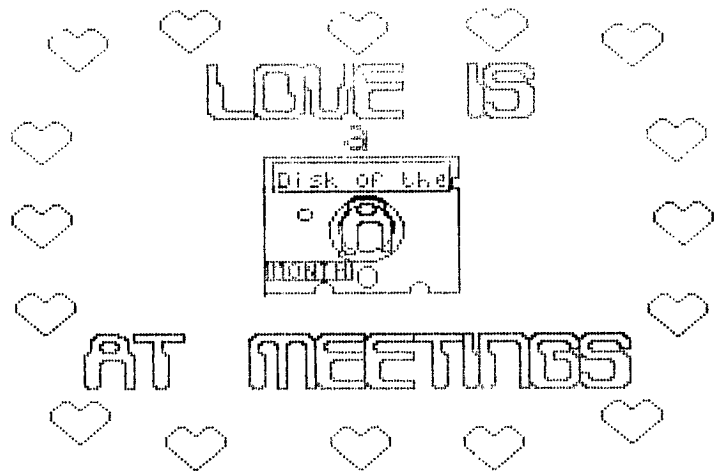
QB-99'ERS U.G. NEWSLETTER

February 1988

The QB MONITOR is the Newsletter of the QB-99'ers User Group, is printed Sept. thru June and sent in exchange for other User Group Newsletters. Send Exchange Newsletter to Frank Cotty, Queensborough Community College, Bayside, NY 11364. Credit original sources.

The QB 99'ers meets the second Saturday of each month September through May, at Queensborough Community College, Bayside New York, room S225. See the calendar at right for the dates

March 1988							April 1988						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
		1	2	3	4	5					1	2	
6	7	8	9	10	11	12	3	4	5	6	7	8	9
13	14	15	16	17	18	19	10	11	12	13	14	15	16
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ME AND MY QJ

Editor's Note:

Happy Valentine's Day! During the past two weeks my family has been using "T.I. Artist". It's now harder than ever to get near MY "Word Processing Machine". This does have a bright side. I own stock in a paper and ribbon company. Dividends should rise sharply; Probably just enough to offset costs! One example of my graphics ability is on the front page of this newsletter.

Furthering the spirit of the season Ed Machonis invokes "The Bard of Avon". Although he does so in a not all loving mood. Lest you think we've lost our perspective Ed will explain the why's of the invocation.

Jim Peterson has a right to Growl! He has earned the right so I'll let him speak out in this issue of The Monitor. He growls about copyright, bulletin Board misuse and program down/up loading abuses.

PR/Base - a FAIRware program - Please send your \$10 or more to the author. This month, to help you use this great DataBase Program to its fullest I include an Enhancement written by Barry Boon and further discussed by Bill Zaebst in the Byte-Line Newsletter. (Our copy courtesy of the L.A. 99'ers). A listing of fairware authors I have available is included below.

Our hardware presentations comes from the Charlotte T.I. 99/4A Users Group and the LITI Users Group. First save money by replacing the power transformer fuse when it blows out. Second, sooner or later your printer will start to give indistinct dots due to gunk on the print head. "Print Head Cleaning" will guide you through the process. In addition John Willforth of the West Penn U.G. continues his series on RAM disks. I will be looking forward to seeing the

rest of these enlightening articles. My interest is growing because of the number of programs which are multi-programs run from a common load menu; Such as T.I. Artist, Funnelweb Loader for T.I.Writer and Editor/Assembler.

From the Great Lakes Computer Users Group "Machine Code Mastery- Funnelweb Farm". To introduce this article I will quote the authors: "The ultimate way to get the real potential of the TI 99/4A is to write or run machine code programs. The next best thing is TI FORTH, But that's grist for another mill. Originally TI did not intend that users would ever write their own programs and provided no hooks at all in console BASIC to link to machine language programs, or to allow direct access to machine functions." Their copy continues on page 9.

Perhaps an Extended BASIC programmer would find the "Call Load Commands" listed in this issue a handy reference. This article is from the 99'er Output newsletter of The Brazos Valley U.G.

Fairware Authors Listing:

For DM1000 send to: Ottawa TI-99/4A Users Group, P.O. Box 2144 Station D, Ottawa Ontario, K1P 5W3, Canada atten. Treasurer

For PR-Base send to: William Warren, 2373 Ironton Street, Aurora, CO 80010

For little c-Compiler send to: Clint Pulley, 38 Townsend Avenue, Burlington, Ontario, Canada L7T 1Y6

For Funnelweb loader send to: Tony or Will McGovern, 215 Grinsell St. Kotara, NSW 2289, Australia

SHAKESPEARE on The TI-99/4A

Adapted From The Official Computer Haters Handbook by Ed Machonis, QB-99ers

On the TI Pullout:

*"The evil that men do  
lives after them...."*  
Julius Caesar, III,1

Upon Reading The E/A Manual:

*"Though this be madness,  
yet there is method in't."*  
Hamlet, II,2

Upon Writing His First Program:

*"An ill-favoured thing, sir,  
but mine own."*  
As You Like It, V,4

On User Groups:

*"Misery acquaints a man with  
strange bedfellows."*  
The Tempest, II,2

Upon Blowing His Last Back-up Disk:

*"If you have tears,  
prepare to shed them now."*  
Julius Caesar, III,2

On Programming Speech Synthesizers:

*"Speak the speech, I pray you,  
as I pronounce it to you,  
trippingly on the tongue."*  
Hamlet, III,2

On The Price of Peripherals:

*"Costly thy habit  
as thy purse can buy..."*  
Hamlet, I,3

On His Subscription to Home Computer Magazine:

*"Oh what a goodly outside  
falsehood hath."*  
Merchant of Venice, I,3

On TI's Packaging a 88DD Drive With a 688D Controller:

*"Something is rotten in the  
state.....of the art."*  
Hamlet, I,4

On Computer Crashes:

*"The rest is silence."*  
Hamlet, V,2

Whilst Playing an Adventure Game:

*"Is this a dagger  
which I see before me,....?"*  
Macbeth, II,1

After Losing a Night's Work to the Quit Key (FCTN \*):

*"O villian, villian, smiling,  
darned villian."*  
Macbeth, I,1

On The Turbo XT Keyboard:

*"What's in a name?  
That which we call a Rose  
By any other name would smell....."*  
Romeo and Juliet, II,2

Upon Buying a Geneve with DOS .9:

*"Have we eaten of the insane root  
That takes the reason prisoner?"*  
Macbeth, I,3

On The TI-99/4A Brown Ports:

*"The Gods are just,  
and of our pleasant vices  
Make instruments to plague us."*  
King Lear, V,3

On Debugging Source Code:

*"When sorrows come,  
they come not single spies,  
But in battalions."*  
Hamlet, IV,5

On The Speed of the TI-99:

*"My flocks feed not,  
My ewes breed not,  
My RAMs speed not,  
All is amiss."*  
The Passionate Pilgrim

On Purchasing Software:

*"I am a man more sinned against  
than sinning."*  
King Lear, III,2

On Software Pirates:

*"One may smile, and smile,  
and be a villian."*  
Hamlet, I,5

**TI-WRITER TOOLBOX**

by Ed Machonis

**REPLACE STRING & CONTROL U**

Elsewhere in this issue is an article titled **SHAKESPEARE** on The TI-99/4A. If you haven't read the article please do so now. It was written to be enjoyed, not dissected.

The actual physical presentation of an article has almost as much to do with its appreciation as the ideas contained therein. Visualize, if you will, the same article illustrated with a picture of the Bard seated at a console. It would be a lot more effective even with the loss of a few quotations.

Unfortunately, constraints of time and artistic ability precluded this approach. A compromise of sorts was reached by italicising each quotation. And "therein lies a tale."

First it was decided that the quotes would be presented in a two column format, which meant using an Elite type style. With 96 characters per line, it enables two 40 column COLUMNS with 16 columns available for gutter and margins. On my Epson RX-80, Elite looks a little anemic unless Double Strike is used. The necessary print codes were embedded at the beginning of the article using CONTROL U.

It would be necessary to change to Italics at the beginning of each quote and to cancel Italics at the end of each quote. The key strokes involved were CONTROL U, FUNCTION R, CONTROL U for the ESCape code and a 4 or 5 to enable or disable Italics. With some 19 quotations, this could be a chore.

Rather than type in all those control codes, an open bracket was used at the start of each quote and a closed bracket at the end. When the article was typed, AND SAVED, Replace String was used to replace the brackets with the appropriate print control codes.

A test printing indicated room for improvement. There was enough room to print the Bard's words in Pica for added impact. Since we were using Pica why not Emphasized as well? Reload the saved file and now use Replace String to replace the open bracket with the print codes to cancel Elite and print Emphasized Italics. Restore Elite when replacing the closed bracket.

Test printout looked snazzy due to Emphasized with Double Strike. Several trials indicated best results with the

quotation printed in Single Strike Emphasized Pica Italics. Replace String made changing the 38 sets of print control codes for each test a snap. An impossible task otherwise.

The key strokes required at the beginning of each quote were: CONTROL U, FUNCTION R, CONTROL U, P, CONTROL U, FUNCTION R, CONTROL U, 4, CONTROL U, FUNCTION R, CONTROL U, H, CONTROL U, FUNCTION R, CONTROL U, E. At the end of each quote: CONTROL U, FUNCTION R, CONTROL U, M, CONTROL U, FUNCTION R, CONTROL U, 5, CONTROL U, FUNCTION R, CONTROL U, 6.

You can see what a time saver Replace String can be. Just remember to page up to the beginning of the file each time BEFORE entering command mode. Type RS & Enter. Follow the sample presented: /old string/new string/ then Enter. The cursor will stop at the first occurrence of the old string. Type an A for All and you will find yourself at the last occurrence of old string now changed to new string.

But wait, there's more! Once the type style was set to our satisfaction, it was thought that a little space between the occasion and the quotation would help set off the Bard's words. A full line of space would be too much, a half line would be better. The print code for a one time half line feed is ESC J CHR\$(18).

Replace String to the rescue again. Each occasion line ended with a colon and a carriage return. This could be the old string and the new string would include this and the print code for a one time half line feed. The entry for the Replace String was as follows:  
/:CONTROL U SHIFT M CONTROL U/:CONTROL U SHIFT M FUNCTION R CONTROL U J CONTROL U SHIFT R CONTROL U/

In Special Character Mode, SHIFT M is CHR\$(13), or Carriage Return, and SHIFT R is CHR\$(18). These can be found on page 146 of the TI-Writer manual, or can be determined by counting off the letters of the alphabet; M being the 13th letter and R the 18th.

One word of Warning! If you decide to count off the letters, first close the door. The sight of a grown man sitting in front of a computer and counting on his fingers seems to inspire sarcastic witticisms from family members who happen to pass by. Particularly from family members who are prone to buying books with titles like "The Computer Hater's Handbook."

## THE TIGERCUB GROWLS

By Jim Peterson

GROWL #1. Arto Heino in Australia, being unemployed and in need of income, wrote a great program called Picasso Publisher. He is selling it in Australia through the Sydney User Group, and was hoping to find a U.S. software publisher to handle it in this country.

A user in Australia sent a copy to a user in California, and erroneously stated that it was fairware, although the program bears a copyright notice and no mention of fairware. The California user uploaded it to GENIE, the SYSCP of GENIE accepted it, and it has by now been downloaded and uploaded back to every BBS in the country!

So, another good programmer's livelihood has been ruined, and we will all suffer as a result. I am sure that Arto Heino will not be writing any updates to his program and will not be writing anything more for us.

Now, if you have Picasso Publisher in your files, and if you are one of the honest users among us, you have two choices. Delete it or pay for it. And don't just pay what you want to, because it is not fairware. The price is \$29 Australian, which is \$14.25 American if our dollar does not become even more worthless by the time this is printed. If you think that is too much, take a look in a computer magazine and see what such a program for any other computer would cost you. I hope that every user group will take up a collection and send it on to Mr. Heino.

GROWL #2. I recently found time to download a diskfull of programs from a BBS, and found that three of them had a Texas Instruments copyright notice staring at me from the screen. Two of them were old TI cassette programs which are still listed in the catalog of a major mail order house, the third was a duped arcade game module.

Now, passing this stuff around is not hurting Texas Instruments, because they have unloaded all their stocks to retailers. It is hurting those retailers, who are still supporting us - and if they quit, we are really in deep do-do! Texas Instruments has stated that they are definitely defending their copyrights on that material, because they have an obligation to those retailers.

If the person who uploaded those programs obtained them legally - which I greatly doubt - he had a legal right to make one archive copy for his personal use. He did not have a legal right to make a copy to the program disk of a BBS, and he exposed himself to prosecution by doing so, because his user number was recorded as the uploader.

He also exposed the SYSCP of the BBS to possible prosecution. The BBS SYSCPs are giving a great deal of

their time and equipment to providing us with a free service for our messages, and a source of free programs, and they should not be endangered by irresponsible individuals. There have been repeated attempts to restrict BBS operations by Federal legislation, to curb the illegal activities of some individuals, so let's not add fuel to that fire! In my opinion, anyone who uploads copyrighted material should be permanently barred from the BBS.

GROWL #3. Programmers, please don't put a copyright notice on a program unless you really want to restrict its distribution! There are folks out there who are trying to avoid being involved in piracy, but you are making it difficult. If you're going to give the program to everyone, and you don't care who they give it to, don't label it as a copyrighted production of Super Fantastic Software Inc. If it is fairware/shareware, say so right on the title screen. If you want to give it away but you don't want somebody else selling it, or taking credit for it, or modifying it, say so on the title screen. After a certain Florida outfit started selling some of my public domain programs for more than I was charging for copyrighted programs, I started titling my more worthwhile efforts as "copyright Tigercub Software, for free distribution but no price or copying fee may be charged."

GROWL #4. Folks, when you upload something to a BBS, and you are prompted for a file description - don't you please give the complete program name, the author's name if possible, and the hardware required to run it? I'm getting awfully tired of spending an hour or so downloading and unpacking files, and finding nothing that I want because it is something I already have (sometimes something I wrote myself!), or requiring equipment I don't have - or copyrighted. Is "FILESORL" a great utility worth downloading? Is "OTHELLO" one of the four versions I already have, or has someone perhaps written a better one? Is "the very latest version of Fun!writer" a later version than the one I have? (Please, at least mention version numbers, that's why the authors use them!) Are you one of the many who spent money downloading 299 sectors of TEESINDS from GENIE, when you already had Barb Berg's TI-SINGS?

With the proliferation of programs being written for the Tool Shed, the Braz fracker, the various new versions of Extended Basic, the Super Cart, etc., it is becoming very frustrating to even determine why a downloaded program won't run for you!

# QB MONITOR ~ QB-99'er NEWSLETTER

PRBASE ENHANCEMENT: by Bill Zaebst

From BYTE-LINE

PRBASE IS A NICE PROGRAM SO NOTHING DRASTIC NEEDS CHANGING. BUT SINCE COPY UTILITIES WERE NOT INCLUDED ORIGINALLY BUT ADDED LATER IN THE FORM OF AN EXTENDED BASIC PROGRAM, NOTHING IS PROVIDED TO AUTOMATICALLY LOAD THAT PART OF THE PROGRAM.

```
100 !*****
110 !*
120 !*   Generated By   *
130 !*   SysTex V1.0   *
140 !*   (C) 1985     *
150 !*   By Barry Boone *
160 !*
170 !* Hold Space Bar To *
180 !* Load Copy Utility *
190 !*
200 !*****
210 CALL KEY(I,K,S):: IF S=0 THEN 270
220 FOR Z=1 TO 8 :: CALL SCREEN(5)
230 CALL COLOR(Z,16,1):: NEXT Z
240 DISPLAY AT(2,4):"PRBASE COPY UTILITIES"
250 DISPLAY AT(6,4):"LOADING, PLEASE WAIT"
260 IF K=32 THEN RUN "DS<:PRBUTL/BAS"
270 CALL INIT :: CALL LOC(8196,254,0)
280 CALL LINK("SLOAD")
290 CALL LINK("ENTRY")
```

THE MAIN MENU IS IN ASSEMBLY AND CANNOT LOAD XBASIC. HOWEVER THE LOAD PROGRAM THAT LOADS THE ASSEMBLY CAN BE USED TO LOAD THE COPY UTILITIES BEFORE YOU GET TO THE MAIN MENU. ANOTHER MENU COULD BE PROVIDED BUT IT IS SIMPLER TO USE A CALL KEY TO DETECT DEPRESSION OF THE SPACE BAR AND AS A RESULT AUTOMATICALLY LOAD THE COPY UTILITIES. SINCE THE LOAD PROGRAM DID NOT PREVIOUSLY DISPLAY ANYTHING IT HAS BEEN CHANGED TO PROVIDE SCREEN COLOR TO MATCH THE BALANCE OF PROGRAM AND TO DISPLAY THE LOADING MESSAGE AS IT TAKES ABOUT FIFTEEN SECONDS TO LOAD.

THE ABOVE LOAD PROGRAM INSERTS THE WORD COPY IN THE TITLE TO MORE ACCURATELY DESCRIBE IT'S FUNCTION. LINE 150 OF THE PRBUTL/BAS PROGRAM SHOULD ALSO HAVE COPY INSERTED AND HAVE COLUMN NUMBER ADJUSTED ACCORDINGLY.

```
150 K=1 :: L=2 :: DISPLAY AT(2,4)ERASE ALL:"PRBASE COPY UTILITIES" :: CALL HCHAR
(4,1,45,32):: CALL HCHAR(21,1,45,32)
```

IN ORDER FOR THE TITLE NOT TO BE CLEARED THE CALL CLEAR IN LINE 100 MUST BE CHANGED TO A DISPLAY AT():""(NOTHING) TO ONLY CLEAR THE ONE LINE ON WHICH THE LOADING MESSAGE IS DISPLAYED.

```
100 CALL LINK("CHARDF"):: CALL SCREEN(5):: DISPLAY AT(6,1):" " :: FOR A=0 TO 31 :
: CALL COLOR(A,16,1):: NEXT A :: OPTION BASE 1 :: ON ERROR 1280
```

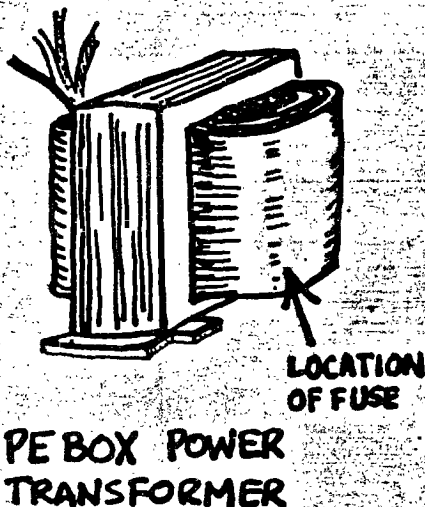
Charlotte TI 99/4a Users Group

**Power Supply Fix**

This tip comes from Raymond Langevin of the Northeastern 99ers.

If you have the misfortune of having your power supply quit on you, check the transformer voltage on the primary and secondary sides. If you have the primary voltage and no secondary voltage, then check the fuse that is located inside of the transformer. The fuse is located on the opposite side from the wire connections, at the lower part of the transformer. You will have to cut away the insulation (plastic housing) from the unit to expose the fuse, which is an inline type that is soldered to the white wire of the primary side of the transformer. Next check the power supply board. The bottom left hand side has two, one-amp diodes. You will probably find that one or both have shorted internally. Check them with a meter. If you find the values are faulty, change them.

This procedure can save you from a costly replacement and extended down-time of your computer. The transformer and power supply board costs \$127.50 from Texas Instruments, not to mention the delay for shipment.



**PRINT HEAD CLEANING**

By Chuck Reinhart of LTI

It takes only three things to get good, dark, crisp print from your printer.

- 1- A properly adjusted printer
- 2- A good ribbon
- 3- A clean print head

The guide for the fine print wires gradually gets clogged with a mixture of lint, ink and oils from the ribbon. As this dirt builds up and dries out, the pin wires drag in the guide. The result is you get light, low-contrast print even from a new ribbon. The following is a procedure for cleaning the print head that is quick, simple and does not require removal of the print head.

... Obtain an aerosol can of Color TV Tuner Cleaner (Radio Shack # 64-2320 or equivalent). Make sure the label states that it contains silicone, that it will not harm plastic and that it has a plastic tube to plug into the spray nozzle.

... Power off the printer. Leave paper in the printer, but remove the ribbon. Gently move the print head to the middle of the carriage.

... Cut a two inch square from a lint-free cotton handkerchief. Fold the cut cloth over on top of itself a couple of times until it is about the width of your printer ribbon and is about four layers.

... Insert the cloth into the print head where then ribbon was, between the pin guide and the ribbon shield. The cloth should not fit too tight.

... Insert the tube into the aerosol spray cap. Put the end of the tube in contact with the cloth next to the pin guide of the print head and give a short quick press to wet the cloth.

... Turn on the printer and send a page of print to the printer (self test can be used). Now move the cloth a little to the side so that you have a clean spot. If necessary, give the cloth another shot of fluid and print out another page.

... Remove the cloth from the print head and print a page (without the ribbon). If you see any printing on the paper, put the cloth back into the print head and repeat the whole process until the page prints clean.

... Finally install the ribbon and enjoy the improved print.

LET'S TALK RAM DISKS PART II

BY JOHN F. WILLFORTH (DEC. 1987)

LAST MONTH I ATTEMPTED TO PRESENT A FOUNDATION FOR US TO SPRING INTO THE SUBJECT OF RAM DISKS BY DESCRIBING WHAT THEY ARE AND WHAT FEATURES THEY GENERALLY POSSESS, THIS IS THE MONTH THAT I WILL BEGIN TALKING ABOUT SPECIFIC RAM DISKS. THE ORDER IN WHICH THEY ARE PRESENTED MONTH BY MONTH IS NOT RELATED TO MY PERSONAL PREFERENCE OR THEIR PUBLIC ACCEPTANCE.

THE HORIZON RAM DISK WAS NOT THE FIRST RAM DISK ON THE MARKET, BUT IT WAS THE FIRST WITH STATIC RAM AND LOW POWER AT THAT. THIS ENABLED THE UNITS TO SAVE THE ROS AND THE FILES IN THE EVENT OF POWER OUTAGES AND NORMAL POWER-DOWN OF THE PEB FOR LONG PERIODS OF TIME (WEEKS AND PERHAPS MONTHS) WITH THE USE OF ONLY THREE "AAA" NI-CAD BATTERIES. THE ORIGINAL CAPACITIES OF THE TWO VERSIONS AVAILABLE FROM HORIZON COMPUTER LIMITED WERE 104K (360 SECTORS) AND 192K (720 SECTORS), THE DIFFERENCE, IF YOU CALCULATE FOUR SECTORS PER EACH ONE K. OF MEMORY, IS THE MEMORY USED TO STORE THE ROS (RAMDISK OPERATING SYSTEM).

THERE WERE LARGER RAM DISKS ON THE MARKET WHEN THE HORIZON CAME OUT, BUT NONE THAT OFFERED THE SOURCE CODE OPENLY TO ANY WHO WANTED TO DEVELOP NEW APPLICATIONS FOR THIS CARD. THIS DECISION WAS A FACTOR IN MAKING THE HORIZON RAMDISK THE POPULAR UNIT THAT IT IS TODAY AS WELL AS THE TERRIFIC ENHANCEMENTS BOTH HARDWARE (MIKE BALLMAN) AND SOFTWARE (JOHN JOHNSON) WISE. MORE ON THIS SUBJECT LATER.

THE HORIZON RAM DISK (I'LL REFER TO AS HRD) WAS DESIGNED TO OPERATE WITH ALL OF THE DISK CONTROLLERS ON THE MARKET (T.I., MYARC, CORCOMP, AND PERCOM) AND WITH MOST 32K MEMORY EXPANSIONS (T.I., MYARC, FOUNDATION, BOXCAR, ETC.). THE HRD IS NOT YET ABLE TO OPERATE IN THE GENEVE (9640) ENVIRONMENT, BUT EXPECT THIS TO CHANGE SHORTLY. WITH THE UNCERTAINTY OF THIS MARKET, AND THE ADVANCES MADE EVERY DAY, THE AREAS THAT I TALK OF HERE ARE ONLY ONE MORE RUNG OF THE LADDER HIGHER TOMORROW, SINCE WE HAVE NOT YET SEEN THE APEX OF THE LIFE CYCLE OF THE TI-99/4A AND IT'S FAMILY OF PERIPHERALS.

THE HRD SUPPORTS NEARLY ALL SOFTWARE THAT CAN BE LOADED ONTO A DISK DRIVE IN THE NORMAL FASHION, FILE OR DISK COPY WITH DISK MANAGER II, DM1000, OR THE MYARC AND CORCOMP DISK MANAGERS. IF THE PROGRAM IN QUESTION HAS SOME SPECIAL TRACK/SECTOR PROTECTION YOU WILL PROBABLY HAVE TROUBLE INSTALLING IT ON THE HRD, OR FOR THAT MATTER ANY RAM DISK.

THE HRD HAS A SWITCH SELECTABLE CRU ADDRESS, WHICH ENABLES YOU TO SELECT IT'S CRU ADDRESS EASILY. THE ROS TALKED OF EARLIER, IS RAM, AND CAN THUS BE ALTERED EASILY AS THE NEED ARISES (IMPROVEMENTS TO THE OPERATING SYSTEM OR CUSTOMIZING). THE HRD HAS A COMPLETE SET OF "CALLS" AND CAN EASILY HAVE NEW CALLS WRITTEN BY THE USER. YOU DON'T NEED AN EPROM BURNER TO IMPLEMENT THEM ON THE CARD. THESE CALLS ARE SUMMONED IN BASIC OR EXTENDED BASIC. THEY INCLUDE:

- |   |  |
|---|--|
| 1) <u>CALL DN(N)</u> SET DRIVE NUMBER   | 6) <u>CALL EX</u> USED WITH CALL CO/CF ALLOWS THE USER TO LINK TO THE ROS FROM BASIC.                                |
| 2) <u>CALL WO OR WF</u> SET/CLEAR WRITE PROT. ON THE DRIVE.   | 7) <u>CALL DM</u> USED TO LOAD A DISK MANAGER WHEN THE DISK MANAGER FILES ARE ON THE RAMDISK.                        |
| 3) <u>CALL MS(N)</u> SETS MAX. SECTORS THE ROS WILL RECOGNIZE.  | 8) <u>CALL NF(N)</u> ONLY USEFUL WHEN CRU BASE ISN'T <1000 TO ENABLE BASIC AND OTHER PROGRAMS TO ACCESS THE RAMDISK. |
| 4) <u>CALL CO OR CF</u> TURNS CARD ON/OFF   | 9) <u>CALL ?</u> USERS CAN CREATE THEIR OWN USER-DEFINED SUBROUTINES. DOCUMENTATION INCL.                            |
| 5) <u>DELETE "XBCALL"</u> EXECUTED AFTER CALL INIT TO MOVE ALL THE CALL ROUTINES TO THE LOW 8K. OF EXPANSION MEMORY. CALL LINKS THEN CAN ACCESS THEM. |  |

THE HRD CAN BE PURCHASED AS A 192K. UNIT FULLY ASSEMBLED AND WARRANTIED FOR 90-DAYS FROM HORIZON FOR \$195. OR AS A BARE BOARD W/DOCS AND SOFTWARE FOR \$45. OR JUST THE BARE BOARD FOR \$38. IN ANY QUANTITY. I TALKED TO RON GRISE JUST YESTERDAY 12/25/87, AND WAS TOLD THAT THE LAST UNITS HE SENT OUT WERE SET UP TO BE EASILY UPGRADED TO THE HRD+ (USES 32K. BYTE CHIPS AND CAN BE EXPANDED TO ONE-MEG.). THEY INCLUDE MENU 7.01 AS WELL AS THEIR OWN OPERATING SYSTEM. BUD MILLS SERVICES PROVIDES THE COMPLETE KIT ASSEMBLIES FOR THIS UNIT AND THE HRD+. MORE ON THE HRD+ NEXT MONTH. THERE IS JUST TOO MUCH DIFFERENT TO INCLUDE THIS MONTH. HORIZON COMPUTER, LTD P.O. BOX 554, WALLBRIDGE, OH 43465 AND BUD MILLS SERVICES, 166 DARTMOUTH DR., TOLEDO, OH 43614.

ED. NOTE: I HAVE BEEN USING THE HRD FOR NEARLY AS LONG AS IT'S BEEN AVAILABLE, AND HAVE HAD NO PROBLEMS WITH IT, EVIDENCED BY THE FACT THAT ROS REV.'S HAVE BEEN SO SELDOM IN COMING.



The same sort of corporate marketing contempt for the customer led them to put calculator keys on the original TI-99/4. They weren't and aren't alone in that attitude of contempt for the user....look at the IBM PC, years later, or the Apple Macintosh.

And when they did bring out the expansion system, it still did not realize the potential of the TMS-9900 processor because of the fractured memory map and conversion of the 16 bit data path to successive 8 bit slices for all but a small part of CPU memory space, adding that insult to use of external memory with wait states. However when TI finally made machine code available to users they did it in style, adapting their mini-computer software for the purpose. Some of the programs supplied still contain traces of their origin, such as memory mapper instructions relevant only to the larger 990 minis.

First let's look at how machine code programs are recorded as disk or cassette files, and then survey the modules which allow these files to be loaded and executed. These files come in two forms. The most direct form is as memory image files, in which the actual contents of a block or blocks of memory are stored, with control information appended. These are known as PROGRAM files in TI-99/4A language (and correspond to .COM or .CMD files in other systems). TI Basic and XB programs are also stored in this format, which can be saved to and loaded from cassette as well as disk. The other kind, usable only with a disk system, is the assembly tagged OBJECT file. In normal usage of the TI-99/4A, object files are created to be relocatable in memory by the loader, and the programmer does not have to know explicitly where the loader has placed them, and calls their entry points up by name. None of the primitive USER or suchlike business. There are 4 (maybe 5) modules available which can load and run machine language programs. They all have different capabilities and limitations.

Editor/Assembler

The primary one is EDITOR/ASSEMBLER which is necessary for creation of relocatable object files (... well you could write one with a word processor but that would be masochism of a high order, exceeding even direct POKEing of machine code bytes). E/A will load any of the machine code file types mentioned above, from its menu screen. The LOAD AND RUN option handles both uncompressed and compressed tagged object files, and will resolve REFERENCES by name from one object file to another, or to standard system names. Uncompressed object files represent bytes in Hex notation, and take about twice as much disk space as compressed object files. Invocation of LOAD AND RUN re-initializes the memory pointers completely; while loading the system utility routines such as VMEM from GROM storage, so if a sequence of file loads is interrupted by an error, it must be started all over again.

E/A adds CALL LOAD and CALL LINK to console Basic to

allow these same object files to be loaded and accessed from Basic. The standard utilities such as NUMREF for communicating with the Basic program must be loaded as a separate file BSCSUP.

E/A will also load and run from the RUN PROGRAM FILE option, program files of machine code, prepared according to a specific recipe as SAVE files. The details of these will be a subject for HV99 News articles in the future. It will load them from cassette as well but I can't see anyone doing that in preference to using disks, unless perhaps they have installed the TIUP internal memory expansion mod in the spare console that gets taken away on holidays. No provision exists in Basic to load SAVED program files from Basic as they could overwrite part of the Basic program in the VDP on the way in.

Extended Basic

The next module which can load assembly code is our old friend EXTENDED BASIC. This is much more limited than E/A in what it will handle. Firstly it recognises only the 8K low memory area from >2000 to >4000 for loading relocatable object code. Absolute code can be loaded, or RAM buffer areas used in the lower part of high memory once it is known how far down this is filled by the XBasic program. The loader does not handle external REFERENCES, and the utilities loaded by CALL INIT in XB are missing the most useful one - DSRLNK, and GPLLNK as well. The Basic support utilities are loaded by CALL INIT from GROM. The assembly source code has to locate them with EQUates. A minor difference from E/A is that CALL LINK always hands over control in the GPL workspace. Programs written to LINK to E/A Basic will almost always need at least minor modifications to LINK to XB successfully.

The operational hangup with XB is that the loader is written in GPL and is painfully slow. A long assembly routine, such as Text to Speech, may take several minutes to load (shades of the Commodore 64's disk system). The usual way round this is to load an assembly language loader which in turn does a faster load of the longer program. The great virtue of the XB module that sets it apart from the others is that it supports auto-RUNning from disk, as soon as the module is selected, of an XB program DSK1.LOAD which can then load further programs. The other reason for preferring XB is that it is a vastly more powerful language than the mildly enhanced console Basic offered by E/A. Unlike E/A it can never load machine code programs without Basic as an intermediary.

Mini-Memory

This module has its own particular charm as the only one which allows access to machine code without the 32K memory expansion and using cassette storage. In this mode a LINE by LINE (or immediate input) Assembler allows standard TMS-9900 mnemonic assembly code to be entered in a restricted format. This is a descendant of TI's board level 990 evaluation systems. Only 700 odd bytes are available in the module's 4K of CMOS RAM after loading

the assembler but I can't imagine anyone wanting to do programs longer than that with L by L. Still it's enough to do a pretty fair Game of Life program. MM also contains a full set of system utilities and Basic support routines in ROM and EASYBUS in BRGM, a monitor program that is useful but much less powerful than the E/A DEBUG.

MM is even more useful in a fully expanded system. It does not provide the Editor and Assembler features of E/A, but offers more scope for loading and running programs. Firstly there is 5-6K more RAM available, 4K of CMOS RAM in the cartridge and the saving of space in RAM because of the utilities in cartridge ROM. Its principal deficiency as compared to E/A is the lack of a PROGRAM file loader, but this can be easily remedied by writing your own to reside in MM cartridge RAM. Even the L by L Assembler, as well as EASYBUS, remains useful for occasional little purposes anywhere in RAM, and I have prepared a disk based version for convenience.

E/A object code, even compressed, is loaded successfully as long as REFS are used for system utilities and Basic support routines. EQUATES as used for XB code will only get it right for one module. The loader has one more space, cartridge RAM, to place relocateable object code as a last resort. I have not yet experimented to see whether the loader will link object files with external references as the E/A loader does. The MM manual, never a fount of information, is

silent on this point.

MM does not erase its DEF table unless it is explicitly done by one of several means. The table survives a return to the title screen, and even switch-off if the internal battery is still alive. This is different from E/A's workings, and must be taken into account for better or for worse. Code in memory expansion does not survive switch-off even if its name lives on.

TI-WRITER

Now we leave the modules which can load files under any name for one which loads program files with particular names. TI-WRITER tries to load an E/A type SAVE file from DSK1 under the name EDITAI (and successor filenames) when the EDITOR option is selected from the menu screen. If you have followed the E/A manual's advice on using the SAVE utility with TOMESTONE CITY as the victim, take the file so generated and place it on a fresh disk under the name EDITAI and place in DSK1. Then fire up TI-WRITER, choose the Editor option, and see what happens. Extension to Formatter and Utility options are obvious. It may provide light relief to heavy TI-WRITER sessions. More seriously, short of writing a PROGRAM file loader to be loaded by XB using DSK1.LOAD, it is the nearest that the TI-99/4A comes to an auto-loader for machine code program files.

USEFUL EXTENDED BASIC  
CALL LOAD COMMANDS  
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Address	Value	Meaning
-28672	P	Evaluate P. If P=0, speech not attached. P=96 attached to unit.
-31806	16	Disable function quit key.
	32	Disable sound.
	64	Disable auto sprite motion.
	128	Disable all three.
-31860	4	Enter "basic" from "extended basic". However, you must type in "new"
	8	Auto run of DSK1.LOAD
	0	Unprotect XB program.
	0	Unprotect XB program.
	2	Set "ON WARNING NEXT" command
	4	Set "ON WARNING STOP" command
	16	Set "TRACE" command
	64	Set "ON BREAK NEXT" command
	128	Protect XB program.
	0	Return to the Title Screen.
-31962	32	Return to the Title Screen.
	255	Restart XB with DSK1.LOAD

TO USE THESE COMMANDS  
TYPE IN CALL INIT::CALL LOAD(ADDRESS,VALUE)  
EX..CALL LOAD(-31806,16) AND PRESS ENTER..NOW FUNCTION QUIT DOES NOT WORK.  
DAVE EISFELDT...  
Pg-10