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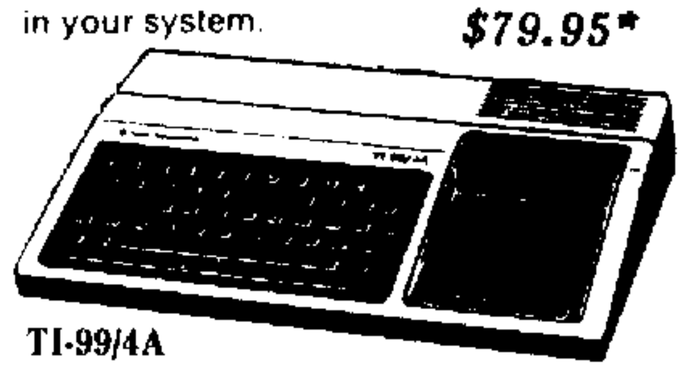

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Programming conventions

Here are some tips to help you when entering programs from MICROpendium:

1. All BASIC and Extended BASIC programs are run through Checksum, the numbers that follow exclamation at the end of each program line. Do not enter these numbers or exclamation points. Checksum was published in the November 1987 edition.
2. Long XBASIC lines are entered by inputting until the screen stops accepting characters, pressing Enter, pressing FCTN REDO, cursoring to the end of the line and continuing input.

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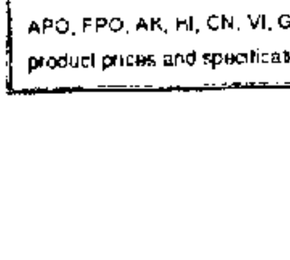

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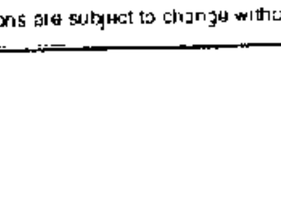

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Comments

Plato, Q*Bert, Logo II are most wanted

Word reaches us of the development of a new word processor for the TI and Geneve. The program, which isn't expected to be ready for market until the fall, is said to be a departure from the TI-Writer format. It is described as being a combination of Word Perfect and Word Star, two of the most successful word processors in the PC world.

PATCHES, PATCHES, PATCHES

Here are the programs that readers would like to see running on the Geneve, in the order of preference. Several months ago, Myarc said it would write patches for the top dozen or so programs requested by readers, assuming no problems with copyright and other considerations. We appreciate the response from readers.

- Plato
- Q*Bert (runs, but screen is black)
- Logo II (the fix published in MICROpendium doesn't allow the program to scan a disk to load a file)
- Ms. Pacman (joystick doesn't work)
- Dragonslayer Spell Check (locks up prior to exiting to MY- Word)
- Moon Patrol (no control)
- Jungle Hunt (fire button doesn't work)
- Personal Record Keeping
- Disk Manager II (valued for its comprehensive disk test)
- Bigfoot
- Dig Dug
- Pole Position (fire button doesn't work)
- Frogger
- Donkey Kong
- War Games
- Submarine Commander
- River Rescue
- Fathom

Other programs that readers mentioned include: Data Base Manager by Navarone, Rapid Copy, Video Graphs, Meteor Multiplication, Early Reading, Moon Sweeper, Slymoids, Alpiner, Popeye, TEII (speech access), Statistics, Tax Investment Record Keeping, Certificate Maker 99, Moon Mine, Early Logo Learning Fun, Honey Hunt, Buck Rogers, Munchmobile, Music Maker, Jawbreaker, Super Demon Attack (no speech synthesizer in PEB — Rave 99 markets a board to mount the speech synthesizer in the PEB—Ed.), Congo Bongo (locks up on level 2), Microsurgeon (joystick doesn't function), Slymoids (no graphics or joystick), Henhouse (no joystick), Space Bandits (no control), Star Runner, Editor/Assembler (wants 80-column support and assembler support for additional opcodes of the 9995 CPU, which are currently used through use of the DATA directive, Mini-Memory Line-by-Line Assembler (9640 doesn't recognize REF/DEF table, TI Forth (GRPHICS2 mode (loaded with —GRAPH2) doesn't work. Nor do the —SPLIT modes which also use GRAPHICS2 mode)

A SERIAL MOUSE FOR $29.95

Donny O'Neil called from California to let us know about a company that sells a serial mouse for $29.95. The subject came up vis a vis an article published in May detailing how to connect a mouse to the TI for use with TI-Artist. Refer to the article for more information. Let it suffice that Computer Direct, 22292 N. Pepper Rd., Barrington, IL 60010 (312-383-5050) has an analog 2-button mouse and a 3-button mouse. Both sell for $29.95.

ASSEMBLY COLUMN COMING

Starting in July, we'll be publishing an assembly language column again. We are thrilled to have John Birdwell, author of Disk Utilities and other programs, as the columnist.

John is assuming that those who are interested in learning assembly will have read Mack McCormick's assembly language columns that appeared in MICROpendium in 1986 and 1987. Not exactly a tutorial, his column will begin with a series whose goal is to create a word processor in assembly. He's asking for suggestions from readers about features the word processor should incorporate. Suggestions should be sent to MICROpendium, Assembly, P.O. Box 1343, Round Rock, TX 78680. We will forward letters to John.

AUSTRALIA TI FAIR

Garry J. Christensen reports that the Bi-Centennial TI Faire in Brisbane had visitors coming from the far corners of Australia. Demonstrations were held of products from Australia, Germany and the United States, including the latest version of Funnelweb (available from Tony McGovern, 215 Grinsell St., Kotara, New South Wales, Australia 2289), a mini-PE system and an AT expansion card. Programs were demonstrated from various user groups in Australia. Mechatronics and Rave 99 products were on view, and Christensen writes, "Inscebot sent disks of TI-Artist, Artist Extras, Display Master and TI-BASE. The latter certainly created a stir, with 15 copies being sold in a very short time."

More on TI-BASE can be found in Bill Gaskill's article in this issue.

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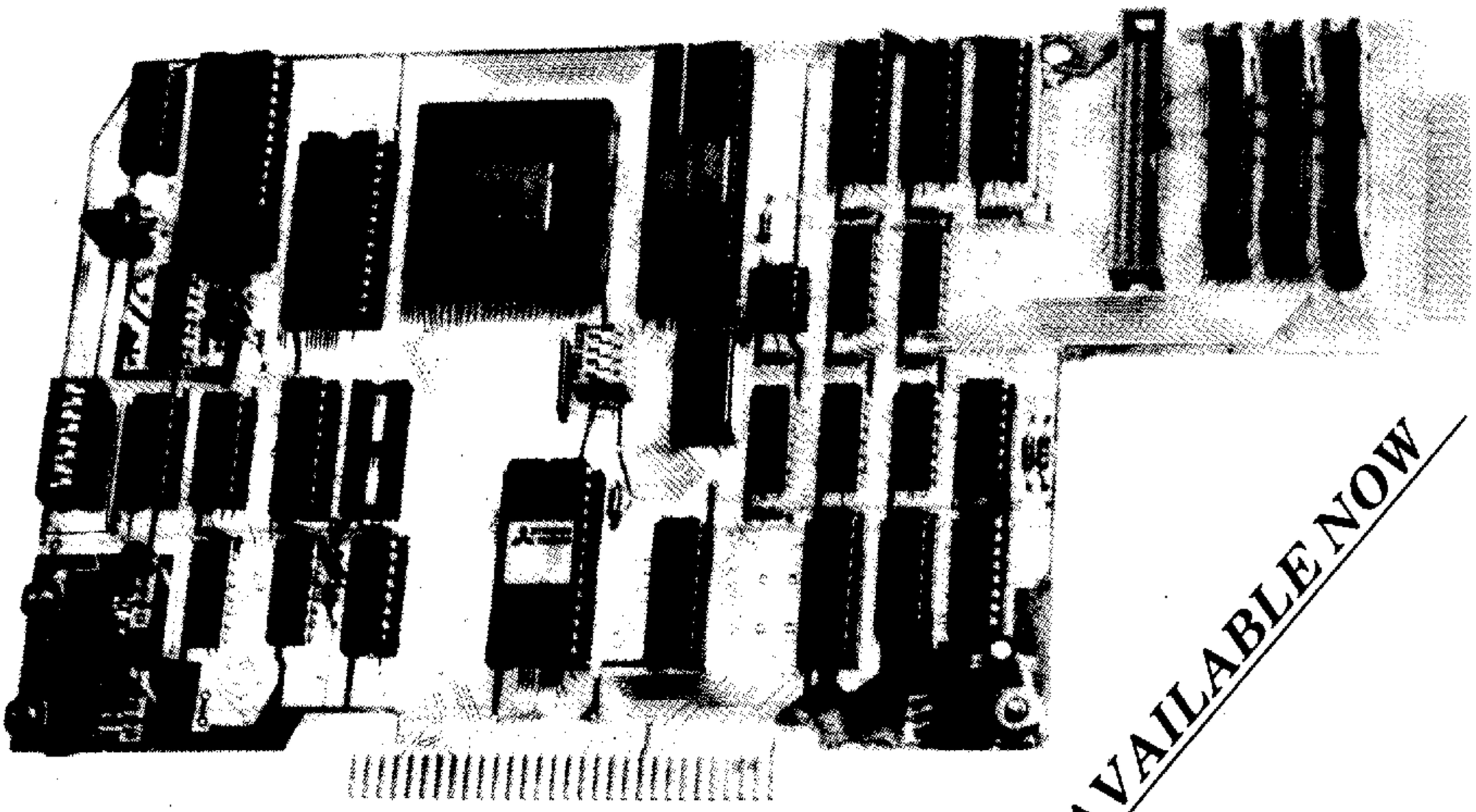

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Feedback

Another TI-runner screen editor

In reading the User Supported Software listing of your March 1988 issue, I read with interest that Michael Rittweger is offering an Extended BASIC program for editing TI-Runner screens for $15.

This was especially interesting because my brother Bill has been offering a public domain program which does the same job, with the exception of the printer output. If users could do without printer output, I believe that they would be a lot better off with the free program.

Bill's program was first written quite a few years ago, and has appeared in the listings of many BBSs, as well as being listed on CompuServe. It was updated to version 6.0 some months ago, with a few assembly language routines of mine added to make the program run faster.

There is also now a "pallette" of building blocks on both sides of the screen. If anyone would like a copy, it can be found on our BBS (201-679-0549), or a disk with return mailer can be sent to: Bill Reiss, 23 Cressida Dr., Old Bridge, NJ 08857.

Jim Reiss
Mount Vernon, Iowa

Two drives at the same time?

After reading the Charles E. Kirkwood's April Feedback letter, I was reminded of a little oddity revealed to me by John Clulow.

After installing my Horizon RAMdisk for the first time, I observed the same thing Charles did when my Horizon was emulating drive one, namely, the lack of use of my physical drive one except by disk name. What this meant was instead of using DSK1.FILENAME,DSK.DISKNAME.FILENAME was required to find a file on my physical drive one. Well, a phone call to John Clulow was all it took. He explained to me how to have my Horizon emulate drive one and still be able to access my physical drive one, all without having to remember any disk names.

Here's how it's done. When installing drive one (DSK1) in your system, for example, you have to set a DIP switch on the drive so your system knows what drive number it is. When installing drive two (DSK2), the same thing applies except the DIP switch is set to refer to drive two, instead of one. Usually this involves connecting or breaking a pair of contacts across the switch. Now, on drive one, let's suppose you connected the pair representing DSK1, and also the pair representing DSK3. That's right. Both drive one *and* drive three! Access to DSK1 and DSK3 will both activate your physical drive one! So, on a two drive system, with your Horizon set for DSK1, your physical drive one would respond to DSK3, with access to DSK2 unaffected. When your Horizon is DSK3, your have your physical drive one as DSK1 as normal. This way there is no need to remember disk names, although access by diskname is always available.

My system has been in this state of operation since October 1986 without incident of any kind.

Steve Mehr
Thousand Oaks, California

Fairware Exchange

Regarding Mr. Trapp's (Feedback May '88) comments concerning software for the 99/4A and the timeliness in obtaining programs ordered from user groups, I would like to inform him and other users of my services, the Fairware Exchange. The Fairware Exchange has been around now for more than one year and I have tried to keep on track with getting responses and orders out on a timely basis, usually within the same week the order is received.

The Fairware Exchange offers more than 130 (and growing) different freeware programs, either at $2.50 per disk which includes the disk, mailer, etc., or on a one-for-one exchange basis from users submitting programs not in the Fairware Exchange library. Checks are not cashed until the order is sent, just my way of operating the service.

A current catalog listing may be obtained by sending $2 which is refundable with the first order. Inquiries may be sent to: Fairware Exchange, c/o Robert Neal, 317 Hickory, Romeoville, IL 60441.

Robert Neal
Romeoville, Illinois

Praise for Horizon

I have just installed the new HRD+ 1 megabyte Horizon RAMdisk, and I feel like I've got a new machine.

I wish to express to your readers the ease of building and using this card as well as the excellent follow-up support service from Bud Mills. I had no experience other than minor soldering but had no trouble following the directions in putting the kit together. When I did run into glitch, I called Bud, and though he did not know for sure the cause, he sent me a whole set of replacement support chips the next day.

This mod has made as much of a difference in my system as did upgrading to the Geneve. In fact, the idea of waiting for the system to boot, especially after lockups, was an aggravating regression from the 99/4A. Now the two parts of the system complement each other superbly: the fast speed of the 9640 with the quick access of the HRD+ makes computing a real joy again with no hassles. I've got the disk manager, MyWord, spelling checker, Multiplan, PRBASE and XB all in RAM and, with a little minor sector editing, now almost instantly accessible at the touch of a key. There is still room in the 800K module for all my data and doc files. The 256K Phoenix boot drive contains system/sys along with MDOS loadable programs. I'm in hog heaven.

One more note on Bud: I ordered the kit before the hefty price increase that I saw in the next MICROpendium and wondered whether he would hold to the price that I ordered at. He did. In addition, he patiently answered three calls I made with questions and was very helpful. The TI world (the rest of it too for that matter) needs vendors that offer support like Bud. By the way, the kit is still a bargain, and don't look for chip prices to drop; the only way is up in the foreseeable future.

Curt Purdy
Jasper, Texas

Program difficulties

Since my retirement about a year ago, I have finally had the time to sit down and work with my TI and the large amount of programs that I had purchased through the

(See Page 10)

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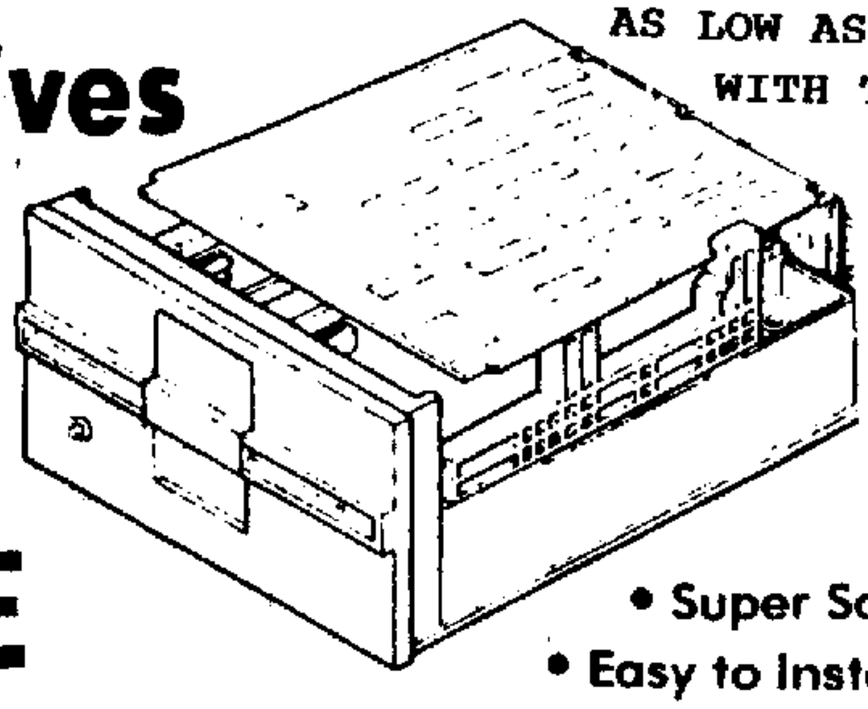

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Feedback

(Continued from Page 8)

years. Just to put things into perspective, I had been a supervisor of computer programming for a large corporation on a *very* large IBM mainframe. I was also a member of the Data Processing Management Association and hold the Certificate for Systems Professionals. What I am trying to point out is the fact that I do know a few things about how things should be done.

It therefore came as a very rude shock to me when I found out that a lot of the programs would not run. Those that did would not do a complete job. Just to be fair, some of the programs worked nicely for a particular phase but I found out that one had to be a systems expert to make them really do a job. Since I figured I had put in my years doing systems work, I did not relish this approach. Documentation, when it existed, was in most cases a laugh. I never would have let a large majority of these so-called programs out of my shop!

Two cases in point: Some time ago I decided to fool around with a program called "PILOT" which, according to the write-ups, was a simplified way to write programs. No such luck! Again, I cannot understand the so-called documentation or anything connected with it. All I got was a garbaged up core dump! In desparation I wrote to DataBioTics but have had no answer in about three months.

Then I became excited with Desktop Publishing, having done this on several other machines before retirement. After waiting about four months for my order from Tenex, I finally got this package from DataBiotics. These people must have gotten their training from former IBM people! The person who wrote the program did not talk to the person who wrote the so-called manual and none of them talked to the person who did the advertising. The advertising shows what great things can be done but no mention in the manual of how to accomplish any of this. Again, writing to DataBioTics yielded negative results.

Maybe I am being unrealistic but I believe when I purchase something it should work. Some of the programs I have purchased from Quality 99 do very good jobs although some of the documentation is a little deep to follow. And to add insult to injury, the addendum that came from DataBioTics was so small that my bifocals would hardly handle it!

I believe some of these outfits could use a lot of help in compiling their so-called documentation. One of the best approaches I have found is to let somebody totally unfamiliar with the program do the write-ups because the programmer knows what should happen and therefore ignores the majority of the problems.

Lloyd M. Schmidt
Littleton, Colorado

(Our review of Desktop Publisher, this issue, may be of some help, as the reviewer lists some undocumented features for the program.—Ed.)

Back to the old drawing board

I have built, and use, a number of the "super cartridges" per the plans from the magazine. Generally no problems, except that I clobber the contents occasionally, as I am always trying to bend the 99/4A out of shape.

Operating on the technique of "never program yourself anything that you can siphon from somewhere," I set up the code to use the routines that are loaded into RAM bank >2000 by the "CALL INIT" in BASIC. It extracts code for "VMBW", "VMBR", "KSCAN", etc. from the E/A GROM and places the routines into RAM bank >2000, a nice, lazy way to go.

Then I got a Horizon RAMdisk, and all falls apart. After you run "CALL INIT" in BASIC, and then exit BASIC, you are returned to the Horizon menu. Someplace along RAM bank >2000 seems to get changed. Then all my nice stuff in the Super Cart, which depended on RAM bank >2000, is dead, dead, dead.

Everything which was built on "stand alone" code still works fine, so I guess it is back to the drawing board and rebuild a bunch of routines. Live and learn...

Merle Vogt
Von Ormy, Texas

Praise for PC-Transfer

I bought PC-Transfer at TI-Fest-West in Las Vegas in February. After hearing J. Peter (Hoddié) talk about it, I dashed to Genial's booth to ask, "Does it *really* do that?" A dumb question, but it did sound unbelievable to me! It has been a big help to me with the Pascal class I'm taking this semester. I just don't have enough time to spend with the IBM-PCs at school, so it's great that I can do my typing at home, transfer the file, then take my disk to school to load into Pascal for compiling and running. To get to the point I want to make — your review (April 1988) said that it works with the Geneve with a Myarc controller. It also works with the Geneve with a CorComp controller — that's what I've got.

I find it difficult to learn a computer language on my own, so I've taken BASIC and Advanced BASIC programming at the Clovis campus of Eastern New Mexico University. Having studied Pascal makes the excellent series on c99 by Charles Kirkwood Jr. clearer; now that the semester is over, I'm concentrating on applying what I've learned to learning c99. Matter of fact, our teacher says the only reason he sees for studying Pascal is as a stepping stone to learning C. Thanks very much to MICROpendium and Charles for such excellent tutorials.

Claire Roberts
Clovis, New Mexico

Wants disks

I have been a 99er since July 1983. I have matured in the 99 to the point that I avoid entering code if I can help it.

I would suggest that whenever you present a program listing, that you have the author offer the file(s) on a disk (or cassette?) at a nominal price.

Sure beats pounding the keyboard and then the usual debug of typos.

Rather than hundreds of users sweating it out, how about a mail order disk?

Jack Topham
Prospect Heights, Illinois

(You are not the first to make the suggestion. Some of our authors do offer their programs and we are always glad to include that information, but don't want to eliminate possible contributers who do not want to do this. We are not able to duplicate and distribute all our programs ourselves, in addition to publishing this magazine. — Ed.)

The Feedback column is for readers. It is a forum to communicate with other readers. The editor will condense excessively lengthy submissions where necessary. Mail Feedback items to MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

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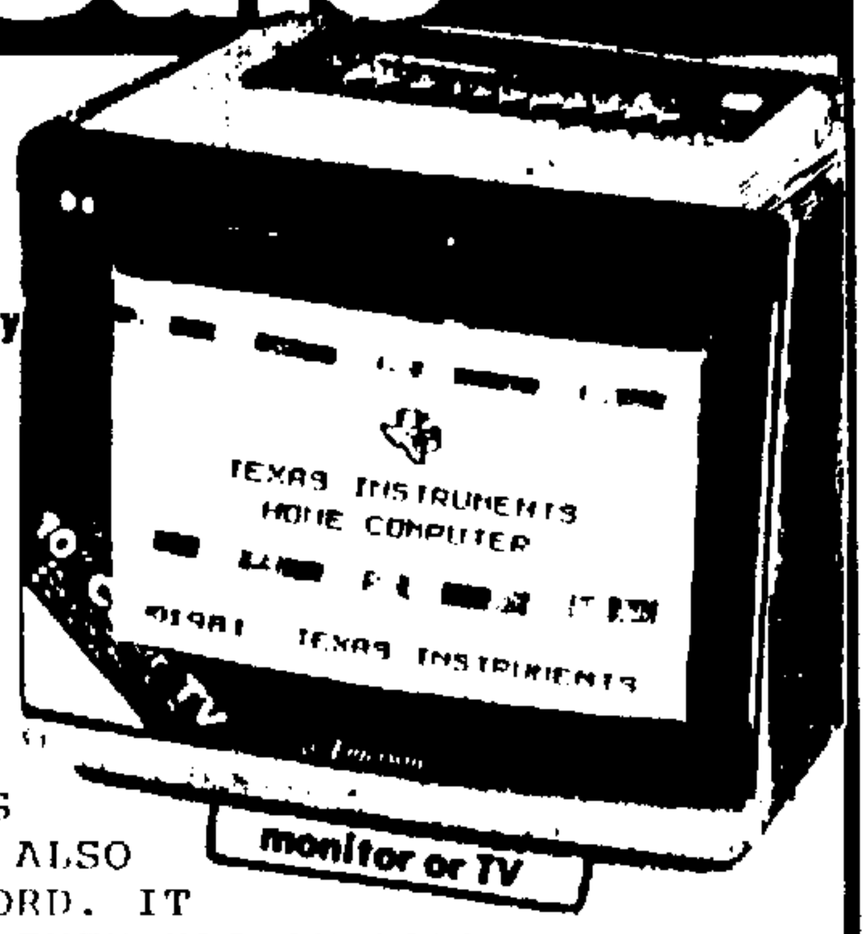

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BASIC

Concentration on the computer

By REGENA

I recently was watching my children play a card game that I had taught them from my childhood. I realized their game could easily be played on the computer. The computer could deal the cards and keep track of the score.

"Concentration" may also be called "Memory" and is played with a standard deck of cards including the two jokers. The deck is shuffled, and all cards are dealt out in rows and columns, face down. The player chooses two cards, one at a time, and turns them face up. If the numbers match, the player keeps the cards and they are removed from the playing surface. If the numbers do not match, the cards are replaced face down and play continues.

In the computer version, there may be one player or two players. In the one-player version, the computer keeps track of how many turns the player takes. Try to match all the pairs in the minimum number of attempts. The number of attempts is printed in the upper right corner of the screen. In the two-player version, the players change turns whenever a match is not made. The computer keeps a running score (number of cards matched) at the side of the screen for players A and B. The computer indicates whose turn it is by the letter A or B at the top right corner of the screen.

Use the arrow keys to move the asterisk, then press the ENTER key when it is over the desired card. After two cards are chosen, press the space bar to continue the game.

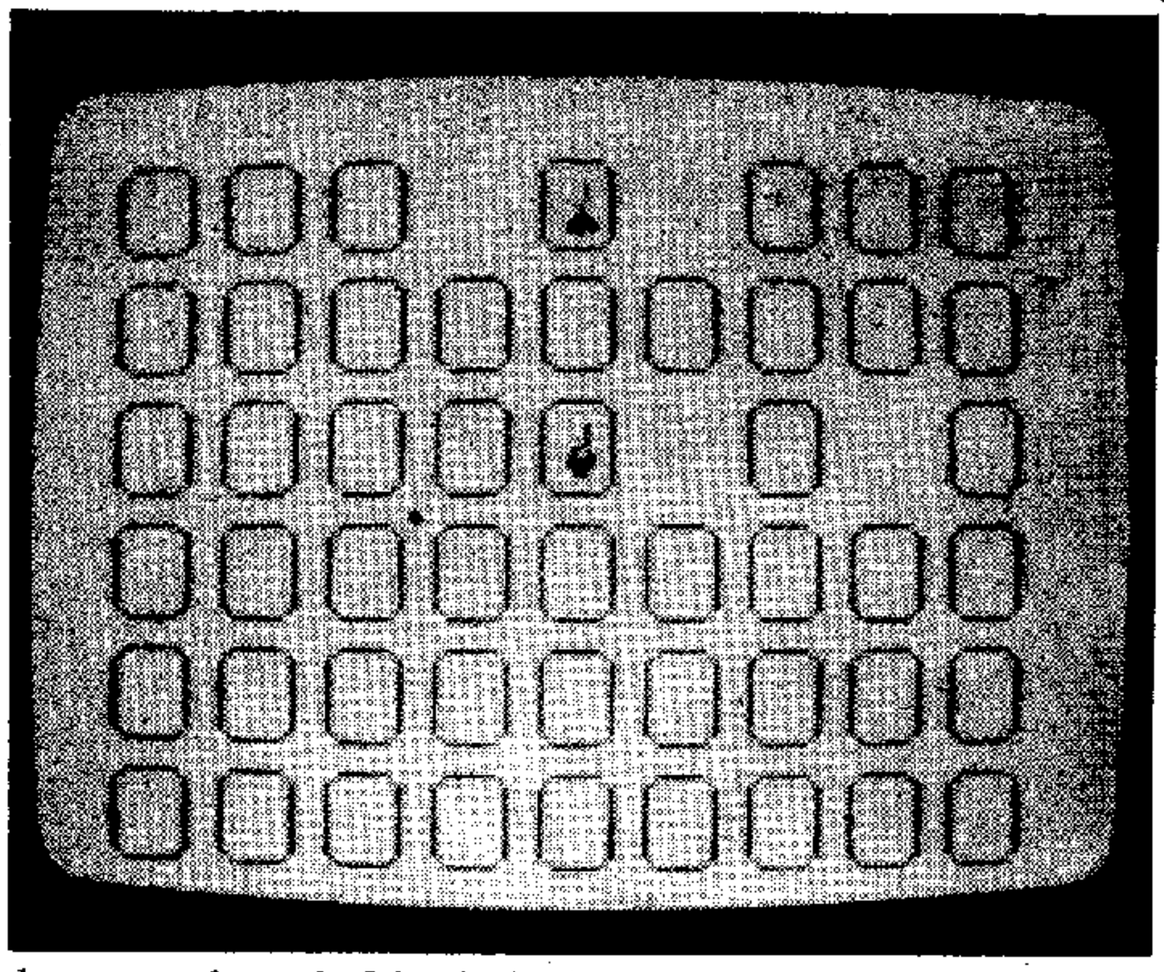
Several of the variables are dimensioned in Line 130. A(13,4) is the array used to hold the 13 cards in four suits of a deck of cards. As cards are randomly chosen, the array element becomes "1" so the card cannot be chosen again. B(6,9,2) is the card in its position on the screen. There are six rows and nine columns. B(row,column,1) holds the card number, and B(row,column,2) holds the suit number. SC(2) are the two scores for the two-player game. SUIT(5) are the character numbers for the four suits plus the jokers. AR(2) and AC(2) are the row and column coordinates for the two cards chosen. PICK(2) are the card numbers for the two cards chosen.

Lines 160-200 redefine characters to be cards 10, Jack, Queen, King and Ace. Lines 250-330 define other graphic characters. Lines 290-310 contain the data to define the red numbers and the heart and diamond. Line 320 has data to define the characters for the card outline. Line 330 has data to define the club and spade. Lines 340-350 define characters used in drawing the joker cards. Lines 360-370 set the color for the red cards.

Line 390 initializes CH, which is a factor used in determining whose turn it is in the two-player game. Lines 400-450 set the character numbers for the four suits and the joker.

Lines 510-590 are a subroutine to draw the card outline as the cards are dealt. Line 600 clears the screen, and Line 610 changes the screen color. You may wish to adapt Line 610 for your preference. Line 620 is RANDOMIZE so the RND function will be random.

In Lines 630-1000, the variable J is the row number and K is the column number used in drawing the cards. These numbers are used to deterine the row and column number in the B(row,column,2) array. Linew 630-730 randomly choose cards from the A array, making sure a card has not previously chosen. These cards are the first four rows of cards. Since this method of "choosing" cards can slow



down near the end of the deck, the last two rows of cards are dealt with a different method in Lines 740-900. After the first four rows of cards are chosen, the computer systematically goes through the remaining A array to choose cards for the last two rows of cards.

After 52 cards have been dealt, the jokers are placed. Lines 910-1000 randomly pick any other card in the top five rows and replace it with a joker and place the original card in the bottom row. The joker number is 15, and the suit is 5.

Lines 1010-1040 initialize variables for the game. CR and CC are the row and column numbers, F is the factor used in scorekeeping and G is the character under the asterisk.

Lines 1050-1150 print the right section of the screen for the one-player or two-player game. T is the number of attempts. CH and F are used in the two-player game to print A and B and to keep track of the two scores.

Lines 1160-1740 are the main loop for picking a card, and the loop is performed twice. Lines 1170-1470 determine which arrow key (or the ENTER key) is pressed and act accordingly. Lines 1480-1490 determine the ROW and COLumn the card is in. Lines 1500-1540 make sure you do not select a blank space. Lines 1550-1680 print the suit and number of the card. Lines 1690-1700 keep track of the coordinates of the card chosen and Lines 1710-1730 move the asterisk over for the next card to be chosen.

Lines 1750-1790 play an "uh-oh" sound if a match is not made and change the CH for the next player. Lines 1800-1900 play an arpeggio if a match is made. The score is incremented, and the number of matches MATCH is incremented.

Lines 1900-2020 wait until the space bar is pressed, then turns the cards back over if a match is not made or removes the cards if a match is made. Line 2030 determines if the game is over or not and branches accordingly. Lines 2040-2070 print the final message when the game is over, and Line 2080 ends the program.

If you prefer to save typing effort, you may have a copy of this program by sending $3 plus a blank cassette or diskette and a stamped, self-addressed mailer to *REGENA, P.O. BOX 1602, Cedar City, UT 84720.* Be sure to specify the title "Concentration" and that you need the TI version.

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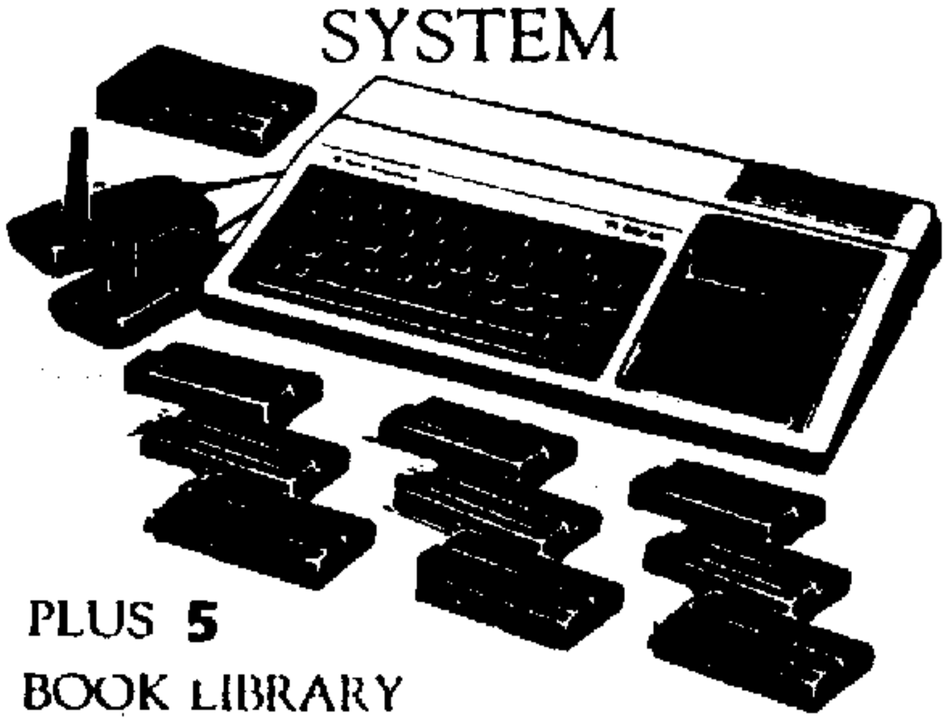

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BASIC—

```
100 REM CONCENTRATION !177
110 REM BY REGENA !071
120 OPTION BASE 1 !137
130 DIM A(13,4),B(6,9,2),SC(
2),SUIT(5),AR(2),AC(2),PICK(
2)!125
140 CALL CLEAR !209
150 PRINT TAB(7);"CONCENTRAT
ION" !100
160 CALL CHAR(58,"00BE919191
91918E")!033
170 CALL CHAR(59,"0004040404
044438")!221
180 CALL CHAR(60,"0038444444
544834")!237
190 CALL CHAR(61,"0044485060
504844")!231
200 CALL CHAR(62,"003844447C
444444")!253
210 PRINT : :"PICK TWO CARDS
 BY USING THE ARROW KEYS THE
N PRESSING THEENTER KEY.  TR
Y TO REMEMBER" !088
220 PRINT "WHERE MATCHING NU
MBERS ARE." !198
230 PRINT :"USE THE SPACE BA
R TO":"CONTINUE THE GAME." !
186
240 PRINT :"FIND ALL PAIRS O
F CARDS.": : : :!045
250 FOR C=96 TO 119 !221
260 READ C$ !254
270 CALL CHAR(C,C$)!081
280 NEXT C !217
290 DATA 0038440408102207C,00
384404180044438,0008182848700
808,007C4078040044438,0018204
078444438 !220
300 DATA 007C0408102020202,003
844443844438,00384444300408
3,00BE919191919E,0004040404
044438 !118
310 DATA 0038444444544834,00
44485060504844,0038444447C444
444,36777F7F7F3E1C08,081C3E7
F3E1C08,"" !154
320 DATA 0000000304081101,000
000FF,0000000804020101,101010
1010101101,1008040302040408 !
058
330 DATA 1C3E3E083E7F3708,08
081C3E7F7F6B08 !031
340 CALL CHAR(120,"8040202838
381B9A7C")!079
350 CALL CHAR(121,"1818282844
4482202")!031
360 CALL COLOR(9,7,1)!184
370 CALL COLOR(10,7,1)!225
380 PRINT "CHOOSE" !042
390 CH=-1 !005
400 SUIT(1)=109 !207
410 SUIT(2)=110 !200
420 PRINT :" 1  ONE PLAYER"
!134
430 SUIT(3)=118 !209
440 SUIT(4)=119 !211
450 SUIT(5)=121 !205
460 PRINT " 2  TWO PLAYERS"
!052
470 CALL KEY(0,K,S)!187
480 IF (K<49)+(K>50)THEN 470
 !234
490 PL=K-48 !157
500 GOTO 600 !169
510 CALL HCHAR(J,K,112)!151
520 CALL HCHAR(J,K+1,113)!08
3
530 CALL HCHAR(J,K+2,114)!08
5
540 CALL VCHAR(J+1,K,115,2)!
017
550 CALL VCHAR(J+1,K+2,115,2
)!205
560 CALL HCHAR(J+3,K,116)!08
8
570 CALL HCHAR(J+3,K+1,113)!
016
580 CALL HCHAR(J+3,K+2,117)!
021
590 RETURN !136
600 CALL CLEAR !209
610 CALL SCREEN(16)!201
620 RANDOMIZE !149
630 FOR J=1 TO 13 STEP 4 !02
8
640 FOR K=3 TO 27 STEP 3 !03
5
650 N=INT(13*RND+1)!203
660 SU=INT(4*RND+1)!244
670 IF A(N,SU)=1 THEN 650 !1
52
680 A(N,SU)=1 !015
690 B((J+3)/4,(K/3),1)=N !20
0
700 B((J+3)/4,(K/3),2)=SU !0
35
710 GOSUB 510 !079
720 NEXT K !225
730 NEXT J !224
740 YY=1 !106
750 FOR J=17 TO 21 STEP 4 !0
83
760 FOR K=3 TO 27 STEP 3 !03
5
770 IF (J=21)+(K>23)=-2 THEN
 910 !019
780 FOR F=YY TO 4 !240
790 FOR G=1 TO 13 !106
800 IF A(G,F)<1 THEN 840 !23
9
810 NEXT G !221
820 NEXT F !220
830 GOTO 910 !224
840 A(G,F)=1 !166
850 B((J+3)/4,K/3,1)=G !084
860 B((J+3)/4,K/3,2)=F !084
870 YY=F !182
880 GOSUB 510 !079
890 NEXT K !225
900 NEXT J !224
910 FOR K=24 TO 27 STEP 3 !0
87
920 X=INT(5*RND+1)!165
930 Y=INT(9*RND+1)!170
940 IF B(X,Y,1)=15 THEN 920
!070
950 B(6,K/3,1)=B(X,Y,1)!151
960 B(6,K/3,2)=B(X,Y,2)!153
970 B(X,Y,1)=15 !174
980 B(X,Y,2)=5 !125
990 GOSUB 510 !079
1000 NEXT K !225
1010 CR=2 !078
1020 CC=4 !065
1030 F=1 !254
1040 G=32 !052
1050 ON PL GOTO 1060,1120 !1
42
1060 T=T+1 !033
1070 T$=STR$(T)!210
1080 FOR PC=1 TO LEN(T$)!066
1090 CALL HCHAR(5,29+PC,ASC(
SEG$(T$,PC,1)))!035
1100 NEXT PC !041
1110 GOTO 1160 !219
1120 CALL HCHAR(9,30,65)!007
1130 CALL HCHAR(17,30,66)!05
6
1140 F=1.5+.5*CH !159
1150 CALL HCHAR(2,30,64+F)!0
06
1160 FOR CARD=1 TO 2 !010
1170 CALL KEY(0,K,S)!187
1180 CALL HCHAR(CR,CC,42)!23
8
1190 CALL HCHAR(CR,CC,G)!005
1200 IF K=13 THEN 1480 !001
```

(See Page 17)

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Three fantastic freeware programs on one disk. Professional quality and the best "wheel" game around at any price. Vana would love it!

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Two disk sides filled with files that print out great quality pictures on most printers. Many famous TV and comic characters on this disk. "Beam me up Scotty"

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This disk is packed full of assorted files of all types. Graphics, speech etc. Contains complete TI-TREK game for Speech Editor or TE-II module.

#5A. TI MUSIC/GRAPHICS DEMO DISK
A great collection of music and matching graphics. Great examples of music & sprite programming.

#6. EXBASIC MUSIC DEMO DISK
A two disk side collection of music & graphics that we consider some of the best.

#7. SPACE SHUTTLE MUSIC/GRAPHICS DEMO DISK
One of the real outstanding examples of programming. This disk has it all. Great graphics, music, and continuity. A real salute to the space program. It is almost like watching a movie!

#8. LOTTO DEMO DISK
This program randomly generates numbers for use in the various state lotto games and even runs a simulated lotto game. Easy to modify for pick 6 etc. games. A great learning and fun disk.

#9. MONA LISA PRINT OUT DEMO
This disk prints out a near-photo quality picture of that lady with the classic smile. We understand it was made by digitizing the original with a super powerful computer and converting the output to run on the TI-99/4A. Impresses everyone who sees it!

#10. GOTHIC PRINT DEMO DISK
This disk lets you type out a phrase on the screen and then print it out in gothic (old english) style. Looks like hand lettered calligraphy. Use for invitations, announcements and business cards.

#11. ANIMATED CHRISTMAS CARD
This disk was actually originally sent to TEX-COMP as a greeting from master programmer Ray Kazmer. It was just too good not to share! One of the best examples of computer animation and graphics you will see on any computer!

#12. TI-99 OLOPY DISK
This great piece of programming actually simulates and plays the famous board game. For legal reasons we cannot name the game but "do not pass Go! but go directly to Jail!"

#13. STRIP POKER (PG RATED)
Play Poker against your TI-99/4A. When you win a hand she loses a piece of her clothes that is. Don't worry about being a lousy poker player. Another file is included where you don't even have to know an ace from a king.

#14. FIGURE STUDY DEMO (PG RATED)
A collection of Playboy type centerfolds that can be printed out at your command. Use with any printer.

#15. STAR/EPSON PRINTER DEMO
This 2 sided disk contains a large collection of demo programs to put your Star/Epson compatible printer through its paces. Learn what control codes can do! Lots of text and graphics examples. Second side has a great tutorial on printer graphics with examples!

#16. SIDEWAYS PRINTOUT DEMO DISK
This program allows you to print out the material from your printer sideways. Great for spreadsheets, banners and large graphics. Second side contains some new enhancements for Multiplan not available on the TI upgrade.

#17. TI FORTH DEMO DISK
This demo disk was released by TI to show the power of forth. Fantastic music and graphics. Ed/Assem & 32K required!

#18. TI DIAGNOSTIC DISK
This program loads into the Mini-Memory module and checks out your entire system. Much better than disk based diagnostics that cannot be used if a problem in the disk system is at fault. Complete documentation on second side.

#19. TI WRITER/MULTIPLAN UPGRADE DISK
This disk released by TI adds real lower case to your TI Writer, speed to your Multiplan and other enhancements. Easy to use, just substitute new files for old! Instructions included.

#20. ACCOUNTS RECEIVABLE DEMO
This self contained prize winning program loads and runs in Exbasic and has all the features found in a professional accounting system. Complete with documentation and a second disk side with report generating programs.

SERIES II

#21. DATA BASE DEMO DISK
A professional data base program that was originally written to store magazine articles from computer magazines and then find them by name, subject, key word, or publication. Fast, easy to use and easy to adopt for other applications. Comes complete with sample data to make learning date base processing easy. Completely menu driven and unprotected.

#22. ASTROLOGY DEMO DISK
This one is as good as anything you will see in an arcade. Great color graphics and displays. Enter your birthdate and learn about your sign, your lucky days and famous events in history on your birthday. Even prints out a report. Can be used as a great moneymaker at a charity event. Help guide your spouse's career.

#23. WILL WRITER DEMO DISK
Enter your answers to a group of computer asked questions and this program then writes you a last will and testament. Now you can leave your TI-99/4A to your favorite nephew. Works with any printer. Appears legal in all states but better check that out!

#24. ENGINEERING CALCULATIONS
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#25. MEDICAL ALERT DEMO DISK
This disk contains many menu accessable files covering most everyday medical emergencies. A good "what to do until the doctor or paramedic comes" guide. Well written and organized. Could very easily save a life!

#26. A RATED GAME DEMO DISK
It was bound to happen. A talented (but demented) programmer in Germany wrote an Invaders type game but with most unusal guns and targets. Definitely not what you would find at your neighborhood arcade. Not only a great party game but some great programming. You must be over 18 to order this one!!

#27 KIDS LEARNING DEMO DISK
An educator in Georgia put this two sided disk collection of educational programs together. Contains great material. Math, geography, reading improvment, and even IQ testing. All high quality programs for kids of all ages.

#28. LOADERS AND CATALOGERS
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SERIES III

#30 HOUSEHOLD BUDGET PRINTOUT
With this disk you print out the data you have stored with the TI HBM Module. HBM is a great module that can be used for many home and small business applications but TI forgot to include a printout function. This program comes with full instructions and we are sure that your HBM Module will now start being used. Fantastic programming job.

#31. MORSE CODE TRAINER DISK
This disk has every thing you need to learn and practice Morse code for the various FCC license exams. It also is great for scout groups and school "ham" clubs for group training and merit badge qualification. Professional quality.

#32. EXBASIC XMAS MUSIC DEMO DISK
Two disk sides full of high quality xmas music that can be played throughout the holiday
season and then used as a learning tool since it contains wonderful arrangements and graphics. Autoloading and menu driven.

#33. CHECKERS & BACKGAMMON
A collection of great checkers and backgammon games for the TI-99/4A. These are professional in quality and will keep you busy for hours.

#34. SOLITAIRE & SCRABBLE
Another collection of classic games for the TI-99/4A. Exbasic & 32K req.

#35. PROGRAMMING AIDS & UTILITIES
A collection of some unusual programs of interest to programmers. One program shows a group of opening title displays, another is a cross reference program as good as any of the commercial ones. plus a great disk management utility.

#36. STRICTLY BUSINESS DEMO DISK
A collection of various programs for evaluating loans, calculating interest, and other financial items such as return on investment and security performance. Two disk sides filled with financial programs.

#37. LAPD COOKBOOK DEMO DISK
This unofficial police cookbook was put together by one of our boys in blue who is also a gourmet chef. (yes it contains jailhouse chili) Over 50 great receipes from soup to nuts on two disk sides and each separate side can be called up on screen or printer in exbasic from a menu. As good as any of the new PC computer cookbooks we have seen.

#38. GREAT 99/4A GAMES VOL I.
A collection of professional games in assembly and exbasic that all load from a menu in exbasic. Includes a great ski game where you dodge the trees in a fast downhill run. We have included only the best in this series.

#39. GREAT 99/4A GAMES VOL II.
Still more of the great ones from all over the world. The quality, graphics and speed of many of these games will make you wonder why they were never released commercially

#40. ARTIFICIAL INTELLIGENCE DEMO
This disk contains the famous game Eliza where you type in a question or a problem you are having and "Eliza" helps you find the solution Also contains one of the better bio-rhythm programs so you can analyze all your emotional problems at one sitting

#41. VIDEO GRAPHS MODULE BACKUP DISK
This disk is a backup of the discontinued Video Graphs Module from TI. For legal reasons, it can only be purchased for backup use by owners of the original module. Do not order UNLESS you have the original module and intend to use this disk only for backup purposes. Exbasic autoload...

#42. FUNNELWEB FARM UTILITY
You heard about this one, now direct from Australia is the latest version of this fantastic utility that puts everything at your command. For one program you can access word processing, editor assembler, tele-communications, and just about everything else. A freeware program complete with documentation on a second disk side.

SERIES IV

#43. BEST OF BRITAIN, VOL I.
Now for the first time, a collection of the best 99/4A games Britain has to offer including the famous "Billy Bail" series of arcade games. Great graphics, action and excitment with exbasic loading and an all new menu selection program by Ray Kazmer

#45. BEST OF BRITAIN, VOL II.
This disk contains the best 3-D adventure game ever written for the TI-99/4A. The Legend of Carfax Abbey lets you actually move through a four story mansion complete with bats and vampires. You actually are placed in each room and go up and down stairs and through secret panels. Legend of Zelda...look out!

#46. SUPER TRIVIA 99
A great trivia game for 1 to 4 players with great questions and capability to add your own and print out the files. This one is a real challange.

#47. INFOCOM RAPID LOADER
If you have infocom games this is for you. Loads all TI infocom games in only 28 seconds and permits new screen colors and improved text display. Comes with all documentation on disk.

TI PROGRAMS FROM AROUND THE WORLD

#48. GHOSTMAN (from England)
This Pacman/Munchman type game starts at a slow pace and slowly speeds up to a break-neck pace. A totally new experience.

#49. DEMON DESTROYER (from France)
This great assembly game starts where Invaders leaves off. Add features like desending aliens and closing walls. Hours of great arcade action.

#50. OH MUMMY (from Germany)
Move through the chambers of a Pyramid in search of hidden treasure. Fantastic graphics and great entertainment.

#51. BERLIN WALL (from Canada)
This game requires a mine field to be crossed before escaping from E. Berlin. Good graphics and a real challenge.

#52. ANIMATION 99 (from Germany)
THIS IS THE ONE!. A demo disk filled with fantastic computer animation routines like you have never seen before. See famous cartoon figures move with more realism than on Sat. morning tv. This disk received a standing ovation when previewed at a local users group. We have even included instructions how to do it yourself on the second disk side. This one is a show stopper!!!

#53. HACKER/CRACKER
A collection of disk copying programs that copy TI disks by tracks. If one of these can't copy a protected disk nothing will. We included a collection of the very best ones including both TI and CorComp compatible. These require 2 disk drives and 32K of memory.

#54. ASTRONOMY DEMO
This program from Australia plots the heavens and teaches you about the solar system. A great learning and reference tool. Exbasic and 32K required. Don't confuse this one with our Astrology Demo. They are not the same..ask Nancy!

#55. SCREEN DUMP
This program allows you to dump disk and even module programs to a Star/Epson compatible printer. Comes with plans to build a load interrupt switch which is needed to dump module programs. This dump program by Danny Michael is considered the best of the bunch. Complete with documentation.

#56. SPREAD SHEET DEMO
OK its not Multiplan but it works great and handles many spread sheet applications A great way to learn to use spread sheet software. Comes with full instructions and documentation.

SERIES V

#57. TELCO: The ultimate data communications program with inst.
#58. PR BASE: One of the highest rated data base programs with inst.
#59. GRAPH MAKER: Produces great graphs and charts from your data.
#60. FREDDY: Nitendo quality assem. game from F.R.G. Great Graphics, fast action.
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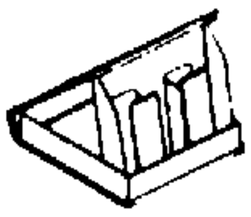

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BASIC—

(Continued from Page 14)

```
1210 IF K<>68 THEN 1250 !229
1220 DC=3 !065
1230 DR=0 !077
1240 GOTO 1360 !164
1250 IF K<>88 THEN 1290 !016
1260 DC=0 !062
1270 DR=4 !081
1280 GOTO 1360 !164
1290 IF K<>83 THEN 1330 !051
1300 DC=-3 !003
1310 DR=0 !077
1320 GOTO 1360 !164
1330 IF K<>69 THEN 1170 !150
1340 DC=0 !062
1350 DR=-4 !019
1360 CR=CR+DR !063
1370 IF CR<23 THEN 1390 !243
1380 CR=2 !078
1390 IF CR>1 THEN 1410 !211
1400 CR=22 !129
1410 CC=CC+DC !018
1420 IF CC<29 THEN 1440 !028
1430 CC=4 !065
1440 IF CC>3 THEN 1460 !248
1450 CC=28 !120
1460 CALL GCHAR(CR,CC,G)!004
1470 GOTO 1170 !229
1480 ROW=(CR+2)/4 !053
1490 COL=(CC-1)/3 !011
1500 CALL GCHAR(CR-1,CC,G)!1
92
1510 IF G<>32 THEN 1550 !006
1520 CALL SOUND(100,330,2)!1
26
1530 CALL SOUND(100,262,2)!1
30
1540 GOTO 1170 !229
1550 NU=48 !151
1560 G=32 !052
1570 RED=B(ROW,COL,2)!127
1580 M=B(ROW,COL,1)!240
1590 IF M>1 THEN 1610 !084
1600 M=14 !058
1610 CALL HCHAR(CR+1,CC,SUIT
(RED))!006
1620 PICK(CARD)=M !185
1630 IF RED<>5 THEN 1660 !21
5
1640 CALL HCHAR(CR,CC,120)!0
28
1650 GOTO 1690 !239
1660 IF RED<3 THEN 1680 !041
1670 NU=94 !152
1680 CALL HCHAR(CR,CC,NU+M)!
111
1690 AR(CARD)=CR !109
1700 AC(CARD)=CC !079
1710 CC=CC+3 !135
1720 IF CC<29 THEN 1740 !073
1730 CC=4 !065
1740 NEXT CARD !176
1750 IF PICK(1)=PICK(2)THEN
1800 !231
1760 CALL SOUND(200,165,2)!1
33
1770 CALL SOUND(200,131,2)!1
26
1780 CH=-SGN(CH)!212
1790 GOTO 1910 !204
1800 CALL SOUND(150,262,2)!1
35
1810 CALL SOUND(150,330,2)!1
31
1820 CALL SOUND(150,392,2)!1
39
1830 CALL SOUND(300,524,2)!1
33
1840 SC(F)=SC(F)+2 !012
1850 MATCH=MATCH+1 !083
1860 IF PL=1 THEN 1910 !206
1870 SC$=STR$(SC(F))!009
1880 FOR PC=1 TO LEN(SC$)!13
2
1890 CALL HCHAR(2+F*8,29+PC,
ASC(SEG$(SC$,PC,1)))!045
1900 NEXT PC !041
1910 CALL KEY(0,K,S)!187
1920 IF K<>32 THEN 1910 !115
1930 CALL VCHAR(AR(2),AC(2),
32,2)!117
1940 CALL VCHAR(AR(1),AC(1),
32,2)!115
1950 IF PICK(1)<>PICK(2)THEN
 1050 !183
1960 FOR CARD=1 TO 2 !010
1970 CR=AR(CARD)!109
1980 CC=AC(CARD)!079
1990 CALL VCHAR(CR-1,CC-1,32
,4)!035
2000 CALL VCHAR(CR-1,CC,32,4
)!103
2010 CALL VCHAR(CR-1,CC+1,32
,4)!034
2020 NEXT CARD !176
2030 IF MATCH<27 THEN 1050 !
122
2040 M$="GAME OVER !" !184
2050 FOR PC=1 TO LEN(M$)!059
2060 CALL HCHAR(5,5+PC,ASC(S
EG$(M$,PC,1)))!229
2070 NEXT PC !041
2080 END !139
```

Trials of a c99 beginner

The calendar program

By CHARLES E. KIRKWOOD JR.

Last month the calendar program was written in FORTRAN for a mainframe computer and also Extended BASIC. This month will be c99's turn. The calendar program will print out any year since the modern calendar has been used. Remember that only the century years divisible by 400 are leap years; i.e., 1200, 1600, 2000, etc. This program takes this into consideration and prints out all the years correctly. The program was tricky since some of the numbers in the calculations get rather large and the order of the arithmetic is important.

Just how will we take care of the large numbers? There are several choices that might work.

Clint Pulley (author of c99) is to be commended for taking the time to develop the c99 compiler and to continue the updates. Not only can c99 be used for integer and character programs, it is also a base for developing additional routines.

A first method could use assembly language for the arithmetic. Assembly language segments can be inserted within a c99 program. An assembly language segment begins with #asm and ends with #endasm, as:

```
#asm
assembly language steps
#endasm
```

There is no semicolon following #asm or #endasm. The assembly code has access to all global symbols and functions by name.

(See Page 18)

c99—

(Continued from Page 17)

Second, a two-element array could be set up for each integer. This would require careful calculation to carry from the least significant to the most significant portion of the number.

And a third method could use Tom Bentley's Foating Point Library. He has written a library that can be used with Clint Pulley's c99. The floating point statements are functions to perform the various operations rather than the algebraic statements of c99 and other languages. This, of course, may appear to be rather awkward, but the functions will do the job just the same.

A statement to add two integers in c99 appears like this:

k=i+j;

whereas the function to add two real or floating point values is:

fexp(a,''+'',b,c);

where a, b, and c are floating point arrays with 8 elements each; c is the result of the operation. The TI99/4A stores a floating point number in 8 bytes, so it is necessary to declare an 8-element array for each number. This will take a little getting used to, but it is not impossible.

The data type **float** is used to define a floating point number. The functions are stored in the FLOAT;C library, which must now be added to your compiler disk. The documentation says to use the file FLOATI with the FLOAT;C, but I found this to be unnecessary since the information in FLOATI was included in my FLOAT;C file.

The general form for arithmetic operations is:

fexp(f1,''op'',f2,res);

where f1 is the first variable, ''op'' is the operation (+,-,*,/) within quotation marks, f2 is the second variable, and res is the result.

Examples and some of the floating point functions are:

```
float f[8]; /*or float f[FLOATLEN];*/
float f1[8],f2[8];
char *c, s[12];     /*c is the pointer to the float*/
                    /*array, may be omitted.  The 12*/
                    /*is the "size" of the array,*/
                    /*refer to fgets(), fpput(), and*/
                    /*stof() below.*/
int i;

c=fgets(s,f); /*input a floating point string*/
              /*and convert to a floating point*/
              /*number, size is the input size*/

fpput(f,s);   /*output to screen, size is the*/
              /*output size*/

c=itof(i,f);  /*converts an integer to a floating*/
              /*point number*/

i=ftoi(f);    /*converts a floating point number*/
              /*to an integer*/

c=stof(s,f);  /*converts a numeric string to a*/
              /*floating point number, size is*/
              /the size of the string array.*/

c=flat(f1,f2);/*returns greatest integer value*/
              /*of f1 to f2*/

c=fcpy(f1,f2);/*copy one float array to another*/
              /*float array*/
```

Other functions are listed in the documentation.

As a simple example using these functions, a short program is written to input two real numbers, multiply them, and print the answer on the screen.

```
#include DSK1.FLOAT;C
main()
{
  float x[8],y[8],z[8];
  char s[12];
  fpget(s,x);
  putchar(10);
  fpget(s,y);
  putchar(10);
  fexp(x,"*",y,z);
  fpput(z,s);
}
```

As stated last month the two FORTRAN functions from the ACM Journal about 20 years ago are used to calculate a calendar for any year. They are repeated here since they contain the algorithm necessary to determine the day of the week in which each month starts and the number of days in each month. The first function IZLR() calculates the starting day and the second one, JD(), the number of days in the month.

```
IZLR(I,J,K)=MOD((13*(J+10-(J+10)/13*(12))-1)/5+K+
77+5*(I+(J-14)/12-(I+(J-14)/12)/100*(100))/4+(I+
(J-14)/12)/400-(I+(J-14)/12)/100*2,7)

JD(I,J,K)=K-32075+1461*(I+4800+(J-14)/12)/4+367*
(J-2-(J-14)/12*(12))/12-3*((I+4900+(J-14)/12)/100)
/4
```

The integer arithmetic is for a mainframe computer with at least a 32-bit (4-byte) word. The c99 program will use these functions. The parameter K is equal to one, so it will be omitted in the c99 program and the one is added to -32075 in JD() and to 77 in IZLR(). There is no problem with IZLR() since all the integers in the function can be stored in two bytes. There is, however, a problem with JD(). Some of the arithmetic values have as many as seven digits.

I chose the third method — floating point or real arithmetic. The real numbers must be truncated properly and the order of operations is important.

Now for the calendar program:

```
#include DSK1.STDIO
#include DSK1.FLOAT
int az,bz;
extern printf(),atoi(),fprintf();
main()
{
  int m[13],day[7];
  int q,qq,sz;
  char str[7],year[5];
```

(See Page 20)

1988 The Year Of The Upgrade Not The Up Trade

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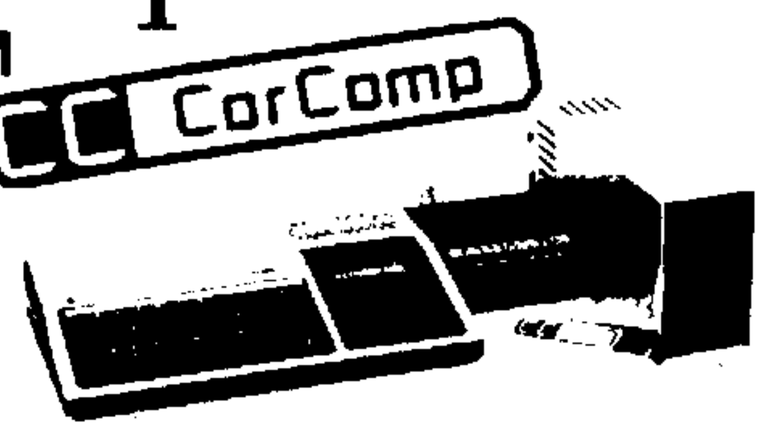

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c99—

(Continued from Page 18)

```
int y,i,j,k,yr,pr,n,s;
int a,b,f,qm,qf,qe;
float d[8],e[8],de[8];
m[1]="JAN";
m[2]="FEB";
m[3]="MAR";
m[4]="APR";
m[5]="MAY";
m[6]="JUN";
m[7]="JUL";
m[8]="AUG";
m[9]="SEP";
m[10]="OCT";
m[11]="NOV";
m[12]="DEC";
day[0]="SUN";
day[1]="MON";
day[2]="TUE";
day[3]="WED";
day[4]="THU";
day[5]="FRI";
day[6]="SAT";
q="     ";
qq="        ";
sz=7;
pr=fopen("PIO","w");
puts("CALENDAR PROGRAM by Charles Kirkwood");
putchar(10);
putchar(10);
puts("year? ");
yr=gets(year);
y=atoi(yr);
for(i=1;i<=12;++i)
{
  fprintf(pr,"                              ");
  fprintf(pr,"%3s  ",m[i]);
  fprintf(pr,"%d\n\n",y);
  fprintf(pr,"         ");
  for(j=0;j<=6;++j)
    fprintf(pr,"%3s     ",day[j]);
  putc(10,pr);
  a=y+i/12;
  b=(i+1)%13+i/12;
  jd(a,b,d);
  jd(y,i,e);
  fexp(d,"-",e,de);
  qm=ftoi(de);
  qf=izlr(y,i)+1;
  qe=8-qf;
  fprintf(pr,"%10s","          ");
  for(j=1;j<=qf-1;++j)
    fprintf(pr,"%8s",qq);
  for(k=1;k<=qe;++k)
    fprintf(pr,"%2d      ",k);
  putc(10,pr);
  n=0;
  fprintf(pr,"%10s","          ");
  for(j=k;j<=qm;++j)
  {
    fprintf(pr,"%2d      ",j);
    n=n+1;
    s=n%7;
    if(s==0)
    {
      putc(10,pr);
      fprint(pr,"%10s","          ");
    }
  }
  if(i==6)
    fprintf(pr,"\n\n\n\n\n\n\n\n\n\n\n");
  putc(10,pr);
  putc(10,pr);
}
  fclose(pr);
}
izlr(i,j)
int i,j;
{
  int m,n,e;
  e=i+(j-14)/12;
  m=(13*(j+10-((j+10)/13)*12)-1)/5+78;
  m=m+(5*(e-(e/100)*100))/4;
  m=m+e/400-(e/100)*2;
  n=m%7;
  return(n);
}
jd(i,j,k)
int i,j;
float k[];
{
  int a,b,c,d,n,z,nr,n4;
  float af[8],cf[8],nrf[8],mf[8],nf[8],n4f[8],df[8],ef[8],gf[8],s[8];
  a=32074;
  b=(j-14)/12;
  d=i+4800+b;
  nr=1461;
  c=(367*(j-2-12*b))/12-(3*((i+4900+b)/100))/4;
  itof(c,cf);
  itof(a,af);
  itof(nr,nrf);
  itof(d,df);
  n4=4;
  itof(n4,n4f);
  fexp(nrf,"*",df,mf);
  fexp(mf,"/",n4f,nf);
  fint(nf,ef);
  fexp(ef,"-",af,gf);
  fexp(gf,"+",cf,k);
  return;
}
```

(See Page 21)

c99—

(Continued from Page 20)

Don't forget to load C99PFI, your object file, CSUP, CFIO, PRINTF, FPRINTF, C99PFF, and SAVE to make your program file.

Nothing has been said about debugging programs in any of the c99 articles. Sometimes this can be the most exasperating and time comsuming part of writing a program. One of the methods I use after getting a program to run is to insert and label print statements in the program and check the results of each operation. This is not foolproof, since there can be special situations.

I don't know how many of you have heard Commodore Grace Hopper's story about the origin of the term "debug." She worked with the first computers which were composed of vacuum tubes and relays. The light from the vacuum tubes attracted the moths and other insects, which would get caught in the relay contacts and necessitated cleaning these contacts periodically. Hence, the first "debugging" was really debugging!

The compiler error messages are pretty much self explanatory. The error might be in the previous statement to that one shown on the screen.

Now suppose we get past the compile stage and no errors are detected. That still does not mean there are no errors. The compiled file (assembly language) is now assembled and at the end we see something like this:

UNDEFINED SYMBOL -- 1100

With the Editor/Assembler, load your assembled file into the computer and look for line 1100. You do not need to know assembly language to discover the error. Chances are that you will discover that a variable name had not been declared or some name after extern has been left off.

In the April 1988 issue of *Computer Language* magazine there are several articles on debugging which you might find interesting reading. Several of these articles are on the C (not c99) language. The hints, however, might prove to be useful.

As a closing statement to anyone who might also want to learn assembly language: The c99 language can also be used as a tutor. By typing **y** following the **Include c-text** in the compiler menu, the c99 statements are included as comments in the assembly language file. This makes it possible to see what assembly statements are necessary to produce the c99 statements.

MAY 1988

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

JUN 1988

SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Croaker needs help to get home

Here is another Extended BASIC game by David Mennenoh, author of Nut-z (February 1988, MICROpendium) and Rock Hopper (January 1987, MICROpendium).—Ed.

By DAVID MENNENOH

In this game, you play the part of Croaker, a small but brave frog desperately trying to get to his home, which is across a poison river. This feat may be accomplished by manuevering the little frog through four lanes of speeding traffic, then onto a sidewalk plagued by a deadly snake. Then comes the hard part: You must safely hop across the river, lily pad by lily pad before finally jumping into one of Craoker's unoccupied homes on the other side of the river.

Movement is controlled via the keyboard with the following keys:

Up	P
Down	L
Right	D
Left	S

There are three levels of difficulty, which is determined at the start of the game. The difference between the levels lies in the speed at which the on-screen hazards travel.

The game ends when five frogs have been killed.

Scoring is determined by the number of frogs you have left after finishing a screen. The following forumula determines the number of points awarded for getting a frog home: 100+(50 x the number of frogs remaining). When all of the homes have been filled with frogs, bonus points are scored. Bonus points are also calculated on the basis of the number of frogs remaining.

Each time you clear a screen, the speed of the hazards increases.

Croaker uses up virtually all of the TI's resident memory and thus makes major modifications difficult.

The high score thus far is 2,000.

Good luck!

PROGRAM EXPLANATION

Line No.	Explanation
10-100	Title screen
110	Define arrow characters
120-160	Display movement keys
170-230	Get level to start at
240-260	Clean screen, set variables
270-400	Define game characters
410	Screen color
420-440	Game song
450	Set colors
460	Set frog homes to empty
470-490	Build board
500	Set colors
510-520	Display men remaining
530-630	Put sprites on screen
640	Set frog start
650-760	Get keypress to move frog in traffic
770-790	Move frog in traffic
800-830	Die routine
840-850	Frog made it to sidewalk
860-930	Get keypress for sidewalk
940	Move frog on sidewalk
950-970	Frog in water
980	Check to see that frog

(See Page 22)

CROAKER—

(Continued from Page 21)

Line No.	Explanation
	missed the water
990-1040	Get keypress for water
1050	Move frog in water
1060-1100	Set frog's motion in water
1110	Check to see that frog missed water
1120-1140	Frog made it home
1150-1230	See if frog's home was empty or missed
1240-1280	Fill appropriate home
1290	Sound
1300	See if all homes are filled
1310-1320	Award points
1330-1380	All homes filled, award points
1390-1480	Game over, display scores, play again option

CROAKER

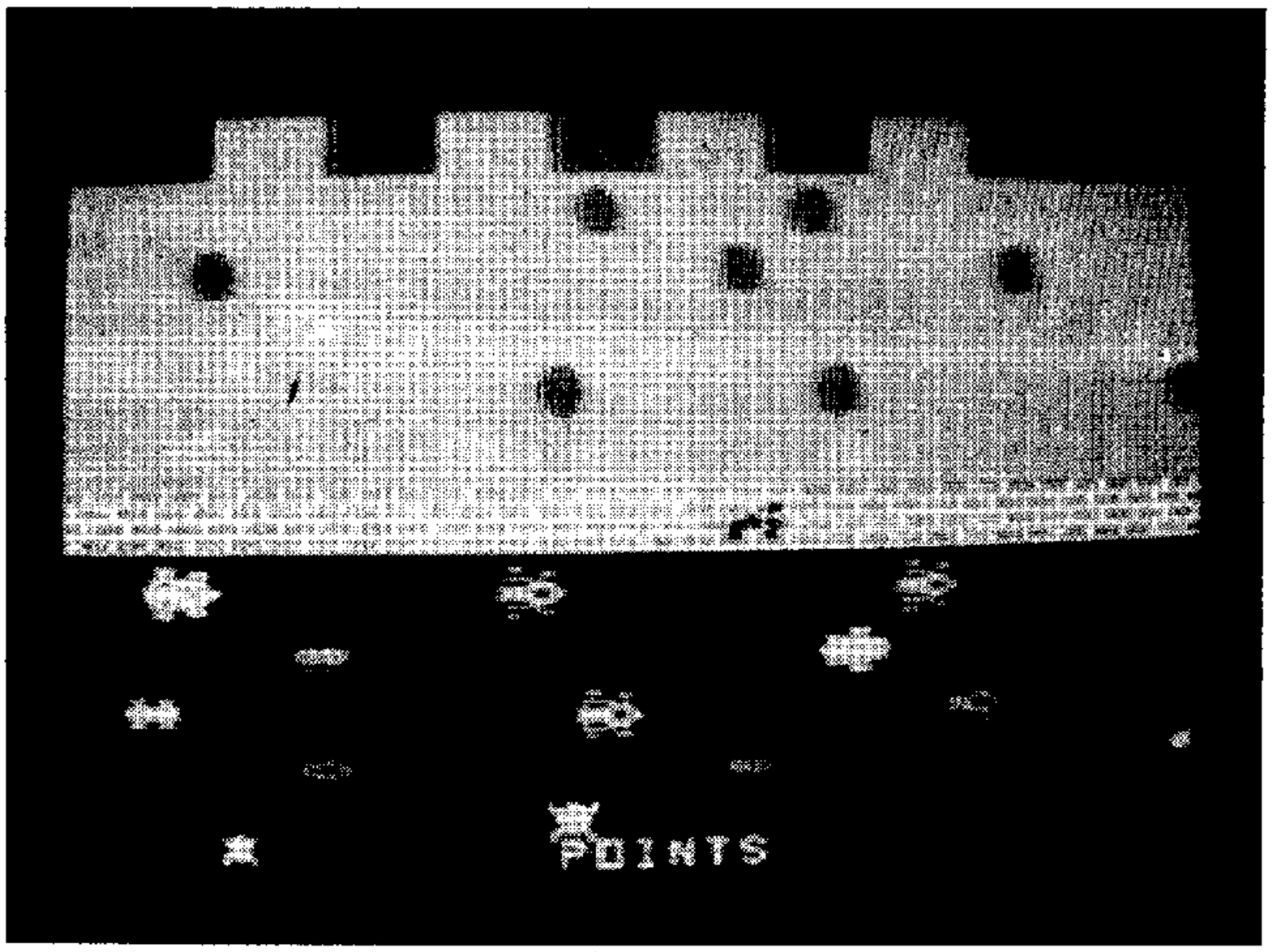
```
10 CALL CLEAR :: CALL SCREEN
(2):: FOR T=1 TO 14 :: CALL
COLOR(T,16,2):: NEXT T !0010
20 CALL CHAR(34,"E0180FFFF0
418E0",35,"249249FFFF499224"
)!0078
30 CALL COLOR(1,5,2,13,7,16)
!0039
40 CALL CHAR(128,"000003C3C3C
3C00000") !0060
50 CALL HCHAR(5,3,128,27)::
CALL HCHAR(19,3,128,27):: CA
LL VCHAR(5,3,128,14):: CALL
VCHAR(5,30,128,15)!166
60 DISPLAY AT(9,6)SIZE(19):"
C R O A K E R" !0035
70 DISPLAY AT(15,3)SIZE(24):
"PRESS SPACE BAR TO BEGIN" !
0080
80 CALL KEY(5,K,S):: IF K=32
 THEN 110 !229
90 RANDOMIZE :: B=INT(16*RND
)+1 :: F=INT(16*RND)+1 :: CA
LL COLOR(13,F,B)!0021
100 GOTO 80 !159
110 CALL CLEAR :: CALL CHAR(
33,"183C7EFF18181818",34,"18
18181818FF7E3C18",35,"0B0C0FF
FF0F0C0B",36,"1030707FFFF7030
10F")!138
120 DISPLAY AT(10,14):"P" ::
 DISPLAY AT(12,12):"S" :: DI
SPLAY AT(12,16):"D" :: DISPL
AY AT(14,14):"L" !229
130 CALL HCHAR(8,16,33):: CA
LL HCHAR(12,12,36):: CALL HC
HAR(12,20,35):: CALL HCHAR(1
6,16,34)!0031
140 DISPLAY AT(1,3):"KEYS TH
AT MAKE FROG MOVE":"AND WHAT
 DIRECTION THEY MAKE":"
   HIM MOVE IN." !1110
150 DISPLAY AT(23,1):"PRESS
THE SPACE BAR TO START" !243
160 CALL KEY(5,K,S):: IF K<>
32 THEN 160 !216
170 CALL CLEAR :: DISPLAY AT
(3,1):"PLEASE SELECT WHAT LE
VEL YOUWISH TO BEGIN AT" !12
6
180 DISPLAY AT(10,5):"1. NOV
ICE" :: DISPLAY AT(11,5):"2.
 BEGINNER" :: DISPLAY AT(12,
5):"3. EXPERT" !143
190 CALL KEY(5,K,S):: IF S=0
 THEN 190 !0007
200 IF K=49 THEN M1=8 :: M2=
7 :: M3=9 :: M4=10 :: GOTO 2
40 !223
210 IF K=50 THEN M1=10 :: M2
=9 :: M3=11 :: M4=12 :: GOTO
 240 !047
220 IF K=51 THEN M1=13 :: M2
=12 :: M3=14 :: M4=15 :: GOT
O 240 !100
230 GOTO 190 !0013
240 CALL CLEAR :: CALL DELSP
RITE(ALL):: CALL CHARSET !19
0
250 CALL MAGNIFY(3)!224
260 SC=0 :: ME=5 !0029
270 CALL CHAR(36,"0000010170
277FFCFC7F27700101000000000C0
C0B0ECECFCFCECEC80C0C0000000")
!223
280 CALL CHAR(64,"4023170D09
0D0F0E07070B1321000000000002C4E8
B0B0B0E07060D0C8840000000000")
!0063
280 CALL CHAR(64,"4023170D09
0D0F0E07070B1321000000000002C4E8
B0B0B0E07060D0C8840000000000")
!0063
290 CALL CHAR(40,"0000000000
27F7FFFFF7270000000000000000
0000FFFFFFFFFFF0000000000000")
!136
300 CALL CHAR(44,"FF83878686
838180B68F8F8F8783818FFF9CFE
66F6FCF8F0F6FFFFFFFEFC6807")
!0007
310 CALL CHAR(60,"000F1F3F3F
7F7F7F7F7F3F3F1F0F000000C0B0
F0F0F8F8F8F8F0F2ECC0000000")
!128
320 CALL CHAR(92,"0000000071
207FF7F77F207100000000000000
00C0B0E0E0E0B0C000000000")
!245
330 CALL CHAR(58,"FF0101010101
0101",59,"0101010101010101
")!101
340 CALL CHAR(96,"0000204F5F
3F3FFFFF3F3F5F4F2000000006080
800E0E0F0F0E0E0C0B0B06000")
!227
350 CALL CHAR(100,"0011120F0
707070305030800000000000044A
4F8F0F0F0E0D000B0B000000000")
!0008
360 CALL CHAR(88,"001C1C083F
207F7F7F7F203F0B1C1C000000038
3890F8FC8F8FFCF89038380000")
!250
370 CALL CHAR(104,"000102F1
7170703050402010100000000040A
0F8F4F4F0E0D0102040400000000")
!255
380 CALL CHAR(108,"0000000468
F99D9D9F870000000000000000183
C303030B098F870000000000000")
!042
390 CALL CHAR(120,"FBFBFB0D0
FDFDF00",128,"0B5D3E1C1C3E49
41")!0000
400 CALL CHAR(33,"FFFFFFFFFF
FFFFFF",112,"FFFFFFFFFFFFFFF
F",136,"FFFFFFFFFFFFFFFF")!0
12
410 CALL SCREEN(13)!198
420 CALL SOUND(200,392,1)::
CALL SOUND(200,392,1):: CALL
 SOUND(200,440,1):: CALL SOU
ND(200,440,1)!146
430 CALL SOUND(200,494,1)::
CALL SOUND(200,587,1):: CALL
 SOUND(200,494,1):: CALL SOU
ND(200,392,1):: CALL SOUND(2
00,392,1)!178
440 CALL SOUND(200,440,1)::
CALL SOUND(200,523,1):: CALL
 SOUND(200,494,1):: CALL SOU
ND(200,440,1)!145
```

(See Page 23)

CROAKER—

(Continued from Page 22)

```
450 CALL COLOR(1,13,13,12,7,
16,13,16,13,11,2,13,14,5,13)
!017
460 SQ1=0 :: SQ2=0 :: SQ3=0
:: SQ4=0 !188
470 CALL HCHAR(22,1,33,96)::
 CALL HCHAR(13,1,120,64):: C
ALL HCHAR(15,1,112,256):: CA
LL HCHAR(3,1,136,320)!213
480 CALL HCHAR(1,5,136,3)::
CALL HCHAR(2,5,136,3):: CALL
 HCHAR(1,11,136,3):: CALL HC
HAR(2,11,136,3)!160
490 CALL HCHAR(1,17,136,3)::
 CALL HCHAR(2,17,136,3):: CA
LL HCHAR(1,23,136,3):: CALL
HCHAR(2,23,136,3)!014
500 CALL COLOR(5,16,13,6,16,
13,7,16,13)!008
510 DISPLAY AT(24,12):"POINT
S  ";SC !250
520 DISPLAY AT(24,3)SIZE(5):
RPT$(CHR$(128),ME)!037
530 CALL SPRITE(#1,36,7,160,
100,0,-M4,#2,92,5,160,190,0,
-M4,#3,40,16,160,40,0,-M4)!0
33
540 CALL SPRITE(#4,88,5,146,
110,0,M2,#5,92,16,146,190,0,
M2,#6,88,11,146,30,0,M2)!041
550 CALL SPRITE(#7,40,13,131
,100,0,-M3,#8,36,16,131,40,0
,-M3,#9,92,10,131,180,0,-M3)
!132
560 CALL SPRITE(#10,88,14,11
5,120,0,M1,#11,88,6,115,210,
0,M1,#12,88,16,115,50,0,M1)!
169
570 CALL SPRITE(#15,96,4,80,
100,0,-M4,#16,96,4,80,180,0,
-M4,#17,96,4,80,40,0,-M4)!01
5
580 CALL SPRITE(#18,60,13,65
,100,0,M2,#19,60,13,65,40,0,
M2,#20,60,13,65,190,0,M2)!06
9
590 CALL SPRITE(#21,96,4,49,
100,0,-M2,#22,96,4,49,20,0,-
M2)!241
600 CALL SPRITE(#23,60,13,34
,100,0,M3,#24,60,13,34,180,0
,M3,#25,60,13,34,40,0,M3)!05
6
610 CALL SPRITE(#26,60,13,19
,100,0,-M1,#27,60,13,19,50,0
```




```
,-M1)!070
620 CALL SPRITE(#13,100,16,1
75,100,0,0)!079
630 CALL SPRITE(#14,108,2,10
0,100,0,M2)!156
640 R=175 :: C=100 !087
650 CALL PATTERN(#13,100)!04
9
660 CALL COINC(ALL,A):: IF A
=-1 THEN 800 !128
670 CALL KEY(5,K,S):: IF S=0
 THEN 660 !223
680 IF K<>83 AND K<>115 THEN
 700 ELSE C=C-10 :: IF C<30
THEN C=C+10 !104
690 GOTO 770 !084
700 IF K<>68 AND K<>100 THEN
 720 ELSE C=C+10 :: IF C>230
 THEN C=C-10 !173
710 GOTO 770 !084
720 IF K<>80 AND K<>112 THEN
 740 ELSE R=R-14 !151
730 GOTO 770 !084
740 IF K<>76 AND K<>108 THEN
 760 ELSE R=R+14 :: IF R>175
 THEN R=R-14 !055
750 GOTO 770 !084
760 GOTO 660 !229
770 CALL PATTERN(#13,104)::
CALL LOCATE(#13,R,C):: CALL
SOUND(50,400+R/C,4)!090
780 IF R<110 THEN 840 !182
790 GOTO 650 !219
800 CALL PATTERN(#13,64):: C
ALL COLOR(#13,7)!191
810 FOR T=400 TO 110 STEP -3
0 :: CALL SOUND(100,T,1):: N
EXT T :: ME=ME-1 :: IF ME<1
THEN 1390 !103
820 DISPLAY AT(24,3)SIZE(5):
RPT$(CHR$(128),ME)!037
830 GOTO 530 !099
840 R=97 :: CALL LOCATE(#13,
97,C):: FOR T=110 TO 400 STE
P 50 :: CALL SOUND(50,T,1)::
 NEXT T !009
850 CALL PATTERN(#13,100)!04
9
860 CALL COINC(ALL,A):: IF A
=-1 THEN 800 !128
870 CALL KEY(5,K,S):: IF S=0
 THEN 860 !168
880 IF K<>83 AND K<>115 THEN
 900 ELSE C=C-10 :: IF C<30
THEN C=C+10 !049
890 GOTO 940 !254
900 IF K<>68 AND K<>100 THEN
 920 ELSE C=C+10 :: IF C>230
 THEN C=C-10 !118
910 GOTO 940 !254
920 IF K<>80 AND K<>112 THEN
 930 ELSE R=R-16 :: GOTO 950
 !226
930 IF K<>76 AND K<>108 THEN
 850 ELSE R=R+14 :: R=119 ::
```

(See Page 24)

CROAKER—

(Continued from Page 23)

```
 GOTO 770 !221
940 CALL PATTERN(#13,104)::
CALL LOCATE(#13,R,C):: CALL
SOUND(50,400+R/C,4):: GOTO 8
50 !128
950 CALL PATTERN(#13,104)::
CALL SOUND(50,400+R/C,4)!034
960 CALL LOCATE(#13,R,C)!182
970 CALL MOTION(#13,0,-M4)::
 CALL PATTERN(#13,100)!046
980 CALL COINC(ALL,A):: IF A
=-1 THEN 990 ELSE CALL COINC
(ALL,A):: IF A=-1 THEN 990 E
LSE 800 !106
990 CALL KEY(5,K,S):: CALL P
OSITION(#13,R,C):: IF C<5 OR
 C>260 THEN 800 ELSE IF S=0
THEN 990 !226
1000 IF K<>83 AND K<>115 THE
N 1010 ELSE 800 !069
1010 IF K<>68 AND K<>100 THE
N 1020 ELSE 800 !076
1020 IF K<>80 AND K<>112 THE
N 1040 ELSE R=R-16 :: IF R<1
0 THEN 1120 !230
1030 GOTO 1050 !109
1040 IF K<>76 AND K<>108 THE
N 990 ELSE R=R+16 :: IF R=97
 THEN CALL MOTION(#13,0,0)::
 GOTO 840 !234
1050 CALL PATTERN(#13,104)::
 CALL LOCATE(#13,R,C):: CALL
 SOUND(25,400+R/C,4)!092 1060
 IF R=81 THEN CALL MOTION(#1
3,0,-M4)!242
1070 IF R=65 THEN CALL MOTIO
N(#13,0,M2)!048
1080 IF R=49 THEN CALL MOTIO
N(#13,0,-M2)!244
1090 IF R=33 THEN CALL MOTIO
N(#13,0,M3)!044
1100 IF R=17 THEN CALL MOTIO
N(#13,0,-M1)!238
1110 CALL PATTERN(#13,100)::
 CALL COINC(ALL,A):: IF A=-1
 THEN 990 ELSE CALL COINC(AL
L,A):: IF A=-1 THEN 990 ELSE
 800 !029
1120 CALL LOCATE(#13,1,C)::
CALL MOTION(#13,0,0):: CALL
POSITION(#13,R,C)!008
1130 CALL DELSPRITE(#13)!178
1140 R=1 :: C=INT((C+7)/8)!2
55
1150 IF C>4 AND C<8 AND SQ1=
1 THEN 800 !038
1160 IF C>10 AND C<14 AND SQ
2=1 THEN 800 !131
1170 IF C>16 AND C<20 AND SQ
3=1 THEN 800 !135
1180 IF C>22 AND C<26 AND SQ
4=1 THEN 800 !139
1190 IF C>4 AND C<8 THEN SQ1
=1 :: GOTO 1240 !044
1200 IF C>10 AND C<14 THEN S
Q2=1 :: GOTO 1240 !137
1210 IF C>16 AND C<20 THEN S
Q3=1 :: GOTO 1240 !141
1220 IF C>22 AND C<26 THEN S
Q4=1 :: GOTO 1240 !145
1230 GOTO 800 !114
1240 CALL COLOR(2,2,13,4,2,1
3)!031
1250 IF SQ1=1 THEN DISPLAY A
T(1,3)SIZE(3):",.:" :: DISPL
AY AT(2,3)SIZE(3):"-/;" !101
1260 IF SQ2=1 THEN DISPLAY A
T(1,9)SIZE(3):",.:" :: DISPL
AY AT(2,9)SIZE(3):"-/;" !114
1270 IF SQ3=1 THEN DISPLAY A
T(1,15)SIZE(3):",.:" :: DISP
LAY AT(2,15)SIZE(3):"-/;" !2
07
1280 IF SQ4=1 THEN DISPLAY A
T(1,21)SIZE(3):",.:" :: DISP
LAY AT(2,21)SIZE(3):"-/;" !2
02
1290 FOR T=110 TO 500 STEP 5
0 :: CALL SOUND(50,T,1):: NE
XT T :: FOR T=500 TO 110 STE
P -50 :: CALL SOUND(50,T,1):
: NEXT T !128
1300 IF SQ1=1 AND SQ2=1 AND
SQ3=1 AND SQ4=1 THEN 1330 !1
59
1310 SC=SC+100+(10*ME):: DIS
PLAY AT(24,12):"POINTS  ";SC
 !049
1320 GOTO 530 !099
1330 FOR T=110 TO 500 STEP 2
0 :: CALL SOUND(50,T,1):: NE
XT T :: FOR T=500 TO 110 STE
P -20 :: CALL SOUND(50,T,1):
: NEXT T !122
1340 SC=SC+100+(10*ME):: DIS
PLAY AT(24,12):"POINTS  ";SC
 !049
1350 SC=SC+(100*ME):: DISPLA
Y AT(24,12):"POINTS  ";SC !0
69
1360 FOR B=1 TO 10 :: A=INT(
16*RND)+1 :: CALL SOUND(50,5
00+(A*10),1):: CALL COLOR(2,
A,A,4,A,A):: NEXT B !128
1370 CALL COLOR(2,2,13,4,2,1
3)!031
1380 M1=M1+2 :: M2=M2+2 :: M
3=M3+2 :: M4=M4+2 :: GOTO 46
0 !008
1390 CALL CLEAR :: CALL CHAR
SET :: CALL DELSPRITE(ALL)!1
90
1400 FOR T=1 TO 14 :: CALL C
OLOR(T,16,13):: NEXT T !213
1410 DISPLAY AT(8,7):"G A M
E    O V E R" :: DISPLAY AT(
15,8):"SCORE  ";SC !197
1420 IF SC>HS THEN HS=SC !02
0
1430 DISPLAY AT(17,6):"HIGH
SCORE  ";HS !182
1440 DISPLAY AT(24,7):"PLAY
AGAIN  (Y/N)" !140
1450 CALL KEY(5,K,S):: IF S=
0 THEN 1450 !248
1460 IF K=89 OR K=121 THEN 1
70 !013
1470 IF K=78 OR K=110 THEN C
ALL CLEAR :: CALL SOUND(500,
700,1,670,1,770,1):: CALL SO
UND(450,780,1,800,1,750,1)::
 END !163
1480 GOTO 1450 !254
```

Reader to Reader

Bartley Busse, Box 36, Neidpath, Saskachewan, Canada S0N 1S0, wants to know about any non-lithium-cell batteries that will work with the CorComp Triple Tech Card.

Alain Machurot, 20 Rue Raymond Bordier, 33200 Bordeaux, France, says he has developed a superloader for Maximem with the Horizon RAMdisk compatible with the ROS and Menu 7.3. The program requires Maximem, RDH, 32K and a disk system. The program allows copying a module like Extended BASIC from RAMdisk to Maximem GRAM in two seconds, Machurot says. Users interested may send him two disks (SS/SD or DS/DD) with any interesting programs in exchange. Assembly source and instruction are in French. He offers with it two other routines to optimize Maximem/RDH use, the first executing directly from menu Maximem option 2 and the second using Editor/Assembler.

Reader to Reader is a column designed to put readers in touch with each other. Anyone with a specific problem or question that may be answered by other readers is encouraged to submit an item. Be sure to address it to Reader to Reader, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

A full-screen Forth editor

By LUTZ WINKLER

As a Forth enthusiast I have always dreamed of a better editor than those provided by TI. While both editors are basically superior to many others, the limitations imposed by the 99/4A made neither one very desirable. It is either squint at a full 64-column display to decipher those squashed hieroglyphics, or opt for legibility and awkward windowing to read a whole screen.

As sometimes happens, my dream has finally become reality. An Advanced Video Processor Card (AVPC) from Dijit Systems of San Diego has joined the other cards in my PE box. I now edit Forth screens without squinting or windowing!

The AVPC — among its many graphics capabilities which are waiting to be explored yet — provides an 80-column by 24-line TEXT 2 mode. It was relatively easy to implement a word (TEXT2) to put my Forth system into this mode. Since a Screen Image Table for 80 columns needs twice as much room as one for 40 and the AVPC allots VDP memory in its own fashion, a few things had to be moved around. But that is no different than what GRAPHICS2 has to do when you go to big map mode. Add a few register settings as required by the AVPC and like magic I had an 80-column display. So TEXT2 took its place alongside TEXT, GRAPHICS, GRAPHICS2 (and the splits) as VDP mode 7. (See screens 31 and 32.)

Line 7 loads my character set as explained in my Forth Tip (MICROpendium, April 1987). If you have not installed a character set on your Forth system disk, change line 7 to:

1100 834A ! 18 GPLLNK 1300 834A ! 4A GPLLNK

This will boot the resident TI characters from console ROM.

Now it was time to write a new editor to take advantage of the 80-column display. Since I like the basic features of the TI editors, I decided to make mine a combination of the two, leaving the function keys as they are with two exceptions which reflect my own preferences. FCTN-4 and FCTN-6 (next and previous screen) are assigned to the CTRL-E and CTRL-X keys (up and down arrows). Function-5 homes the cursor (as it does in the 64-column editor). I left out the word tabs but CTRL-Z advances the cursor 16 positions, and between it and the arrow keys there is adequate movement around the screen.

The advantage I gained is that, without crowding, my editor fits nicely on the screens previously occupied by the 40-column editor. Thus, I can boot it with the same -EDITOR word. The old 64-column editor screens are used for the BSAVE. (Screens 22 through 29 easily hold -DUMP, -PRINT, -FILES, -EDITOR and -BSAVE plus a few miscellaneous words.)

If you compare the following screens with the original -EDITOR screens it will be quite evident that the new

(See Page 26)

```
Screen 31
 0 ( CONVERT TO TEXT2 MODE - 1/2 04APR88 LW )
 1  BASE->R  HEX
 2  : TEXT2  0 780 20 VFILL \ initialize Screen Image Table
 3  .        0 SCRN_START ! 50 SCRN_WIDTH ! 780 SCRN_END !
 4           C00 836E ! \ new location of VSPTR
 5           C80 PABS ! \ new location of PABS
 6           1800 DISK_BUF ! \ new location of disk buffers
 7           1000 800 FF VFILL \ initialize PDT
 8           13 BLOCK 100 + 1100 300 VMBW \ boot charset
 9           7 VDPMDE ! \ current VPD mode
10           4 0 VWTR                \ Register settings
11           F0 DUP 1 VWTR 83D4 C! \ for the 80-column
12           A 8 VWTR                \ text mode of
13           0 9 VWTR                \ the AVPC
14
15  -->

Screen 32
 0 (CONVERT TO TEXT2 MODE - 2/2 )
 1
 2           03 2 VWTR \ Screen Image Table addr
 3           2F 3 VWTR \ Color Table addr
 4           00 A VWTR \    "      "     "
 5           A00 10F 0 VFILL \ initialize Color Table
 6           02 4 VWTR \ PDT address
 7           E4 7 VWTR \ Screen color  E=text, 4=backgrd
 8           4F C VWTR \ Cursor color
 9           21 D VWTR \ Cursor on/off time, 88 max.
10           1 C80 VSBW  16 C81 VSBW  C80 8356 ! \ PABS
11           3 834C !  \ No. of disk files
12           0A E SYSTEM \ DSRLINK for 3 disk buffers
13           0 0 GOTOXY ;
14
15  R->BASE

Screen 34
 0 ( AVPC EDITOR - 1/5     CURSOR CONTROL                04APR88 LW )
 1  BASE->R  DECIMAL  5! CLOAD TEXT  31 CLOAD TEXT2
 2  HEX
 3
 4  VOCABULARY EDITORA IMMEDIATE  EDITORA DEFINITIONS
 5
 6  : !CUR   0 MAX 8/SCR 400 * 1- MIN  R# ! ;
 7  : +CUR   R# @ + !CUR ;
 8  : PTR    SCR @ 8/SCR * R# @ 400 /MOD ROT + BLOCK + ;
 9  : R/C    R# @ 40 /MOD ;
10  : .CUR   R# @ 40 /MOD 3 + SWAP 6 + SWAP GOTOXY ;
11  : +.CUR  +CUR .CUR ;
12  : !BLK   PTR C! UPDATE 1 +.CUR ;
13  : +LIN   R# @ 40 / + 40 * !CUR ;
14  R->BASE

Screen 35
 0 ( AVPC EDITOR - 2/5     SCREEN FORMATTING, NEXT/PREV. SCREEN  )
 1  BASE->R
 2  HEX
 3  : .SCR#   CLS  DUP  SCR ! 3 0 GOTOXY ." SCREEN  " . ;
 4  : RULER   7 1 GOTOXY  7 1 DO 8 SPACES I . LOOP CR
 5            6 2 GOTOXY  6 0 DO ." ----!----0" LOOP ." ----" ;
 6  : LINE#   0 3 GOTOXY  10 0 DO I 3 .R CR LOOP ;
 7  : LINE.   DO I SCR @ (LINE) 1 50 *  F6 + SWAP VMBW LOOP ;
 8  : MLINE   10 0 LINE. ;
 9  : SCRNF   .SCR#  RULER  LINE#  MLINE  ;
10
11  : NEWSCR  0 SWAP SCRNF !CUR .CUR ;
12  : +SCR    SCR @ 1+ DISK_HI @ 1- MIN NEWSCR ;
13  : -SCR    SCR @ 1- 0 MAX NEWSCR ;
14  R->BASE   -->

Screen 36
 0 ( AVPC EDITOR - 3/5     CHAR  LINE INSERT/DELETE,  NEW LINE  )
 1  BASE->R  HEX
 2  : DEL/C  PTR DUP 1+ SWAP R/C DROP 40 SWAP - CMOVE
 3           20 PTR R/C DROP - 40 + 1- C! ;
 4  : INS/C  20 PTR DUP R/C DROP 40 SWAP - + SWAP
 5           DO I C LOOP DROP PTR DUP R/C DROP 40 SWAP - + 1-
 6           SWAP 1-  SWAP DO I C! -1 +LOOP ;
 7  : DEL/L  R/C SWAP MINUS +CUR PTR PAD 40 CMOVE DUP
 8           L/SCR SWAP DO PTR 1 +LIN PTR SWAP 40 CMOVE LOOP
 9           0 +LIN PTR 40 BL FILL 40 * !CUR ;
10  : INS/L  R/C SWAP MINUS +CUR 10 +LIN DUP 1+ 10
11           0 +LIN  DO PTR -1 +LIN PTR SWAP 40 CMOVE -1 +LOOP
12           PAD PTR 40 CMOVE 40 * !CUR ;
13  : NLINE  R/C SWAP DROP DUP 13 EMIT LINE. UPDATE  .CUR ;
14  R->BASE -->
```

FORTH—

(Continued from Page 25)

editor did not require a whole lot of work. Most words are taken directly from TI's original. The AVPC provides the ability to make any screen position blink, so there was no need for a phony blink routine. BLINK (screen 37) simply tracks the cursor and tells the AVPC which character should blink. I chose to invert the display colors under the cursor but you may want to use a contrasting color (see screen 32, line 8).

If AT is defined on your disk, substitute it for GOTOXY in screen 35.

Note that EDIT checks the current VDPMDE. If it is not 7 a warning is given (WRONG VDPMDE!). This avoids having a screen displayed in a totally useless fashion. By the way, in order to make a reboot with COLD work properly in case you should use it while in TEXT2, define it as follows:

```
: COLD  TEXT COLD ;
```

As screen 31 shows, my system loads a character set from my Forth disk. TI's TEXT word (40-column mode) normally boots the TI characters from the console's ROM. If you have followed my example and are booting a character set from disk, you can have TEXT boot it also. Modify SETVDP1 (screen 56) as follows:

```
: SETVDP1 0B0 1 VWTR   ( blank the screen )
          800 800 0FF VFILL  ( init 256 char patterns to FF )
          13 BLOCK 0F0 + 8F0 310 VMBW ; ( load character set from disk)
```

And while you are doing this, you may as well take care of two small corrections on screen 54. On line 0, the last word should be SETVDP2, not VDPSET2, and line 11 should read 07F 3 VWTR 07 4 VWTR. These changes have nothing to do with this editor, but GRAPHICS2 and the AVPC do not see eye-to-eye if register 4 is set at >FF.

TEXT2 also provides the opportunity to VLIST and DUMP in 80 columns. The modifications required to accomplish this will be included in another article. If you can't wait that long, and if you feel that entering the above from the keyboard is too much work), send a disk, mailer and return postage and I will furnish an auto-booting Forth disk (with the source code included). My address is 1540 Corsica St., San Diego, CA 92111. There is no copying fee nor are there any restrictions attached to the use and distribution of my work. If you feel that it warrants a contribution, you may send one, but you are not obligated to do so.

Finally, as the finishing touches were being applied to this article, I received word that TEXT2 and the editor were tested on a 9640. My tester reports that he found them to be 100 percent compatible. However, he did slow down the auto-repeat (increased loop limit of DELAY on screen 37) and changes text and screen colors to suit him.

```
Screen 37
 0 ( AVPC EDITOR - 4/5     ERASE, BLINK, AUTOREPEAT DELAY, QUIT )
 1  BASE->R
 2  HEX
 3  : .BL  PTR  R/C DROP 40 SWAP - BL FILL ;
 4  : D>END  PAD 40 BLANKS PTR PAD 40 R/C DROP - CMOVE ;
 5  : UNBLINK  A00 10F 0 VFILL ;
 6  : BLINK  CURPOS @ 1+ 8 /MOD A00 + SWAP DUP
 7           0= IF DROP 1- 1  ELSE 100 SWAP SRL THEN SWAP VSBW ;
 8  : DELAY  600 0 DO LOOP ; ( auto-repeat key rate )
 9
10  : BOX  10F7 10F1 DO 00 I VSBW LOOP ;
11  : REBOX  10F7 10F1 DO FF I VSBW LOOP ;
12  : QEDIT  REBOX UNBLINK 0 12 GOTOXY QUIT ;
13  : CHECK  DUP 1F > OVER 7F  < AND  IF DUP EMIT DUP !BLK ;
14  R->BASE -->

Screen 38
 0 ( AVPC EDITOR - 5/5 )   BASE->R DECIMAL 32 CLOAD TEXT2 HEX
 1  : ED SWAP CLS BOX SCRNF !CUR .CUR BLINK BEGIN ?KEY DUP IF CASE
 2       05 OF +SCR              ENDOF  10 OF -SCR              ENDOF
 3       0A OF C/L +.CUR         ENDOF  0B OF C/L MINUS +.CUR ENDOF
 4       08 OF -1 +.CUR          ENDOF  09 OF 1 +.CUR           ENDOF
 5       0F OF QEDIT             ENDOF  0D OF 1 +LIN .CUR       ENDOF
 6       0E OF 0 !CUR .CUR       ENDOF  03 OF DEL/C NLINE       ENDOF
 7       04 OF INS/C NLINE       ENDOF  07 OF DEL/L MLINE       ENDOF
 8       06 OF INS/L MLINE       ENDOF  1A OF 10 +.CUR          ENDOF
 9       1E OF INS/L .BL MLINE ENDOF  01 OF D>END .BL NLINE ENDOF
10       CHECK ENDCASE UNBLINK BLINK DELAY ELSE DROP THEN AGAIN ;
11   FORTH DEFINITIONS
12  : EDIT  VDPMDE  7 = IF EDITORA 0 ED ELSE DROP
13          ." WRONG VDPMODE!" THEN ;     : ED0  SCR 0 EDIT ;
14  : WHERE EDITORA B/SCR /MOD SWAP 400 * ROT + 2- ED ;
15  R->BASE  ;S
```

Exploring your printer

The first 32 ASCII codes

By LOU BORRELLI

This is the second of a series of articles the author wrote for the CIM 99 monthly newsletter. CIM 99 is a Montreal-based TI users group and stands for Club Informatique Montreal.—Ed.

The object of this article will be to give you an understanding of the first 32 ASCII codes, what they do, and how to access them through TIW's Editor Mode. (See Table 1.)

TI-Writer in the Editor mode allows the entry of text in three ways:

Mode	Cursor shape
1) Auto word wrap	Solid cursor
2) Fixed—no word wrap	Hollow cursor
3) Special Printer Codes	Underline cursor

1 and 2 are selected in a toggle manner by pressing CTRL 0 3 is selected and deselected by pressing CTRL U.

Last month you were introduced to the basic simple fonts of: Compressed (also called Condensed) and Double Width (also called Enlarged).

Comparing Table 1 with the access commands given last month, you notice that:

— select Compressed is SI or ASC 15, also referred to as CHR$(15)

— cancel Compressed is DC2 or ASC 18, also referred to as CHR$(18)

— select Double Width is SO or ASC 14

— cancel Double Width is DC4 or ASC 20

Are you starting to see the Pattern?

Table 2 is a listing of the most commonly used Control Codes with the Gemini 10X, and most all Epson and compatibles. (See Table 2.)

Get ready to see your printer in action.

(See Page 27)

PRINTERS—

(Continued from Page 26)

1. BS is used in words like:
   fenêtre -> "window" in French
   hôpital -> "hospital" in French
   gâteau -> "cake" in French
   español -> "Spanish" in Spanish
2. HTAB1 HTAB2 HTAB3
3.

4. Nothing was printed in above line because of LF
5. Carriage Return is like a Line Feed or LF and is automatically produced with the key <ENTER>
6. **Enlarged** and Condensed at the same time!

Did you realize that you could do so much with just the touch of a few keys? Take the time to try a few things on your own and next month we'll go into the details of printer codes.

Just for fun, add DC3 (Control U,Shift S,Control U) at the beginning of any D/V 80 file and try to print it out. Now that you see your printer not working, how do you turn it back into proper operation without resetting with the on/off switch?

COMING NEXT MONTH

Animation on the TI using the German-developed Animation 99 program

CTRL Code	ASCII Decimal	TIW Edit Mode **	CTRL Code	ASCII in Decimal	TIW Edit Mode **
NUL	0	Shift 2 (@)	DLE	16	Shift P
SOH	1	Shift A	DC1	17	Shift Q
STX	2	Shift B	DC2	18	Shift R
ETX	3	Shift C	DC3	19	Shift S
EOT	4	Shift D	DC4	20	Shift T
ENQ	5	Shift E	NAK	21	Shift U
ACK	6	Shift F	SYN	22	Shift V
BEL	7	Shift G	ETB	23	Shift W
BS	8	Shift H	CAN	24	Shift X
HT	9	Shift I	EM	25	Shift Y
LF	10	Shift J	SUB	26	Shift Z
VT	11	Shift K	ESC	27	FCTN R ([)
FF	12	Shift L	FS	28	FCTN Z (\)
CR	13	Shift M	GS	29	FCTN T (])
SO	14	Shift N	RS	30	Shift 6 (^)
SI	15	Shift O	US	31	FCTN U (_)

** preceeded and followed by CONTROL U

TABLE 1

CONTROL Code	ASCII Decimal	TIW ** Edit Mode	F U N C T I O N
BEL	7	Shift G	Bell or Buzzer on printer is heard
BS	8	Shift H	Back-space of one character
HT	9	Shift I	Moves to next Horizontal Tab setting
LF	10	Shift J	One Line Feed is done
VT	11	Shift K	Paper feeds to next Vertical Tab setting
FF	12	Shift L	Paper feeds to Top of next Form (sheet)
CR	13	Shift M	Carriage Return after print of line
SO	14	Shift N	Double Width character font
SI	15	Shift O	Compressed character font
DC1	17	Shift Q	Printer is selected
DC2	18	Shift R	Cancels "SI"
DC3	19	Shift S	Printer is de-selected
DC4	20	Shift T	Cancels "SO"

** preceeded and followed by CONTROL U

TABLE 2

DataBioTics says long-delayed Grand RAM to ship in July

By LAURA BURNS

DataBioTics expects to have shipped more than 100 of its long-delayed Grand RAMs by early July, according to Mike Evanbar of DataBioTics.

"One saving grace of the delay is that we now have a much better product," Evanbar says. "The software is improved and it is a better piece of equipment." The RAMdisk was first announced late last summer.

The addition of the John Johnson menu program and "hot keys" are among the improvements, he says.

He says the company has a large back order to fill but hopes by fall to be able to respond immediately in filling orders.

Regarding those who ordered and paid for the card through Innovative Programming last year, Evanbar says DataBioTics has been in contact with California authorities to seek a remedy to the situation. However, he said, DataBioTics has no standing in a potential criminal investigation because the company was not itself a victim of any crime that might have been committed.

DataBioTics is pursuing a civil action against Innovative Programming.

Customers who ordered and paid for the product through Innovative Programming but did not receive it also have the option of filing complaints with their local postmaster.

DataBioTics is acting in a "support role" for persons who ordered through Innovative Programming and did not receive the merchandise, Evanbar said. "We are also in touch with the Post Office," Evanbar says.

He says anyone who ordered through Innovative Programming who has not been in touch with DataBioTics should write DataBioTics so the company can add that person to its list.

Evanbar says DataBioTics has begun procedures to file a civil suit, but that its lawyers have been unable to serve Galen Read, president of Innovative Programming, with papers. Persons who ordered

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DATABIOTICS—

(Continued from Page 27)
through Innovative Programming also may file complaints through their local postmasters alleging mail fraud. An article in last month's MICROpendium outlined the procedures.

"We have been unable to find him," he says of Read, the owner of Innovative Programming. "We have completely lost touch with him."

He says letters and phone calls to Innovative Programming have been unanswered.

Evanbar says Read made a payment of $1,500 in November to DataBioTics for Grand RAMs, but with no accounting as to who his checks were from. He later gave a partial accounting, according to Evanbar, but when DataBioTics checked with customers a number of errors were found.

He says DataBioTics will refund Innovative Programming customers shares of the $1,500 on a pro rata basis, or credit them with their share on a pro rata basis toward purchase of a Grand RAM, which he says will be sold to them at the lowest possible price.

He notes that the company's module sales have funded the development of the Grand RAM.

Currently, he says, the full board has a suggested retail price of $314.95; 256K, $217.95; 128K, $174.95; and 64K, $146.95; the clock retails for $29.95.

Usually, he says, the company will give the clock to someone purchasing a full board.

MICROpendium was unable to reach Read despite repeated efforts over several months.

For further information, contact DataBioTics at P.O. Box 1194, Palos Verdes Estates, CA 90274 or call (213) 867-0481 or (213) 925-2120.

Mini-Memory: a BASIC view

By BOB CARMANY

Several months ago Merle Vogt did an excellent article (MICROpendium, August and September 1987) on TI's "forgotten module" — Mini-Memory. He even touched on one of the most obscure uses of the cartridge, which is using "Mini-Mem" BASIC. But lost among the "enhanced commands," PEEKs and POKEs was one of the most exciting uses of the Mini-Memory cartridge. What I am referring to is using Mini-Memory and a 32K memory expansion as a "poor man's RAM disk."

But let's start at the beginning. What better way to start but with a rhetorical question. How many programs can you have available at one time (sans disk, of course)? Think about it while we explore the many capabilities that Mini-Memory and the 32K give you.

With Mini-Memory, there are several "new" memory areas that can be accessed just the same as if they were a "mini" disk drive. As Vogt pointed out, there is MINIMEM which is the 4K battery backed RAM in the cartridge itself. Another is EXPMEM2 whicih is the 24K block of memory in the 32K memory expansion that starts at >A000 and extends to >FFFF.

Let's see, that's two areas that we can use, isn't it? Well, if there is an EXPMEM2, there must be an EXPMEM1. Sure enough, there is! EXPMEM1 is the lower 8K block of memory that extends from >2000 to >3FFF and is usually used for machine language routines. That's three "new" file areas that we can play with, so let's get started!

We need a simple BASIC program to use for our testing purposes. Here's a short one that we can use:

```
100 CALL CLEAR
110 FOR X=1 TO 20
120 PRINT X
130 FOR DELAY=1 TO 500
140 NEXT DELAY
150 CALL CLEAR
160 NEXT X
170 END
```

Okay, now that the program is typed in we can start moving it around. First, in the command mode, type in "SAVE MINIMEM". Next "SAVE EXPMEM1", and finally, type in "SAVE EXPMEM2". What we have done is to "SAVE" a copy of this short program in each of the three memory locations. Now, to make sure that we have cleared VDP RAM, type in "NEW". That will clear the program from VDP memory.

Now we are ready to bring the program back from each location in turn. Again in the command mode, type in "OLD MINIMEM" and then "LIST". Voila! The program has been reloaded without disk (or cassette tape) access. Follow this with "NEW" to clear out VDP and follow the same procedure with EXPMEM1 and EXPMEM2. We have SAVEd and reloaded the program from all three memory locations.

So, back to our question: how many programs can you access without using a disk drive? The answer is four! One each in MINIMEM, EXPMEM1 and EXPMEM2 — that's three. The fourth program is the one that resides in VDP RAM in the console.

If you can store programs, you can use these areas to store data for programs. The procedure is just the same as accessing a disk drive, printer or any other peripheral — almost!

Why would you want to use these areas for data storage? One of the toughest restrictions to overcome when you are programming in BASIC is the 16K program and data limitation. Some otherwise excellent programs are limited severely by this restriction. Besides, data management and manipulation are much faster when they are done in memory than when there are frequent disk accesses. Just think, a 12K program in VDP and space for 24K of data! The read and write time are lightning fast — those of you who have used a RAMdisk like the Horizon know what I mean.

For small amounts of data, you can easily use the 4K block in the Mini-Memory cartridge (besides, it's battery-backed for semi-permanent storage). For larger quantities of data, you can use the 24K block in high memory expansion. Let's look at accessing the 4K of battery-backed RAM first. A simple OPEN statement will suf-

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MINIMEM—

(Continued from Page 28)

fice here:

OPEN #5:"MINIMEM",SEQUENTIAL, DISPLAY, VARIABLE, UPDATE

Accessing the 24K segment of memory gets just a bit more complicated. We'll take a brief look at file organization before we go any further. Here is a short chart of the file open attributes:

CHOICES	DEFAULT
Sequential Relative	Sequential
Update Output Input Append	Update
Display Internal	Display
Fixed Variable	Fixed if Relative, Variable if Sequential

A file can be opened using any of these attributes but basically there are only four types of files: Display/Fixed, Display/Variable, Internal/Fixed and Internal/Variable. Any of the other attributes can be added.

To tell EXPMEM2 that we are opening a file, we have to use a CALL LOAD with the basic file attribute added *before* we actually open the file. The values we need to be concerned with are:

Display/Fixed = 0
Display/Variable = 16
Internal/Fixed = 8
Internal/Variable = 24.

To actually open the file, the format looks like this (remember CALL LOAD is one of the added commands in Mini-Memory BASIC):

```
100 CALL LOAD(-24574,16)
110 OPEN #5:"EXPMEM2",DISPLAY, VARIABLE 128
```

Once the file is OPENed, you can PRINT to it or INPUT from it just as you would any peripheral device.

Where does all of this leave us? Well, you could semi-permanently save your data file in the MINIMEM portion of the cartridge and manipulate the data at your leisure without the clattering drives and with RAMdisk speed. Or, you could load a 4K+ chunk of data from disk or tape into a temporary buffer and then rewrite it into EXPMEM2 for high-speed processing and finally rewrite it back out to disk for permanent storage before you leave the program. In short, all of the conveniences of a RAM disk without the expense. All of this with a Mini-Memory cartridge and 32K of memory expansion.

Yes, Merle, I agree. The Mini-Memory cartridge is one of the most underrated cartridges that TI has produced — from your view the assemply language facility and from my point of view for Power BASIC.

New Mills board reduces soldering

Bud Mills of Bud Mills Services, manufacturer of the Horizon RAMdisk, announced that his new board, at the same price as the old board, no longer requires additional soldering on the control chips.

He says this will simplify construction because it means there is no stacking of any chips up to 384K.

For further information contact Bud Mills Services, 166 Dartmouth Dr., Toledo, OH 43614 or the TI-COMM BBS, (419) 385-7484 (300 baud, 7 bit, even parity; 1200 baud, 8 bit no parity).

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Geneve

Filer coder works from GPL

By MIKE DODD

This month, I have another program for the Geneve. This program is an automatic file coder that works from GPL mode. It will code or decode any file that is accessed with standard I/O. It will not operate on program image files or files that are accessed with sector I/O.

To use the program, you load it with Editor/Assembler option 3. The program is then loaded and ready, but will not yet have any effect on files. If you press CTRL-F8, you will hear a beep. You can now type a key word and press Enter. Each keypress will generate a different tone and length. Nothing will be displayed on the screen, as the program would have no way of knowing what screen format was in use.

If you wish to disable coding, you can press CTRL-F8 followed immediately by Enter. If you enter a key word, any file access will be coded or decoded automatically. For example: you could load the coder program, then load MY-Word. Type a file, then press CTRL-F8 and type a keyword. Save the file to disk using the normal MY-Word SF command. The file is now encrypted. If you load the file without the coding program installed, with the coding disabled, or with the incorrect keyword, you will get gibberish. The program can be used with MY-Word, Multiplan, or any program that operates on files.

The program works by intercepting all DSR calls. Every time a program calls the DSR, be it to open, close, read, write, save, or load, the coding program is invoked first. The coder then checks to see if it is a read or write opcode. If it is not either one, it allows the DSR routine to be continued normally. If it is a write opcode, it encrypts the string, then allows the DSR routine to write the record to disk. If it is a read opcode, it allows the DSR to read the record from disk, then return to the coder, which will decrypt the record before returning to the original caller.

The coding algorthim used is relatively simplistic, and does have some drawbacks. However, the coding algorithm is completely self-contained in one subroutine, and could be changed. It operates by using boolean arithmatic; specifically, the XOR operation. XOR is an eXclusive OR. Each bit in the byte being operated on is treated independently. If either input bit is a one, the output bit is a one. If both input bits are one, or both are zero, the output bit is a zero. The truth table for this is as follows:

A	B	Output
0	0	0
0	1	1
1	0	1
1	1	0

The XOR is particularly useful for simple coding because repeating the process will turn the changed value back into the original value. Suppose A is the bit to be encoded, and B is the coding key. What is the output? Suppose that the output bit is to be decoded, and B is still the coding key. The bit in column A is the original value.

The biggest drawback to this is that if you code on a field of multiple spaces, the coding key will reveal itself. For example, coding six spaces with the key of "HELP" would be encoded as "helphe". Coding on the key of "help" would produce "HELPHE" as a result. This basic deficiency makes it somewhat impractical for many text files. However, there are still text files and other types of data files that can be encoded with a fair degree of security. Perhaps someday someone will rewrite the CODER subroutine. In the meantime, it does have its uses, and it will also serve as an example on writing "memory resident" programs for the Geneve's GPL mode.

The program has to overwrite part of the TI BASIC code in order to work, due to fact that it was the only place I could store that part of my code where it would be safe from overwriting. Therefore, using TI BASIC with this program loaded is an extremely risky operation. Using Extended BASIC is fine, however. The main section of code is loaded into the end of GROM 0. That GROM bank only uses the first 6K — the last 2K is free. Since, on the Geneve, you can load GROM pages into CPU memory, it made an excellent location.

Enter the program with MY-Word in the Program Edit mode. Assemble with the R and C options. Load with Editor/Assembler option 3.

File Coder

```
0001  * Automatic file coder
0002  * Copyright 1988 by Mike Dodd
0003  *
0004  *   Encodes/decodes all file input/output based on an XOR keyword.
0005  *   Works by intercepting all DSR calls on the Geneve 9640 DSR in GPL
0006  *     mode.
0007  *
0008        TITL 'File coder. Copyright 1988 by Mike Dodd'
0009        IDT  'MIKEDODD'
0010
0011  GPLWS EQU  >83E0           GPL workspace
0012  VWA   EQU  >8C02           VDP write address port
0013  VWD   EQU  >8C00           VDP write data port
0014  VRD   EQU  >8800           VDP read data port
0015
0016        AORG >A000           Load this into high memory
0017
0018  START STWP R0              Save workspace pointer
0019        MOV  R0,@OLDWS+2     This way, we can restore it later
0020        LWPI >F000           Load fast workspace
0021  *  Find DSR1-4 hooks, and re-point
0022        BL   @FIND           Find
0023        TEXT 'DSR1'          DSR text to find
0024        DATA DS1LNK          Where to store the link
0025        BL   @FIND
0026        TEXT 'DSR2'
0027        DATA DS2LNK
0028        BL   @FIND
0029        TEXT 'DSR3'
0030        DATA DS3LNK
0031        BL   @FIND
```

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GENEVE—

(Continued from Page 30)

```
0032          TEXT 'DSK4'
0033          DATA DS4LNK
0034          BL   @FIND
0035          TEXT 'DSK5'
0036          DATA DS5LNK
0037          BL   @FIND
0038          TEXT 'DSK6'
0039          DATA DS6LNK
0040          BL   @FIND
0041          TEXT 'DSK7'
0042          DATA DS7LNK
0043          MOV  @>02B4,@SCANAD   Save address for keyscan
0044          LI   R0,SCANEN        Our new keyscan entry
0045          MOV  R0,@>02B4        New scan entry point
0046          MOVB @>8001,R5        Save memory page number at >2000
0047          MOVB @H38,@>8001      Load copy of GROM page 1
0048          LI   R0,>B802         Start of our program
0049          LI   R1,>3802         Where to put it
0050  MOVPRG  MOV  *R0+,*R1+        Move it out
0051          CI   R0,PRGEND        Is that all?
0052          JNE  MOVPRG           No
0053          MOVB R5,@>8001        Restore memory page
0054  OLDWS   LWPI >0000            Load old workspace pointer
0055          RT                    Return
0056
0057  * Find a DSR link, and re-point to our program
0058  FIND    MOV  @>4008,R2        Get pointer to DSR entries
0059  FIND1   MOV  R2,R0            Get pointer to DSR entry
0060          MOV  *R0+,R2          Get next pointer, in case needed
0061          MOV  R0,R5            Save address of this pointer
0062          MOV  *R0+,R1          Get pointer to this entry
0063          CB   *R0+,@H04        Is the length 4?
0064          JNE  FIND1            No - not this one
0065          LI   R3,4             Four characters to compare
0066          MOV  R11,R4           Return address - that's where the text i
0067  FIND2   CB   *R0+,*R4+        Equal?
0068          JNE  FIND1            No - try again
0069          DEC  R3               Any more to check?
0070          JNE  FIND2            Yes
0071          C    *R11+,*R11+      Point past test by adding four
0072          MOV  *R11+,R0         Get address to put link address
0073          MOV  R1,*R0           Save link
0074          LI   R0,DSRENT        DSR entry
0075          MOV  R0,*R5           New entry point
0076          RT                    Return
0077
0078          AORG >1C9C            Load this part of the program at >1C9C
0079  DSRENT  CLR  R1               Offset of 0 for dsr entry
0080          JMP  GRAB
0081  SCANEN  LI   R1,2             Offset of 2 for scan entry
0082          JMP  GRAB
0083  SCANRT  LI   R1,4             Offset of 4 for scan return
0084          JMP  GRAB
0085  DSRRED  NOP
0086          LI   R1,6             Offset of 6 for dsr read
0087  GRAB    MOVB @>8005,@>1D3D    Save memory page for >A000
0088          MOVB @>8006,@>1D3C    Save memory page for >C000
0089          MOVB @H38,@>8005      Where our program is
0090          MOVB @H03,@>8006      So that sound will work
0091          B    @>B802           Execute our program
0092  GRABRT  MOVB @>1D3D,@>8005    Restore page number
0093          MOVB @>1D3C,@>8006    " " "
0094  GRABAD  B    @@               Return to wherever
0095  H38     BYTE >38
0096  H04     BYTE >04
0097  H03     BYTE >03
0098          EVEN
0099
0100  * Main part of program
0101  *   This code is entered on _any_ interception
0102          AORG >B802            Load this into >B802
0103          MOV  R1,@MYWS+2       Save R1
0104          LWPI MYWS             Load our workspace
0105          MOV  @TABADR(R1),R1   Get address from table
0106          B    *R1              Execute
0107  DS1LNK  DATA >0000            Saved link for DSK1
0108  DS2LNK  DATA >0000            Saved link for DSK2
0109  DS3LNK  DATA >0000            Saved link for DSK3
0110  DS4LNK  DATA >0000            Saved link for DSK4
0111  DS5LNK  DATA >0000            Saved link for DSK5
0112  DS6LNK  DATA >0000            Saved link for DSK6
0113  DS7LNK  DATA >0000            Saved link for DSK7
0114  MYWS    BSS  >20              Workspace buffers
0115  TABADR  DATA DSR,SCRN,SCRT,DSR2       Execution table
0116  SCANAD  DATA >0000            Scan address (where >02B2 branches to)
0117  SCSVRT  DATA >0000            Scan saved return address
0118  H00     BYTE >00
0119  * CODE _MUST_ start on an odd byte boundary
0120  CODE    BYTE >00              Length of coding string
0121          BSS  11               Up to ten characters, plus >20 at end
0122  H02     BYTE >02
0123  H0D     BYTE >0D
0124  H20     BYTE >20
0125  H42     BYTE >42
0126  H43     BYTE >43
0127  HB8     BYTE >B8
0128  HFF     BYTE >FF
0129          EVEN
0130  * Scan entry
0131  *  Any call to the keyboard will come here first
0132  SCRN    LWPI GPLWS            Load GPL WS
0133          MOV  R11,@SCSVRT      Save return address
0134          LI   R11,SCANRT       Our new return address
0135          MOV  @SCANAD,@GRABAD+2 Go to keyboard scan
0136          B    @GRABRT          Execute
0137  * Keyscan has been executed. See if hot key.
0138  SCRT    CB   @>8375,@HB8      CTRL-F8?
0139          JEQ  SCHOT            Yes!
0140  *  Return to caller
0141  SCRT1   MOV  @SCSVRT,@GRABAD+2 Saved return address for scan
0142          LWPI GPLWS            Load GPL workspace
0143          B    @GRABRT          Return
0144  *  Hot key pressed. First, make an audible sound
0145  SCHOT   LI   R0,>8C1A         Middle C
0146          MOVB R0,@>8400        Load sound generator
0147          SWPB R0
0148          MOVB R0,@>8400        Load sound generator
0149          LI   R0,>909F         Volume 0
0150          MOVB R0,@>8400        Set volume
0151          SWPB R0               Prepare for volume 15 (silent)
0152          LI   R1,>8000         Delay
0153          DEC  R1
0154          JNE  $-2
0155          MOVB R0,@>8400        Turn off sound generator
0156          LI   R0,CODE+1        Start of text area
0157          CLR  R1               Length of coding string
0158  * Execute a keyscan.
0159  SCH1    LWPI GPLWS            Load GPL workspace
0160          MOV  @SCANAD,R3       Get address of scan routine
0161          BL   *R3              Execute
0162          LWPI MYWS             Load our workspace again
0163          MOVB @>837C,R3        Status register
```

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GENEVE—

(Continued from Page 31)

```
0164        SRL  R3,14          EQ bit on?
0165        JNC  SCH1           Nope
0166        MOVB @>8375,R3      Get key value
0167        CB   R3,@H0D        ENTER?
0168        JEQ  SCH2           Yes
0169        CI   R3,>2000       A function or control key?
0170        JL   SCHOT          Yes
0171        CI   R3,>8000
0172        JHE  SCHOT          Yes
0173        MOVB R3,*R0+        store in code buffer
0174  *   make a short beep
0175        LI   R3,>8C1A       Middle C
0176        MOVB R3,@>8400
0177        SWPB R3
0178        MOVB R3,@>8400
0179        LI   R3,>909F
0180        MOVB R3,@>8400      Set volume
0181        SWPB R3
0182        LI   R4,>1000       Short delay
0183        DEC  R4
0184        JNE  $-2
0185        MOVB R3,@>8400      Turn off sound generator
0186        INC  R1             Length
0187        CI   R1,10          At max yet?
0188        JNE  SCH1           No
0189  *  <ENTER> pressed _or_ max length reached
0190  *    Make another beep
0191  SCH2  MOVB @H20,*R0       Store space
0192        LI   R3,>860D       high C
0193        MOVB R3,@>8400
0194        SWPB R3
0195        MOVB R3,@>8400
0196        LI   R3,>909F
0197        MOVB R3,@>8400      Turn sound generator on
0198        SWPB R3
0199        LI   R4,>3000
0200        DEC  R4
0201        JNE  $-2
0202        MOVB R3,@>8400      Turn sound generator off
0203        SWPB R1             Length in MSBy
0204        MOVB R1,@CODE       Set length
0205        SOCB @H20,@>837C    Set EQ bit
0206        MOVB @HFF,@>8375    No key pressed
0207        B    @SCRT1         Return
0208
0209  * DSR entry point
0210  *  Get dsr link address
0211  DSR   MOV  @>8356,R0      Get pointer to character past last char
0212  *                               of device name (e.g. the period)
0213        DEC  R0             Point to last character in device name
0214        BL   @SVRA          Set VDP read address
0215        MOVB @VRD,R8        Get character
0216        SRL  R8,8           To lsby
0217        AI   R8,->31        From ascii to hex
0218        SLA  R8,1           2 bytes / word
0219        MOV  @DSYLNK(R8),@GRABAD+2     Get link address
0220        CB   @CODE,@H00     Is coding activated?
0221        JEQ  DSRRT          No - don't code
0222  *   Get start address of PAB
0223        S    @>8354,R0      Minus name length
0224        AI   R0,-9          R0 now points to start of PAB
0225        MOV  R0,R14         Save for future reference
0226        BL   @SVRA          Set vdp read address
0227        MOVB @VRD,R7        Get i/o opcode
0228        CB   R7,@H02        read?     vdp
0229        JEQ  DSR1           yes
0230        CB   R7,@H03        write?    vdp
0231        JEQ  DSR1           yes
0232        CB   R7,@H42        read?     cpu
0233        JEQ  DSR1           yes
0234        CB   R7,@H43        write?    cpu
0235        JEQ  DSR1           yes
0236  *  Return
0237  DSRRT LWPI GPLWS          Load GPL workspace
0238        B    @GRARRT        Return
0239  *  Read or write opcode
0240  DSR1  MOV  @>83E0+22,R10    Save return address
0241        MOVB @VRD,R0        Strip byte - unneeded
0242        SWPB R0             Delay
0243        MOVB @VRD,R9        Get MSBy of VDP buffer address
0244        SWPB R9
0245        MOVB @VRD,R9        Get LSBy
0246        SWPB R9
0247        SRL  R7,9           Read or write?
0248        JOC  DSR3           Write
0249  *   DSR read. First, execute the read, then come back here to decode
0250        LWPI GPLWS
0251        LI   R11,DSRRED     DSR read entry
0252        B    @GRARRT        Execute DSR read routine
0253  *   Read has been executed
0254  DSR2  BL   @CODER         Decode it
0255        INCT R10            Substitute for inct in dsr
0256        MOV  R10,@GRARAD+2  The original return address
0257        JMP  DSRRT          Return
0258  *  Write opcode
0259  DSR3  BL   @CODER         Code it
0260        JMP  DSRRT          Return
0261
0262  * CODER
0263  *   code the string
0264  *    R6 = length of record
0265  *    R7 = opcode, shifted right one bit
0266  *    R9 = buffer address
0267  CODER MOV  R11,R15        Save return address
0268        MOV  R14,R0         Get vdp address of start of pab
0269        AI   R0,5           Point to character count
0270        BL   @SVRA          Set VDP read address
0271        MOVB @VRD,R6        Get length
0272        JEQ  CODRT          Null string - don't do anything
0273        SRL  R6,8           To LSBy
0274        MOVB @CODE,R14      Get length of code string
0275        SRL  R14,8          To LSBy
0276        SRL  R7,6           CPU or VDP?
0277        JOC  COD03          CPU
0278  *   VDP
0279        MOV  R9,R0          VDP address of string
0280  COD01 MOV  R14,R1         Get length of code string
0281        LI   R13,CODE+1
0282  COD02 BL   @SVRA          Set vdp addr
0283        MOVB @VRD,R2        Get byte
0284        SWPB R2
0285        MOVB @VRD,R2        Get next byte
0286        SWPB R2
0287        MOV  *R13+,R3       Get XOR code
0288        XOR  R3,R2          Code it
0289        BL   @SVWA          Set VDP write address
0290        MOVB R2,@VWD        Write first byte
0291        DEC  R6             Decrement length - are we done?
0292        JEQ  CODRT          Yes
0293        SWPB R2             Get second byte in MSBy
0294        MOVB R2,@VWD        Write second byte
0295        DEC  R6             Decrement length - are we done?
```

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TI-Base

A new approach to data management for the TI

By BILL GASKILL

This is not a product review. Rather it is a collection of the author's initial impressions of the operation and features of TI-Base. A review of the product will follow next month.—Ed.

When MICROpendium asked me to review Texament's TI-Base I envisioned it as being yet another flat-file list manager, that would be unexciting and one-dimensional in its view of how data can be managed. When I cracked open the manual I knew within five minutes that I was absolutely wrong!

After reading the documentation from cover-to-cover and then loading the program, it appeared that the king of 99/4A data file managers, Bill Warren's PR-BASE, was about to be unseated as the premier file management tool for the 99/4A. After working with TI-Base for a couple of hours I discovered that I was wrong again. Version 1.0 of TI-Base is not going to oust PRBASE from the top spot in 99/4A data management applications, but it is well on the way. If a few modifications are made in the areas of error trapping, printer control and documentation, TI-Base will be impossible to beat, simply because it has no competition.

Like Ashton-Tate's DBASE II, III and III + for the IBM computer world, TI-Base is the kind of program that will spur experienced users to write books and articles on different ways to take advantage of its power or perhaps spur them to create templates that shelter the novice user from some of the harsher realities of data management. It is that powerful!

The idea of having such an application for the 99/4A community is nothing short of exciting.

One of the all too apparent trade-offs to program power is often a high degree of complexity in use. To the inexperienced data base user the TI-Base program will appear "unfriendly." But that would be an unfair assessment to make for all levels of user-experience. While it is not designed for the first time computer user, it is a most capable and learnable tool for the intermediate and advanced enthusiast.

TI-Base appears to be aimed at the user who wants to take complete control of data management. It is obviously not designed just for such elementary tasks such as mailing list management, though it could certainly perform those functions. Rather it contains the tools to allow serious users to get into the meat of what they are trying to do with date management.

OVERVIEW: The user-interface (the way a program interacts with the operator) built into TI-Base is unique in the 99/4A community. Where every other 99/4A data base application that I have worked with uses a menu-driven interface between the program and the user, TI-Base uses a dot prompt (a period at the lower-left corner of the screen) similar to the DBASE II or Informix data managers available for PCs. That means that TI-Base offers no instructions to choose from in deciding how to start using the program. On your first go around with it you will just have to read the manual or refer to the on-line help that is available by pressing the F7 (AID) keys.

With the exception of the LOAD program that boots TI-Base from XBASIC, it is 100 percent assembly language coded.

Hardware requirements include 32K memory expansion, a disk drive and either the Editor/Assembler, Extended BASIC, Mini-Memory or Super Extended BASIC modules. It supports any type of printer but does not require one. It also operates out of a single-side, single-density disk drive, but two disk drives are more convenient. It has been tested on the TI and Myarc controller cards and on the Myarc RAMdisk and it works flawlessly. It has not been tested using the CorComp controller card yet, nor has it been tested on the Geneve. I would anticipate that it will eventually be compatible with both if it is not already.

TI-Base is a large program that takes a full two minutes to load, but once it is up and running it accesses routines quickly.

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GENEVE—

(Continued from Page 32)

```
0296          JEQ  CODRT          Yes
0297          INCT R0             Buffer address
0298          DECT R1             Code string length
0299          JGT  COD02          Still code string left
0300          JMP  COD01          Back to start of code string
0301  *   CPU
0302  COD03   MOV  R14,R1          Get length of code string
0303          LI   R13,CODE+1     Start of code string
0304  COD04   MOVB *R9,R2          Get character
0305          SWPB R2             To LSBy
0306          MOVB @1(R9),R2      Get second character
0307          SWPB R2             Swap back
0308          MOV  *R13+,R3       Get XOR code
0309          XOR  R3,R2          Code it
0310          MOVB R2,*R9+        Save first byte
0311          DEC  R6             Decrement length - done?
0312          JEQ  CODRT          Yes
0313          MOVB R2,*R9+        Save second bye
0314          DEC  R6             Decrement length - done?
0315          JEQ  CODRT          Yes
0316          DECT R1             Code string length - any more left to it?
0317          JGT  COD04          Yes
0318          JMP  COD03          Start with start of coding string again
0319  CODRT   B    *R15           Return
0320
0321  * Set VDP write address
0322  SVWA    ORI  R0,>4000
0323  * Set VDP read address
0324  SVRA    SWPB R0
0325          MOVB R0,@VWA
0326          SWPB R0
0327          MOVB R0,@VWA
0328          ANDI R0,>3FFF
0329          RT
0330
0331  PRGEND  END  START          Automatically execute START when program is
```

TI-BASE—

(Continued from Page 33

It uses a 40-column display that shows only a status bar at the base of the screen when it is loaded. There are no advertisements, borders, copyright notices or other clutter on the screen. Just the status bar information and the dot prompt.

If you are intimidated by the lack of information on the screen you need only press FCTN 7 and a menu appears that lets you access help files on:

1-How to create data bases
2-How to input data
3-How to access data
4-How to display data
5-List directives.

Directives are the commands used in manipulating data. More on them later.

Basic data base management features available in TI-Base are:

—Ascending sorts on any field.

—Custom file design of up to 255 characters per field, 17 fields per record and 8192 records per file.

—Custom screen design.

—Data display and printing capabilities.

—Full record editing and deleting capabilities.

—Global operations such as deletes, recalls and replacements.

—Support for math functions including addition, subtraction, multiplication, division, exponentiation, squaring, logarithms, anti-logarithms, sine, cosine, tangent and arc-tangent.

—Support of both logical and relational operators including less than, greater than, equal to, not equal to, arithmetic, AND, NOT and OR.

—String manipulation routines for concatenation (joining of multiple strings of data into a single string) and TRIMming of trailing blank spaces.

UNIQUE FEATURES: TI-Base was written by Dennis Faherty (a data processing professional for 23 years) of Inscebot (pronounced IN-SKE-BOTT) Inc. Inscebot, you will recall, is the software house that brought us TI-Artist, the standard in graphics drawing applications for the 99/4A. No doubt because of the author's strong professional background, TI-Base is crammed with many of the hallmarks of professionally designed, commercial quality software.

Besides its unique command language interface that lets the user design just about any data manipulation scheme, TI-Base:

—Provides a "hook" that allows users or application developers to gain immediate access to a pre-defined command language file on start-up.

—Allows custom menus or other applications to be written that can completely mask the default "dot prompt" interface.

—Supports up to five active data files at the same time.

—Allows processing of multiple files by a single command file.

—Supports link-field relationships between different files as long as each file shares a common field and all of them have been activated.

—Contains data security features for recall of deleted records and recovery of damaged files.

—Supports the definition of local variables so that a user-specified value can be referenced anywhere in a file(s) by name (similar to naming a cell in a spreadsheet).

—Provides disk management functions accessible from the main program for cataloging, copying, deleting and formatting.

—Possesses the ability to be "fixed" by patches to the program code.

The hook written into TI-Base is accessed by including command language instructions in a command file named SETUP. This is similar to writing a set of instructions in Extended BASIC and then naming the program LOAD when it is saved. Virtually any function supported by TI-Base is accessible via a command file and thus is also accessible upon initial start-up of the program. Because TI-Base also provides the tools to design custom screens (though without the graphic borders and such that PRBASE or Turbo Dataman support) and it can be programmed to accept input from anywhere on the screen, one could design any kind of "run upon load" application within the SETUP file.

They can even include commands within one file that will RUN another command file. An application developer could design a custom template for TI-Base, write in a menuing system to appear on start-up and thereby provide the user with a ready-made tool for any task. With TI-Base's ability to nest routines in command files and also call other command files from within the one currently running, the possibilities seem limitless.

Writing a command file to display your own instructions, menus or whatever on start-up is a straightforward task. It took me about a minute to create one, which I then loaded by editing the SETUP file so that SETUP would call my command file when TI-Base was ready to go. It was a simple matter of using WRITE directives to create the file and then including a DO "FILENAME" directive in the SETUP file. Also, I could have written the instructions in the SETUP file itself.

TI-Base uses a concept called "SLOTS" to separate the various files that may be activated at one time. You choose a SLOT by SELECTing it. For example, SELECT 2 will move from the current SLOT to SLOT two. SELECT 1 would move back from SLOT 2 to SLOT 1. Since these directives may be used in a command file, TI-Base allows you to perform data processing in one data base and then, if some condition is met (or even if it is not) such as the FINDing of a specific record, you could program the command file to switch to another open file and perform some data processing operation on it only when the conditions you specified for the first file exist. That is data processing power!

Another hallmark of professionally designed data base managers I have used on IBM PC type computers is the ability

(See Page 35)

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TI-BASE—

(Continued from Page 34)

to delete records so that they are masked (hidden) as far as having any impact on data processing operations, but they can be reactivated if needed as long as they have not been purged. TI-Base will allow you to do the same thing. It uses a DELETE directive to mark a record for deletion and a RECALL directive to reactivate it. Sorting a file will also reactivate deleted records.

A truly unique feature of TI-Base is the ability to define local variables, either from the keyboard or from within a command file. Because this concept can be a bit confusing I will try to illustrate it.

If you had a NAME, ADDRESS, CITY, STATE and ZIPCODE file that you wanted to print mailing labels for, and you needed to "push" the printed information five spaces to the right of the left edge of the label, you could design a LOCAL (which we will name "SPACES") to do the job for you.

Either in a command file or at the dot prompt you would type in the following statement: LOCAL SPACES C 5

Translated, this tells TI-Base to declare a LOCAL named SPACES that is made up of Characters and allocate 5 bytes for it. You would then issue the command REPLACE SPACES WITH " " to make the contents of SPACES five blank characters. Then to print your mailing labels you would simply include the following in a command file to print the labels:

```
PRINT SPACES NAME
PRINT SPACES ADDRESS
PRINT SPACES CITY
PRINT SPACES STATE
PRINT SPACES ZIPCODE
```

While working with TI-Base I noticed an unusual quirk where a FCTN 3 (ERASE) keypress in the APPEND (add records) mode caused a tone sound to go off that I could not get rid of. While it did not affect program performance nor data integrity, it was annoying. Turning the volume control on my monitor down eliminated the annoyance but did not fix the problem. A call to Texaments resulted in my discovering that the problem was the result of an improper return from a GPL "beep" access, designed to tell the user that an invalid key has been pressed. Apparently, the bug exists only in the first few copies sent out and they gave me a patch that would fix the problem (see below). To use it I simply type it into the SETUP file so that it would be activated each time the program was used. You don't have to understand what it does or even what it means, because I sure don't.

```
CHANGE    FFC0    0420
CHANGE    FFC2    2108
CHANGE    FFC4    0300
CHANGE    FFC6    0001
CHANGE    FFC8    0300
CHANGE    FFCA    0000
CHANGE    FFCC    0460
CHANGE    FFCE    BD66
CHANGE    BD62    0460
CHANGE    BD64    FFC0
```

Patch to fix GPL beep

Here is a list of the command directives of TI-Base:

APPEND, BOTTOM, BREAK, CASE, CATALOG, CHANGE, CLEAR, CLOSE, COLOR, COPY, CREATE, DELETE, DISPLAY, DO, DOCASE, EDIT, ELSE, ENDCASE, ENDIF, ENDWHILE, FIND, FORMAT, IF, LOAD, LOCAL, MODIFY, MOVE, PACK, PRINT, QUIT, READ, RECALL, RECOVER, REPLACE, RETURN, SAVE, SCROLL, SELECT, SET, SORT, TOP, TRIM, USE, WAIT, WHILE, WRITE.

The command language is the most powerful feature of TI-Base. Without it, the program would only perform rudimentary, single-phase operations. Directives used in the command language environment are required for most repetitive or global operations. For instance, you can do almost anything you want to do on a single record from the dot prompt by simply typing in the directive. But you can't perform the same function on multiple records unless you type in the same command for each record. Thus the ability to cause recurring operations is almost totally dependent upon the existence of the command language.

The exceptions to this are apparent in the DISPLAY and PRINT directives. With them you may attach an ALL statement to display or print ALL records in a file. For example, in a file that I created to index the May issue of MICROpendium I built the following fields: SUBJECT, AUTHOR, TYPE, DATE and PAGE.

With the DISPLAY or PRINT directive I can issue the following command from the dot prompt: PRINT ALL SUBJECT AUTHOR TYPE DATE PAGE and get an immediate printout of the file. If I want a report printed with the field names as headings over the appropriate columns I just issue a SET HEADING=ON command from the dot prompt and then type in the PRINT statement shown above. I can also change the printed order of the fields by simply typing them in in a different order.

While the dependence on the command language may seem limiting to some, it should not be. The essence of TI-Base is to provide total data management capabilities to the user. Where other programs of this genre limit the user to menu driven options (what you see is what you get) TI-Base leaves it up to you to decide what you want to do with your data. Within the limitations of the available directives and your own abilities to conceptualize how to go about the task, TI-Base offers a free-form design tool for data manipulation.

One of the things that I found especially nice about the keyboard commands in TI-Base is their similarity to common commands used in PC-type programs. For instance, there is an ESCape key (F9) an EXEcute key (F8) and there are paging keys (F5 and F6) to scroll through records in ascending or descending order. There is also an INSert on/off toggle (F2). The only variation from the PC-type programs I detected is the use of the F7 (AID) key for help. This usually shows up as F1 in PC computer programs. While this may not mean much to some users, it is just one more "perk" that TI-Base offers to the experienced data base user.

TI-BASE retails for $24.95 and comes on two SS/SD disks with a 38-page manual. One of the disks is the program disk, the other a tutorial. The manual needs to include more examples and clearer instructions, but it is adequate as it comes.

The program is available from Texaments; 53 Center St.; Patchogue, NY 11772; 516-475-3480.

More progress on an index

This continues Elton Schooling's BASIC index of MICROpendium. Several months ago we published a list of abbreviations and definitions. This installment marks the beginning of the BASIC program and DATA statements for 1984. The remainder of the program with 1984 entries will be published next month.

```
10 REM INDEX84 MICROpendium
INDEX for 1984. Publisher Jo
hn Koloen, editor Laura Burn
s. !146
20 REM Compiled by Elton Sch
ooling, 4014 57th St., Sacra
mento, CA 95820 !173
30 REM Sort routine by Jim (
Tigercub) Peterson. For use
with printer or with screen
display. !124
40 REM For your printer you
may need to change line 160.
 !202
50 REM For longer dwell time
 on screen increase the DELA
Y number in line 300. !207
60 OPTION BASE 1 !137
70 CALL CLEAR !209
80 DIM N$(210)!199
90 INPUT "OUTPUT TO PRINTER?
(Y/N)":P$ !247
100 CALL CLEAR !209
110 PRINT "WORKING" !139
120 FOR I=1 TO 210 :: READ N
$(I):: NEXT I !062
130 CALL LONGSHELL(210,N$())
!115
140 CALL CLEAR !209
150 IF P$="Y" THEN 160 ELSE
280 !083
160 OPEN #1:"PIO" :: PRINT #
1:CHR$(27);"H" !001
170 PRINT #1:TAB(24);"MICROp
endium INDEX, 1984" !154
180 PRINT #1: : : :!103
190 FOR J=1 TO 210 :: IF J=1
05 THEN 200 ELSE 210 !105
200 PRINT #1: : : : :: PRINT
 #1:TAB(35);"PAGE 3" :: PRIN
T #1: : : : : : : :!122
210 IF J/2=INT(J/2)THEN 230
!239
220 PRINT #1;N$(J);:: GOTO 2
40 !230
230 PRINT #1:TAB(40);N$(J)!1
88
240 NEXT J !224
250 PRINT #1: : :!178
260 PRINT #1:TAB(31);"PAGE 4
, INDEX '84" !083
270 GOTO 330 !154
280 CALL CLEAR !209
285 CALL SOUND(500,110,0,131
,0,196,0)!005
290 PRINT TAB(7);"MICROpendi
um INDEX, 1984" :: PRINT : :
 :!251
300 PRINT "DATA AND PAGE NO.
 ARE LISTED TOGETHER. JAN 85
 p.16 BECOMES 1/85/16.": : :
!001
310 FOR J=1 TO 210 :: PRINT
N$(J):: FOR DELAY=1 TO 200 :
: NEXT DELAY :: NEXT J !016
315 PRINT : : :!187
320 PRINT "DATA AND PAGE NO.
 ARE LISTED TOGETHER. JAN 85
 p.16 BECOMES 1/85/16." :: G
OTO 360 !028
330 PRINT #1: : :!178
340 PRINT #1:"DATE AND PAGE
NO. ARE LISTED TOGETHER. JAN
 85 p.16 BECOMES 1/85/16." !
146
350 CLOSE #1 !151
360 END !139
370 DATA BOMBER GA REV 2/84/
14,TM100-2 DSKDR REV 2/84/15
,VOID GA REV 2/84/16,BEANSTA
LK GA REV 2/84/17,MICROSURGE
ON GA REV 2/84/18 !111
380 DATA TANDONDR TM100-2 RE
V 2/84/15,PRNTR PROWRITER RE
V 3/84/19,PROWRITER PRNTR RE
V 3/84/19,TELISPEECH USNO 5/
84/21 !201
390 DATA GRAPHED REV 2/84/19
,DABASE500 REV 2/84/20,PASSW
ORD USNO 2/84/22,BNCHM USNO
2/84/22,GROMFIX USNO 2/84/22
,DRIVEOFF USNO 2/84/22 !104
400 DATA MODCLIPS USNO 2/84/
22,CS1FIX USNO 2/84/22,DIALE
R USNO 2/84/22,DSKDR TM100-2
 REV 2/84/15,GROM FEEDB 3/84
/4,FEBFIXES 3/84/4 !240
410 DATA LOGIC BOOLEAN 3/84/
12,BOOLEAN LOGIC 3/84/12,BIN
LOGIC 3/84/13,STARTREK GA RE
V 3/84/14,ESC GA REV 3/84/15
 !072
420 DATA GETAWAY GA REV 3/84
/16,DIVER GA REV 3/84/17,MAI
LCALL REV 3/84/18,PROWRITER
REV 3/84/19,TUNNELS OF DOOM
USNO 3/84/22 !252
430 DATA LISTSPEECH USNO 3/8
4/22,CHIMES USNO 3/84/22,SCR
OLL USNO 3/84/22,NOQUIT USNO
 3/84/22,REM USNO 3/84/22,ME
M USNO 3/84/22 !181
440 DATA PROGRAMMERS 4/84/7,
WYC FORTH 4/84/11,BUDGET$MAS
TER REV 4/84/13,BUDGETS 4/84
/12,BUDGETMASTER REV 4/84/14
,FORTHWYC 4/84/11 !197
450 DATA HOMEBUDGET REV 4/84
/15,THIEF GA REV 4/84/17,KHE
SANH REV 4/84/18,DONKEYKONG
REV 4/84/19,REM USNO 4/84/21
 !184
460 DATA TIPS USNO 4/84/21,P
ROTECT USNO 4/84/21,TESTSCR
USNO 4/84/21,SCROLL USNO 4/8
4/22,BNCHM USNO 4/84/22 !229
470 DATA CURSOR USNO 4/84/22
,ADVENTUREVOCAB USNO 4/84/22
,DISPLAY USNO 4/84/22,TUNNEL
 5/84/3,KEYFIX FEEDB 5/84/4
!044
480 DATA PROGRAMMERS 5/84/11
,WDPROC COMPANION REV 5/84/1
3,COMPANION WDPROC REV 5/84/
13,QBERT GA REV 5/84/16 !250
490 DATA MADDOG GA REV 5/84/
17,PROGR BOOK REV 5/84/18,BO
OK PROGR REV 5/84/18,TESTMOD
ES USNO 5/84/21,BNCHM USNO 5
/84/21 !090
500 DATA SPEECHTEII USNO 5/8
4/21 !060
510 DATA DRIVEOFFON USNO 5/8
4/22,WIPES USNO 5/84/22,CTRL
FNCTNKEYS USNO 5/84/22,DSKLI
FE USNO 5/84/22,BNCHMS FEEDB
 6/84/3 !059
520 DATA TIWR FEEDB 6/84/4,T
IBBS 6/84/8,ACCTS REV 6/84/1
3,DRCDC9409 REV 6/84/15,STAR
SHIP GA REV 6/84/16,LOSTTREA
SURE GA REV 6/84/17 !111
530 DATA CDC9409DR REV 6/84/
15,BUGS USNO 6/84/21 !222
```

(Continued Next Month)

TI BASE

The Ultimate TI-99/4a Database

For years many 99ers like yourself have settled for nothing more than fancy mailing list programs to fulfill their database needs. And although they have managed small mailing lists well, these programs are too limited for any serious database work. It's now time to stop settling, and start using TI BASE: the only database system that lets you get serious.

With TI BASE you can create, access, manipulate, report, and print information the way you want, not the way some abstract programmer forces you to do. TI BASE lets you design your own database; it literally puts you in the driver's seat. Like dBASE, the most popular database system for the IBM PC, TI BASE gives you a complete procedural command language that allows you to "program" your own database system. No longer will you have to "fill-in-the-blanks" other databases force you to do. After all, aren't you the ultimate user? We think so too.

The Language

Unlike any other database system for the 99/4a, TI BASE employs a database "engine" that is controlled by a procedural command language. This command language, which consists of 45 different commands, allows you to access your own custom databases on-the-fly, or create powerful command (program) files for automatic and complex data processing.

The following capabilities are supported by the command language implemented within TI BASE:

- Database creation and deletion; adding, editing, deleting, searching, and sorting records within a database.
- Free interchange of data; numerical, character, date and local variables.
- Complete mathematical functions; arithmetic, logical, trigonometric, and Boolean.
- Formatted display and print capabilities; character manipulation, screen scrolling, color changing, and more.
- Structured command language; local variable creation, nested command files, and complete logical language.
- Disk management functions; catalog and format disks, copy and delete files.

The System

TI BASE offers many features and capabilities not currently found in any other 99/4a database system, such as:

- Database capabilities: supports five active databases; each database can consist of 16129 records, with 17 fields per record, and 255 characters per field.
- Powerful command (program) language.
- Command (program) file editor.
- System status/setup; allows the definition of disk location, printer configuration, date stamping, and other miscellaneous functions.

Not only is TI BASE powerful, but it is affordable as well. For only $24.95 (plus $2.50 for shipping) you get the TI BASE system disk, a TI BASE tutorial disk, a TI BASE keyboard overlay, and a comprehensive instruction manual. To start using TI BASE you will need a disk system, 32K memory expansion, and either an Extended BASIC, Editor/Assembler, or Mini Memory cartridge.

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Captain's Wheel 32K Expansion

Memory with varied options

By BOB CARMANY

A while back, one of my consoles terminated its existence in a rather spectacular "crash." As if that wasn't bad enough, it managed to take my only 32K standalone memory expansion with it.

Once the initial panic subsided, I began to search for a replacement. In my wanderings through volumes of advertising literature, I came across some information from an outfit called "The Captain's Wheel." Among the other things they advertised was a 32K standalone with some intriguing options.

Basically, three options were offered:

1) Duplicate any 8K block of memory.

2) Add up to three additional blocks counting the software loader as a block.

3) Order a loader to allow the transfer of code from disk to tape or vice versa.

Each option was $10. So, for a 32K with all three options (two banks of memory and the loader software) you would only have to come up with $79. That compares quite favorable with the CorComp 32K standalone for $99. *(MICROpendium strongly recommends contacting manufacturers for current prices for any hardware items.'— Ed.)*

I didn't order the fully expanded 32K although I now wish I had ordered another bank of memory. I did, however, order the 32K with an optional bank of memory at >6000 — a 32K and 8K "SuperCart" all in one unit!

Performance: The standalone 32K was everything that I had hoped for! In fact, with the extra bank at >6000 (the GROM port), it exceeded my expectations by a good measure. Once connected to the console, it ran all of the programs that required 32K. I could discern no timing problems or any other difference between the standalone and the 32K PEB card.

The real "eye-opener" came when I decided to exercise the optional bank of memory. The first thing I tried it on was Funnelweb. After entering XB and bringing up the F'WEB loader, I just switched the cartridge port expander to an empty slot and ran C8TRAM (the specialized loader that came with F'WEB). The screen went back to the TI title screen, and, when a key was pressed, there was Funnelweb as a menu option! In fact the >6000 bank and Funnelweb make an amazing pair! By following the same basic procedure and substituting the Funnelweb E/A Load and Run loader, I was able to load a wide variety of programs initially designed to run on Dave Romer's "SuperCart" and had no problems whatever! Once you get used to the procedure, a couple of keystrokes will let you enter a new world. In fact, MEGALOAD will also fit nicely into the 8K of memory in the optional memory bank.

Review

Report Card

Performance	**A**
Ease of Use	**A**
Documentation	**B**
Value	**A**
Final Grade	**A**

Cost:$49
Manufacturer: The Captain's Wheel, 17295 Chippendale Ave., Farmington, MN 55024
Requirements: Console, monitor or TV, cartridge port expander, disk system

Ease of Use: I probably covered most of this topic under "Performance" but let's recap it anyway. The 32K simply plugs into the console. It has to be immediately next to it in line because it draws its power from the console. That is all there is to it — just make sure it is plugged in rightside-up and it is ready to go!

The load procedure for utilizing the optional memory banks is quite easy and straightforward. Just remember that two memory banks cannot be addressed at the same address at the same time. That means you cannot have a cartridge being addressed at the same time you want to use the RAM at >6000. That is where F'WEB and the cartridge expander come in. Once F'WEB is loaded and the appropriate loader selected, you can move the port selecter on the expander to an empty slot. Then, flip the switch to enable the bank of memory and run the loader. The program will load into >6000 assuming that it has been properly AORGed into that location. Press FCTN= and when the title screen appears, press any key and your program will appear as an option. That's all there is to it!

Documentation: The 32K comes with a seven-page brochure that fully covers connecting the memory expansion. Even the most inexperienced user can follow. It is clear, concise and to the point. After the connection is discussed, there are sections on "Using the 32K Memory" and a brief section on "Troubleshooting."

There are about two pages of CALL LOADs and CALL PEEKs you can use with the additional 32K of memory. Some are new and others are of the "I've seen them before" variety. A brief discussion of the Captain's Wheel Load Interrupt Switch follows and a single line on the optional memory bank. The brevity of this discussion of the optional memory bank is the primary reason for the "Documentation" grade. The docs for the optional program loader V. 1.0 are also included.

Value: The listed price, $49, for the basic unit is extremely attractive if you are in the market for a 32K memory expansion. In fact, the advertisement says that the basic unity price is $39 if two or more are ordered! My unit cost $59 and for that price I got not only a 32K unit that has proved to be reliable, but the equivalent of a "SuperCart" as well! Even with the "full package" of three options, the unit comes in at about $20 less than the comparable CorComp standalone 32K.

Final Grade: Despite the sometimes brief documentation, the over-all performance and ease of use of the Captain's Wheel 32K makes it a real winner! With the requisite hardware and the "fairware" Funnelweb package, you can load programs that, quite frankly, I had never seen before.

The only drawback I have found with the optional memory bank at >6000 is that it leads you to want more programs you can use with the Captain's Wheel 32K. One excellent source is David R. Romer (of Horizon RAMdisk fame), P.O. Box 554, Walbridge, OH43465. He has a collection of programs called "CARTSTUFF" or, you can follow his instructions (MICROpendium July '85) for creating a program header and "roll your own."

Desk Top Publisher v1.0

Useful for unexpanded systems

By RON PREWETT

Desk Top Publisher is a cartridge program produced by DataBioTics that allows the user to create a graphic picture and then include the picture in text. The text can be printed in one to three columns with an Epson compatible printer.

The cartridge can be used with just a console and cassette recorder. Expanded memory is not required nor are other peripherals except for an RS232 interface and printer.

Performance: The documentation recommends that the console be turned off when inserting the cartridge module. The title of the module will appear on the master selection list as "2" on the TI or Myarc and "3" on the CorComp controller card. The documentation doesn't mention that you must use the space bar to get to the secondary selection screen with the CorComp card, otherwise the module does not function.

The program consists of three major sections that are selected from the main menu. These are PICTURE MAKER, WORD MAKER and PRINT PAGE.

The PICTURE MAKER is a graphics or drawing program that has many of the drawing functions of other graphic programs like TI-Artist and Graphx. The drawing modes are represented by icons that are selected by a single key input. The drawing modes are Draw, Point, Frame, Box, Circle, Disc, Fill, Line, Connected Line, and Rays Horizontal.

The crosshair-shaped cursor can be moved about with either the joystick or the FCTN "arrow" keys. The mode is activated by either the ENTER key or joystick fire button. A text mode lets you type in the drawing area. You can select different sized fonts with the FCTN and 1 through 0 keys. The other functions are Clear to clear the work area, Save Picture to disk or cassette and Load Picture from disk or cassette. There is no mention of being able to use pictures created by any other drawing programs.

WORD MAKER is the text input program. You will first be asked to choose 1, 2 or 3 columns for inputting your text. Choosing 1, 2 or 3 columns will allow input of 78, 39 or 26 characters per line,

Review

Report Card

Performance	**B**
Ease of Use	**B**
Documentation	**C**
Value	**C**
Final Grade	**B–**

Cost: $69.95
Manufacturer: DataBioTics, P.O. Box 1194, Palos Verdes Estates, CA 90274
Requirements: Console, monitor or TV, cassette recorder, RS232 interface and printer.

respectively.

Making this selection will then take you to the text editor screen. The first task is to position the picture that was created or loaded from the PICTURE MAKER. Using the FCTN "arrow" keys or the joystick will position the picture anyplace on the page. To set the picture position, use ENTER or the joystick fire button. This will make the text editor ready to accept your input. The editor will display only five lines of text on the upper part of the screen and a maximum of 26 characters per line at one time. The lines can be scrolled up or down one line at a time with the FCTN "arrow" keys or five lines at a time with the FCTN 4 or 6 keys. The screen can be scrolled horizontally to view the entire line. The very top line of the screen shows the location of the cursor by column, row and the position within the line.

The bottom of the screen displays a graphic representation of the entire page showing the position of the cursor and the picture. The screen also has framed areas that show several status conditions.

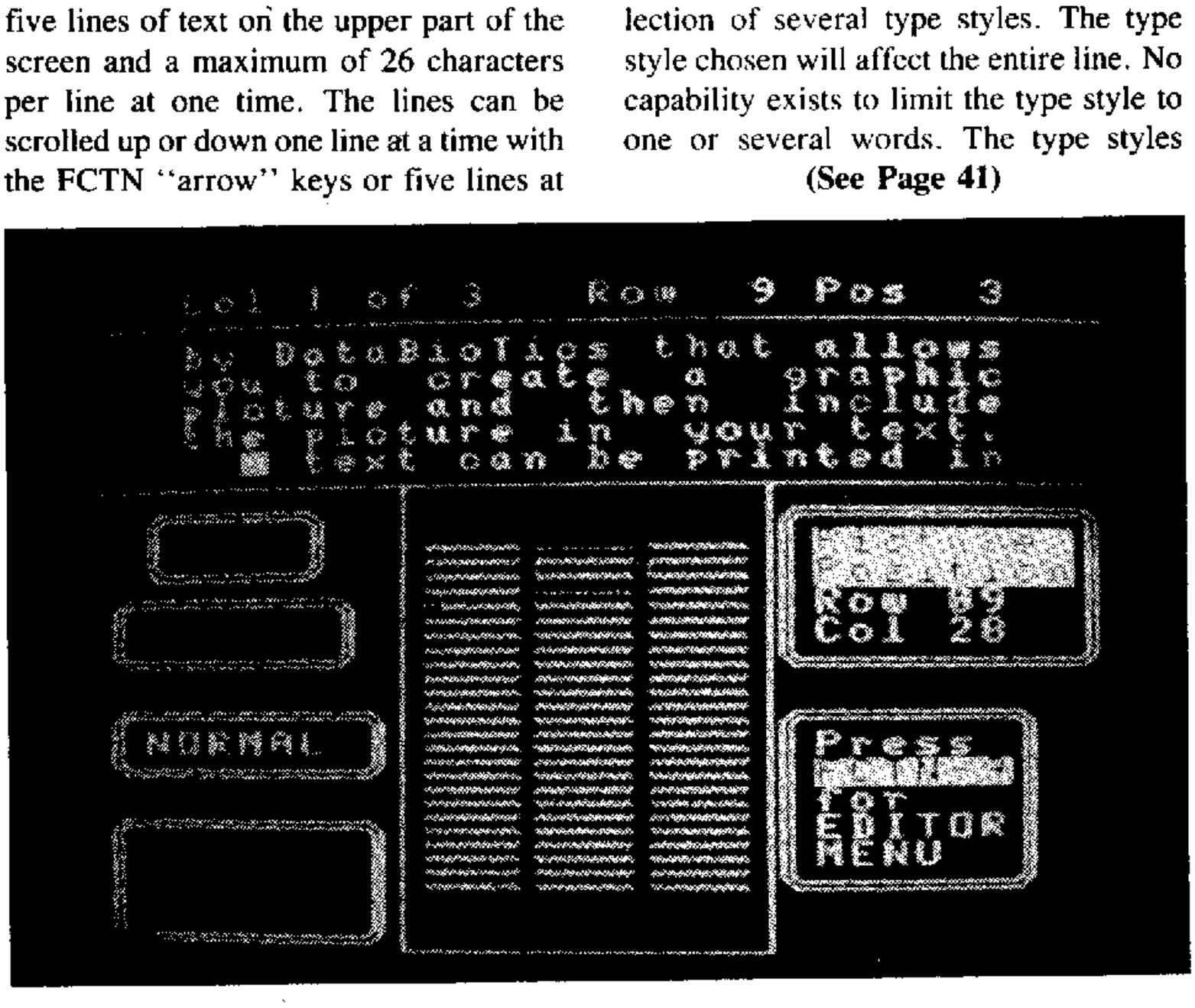
The editor functions are Delete Character, Insert Character, Delete Line and Insert Line. There are no Move, Copy, Replace String or Reformat functions.

Other utility commands are Roll-Up, Roll-Down, Page-Right to scroll to the right, Word-Wrap toggle, Previous Menu, Save-Text, Load-Text, Place-Picture and Select Text-Style. The last four functions can be selected from either assigned function keys or the Editor Menu.

The saved text should be reloaded in the same 1, 2 or 3 column mode in which it was originally created and saved. Loading text that was saved as 1-column when you are in 3-column mode will truncate the text beyond position 26.

The Text-Style function allows the selection of several type styles. The type style chosen will affect the entire line. No capability exists to limit the type style to one or several words. The type styles

(See Page 41)



TEXLINK BBS

The more you use it, the better it is

By CYNTHIA BECKER

There are all kinds of bulletin board programs, ranging from the original program that Mark Hoogendoorn wrote for the TI/994A (and which has been customized by many a sysop), to the Techie BBS program by Monte Schmidt, the TIKS by Scott Darling, the TIBBS program by Ralph Fowler (most commonly used on TI systems nationwide), the Paradigm system by Mike Kimball and Travis Watford, and others. Which brings me to TEXLINK, a bulletin board program recently put on the commercial market by the Ottawa TI User Group.

This program was developed over the past two years, originally having been written by Benoit Tanguay, with further development by Lloyd Galenzoski and other members of the club (Bob Boone, Jane LaFlamme, Tom Bentley and Peter Arpin). It is now being tended to by Charles Earl, author of TELCO.

A little background might prove interesting here.

About two years ago, I was reading the BBS listing on the back of one of the Miller's Graphics flyers, and came across the number for the Ottawa user group. What impressed me most was the size of the group's software library. On the strength of that, and out of curiosity, I logged on one Saturday evening. The system at the time was a "secure system" (new users had to be validated). I waited for clearance.

The software the Ottawa board was running was unlike anything I had ever seen. The security was stringent! You had to leave your voice phone number, address, and other information. Finally, the sysop, Peter Arpin, called me to verify my information and assigned me a password.

They were not running TEXLINK at the time, but a bulletin mentioned the fact that Tanguay was working on an all-assembly BBS program, and was beta testing it as a running sister board. I called it. Although a diamond in the rough, it had potential, and I liked the speed. It was fast. It had some bugs, but Tanguay was working them out slowly but surely.

They had it running intermittently on a regular basis at the regular phone number while perfecting it on the basis of user input.

I followed the chatter over the months, following the program's development as well as the club's planned purchase of a hard disk drive to add to the speed and storage capacity of the very popular bulletin board. Even then, the message base had a fast turnover.

I was amazed at the transformation of this fledgling BBS system into one of the finest bulletin board programs bar none. It has lots of latitude and flexibility. Sysops can set it up to reflect their personalities, as most bulletin board systems eventually do.

The Ottawa user group is currently running its own TEXLINK BBS on a 99/4A with a 10 megabyte hard drive and a Super Cart. The use of the Super Cart allows the system to maintain a user base of 408 users. The Ottawa board has nine download areas (by category) and three message bases: general, Geneve and programming. There are news and information sections as well.

The system comes on three disks labelled TEXLINK BBS, SYSTEM DISK A and SYSTEM DISK B. Also included is a handsomely packaged user manual, outlining the program and how to set it up, along with cable diagram, and lots of information to help you get your own system up and running. The A and B disks are used to run a sample copy of the BBS to see how it works and to give budding sysop some ideas on how to set up your own.

The program is being sold through the Ottawa user group for roughly $40 in U.S. funds, and each program is numbered. The minimum system requirements of the program are listed with the report card above. Optional equipment includes: additional disk drvies, Horizon or CorComp RAM-disks, hard disk, clock (the program supports both MBP and Triple Tech), Super Cart (or any cartridge that provides RAM >6000 >7FFF).

Menus are clear and understandable. From the main menu, you can select to read the bulletins, check out exchange/sales, who the last 10 callers were, get the numbers of other BBS systems, your parameters (you can change your password or toggle the help online), chat with the sysop, or go to a file transfer area (you can set up as many as nine download sections).

The message base allows you to Expedite, Kill, Preview, Read or Selectively Read messages. Once a caller has entered a message, he or she enters a period on the next available line and is prompted to save it or redo or edit a line, or whatever.

There are clear instructions in the manual regarding the pinouts for the cable you will need to use. They are as follows:

MODEM	RS232
Ground 1	Ground 1
Transmit 2	Receive 3
Receive 3	Transmit 2
Ground 7	Ground 7
Carrier 8	DTR 19 (uses port #2)
DTR 20	CTS 5

The filenames on the main system disk are: BULLETIN1, LASTTEN, BULLETIN2, MSGBAND, BULLETIN3, MESGHEAD, BULLETIN4, OTIB, BULLETIN5, PRIVATEBBS, BULLETIN6, SYSTEMLOG, ECHS, USERLOG, GOODBYE, WELCOMEALL, HELLOGUEST, WELCOMEMENU and HONL.

(See Page 41)

Review

Report Card

Performance	**A**
Documentation	**A**
Ease of Use	**A**
Value	**A**
Final Grade	**A**

Cost: $40 U.S.
Manufacturer: Ottawa TI User Group, P.O. Box 2144 Station D, Ottawa, Ontario, Canada K1P 5W3
Requirements: Console, memory expansion, serial interface with two ports free, Hayes-compatible modem, one DS/SD disk drive, TI-Writer or Editor/Assembler cartridge

DESK TOP PUBLISHER—

(Continued from Page 39)

are Normal, Italics, Bold, Emphasized and Underline. Combinations may be utilized for a line: for example, Bold and Emphasized.

The text buffer will hold only one page regardless of column format. If you need additional pages for your text input, they must be created and saved in separate files.

The PRINT PAGE section is pretty straightforward. It allows input of printer device (the default is "PIO.CR") and whether to include the picture in the printed output.

Ease of use: The program is fairly easy to use. Almost everything is menu driven with easy-to-follow prompts.

One thing that would make the program a lot easier to use is being able to reformat the text. Although lines can be inserted, you end up having to retype a lot of text to eliminate having a really short line.

Another inconvenience is losing the special type styles you have set when the text is saved and then loaded back in from disk. They are not lost when saved and loaded back in from cassette.

Another feature that would have made it easier is Right-Justify to eliminate the ragged right edge of the text. This can be done manually by turning off the Word-Wrap mode and inserting additional blank spaces between words.

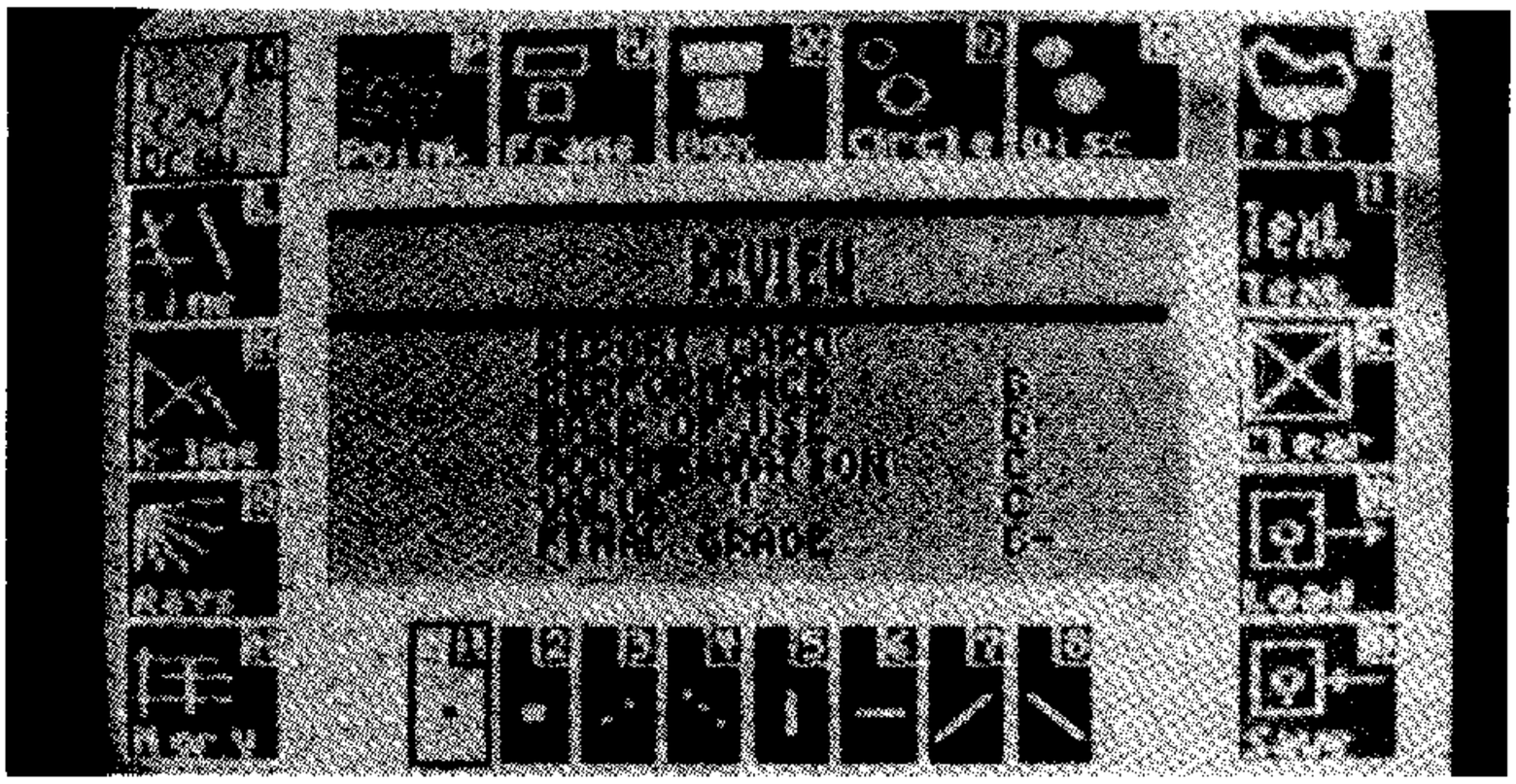
It would also have helped if the program automatically caused the text to bypass the Picture area. Typing text in the Picture area will overlay the text on the picture when printed. An on-screen status box indicates when your text is in the Picture area, but it is still easy to end up with text in this area when you're busily typing in your text. You also have to remember that if you insert lines the type styles you have set will be off by the number of lines inserted. The PICTURE MAKER would have been more functional if it had the capability to work with pixels in a zoom or magnify mode. Being able to use pictures from other graphics programs would have been helpful also.

Documentation: The documentation consists of a seven-page booklet including the Contents and In Case of Difficulty pages. There is also an addendum insert of corrections to the booklet. This still provided only "bare bones" information. There is no explanation of the Status Boxes or that some of the type styles could be used together on the same line.

These are just a couple of examples of information that could have been provided.

Value: The value is greater for those with an unexpanded system. It is a minimal text processor that allows you to prepare your text in one, two or three columns.

Although the ads show a page in a printer almost full of graphics, the Picture area is actually only about 7 rows by 27 columns of text. There is only the capability to use one picture per page.



TEXLINK—

(Continued from Page 40)

Using the utility files, you can customize the BBS to your liking (within reason, of course.)

From the SYSOP level, you can create bulletins and announcements without removing the program from memory. A nice feature of this program. There are at least six user-levels, ranging from 0 to 6.

The manual covers everything you need to know about setting up and running the program. And the user group is very supportive if you should happen to have questions or particular needs or problems.

The long and the short of it is this: if you are serious about setting up and running a bulletin board system, I highly recommend you consider TEXLINK. It is easy to run, and easy for people who call to navigate. I ought to know. I call just about every week, and it has one of the fastest moving message bases I have seen.

If you want to see the system in action, give Ottawa a call at (613)738-0617, on the weekend when the phone rates are lowest, and take it for a test-drive.

Overall, I give the program all A's!

Cynthia Becker is an assistant sysop on the QACS BBS (206)361-0895).—Ed.

The program is being sold through the Ottawa user group for roughly $40 in U.S. funds, and each program is numbered. The minimum system requirements of the program are listed with the report card above. Optional equipment includes: additional disk drvies, Horizon or CorComp RAMdisks, hard disk, clock (the program supports both MBP and Triple Tech), Super Cart (or any cartridge that provides RAM >6000 >7FFF.

UK software available

Parco Electrics, of Honiton, Devon, United Kingdom, holds stocks of products produced for the TI by a leading UK publisher just before TI "pulled the plug," according to Stephen Shaw of the UK's TI99/4A user group.

Four titles make up the Collins packs, each consisting of a book and cassette. The titles are Starter Pack 1 and 2 and Games Writer Pack 1 and 2.

Bulk purchases are available. Costs for the U.S. are 10 packs, $23 and 90 packs $115, air mail; and 10 packs $14 and 90 packs $90, surface mail (U.S. funds). Costs for Australia are 10 packs, $50 and 90 packs $300, air mail; and 10 packs $21 and 90 packs $145, surface mail (Australian funds). Insurance is extra. Write for other prices. For information or to order, write Parco Electrics, 1 Manor Close, Weston, Honiton, Devon, UK, EX14 0PE.

Newsbytes

Program designed to speed up XBASIC

A new program, XBASIC Speeder/Protector, has been released by Nick Iacovelli Jr.

Iacovelli says the program will speed up and hide the contents of most Extended BASIC programs.

The program sells for $10. For further information, or to order, write Iacovelli at 1411 N. 36th, Melrose Park, IL 60160.

Companion disks added to programs

A.K. Kiddoo has added Companions 1 and 2 to his Artist+Graphx programs. He says the disk-based programs will allow exact placement of graphics and text.

TI-Artist is required. Graphx+Artist is $10. Companions 1 and 2 are $6 each or $10 for the two.

The programs are available from Kiddoo at 120 Boys City Dr., Winona Lake IN 46590.

Plug-in for Super XB

John P. Guion of Dallas, Texas, says he plans release of a plug-in upgrade usable only by owners of the Triton Super Extended BASIC module. The upgrade provides the user with Editor/Assembler, TI-Writer and Disk Manager III in addition to Super Extended BASIC. Price is $22.95 for the upgrade kit, instruction manual and one disk with additional support programs.

For a brochure containing complete information, write Guion at 11923 Quincy Lane, Dallas, TX 75230-2651.

Changes occur for Villa-TI BBS

The Villa-TI BBS of the Front Range 99ers of Colorado Springs has a new area code, so the number is now (719) 574-2567.

Joe Nuvolini, sysop, says the board now operates at 300 to 2400 baud and supports both TI and IBM. The board is running The Message HUB, shareware written by Thom Foulks of Colorado Springs. Nuvolini says it is also running a 20 meg hard disk, so it is "very fast."

Mail order only for Pilgrim's Pride

Pilgrim's Pride, of Hatboro, Pennsylvania, has closed its retail store and is selling TI products by mail order only, according to Scott O'Gorman of the company.

For further information, write Pilgrim's Pride, 5 Williams Lane, Hatboro, PA 19040.

Print Wizard offered

Print Wizard, available from Trio+ Software, consists of several programs which give the user the ability to design and print cards, signs, letterheads and banners.

Print Wizard consists of a manual and three disks, one program disk and two data disks. Which data disk the user uses depends on the type of printer. The program operates on the TI99/4A and the Geneve 9640.

Included are borders, fonts and graphics, and a utility to convert artwork and fonts created with TI-Artist.

The program sells for $25 and is available from Trio+ Software, Box 115, Liscomb, IA 50148.

Computer Exposition set for October

The Central PA 99/4A Users Group has announced that its 1988 Computer Exposition will be held from 7 a.m. to 2 p.m. Oct. 16 at the Carlisle Fair Grounds, Carlisle, Pennsylvania, in partnership with the Cumberland County Amateur Radio Society.

Barry Long says that because of the success of last year's exposition, which was held in a tent at the Colonial Park Shopping Center, this year the group will have an entire building devoted to the TI and TI-related equipment.

Some table space has already been reserved, he notes. For further information, contact the Central PA Users Group, P.O. Box 14126, Harrisburg, PA 17104-0126.

Chicago Faire set

The 1988 Chicago TI-Faire will be held Nov. 12 at the Holiday Inn in Rolling Meadows, Illinois, sponsored by the Chicago Users Group. Contact Marcy Brun, 380 Park, Elgin IL 60120 or (312) 695-9291.

User Group updates

The following are additions and updates to our user group listings, which we began publishing in the May 1987 issue.

California

Sacramento 99ers (formerly Central Valley User Group), c/o John Riley, 7661 Plaid Circle, North Highlands, CA 95660. Meets at 8 p.m. second Thursday of the month at the Rancho Cordova Library, 9845 Folsom Blvd.

South Bay TI Users Group, c/o Mike Ewell, President, P.O. Box 23447, San Jose, CA 95153-3447. Phone: (408) 370-7988. Approximately 70 members. Meets at 7 p.m. first Tuesday of the month at the Saratoga Library, 13650 Saratoga Ave, San Jose, California. Has 150 disks of public domain and fairware. Annual dues: $15.

Florida

Greater Tampa Bay TI Users Group, 2620 Tulip Tree Circle, Seffner, FL 33584. Formerly Brandon TI Users Group. Thomas Austin, president. BBS.

Washington

Tri-Cities User Group voted to disband.

Outside U.S.

Belgium

Texsoft Club, Kerkeveldstr. 28, 2280 Grobbendonk, Belgium. Phone 014/513012 (new address).

Canada

New 99er Users Co-op, 216-10th Ave., New Westminster, British Columbia, Canada V3L 2B2 (new address). PUBBS Data Line (604) 526-3389. Founded spring 1984. General meetings second Thursday of month, games night first Thursday, tutorials third Thursday, copying library programs fourth Thursday. All meetings at 7 p.m. at the Cameron Recreational Center, 9523 Cameron St., Burnaby, B.C. Approximately 50 members. Library with more than 500 disks, newsletter, hardware and software support. Annual dues $30.

User Notes

Right justify with Writerease

Keith Emmett, of Brantford, Ontario, has a program for use with Writerease that will right justify any file created in word-wrap mode with the word processor.

Unlike TI-Writer, Writerease does not use embedded format commands when creating a text file. When creating a Writerease text file in wordwrap mode, it is necessary to indent each paragraph. The file will print exactly as it appears on the screen. In fact, in Writerease the left margin is set by the writer. Wordwriter will automatically adjust the number of words per line in wordwrap mode. The right justify program will not adjust the number of words per line. That is, it will not reduce or increase the length of the line except to add spaces to right justify the text.

It is recommended that a right margin of 72 for 80 columns, 86 for 96 columns or 122 for 136 columns be used. The program allows the user to set his own right margin. The right margin setting should not be set less than the length of the line.

This program will add spaces in any lines which do not have a carriage return at the end of the line. Therefore, any line that is not to be right justified must end in a carriage return.

The print pitch is also set at either 10, 12 or 17 characters per inch. The pitch may also be inserted in the text file with the special character mode. Any print pitch commands in the text file will override the right justify program's print pitch settings.

The program will ask for the file name only and assumes that the file is in DSK1. If a different drive is desired, change line 590. The program will search for the file and determine the file size and then load the file. If the file doesn't load, check the file to see if there is any text to the right of the right margin.

The program will handle up to 150 lines per text. If more lines are required, change the dimension statement in line 120.

The program adds spaces in the following sequence:

1. Add spaces at the end of punctuation marks, starting from the end of the line and going backwards.

2. Adds spaces at the end of each word (including words ending in punctuation marks) from the end of the word and going backwards.

3. If more spaces are requires, 1 and 2 are repeated.

This program will also print Wordwriter files saved to disk with the Print File function.

The main advantage of Writerease is its flexible line length of up to 255 characters. One could also add a page numbering routine to this program.

```
100 REM FILL FOR WRITEREASE
-- ANY DV SIZE: XBASIC !174
110 REM BY KEITH EMMETT (PUB
LISHED MICROPENDIUM 6/88 !09
5
120 DIM A$(150)!189
130 CALL CLEAR :: RM=0 !169
140 DISPLAY AT(2,1):"WRITERE
ASE PRINTER" !116
150 DISPLAY AT(4,1):"THIS PR
OGRAM WILL FILL" !074
160 DISPLAY AT(5,1):"AND ADJ
UST ANY FILE THAT" !149
170 DISPLAY AT(6,1):"WAS CRE
ATED IN WORD-WRAP" !188
180 DISPLAY AT(7,1):"MODE WI
TH WRITEREASE" !216
190 DISPLAY AT(9,1):"IT ASSU
MES ONE USES 80,96," !211
200 DISPLAY AT(10,1):"OR 136
 COLUMNS PER PAGE." !121
210 DISPLAY AT(12,1):"RIGHT
MARGIN DEFAULTS:" !121
220 DISPLAY AT(13,1):"72 FOR
 80 COLUMNS" !160
230 DISPLAY AT(14,1):"86 FOR
 96 COLUMNS" !173
240 DISPLAY AT(15,1):"122 FO
R 136 COLUMNS" !002
250 DISPLAY AT(18,1):"FILENA
ME?" !228
260 ACCEPT AT(18,11)BEEP SIZ
E(10):FILE$ !125
270 DISPLAY AT(19,1):"USE DE
FAULT RIGHT MARGIN? Y" !189
280 ACCEPT AT(19,27)BEEP VAL
IDATE("YyNn")SIZE(-1):YN$ !0
97
290 IF YN$="Y" OR YN$="y" TH
EN GOTO 300 !222
300 DISPLAY AT(20,1):"NEW RI
GHT MARGIN:" !005
310 ACCEPT AT(20,19)BEEP VAL
IDATE(DIGIT)SIZE(3):RM !254
320 IF RM<0 OR RM>255 THEN G
OTO 300 !135
330 DISPLAY AT(21,1):"PRINT
PITCH: 1) 10 CPI" !193
340 DISPLAY AT(22,1):"
       2) 12 CPI" !230
350 DISPLAY AT(23,1):"
       3) 17 CPI" !237
360 DISPLAY AT(24,1):"PITCH?
 1" !104
370 ACCEPT AT(24,8)BEEP VALI
DATE("123")SIZE(-1):D !171
380 REM CHECK FILE + SIZE !2
54
390 SZ=0 !100
400 OPEN #2:"DSK1.",INPUT ,R
ELATIVE,INTERNAL !237
410 INPUT #2:P$,J,J,K !171
420 FOR LOOP=1 TO 50 !094
430 INPUT #2:Q$,A,J,K !163
440 IF LEN(Q$)=0 THEN GOTO 5
00 !230
450 IF FILE$<>Q$ THEN GOTO 4
90 !166
460 SZ=K !182
470 IF ABS(A)<>2 THEN GOTO 5
00 !107
480 GOTO 520 !089
490 NEXT LOOP !208
500 CLOSE #2 :: DISPLAY AT(2
2,1):"FILE NOT FOUND" :: FOR
 I=1 TO 1000 :: NEXT I !249
510 GOTO 130 !200
520 CLOSE #2 !152
530 IF RM<>0 THEN GOTO 580 !
224
540 IF SZ<=80 THEN RM=72 !03
2
550 IF SZ>80 AND SZ<=96 THEN
 RM=86 !134
560 IF SZ>96 AND SZ<=136 THE
N RM=122 !225
570 IF SZ>136 THEN GOTO 130
!215
580 REM READ IN FILE !205
590 OPEN #1:"DSK1."&FILE$,IN
PUT ,DISPLAY ,VARIABLE SZ !0
65
600 I=0 !000
610 IF EOF(1)THEN 650 !186
620 I=I+1 !011
630 LINPUT #1:A$(I)!113
640 GOTO 610 !179
650 NLINES=I :: CLOSE #1 !23
3
```

(See Page 44)

User Notes

(Continued from Page 43)

```
660 REM MAIN CONTROL LOOP !1
22
670 FOR I=1 TO NLINES !007
675 DISPLAY AT(1,1):"PROCESS
ING LINE:";I !174
680 B$=A$(1)!063
690 IF LEN(B$)=0 THEN GOTO 9
80 !185
700 IF ASC(SEG$(B$,LEN(B$),1
))=13 THEN GOTO 980 !066
710 IF LEN(B$)=RM THEN GOTO
980 !095
720 SPACES=RM-LEN(B$)!134
730 IF SPACES<=0 THEN GOTO 9
80 !143
740 REM FIND FIRST LETTER IN
 LINE !114
750 FOR M=1 TO LEN(B$)!234
760 C=ASC(SEG$(B$,M,1))!162
770 IF C<>32 THEN GOTO 790 !
141
780 NEXT M !227
790 FIRSTC=M !214
800 REM INSERT SPACES IN LIN
E !109
810 CHECK=0 !021
820 FLAG=1 !210
830 FOR LL=LEN(B$)-1 TO FIRS
TC STEP -1 !048
840 R=ASC(SEG$(B$,LL,1))!252
850 IF FLAG=2 THEN GOTO 880
!201
860 IF R=46 OR R=44 OR R=59
OR R=33 OR R=63 OR R=58 THEN
 GOTO 900 !068
870 GOTO 940 !254
880 IF R<>32 THEN GOTO 900 !
010
890 GOTO 940 !254
900 IF ASC(SEG$(B$,LL+1,1))<
>32 THEN GOTO 940 !135
910 B$=SEG$(B$,1,LL)&" "&SEG
$(B$,LL+1,255)!234
920 SPACES=SPACES-1 !248
930 IF SPACES=0 THEN GOTO 97
0 !198
940 NEXT LL !046
950 CHECK=CHECK+1 :: IF CHEC
K>RM+2 THEN GOTO 980 !138
960 IF FLAG=1 THEN FLAG=2 ::
 GOTO 830 :: ELSE GOTO 820 !
116
970 A$(I)=B$ !063
980 NEXT I !223
990 OPEN #1:"PIO",VARIABLE S
Z !080
1000 PRINT #1:CHR$(27)&CHR$(
66)&CHR$(D);!226
1010 FOR I=1 TO NLINES !007
1020 PRINT #1:A$(I)!099
1030 NEXT I !223
1040 PRINT #1:CHR$(27)&CHR$(
66)&CHR$(1);!152
1050 CLOSE #1 !151
1060 CALL CLEAR !200
1070 DISPLAY AT(22,1):"PRINT
 ANOTHER FILE? Y" !033
1080 ACCEPT AT(22,21)BEEP VA
LIDATE("YyNn")SIZE(-1):YN$ !
085
1090 IF YN$="Y" OR YN$="y" T
HEN GOTO 130 !051
```

NX-10 tip

This comes from Jim Uzzell, of Houston, Texas:

To print out the DIP switch settings for the NX-10 printer from the TI-Writer Editor, enter the following: CTRL U, FCTN R, SHIFT 2, CTRL U. The print through the editor using Print File, PIO.

To print the DIP switch settings through Extended BASIC, use this line:

```
100 OPEN #1:"PIO":: PRINT #1:CHR
$(27);CHR$(0)
```

Temporary fix for clock

Paul E. Flesner, of Prospect Heights, Illinois, writes:

I have been using the following short program, which runs out of Extended BASIC, to set the correct day of the week until the new version of MDOS corrects the "leap year bug."

```
10 CALL INIT :: CALL PEEK(-3273
8,A) :: A=A+1 :: CALL LOAD(-327
38,A)
```

Lithium coin cell for Mini-Memory

This comes from Steven Lisonbee, of Orem, Utah:

For people who have always been looking for a source for the Mini-Memory battery, which is hard to find, this may be of interest.

Recently I took the battery out of my Mini-Memory cartridge to prevent possible damage from leakage. While it was apart, I thought about wiring in a lithium coin cell holder so the battery would be easier to replace and I could use the regular lithium coin cells.

While looking at the circuit board, I noticed a hole close to where the ground wire from the battery is connected. To make the story short, I put a coin cell holder on top of the circuit board and, to my surprise, it fit as if the board was made for it. The small hole on the negative side was opened up with a soldering iron and a solder sucker and the coin cell holder put on. It had an almost perfect fit.

Now my Mini-Memory cartridge has a lithium coin cell holder soldered to the circuit board as if it were installed at the factory. Now all I have to do is go down to the local Radio Shack and buy a CR2032 lithium coin cell and slip it into the holder. No more unsoldering and resoldering batteries.

One source for the lithium coin cell holder is DIGI-KEY Corp. (Box 677, Thief River Falls, MN 56701). The part number is 107K-ND and the cost is $1.09, plus service charge ($0-$9.99 is $2; $10-$24.99 is $2.75).

The company also has a battery (part number P189 for $1.53) which is the CR2032 lithium coin cell. A heavier duty battery (part number P187 for $1.90) is a BR2330 lithium coin cell. However, the BR2330 will just barely fit into the cell holder.

Readers who undertake any hardware modification do so at their own risk.—Ed.

Cable for Multisync and the Geneve

David G. Knapp submitted the following item for those who want to connect an NEC 1401 Multisync monitor to the 9640. As usual, readers undertake any hardware modification at their own risk.

I have made about a half-dozen cables using the attached diagram without any problems. This cable will work only with the 1401 Multisync and not the newer 1402 Multisync.

Knapp notes that he is willing to make

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a tested, four-foot monitor cable for the 1401 for a reasonable price. For more information, contact him at 15 Jones Lane, Long Valley, NJ 07853, 201-876-3685. He may also be reached on CompuServe. His ID is 73300,1010.

Talking typewriter

This comes from Elaine Chan, Ph.D, of Seattle, Washington.

In order to teach young children the names of the letters of the alphabetical keyboard the following program waits for a keypress, displays the letter in double-size capitals in the middle of the screen and says the name of the letter. It requires Extended BASIC and a speech synthesizer.

```
100 REM TALKING TYPEWRITER, E
XTENDED BASIC REQUIRED
110 CALL CLEAR
120 CALL KEY(0,K,S)
130 IF S=0 THEN 120
140 IF K>90 THEN 120
150 IF K<65 THEN 120
161 CALL CLEAR
162 CALL SPRITE(#1,K,2,85,120)
164 CALL MAGNIFY(2)
170 CALL SAY(CHR$(K))
180 GOTO 120
```

By removing lines 162, 164 and 170 and inserting the following lines, the program will run with Terminal Emulator II and a speech synthesizer. The characters will be normal size.

```
165 CALL HCHAR(12,14,K)
105 OPEN #1: "SPEECH",OUTPUT
170 PRINT #1: CHR$(K)
```

Modifications to Multicol program

Ralph W. Mills, of Selkirk, Manitoba, writes:

After reading *Printing in multiple columns* and typing the program MULTICOL (MICROpendium, January and February 1988), I encountered difficulties.

In lines 740 and 890, the expression (in part) — LEN(B$(I))=0 — appears. The makes a line with only a carriage return or line feed symbol (ie. a blank line) after the control code is removed (by line 960 or 930) seem like the last line to be printed. Changing the expression to — LEN(B$(I))=-1 -- corrected the problem.

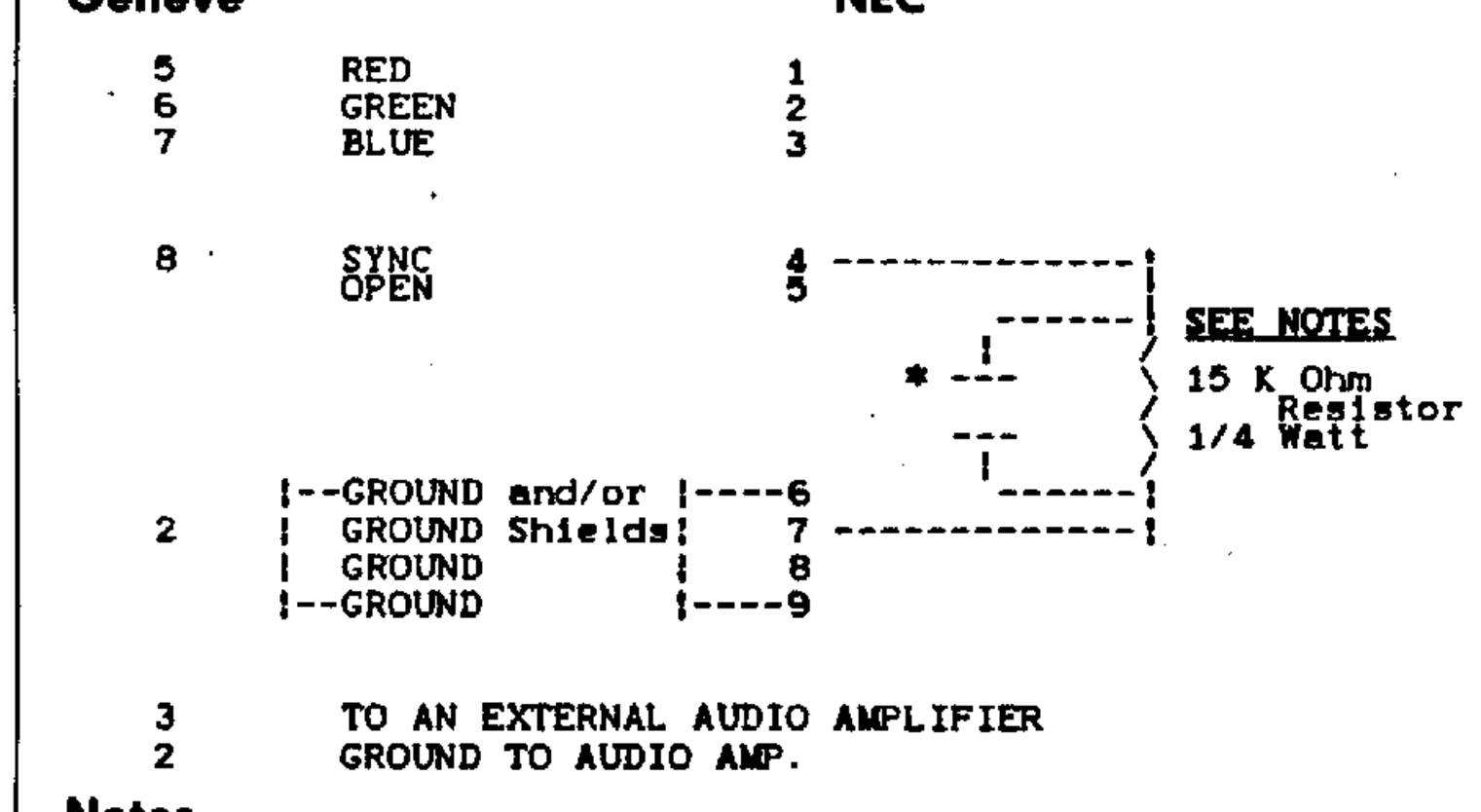
In lines 560 and 970, the statement — IF ASC(B$(I))>127 THEN B$(I)="" — is used. My computer, with Extended BASIC Ver. 110, doesn't like this, and returns ERROR 74 during loading from a file. A similar statement occurs in line 940 — IF ASC(A$)>127 — etc., and causes no problem. Changing lines 560 and 970 to — IF ASC("B$(I)")>127 — etc. makes the computer happy.

The TI-Writer version I use is part of Funnelweb Ver. 4.0. Although I can see what these statements will do, I don't understand their need. In addition, in line 550 — IF ASC(B$(I))>127 — etc. is outside the input loop, whereas in lines 940 and 970, it is inside the input loop.

In line 370, the 'C' and 'N' should be interchanged to coincide with the text article, and the file characteristics. Line 370 should read:

```
370 DISPLAY AT(6,2):"save  FILE
 PRESS  'C' :: DISPLAY AT(8,2):"P
rint File  PRESS 'N'"
```

Monitor adapter cable for the Geneve to a NEC 1401 Multisync monitor



Notes

1. Resistor needed to Reference Sync. to Ground
2. Add capacitors in range of .2 microFarads to .2 picoFarads Mylar to eliminate random noise on display. (Add as needed.)
3. NEC will take 10-20 seconds to PHASE LOCK after Geneve is turned on.
4. RG174 shielded cable is recommended to reduce interference.

Tinygram plays ballpark music

This comes Mike Stanfill of the Dallas TI Home Computer Group. It appeared in the group's newsletter.

Look at the program below. Looks kind of weird, don't it. Well sir, it's something that I've been wanting to do for a long time. An entirely, 100 percent, All-American CALL LOAD Tinygram. Ballpark is a compilation of a lot of things, but what it is mainly is a music program. *Take Me Out to the Ballgame* to be exact. The special thing about it is that it loads itself into low memory and *stays there*. The only thing that'll get rid of it is to type CALL INIT, which clears the area this type of thing is stored, or shut off the console.

Save a copy of it and run it. In only a second or two you'll see the cursor flashing at you. This is your cue to enter CALL LINK("S").

Instantly you'll hear those familiar strains. You can LINK to this program over and over if you like.

Now the fun stuff. Don't like LINKing

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to "S"? No sweat. Go to line 4 and right after 16376 you'll see 83 (that's the ASCII code for the S) and five 32s (ASCII number for the space symbol). Just pick a six-letter or less word that you'd prefer to LINK to, break it down into its ASCII characters and insert it in line 4 in the 83, 32, 32, 32, 32, 32 space.

Also, try this: from lines 8-10, everytime you see a 3 look one number ahead of it. It's usually an 18. These control the speed. These can be anywhere between 1 and 256. 1 is the fastest, 256 is the slowest.

```
1 CALL INIT !157
3 !**********************
   * BALLPARK-A TINYGRAM *
   *     BY MIKE STANFILL *
   * DALLAS TI U.G.       *
   ********************** !
113
4 CALL LOAD(16376,83,32,32,3
2,32,32,36,246,"",8194,37,11
4,63,248)!232
5 CALL LOAD(9460,4,91,2,0,16
,0,2,1,37,44,2,2,0,70,4,32,3
2,36,200,0,131,204)!102
6 CALL LOAD(9482,216,32,37,4
2,131,206,248,32,37,42,131,2
53,4,199,3,0,0,2,3,0,0,0)!17
7
7 CALL LOAD(9501,152,7,131,2
06,22,1,16,231,4,91,1,0,3,14
0,26,144,36,3,134,13,144,18)
!067
8 CALL LOAD(9526,3,142,15,14
4,18,3,141,17,144,18,3,131,2
1,144,18,3,141,17,144,54,3,1
41)!232
9 CALL LOAD(9548,23,144,54,3
,140,26,144,36,3,134,13,144,
18,3,142,15,144,18,3,141,17,
144)!037
10 CALL LOAD(9570,18,3,131,2
1,144,18,3,141,17,144,54,3,1
59,191,223,0,68,73)!057
```

Using RAMdisks with the Geneve

This item is excerpted from a column by Don Jones that appears monthly in the Chicago TImes newsletter of the Chicago TI User Group. It dispels a rumor that the Geneve can't recognize a Horizon RAMdisk.

Using DOS 1.0 and GPL loader 0.98, finding the built-in RAMdisk or a Horizon RAMdisk is no problem either at the DOS level or the GPL (TI mode) level. In fact, the latest version of MDOS ws written with the idea of helping you to find your Horizon RAMdisk.

In order to use a Horizon RAMdisk (HRD) with the Geneve, the HRD must sit at the CRU >1400 and take the drive name DSK6. If you do this, you will have no trouble "finding" your HRD and won't have to alter MDOS with a sector editor, which was necessary with MDOS 0.97 and 0.98.

Bomb-proofing ACCEPT AT

This Extended BASIC programming tip appeared in TI*MES, the newsletter of the TI 99/4A User Group United Kingdom. It is by John Seager.

Using ACCEPT AT for a numeric variable, how do you idiot-proof it so the program will not bomb? You can insert a default input value, and use a negative size, and also use VALIDATE.

However, the user can blank the default variable with CLEAR, and if the input variable is a numeric variable, trying to input a blank will cause an error condition.

Authors frequently input all numbers into a string variable. Inputting a blank does not cause an error, and you can test for a null input and go back if required.

You don't have to do it that way. Using ON WARNING NEXT will test for the null input and go back for you. Try it.

```
100 ON WARNING NEXT
110 ACCEPT AT(4,5)ERASE ALL VA
IDATE(DIGIT):A
120 GOTO 110
```

Seager also points this interesting tip. Examine the following lines.

```
100 ON ERROR 600
110 RUN "DSK1.NOFILE"
....
600 ON ERROR 600 :: RETURN
```

The RETURN will fail as the failed RUN seems to remove the internal pointers. This is a deliberate ploy by TI to avoid the "accidental" removal of the List Protection flag — which happens with Ver. 100 of Extended BASIC.

You need to use the format RETURN XXX, where XXX is a line number to go to which will RUN the original program again. You could use RUN 110 or something if required. The second RUN will, of course, reset all required pointers.

Routine sets listing line length

This tip appeared in TopIcs, the newsletter of the Los Angeles 99ers. It was used in Chick De Marti's column. He credited the Aloha newsletter as the source.

The program allows the user to set the line length for program listings. As it appears here, the program instructs the printer to print 28-character lines in elite pitch.

With Extended BASIC, save the program in MERGE format. Load the program you want to list and MERGE this routine into it. With the printer turned on, run the programs. The routine will send instructions to the printer and then stop. Then, delete lines 2-6 and enter LIST "PIO".

The program can be used in BASIC by running it through the printer and then loading the program you want to list.

The printer codes are for Epson-compatibles. Line 3 selects elite pitch — CHR$(77). Line 4 sets the right margin — CHR$(81) — and sets the number of characters to print per line — CHR$(N+28).

```
2 OPEN #2:"PIO"
3 PRINT #2:CHR$(27)&CHR$(77)&CH
R$(N)
4 PRINT #2:CHR$(27)&CHR$(81)&CH
R$(N+28)
5 CLOSE #2
6 STOP
```

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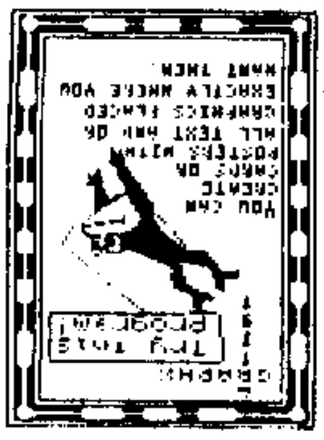
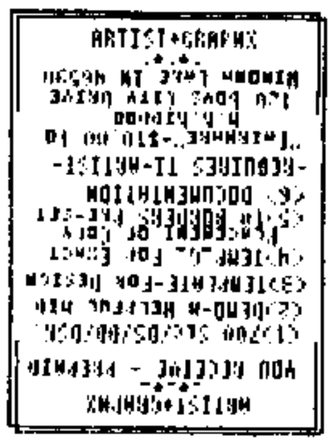
Classified

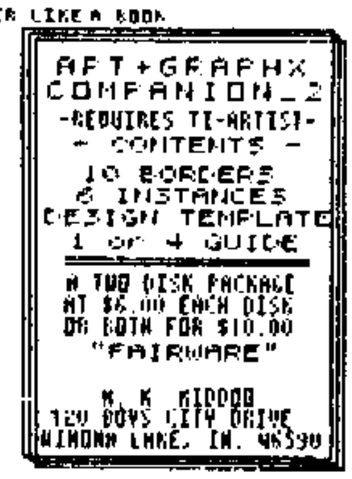
Software





(FOLD BACK & DOWN AT CENTER)

FOLD IN ON CENTER LIKE A BOOK



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