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THE HUGgers  
HOOSIER USERS GROUP  
People Helping People

# Best of Huggers Volume II

Hoosier User's Group  
Indianapolis, IN





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**THE HUGgers**  
**HOOSIER USERS GROUP**  
**People Helping People**

August 1989

THE HUGgers NEWSLETTER

Volume 7, Number 7

### H.U.G. BBS UPDATE

Those of you who may have tried the Bulletin Board recently would have noticed that it is down.

Unfortunately, it was hit by lightning during one of those thunderstorms we had in mid-July. Hopefully the damage will be found to be minor and we will be able to have it back on-line soon.

### OFFICERS

PRESIDENT....JOHN POWELL 786-3270  
VICE-PRES.....CARL CLARK 1-398-6226  
LIBRARIAN..BRYANT PEDIGO 255-7391

\*\*\*\*\*  
\*  
\* **AUGUST** \*  
\* **SPECIAL MEETING** \*  
\* **& PARTY** \*  
\* \*  
\* **August 20, 1989** \*  
\* **3:00 p.m.** \*  
\* \*  
\* **At the home of Gary** \*  
\* **McQuade. See page 5** \*  
\* **for details.** \*  
\* \*  
\*\*\*\*\*

### TELCO QUICK REFERENCE

Southwest 99ers Mar 89

#### TELCO Editor Key Functions

Fctn-1 Delete Character at cursor  
Fctn-2 Insert Character at cursor  
Fctn-3 Delete line  
Fctn-5 Clear input  
Fctn-8 Insert line  
Fctn-5 Left Cursor  
Fctn-9 Right Cursor  
Fctn-E Cursor up  
Fctn-I Cursor down  
Ctrl-A Clear all tabs  
Ctrl-B Set Bell  
Ctrl-C Clear Tab  
Ctrl-P Place Tab  
Ctrl-R Set Right Margin  
Ctrl-S Show Tab Line  
Ctrl-T Tab

#### TELCO Terminal Function Keys

Fctn-1 Auto Dialer  
Fctn-2 Print Spooler Toggle  
Fctn-3 Window Left  
Fctn-4 Download Files (Page Down on Geneva)  
Fctn-5 Window Right  
Fctn-6 Upload Files (Page Up on Geneva)  
Fctn-7 Help  
Fctn-8 Review Buffer  
Fctn-H Hangup  
Fctn-M Macro Select  
Fctn-Y Screen Setup Options  
Fctn-W Full/Half Duplex toggle  
Fctn-L Log open/close  
Fctn-/ Log Hold  
Fctn-J Window Lock toggle  
Fctn-V Status line toggle  
Fctn-. (function-period) Conference Mode  
Fctn-8 Reset Clock  
Ctrl-2 Clear screen locally

#### TELCO Review Buffer Function Keys

Fctn-1 Top of review buffer  
Fctn-2 Bottom of review buffer  
Fctn-3 Window Left  
Fctn-4 Window Down  
Fctn-5 Window Right  
Fctn-6 Window Up  
Fctn-7 Help  
Fctn-8 Screen Dump to a device  
Fctn-P Purge review buffer  
Fctn-E Line up  
Fctn-I Line down  
Fctn-8 Column left  
Fctn-8 Column right

#### TELCO Auto Dialer Function Keys

To view the list of numbers use:

Fctn-4 Page down  
Fctn-6 Page up  
Fctn-I Line down  
Fctn-E Line up

# THE TI - 99 LIGHT PEN

I found an article in my archives that referred to a light pen for the TI - 99 that I had been saving for quite a while ( the article and accompanying program came from the MAY 1987 edition of TIBUG's BUG BYTES Newsletter ). After looking into it a little more closely it became evident that it was not what I had remembered it to be, however I thought that it would serve quite well as a beginners' hardware project, a novelty for the younger members and a challenge to the Extended Basic programmers to come up with some useful routines or interesting games to play

The basis of the design is a light - dependant resistor or CdS ( Cadmium Sulphide ) cell which is quite sensitive to light. Construction of the pen is very simple, and the accompanying diagram should be self - explanatory, as the CdS cell is not polarity conscious

Connected to pins 7 and 9 of the joystick port, the programme is looking for RIGHT joystick movement from JOYSTICK #1. The original article suggests that a second pen could be connected to pins 2 and 5 WHICH IS PROBABLY THE SAME FUNCTION FOR JOYSTICK #2

The accompanying program is of a trivial game that I had to modify to make it more interesting to look at and more challenging to play - I mean if I can consistently win, the game MUST be at pre - kindergarten level. For those who find the game too easy, try firstly changing the score values at lines 820 to 890, at least you will get some abusive messages occasionally

I have been frantically searching for joystick - based games that were suitable for modification for use with the light pen. Please send me a copy of simple programs that you think may fit the bill. Just remember that this is supposed to be a project for the novice programmer

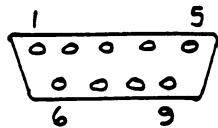
I would also like a copy of the program that came with the original TI joysticks if any one has a copy of it - maybe that type of drawing and music program would suit the light pen. There is also a TIC TAC TOE program deep in the archives that requires a light pen - does anyone have a copy of that one ?

Geoff WARNER



FOOTNOTE : The CdS cell is sensitive to WHITE light, and thus the light pen will not work on a green screen monitor...G.W.

# TI LIGHT PEN



PIN LAYOUT  
DB9 Connector  
(from solder side)

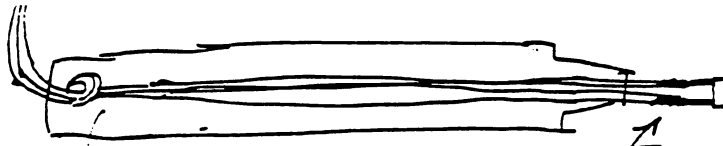
NOT TO SCALE

drill a  $\frac{3}{16}$ " hole  
in the end of the  
empty pen casing

cut  
tip off,  
remove and  
discard contents  
of pen

Old 'fine line'  
fibre-tipped pen

to DB9 connector



Cds Cell or light-dependant  
resistor

I used light  
'figure 8' or car speaker  
wire for the connector.

Solder wire to  
Cds Cell leads.  
Don't forget to sleeve the  
exposed leads.

\* Knot the wire to prevent  
it pulling through and  
putting a strain on the  
soldered connection.\*

## PARTS LIST TI-99 LIGHT PEN

- DB9 Connector (female)
- Backshell to suit
- length of light 'figure 8'  
cable (car speaker wire)
- CDS cell Dick Smith DSCD01
- Surplus fibre-tipped pen

**THIS PROJECT IS RATED  
SUITABLE FOR BEGINNERS**

TIUP  
TI - 99 USERS OF PERTH ( Inc. )  
c/o THE SECRETARY  
3 MARU WAY  
LESMURDIE 6076  
WESTERN AUSTRALIA



## PROGRAM LISTING - SOFTWARE FOR LIGHT PEN PROJECT

### SUITABLE FOR CASSETTE USERS

```

100 !DOTS
110 !
120 !REQUIRES LIGHT PEN
130 !
140 !ORIGINAL AUTHOR UNKNOWN
150 !
160 !UPDATE #1
170 !
180 !by Geoff WARNER
190 !
200 !for TIUP ( Inc. )
210 !
220 !PERTH
230 !
240 !WESTERN AUSTRALIA
250 !
260 !JANUARY 1993
270 !
280 CALL CLEAR :: CALL SCREE
N(2)
290 FOR X=1 TO 10 :: CALL CO
LOR(X,5-11*(X=8),1):: NEXT X
300 RANDOMIZE
310 FOR X=0 TO 2
320 C=96+8*X
330 CALL CHAR(C,"3C7EFFFFFFFF
7E3C")
340 CALL COLOR(9+X,1,1)
350 NEXT X
360 CALL DOT_SCREEN
370 DISPLAY AT(16,1):""'hp'h
p'hp'hp'hp'hp'hp'hp'hp' T
I 99 LIGHT PEN hp
TOUCH DOT TO CONTINUE. 'ph
p'ph'ph'ph'ph'ph'ph'ph'ph'"
380 CALL JOYST(1,X,Y):: IF X
<>0 OR Y<>0 THEN 450
390 FOR C=1 TO 3
400 CALL COLOR(9,7-4*(C=1)-8
*(C=2),1)
410 CALL COLOR(10,7-4*(C=2)-
8*(C=3),1)
420 CALL COLOR(11,7-4*(C=3)-
8*(C=1),1)
430 NEXT C
440 GOTO 380
450 CALL SOUND(100,440,0)::
CALL CLEAR :: SC=D
460 DISPLAY AT(12,9):"EASY
HARD"
470 DISPLAY AT(16,7):"SELECT
DIFFICULTY" :: DISPLAY AT(1
8,1):"EASY=LARGE DOTS, H
ARD=SMALL"
480 CALL HCHAR(12,9,112):: C
ALL HCHAR(12,19,104)

```

```

490 CALL COLOR(11,16,16,10,2
,2)
500 FOR I=1 TO 10
510 CALL JOYST(1,X,Y):: IF X
=4 THEN CALL MAGNIFY(2):: GO
TO 580
520 NEXT I
530 CALL COLOR(11,2,2,10,16,
16)
540 FOR I=1 TO 10
550 CALL JOYST(1,X,Y):: IF X
=4 THEN CALL MAGNIFY(1):: GO
TO 580
560 NEXT I
570 GOTO 490
580 CALL CLEAR
590 CALL SPRITE(#1,96,16,92,
124)
600 DISPLAY AT(16,6)BEEP:"TO
UCH DOT TO START"
610 CALL JOYST(1,X,Y):: IF X
<4 THEN 610
620 CALL SOUND(-100,220,5)::
CALL SOUND(-100,880,0)
630 CALL CLEAR
640 CALL CHAR(128,"3F7CF8F0F
8FC7E3F")
650 CALL CHAR(132,"3C7EFFFFF
FFF7E3C")
660 FOR L=1 TO 20
670 CALL SPRITE(#1,128,16,IN
T(RND*192)+1,INT(RND*256)+1,
INT(RND*0)+1,INT(RND*0)+
10)
680 N=0
690 CALL JOYST(1,X,Y)
700 IF X=4 THEN 730
710 CALL PAT
720 N=N+1 :: GOTO 690
730 SC=SC+N :: CALL SOUND(-1
00,440,5)
740 DISPLAY AT(1,5):"SCORE "
;SC
750 FOR X=1 TO 100 :: NEXT X
760 NEXT L
770 FOR Z=1 TO SC STEP 10
780 CALL SOUND(-100,Z+110,0)
790 NEXT Z
800 CALL CLEAR :: CALL SPRIT
E(#1,96,16,150,123)
810 DISPLAY AT(10,1):"YOUR S
CORE IS ";SC :: DISPLAY AT(1
8,3):"TOUCH DOT TO PLAY
AGAIN"
820 IF SC>150 THEN 830 ELSE
DISPLAY AT(12,6):" YOU CAN'T
FOOL ME." :: DISPLAY AT
(13,6):" YOU CHEATED!" :: GO
TO 900

```

## PROGRAM LISTING ( cont. )

```

830 IF SC>200 THEN 840 ELSE
DISPLAY AT(12,1):" VERY GOOD
! " :: GOTO 900
840 IF SC>225 THEN 850 ELSE
DISPLAY AT(12,1):" WOW ! YOU
R NAME RAMBO? " :: GOTO
900
850 IF SC>250 THEN 860 ELSE
DISPLAY AT(12,1):" NOT BAD.
BUT DO YOU PAY SOMEONE T
O SWAT FLIES FOR YOU? " :: G
OTO 900
860 IF SC>300 THEN 870 ELSE
DISPLAY AT(12,1):" YOU NEED
PRACTICE " :: GOTO 900
870 IF SC>350 THEN 880 ELSE
DISPLAY AT(12,1):" HAVE YOU
CONSIDERED CHECKERS? " :
: GOTO 900
880 IF SC>400 THEN 890 ELSE
DISPLAY AT(12,1):"HELLO! ANY
ONE AWAKE OUT THERE? " :
: GOTO 900
890 DISPLAY AT(12,1):"TRY PO
INTING THE PEN AT THE DOT! "
900 FOR Z=1 TO 500 :: CALL J
OYST(1,X,Y):: IF X=4 THEN 93
0
910 NEXT Z
920 CALL CLEAR :: DISPLAY AT
(12,1):" DOTS ALL FOLKS!" ::
END
930 CALL DELSPRITE(ALL):: GO
TO 450
940 SUB PAT
950 FOR PATT=128 TO 132 STEP
4 :: CALL PATTERN(#1,PATT)
960 FOR D=1 TO 5 :: NEXT D
970 NEXT PATT
980 SUBEND
990 SUB DOT_SCREEN
1000 DISPLAY AT(1,1):" 'hp'h
hp'h 'hp'hp 'hp'hp p'
h ' hh h 'p
h p h 'p p ph
p ' p h' 'hp'hp "
1010 DISPLAY AT(5,1):"h'
h ' ph 'p h
p h 'p h ph
p ' p h' p h'
ph' p'hp ph hp'hp' "
1020 SUBEND

```

A PROGRAM THAT I WOULD LIKE TO SEE by  
Dave Renkenberger

First of all, let's establish one thing, I am not a Programmer! I can plunk around in Extended Basic and I have written a couple of screen display routines in Assembly but that's about all.

One thing that I have noticed over the last couple of years in the 99-4A/9640 world is that most of the programmers are turning out utility programs and a few games. If this trend continues, our computers will become more and more one dimensional. What we need is more variety in the new offerings from our programmers.

The few simple programs that I have written in the past, were not all that difficult to write, once I came up with an idea of what I wanted to create. If others are like me in this respect, it would follow that if we would flood the user group newsletters and BBS's with programming ideas, we just might end up with some new programs to play with.

The following are my thoughts on a program that I would like to see written by someone more talented than me. I would encourage others to follow suit and submit requests for programs that they would like to see. If handled properly, this thing could snowball into something useful.

I have always wanted to write a program that would develop a grocery shopping list. The program should include a database for coupons and the user should be able to develop a store map that would sort the items on the list into the order in which they appear in the store. This program could also include such things as estimated cost calculations, and if the programmer really wanted to get fancy, nutritional info could be worked into the package.

Now it's your turn, What kind of program would you like to see?



## PC99 a Synopsis.

By Dan H. Eicher, 04.05.93

Over the last two months I have been Beta testing stage 1 of PC99. Lets review, PC99 is a software only products that runs on an IBM PC with at least a 386 processor. PC99 emulates the complete 99/4A environment in software, at the chip level. What does that mean? Well, you could make an emulator that only acted like the TI at the system software level, meaning to access a peripheral you would do something like this in your assembler software:

```
BLWP DSRLNK
DATA 8
```

But, if your software was to do something similar to the following code it would not work, since the emulation software would have no way of knowing the following code was writing directly to a certain chip ( Memory Mapped I/O ).

ie. ( This code will directly write out bytes to the PIO port)  
( after the correct setup code.)

```
MOVB *R1+,>5000
```

To make this work out properly you would have to rewrite the DSR service routines of the cards you wished to emulate. Cadd Electronics ( the people that brought you the Gramulator ) took it one step further. They emulated the 99/4(a) at the CHIP level, meaning any software that writes to individual chips ( instead of making system calls ) will still run. You will remember that when the Geneve first came out that this was a topic. One of the programs that wouldn't run on a Geneve was Fasterm by J. Paul Charlton. The reason was Fasterm reads the status of the keyboard by directly interrogating bits from the 9901 PSI( Programmable System Interface ) and on the Geneve the keyboard is not directly connected to the 9901 as it is on TI-99/4(A). It is ironic that the PC99 emulator running on a PC is, in some ways, more hardware compatible with a TI-99/4(A) then the Myarc Geneve!

Let me give a brief recap of the various stages that PC99 will be released in:

### Stage 0.

Basic emulation, machine will execute all 9900 instructions. Including all 9918A compatible commands ( except sprites ). No I/O is available.

### Stage 1. ( Current Available )

Clean up any existing Bugs. These included incorrect display in multi-color mode, and incorrect color mapping in TI Basic ( also shows in some modules that use the basic interpreter).

Emulate operation under interrupts.

Emulate disk and RS232/PIO I/O.

## Stage 2.

Emulate multi-voice sound through PC Sound Blaster card.  
Emulate speech through PC Sound Blaster Card.

## Stage 3.

Allow addition of external DSR's. This will be achieved by reserving a set of illegal TMS9900 Instructions. Each illegal instruction will be trapped by PC99 and vectored to a user space where control can be passed to an external function. This function must be written PC C or PC Assembly ( 80X86 instruction set ) language.

## Stage Future:

Direct reading of TI disks in a PC drive.

A basic compiler written in PC C or PC Assembly language. The compiler must be able to read the emulated TI disk system to extract the Basic source file. The compiler will then generate native 9900 code in E/A3 or E/A5 format and place the output file back in the TI disk system. The user will then be able to load and execute the file using the Editor/Assembler.

The emulator as it exists today will run all the cartridge software TI ever produced. The requirements to run PC99 are a 80386 based MSDOS computer with a VGA graphics card. Pretty much a basic configuration by todays standards.

While using PC99 I have found it a pleasure to use. It is very good for debugging software or as a learning tool. You can at any time during emulation hit the escape key and you are in debugger mode, where you can change any memory locations value ( VRam, Gram or CPU ram ) then continue execution to see what results your modification made.

I can see a true renaissance for the TI. Consisting of former TIers that went over to big blue long ago. Many of these folks still have a 4(A) and a zillion game cartridges lying around somewhere ( usually in the hallway closet). I believe that many of these people ( if they knew of the existence of this software ) would buy it, to once again have access to the still exception educational software ( not to mention all those old games that they once secretly enjoyed!).

One of the most exciting things about the emulator is that your ENTIRE TI system is emulated in software! That means it is at least theoretically possible to add features like AMS and RAMBO compatible memory or a 9938 Graphics chip by adding some additional code to the program.

Let us say that you have 8 megs of memory on your PC. Much less than one meg of memory is taken up by PC99. That leave 7 megs of potential RAMBO/AMS memory. Always wanted a Gramulator/Gramkracker but couldn't justify the cost? Well, on your PC all the ROMS and GROMS are now in RAM! Free Gramulator! Always wanted a RAVE keyboard? Well now you get it for free!!

Cadd Electronics provides utilities and information to aid you in migrating your programs and data to this platform. Your cartridge based software can be moved over just as it was with a Geneve or Gramulator. In fact PC99 accepts the same cartridge dump formats used by these devices.



Documentation consists of two files. One in WordPerfect format and an ASCII formatted file so you can do a direct "dumping" to your printer. The documentation has been left in electronic form to insure sure that the most up to date information is distributed with the software.

In short, as TI hardware gets harder to find and PC hardware gets cheaper and easier to find ( because of economy's of scale ) you can protect your software and knowledge investment by purchasing this product.

The TI will now live on for at least another 15 years, if only in emulation!

PC99 ( Stage 1 is available today from:

CaDD Electronics  
81 Prescott Road  
Raymond, NH 03077

Price: 100.00  
( 45 dollars for those who purchased Stage 0)  
Please specify media type:  
5.25 - Low or High Density  
3.5 - Low or High Density.

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Reprinted from 99'ER NEWS

## LASER PRINTERS AND THE TI

By Mike Maksimik  
Chicago User Group

Laser printers can work fine on the TI and Geneve. The IBM 4019-001 laser printer I installed at the company I work for came with a technical reference manual including all codes necessary to get the printer to work in several modes: IBM PPDS mode (IBM mode), HP mode (Hewlett Packard), plotter mode, and Epson compatible printer mode.

In Epson mode the printer behaves like any standard PC dot matrix printer. It produces excellent text in this mode and several fonts are available from the front panel and software (and cartridges) to add distinction to your text.

The IBM mode is similar, but adds some commands to change the font styles and also to download them into different memory areas of the printer, so that several fonts can be downloaded and retained in the printer's memory, as long as the power is on.

Using software commands (escape codes) you can rotate the fonts, enlarge them, or shrink them (scaling). You can also control the paper supply using escape codes. In fact, all the necessary codes for controlling the printer need no special software to run on the 4A, just *TI Writer* and a little patience in entering the escape codes into a document.

The author had an IBM PC at work and a Texas Instruments 99/4A at home. Naturally, he wanted to transfer files from the smaller 99/4A to the faster PC. This article describes the hardware and software modifications needed to make the IBM-TI connection. By Kenneth Burchett

# IBM-TI Connection

With today's vast computer market, it's not unusual for someone to have one kind of computer at home and a different one at work. Having a TI 99/4A of my own and an IBM PC at work soon made me want to adapt programs from the smaller unit to the faster machine. Texas Instrument's decision to drop the TI 99/4A and IBM's announcement of the PCjr was an added incentive to find a simple file-transfer method for these two popular brands.

## Making the Connection

First, you have to connect the asynchronous communications support adapter on the IBM PC to the RS-232C interface card on the TI 99/4A. You can use a direct cable or a telephone coupler (modem). If you use a cable, you can buy one or make one from bell wire and two DB-25 connectors—one male and one female.

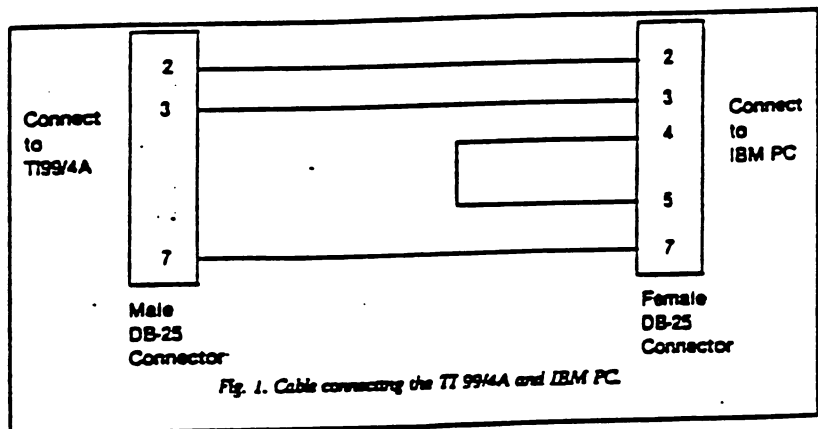
The required pin connections are shown in Fig. 1. Note that pins 4 and 5 on the IBM PC side are wired together to automatically turn on the clear-to-send input line. This cable hookup successfully moves files from TI 99/4A cassette storage to IBM PC disks and works equally well in disk-to-disk transfers.

The file transfer process is easier when you use the communications program in Listing 1. Prepare a disk containing DOS, BasicA, PCTICOM and the following AUTOEXEC.BAT file: BasicA PCTICOM.BAS/C:16000. A 16Kb buffer for receiving data is set aside to eliminate any possibility of a communication buffer overflow. The size allocated may vary with the system; however, it needn't be larger than the memory of the TI 99/4A to do the job. The maximum allowable is 32767 bytes.

One final note—some Basic program lines may be divided in the process of being translated, resulting in a Direct Statement in File error message when you try to run them. Therefore, it's useful to include a copy of the ED-LIN editor provided with MS DOS on the utility disk. I find that, with just a few changes, most programs written on the TI 99/4A can be converted to

```
100 CLS:LOCATE 4,12
110 PRINT "=====PCTICOM=====
120 LOCATE 5,12:L=1
130 PRINT "Program to transfer files from a TI99/4A to an IBM-PC."
140 PRINT TAB(12) "File to be transferred must be in TI99/4A memory."
150 LOCATE 7,12
160 PRINT "Use CTRL BREAK to interrupt PC processor. CONT to continue."
170 PRINT TAB(12) "Use direct GOTO 100 to start over after CTRL BREAK."
180 "By K. Burchett, January 1983. Ref: J.G. Schmidt, Microcomputing,
190 "November 1983; IBM Basic Manual, 1982; TI RS232 Reference, 1982
200 KEY OFF:CLOSE:LOCATE 9,12:ON ERROR GOTO 500
210 PRINT "=====
220 LOCATE 12,28:PRINT " 1. Transfer file"
230 LOCATE 14,28:PRINT " 2. Return to BASIC(A)"
240 LOCATE 16,28:PRINT " 3. Return to DOS"
250 LOCATE 19,14:INPUT " Enter choice: "C
260 LOCATE 20,1:CLS:ON C GOTO 280,340,360:GOTO 100
270
280 "=====Process file=====
290 INPUT "Print transferred file on the screen (y or n)":P1:PRINT
300 INPUT "Print transferred file on a printer (y or n)":P2:PRINT
310 IF P1<>"Y" AND P2<>"Y" THEN 340
320 INPUT "Number of lines per page (continuous=0)":L:P1:PRINT
330 INPUT "Number of characters wide (maximum=155, TI=28)":W1:PRINT
340 INPUT "Save transferred file on diskette (y or n)":S1:PRINT
350 IF S1<>"Y" AND S2<>"Y" THEN 380
360 PRINT "Enter filename for file to be received. Add .BAS suffix if"
370 PRINT "file is BASIC program: ";FILES:OPEN FILES FOR OUTPUT AS #2
380 WIDTH "1p1:":WT: OPEN "CON:300,0,7,CS,DS,RS" AS #1CLS
390 IF P=1 THEN PRINT "Ready Printer"
400 PRINT "Enter LIST RS232/1(in quotes) at TI99/4A.":PRINT
410 LINE INPUT #1,AS: IF LEFTS(AS,1)=CHR$(10) THEN AS=MIDS(AS,2)
420 IF P1="Y" OR P2="Y" THEN PRINT AS
430 IF P=1 THEN 440 ELSE 460
440 LPRINT AS:CTR=CTR+INT((LEN(AS)/WT)+.1):IF CTR<L OR L=0 THEN 460
450 PRINT:INPUT "Page change. Press ENTER to continue.":K1:CTR=0
460 IF S1="Y" OR S2="Y" THEN PRINT #2,AS
470 FOR T=1 TO 3000:IF LOC(1)>1 THEN 410
480 NEXT T:PRINT:PRINT:PRINT "====Transfer Completed====
490 CLOSE:FOR I=1 TO 5000: NEXT I:CTR=0:CLS:GOTO 100
500 IF ERR=69 THEN PRINT "====overflow====RESUME
510 IF ERR=25 OR ERR=27 THEN 520 ELSE 530
520 INPUT "Device Error. Check Printer. ENTER to continue.":K1:RESUME
530 ON ERROR GOTO 0
540 CLS:PRINT "End of session. BASIC(A) resumed.":WIDTH "1p1:":255
550 END:
560 SYSTEM
```

Listing 1. PCTICOM file transfer program.



run on the IBM PC. In order to be transferable, files must be ASCII text files. Default storage for TI files is Display (the equivalent of ASCII code).

The PCTICOM program has all the necessary features of the asynchronous communications support program (ACSP) to control data transmission, with the added convenience of being able to control the print setup,

and without the comparatively long initialization time required by the ACSP. By configuring the IBM PC to the communication defaults of the TI 99/4A and using the TI's simple List "RS232" command, you can accomplish the whole transfer process very quickly. □

Address correspondence to Kenneth E. Burchett, SR 2, Box 4040, Branson, MO 65616.



```

*****
**          DM1000 v6.1          **
**   Modified by Jack Mathis    **
** Review by Mary Phillips, OUG **
*****

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I saw Jack at Fest West and thanked him for the package he'd sent. "Don't use the DM1000 I sent you, it's got a bug in it! Let me give you a new one!" And he autographed it for me. Ain't I (contraction for 'Am I not') proud!

Let me tell you, this version is the most beautiful disk and file manager ever did I see. And the docs? B.J. did well! The documentation is very clear and easy to follow.

What makes v6.1 different from 5.0? Major modifications include:

- 1) Consolidation of the Disk and File Utility Menus into one Main Menu.
- 2) (T)ype or (P)rint in the CDM column of File Utilities catalog displays a DV/DF80 file to the screen or print it out.
- 3) Disk initialization (formatting) and copying are speeded up.
- 4) Defaults for disk formatting, printer configuration (device and codes), and foreground and background colors may be saved into the program.
- 5) Choice of drives for saving configure defaults.
- 6) Works with Myarc HFDC on TI and on Geneve with Ben Hathaway's ROMPAGE loaded.

Print out the documentation with TI Writer or the Print File Option of BOOT!, MENU, or DM1000 itself. A Quick Reference Guide is included in the documentation.

The following key presses are active in File Utilities:

- FCTN 1 Delete a character
- FCTN 2 Insert a character
- FCTN 3 Configure List Device (printer or DSKn.filename)
- FCTN 4 Halt disk drive I/O operation

- FCTN 5 Return to DM1000 main menu
- FCTN 6 Request "EXECUTE COMMANDS Y/N" prompt
- FCTN 7 Print Catalog to List Device
- FCTN 8 Re-enter Drive #
- FCTN 9 Return to DM1000 main menu
- FCTN = Exit Disk Manager 1000
- FCTN E Move cursor up one field
- FCTN X Move cursor down one field
- FCTN S Move cursor left one character or back one field
- FCTN D Move cursor right one character or ahead one field
- CTRL E Move cursor back one page
- CTRL X Move cursor ahead one page
- CTRL C Copy all files
- CTRL D Delete all files
- CTRL N Perform No Action on Any Files
- CTRL P Protect All Files
- CTRL U Unprotect All Files

Individual files may be marked for Copy, Delete, Move, Protect, or Unprotect and then press FCTN 6 to proceed. T and P must be done by themselves.

When DM1000 copies a disk you have a choice of Bitmap (copying only the sectors that are used) or Sector copying all the disk sectors.

If you (D)delete a file and then wish you hadn't, Undelete will ask you for the disk drive number and the file name and it will reconstruct the link between the directory and the file so you have your file back.

Unprotect is only for Extended BASIC programs and if it is used on other files, they may be unusable.

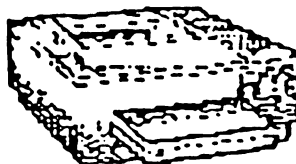
Error messages are in friendly English, no code numbers. This program is USER FRIENDLY.

To put DM1000 on your BOOT! or Horizon Ram Disk you only need MGR1 and MGR2. For the DCM 1/89 BOOT!, just copy these two files over the ones you have and delete MGR3. In MENU, delete files MG and MH, copy MGR1 and MGR2, then rename them MG and MH.

This program is our Utility of the Month and I will be demonstrating it at the meeting for you. I will have a few printouts available for those who have disk drives but no printer yet.

from OZARK W/L, March '93

## LASERS AND THE TI



### DERIVING SIMULAN NORTHCOST 99ERS

With the cost of laser printers falling almost daily, you may want to investigate the feasibility of using one with your TI. I have looked for a comprehensive review of laser printers in newsletters for the past two or three years, and not one article has appeared.

You have all seen what Marty Smoley can do with his laser printer and the TI, but most of us WOULD NOT go through what Marty does to get his printouts. Since none of the TI software has built-in printer commands for lasers, Marty has to write his own.

I just purchased a HP Laserjet IIip and thought that my experience might help someone else decide if there might be a laser in their future also. I knew that you could print text from the TI through funnelweb, but was concerned that I would not be able to use my graphic programs. The laser prints at 300 dots per inch, while most dot matrix printers use under 200 dots per inch. Thus, all you would get is garbage.

If you read the advertisements for lasers, you will see that many of them have several printer emulations. That means that if it is emulating a Diablo 630, or an Epson FX, or an IBM Proprinter, that the printer commands for those printers will be accepted by the laser and printed out as though they were that machine.

Many of the newer dot matrix printers have a variety of fonts built in. My XR-1000 has Courier, TW Light, Sans Serif, Cinema, and several more that I can choose from the front panel of my printer. Even though most laser printers advertise 14 basic fonts, they will not be different fonts that you are used to with your dot matrix. These 14 fonts are basically variations of one font...Courier., i.e. courier 10 pt, 12 pt., 16.6pt (condensed as we know it), in regular, bold, italic, etc. Thus, this is the only font you will get when you are in said Epson, Diablo, Proprinter, etc. mode. The commands for condensed, enhanced, double wide, etc. will be interpreted and printed as you usually expect.

Thus, when considering a laser, the first thing that you will want to know is whether it has built-in Epson emulation or whether a separate card can be purchased to emulate an Epson. With this feature, you can use PAGE PRO, TIPS, etc. without any modifications to the program.

There are several laser printers advertised between the \$600 and \$900 range, but the cheapest in price may not be the least costly in the long run. If the Epson emulation is not built in, the cartridge will cost about

\$100. A lot of these low-end printers only have 512K memory.

A laser printer is a "page printer". All of the data necessary to print an entire page is sent to the printer before it prints anything. Thus, if there is not enough memory in the printer to hold the whole page, not all of it will print. When reading articles on lasers, they say you should have at least 1mg in order to print a full page of graphics. I don't know how many of us would be printing a page of high density graphics and nothing else. But it is some thing you should consider.

The cost of laser memory varies widely from printer to printer. You can add a meg to your PC for about \$50, but it will cost you two to three times that for your printer, depending on the make.

Another cost to consider is the imaging process the laser uses. Some use a toner/drum combination which is standard in the HP laserjets. Others require you to replace the toner and drum separately. This is not done each and every time you need toner, but every so many thousand copies. Some use the HP toners and others use their own brands which are not as plentiful or as cheap.

I seriously looked at the Epson Action Laser II. This is a very basic inexpensive printer. It has Epson emulation built in, and uses Hewlett Packard font cartridges (which you could use for text on the TI). The print speed on this machine is rated at 6 pages per minute which is fast for a low-end printer. Standard memory is 512k and additional memory was about \$100 for one meg and \$150 for 2 megs. The second meg is sometimes cheaper because it goes on the same board as the first. However, I started to get second thoughts when I found out that the toner cartridges were about \$100 each and the drum had to be replaced at 100,000 (I may die before I reach that many though) at a cost of about \$150. The street price on this printer is a little over \$650.

Since I would be using my laser in both my TI, and my DOS machine, I looked at a machine I probably would have passed up if I only had my TI. This is a TI microlaser which was highly rated in a PC Magazine review. However, when I went out to CompuADD, the only dealer in this area, they did not have one in, did not know when they would get one, and couldn't tell me how much an EPSON font cartridge would cost or where I could get one. Guess you know they lost that sale in a couple of minutes.



# From First Draft To Final Copy

REVIEW BY DEANNA SHERIDAN  
NORTHCOAST 99ERS, CLEVELAND, OHIO

I have been anxious to see the new word processing/publishing program that Art Gibson was writing ever since visiting with him at Lima last May. With a little work, you can do things with this that TI never dreamed of when they wrote the first TI-Writer program.

Before trying out any of the other features, I wanted to see if you could place text next to graphics, and with some experimentation, I was able to do so. Now that I have accomplished that, let's get into the features of the editor of 'First Draft'.

Those of you who are 'fast typists' should enjoy the cursor movement in this and know that your typing errors should be cut down considerably. I have yet to have a letter drop off on me while 'rounding' the end of the line as always happens in TI-Writer.

This program is an extension of the Newsletter Printer that some of us have enjoyed for a little over a year. There are features to the new editor that some may like and some may wish for some of the old TI-Writer/Funnelweb features that were left out. Remember that the formatting depends on the DOT commands and can be done in funnelweb if you still feel more comfortable in that environment. The formatter is the work horse of the program and will read either DV80 or DISFIX80 files for printing.

If you have a 40-column screen as most of us do, you will have 40 columns on which to type on the screen. There is no scrolling. I know of many in the TI-World who did not like the scrolling and would set their tabs so that they would only type what they could see on the screen. If you have an 80-column screen, you will have 80 columns to view and can even type in 'columns' if you wish.

When running the program the first time a configuration file must be created for certain defaults, screen size, do you want word wrap, default drives for files and spell checking, etc.

## FEATURES PULL-DOWN MENUES

After entering the editor there are five pull down menus on the command line...FILES, STRINGS, LINES, OTHER and HELP. The FILES menu consists of 1. Catalog. Within this function one can unprotect a file, print the file directory, delete a file, protect a file, select a new drive, mark a file. There are three 'FCTN' keys that almost make this catalog a dist manager. A file can be renamed, file comments can be saved, and a dist can be formatted. How many times have you done a large file, only to find that the diskette was full, and of all times, you didn't seem to have another initialized dist anywhere. I think this is a great feature.

The other file operations are Open, Save, Close, Merge, view and quit. The merge function is not as flexible as with funnelweb in that you cannot choose a certain number of lines to merge. The entire file is merged.

Under STRINGS, you can find a string, change a string, or check your spelling. One word at a time can be checked, or the entire document. For the first time, TI99 people can check a document while still in the editor. The entire document or just the word at the cursor can be proofed. I have never been a fan of spell checking on the TI because you still need to know the correct spelling, and it is extremely slow. I know a lot of people have wanted this feature though and will probably make good use of it. I usually print out my document, mark the typos and then use the replace string function to do my corrections. It is a lot faster.

LINES lets you go to a certain line number, copy lines, or move lines with the same parameters that Funnelweb uses.

OTHER is where tab settings are changed; columns can be set up with an 80-column device; screen colors can be changed; dictionary drives can be changed and files can be converted between DV80 and DISFIX80. The editor only loads DISFIX80 files. Therefore, if you have a TI-Writer file, you want to use in First Draft, it must be converted. DISFIX80 files take up a lot more room than DV80 files. Remember that the Formatter will read either type, and after you have finalized your copy, you may wish to convert it to the DV80 and delete the DISFIX80 file.

By hitting FCTN2 (insert), typing can be done in insert mode without the line splitting. Hitting the FCTN2 key again, puts you in overtype mode. CTRL3 toggles the cursor from the left to the right margin. CTRL4 sends you to the next paragraph. CTRL5 goes to the beginning of the file. CTRL6 goes to the preceeding paragraph and CTRL7 goes to the end of the file. CTRL8 and 9 are used to display chars 30 and 31 used for printer commands. CTRL0 erases to the end of the line.

Comparing the above features, you can decide if you want to use the FIRST DRAFT editor or stay with the funnelweb editor. NONE of the above features has anything to do with the way the pages are printed. These are done with DOT commands which can be placed in any editor.

## DOT COMMANDS ARE THE HEART OF THE PROGRAM

If you have used Newsletter Printer at all, most of the dot commands will be familiar, and you know that you will need to build a printer definition file to customize the features of your printer. A file is included which is based on the Gemini10X. A lot of us have never printers that print with several fonts, quad high, reverse line feed, etc. These will need to be placed in the file. There are 17 user defined dot functions that will accept up to 30 characters.

Quickly running through the commands, some are similar to funnelweb and others peculiar to First Draft. BP begins a new page. C1 x,y will set condensed print with one column setting the left margin at 'x' and running for 'y' characters (length). C2 does the same thing for two

columns. CJ is the centering command. DI displays the next line. FC is a footer, center justified. FI is the fill command. FL is a left justified footer. FR is a right justified footer. GN is the graphic name of your TI-Artist Instance or Page Pro Picture. You can have up to nine of these.

GN sets the left margin for a graphic. The total line length of a graphic cannot be more than 60. GR prints the graphic. GR 1 prints graphic 1 at the margin set by GN. Up to three graphics can be printed across the page at a time. GR 1,2,3 would print one on the left, one center and one on the right. HC prints a header center justified. HL prints a header left justified and HR prints a header right justified. IF is include file. IN indents x number of spaces. LJ left justifies a set number of lines. LS sets line spacing up to 255. PI serves the same purpose as CI except the type is PICA. P2 sets 2 column pica. PA resets the page number when using automatic page numbering.

PL sets page length, PI is a prompt command to allow the entering text at the time of printing. RJ right justifies x number of lines. These commands are preset and not changeable.

The following commands can be customized for any printer. I think Marty could even set up a printer driver for his laserjet with the options available here.

There are 9 available An commands. These commands do not require an on/off function such as underlining on and underlining off. So each command can stand on its own. It can be used similar to the transliterate code in Funnelweb. Several examples are given for printing small graphics such as a smiley face, copyright symbol and heart. I developed a number of these type of graphics a few years ago when I did a Christmas dist of graphics. These could all be used in the An commands in First Draft.

The BD commands prints in bold. BS is the backspace. DP is double wide print. HP is high print (superscript). IP is italic. LG is six line spacing. LG is 8 lines for graphics. LP is low print (subscript). NB is no bold (cancels bold). ND is no double wide. NH is no high print. NI is no italics. NL is no low printing. NU is no underline. PC is print condensed. PD sets printer name for either serial or parallel. PI c is the prompt input char. PP is pica print. PS defines page number character. RS defines require space character. UN underlines text. There is a set of nZ user defined commands and related Nn commands for custom on/off functions. In fact, you could combine bold printing and underlining in one command for special effects.

Because you set the printer definitions yourself according to your printer manual, any of the above could be changed to a command you might use. For instances, I probably would NEVER use italics, superscript and subscript. I could change all of those to commands for fonts that my XR1000 supports. Thus, building a special printer driver only limits you by the effects supported by your printer.

Thus far, there are THREE Artist instances in this printout. The title and the two small subheadings. The printer command for reversing to the top of the page is 27.12. Either change one of the preset commands to this or

create a new one in the printer configuration file. Change the page length to double the 66 lines. Print out a sample copy. Insert the command to reverse to the top of the page. Insert the command and change your left margin to correspond to where you want it to start on the right hand side of the page. For some reason, I found this very tricky and had to try many many times before it finally worked for me. I don't know what I did differently to finally make it work, so be patient because it does work. When I had the first page full, I inserted a page break to make it go to the second page. If you want to insert a graphic within the text, you will have to create a blank area for the graphic, send the reverse line feed command and then line feed down to where you want the graphic printed. If necessary, line feed again to where you want to pick up text.

An entire newsletter could be printed from one file. At about 199 lines, the file is saved and then that many lines are brought in at a time to view (similar to the way a picture is brought in in Page Pro.) About the only drawback to this is that DISFIX00 files are large. You will need a lot of disk space for a large article.

## CONCLUSION

When using Newsletter Printer, I thought it was one of the easiest programs I ever picked up to master for the features it provided. I feel the same after writing this article with the first Draft editor. There are only minor problems that I noticed. One, when a file is saved, there seems to be no opportunity to change the name of the file. Sometimes we like to save a file under a different name than when it was loaded or to a different disk drive. I can find no way to do this. One way around this would be to go to the cataloging function and change the name of the old file before saving.

There was a comment at the Northcoast meeting this month that one of the members would like to be able to merge only parts of files, or save parts of files. You loose both of these with First Draft. It's all or nothing. I have already come to enjoy typing with this editor and feel I would choose it over the Funnelweb environment. However, I understand there are major changes in the 5.0 funnelweb soon to be released, and you may find reasons to choose that environment when it arrives. I tried the replace string function, and believe me, you will enjoy this compared to the funnelweb version. Remember, this program was conceived to assist newsletter editors and that is still the thrust of the program. You may or may not want to use it if you are just printing a letter without special formatter features or graphics. I am continually amazed that people are still coming up with new hardware and software for the TI 10 years after we have become an orphan.

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## Line Noise and the Problems it Can Cause with File Transfers

Many people have left messages on my bulletin board asking me why there are so many 'garbage' characters on their screens and why file transfers are riddled with errors. These garbage characters are really line noise and can be introduced in many different places. One of the more common and familiar introduction points of line noise is in the telephone company's system and even here there are several ways noise is introduced. A signal is routed through multiple stations before it eventually makes it to the other end and some of these stations aren't exactly new. Older areas may have older, less sophisticated equipment that is more apt to be affected by ambient noise. This is one reason some people continue to have noise problems even after hanging up and calling back multiple times. Also, a given physical connection

at one of these junctions may not be up to snuff. If your particular bout of line noise is solved by hanging up and calling back, then it's probable that you were previously connected through an intermittent or 'dirty' connection. Some of these trunk lines (large, multi-caller 'pipes') may pass through an area that has a lot of ambient RFI (Radio Frequency Interference) present although this is not usually the case.

Another common noise introduction point is in your home. Most residential homes have televisions, radios, microwave ovens, VCR's, and if you are reading this, a micro-computer. All these devices radiate radio waves that can (and often do) get into the phone lines and cause noise. Electric motors and mechanical dimmer controls can introduce noise into the electrical wiring in your house and cause problems. If your line noise problem does not go away after repeated hanging up and calling back, then you may be suffering from one of these household problems. If you are suffering from this problem, you can take steps to eliminate it. First of all, turn off EVERYTHING except the fridge (If it IS the fridge, then you're SOL. Can't live life with your ice box unplugged) and see if the noise persists. If it goes away, then start turning things back on, checking the computer each time until you see the noise start up again. It may be that a single device is not bugging you but several devices plotting together to annoy you. This elimination tournament may take awhile.

Another area to check is your wiring at the computer. Use noise suppressors on your power connections to both the PC and the modem (if external). Use a shielded RS-232 cable to connect your modem to the PC. Ribbon cables (especially long runs of it) are great antennas and will cause problems. Re-route the RS-232 cable so it does not run next to the PC power supply or any other transformer. Many 'clone' monitors do not have internal metal shielding and can radiate lots of noise. Make sure the cable does not run near the monitor. If you are particularly adventuresome, you can line the interior of the monitor with foil and ground it with a ribbon grounding strap. Be VERY CAREFUL if you attempt this. Monitors generate THOUSANDS of volts of electricity and can knock you clear into next week. You'd best NOT attempt this unless you are experienced in electronics. If you live near a freeway or highway, then interference from CB radio can present a problem. Many interstate truckers have 100+ watts of power (illegally) on their CB rigs and frequently have sloppy amplifiers that can emit spurious radiation all over the radio spectrum.

And now a little discussion about the modem itself. First of all, I'd like to clarify a commonly misused term - BAUD. The term "Baud" is actually a man's name - J.M.E. Baudot (Pronounced: Baw-doe) a French Telegraphy expert. 1,200 and 2,400 Baud is NOT the same as 1,200 and 2,400 BPS (Bits Per Second).



incorrect. 1,200 and 2,400 BPS modems both operate at 600 Baud. Basically, without getting too technical, a Baud is a "blip" of information. 1,200 BPS modems use four states per blip (or Baud) and 2,400 BPS modems use sixteen states per blip. If you want more information on what Baud and BPS mean and a full explanation of how data is actually represented and transferred by the modem, please refer to PC Magazine Volume 6, Number 9 (May 12, 1987).

Modems operating at 2,400 BPS are much more intolerant of line noise than are modems operating at 1,200 BPS. Conversely, modems capable of 2,400 BPS operate better at 1,200 BPS than do 1,200 BPS only modems. If you are being hopelessly attacked by noise at 2,400 BPS, trying calling back at 1,200 BPS. It's very possible that the noise will be greatly reduced or disappear altogether. I know, you didn't buy a 2,400 BPS modem just to retard it to 1,200 BPS. The brand of the modem plays a part in the immunity to line noise. Some modems can digest more noise (lower signal-to-noise ratio) than others. PC Magazine (same issue mentioned above) ran a test on 87 different modems. You might check the results to see how your modem ranks. Most 2,400 BPS modems operating at 1,200 BPS have approximately -8 to -10 db error threshold while the same modem has about -16 to -20 db threshold operating at 2,400 BPS. For this reason, line quality is much more critical at 2,400 BPS operation.

Additionally, a friend of mine who runs a bulletin board from their office has been plagued with line noise problems at 2,400 BPS but very little noise at 1,200 BPS. The culprit is the office's centralized telephone system. Many office buildings have a given number of trunks that actually enter the building while there may be many, many more extension within the building. These types of telephone systems have their own controllers and line assignment devices and are frequently not as high in quality as a hard-wired MaBell line. The acceptable signal-to-noise ratio in some of these inter-office phone controllers are lower than necessary for reliable 2,400 BPS operation but not too low for 1,200 BPS.

If you gets transmission errors while downloading or uploading a file, don't fret it. The Xmodem (or whatever protocol) incorporates an error checking/correction mechanism that automatically detects and corrects any errors that may occur during transmission. The very fact that Xmodem reported the error in the first place means that he caught it and corrected it. The only errors you have to worry about are the ones that Xmodem does NOT report. Any reported error has already be corrected. Xmodem, especially the CRC flavored one, is a very reliable file transfer protocol. Even if you got 100 errors during transmission, chances are still pretty slim that the file got corrupted. Occasionally, a file will be corrupted after transfer, but many times this may be due to a bad ARCing of the file or perhaps a disk error that may have occurred sometime during the files' past.

I hope this text helped explain some facts about modems, line noise, and file transfers. If you have other, more specific questions, concerning modems or communications in general, leave a Comment to the SYSOP on the PC Consultant. I'll try to answer them.

the PC Consultant  
SYSOP: Robert K. Ricketts  
P.O. BOX 42086  
Houston, TX 77242-2086

Node 1 (713)270-7408 - Free and open to all.  
Node 2 (713)270-8129 - Contributors only.

## Modem Noise Killer (alpha version)

With this circuit diagram, some basic tools including a soldering iron, and four or five components from Radio Shack, you should be able to cut the noise/garbage that appears on your computer's screen.

I started this project out of frustration at using a US Robotics 2400 baud modem and getting a fare amount of junk when connecting at that speed. Knowing that capacitors make good noise filters, I threw this together.

This is very easy to build, however conditions may be different due to modem type, amount of line noise, old or new switching equipment (Bell's equipment), and on and on. So it may not work as well for you in every case. If it does work, or if you've managed to tweek it to your computer/modem setup I'd like to hear from you.

I'd also appreciate any of you electronic wizzards out there wanting to offer any improvements. Let's make this work for everyone!

Please read this entire message and see if you understand it before you begin.

OK, what you'll need from Radio Shack:

1 #279-374 Modular line cord if you don't already have one. You won't need one if your phone has a modular plug in its base. \$4.95

1 #279-420 Modular surface mount jack (4 or 6 conductor) \$4.49

1 #271-1720 Potentiometer. This is a 5K audio taper variable resistor. \$1.09

1 #272-1055 Capacitor. Any non-polarized 1.0 to 1.5 uf cap should do. Paper, Mylar, or metal film caps should be used, although #272-996 may work as well. (#272-996 is a non-polarized electrolytic cap) \$.79

1 100 ohm resistor - quarter or half watt. \$.19

1 #279-357 Y-type or duplex modular connector. Don't buy this until you've read the section on connecting the Noise Killer below. (A, B, or C) \$4.95

First off, open the modular block. You normally just pry them open with a screwdriver. Inside you'll find up to 6 wires. Very carefully cut out all but the green and red wires. The ones you'll be removing should be black, yellow, white, and blue. These wires won't be needed and may be in the way. So cut them as close to where they enter the plug as possible. The other end of these wires have a spade lug connector that is screwed into the plastic. Unscrew and remove that end of the wires as well. Now, you should have two wires left. Green and red. Solder one end of the capacitor to the green wire. Solder the other end of the capacitor to the center lug of the potentiometer (there are three lugs on this critter). Solder one end of the resistor to the red wire. You may want to shorten the leads of the resistor first. Solder the other end of the resistor to either one of the remaining outside lugs of the potentiometer. Doesn't matter which. Now to wrap it up, make a hole in the lid of the mod block to stick the shaft of the potentiometer through. Don't make this hole dead center as the other parts may not fit into the body of the mod block if you do. See how things will fit in order to find where the hole will go. Well, now that you've got it built you'll need to test it. First twist the shaft on the potentiometer until it stops. You won't know which way to turn it until later. It doesn't matter which way now. You also need to determine where to plug the Noise Killer onto the telephone line. It can be done by one of several ways:

one of them using a line cord. (a line cord is a straight cord that connects a phone to the wall outlet. Usually silver in color)

B. If your phone is modular, you can unplug the cord from the back of it after you're on-line and plug the cord into the Noise Killer.

C. You may have to buy a Y-type modular adaptor. Plug the adaptor into a wall outlet, plug the modem into one side and the Noise Killer into the other. Call a BBS that has known noise problems. After you've connected and garbage begins to appear, plug the Noise Killer into the phone line as described above. If you have turned the shaft on the potentiometer the wrong way you'll find out now. You may get a lot of garbage or even disconnected. If this happens, turn the shaft the other way until it stops and try again. If you don't notice much difference when you plug the Noise Killer in, that may be a good sign. Type in a few commands and look for garbage characters on the screen. If there still is, turn the shaft slowly until most of it is gone. If nothing seems to happen at all, turn the shaft slowly from one side to the other. You should get plenty of garbage or disconnected at some point. If you don't, reread this message to make sure you've connected it right.

\*\*\*END OF ORIGINAL FILE\*\*\*

ADDITION TO ORIGINAL FILE - 2/29/88 - Mike McCauley - CIS 71505,1173

First, a personal recommendation. THIS WORKS!!!! I have been plagued with noise at 2400 for some time. I went round and round with Ma Bell on it, and after they sent out several "repair persons" who were, to be kind, of limited help in the matter, I threw in the towel. I saw this file on a board up east a few days ago, and thought I'd bite. Threw the gismo together in about 10 minutes, took another five to adjust the pot for best results on my worst connection, and guess what? No more worst connection! A few pointers:

- 1) The pot need not be either 5K or audio taper. I used a 10K 15 turn trim pot. Suggest you use what is handy.
- 2) I used 2MFD's of capacitance (two 1MFD's in parallel) Two R.S. p/n 272-1055 work fine. Remember that about 90 Volts will appear across red & green at ring, so the caps should be rated at 100VDC+.
- 3) I ended up with a final series resistance value (100 ohm + pot) of 2.75K. I speculate that one could probably use 2MFD and a fixed 2.7K resistor and do the job 90% of the time. The adjustment of the pot is not very critical. Changes of +/- 1K made little difference in the performance of the circuit.

Hope it works as well for you as it did for me.

Mike McCauley

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Librarian	Bryant Pedigo	255-7381

#### Personal News Byte

It comes to our attention that, Mrs. Lett, the wife of George Lett, of Marion is ill. George is a long time member of the Hoosier Users Group.

Our thoughts and prayers are with you, Mrs. Lett, for a speedy and complete recovery.

# SPEECH CARD

I READ THE ARTICLE BY AL BEARD OF THE 9T9 USERS GROUP IN THE JANUARY 1993 HUGGERS NEWSLETTER. THE ARTICLE "TALES OF A POWER SUPPLY" HAS TO DO WITH INSTALLING A NEW POWER SUPPLY IN THE PEB.

IN THE COLUMN TITLED "RESULTS", HE DESCRIBES HAVING TO MODIFY THE CARDS AND MAKES AN INCORRECT STATEMENT AS FOLLOWS: "--AND A SPEECH SYNTHESIZER CARD (SOMEWHAT USELESS IN THE GENEVE UNTIL THE NEXT MDOS RELEASE)."

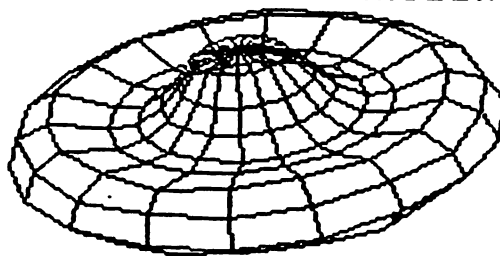
IF A PERSON WAS THINKING OF BUYING A GENEVE OR A RAVE SPEECH CARD TO ADD THE SPEECH CAPABILITY TO THEIR GENEVE, A STATEMENT LIKE THIS CAN BE A CONFUSING STATEMENT. I RECALL HOW I WAS THINKING OF THE LOSS OF SPEECH WHEN I PURCHASED MY GENEVE BEFORE I BOUGHT MY RAVE SPEECH CARD.

SO, JUST TO CLEAR UP THE CONFUSION CAUSED BY THIS KIND OF STATEMENT. A SPEECH CARD IN WHICH THE SPEECH CAPABILITY IS ADDED TO A GENEVE WILL WORK EXACTLY THE SAME AS THE SPEECH SYNTHESIZER ON THE SIDE OF THE TI CONSOLE. GAMES, SUCH AS STAR TREK, PARSEC, AND SPEECH EDITOR, ALL FUNCTION AND GIVE SPEECH WHEN USED WITH A SPEECH CARD AND A GENEVE OR A SPEECH CARD IN THE PEB AND THE SMALL TI CONSOLE. YES, IT IS THE SAME SPEECH AS YOU GET WITH THE SPEECH SYNTHESIZER PLUGGED INTO THE TI CONSOLE. ALSO, IF YOU PROGRAM OR HAVE AN EXTENDED BASIC PROGRAM WITH SPEECH IN IT, THE SPEECH WILL FUNCTION AS IT SHOULD. I REALLY HATE TO SEE PEOPLE MAKING LOOSE STATEMENTS (KNOCKING THE GENEVE AND TI) WHEN THEY MAY BE TALKING ABOUT A CERTAIN SET OF CONDITIONS.

MANY OF THE BAD THINGS THAT I HEARD ABOUT THE TI LONG AGO HAVE PROVED TO BE WRONG.

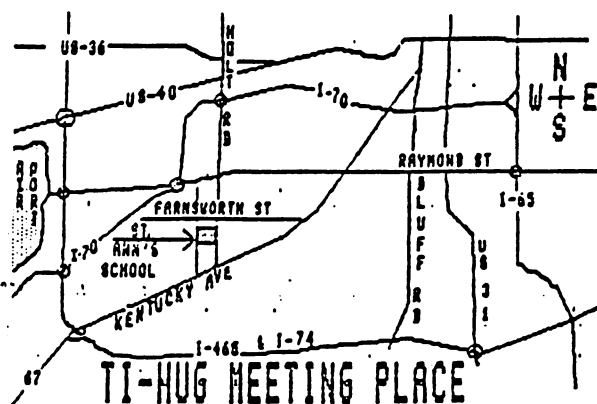
WHEN I TYPED THIS AND RAN IT THRU THE COLUMNIZER OF PAGEPRO IT MADE AN ERROR. I FOUND AT THE LOCATION OF THE ERROR THAT A CR RETURN MARK WAS NOT VISIBLE. I KNOW THAT I HAD MADE A LINE INSERT AND APPARENTLY THE COMPUTER PUT AN INVISIBLE CR MARK AT THAT LOCATION. SO, TO CORRECT THE ERROR I PUT A VISIBLE CR MARK. IF YOU HAVE FORGOTTEN HOW TO DO THIS, PUT THE CURSER WHERE YOU WANT THE CR MARK. THEN, PRESS CTRL U THEN SHIFT M THEN CTRL U. THAT FIXED THE PROBLEM AND THE RESULTING FILE THEN WAS PROPERLY COLUMNIZED.

ROGER PRICE, 1015 RIVER DRIVE, MARION, INDIANA, 46952  
INDIANAPOLIS HUGGERS.  
PAGEPRO-COLUMNIZER.



GRAPHIC  
PRODUCED  
BY  
THE  
GEOMETRIC  
APPRENTICE

*REMEMBER MARCH IS  
SWAP MEET MONTH*



## SOME NOTES ON VIDEO

By - Delbert Wright

These articles are being written using Sams a Howard W Sams & Co. book "COMPUTER CONNECTION MYSTERIES SOLVED" by Graham Wideman, as a reference. I HIGHLY recomend this book to all persons who have an interest in how to connect computer stuff & make it work properly. This includes installing & repairing as well as just wanting to know how it works.

The last article ended stating that a composite monochrome video signal had three parts on 1 wire. The signals were the HORIZONTAL sync (to move the beam across the screen), the VERTICAL sync (to move the beam down to the next line), and LUMINANCE (to vary the brightness of each phosphor struck by the electron beam).

In television this signal has to be mixed with the frequency of the broadcasting station's carrier signal & transmitted to our TV. We select which of the many signals are in the air by using the channel selector of our TV. In many home computers we use a Radio Frequency Modulator or RF MODULATOR to "broadcast" to our TV. There is a switch to select channel 3 or channel 4 so we may choose the best choice at our location. One common misconception is that if one of those channels is operating in your area, then it can't be used for our computers. The fact is that many times that channel gives better computer reception than the unused one. The signal from the RF Modulator will be much stronger & over ride the broadcasting TV station.

For COLOR video a picture tube with pixels of 3 colors (Red, Green, & Blue) must be used. These are arranged in VERY close proximity to each other, but a perforated metal mask and adjustments by a technician will allow each dot to be only hit by electrons from 1 of 3 "guns". There are 3 seperate "guns" in a color tube & each generates 1 of the R,G,orB beams in response to signals called CHROMA and SATURATION. Chroma

picks the combination of guns to be on, so any color can be made. Saturation determines how much color. The brightness signal varies the intensity of all guns at the same time. The Chroma and Saturation signals are added to the Composite Monochrome signal and now we have a COMPOSITE COLOR signal.

This system is ok for movies & pictures, but is pretty bad for viewing color characters and graphics from a computer. The technical reason is that the color signals are so slow that details tend to blur. This a fault of the METHOD used to transmit the COLOR information, not the CRT or picture tube itself.

If we replace the 9918A chip in our 99/4A computers with a 9928 chip, then with absolutely no, (none, 0, zero ), other modifications we have a composite monochrome output (no color) that has startling resolution, even when using an RF modulator & a color TV. If you use your 99/4A for mostly text, then you maybe interested in this change. I'll tell you a secret in another installment on how with this chip, you can increase the COLOR output of your 99/4A too. Actually you will EITHER have better color, or better monochrome video. The monochrome change is "do it yourself, but the color change is more complicated and expensive.(but worth it!!)

I believe 9928 chips can still be purchased from:

L.L.Conner Enterprise  
1521 Ferry Street  
Lafayette, IN 47904  
317-742-8146

*Resolution* is what determines how much detail is displayed, but *how is resolution measured?* Resolution is sometimes stated in lines and some times in pixels. To some people, it means how close can 2 paralell lines be displayed to each other without appearing to touch each other. This is used in photography and not in computer displays, because to not touch we need a blank line between each displayed line,so our raster that cosists of 240 displayed lines is only 120 using this method.



(CONTINUED FROM PAGE 2)

THE measurement that IS used is the number of PIXELS or individual dots horizontally and vertically that COULD BE displayed. (Remember the entire surface is not used to display characters.) The vertical resolution of composite monitors is limited to 240 lines by standard circuitry, but the horizontal direction is limited by how fast the beam can be turned off and on.

Ok, if you are still here this part is both the most confusing and the part that will make sense of all that follows.

### BANDWIDTH

Bandwidth is a term that can be used to indicate resolution. It is a measure of how fast the controller can turn the scanning electron beam ON and OFF and is expressed in millions of times per second, or Megahertz.

You can see that to display an 80 character line with each character being 8 pixels wide would require 8 times 80 pixels, or 640 pixels. If we only wanted to have every other dot on (as in some graphic characters), and the dots must be clearly on or off, then the maximum number of on/off cycles is 320 per line. It takes 64 microseconds for 1 line, but only about 45 microseconds is used to display information. So to find the speed needed to switch on/off 320 times in 45 microseconds, we divide 320 by about 7 Megahertz. This is the absolute MINIMUM for 80 column display!

The FCC and the National Television Standards Committee or NTSC has set the bandwidth of color TV at 3 Megahertz and 3.5 Megahertz for black and white TV. From the above calculations you can see that 40 columns of characters that are 8 pixels wide is the maximum that could be clearly displayed with these bandwidth restrictions. Actually with the 3 Megahertz bandwidth of a color TV, 32 is the maximum for a clear display of 8 pixel wide characters.

If the display is set at 240 lines, and we are using a character that was 10 pixels high, then we would have 24 rows of characters, but they would all touch,

so...if there were no dots used in the top or bottom row, we would have 24 rows of characters that were 8 pixels high and there would be 2 blank rows of pixels between each row of characters. This is how the TI came to have an 8x8 size character set as the standard.

In TI basic the display is 24 rows of 32 characters of 8x8 pixels. In other programs that have 40 column displays the CHAR1 file is a replacement character set that has been changed to squeeze the character into a smaller space & provide 8 more characters per line.

\*\*\*\*\*Next time will be about differences between TV & monitors, RGB & RGBI, RGB TTL & RGB analog, CGA/EGA/VGA/Super VGA.

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This is a reprint of an article that appeared in the FEB.91 newsletter for: SOUTHERN CALIFORNIA COMPUTER GROUP. "THE COMPUTER VOICE"

TI-WRITER AND PRINTER GRAPHICS.  
by Woody Wilson

Many articles have been written in regard to using graphics with TI-WRITER, but here comes another one. This project on my part came about from conversations with two of our members. In one case the individual wished to use some transliterated Spanish characters in a letter and the other person desired to make a chart and use check marks to indicate where certain things were applicable.

Before we get too far into this, let me make one thing perfectly clear, this article is written for EPSON compatible 9-pin dot matrix printers. Prowriter printers were covered quite adequately in the Chicago User's Group TI-WRITER Supplement. (An excellent book to have in your library!)

You should also be aware that there are programs that will do most of the work that you will be doing here. This article is for those of you that do not have ready access to such programs as J.Peter Hoddie's FONT WRITER II, FRONTMAKER, ARTCONVERT by TRIO+ SOFTWARE, and many other fine programs.

## SOME NOTES ON VIDEO

by: Delbert Wright

These articles are being written using a Howard W Sams and Co book "*Computer Connection Mysteries Solved*" by Graham Wideman, "*TV Typewriter Cookbook*" by Don Lancaster, and "*PC Magazine*", as references.

There are a number of differences between typical TV pictures and images generated by computers. First of all TV pictures are drawn by continuous scan lines, while the computer makes screen images by turning dots or *pixels* on or off very rapidly while doing the horizontal scan.

Secondly, there is a great deal of medium brightness level, or grey tones, in a TV picture, but most computers will only generate full "on" or full "off" signals to the picture tube guns.

Thirdly there is this thing called *interlace*... There are 525 horizontal lines to a TV picture. This picture has 262.5 odd lines and 262.5 even lines. Actually only about 240 of each of those lines is "picture". The others are consumed by turning the beam off and quickly returning it to the left side of the screen (retrace) to position it at the start of the next line to be scanned. In 1/60 second all odd lines are scanned, and then in the next 1/60 second all even lines are scanned. This produces fine detail without having to scan all lines at one pass, which would require a scanning frequency twice as fast, and accordingly more bandwidth would be required. This means a COMPLETE picture screen is only redrawn once every 1/30 second. First 1/60 sec for all odd lines and then 1/60 sec for all even lines.

Most computers DO NOT generate interlace signals, because they don't have too. If we are mostly using a video screen to display numbers and letters, then all we need is to clearly separate characters in both the horizontal and vertical directions. The TI99/4A and the Myarc 9640 Geneve both use characters that are 8 lines high. The normal text mode of both is 24 rows of characters, so 8x24 is only 192 scan lines. The Geneve can also do 26.5 rows in text-2 mode, but this is still only 26.5 x 8 = 212 lines. In other computers, a typical screen that consisted of 25 rows of 80 characters in a 7x9 matrix would still only require 225 lines, so you can see, with 240 available scan lines, interlace is NOT needed for text and there are scan lines to spare.

Some computers can display 400 to 480 lines in graphics modes of the 525 available scans. The Geneve for example can display up to 424 vertical lines. Obviously if a standard monitor is used it would have to interlace. More accurately *interlace* is a function of the video controller card in the computer.

Here's the problem with that... We said TV screens are interlaced and that they are refreshed (or redrawn) every 1/60 second. But wait! We are refreshing the ODD lines in 1/60 sec. and then the EVEN lines in 1/60 sec. This means that we only see one COMPLETE picture every 1/30 second! Since the AVERAGE brightness is being refreshed every 1/60 second, the screen does not appear to "flicker". In computer graphics a detail may be only 1 pixel wide. If this pixel is only refreshed every 1/30 second, it will appear to flicker. A display DESIGNED to use interlace will have "long persistence phosphors" to minimize flicker.

Scanning of the electron beams at the monitor is controlled by the scanning circuitry and not by the picture tube components. The video circuits in the monitor must stay in "time" or "sync" with the computer so the computer video section generates vertical and horizontal sync timings and sends them out on the cable connecting the

computer to the monitor. The computer AND the monitor must have the same scan rate. Virtually all monitors in the USA use 60 Hz for the VERTICAL scan rate. The Horizontal Scan rate is what usually is different as the video type changes.

The 9918/A chip in the 99/4A, and the 9938 chip in the Geneve are the video controllers for our computers. By the way, the reason for the name 99/4 or 994/A is the video chip. The 99/4 used a 9918 chip NOT a 9918/A. The main difference is that the 9918/A has a built in lower case character set that the 9918 does not. The 9918 chips do NOT have interlace circuits but the 9938 does.

Have you ever seen an IBM type with two monitors attached? This is because the Color Graphics Adapter or CGA card in the PC in text mode uses 8x8 character, and it's horizontal scan rate of 15.75 KHz makes it only useable for lines of 40 characters, as we have seen. This card allows a palette of 16 colors TOTAL. In low resolution graphics mode it can only display 4 colors at once, in 200 lines of 320 dots. (320 dots divided by 8 = 40 characters wide, and 200 lines divided by 8 = 25 rows) In HIGH resolution mode, 80 columns of text is available...Oh Yeah, I almost forgot...in high res mode, the background can be any color you want..... as long as it's BLACK! The foreground can be colors, but it is usually white. So in High Resolution mode the IBM CGA card is essentially monochrome. (And they had to pay extra for this?)

The other monitor was a nifty keen IBM MONOCHROME w/green background and black characters. This little gem is for text. The thing of note here is that the controller scan rate is 18.432 KHz, and the card also produced a vertical Sync signal of 50 Hz. Dividing 18,432 by 50 gives us 368.6 scan lines. Of these 350 are used to display characters. With 350 lines used for character display and 720 pixels per line, each character is 14 lines high and 9 dots wide. This is essentially pixel on or pixel off operation, but another signal line, used for the first time, *INTENSITY* allows the pixels to be either bright or dim when "on". This gives those happy IBM types 25 lines of 80 characters of 1 color text that is very readable, and also a lot more money than most of us have in our entire computers systems!

So pity the poor IBM owner shopping for a monochrome monitor and buys one of the many available monitors, only to find that it won't work because he has an IBM monochrome card with a non standard scan rate. Remember: the video output of the computer must match the video monitor capabilities. Simply buying the same brand of both won't guarantee that they will work together. When buying any monitor you need to check that the scan rate and scan type match your computer video outputs.

So far we have only talked about Composite Video. With the exception of the IBM Monochrome adapter, all composite video is ANALOG video of the same type as a TV signal. That's why we can use an RF Modulator to connect our computers to a TV. This is the same reason we can use a VCR, or a video camera, as an input to a composite monitor. However some composite video monitors intended to be primarily used for vcr and TV tuners, have built in filters that are meant to reduce noise interference, but they also blur detail in computer video input. Some of this type monitors have a switch to bypass this filter. The Commodore 1084 is one of those monitors with a "VCR" switch on the back to switch that filter in out.

There is also one other type of one color monitor to mention and that is the *Direct Drive* type. This type is normally encountered on computers with built in screens such as Kaypro, Zenith 100 "All in One", portable PC clones, and most terminals. This system uses separate wires for horizontal and vertical sync, and one wire to control beam intensity. They are recognizable by the labels horizontal DRIVE and vertical DRIVE. These are seldom encountered by themselves and would be worthless without the video controller.

Next month we will finally get to RGB, RGBI, VGA, PGA (no that's not golf), EGA, and misc TI video notes.

# USING THE TI-WRITER MAIL MERGE

By Chick De Marti

FROM LA 99ers Topics

## WHAT IS MAIL MERGE?

A Mail Merge is a convenient way to mail a form letter to many people without manually typing in the names, addresses, etc. This is extremely useful when various forms of communication must be sent to the same group of people monthly, quarterly, etc. So the obvious thing then would be to create the mailing list. Use this...

### Example:

1 Mr	(Press ENTER> after each line.
2 Tom	Yes! the numbers 1,2,3,4,5,6
3 Jones	must be entered. Notice the '*'
4 2341 Any Street	asterisk separating each group of
5 Somewhere, CA 91123	members, TIWriter recognizes it
6 Jones family	as a separator.)
*	
Ms	
Jane	
Smuthers	
7777 Lucky Lane	
Sameplays, CA 91119	
*	
1 Mrs	
2 Eunes	
3 Somuch	
4 2468 'Preciate Ct.	
5 Fairytale, CA 91121	
6 Somuch family	
*	

Save as DSK2.MYFILE/1

Next, let's create a form-letter. This is the one I created for our August meeting. A typical heading would look similar to this:

.FI;AD;LM 8;RM 72	<enter>	
.IN +32	"	(the +32 will print the following
Chick De Marti	"	lines near the center of the page)
18028 Falda Ave.	"	
Torrance, CA 90504	"	
<enter>	"	
August 26 1991	"	
.IN +0	<enter>	This cancels the .IN on Line 2
<enter>		
<enter>		
*1* *2* *3*	<enter>	= Title, F-name, L-name
*4*	"	= Street address
*5*	"	= City, State, Zip code
<enter>		
Dear *2*	<enter>	= F-name

(now you would type the body of the letter)

Example:

This year we are going to have many interesting demonstrations, and surprise guests. We expect some of the leading programmers in the TI community to be displaying the wares, as well as their expertise. There will be many bargains available in software as well as some 'steals' in hardware.

It would be my pleasure to greet the \*6\* at the door personally. So do come to the meetings and enjoy yourself as well as learn many interesting things.

<enter>

.IN +32

Yours truly,

Chick De Marti

Save the letter as DSK2.FORMLET/1

This is about as simple as it can be. By doing the mailing list in the TI-Writer editor, you can make changes, corrections, as well as additions with little or no trouble.

NOTE: when you are through typing your form letter, before leaving the editor, make a quick copy of it using the PF command (Print-File). The resulting copy will include all 'dot' commands and will allow you to check the finished copy with your original notes.

To make a 'Print-File' copy, while still in the editor:

press Fctn-9 to get to the command line,

type PF <enter>

PIO

(No! LF (line feed) is not needed)

(You may be using RA-etc. etc. In any case, just press <enter> and a copy of your formletter will be printed.

## PRINTING THE LETTERS

This is even easier. Get into the Formatter and follow the prompts:

Program	DSK2.FORMLET/1	<enter>
Printer	PIO.LF	<enter>
Use mail list?	Y	<enter>
Page(s)/All	A	<enter>
Pause after each page	N	<enter>
Mail list name	DSK2.MYFILE/1	<enter>

That's all there is to it. When the letters are printed, TI-Writer will replace \*1\* \*2\* \*3\* with Mr Tom Jones and the \*4\* with his address. \*5\* will be replaced by the City, State etc. and at \*6\* will insert "Jones family". Neat huh?

Now TI-Writer has another feature you might like to try. It is a manual insert option. Using this option you could insert personal information anywhere within the letter. This could be used by a business for billing purposes, or for a club to make it's members aware of changes, awards etc. Here's a quick 'how to'.

Let's make a minor change to our mailing list. Load MYFILE/1 into your editor and the delete line sixes (Jones family, etc.). Place the cursor on the '6' and press FCTN3. When finished:

Save as DSK2.MYFILE/2



Now load your FORMLET/1

Normally, this would probably be a different heading, but for the sake of expediency, let's use what we have. Go to the line with Dear \*2\*, and change it to Dear \*1\* \*3\* (Mr Jones). Now to the letter itself. Type in:

Thank you for your recent payment. Your balance is \*6\*. If you have any questions, please give my office a call.

.IN +32

Yours truly,  
Ida Dugood  
SMALL LOAN CO.

Again using the FCTN-3 key, delete the rest of the letter and save it as: DSK2FORMLET/2  
(Did you make a copy using PF?)

TI-Writer matches all numbers within the asterisks (\*1\* \*2\*, etc.) with the respective lines in your mailing list. If it does not find the corresponding number, it halts the printing and asks for your input. Now print your letters answering the prompts as you did for FORMLET/1. The printer will stop and at the message "Enter input:" Enter a dollar sign and any amount you want ...  
Example: \$1150.90. When you read the letter, the second sentence will now read:

"Your balance is \$1150.90.

There doesn't seem to be any limit to the number of inputs you may have. With that in mind, another opportunity to use the Mail Merge might be at Golf tournaments. Still using the mailing list MYFILE/2, type in this form-letter:

Dear \*2\*,  
<enter>

Thank you for participating in the Junior/Senior Golf Tourney. Your official handicapped score was \*6\* earning you \*7\* as your portion of the 'Winner's Booty'. Looking forward to seeing you again next year.

.IN +32

Bobby Sox, tres.  
Good Guys Golf Gang

The inputs in the above example are obvious, and as you can see, the occasions to use a Mail Merge are endless. So try it out for kicks...I did and I learned how to Mail Merge.

-\*\*- Chick De Marti -\*\*-

#### HUG OFFICERS

President	Gregory Larson	783-4575
Vice Pres	Bryant Pedigo	255-7381
Secretary	Dan H Eicher	241-994A
Treasurer	Fred Edstrom Jr	898-7300
Librarian	Bryant Pedigo	255-7381

```
=====
"                                     "
"      NEW S&T BBS                    "
"      Hoosier Users Group           "
"      Baud rate 300,1200 & 2400     "
"      On Line 24 Hours Daily        "
"      782-994A                      "
"                                     "
=====
```

Ar: TI General Forum  
To: ALL  
Fr: Michael Maksimik #611  
On: 01/19/93 11:44:49 pm  
Sb: "virus?"

## TI 99/4A VIRUS NOTES

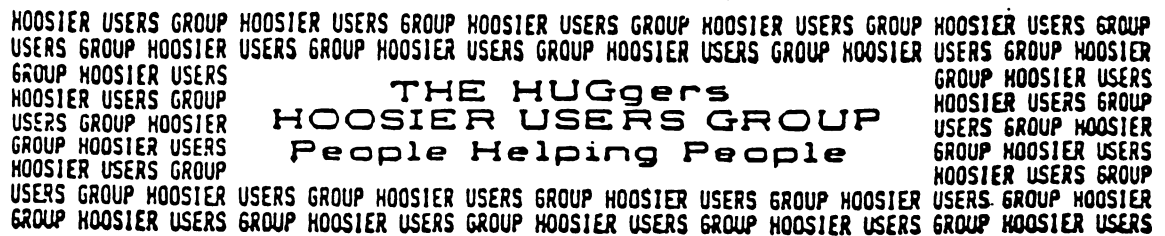
I was mailed a disk today with a newsletter from the Lima users group. in the newsletter was the story of a "virus" which apparently ruined someones hard disk, ramdisk, and some floppies.

- 1) a true virus cannot run on a 99/4A because of strong file typing and limited memory. a virus is a program which appends itself to the BIOS of a machine (which runs in the machines RAM) and modifies any program which is copied or modified. In fact, some viruses will actively seek all ".COM" and ".EXE" files and append themselves to the programs, thereby guaranteeing that they will be mobile and movable to other systems.
- 2) since the TI operating system does not have the low level disk access code in RAM, it can't be corrupted. So a self-perpetuating, destructive program (a computer "virus") can't exist on the TI. And if the geneve des get it's DOS copied to EPROM where it can run as re-entrant code, the geneve will be totally virus proof also.

Since the TI and geneve op systems incorporate strong minicomputer-like filing systems, it is nearly impossible to modify a program, such as a "PROGRAM" file. First, the virus would have to load ALL of the program into memory, and save it out to disk with the virus attached at the end. a virus to do this would have to be written in low-level code to access a specific disk controller. This problem is not present for a virus on MS-DOS machines, as a virus just makes a CALL to the DOS routines for accessing disk and uses the system facilities to perpetuate itself. On the TI and geneve, there are seperate disk controllers (CorComp, TI, Myarc, Myarc HFDC, RAMDISK, etc.) which all require different code. The virus would have to be LARGE, in fact, TOO LARGE to fit into 32K of memory space. It would be easier on the geneve to do, but then again, the virus would have to determine if the file on disk is a geneve program or not. Next to a wasted effort, it is a difficult one.

The problem which was listed in the Lima newsletter was caused by a nuisance, not a virus. A small routine, disguised as DM-1000, gets loaded, and when the user tries to copy ANY file, the nuisance just messes up and "swaps" sectors on hard disk, floppy, and ram disk. Be sure the DM-1000 you use is a SAFE copy that you have been using for some time.

Also, to protect your system further, BACKUP your ramdisk to floppy disk and BACKUP your harddisk to floppies (or tape) to protect them from an accidental injury to sector 0. I only say DM-1000 because it is easy to create an "imitation" DM-1000 which is really a disk destroyer. Remember, this program is NOT a virus, as it does not make lots of copies of itself. It just destroys a disk when run the first time. I would also advise any would-be virus designers in the TI community-- you can't get away with it. There are many techies out there who can track programming styles, and can come up with MANY solutions to your petty attempts to destroy disks. What you are doing is IMMORAL and ILLEGAL, and it just plain \*\*\*\*\*!



Volume 12, Number 1

## TALES OF A POWER SUPPLY

By AL Beard, 9T9 Newsletter

Ever noticed your PEB gets really hot? Wished for a hard drive mounted in the PEB but know your PEB power supply can't handle it? Tired of your GENEVE and HDPC cards slowly turning brown around the power regulators?

I've been worried about it for quite some time... Tony Lewis advised me a while ago that the PEB power supply wasn't really designed for all these new drives and cards being mounted in them. After losing a power supply (and sending \$50.00 to TI to get a new one) I decided that the way to go was to replace the power supply with a new "switching" type supply.

TI designed the power supply around the technology of the time. The power supply is a "linear" supply. That means that your PEB has inside, a huge power transformer, with simple regulating circuits that provide the power to the bus in the TI computer.

A switching supply avoids the huge transformer and heat problems by switching the power on and off very quickly (this has caused some interesting problems in offices that contain large amounts of PC based equipment). Switching supplies are very cheap due to their wide applicability to PCs.

One mistake (in terms that it has caused untold grief for board designers of the PEB) is that the TI linear power supply is underpowered and generates too high a voltage for the cards on the

bus of the PEB.

This is what the TI PEB manual says the voltages going to the PEB bus should be out of the power supply:

Brown - +16v  
Yellow - -16v  
Green - + 8v  
Black - Ground

Per the TI design, the cards you plug into the PEB must drop these voltages to something they can tolerate with their circuits:

+16v drops to +12v  
-16v drops to -12v  
+ 8v drops to + 5v

This isn't too bad, but the actual voltages I measured coming out of the TI supply were even higher than listed (I measured +20v instead of +16v, etc.). The drop in voltage means the cards must get rid of the excess energy somehow and that means HEAT!

Also, the power going to the floppy drive(s) is not adequate for two full height drives, or even one 5 1/4" hard drive. I wanted to mount a 5 1/4" drive along side a 1/2 height floppy drive for a complete self-contained machine.

### A NEW SUPPLY

Browsing at the Trenton Computer Fair (in pouring rain) I found a Highland brand new power supply for \$50. Not a bargain, but I didn't want to trust this project to a used supply or one without a guarantee. The supply I picked up came mounted in a metal case ready to drop into an IBM AT compatible. Because it was mounted in a metal case, it came with a few extra goodies, like a

new power connector for the back of the PEB and a low voltage (and quieter) fan.

The supply I picked up is a 200 watt supply, which I decided would have enough for my PEB with full complement of cards.

I started this project on a Sunday evening by opening up my PEB (I have a spare so I wasn't too worried about destroying this PEB) and removing the following from the left hand power section of the PEB:

- a. Power Transformer (remove four nuts)
- b. Terminal strip (remove two nuts)
- c. Power connector (remove two screws)
- d. Power Supply (remove two screws and unsolder wires to PEB bus)
- e. Fan (remove four nuts)

I kept the wiring to the front power switch and to the fuse (new model PEBs seem to have removed the fuse on the rear of the PEB). I carefully cut the two wires from the front power switch and soldered the 120 VAC power connections to the power plug which goes to the new power supply.

Working on the new power supply, I unscrewed the low voltage fan and mounted it on the back of the PEB after first cleaning everything in the PEB (amazing how dirty it gets after six years!) using the four nuts which held the previous fan. I unsoldered the 110/220 VAC switch on the power supply and soldered the wires together (to force 110VAC) and taped the wires to prevent a short.

(continued on next page)

Deciding how to mount the new power supply took much of my time. I finally decided to use the plastic verticle mounting unit from the old TI PEB power supply, and drill a couple of holes and mount the new supply board to it. The new power supply then mounted vertically in the same manner as the old supply.

Fortunately, the new power supply came with several disk drive connectors (four to be exact). I removed one of the disk drive cables (cut it off).

The power supply also comes with connectors which are intended to plug into an IBM PC compatible motherboard. I also cut these off and removed all the wires except for the wires which had the following voltages:

+ 12V  
- 12V  
+ 5V  
ground

I then soldered these wires to the bus in the same place as:

+ 12V went to BROWN  
- 12V went to YELLOW  
+ 5V went to GREEN  
Ground went to BLACK

(Warning: If you decide to try this yourself, try and make sure that the cables going to the drive connectors are long enough to run behind the cards in the PEB. Mine were a bit short but were still usable.)

Next came the hard drive. I just mounted the hard drive and the floppy drive side by side in the PEB and ran the cables out of the box before putting the whole thing back together.

## CARD MODIFICATIONS

Here is the nasty part of the power supply changeout, every card that you plug into the PEB will require a modification and the card with the modification cannot be plugged into as standard PEB without blowing out the card. Time for a nice BIG caution sticker on the card.

The modification is quite simple, and is because the cards no longer need to do their own power regulation. The power on the bus (+ 12V, - 12V, and + 5V) will have the right voltages for the cards to run. The modification involves jumpering out all the voltage regulators each board.

One way to do this is to remove all power regulators and then jumper across the contacts. I chose a simpler way which lets me remove the modification in the future if I so desire. (remember, also, at this point I wasn't quite sure this was all going to work!).

The voltage regulators have three prongs connected to a square body, and are usually located near the bottom of the card (usually one or two right next to the LED which sticks out the front):

```

._____.
:_____||=====O\ jumper
:      :      :
:O      :=====o : across
:      :      :
:      :      :
:_____||=====O/ terminals

```

The middle connection is ground, and should be left alone. I made up small jumpers for the outer two connections, and soldered all of them on the PC-side of the board.

## RESULTS

I modified the GENEVE card, held my breath, and turned on the power. Relief followed as the normal GENEVE Swan Screen appeared. I then modified my HFDC card and plugged in the hard drive. The system booted normally (so far so good). Next I modified my TI disk controller (it was a bit hard to get the case apart) and plugged in the floppy drive. The floppy checked out fine. The last card I modified was a Myarc RS232, everything was OK.

I have several more cards to modify and try, including Ron Walters fabulous MEMEX 2-megabyte memory expansion card and a speech synthesizer card (somewhat useless in the GENEVE until the next MDOS release). I'm going to check with Ron on the memory expansion card.

### SUMMARY:

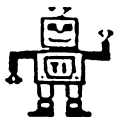
Was it worth the trouble? Total project time was three evenings of about six hours total. My PEB runs cool and quiet and my cards are no longer turning brown. I have the peace of mind of a totally integrated computer within the PEB with a hard drive!

It was worth the trouble for me, and gave me a little respite from a long haul in programming.

Of course, I wouldn't try this yourself, unless you have a pretty good knowledge of computer hardware and power supplies. In any case you are on your own.

A.L. Beard





# COMPUTER CONTROLLED ROBOT

->  
->  
->

By  
Ken Gladyszewski

## CONTROL A ROBOT OR ANYTHING USING "PIO"

Some years ago while visiting my local Radio Shack, I discovered a robot called "The Mobile Armatron" and immediately decided that controlling this robot with my computer would make a great project. So did Radio-Electronics Magazine in an article which appeared in their May 1987 issue using a Commodore 64. This simple robot consists of five motors which cause different motions when energized by a handheld remote attached to the robot via a two foot, seven conductor ribbon cable. The remote consists of a number of pushbuttons which when pushed connect the wires of the ribbon cable in various combinations to energize one of the motors in a given direction. After reading and understanding the article, I concluded the TI parallel port is similar to the Commodore user port and could be used in a like manner to control the robot. These ports both have 8 data bit outputs which can be used to drive relays whose contacts then act just as the pushbuttons did in the remote. My design for the interface uses SPDT relays instead of the SPST relays used in the article and only 6 instead of 7 of the 8 available data bits. In addition to less hardware, the contacts are interconnected so that each motor acts as a generator when power is removed, causing the motion to stop quickly instead of coasting. The remaining bits can be used for other purposes, such as speed control, by switching out resistors to vary the voltage to the motor.

Before attempting to write the program and design the interface, I did some investigation into the workings of the parallel port and learned the following:

The parallel port on the TI RS232 card is bi-directional, meaning the port may be used to input as well as output information. A printer and the robot use the output ability solely and can be used with a parallel interface that can only output data, such as the Axion parallel. The connector on the TI card is a 16 pin IDC type having 2 rows of 8 pins, per Fig. 1. The data bits are connected to a pair of cross wired 74LS373, 8 bit transparent latch IC's. These chips are capable of sinking 18 MA (input mode) and sourcing 6 1/2 MA (output mode). LED's and relays (even low power reed type) require more current than this and must be driven by a transistor.

### Editor's note:

It must be very hard putting all this effort into letting others know what amazing things our TI can do when there is very little feedback from the readers. Ken told me this project has spawned many more ideas that cannot possibly be looked into without the help of other hardware hackers, as time is always an enemy which can't be overlooked! Please write Ken if you would like to get involved in this project or any other that Ken has written about in the past. Also, write Ken, just to let him know if you like his ideas or not. This way, you may see more projects printed in this Newsletter! Thanks, Harry

When the computer outputs a byte, it causes the "handshake out" line to go high when the "data bit" lines have all changed. The data lines are latched, i.e., they remain in their last state until changed by new information. The peripheral device must cause the "handshake in" line to go low when it has read the data lines. The computer is then allowed to change the "data bit" lines to output another byte.

This information was used to design the universal interface shown in Fig. 2. The design is modular using a handful of inexpensive generic parts which are easily obtainable. All relay contacts are wired to a 25 pin D-Sub connector (like the one used with the RS232 serial port). Interconnections between the contacts required to use the interface with the robot are made in the mating interface cable MILEN attaches between the interface box and the robot ribbon cable. Using this approach, one interface may be used for many different projects, each with it's own custom cable. Almost anything can be controlled using this interface and some imagination! These relays could energize bigger relays if final devices require a large amount of power. The program in Fig. 3 shows how keys 0-9 on the computer keyboard may be used to energize ops or core relays at a time.

The actual program for the robot includes unlimited speech and the ability to store motion commands to disk. The commands may be input to the computer interchangeably through the keyboard or the handheld remote attached to the joystick port. The program is in this newsletter. It consists of 120 lines of Extended Basic with no Assembly routines, except for the text-to-speech routine. The program could be re-written to run in Basic on a console, using the Terminal Emulator cartridge, a cassette recorder and a stand alone parallel port.

If you have a Mobile Armatron and would like to computerize it now, or have other uses for this information and can't wait - - - write to me!

Ken Gladyszewski  
6440 St. Rte 86  
Concord, OH 44077

By

Ken Glodysewski

# SCHEMATIC FOR COMPUTER CONTROLLED ROBOT

- NOTES:
1. R6, R7, R9, R10, Q6, Q7, RY6, RY7, OPTIONAL FOR SPEED CONTROL. IF NOT USED, SHORT PIN 14 TO 17.
  2. 5 VOLT RELAYS MAY BE POWERED BY PIN 12 OF PARALLEL PORT CLAMPER X & Y. SOME 12 VOLT RELAYS MAY BE POWERED BY 9V BATTERY CLAMPER Y & Z.
  3. RESISTORS R0-R8 AND TRANSISTORS Q0-Q8 MAY BE REPLACED BY OPTO-ISOLATOR INTEGRATED CIRCUIT.

K. GLADYSZEWSKI S/OI/92  
NC99C85 CLEVELAND, OHIO

PARTS LIST:  
Q0-Q8 GENERAL PURPOSE  
NPN SWITCHING TRANSISTOR  
RADIO SHACK 276-1617  
RY0-RY7 SPDT RELAY  
OR RADIO SHACK 275-241 Q2V)  
OR RADIO SHACK 275-240 (5V)  
R0-R8 10K OHM RESISTOR 1/4W  
RADIO SHACK 271-1335  
R9-R10 RADIO SHACK 276-1547  
R9-R10 RADIO SHACK 276-1548  
R9-R10 RADIO SHACK 276-1549  
R9-R10 RADIO SHACK 276-1537  
R9-R10 RADIO SHACK 276-1538  
R9-R10 RADIO SHACK 276-1539

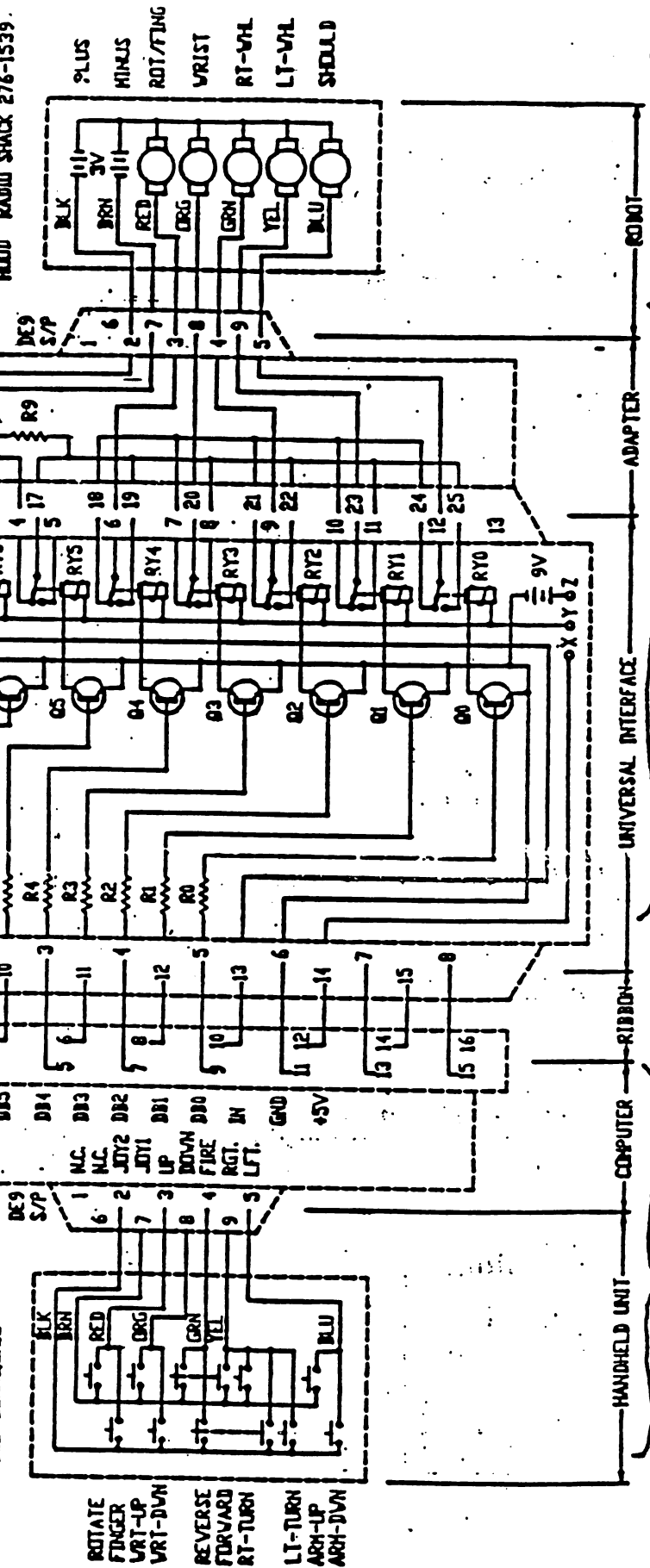


FIG. 1

## TOURNAMENT SOLITAIRE

Reviewed by Jim Peterson

Tournament Solitaire is a collection of seven different card solitaire games on disk. You can select any of the games from the load menu, or elect to play all seven in sequence as a "tournament", hence the name.

The games were programmed by William Reiss in Extended Basic with assembly links, and the disk is available from Asgard Software (P.O. Box 10306, Rockville MD 20849) for \$14.95 plus \$2.50 for shipping and handling (U.S. and Canada; \$7.50 for airmail elsewhere; 7% additional for credit card orders). The disk is accompanied by a very neatly published 7-page manual of instructions.

As a programmer, I can appreciate the skill and the effort that went into writing these seven programs. The graphics are all that can be done on the TI in Extended Basic, colorful and legible. The programming logic appears to be flawless - in none of the games was I able to make an illegal move, nor was any legal move refused. The manual is well written, although a bit sketchy - I still don't quite understand how to play the "Corners" game.

The seven games are Golf, Pyramid, Klondike, Canfield, Calculation, Pile Up and Corners. As far as I know, only two of these have previously been programmed for the TI - Klondike by Schererville and under the British name Patience by Gadget Man, and Pyramid by Regena. Of the others, Canfield was the only one I had ever heard of.

To evaluate computerized card solitaire games, one must ask two questions - how do they compare with Walt Howe's Chainlink Solitaire, and are they easier and more enjoyable to play on the computer than with a deck of cards?

The first question is perhaps unfair, because I consider Chainlink Solitaire to be the best "brain game" ever programmed on the TI-99/4A.

As for the second, the shuffling and laying out of the cards is far quicker than could be done manually, thanks to the assembly link. Thereafter, action slows down. Moving cards from one stack to another is accomplished by using the arrow keys to move a cursor to the card to be moved, pressing the space bar to select it, using the arrow keys to move to the position it is to be moved to, and pressing the space bar again. Cards on the stack are turned over by pressing the Enter key, and some games also use other keys. The method of playing is the same for all the games, which makes it easier to play a tournament.

Many people would probably much rather use the joystick than the arrow keys. Personally I would very much prefer to simply select a numbered pile by pressing a number key, as Chainlink Solitaire is played.

In spite of the cumbersome method of play, I did find these games to be very entertaining and addictive, and I spent a good deal of time playing them when I should have been doing something more productive.

I liked Pyramid, although it is one of the slowest in play, because it allows some opportunity for strategy. Its rules differ in one respect from Regena's version, which enabled me to actually beat the game once. I also managed to win at Pile Up, a complicated game with 20 piles of cards, which allows two reshuffles and a draw during the game, as well as peeking into stacks.

Calculation is an unusual game which might permit considerable strategy, but would require a great deal of study. Klondike is the well-known solitaire game - it could have been improved by automatically turning exposed cards face up. Canfield is a variant of Klondike. Golf is the fastest playing, and very addictive.

Is it worth buying? Absolutely!

# DEBUGGING

----- by Jim Peterson

When you have finished writing a program, the next thing you should do is to run it. And, very probably, it will crash! Don't be discouraged. It happens to the very best of programmers, very often.

So, the next thing to do is to debug it. And you are lucky that you are using a computer that helps you to debug better than some that cost ten times as much.

There are really three types of bugs. The first type will prevent the program from running at all - it will crash with an error message. The second type will allow the program to run, but will give the wrong results.

And the third type, which is not really a bug but might be mistaken for one, results from trying to run a perfectly good program with the wrong hardware, or with faulty hardware. As for instance, trying to run a Basic program, which uses character sets 15 and 16, in Extended Basic.

First, let's consider the first type. The smart little TI computer makes three separate checks to be sure your program is correct. First, when you key in a program line and hit the Enter key, it looks to see if there is anything it can't understand - such as a misspelled command or an unmatched quotation mark. If so, it will tell you so, most likely by SYNTAX ERROR, and refuse to accept the line.

Next, when you tell it to RUN the program, it first takes a quick look through the entire program, to find any combination of commands that it will not be able to perform. This is when it may crash with an error message telling you, for instance, that you have a NEXT without a matching FOR, or vice versa. And finally, while it is actually running and comes to something that it just can't do, it will crash and give you an error message - probably because a variable has been given a value that cannot be used, such as a CALL HCHAR(R,C,32) when R happens to equal 0.

The TI has a wide variety of error messages to tell you when you did something wrong, what you did wrong, and where you did it wrong. But, it can be fooled! For instance, try to enter this program line (note the missing quotation mark). 100 PRINT "Program must be s aved in:"merge format."

And, sometimes you may be told that you have a STRING-NUMBER MISMATCH when there is no string involved, because the computer has tried to read a garbled statement as a string.

Also, the line number given in the error message is the line where the computer found it impossible to run the program; that line may actually be correct but the variables at that point may contain bad values due to an error in some previous line.

If the error occurs in a program line which consists of several statements, and you cannot spot the error, you may have to break the line into individual single-statement lines. This is the easiest way to do that - Be sure the line numbers are sequenced far enough apart. Bring the problem line to the screen, put a ! just before the first ::, and enter it. Bring it back to the screen with FCTN 8, retype the line number 1

higher, use FCTN 1 to delete the first statement and the `1` and `::`, put a `1` before the first `::`, and continue. Then, when you have solved the bug, just delete the `1` from the original line and delete all the temporary lines.

Pages 212-215 of your Extended Basic manual list almost all the error codes, and almost all the causes of each one - it will pay you to consult these pages rather than guessing what is wrong.

You may create some really bad bugs when you try to modify a program that was written by someone else - especially if you add any new variable names or CALLs to the program. Your new variable might be one that is already being used in the program for something else, perhaps in a subscripted array. I have noticed that programmers rarely use `@` in a variable name, so I always tack it onto the end of any variable that I add to a program.

Also, the program that you are modifying may have ON ERROR routines, or a prescan, already built in. The ON ERROR routine was intended to take care of a different problem than the one you create, so it could lead you far astray - you had better delete that ON ERROR statement until you are through modifying.

The prescan had better be the subject of another lesson, but if the program has an odd-looking command `!@P-` up near the front somewhere, it has a prescan built in. And if so, if you add a new variable name or use a CALL that isn't in the program, you will get a SYNTAX ERROR even though there is no error. One way to solve this is to insert a line with `!@P+` just before the problem line, and another with `!@P-` right after it.

When a program runs, even though it crashes or is stopped by FCTN 4 or a BREAK, the values assigned by the program to variables up to that point will remain in memory until you RUN again, or make a change to the program, or clear the memory with NEW. This can be very useful. For instance, if the program crashes with BAD VALUE IN 680, and you bring line 680 to the screen and find it reads `CALL HCHAR(R,C,CH)` just type `PRINT R;C;CH` and you will get the values of R, C and CH at the time of the crash. You will find that R is less than 1 or more than 24, or C is less than 1 or more than 32, or CH is out of range.

In Extended Basic, you can even enter and run a multi-statement line in immediate mode (that is, without a line number), if no reference is made to a line number. So, you can dump the current contents of an array to the screen by `FOR J=1 TO 100::PRINT A(J);: : NEXT J` - or you can even open a disk file or a printer to dump it to.

You can also test a program by assigning a value to a variable from the immediate mode. If you BREAK a program, enter `A=100` and then enter CON, the program will continue from where it stopped but A will have a value of 100.

You can temporarily stop a program at any time with FCTN 4, of course (the manual says SHIFT C, but it was written for the old 99/4), and restart it from that point with CON. Or you can insert a temporary line at any point, such as `971 BREAK` if you want a break after line 970. Or, you can put a line at the beginning of the program listing the line numbers before which you want breaks to occur, such as `1 BREAK 960,970,980` Note that in this case the program breaks just BEFORE those listed line numbers. You can also use BREAK followed by one or more line



numbers as a command in the immediate mode.

The problem with using BREAK and CON is that BREAK upsets your screen display format, resets redefined characters and colors to the default, and deletes sprites. So, it is sometimes better to trace the assignment of values to your variables by adding a temporary line to DISPLAY AT their values on some unused part of the screen. If you want to trace them through several statements, it will be better to GOSUB to a DISPLAY AT. And if you need to slow up the resulting display, just add a CALL KEY routine to the subroutine.

Sometimes, your program will appear to be not flowing through the sequence of lines you intended (perhaps because it dropped out of an IF statement to the next line) and you will want to trace the line number flow. This can be done with TRACE, either as a command from the immediate mode or as a program statement, which will cause each line number to print to the screen as it is executed. If used as a command, it will trace everything from the beginning of the program, so it is usually better to insert a temporary line with TRACE at the point where you really want to start. Once you have implemented TRACE, the only way to get rid of it is with UNTRACE.

TRACE has its limitations because it can't tell you what is going on within a multi-statement line, and it will certainly mess up any screen display. Sometimes it is better to insert temporary program lines to display line numbers. I use CALL TRACE( ) with the line number between the parentheses, and a subprogram after everything else

```
300000 SUB TRACE(X)::DISPLAY AT(24,1):X :: SUBEND
```

Some programmers use ON ERROR combined with CALL ERR as a debugging tool, but I can't tell you much about that because I have never used it. ON ERROR can give more trouble than help if not used very carefully, and I cannot see that CALL ERR gives any information not available by other means.

Sometimes you can debug a line by simply retyping it. It is only very rarely that the computer is actually interpreting a line differently than it appears on the screen, but retyping may result in correcting a typo error that you just could not see. In fact, most bugs turn out to be very simple errors.

When you are debugging a string-handling routine, don't take it for granted that a string is really as it appears on the screen - it may have invisible characters at one or both ends. Try PRINT LEN(M\$) to see if it contains more characters than are showing; or PRINT "\*"&M\$&"\*" to see if any blanks appear between the asterisks and the string.

There is no standard way to debug a program. Each problem presents a challenge to figure out what is going wrong, to devise a test to find out what is really happening.

Don't debug by experimenting, by changing variable values just to see what will happen, etc. Even if you succeed, you will not have learned what was wrong so you will not have learned anything - and if your program contains lines that you didn't understand when you wrote them, you will have real problems if you ever try to modify the program. (Believe me, I speak from experience!)

## FORMATTER 'CRIBSHEET'

Text Dimension commands, as the name lies implies, move or shape the words in the document (margins, linespacing, right justify, etc.).

.FI : FILL : PUTS AS MANY WORDS ON A LINE AS WILL FIT.  
 .NF : NO FILL : CANCELS FILL.  
 .AD : ADJUST : ALIGNS THE TEXT TO THE LEFT AND RIGHT MARGINS.  
 .NA : NO ADJUST: CANCELS ADJUST.  
 .LM n : LF MARGIN: SETS LEFT MARGIN TO "n".  
 .RM n : RT MARGIN: SETS RIGHT MARGIN TO "n".  
 .IN : INDENT : CREATES AN AUTO-INDENT FROM LEFT MARGIN.  
 .LS n : LINE SP : SETS LINE SPACING TO "n" LINES.  
 .PL n : PG LENGTH: DEFINES NUMBER OF LINES TO A PAGE.  
 .BF : BEGIN PG : DEFINES FIRST LINE OF NEW PAGE.

Internal Format commands control the spacing of characters on a line.

.SP n : SPACE : SIMILAR TO TAB FUNCTION.  
 .CE n : CENTER. : CENTERS NEXT "n" LINES BETWEEN MARGINS.

Highlighting commands control functions such as underline or bold and allow you to redefine characters to use them to send CTRL codes to the printer.

^ : REQUIRED : JOINS WORDS TOGETHER WHEN REQUIRED TO PREVENT  
 , : SPACE : SPLITTING IN REFORMATTING, UNDERLINE, ETC.  
 & : UNDERLINE: UNDERLINES ALL TEXT FOLLOWING UNTIL NEXT PAGE.  
 @ : BOLD : RETYPES FOLLOWING TEXT FOUR TIMES.  
 .TL xx : TRANS- : ALLOWS REASSIGNMENT OF ONE CHARACTER TO REPRESENT  
 LITERATE : A NUMBER OF CHARACTER VALUES TO SEND CODES TO THE  
 : PRINTER.  
 .CO t : COMMENT : SIMILAR TO REM IN BASIC--ALLOWS NOTES THAT DON'T  
 : PRINT.

Page identification commands print notes in the upper or lower corner of each page, either headers or footers.

.HE t : HEADER : PRINTS TEXT (t) AND PAGE NUMBER AT TOP OF PAGE.  
 .FO t : FOOTER : PRINTS TEXT (t) AND PAGE NUMBER AT BOTTOM OF PAGE.  
 .FA : PAGE # : RESET PAGE NUMBER IN .HE AND .FO

File management commands.

.IF f : INCLUDE : MERGES A FILE TO PRINT A DOCUMENT TOO LARGE FOR ONE  
 : FILE.

Mail Merge commands are used to supply values to the variables in a letter that has been set up for the mail merge option.

.ML f : MAIL LIST: IDENTIFIES VALUE FILE ((f) FOR MAIL LIST.  
 \*n\* : VARIABLE : INSERTED IN TEXT AS VARIABLE FOR REASSIGNMENT FROM  
 : VALUE FILE.  
 .DP n:t : DISPLAY : PROMPTS YOU USING TEXT "t" TO ASSIGN TO VARIABLE  
 : (\*n\*).  
 . : PROMPT :

## ARTIST CARDSHOP

Review by Deanna Sheridan

NORTHCOAST 99ERS

Reprinted from Cleveland U.G.

6/92

Over the years, you purchased CSGD, Fontwriter, Print Wizard, Page Pro, Jiffy Card, and took advantage of TIPS, so why would you need another card-making program? Just look how each of these incorporated new features and become more sophisticated than the previous. I think that Paul Coleman has finally found the ULTIMATE card-making program for the TI.

As you look at each of the above, you will find that they were difficult to set up, or took only certain size graphics; graphics could only be set in certain areas, only certain built-in fonts could be used, etc. Or else there was no way to save the card, or print multiple copies, or else the printing so excruciatingly slow. Artist Cardshop will make your creative juices flow without frustration if you like to create and print your greeting and note cards.

It consists of three separate programs (in the manner of TI-Artist) which include CARD BUILDER, CARD PRINTER and BORDER MAKER. There is a professionally printed 26-page manual and samples of cards and borders included on the disk.

Both the inside and outside of the card uses two TI-Artist fonts. 1 large (any size) and 1 small (1 char high). Up to 4 TI-Artist instances can be used on a page, and the back of the card will print any TI-Artist instance up to 27 columns wide. Thus, you can use the back for an additional message or your own personal logo.

Each page of the card consist of 40 lines on which to place material (text, or graphics or text and graphics). This can be laid in any combination of the following:

1. Graphic only
2. Text only
3. Graphic (left) with text (right)
4. Text (left) with graphics (right)
5. Graphic, then text, then graphics

If the instance is small enough, the graphic only option allows you to lay multiple copies of the picture across the page. Cards can be saved and loaded for later modification. Up to 99 cards can be printed at one time and they can be printed in single or double density. I accidentally discovered that if you have a color printer and set the printer for a certain color before entering CARD MAKER, it will print in that color for you. I have tried this with Page Pro and a couple of other programs,

and it doesn't work because evidently the program sends a "reset" command to the printer before printing. Card Maker does not, so if you write a short XB program to say, print in Blue, before entering the print program of Card Maker, you will be able to print your card in blue ink. This is probably the next best thing to having a color card program.

Once you have chosen the graphic or graphics and fonts you will want to use, enter the Card Builder program. You are first requested for the fonts. I guess the only complaint I might have is that you MUST load both fonts even if you don't plan to use both. It seems it would save some computer memory for the graphics if one didn't have to load a font one wasn't going to use. This must be done for both the inside and outside of the card. Then you are prompted to load your graphic or graphics. As you place them, you chose the line on which you wish to place your data, and the computer tells you how many of the 40 lines are needed, so that you will know where to start the next step. On the example enclosed on the font side, I used the text only option to place the first two lines. The graphic only option printed my instance, and again the text only was used for the last two lines.

On the inside of the card I used the text-graphic to place the text next to the graphic and the text only to finish up the last three lines. For the instance on the back page I simply used my initials as my personal logo. But, remember large instance could have been used with an additional Father's Day message.

When you have all the data placed on the card it is time to save it to a file. You then call in the Card Printer program. All the fonts and instances are loaded before any printing commences. You are then prompted for a border. Twenty-five borders have been included and you can use borders on both the inside and outside if desired. Here is where you are prompted for the instance you might want to use on the back side. And then you can print in single or double density.

Last but not least, if you need more borders, you can use your imagination and make your own. The template for the border is created in TI-Artist. If you are familiar with the grey boxes you could bring in from Graphx to use as a guide in Artist, You will see the area available to make a border pattern. The design must be saved in Instance format and has to be EXACTLY 9 rows by 12 columns. If it is not you will get an error message when returning to Border Maker. If you have saved your border correctly, Border Maker will take your file and make a border with the name you designate.

I paid \$25 for the program at Lisa, and it can be ordered through Comproline, 1949 Evergreen avenue: Fullerton, CA 92635

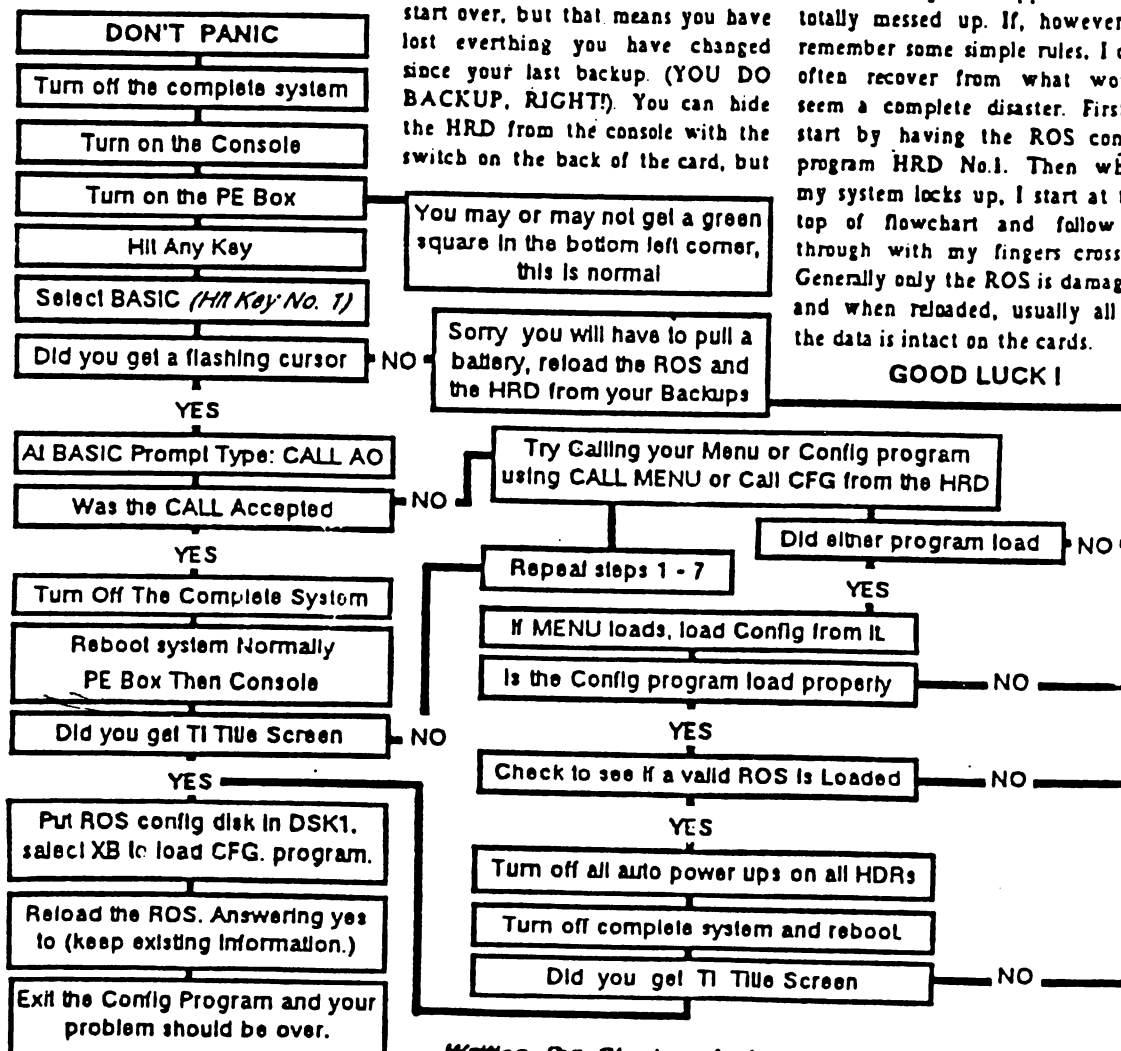
# Horizon RAM Disk Lockups

## *(Don't dump that data yet!)*

Certain coincidences this morning have made me decide to write an article, or sort of a quick reference guide for users of Horizon Ram Disks (HRD) of all types. This morning started with a call from our newsletter editor asking questions about a new HRD test program from OPA and problems he was having with one of his HRDs. We discussed his problem, determined that it was most likely the hardware and decided on a course of action. We said our goodbyes and

I went to my system to work on something only to find that my own system would not boot. This is where the real story begins. Anyone with a HRD, with any of the new Ram Operating Systems (ROS) installed in memory, as opposed to some of the Eproms that are available has had this problem. (Come on be honest) At this point you have a lot of options. You can shut everything off and walk away, but that will not solve anything. You can pull the batteries on your HRD(s) and start over, but that means you have lost everything you have changed since your last backup. (YOU DO BACKUP, RIGHT?) You can hide the HRD from the console with the switch on the back of the card, but

we are not all lucky enough to have that option because the old cards do not have the switch. You could take out the card, put it in the closet and you will never have the problem again. (No, No, that just wouldn't do) These are all options, but not very good ones so let's discuss the alternatives. I am the club librarian and when trying out many new programs, or reviewing older ones, I often have conflicts with the ROS on my cards that make the system appear to be totally messed up. If, however, I remember some simple rules, I can often recover from what would seem a complete disaster. First I start by having the ROS config program HRD No.1. Then when my system locks up, I start at the top of flowchart and follow it through with my fingers crossed. Generally only the ROS is damaged and when reloaded, usually all of the data is intact on the cards.



*Written By: Stephen Andrews of the North Bay 99ers*

Msg#:12518 \*TI-ECHO\*  
 08-29-92 19:19:00 (Read 1 Times)  
 From: BEERY MILLER  
 To: ALL  
 Subj: GENIE TO TI-ECHO RE FORTH  
 Message 502 Sat Aug 29, 1992  
 J.CARVER [Me John] at 14:39 EDT

Barry T.,

I'm going to answer in reverse order. You say that Basic experienced a revival in the PC world due to the new features added to it. I will agree with you on that. Any time something that people are familiar with, like basic, is released in a new version people are going to check it out. However, I think the main reason for popularity of basic in the PC world is due to the fact that they have basic compilers that work.

I'll admit to looking at PC magazines and catalogs, and from what I've seen, a lot of the shareware has been written in basic and then compiled. I even called a BBS one time where the entire BBS program had been written in basic and then compiled. If you can find someone that is able to write a basic compiler for our machines that not only works, but works well, I think you'll see a revival of interest in basic on the TI. I haven't used the Advanced Basic on the Geneve, remember we established last message that I don't even speak basic, but I've heard that it has some nice features and is pretty fast at some things. I really should take a look at it. Maybe I could get into basic. Sometime's it's embarrassing to have to admit that I don't speak basic.

Now on to the good stuff. Yes, I have worked with Wycove Forth. I have a couple of versions laying around here, even one that loads from cassette! Wycove is a good product. I tried to get a copy of their last revision several years ago and never could find anybody that had it. I even called the number in Canada that was in one of the old manuals and couldn't find anyone. Maybe they are the original invisible supplier. I heard that the last version was quite a step forward with many major changes but since I could never find a copy, I can't say.

As to any significant update of TI-Forth, Databiotics did quite a bit when they released Super4th. This was a complete rework of the kernal correcting all known bugs and adding several features including hard drive access and the ability to use a supercart to store most of the program in, freeing up quite a bit of RAM.

Mike DeFrank from Florida released his Forth Utilities which was a pretty impressive set of routines in TI-Forth. In the package he had the first really decent debugger I'd ever come across. He had a lot of nice utilities, very useful for the Forth programmer. Since I used TI-Forth about eighty percent of the time, these worked out quite well.

The biggest change, regarding TI-Forth, was Lutz Winkler and all the work he has done over the years. Lutz wrote a set of tutorials early on that were a good rock solid introduction to Forth. Some people complained that the tutorials were too similar to the ones done by George Smythe, but there are only so many ways to do things in Forth. If I write a tutorial on learning French, and you write one, I bet we both talk about verbs and I bet we use some of the same words too.

Lutz's biggest contribution was the AVFC Forth for the DigiT 80 column card. 80 column Forth! I was a beta tester when Lutz saw no reason that it shouldn't work on a Geneve also since they both used a 9938. It wasn't quite that simple, but almost. It ran in TIMode on the Geneve and did have eighty

columns, no windowing. Other than that, it was the same old TI-Forth, but I believe that it was one giant step forward for Forth on the Geneve. (We had, by the time Lutz finished his AVPC Forth, already figured out how to get the old TI-Forth to boot and run on the Geneve and the patches for that and to slow down the cursor are here in the message bases on Genie, down in the Myarc section somewhere).

Next, per Beery's message, was Mike McCann's Forth. Another great step forward. Still basically TI-Forth but it ran in native mode on the Geneve and had many, many added features that took advantage of the Geneve. Probably the most impressive change was the ability to save programs in files instead of screens. Actually, there were toggle words and one could save files either way. The resulting files could be moved to any disk in any format. No more worry about damaging the integrity of the Forth disk. You remember how hairy that used to be.

The next great step forward, still in process, we don't know where the foot will drop, is Bill Sullivan's MMMS Forth. I'm beta testing the product now and it's working out pretty well. Bill has posted public messages about this product elsewhere, so I'll not be telling tales out of school if I give you the highlights. The package is firmly based on McCann's Forth which was firmly based on TI-Forth so we know where our roots are. It's interesting that both Sullivan and McCann used code from Lutz Winkler's AVPC Forth.

MMS stands for memory management system. The package takes advantage of all the features of the Geneve, including a 2 Meg Memex, full hard drive usage and a unique memory manager that keeps track of memory page usage and calls and sets up additional pages as needed. The message that I have describing all of the features of this package is six pages long, so I won't go into great detail. Just as McCann's great innovation was the ability to save programs in file format, Sullivan's is libraries. The one thing lacking for TI-Forth programmers all this time has been libraries, toolboxes and whatever else the people in the PC world call them. Forth programmers have always had to roll everything from scratch. In the PC world, programmers take advantage of libraries or toolboxes to find commonly used routines. There are libraries for C and several other languages.

Thanks to Bill Sullivan we can do this now with Forth on the Geneve. He has built in routines that make it very easy to create a library and then detach it and send it to someone else to install on their system. He's even written the first few libraries. He has a floating point library, a ED/ASM library, a FORTH83 library and a database library. The floating point library speaks several different dialects other than RADIX 100. He is also working on a TIMODE library, a graphics library and a few others that he won't talk about yet. He has expanded the original Forth kernal to nearly four times the original size. Yes, it is Geneve specific, but in working with it I have come up with an idea for a project that would be implemented on the Geneve, then working backwards, adapting it to Lutz Winkler's AVPC Forth it would run on a TI with an 80 column card and from there, to a standard TI.

The only problem with the whole thing is I don't think anyone will buy Bill's package. It's going to be a fantastic package when it's finished, but I think he's too late. I don't know if anyone besides me is even still interested in Forth, much less buying a packaged Forth.

Hope this answers your questions and ask away again if it doesn't. Since the user groups are dead around here, I don't get much of a chance to talk computing or programming with anyone. Would love to write a book on Forth and the TI and Geneve, but I'm afraid it'd only sell three or four copies. Well, ten if I count the grandchildren!

John

\* Origin: -9640 News BBS- MidSouth 99'er BBS \*\*1-901-368-0112\*\* (1:123/50)

## THE DUMPING OF A CARTRIDGE.

Recently, Bob Stahlhut asked me to dump his Navarone Data Base Management System (DBMS) cartridge to disk for him. Well, sounds simple enough right? Well, here is what I had to do to make it happen.

### The HARDware part.

The copy of Navarons DBMS that I had was residing on my PC in the form of an eprom dump, I burnt another eprom copy of it. All was well and good, but I did not have a place to plug. So I called up Larry Connors and ordered a Navarone Cartridge from him, one of the very old style that was long and protrude a distance from the cartridge port. ( Because I had a plan ). The next step was to call up JDR Microdevice and order a 28 pin ZIF ( Zero Insertion Force ) socket and receptacle.

Finally I had all the parts I need. The Navarone cartridge Larry sent me was called Hen Pecked, something like the old Atari game of Joust. Anyway, I pulled out my soldering iron, desoldered the hen pecked eprom ( 2764 ) and soldered in the ZIF socket and receptacle. Then it was time for the smoke test. I plugged the Hen Pecked module in the Zif Socket and powered up. After about 40 minutes of playing Hen Pecked I felt assured that the program was running properly.

OK, the hardware part is about done, not hard but it was kind of expensive.

### The SOFTWARE Part.

Well, I am where I started. I have a navarone Hen Pecked cartridge. I plug it in. Now, I need some software that will allow me to dump the >6000 memory space, where the 8K Cartridge Memory Area resides. Well, guess what, it is kind of hard to load a program to manipulate memory when you have a game cartridge program plugged in ( aka... No loader ), kind of makes you think, TI did that on Purpose? Ok, I had a couple of ways of doing things. One was the hard way we use to do in the dark ages. AKA. You would load a debugger somewhere in memory, place the address of it at the top of memory. Shove the cartridge in, hit your load interrupt switch VIVA.... Debugger.

But this is the 90's right? I need some piece of hardware that would allow me to load a program image file, no matter which cartridge was plugged in. Unfortunately, my SOB ( which would have been perfect for this ) was dead. In order to resolve a problem between my AVPC card, Corcomp controller and P-Gram+ I switched to the Millers Graphics eproms for the Corcomp controller ( that fixed that problem ). But eliminated the possibility of using the Corcomp Disk's controllers loader that appears before the title screen ( it is now gone ). Well I finally remembered the ROS 8.14 for the Horizon Ram disk had a command called "LD" that would load program image files. Success!

I powered up went into basic, and "LD'ed" Super Bugger II. Super Bugger II has a handy command called dump program image. Perfect, I just had to give it a starting and ending address, a filename and I was done? Right, wrong. I found out that Super Bugger II has a bug in it, and that function would not work properly, it would either fill up the disk with empty files or it would keep writing one file with nothing in it forever..... O'well back to the drawing board.



Ok, NEXT up on the great idea list. I reached for an old favorite- MG/Tom Freemans DiSK Assembler. Again into basic, loaded the program and started Disassembling what I needed. Everything went great. Now I have about 90K of source listing. I took all the source code over to my Geneve. I put all the source code on the Geneve's internal ramdisk for fast compiling. I made up a control file with all the include statements I need and the obligatory, AORG statement to make sure the loader placed the program in memory where I wanted it.

Having Hen Peck load in the >6000 space wasn't necessary, but for the NDBMS it was. NDBMS uses all available memory expansion to do its thing and to locate any part of the main program in "normal" memory expansion space would render it in operable. Thus, to run this program a super cart is a requirement.

I then started a compile. The Geneve locked solid. Opps.. Forgot, my geneve has a problem compiling on the internal RAMDISK, it always locks up ( guess that problem will have to wait until I get my hands on the MDOS source ).

Next, I started my compile on a floppy drive and went down stairs to watch some TV, about half an hour later, I came back. Ok, everythings swell. I had a object file. Ran it, and everything worked fine.

But who likes nasty object files? They just take up more room on a disk and load slower. It's time to convert this guy over to becoming a program image file. I ran the object file through Ray Greens Linker. Started to load the program up and run then CRASH, the system lockup! After asking a couple of Guru's what the problem was it became crystal clear.

When you crate a source file, that you know you want to turn into a program image file, you must include some a label, Sfirst, Slast ect. (See, Bruce Harrisons, tutorial in the July '92 Micropendium). These codes are suppose to tell the LINKER the first executable and last executable address. Well, the Navarone cartridges are designed with a small header that tells the TI when it powers up that there is a valid module in the port, the name to display on the title screen ect... This must be at the beginning of program. Well, the loader TI built into the E/A cartridge is kind of stupid, in that it does not care what you tell it is, the first executable instruction, instead, it just starts to execute at the first byte of memory that it starts loading at, in our case >6000, so the first thing executed was its power up header information! Apparently, TI had planed at some later date to come out with a loader that could handle the user defined start address. I have been told by Gary Bowser that TI has alot of goodies tucked into the EA package that they never told anyone about, but I stray from the subject.

Two alternatives came to mind, leave it in object form, or write a custom loader to place the program image file in memory. Taking the easy way out, for now, the program is being left in object format.

So what on the surface, looked to be a VERY simple under taking ended up being more complicated than I anticipated.

Dan Eicher  
Indianapolis  
08.22.92

PC and the TI  
By  
Warren A. Barnes

These are my personal thoughts regarding the article that appeared in the newsletter by Barry Traver (The TI and the IBM.) In the article, he indicates he wasn't, but the overall tone was biased against PC/Clones. I own both a Geneve and a Clone and found most of his comparisons trivial at best and misleading at worst. Here are some of my opinions on his topics discussed:

Teaching Tools: TI has many GOOD teaching tools while the PC world has HUNDREDS of teaching programs. One system's are easily found the other ones are not (Can you guess which one is which?) Since I don't have children, I don't give a hoot about teaching tools.

Graphics: A plain TI has a standard color setup on all machines which is just that STANDARD. However, the Geneve has very good color set reaching upwards to 512 colors on screen at one time. A PC CAN have very sharp SVGA graphics that are very crisp which has resolutions reaching 1024x720 pixels and still climbing. Also, anyone considering paying \$1750+ for a PC and NOT getting a SVGA card/monitor needs to look elsewhere. Entire systems are sold for that price - which includes SVGA.

Speech: I turn my sound off on my PC and don't have it with my Geneve. Who wants to listen to all those beeps and bonks anyway?

Mathematical Accuracy: Well where I went to school 0.8 and 0.800000001 are CLOSE (to use a non-mathematical term) enough to not worry about the difference, truncation would fix that problem.

Now it may seem I am saying get rid of your TI's. By all means NO! I am not. I agree with Mr. Traver in saying let a PC not be a replacement for your TI/Geneve. I write programs on both the Geneve and the Clone. In fact I do MOST of my programming on the Geneve. I found the 9900/9995 instruction set (Assembly) to be simplistic and very powerfull while the clone's to be VERY long and complex(e.g. One Geneve MOVE assembler statement handles all combinations of Register to Memory Address moves including indexing and indirect moves while a PC has many MOVE instructions to handle the combinations.) I like my Geneve and will probably keep it for however long it lasts. BUT there are some things it can't do that a clone can. SPEED being the first thing to come to mind. After whizzing along at 33Mhz, it's like jamming a car into 1st gear from 4th when going to the Geneve.

The proliferation of hardware/software and it's continued advances in technology is another factor. On a PC you can run just about anything from hand scanner technology to multi-media tasks. And products are getting cheaper and more powerful as designers find ways to cram more transistors onto a chip. As far as software goes there are millions of programs for the clone while we still haven't decided which version of MDOS works with

what. This isn't saying the PC world doesn't have it's share of problems(The MS-DOS 640k conventional memory problem being the first to come to mind.)

And lastly, should you go to an employer and be asked "Have you any PC experience?" I'm sure he/she will not be interested in the TI/Geneve having sprites and being able to talk at you.

Purchasing a PC is not moving over, but definately up and to the right. As PC's continue to become more technologically advanced and the TI/Geneve continues to stagnate, the gap will become even greater, leaving the TI/Geneve obsolete.

Just a thought(Something that made me go HMMMM.)

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(Reprint from Nov. 1991 DECATUR 99er H.C.U.G.)

#### NEW AND REVISED SOFTWARE FROM HARRISON

Harrison software has released Smart Connect, a program with which TI owners can transfer text files to and from PC computers.

The package can take large files from the PC and automatically split them into files small enough to be used with TI-Writer or Editor/Assembler editors on the TI side. The program will auto-increment the names of these split files, so that if the first one is TEXT1, the file will be split into TEXT1, TEXT2, etc.

The package is design so that, once the program is at the PC end, all actions are controlled from the TI keyboard and the PC therefore can be unattended while transfers are being done, Harrison says. Two GW-BASIC programs for the PC are supplied. At the end of the session, the TI program will cause the PC program to end before ending itself.

The package, which sells for \$10 including shipping and handling, requires 32K, at least one SS/SD drive, RS232 and a PC with GW-BASIC. The package can run from Extended BASIC, E/A or TI-Writer modules. Instructions and an XB program to print them are included on the disk. Numerous "error traps" are included, Harrison says, so that even errors on the PC program will be reported on the TI screen and can be recovered from it with out any action at the PC itself.

Harrison notes that Harrison Software's Word Processor has been reduced in price from \$20 to \$14, including shipping and handling.

For information or to order, write Harrison Software, 5705 40th Place, Hyattsville, Md 20781.

A lot of people are puzzled by archiving and how to use Barry Boone's Archiver. What follows is both a reference guide and explanation of Archiver III. It is not meant to totally replace the documentation for this program. Actually, I haven't seen a distribution copy that comes with a set of instructions. There may be hidden features of ArcIII that aren't obvious to me (for example, Disk Utilities by John Birdwell has a feature to figure decimal-to-hex conversions).

What exactly is archiving? Putting it simply, when you archive you take file or a set of files, and group them as one file then compress them so they take up less disk space. Some software comes archived. These ALMOST always include the archiving program. Examples are Jack Sughrue's PLUS! and the Complete Adventure disk set.

What is the purpose of archiving? Well it started out as a money saver for modem users. It is faster, and thus cheaper, to send 90 archived sectors as 1 file, than 120 sectors for 3 programs. Now it is also a means of backing up disks. You can save each of your disks as a one file, squashed archive. You can specify whether you want compressed files or not. The reason you have a choice is that some unusual files actually take up more space when they are compressed. Another useful application of archiving is when you have programs you want to keep, but don't need ready to use. You can keep archives of all these files instead of taking up disk space.

OK, now that you have the "what", here's the "how". As far as I know, the only archiver is Barry Boone's program. Its operation is completely different from Archiver II. Rather than add new features to past versions, Archiver was completely re-written. It usually contains an XB LOAD program, but may be loaded from E/A. The program's filename is usually ARC1. It can be found on almost all of the bulletin boards, as a commercial version with Geneve utilities, in user group libraries, with other Fairware programs or from the author. Chances are, you can definitely get a copy.

First things first, so get the program loaded. After that, you should see a Fairware notice. Press any key to pass this. You then see a menu. Each menu option is described in detail below.

1) Archive Files - These options are largely self-explanatory. As you may have guessed, this option archives files. Pressing one will deliver a set of prompts. These are "Source Drive (1-Z)". Yes, you can have drive numbered from 1-9 and A-Z. Then comes, "Output Drive (1-Z)". You may use one drive. Archiver will prompt you to change disks when needed. It is highly recommended that you use a blank output disk, since archives may fill or almost fill a disk. Next comes "Output Filename". This is usually the name of the disk you are archiving, or some related heading. For example, a set of D/V 80 articles may be named "ARTICLES". The following prompt is "Pack all Files? (Y/N)". If you answer "Y" then all the files on the source disk are archived. If you answer "N", then when Archiver is working, you are asked "Include filename? (Y/N)". If you answer "Y" then that file is archived, otherwise it is ignored. This is a handy feature if you have programs and files for example, and need them separated. This process repeats for each of the files on the source disk. The final prompt is "Compress? (Y/N)". Saying "Y" and Archiver attempts to squash each file so it takes up less space. Remember that some unusual file types will actually get LARGER if compression is attempted. When all the prompts are answered, press REDO to correct an error in your answers, BACK to return to the menu, or any other key to continue. When Archiver is done performing any operation, pressing a key goes back to the main menu.

2) Extract Files - This is the opposite of archiving. It will let you pull (extract) files from an ARC file. You are first asked for the source drive. Next you input the source filename. After that, you are asked for the output drive. It must be stressed that the output drive for ALL operations of Archiver should be different than the input drive. You may run out of space or overwrite a file accidentally. Output disks should be blank.

The next prompt asks, "Extract all files?" If you answer "Y" then every file stored in the ARC file will be taken out. If you answer "N" then when extracting starts, the program asks, "Include filename?" for every separate file in the archive. Again, press REDO (to restart this option), BACK (returns to main menu), or any other key to continue.

3) Catalog Disk - This is fairly self explanatory. Simply input the source drive name. The program will ask if you want a printout. If you answer yes, then you are asked for the printer name. If there are more files than can be displayed, then [more] is printed on the screen and pressing a key advances the screen.

4) Catalog ARC File - If you aren't sure what files are contained in an archive file, then this option tells you. You are asked for the source drive, source filename, and whether or not you want a printout of the list of files.

5) File Copy - This option will copy a file (obviously). Simply supply the source drive and filename, and the output drive and filename.

6) File Rename - Again, this option should explain itself. Give the source drive and filename, then the output filename.

7) File Delete - Supply the source drive and filename.

8) File Un/Protect - You first supply the source drive and filename. You are then asked "Protect?" If you answer "Y" the file is protected. Otherwise, file protection is lifted.

9) List Text File - This will display or print a D/V 80 file. Give the source drive and filename. You are then asked if you want the file printed or not.

10) Load FW - This returns to Funnelweb. Simply give the drive number on which the UTIL1 file is located.

NOTE: When an I/O error occurs, pressing a key returns to the main menu. If you have a Geneve, this is for you. Using a sector editor, find the string 04E08C00 and replace it with D8018C00.

I think that this should get people on the road to understanding archiver. Remember that it is fairware, so if you find it very useful, send the author (Barry Boone) a donation.

[This article/item comes from the January 1991 issue of BITS, BYTES PIXELS (Charles Good, editor), the newsletter of the Lima OH 99/4A User Group, P.O. Box 647, Venedocia, OH 45894.]

## TIPS MANIPULATOR--A REVIEW

by Dick Beery

A month or so ago, Jim Peterson asked me if I would review this program which Patrick Powell, its creator, had sent to him. I said that I would, wondering why as I did so. It seemed obvious to me that all that was necessary in using TIPS pictures was to go to the appropriate file and pull out what was deemed appropriate. I was wrong ! As I began to use this program I discovered how many files of TIPS pictures there are, that they lack a common index, and that trying to find all the pictures on a given topic can be very time-consuming. I now recommend that a number of people make use of this program, create files on subjects that interest them, and then make these "homogeneous" files available to others. Two people at the C.O.N.N.I. meeting during which I demonstrated this program volunteered to do one special topic file apiece, and when mine is completed, we will place the results of all three in the C.O.N.N.I. disk library. Maybe we will also place them on our Clearinghouse BBS, so that others across the country can have access to them.

The program itself, Tips Manipulator version 2.1, comes with over seven pages of documentation, but it is quite easy to use. I suggest a careful reading of the docs before beginning to use the program, then the use of the Sequence of Events (Docs, page 7). Tips Manipulator is a modified version of Ed Johnson's TIPS2PP program (Jan. 1991) that has also been modified by Ed's co-author Bob Kaat. This latest version, 2.1, allows renaming of pictures, forcing of uppercase, and has been prescanned to increase speed of operation. It is written in Extended Basic, and comes with a modified version of Irwin Hott's Load program.

Once you have loaded the program, you will be permitted to change the screen background colors to your choice. Also, you then remove the program disk and insert your TIPS file disk. As I have two drives, I place the disk that is to receive my newly-created file in drive two. If you have only one drive, you will need to make sure your original TIPS file disk has enough room to receive the new file as well, as the program does not yet support the changing of disks. (Maybe a later version will!). The printer parameter menu permits you to change your printer designation to PIO, RS232 or whatever.

The main menu offers the following choices: manipulate files, sort file, print file, catalog a disk, rename pictures, reset color/printer, and exit.

I found, that since picture names do not always reveal the complete nature of the picture, that it worked best for me to skim the pages of pictures I have printed out and saved in a looseleaf notebook, jot the name of the file (e.g. GRCD.TXT) and the names of the pictures wanted and then move to the Tips Manipulator (hereafter referred to as TM) program. Since the operation of the TM requires that you use the picture's number within the file, I found it indispensable first to use the Print File option to print out each of the TIPS picture files I planned to use. This gives you a printout with the picture number and name but no graphic printout. You can thus circle the numbers you want and use these sheets as a guide when accessing the Manipulator function.

The Manipulator function offers the possibility of printing files, but since you have already done this, select "N". You will then be asked for the drivenumber and filename of the source file (e.g. GMAZ.TXT) and the same for the new file you are creating. While you can input up to seven characters for the source file, the program works well with a four-character input (e.g. GMAZ). You are limited to four characters in your output (new) file. Since my file deals with computer-related items, I named it COMP. The program adds the necessary .TXT and .XXX extenders.

Once you select picture numbers to be manipulated (transferred to the new file), you will be asked for the picture numbers they will have in the new file. The easiest way is to accept the default numbers at the bottom of the screen, and when you have your new file all or partially completed, use the Sort function to arrange them in alphabetical sequence, if this is desired. When your new file is complete, you may use it in the same ways you use your present TIPS picture files.

As soon as you have completed and sorted your new file, I suggest that you use the TM program to print the new file (numbers and names, remember?), and then move to one of your TIPS companion programs to print out the actual graphics, the same as for your other, heterogeneous, TIPS picture files.

When you print the file in the TM print function, you may find that not all picture names will print, the problem being that some came over from the other type of computer in lower case. The Rename Pictures function of TM will redo these in upper case, and you can then print out the entire file correctly.

I found the program to be very user-friendly and had only minor problems with it, and those I expect to eliminate when I have time to practice with it more in depth. I highly recommend it, and think that you will find a little time spent in organizing your TIPS pictures into homogeneous files will save you much time and frustration when you have a quick project to execute and little time in which to do it.

The program is released as Disk Ware, and the author states that "I do not grant any company or person other than Jim Peterson/Tigercub Software to charge any copying fee for this program..." In other words, you can give it away, but don't sell it! He also asks that those who use the program send a note, or a copy of the club's newsletter, or a disk from the club's library (or why not a disk from your personal collection?) to him.

Address: TI EXPRESS  
C/O PATRICK R. POWELL  
P.O. BOX 496  
OCEAN PARK, ME  
04063-0496

You may also contact him on Genie. Address: P.POWELL7

P.S. I give this an A-PLUS rating on both program and documentation. Hope you enjoy using it as much as I do!



I have always wished that there were more educational programs, above the  $2+2=?$  level, for our computer. And I have always thought that the best educational programs were those that took advantage of computer capabilities to entertain while teaching.

Also, I have always much preferred games that require me to exercise my mind, rather than depending on quick reaction or blind guessing. And, being a programmer, I admire efficient, memory-saving programming.

All that is why I was so very impressed by the new game, Air Taxi, recently released by Don Shorrock. It is uniquely educational, very entertaining, and so compactly programmed that the basic version is available on cassette!

The game can be played alone, as it usually will be, or by up to 8 players. Don customizes each game with the default names of whatever number of players you choose and with your home town as the starting point. Each player may select his own handicap level, ranging from A to Z for 6 to 81 cities, and his skill level ranging from 1 to 9 which determines the target size.

A black silhouette map of the entire United States and southern Canada is then displayed; the only features are the Great Lakes, Great Salt Lake, and the coast lines. You are randomly offered a destination to fly to. Since all your friends bum rides from you, and TI users are cheapskates (that is my comment, not Don's!), you are not even paid for your gas for this first trip. It may therefore pay you to refuse any offer to a distant destination - however, each refusal costs you \$2.00.

When you accept an offer, you then use the S and D keys to set your initial flight direction, in 45 degree increments (i.e., north, northeast, east, etc.) and press Q. You hear the sound of the motor revving up, and a small cursor dot begins moving from your town in the direction you selected, while your gas gauge shows your fuel being used up. You can use the S and D keys to change direction. If you get close enough (depending on the skill level you selected) before your fuel runs out, the cursor will stop, the motor revs down, and you will be shown the cost of the fuel expended and your remaining bank balance. If your fuel runs out too soon, you will glide to the nearest airport and you must then set your direction from that point and try to reach your original destination. However, if you were too far from any airport when your gas tank ran dry, you will be returned to your home town and will be assessed repair costs.

Once you have reached your first destination and said goodbye to your freeloading friends, you will then be randomly offered fares, at prices depending on distance, from that point to another city. You have the option to refuse offers, at a cost of \$2.00. If you can fly to that point with a minimum of maneuvering, the fare will more than cover the cost of fuel, and you will make money - plus an occasional tip.

There are too many other features to describe here. The program comes with four pages of printed documentation, and the disk version includes three additional files, which can be merged in, to add many more cities or to convert the program for use with a joystick.

At the handicap and skill level K 7 which Don set for me as defaults, I found that I was able to stay ahead of the game by refusing most fares except coastal cities and then cruising along the coast until the airport radar picked me up and brought me in. Trying to find Kansas City or Cheyenne on that black silhouette map would be very difficult without consulting a regular map - and in doing so, you would learn a great deal about the relative location of cities.

This is a commercial program, not fairware, and it is customized for each purchaser. The price is \$15 for the disk version, \$20 for the cassette version. To get an order form, on which you can specify your own default options, write to Don Shorrock, P.O. Box 501, Great Bend KS 67530.

## EZ-KEYS

Review by

Bill Gaskill

READ THIS REVIEW. PLEASE DO NOT JUST LOOK AT THE REPORT CARD. IT DOESN'T TELL THE WHOLE STORY BEHIND THIS EXCELLENT NEW PRODUCT!!!

EZ-KEYS is a new product from Asgard Software that is designed with the Extended Basic programmer or Extended Basic program user in mind. To use it one must have Extended Basic, 32K memory expansion and a disk drive. The program retails for \$14.95 and is currently available directly from Asgard Software or TENEX Computer Express. I am certain that it will be available from other major 99/4A retailers in the near future.

### A MACRO GENERATOR:

EZ-KEYS is one of three keyboard macro generators that I know of that are available for the 99/4A owner. PC-KEYS II, from Techni-Graphics, and SoftKeys, from Quality 99 Software, are the other two. Another program named MicroKeys, from Tarik Isani (StarSoft) was announced a couple of years ago but I have never actually seen it available anywhere. The fact that all three programs could be generically grouped into the "macro" development classification is really about all that they have in common. PC-KEYS II offers disk cataloging, a pop-up notepad, a pop-up calendar and user-definable/selectable screen dump capability, along with the ability to define a limited number of "hot-keys" that perform common functions with one keystroke. SoftKeys is basically a "hot-key" macro generator without all of the added features of PC-KEYS II or the additional cost.

EZ-KEYS takes a different approach to the concept of macro generation. It too allows you to define "hot-keys", but the keys that you define can do much, much more than either of the other two programs. In fact, by my definition, EZ-KEYS is really the only true macro generator of the three. In my experiences as a user of "other" computers, macros are short programs that "remember" keystrokes for you, so that you can later call them up at the press of a single key. In other words they are time-savers that shorten the number of steps you have to go through to perform a desired function or series of functions.

On all of the MS-DOS macro generators that I have used macro files are built in one of two ways. One method is to use a "remember" mode that tracks and then saves keystrokes as you press them and another method is to provide a macro editor that allows you to write and save small files containing the desired keystrokes. EZ-KEYS is of the second type. It will not allow you to generate a macro by remembering keys that you press. Instead it provides a macro editor that itself appears at the press of a single key.

EZ-KEYS allows up to 55 keys to be defined for macro use, with each macro capable of being 668 characters (about 7/8 of a screen) in length. Perhaps the neatest feature of EZ-KEYS is its ability to link

macros together. This means that one macro file can RUN another, thus providing almost unlimited potential to the utility the EZ-KEYS environment can offer the XB programmer or user. EZ-KEYS also RUNS Extended Basic programs or parts of XB programs. For instance, if you wished to have a disk cataloging program available at the touch of a key, you could write it in Extended Basic, LIST it to disk so that it is SAVED in DV/80 format, then EZ-KEYS will be able to RUN it at the touch of a key when you define a macro for it. In fact, such a program is provided on the EZ-KEYS disk.

Programming a macro is simple if you are creating simple macros. It can become quite complex and demanding if you really want to build some sophisticated applications. Saving a macro is simple and straight-forward. You simply define it in the Macro Editor, exit out of the editor, do a BYE at the READY prompt and then load the program again. You will immediately be given the option of loading or saving your macros. When you elect to save them, all macros that exist in memory are saved to disk for use any time the EZ-KEYS environment is loaded.

To use your macros in a RUNNING program environment you simply edit a line in the EZ-KEYS program so that it RUNS the first program you want to activate, then you must save the EZ-KEYS program as LOAD. When the EZ-KEYS LOAD program is read into memory it brings all of your macro definitions with it and then it RUNS your first program. That's it! No programming expertise required here, just a user-friendly common sense approach to interfacing with your XB program(s).

Extended Basic programs that use assembly language subroutines may also be used with EZ-KEYS. The author has included an EZLOADER that will allow you to save custom assembly routines and your macros all together. Assembly routines are loaded first, then your macros are defined. EZ-KEYS assigns pointers to your macros so that they do not conflict with the subroutines already in low-memory. The whole package is then saved as a memory-image file and can be called up whenever you use the application with the custom assembly routines. The really neat thing here is the ability to customize the EZ-KEYS environment to fit as many different uses or programs as you have.

#### A PROGRAMMING UTILITY:

EZ-KEYS is an assembly language coded program that is designed to operate in an Extended Basic environment. Aside from its ability to generate macros it also provides a set of utilities for the Extended Basic programmer. While in the command mode (at the \* READY prompt) in XB EZ-KEYS allows you to set a timer that will automatically SAVE your work in case of a power failure or interruption. The time intervals can be from 0 to 18 minutes apart and two files, BACKUP1 and BACKUP2 are used to save your work. All work is saved only to DSK1. Another option allows the setting of background and foreground colors in the programming environment, much the same as the Gram Kracker Utilities or John Johnson's Horizon Ram Disk menu allow. Colors may also be set for the Macro Editor and for the special characters displayed in a macro file.

Another routine that can be CALLED will highlight numbers and arithmetic operators so that they appear on screen in the reverse color of the background and foreground colors chosen. When a running program

is being used you may also set all character sets to the same color by linking to a routine named RCOLOR.

Although the manual cautions that Extended Basic might not always be able to interpret it, EZ-KEYS lets you write a single program line that can be 23 screen lines long. How's that for expanding the capabilities of Extended Basic? Additionally, you can press Function 7 or Function 6 to move the cursor directly between program lines while in the programming (immediate) mode.

If you are a TI-Writer aficionado you may also write macro files in the TIW Editor, in a manner similar to writing a .BAT file for the GENEVE or any MS-DOS machine. The author includes a customized CHARA1 file to use on your TI-Writer disk. This file contains the character definitions needed to display the special characters that represent specific macro functions. This is another example of the fore thought put into this program. I would guess that few first-time users would opt for this method of development though, since it requires the use of the Transliterate Mode in TI-Writer and it is only sparsely documented in the EZ-KEYS manual. There is a chart in the documentation that shows the various equivalents that are available. For example, after pressing Control U to enter the transliterate mode you would press;

C	to get the macro symbol for Fctn 1 (DELETE)
D	.....Fctn 2 (INSERT)
G	.....Fctn 3 (ERASE)
B	.....Fctn 4 (BREAK)
N	.....Fctn 5 (BEGIN)
L	.....Fctn 6 (PROC'D)
A	.....Fctn 7 (AID)
F	.....Fctn 8 (REDO)
O	.....Fctn 9 (BACK)
E	.....Fctn = (QUIT)

Additional keys are documented for the four arrow keys, the <ENTER> key, the Control Key, the Function Key and the "Hold" command. Once you have created the macro file you simply print it to disk, run the POKER program provided on the EZ-KEYS disk, and the macro file is then assigned as a macro definition.

#### PERFORMANCE:

If EZ-KEYS has a short-coming it is in the method used to call macros from a RUNning XB program. All macros must be called at an input prompt. This means that the cursor must be displayed on screen for a macro to be accessed. You cannot for instance access a macro when the program being RUN is looping at a CALL KEY statement. Then, once the file instructions within a macro have been set in motion they are suspended only by a "hold" command in the macro (a Control H). So you must have programmed a Control H in the macro file so that it appears at the proper point in your XB program. This can be tricky and a little confusing to the novice programmer. I would have rather seen an execution routine used that could be called at any time, similar to the method Tom Freeman used to modify Danny Michael's Screen Dump utility. In that program a Fctn Zero keypress overrides any operation in an XB program and immediately accesses the dump routine. Even I/O routines like LOADs and SAVEs to disk are interrupted, so I know that it can be done.

One curious over-sight that appears to have been over-looked in the EZ-KEYS program involves character definitions. A custom character set is used in the macro generator that is not reset when an XB program is used. What you end up with is a couple of lower case letters that are out of line with the standard TI character set in your running XB program. While this is easily overcome by restoring the offending characters with CALL CHAR statements in the program you are running, it would be nice to see EZ-KEYS take care of this for you. It is one less than professional aspect of a program that is otherwise truly representative of "commercial" quality software.

#### EASE OF USE:

EZ-KEYS is not an application for the first-time programmer. It IS an application for the first-time user though. While creating macros is not in the suggested domain for a new programmer, setting up the EZ-KEYS program to use macros is. More detailed documentation is needed to help the less adventuresome programmer wade through the rigors of complex macro development. Nothing more is needed to convince the new user (or the experienced user for that matter) that EZ-KEYS is a superb competitor for your software dollars.

#### DOCUMENTATION:

The documentation is adequate for simple macro definitions, but falls way short of being a complete tutorial for the advanced macro programmer. It does cover most of the "absolutes" of macro development in the EZ-KEYS environment, but stops short of really being a useful guide to the world of advanced macro development. However, in fairness to Asgard Software, it's pretty difficult to offer such an outstanding product and then to couple that with outstanding documentation, for \$14.95. While the manual does show some evidence that it was written with TI-Writer, (some letters are lost at the end of a few words) overall it is well written and understandable. That is an important consideration in any new software purchase. If EZ-KEYS "takes-off" as I hope it will, perhaps Asgard will develop follow-up products for it such as a disk of pre-defined macros or a tutorial on advanced macro programming.

#### VALUE:

Harry Wilhelm is the author of EZ-KEYS. I know nothing about Mr. Wilhelm nor do I recall ever reading his name in any of the many 99/4A publications I have come across in past years. After seeing the kind of product he is capable of producing I can only hope that he continues to write programs for the 99/4A (and hopefully the 9640). If future Wilhelm applications are anything like EZ-KEYS, we are all in for a treat. EZ-KEYS is as superb a first-release application as I have ever seen for the 99/4A. It is well thought out, professionally executed and virtually error-free. For the adventuresome programmer or user EZ-KEYS promises unlimited potential and utility. It is truly a professional application that needs only more complete documentation and some fine-tuning to push it into the "stellar" software class. If you don't have EZ-KEYS you should buy it. You won't regret the meager \$14.95 investment. Even if you do not use it to do ANY macro development of your own, you will likely find another, perhaps more important, use for it. I would not be surprised to see future XB type applications developed under the EZ-KEYS environment. It is truly a

powerful development tool that cries out for an imaginative programmer to come along and demonstrate some of its potential. With the right combination of good marketing, dependable customer support and continued development of the product, EZ-KEYS could become a standard among 99/4A users. It is THAT GOOD! It is only in its infancy in version 1.0. I am sure that the best is yet to come.

#### FINAL GRADE:

You will note that EZ-KEYS falls down to a "B" rating in some categories. In the PERFORMANCE area I knocked it down because of the less than flexible method used to call up a macro and the program's inability to suspend macro operations more effectively. In the EASE OF USE area I took some points away because of the complexities required to design more than just simple macros. The DOCUMENTATION lost points because of brevity and several typos that snuck into the final product. The VALUE category makes up for all of the little short-comings I found in this first release. If 99/4A Users fail to see the value in this program then I will be truly disappointed. It is the "missing link" that we have been looking for in making more of the 99/4A then just a single purpose machine. For \$14.95 you simply can't go wrong. If the TI Community supports EZ-KEYS like it deserves to be supported I am confident that the incentive will be present for Harry Wilhelm to continue development of the product. I am equally certain that other talented programmers will develop applications to run in the EZ-KEYS environment. The end result to our support of this product is sure to be an even better product in the future.

#### (CONTINUED FROM PAGE 4)

read the manual one time, file it away with the warranty or lose it, and operate the appliance based on what they remember from that one reading. Of course, there are an increasing number of people who are incapable of reading the manual at all, and very few people who are capable of writing a manual that anyone can understand!

The average home computer buyer, knowing nothing about computers, can easily be convinced that he needs 640k a RAM, a hard drive, a mouse, and who knows what else. He needs all those things like he needs a hole in the head, and he is completely baffled by the technical jargon in the manuals that come with the machine.

His computer probably comes bundled with an assortment of "free" software that is alleged to be worth more than the machine itself. It is probably excellent software - but each program comes with a thick manual, hopefully written in intelligible English, which must be studied before the program can be used.

Big programs like that are fine for the workplace, where a worker becomes familiar with a program and remembers how to use it because he uses it every day. For the typical home computer user, they are totally impractical.

So, what is a HOME computer? It is a computer with no more memory than is needed to do the job, practically automatic in operation (i.e., with built-in disk operating system!), with one disk drive, and with an adequate supply of short simple programs to do what needs to be done at the moment and no more, so simple that they can be operated by reading on-screen instructions and prompts.

I happen to own such a computer. It is called the Texas Instruments TI-99/4A HOME Computer.

I would like to ask anyone who has any old exchange newsletters to bring them to the next meeting. We need them for articles in printing our newsletters. Also the bbs is temporally off line due to a hard/floppy controller breakdown. We hope to have it up soon.

## MIDI-Master 99

# A musical masterpiece

By BRUCE HARRISON  
and DOLORES P. WERTHS

First, some clarification: Although many readers will recognize the authors of this review as the creators of Assembly music for the TI, we are not in any way in competition with Crystal Software's MIDI-Master. We are, however, in the unique position of having a team consisting of both a programmer and a musician, so we feel eminently qualified to evaluate this product from both a technical and musical perspective. Also, we have a Casio MIDI Keyboard with which to use the program.

First impression: This is an excellent piece of programming by a very talented programmer. Mike Maksimik has delved into the depths of the TI's capabilities and made it do things we didn't think possible. The program takes "source" files written in a special musical-oriented notation and compiles these into the necessary commands for a MIDI interface. It can also save the compiled music to disk, and can load pre-compiled works into memory for play through the MIDI device.

The currently available version is V2.3+, with a recent upgrade having been made. The package consists of two items: a very nicely made MIDI connection cable, which plugs into the RS-232 connector, and a single disk (DS/SD) which contains all the software and documentation. (If the user has only SS/SD drives, a single sided edition will be supplied upon request.) The program is set up to autoload from Extended BASIC, and may also be run from Editor/Assembler. Hardware required is TI-99/4A or Geneve, with E/A or XB, 32K, RS-232, and disk drive.

Documentation is extensive and well written. The only gripe we had about the documentation was that it required either Funnelweb or TI-Writer to print it out. Given either of those, however, printing was simple enough. We used Funnelweb's formatter and had no trouble printing the docs.

The program itself is menu-driven, and easy to use. Prompts and error reports are concise and clear, making this one of the more user-friendly programs we've seen.

## Review

### REPORT CARD

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

Cost: \$45.00

Manufacturer: Crystal Software, 635 Mackinaw, Calumet City, IL

Requirements: TI-99/A or Geneve 9640 with Disk Drive, XB or E/A module, RS-232 interface

### A MONUMENTAL WORK

From a programmer's perspective, this program represents a monumental work. Mike has crammed what must be a very complex program into Low Memory only, so that all 24K of high memory is available for the music itself. He has also constructed a very efficient language for MIDI music.

Creating music source files for MIDI-Master does require an editor of the kind supplied with the E/A module, or one could use Funnelweb's Program Editor for that purpose. Music source files are written in a compact and easily learned language of Mike's devising, called Symbolic Note Format. The documentation includes a full description of this format, and it doesn't take long to master.

MIDI devices themselves come in many shapes and forms, and have different commands for the "instrument" selections. MIDI-Master has provided for this variation among devices in a number of ways. First, and most important, is the ability to establish a "Patch Library" so that works prepared for a different keyboard or synthesizer may be translated on the fly to work on the make and model you own. For those who have MIDI devices with more advanced capabilities, special DATA messages may be included in the source files to activate auto-rhythms and such, and to

synchronize them with the music MIDI-Master is sending. (We haven't tried doing that with our Casio, but the capability is provided.)

For those, like us, who also have PC computers with MIDI interface and Twelve-Tone systems' Cakewalk software, the soon-to-be released version 3.0 of MIDI-Master will provide the capability to "port" MIDI files created by Cakewalk over to the TI and play them through MIDI-Master.

### MUSICIAN'S POINT OF VIEW

MIDI-Master is very easy to use. The instructions are more than adequate. Best of all, at least for me, they are written in a musician's language rather than in "computerese". The computer-puke who is musically oriented would have little difficulty with the instructions, because most of the MIDI terminology is very clearly illustrated.

I did, however, find a discrepancy in the instruction regarding accidentals, that is, "sharps" and "flats" that occur throughout a composition. MIDI-Master's manual says to use a "#" for a sharped note, and " " for a flatted note." This is not so. When I used the space in order to make a flat, it did not work. I had to use its equivalent sharp instead. For instance where my score indicated had given the flat sign for B when the key signature indicated natural, I had to write it as A#. That was a minor annoyance, which was easily overcome.

I can appreciate the facility with which MIDI-Master's instructions read, because I had to struggle with Cakewalk's 172-page "easy to read" manual, most of which was written in "Computerese". However, I'm with Bruce — you should NOT have to have TI-Writer or Funnelweb with which to print the documentation. A simple Extended BASIC program will do the trick.

Take it from me. MIDI-Master has a great set of instructions! Let's face it, if you can't understand the instructions, how the heck can you expect to learn to use the product? I learned to use it in one day. In my opinion it shouldn't take any longer

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## MIDI-MASTER 99—

(Continued from Page 28)

than a day or two to use any piece of software.

As yet, there is no provision for allowing a person to play the work into MIDI-Master. It must be programmed. I don't let that bother me, since I don't play the clavier very well anyway.

It is easy to use. I recommend marking each measure carefully with a comment line even though it takes up file space, because once you need to make corrections, it will be chaos trying to locate a mistake if you don't. Comment lines do not use any memory in your music. The compiler skips over them.

### MANY CHANNELS AND VOICES

MIDI-Master can handle numerous channels and voices at once, but its capabilities are only as good as your clavier. You must remember that each instrument requires a separate channel. This is not unique to MIDI-Master, rather to the clavier you are using. If you have a MIDI-compatible Casio, then you are limited to 3 channels and a fourth channel which is supposed to be assigned to program changes for auto-rhythms. Casio's channel 1 handles 6 "voices", channel 2 handles 4 voices, and channel 3 handles 2 voices, so you must plan carefully before attempting to combine voices and instruments. Yamaha's new PSR-300 claims to be 28-note polyphonic, but I wouldn't know, since I don't own one.

Changing instruments and tempos on the fly is easy and fun to do with MIDI-Master. A simple "patch" or "tempo" directive placed ahead of where you want the change to occur in the data file and - Voila! It happens!

For instance, if you are playing an organ number which uses a regular pipe organ sound, then later requires you to draw the "flute" stops on the right hand, then you would tell the channel and track numbers representing the right hand to change from pipe organ to flute. The ones for the left hand might remain the same as before. The main drawback of all this is if you do chording. Each note requires a separate voice, unlike Cakewalk, and in order to keep each voice in sync, you must put in the required number of rests in the voice which may only have one or two notes be-

cause they are part of a chord. This is a real pain, and should be corrected in future updates. Each rest wastes two bytes.

MIDI-Master's biggest limitation appears to be that it has no way to make multiple files. Mike recommends TI-Writer's Formatter. Great. But, what if you don't have TI-Writer? You are then stuck with one very long file which takes for-bloody-ever to load and may not all fit in memory once it finally does stop loading. Bruce cured that problem for me by making a tool that allows me to make as many separate files as I wished, then combined them all as a single file on the disk. It takes only a few minutes to combine 6 or 7 files.

However, Mike promises that this problem will be solved in Version 3.0. In the meantime, Bruce gave a copy of our "tool" to Mike pass along to his customers who don't have TI-Writer. (We're told this tool is available from the Chicago Users' Group's BBS.)

MIDI-Master does allow the user to interpret most signs in any musical score. Trills, turns, appoggiaturas, staccatos, dotted notes, ties, and triplets are all easy to execute. Slurs and legatos are another matter. You must use a tempo change in order to create the illusion of phrasing which is normally done with slurs and legatos. Some of this is possible in the data section by playing mathematical games with the ties, rests, and durations, but it will cost bytes. All I can say is see what works for you, and stick with it.

Da Capos are not possible with Version 2.3+, because it has no provisions for looping. I programmed a 16-measure military march with 6 parts with MIDI-Master. Each 8-measure section required a repeat. I had to replicate the data in order to follow the composer's instructions. You multiply those 8 measures times 2 for the first da Capo times another 2 for the next 8 measures which also must repeat, times 6, and a lot of memory is used up. Don't plan on doing Beethoven's Ninth with Version 2.3+.

Don't let this factor discourage you! This is a neat product!

It does everything it promises to do, and does not require an expensive clavier. In fact, if you have a Clavinova with 7 octaves, you'll be out of luck, because Ver-

sion 2.3+ handles only the 5 octaves found on the garden variety clavier you found at K-Mart, Consumers, etc. Most MIDI-compatible Casio and Yamaha claviers of this type are moderately priced at \$200 to \$300.

I have pointed out MIDI-Master's drawbacks, but I have looked at it from a classical musician's viewpoint, and for me there is still a wealth of music out there which MIDI-Master can handle. Popular songs are easy to program, as are country-western, sacred music, and folk songs. There seems to be no end to the arrangements that are possible in these fields. It's all up to your imagination.

Mike Maksimik is one of those rare people who is both a talented musician as well as a programming genius. It is for this reason that MIDI-Master was possible.

Drawbacks exist on any program, and MIDI-Master is no exception. The principal ones have already been mentioned. One that hasn't been, although it's a minor annoyance, is the business of Barry Boone's loader. Maksimik chose to use that loader so the program could run from Extended BASIC. The gripe is that the docs suggest that the user should send a fairware contribution to Barry Boone. Perhaps I don't understand the fairware concept, but the user did not choose the Boone loader, and therefore should not be asked to contribute. When one has paid his \$45 for MIDI-Master, that should be enough.

### FREE UPGRADE TO V3.0

Potential users should know that for those who purchase Version 2.3, Crystal Software will throw in a free upgrade to Version 3.0 as soon as it's finished. As we understand what Mike is doing in Version 3, all of our gripes should go away.

In summary, MIDI-Master 99 is a truly fine program, with a few flaws, most of which should go away with the introduction of Version 3.0. If you have a TI or Geneve and a MIDI keyboard, this program is a must have.

MIDI-Master is the single most affordable MIDI anywhere at \$45! It compares favorably to programs for PCs which cost more than three times that price. (Adding MIDI to our Tandy PC cost \$250 for hardware and software.)

## Software Shootout!

### Business Graphing and Charting Programs

Bill Gaskill

We've all heard that a picture is worth 1000 words and that expression holds no more truth anywhere than it does in the area of presentation graphics. In the business world we have discovered the need to effectively communicate the relationship between numbers, whether they are sales figures versus profit margins or the current rate of crime versus the number of arrests made by a police department. The ability to produce presentation graphics is fast becoming a necessary part of doing business.

In the 99/4A community there are several business graphics programs to choose from, none of which can compete with the applications out there in the business world, but all of which have a place in someone's library of software tools. Most if not all of these applications that are written for the 99/4A are certainly adequate for home use and even small business applications where a great deal of sophistication may not be required. Unfortunately, presentation graphics require a great deal of memory to produce, which is something that the 99/4A just doesn't have. But that does not mean that the programs cannot be put to good use.

#### GENERAL INFORMATION:

There are four main business graphics programs that have been produced for the TI that I am aware of and that I have used; Business Graphs 99 from McCann Software, Chart Maker II from Quality 99 Software, Extended Business Graphs II from Great Lakes Software and Von Graph from Utilitee Software. Business Graphs 99 is written in Forth, Chart Maker II in XB and assembly, Extended Business Graphs II in XB and assembly and Von Graph totally in assembly language. All but Business Graphs 99 employ the TI-99's 32 column Graphics mode to generate screen displays. BG99 uses a 64 column Forth screen.

Business Graphs 99 comes with a 27 page manual that is the best of the lot. Chart Maker II and Von Graph come with one 8 1/2" X 11" sheet of paper and Extended Business Graphs II comes with seven 8 1/2" X 11" sheets of paper. From a content point of view, only Chart Maker II really suffers from a lack of information. Von Graph is so simple to use that the one page it does have is pretty much unnecessary. Chart Maker II could use some more information to help out the first time user.

#### TERMINOLOGY:

Variables, as used in this article pertain to the names of the months. Values describe the numeric amount that is attached to each variable (each month), meaning the dollar amounts.

X/Y describe coordinates on a graph. X is always the horizontal coordinate and Y the vertical.

#### DATA IMPORT/EXPORT FEATURES:

None of the the four applications examined provide built-in import/export routines to read data from Multiplan, TI-Writer or any other program, or to send completed graphs to another program. In the business world it is the norm for presentation graphics programs to possess both of these capabilities. However, only Business Graphs 99 even considers them. It tells you how Multiplan files can be converted for use in a BG99 graph (with some limitations) and it provides some help on how a BG99 graph can be converted for inclusion into a TI-Writer file. Since no import/export facilities exist, all four programs require that data be hand-keyed.

#### LOADING/SAVING FEATURES:

One of the most convenient features a presentation graphics program can offer is the ability to save the data used to produce a graph and also to save the actual screen that was displayed by the graph generation process. Von Graph does not provide any load/save facility, nor does it save graphs from the screen. You must key in the data each time. Business Graphs 99 allows variables and values to be saved, but not Titles or Sub-Titles. It too does not save actual screens. They must be re-generated from saved data. Chartmaker II allows everything to be saved and you can even edit a graph in Draw 'n Plot that was produced by Chart Maker II. Extended Business Graphs II allows everything to be saved also, but saved screens cannot be edited. Instead, you must generate a new one.

#### PRINTING CAPABILITIES:

Another fairly common feature of presentation graphics applications is the ability to "size" the graph for output purposes. In our comparison, Chart Maker II and Extended Business Graphs II both allow large or small printed output. Von Graph supports only one type, which is large. Business Graphs 99 provides an X/Y relationship option that allows the width of a graph to be altered (done mostly to allow pie charts to be printed as circular as possible), and a "density" option that allows spacing between variables to be controlled. But the output of a Business Graphs 99 graph is always done on the same plane, regardless of spacing. By that, I mean that it will not fill an entire page with a graph or chart by printing it in double size, sideways.

#### TYPES OF CHARTS/GRAPHS:

Von Graph provides a one-dimensional vertical bar chart with from 2-12 variables allowed and a one-dimensional pie chart that also allows from 2-12 variables. Business Graphs 99 provides one-dimensional vertical bar charts that can be single, double or stacked, with up to 20 variables. It also offers a one-dimensional X/Y graph that can show Hi-Low plot, Line plot or Area plot, with as many as 100 variables. The pie chart is one-dimensional also, allowing up to six variables, but with exploded view capabilities, something none of the others offer. Extended Business Graphs provides one-dimensional vertical bar charts with from 2-12 variables and unique pie charts that include a 3-D block graph in the same printout as the pie chart. From 2-12 variables are allowed. Chart Maker II provides a 12-month histogram, which forces you to use the months of the year as the variables whether you want to or not, and a 10-item graph that could be used to compare

five months of data from two different years, or 10 items using any variables. Either option supports 3-D horizontal and vertical graphs and one-dimensional pie charts.

#### SCALING/DATA ACCURACY:

Scaling is the process of making equal relationships between values based upon the low and high values that exist in the data being charted. For example, in the graphs that I have included for illustration, the low value is \$40 for utilities in July and August and the high is \$250 in February. The process of Scaling sets the other nine values at equal increments somewhere in between 40 and 250. The result of that process determines the accuracy of the values that are ultimately printed on the chart or graph. In most business world presentation graphics programs you have a choice of manual or automatic scaling.

Von Graph provides only limited scaling of values, but it does determine the size of the bars in its bar chart based upon a maximum value that you key in after all of the values have been entered for each variable name. Although the manual entry of an upper limit might seem unnecessary, it does allow you some control over the height of the bars. In the 1988 Utilities illustrations, using the \$250 max would put the bar for the month of February right at the top of the chart. To lower it and make the appearance of the chart more appealing, you could simply enter \$300 as the max value and Von Graph would bring the highest bar back into the chart's grid. Once the max value has been entered Von Graph then produces a chart or graph that contains actual values as you keyed them in. Extended Business Graphs II uses the data you key in to determine chart or graph element sizes and relationships, but does not provide actual values in any of the output. Although the charts and graphs are quite attractive, you never know what the actual values are. You get only an average and a total. Business Graphs 99 does the same type of thing. Your data is used to determine the relationships between values, but the actual values for each variable don't show up in the end product. Chart Maker II seems to be the best in this area, providing actuals in most graphs. The pie chart though shows only percentage of total for each value and the total itself.

#### TITLE, VARIABLE and VALUE LENGTHS:

Von Graph allows a graph title of up to 24 characters on the bar graph, but no title on the pie chart. Variable names are limited to four characters in length. Values can only be 3 digits long, with no decimals allowed. Business Graphs 99 allows 18 character titles and an 18 character Sub-title, 9 character variables and 6 digit values, with no decimals allowed. Extended Business Graphs II allows a 28 character title, 11 character variable names and 8 digit values, but no decimals. Chart Maker II allows 28 character titles, 8 character variable names and 4 digit values including a decimal point.

#### ERROR HANDLING:

All programs trapped user created errors properly except Chart Maker II. Trying to print a graph without providing a printer or device name caused the screen to go berserk and the program to lock up. Aside from that, I/O operational errors were trapped quite well.

## CONCLUSION:

As with almost any piece of software, each program examined has its good points and bad points. Von Graph 99 is perhaps the easiest of the lot to use, but it also has the fewest features. Business Graphs 99 produces the best output and also has the most flexibility, but it is by far the most complex and even perplexing program of the bunch. The Extended Business Graphs II program is fairly easy to use and quite comprehensive in the options it provides, but it won't provide actual values in printed output. Chart Maker II is easy to use, feature rich, including the ability to sort data in ascending or descending order, but it limits the scope of its utility by forcing variable names to always be based upon months of the year on one-hand, or allowing only 10 variables at one time on the other.

The bottom line may be that you will have to determine which program best fits your particular needs. If you only need visual trend analysis capability then Extended Business Graphs II may be your choice. If you need the most professional output available for a 99/4A application then Business Graphs 99 would likely be your pick. If simplicity and ease of use are your major concerns then Von Graph 99 is probably at the top of your list. If you are looking for a happy medium between the best and the worst of what all the others have or don't have, then Chart Maker II is probably going to be your choice.

\*\* Note: In the Report Card grading, I follow InfoWorld's standard of deducting 1 point or half of a grade for copy protection. Thus both Chart Maker II and Von Graph have lower final grades than they otherwise would have earned on their other merits. Note also, that the Final Grade is NOT an average of the other categories. Please consult the January 1988 MICROpendium, page 6, for review criteria.

## REPORT CARD:

	BG99	CMII	EBG2	VG99
	----	----	----	----
PERFORMANCE....	A	B+	A	B
EASE OF USE....	C	A-	A	A+
DOCUMENTATION..	A	D	B	C
VALUE.....	A+	A	B	C
FINAL GRADE.....	A-	B+	B+	B-

Business Graphs 99 \$15.95  
McCann Software  
Box 34160  
Omaha, Ne. 68134

Chart Maker II \$9.95  
Quality 99 Software  
1884 Columbia Rd #1021  
Washington, D.C. 20009

Extended Business Graphs II \$14.95  
Great Lakes Software  
804 E. Grand River Ave.  
Howell, Mi. 48843

Von Graph 99 \$10  
L.L. Connor Enterprise  
1521 Ferry St.  
Layfayette, In. 47904

# a little BIT of math by: Dan Eicher

editor's note: A BIT is made from the words: Binary digIT. Binary is the 1s & 0s representation of Hexadecimal numbers. You will see the "greater than" sign used in TI documents to denote Hexidecimal numbers. ie: >0A The digits 1 thru 9 are the same in Hexidecimal or decimal numbers.

A decimal number from 0 to 15 is encoded into 1 byte, (4 bits) in this form:

The DECIMAL value of bits in a byte is 8421  
so the bit value of Hex 0 or and

>0	= 0000 ( no bit on at all)	= 00 dec.
>1	= 0001 (1 bit only)	= 01 "
>2	= 0010 (2 bit only)	= 02 "
>3	= 0011 (1 bit & 2 bit added )	= 03 "
>4	= 0100 (4 bit only)	= 04 "
>5	= 0101 (4 bit & 1 bit added )	= 05 "
>6	= 0110 (4 bit & 2 bit added )	= 06 "
>7	= 0111 (4, 2, & 1 bit added )	= 07 "
>8	= 1000 (8 bit only)	= 08 "
>9	= 1001 (8 bit & 1 bit added )	= 09 "
>A	= 1010 (8 bit & 2 bit added )	= 10 "
>B	= 1011 (8, 2, & 1 bit added )	= 11 "
>C	= 1100 (8 bit & 4 bit added )	= 12 "
>D	= 1101 (8, 4, & 1 bit added )	= 13 "
>E	= 1110 (8, 4, & 2 bit added )	= 14 "
>F	= 1111 (8, 4, 2, & 1 bit added )	= 15 dec.

To really understand how computers work the first key element that must understood is Boolean Alegebra. An easier way of thinking of this is as TRUTH tables.

And Table	Or Table	Exclusive or (XOR)	Not Or (NOR)	Not )
1 and 1 = 1	1 or 1 = 1	0 XOR 0 = 0	0 NOR 0 = 1	0 NA
1 and 0 = 0	0 or 1 = 1	1 XOR 0 = 1	1 NOR 0 = 0	1 NA
0 and 1 = 0	1 or 0 = 1	0 XOR 1 = 1	0 NOR 1 = 0	0 NA
0 and 0 = 0	0 or 0 = 0	1 XOR 1 = 0	1 NOR 1 = 0	1 NA

Examples:

00111010	00111010	00111010	00111010	0011
01011100	01011100	01011100	01011100	0101
00011000	01111110	01100110	10000000	1110

For the sake of terminology, lets say a 1 is true or positive and 0 is negative of false. This is how the chips in our computers determine what is going on ... a negative voltage level means a negative bit and a positive voltage level means a positive bit.

Remember 8 bits make a byte, 2 bytes make a word. The ability of a single assembly instruction to operate on 16 bits (a word) at a time is what makes our machine a true 16 bit computer. This separates it from earlier technology like the 6502 or the Z-80, these cpu's moved data around the computer 8 bits (a byte) at a time.

The last two logical operators Nor and Nand are used far more commonly in electrical engineering than in programming.

At this point you are probable wondering "Ya.. So whats the big deal, how is this going to help me write better programs?"

Well one of the major uses for this type of instructions are in setting "flags". A flag is an indicator to your program of a condition that can be true or false. Some possable uses would be to save the configuration of the machine your program is running on in a single byte instead of wasting memory.

In one byte you could hold all the following information:

- (bit) 1 If = 1 then color monitor, else adjust colors for black and white.
- (bit) 2 If = 1 then disk system, else assume cassette and do not try to save high score.
- (bit) 3 If = 1 then system has a printer, give option to output to printer else prepare all output for screen only.
- (bit) 4 If = 1 then speech synthesizer is attached, use speech

If think you get the idea how, then the use of flags can save an enormous amount memory if used properly. This is especially important in a machine like ours. In a day when most computers are counting memory by the Megabyte (thats thousands of Kilobytes which is, in turn thousands of bytes).

1 Meg = 1000K = 10,000 Bytes

One last bit of arcane knowledge that you should at least have a passing knowledge of is how to get the "Twos Compliment" of a number.

Basically the twos compliment of a number is how a computer distinguishes between a positive and a negative number, the computer must to do this internally before subtracting two numbers, here is how it is done.

*(editors note: Computers do NOT subtract, but add the COMPLIMENT of the subtrahend to find the difference.)*

Lets say you have the number 53 thats 00110101 in binary (>35 = 53 dec)  
and you want to subtract 26 thats 00011010 in binary. (>1A = 26 dec)

First the computer must compliment 26 and heres how its done:

first you take the number 26 =====>	00011010 (1A hex = 26 dec)
change all 0 to 1 and all 1 to 0=====>	11100101 (E5 hex)
add 1 (trust me here)=====>	1
the complimented number is =====>	11100110 (E6 hex)

NOW to "subtract" the computers:

Take 53=====>	00110101 (35 hex = 53 dec)
ADD 26's compliment=====>	11100110 (E6 hex)
The answer is =====>	100011011 (1B hex = 27 dec)

Since this is BYTE arithmetic, the 9th digit goes in the bit bucket leaving only 00011011. Thats 27 decimal, which is the result if one subtracts 26 from 53.

(CONTINUED FROM PAGE 3)

#### Conclusions:

The MUG Conference succeeds, because of the uncounted hours of planning and preparation on the part of Charles Good and the rest of the Lima users group. It gives a platform for various TI groups to openly exchange thoughts and ideas on our system. Though commercial vendors are present, the Conference's appeal is that it concentrates on the user group and the group's influence upon the community. Group problems are discussed, software and hardware needs are addressed, in a casual atmosphere, which belies the avid devotion to the most famous orphan, since Annie. Every Tier should make at least one pilgrimage to this Mecca of the 89/4A.

-Steve Mickelson  
9T9 Users Group  
15 Kersdale Ave.  
Toronto, Ont..M6M 1C9  
CANADA

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## Hardware

by James P. Donovan  
Kentuckiana 99/4a Computer Society

Like all Atari type peripherals, they can be converted easily for use on the TI computer. Since the TI uses two isolated common (-) terminals instead of a common ground, optical couplers may be used to isolate the inputs and power supply. Motorola 4N25As were chosen to isolate the inputs. Four (4) are needed to isolate all lines. The encoder chip in the Trackball is normally supplied from the internal supply in the Atari. The TI computer has no internal supply, so the coupler power also supplies the encoder chip. A 9VDC power supply, regulated at 5V DC, is used to power the optical couplers, vane sensors, and encoder chip in the Trackball.

Quantity	Desc.	Radio
4 -	4N25 Opto Coup.	n/a
1 -	7805 Reg.	276-1770
1 -	1000/16V Cap.	276-958
1 -	22/16V Cap.	276-1437
1 -	1N4148 Diode	276-1122
1 -	DB-9M Conn.	276-1427
1 -	DB-9F Conn.	276-1428
1 -	Mini jack	274-1565
1 -	Plastic case	270-221
1 -	6-32 bolt/nut	276-1373
	Mt. for Reg.	
4 -	330 ohm 1/4w	271-1315
	asstd. hookup wire	278-1304
1 -	AC adapter	273-1455
	(9VDC out)	

**WORKING WITH THE**

# TAKING CONTROL OF FORMATTER

----- by John Owen  
June 1990  
JUG 99'er NEWS  
OR HOW TO AVOID TI-WRITER  
"FF" (Formatter Frustration)

The TI-Writer Formatter automatically "wastes" 5 lines at the top of a page and 3 lines at the bottom. There is no "automatic" way to change this that I know of. If you want to control the blank space at the top and bottom of your pages, use DEFINE PROMPT (.DP) to start and stop your printer using the following steps:

- a. Prepare text in EDITOR in any FORMAT.
- b. Print to DISK in the desired FORMAT.
- c. Change CURSOR to FIXED MODE (CTRL-Ø). d. Remove LINE FEEDs from formatted file (use Replace String).
- e. Delete (FCTN-3) 6 blank lines and 1 PAGE BREAK for each page.
- f. Add PAGE LENGTH (.PL) formatter code.
- g. Add DEFINE PROMPT (.DP) and SPACE (.SP) formatter codes.
- h. Save to DISK and print it out through the FORMATTER.

This technique gives you ABSOLUTE CONTROL over where you printer STARTS printing and HALTS printing and waits for you to let it continue. NO more "wasted" blank lines and sheets of paper. Try the following:

## 1. PREPARE TEXT IN EDITOR

I use a 40 column screen to avoid windowing and then print the text to DISK via the Formatter to expand the text to 80 column format. I use the following FORMATTER COMMANDS to PRINT to DISK.

.FI;LM 8;RM 76

Now load the new DISK file to EDITOR, place the CURSOR in FIXED FORMAT (CTRL-Ø) and use REPLACE STRING (RS) to quickly remove all "LINES FEEDS" (LF) that are in the new file. T put the LINE FEED symbol in the screen: Hit CTRL-U, SHIFT-J, CTRL-U. Delete 6 blank lines and "BEGIN PAGE" code from each page in text (on screen).

## 2. SET PAGE LENGTH (.PL)

Add a LARGE page length code as follows: (.PL nnn)

Where "nnn" is about 20 characters higher than the last line of your file. This prevents the FORMATTER from automatically "breaking the page" until you print the complete file.

## 3. ADD DEFINE PROMPTS

Before the first line of text add: .DP 1:"SET PAPER"  
\*1\*

To print a page with two blank lines at top and bottom of each page, use the following:

After EACH sixty two lines of text add: .LS 4  
After the last line of text, add: .DP 2:"EXIT"  
\*2\*

Save file to DISK

#### 4. PRINT TEXT VIA FORMATTER

The printer will start, skip 5 lines and STOP. The Formatter screen will prompt you to "SET PAPER".

Roll your paper to place the print head 2 lines from the top of the page and HIT ENTER.

The printer will print all pages and STOP. You will be prompted to "EXIT".

To EXIT, Hit FCTN-4, ENTER and you will to EXIT Formatter and return to the TI WRITER MENU.

NOTE: This ARTICLE was printed using this procedure. Note that there are only TWO (2) blank lines at the top and bottom of the first page and two blank lines at the top of the second page. (Isn't it GREAT to be in CONTROL of the FORMATTER!!!)

5. The above procedure will let you print several SHORT FILES (less than a page) without "wasted" space between files. The use of DEFINE PROMPTS before the first line of text and after the last line of text files lets you determine exactly where your printer will START and STOP for each SHORT FILE! This technique is very good for RECIPE FILES and can be used to print postcards and to address envelopes. You will be prompted to "SET PAPER" before each new SHORT FILE starts printing. For SHORT FILES, you only need to do STEPS (a), (f), (g) and (h) as shown in the first paragraph of this article. Add FORMATTER codes in STEP (a).

#### 6. EXAMPLES

Examples of FORMATTER CODES used to print this article are shown below. STEPS (a) through (h) only take about five minutes after you do it once or twice. It is EASY!!!

```
.CO FILE #1
.PL 140
.DP 1: SET PAPER *1*
  THIS IS THE FIRST LINE OF TEXT
  -----
  -----
  -----
  THIS IS LINE 62 OF TEXT
.SP 4
  THIS IS THE FIRST LINE OF PAGE 2
  -----
  -----
  -----
  THIS IS THE LAST LINE OF MY TEXT ON PAGE 2 .DP:EXIT
*2*
```

7. Have FUN and enjoy that feeling of having the FORMATTER under your CONTROL!!! No more "runaway" printers and wasted paper!!! Avoid TI-WRITER "FF" (Formatter Frustration).

## Speeding Up Your Console By Jesse C. Slicer

### INTRODUCTION

Does your stock TI-99/4A console seem to be dragging in these modern days of computers running on 33 MHz 80486 and 68040 systems? If so, perhaps a quickie speedup is for you. The following instructional will show you how your stock TI-99/4A can be speeded up from 3 MHz to 3.58 MHz. I accept NO responsibility in the damage of anyone's computer equipment; however, I have taken care to ensure success. I credit most of the technical material presented here to Barry Boone, who first told me how this modification was done. Make sure you read this ENTIRE document before you take any action whatsoever.

### BEFORE YOU START

Before you begin dismantling your console, eager to speed it up, there is a part you may or may not need to buy. This is the 14.31818 crystal (this is NOT a clock crystal). I was once given two defunct Commodore VIC-20s and each of them had these for their video circuitry. Otherwise, it will be a trip to your local electronics store. Most Radio Shacks do not have this in stock but they can order it for you. It takes about four days, and the cost is about four and one-half dollars.

### GETTING STARTED

With part in hand, and standard tools at your side, you are now ready to begin. Open the console all the way until you have the circuit board facing up at you. About one and one-half inches below the 9900 microprocessor and just to the right of the 9904 sound chip should be a component that looks almost like the one you just acquired. Carefully note the number on the one on the circuit board. If it is not 12.000 (might be 28.000), then this console cannot be modified in this manner.

### REMOVING THE OLD CRYSTAL

Use your fingers to locate the solder pads for the crystal on the bottom of the circuit board. Flip the circuit board over. Using a desoldering iron, remove the solder pads surrounding the leads. The crystal can now be pulled out of its normal place and set aside. DO NOT THROW IT AWAY!!! You have a definite use for this that I shall describe later!

## INSTALLING THE NEW CRYSTAL

Face the numbers that are on the new crystal in the same direction the old one was, slide the new crystal into the area where the old one was located. Using a soldering iron, place small solder pads around the base of the leads on the circuit board. Then, using wire snippers, cut the leads down to your solder. Clean up the area on the circuit board, close up the console, and turn on your computer.

## THE MAGIC HAPPENS

Run a few programs and note the increase in speed they have. Enjoy how you gained 19.3% increase in pure microprocessor speed. Then, as you run some programs (terminal programs, graphics intensive, for example), you begin to notice.....

## PROBLEMS!

Ack! Why did there have to be a snake in paradise?!? All is not lost. You can still use your terminal programs and graphics intensive programs with your new console. Remember when you saved the 12.000 crystal? How about we put them both in and have a switch between them? Sounds like a good idea. Let's do it.

## INSTALLING THE DUAL SPEED CRYSTALS

Assuming you read through this entire document before you started, this will save you some trouble. First, obtain a double pole, single throw (DPST) switch from ye olde electronics shoppe. This should have six connections on the bottom of it. Also, obtain about ten inches of some thin duralloy wire. Cut the wire in half and solder one end of each of the wires onto the middle leads of the switch. Then, instead of installing the new crystal as shown under "installing the new crystal", install the other ends of the wire into the old crystal "socket". After that is complete, solder (remembering the way the numbers were facing in the socket (key them with the wires)) each crystal to the two paired leads of the switch. Mount the switch somewhere on your console. I cut a hole in the back and glued it there. You now can switch between a standard console for those problem programs and the new SPEEDY console that gets your work done somewhat faster!

## ENJOY!

Programs that do intensive number crunching or memory manipulation will benefit from this the most. Disk I/O will speed up slightly only because the code in the ROMs are being executed by the faster processor. Good luck and warp speed!

DIAGRAM is located on Page 9

EDITORS NOTE: this article was downloaded from DELPHI  
ON 8-10-91.

*EDITOR'S NOTE: The following message from the late John Guion is from Delphi's message base and concerns Mike Ballmann's 64k modification.*

Category 4, Topic 6

Message 3

Sun Sep 06, 1987

JOHN.J [jjj]

at 23:48 EDT

John Guion of the Dallas Users Group has submitted this modification to the users of Mike Ballmann's 64k on the 16 bit bus modification:

The following is how to bypass the wait-state defeat of the 16 bit memory bus modification to allow memory to be used at normal speed. This is desirable since some programs (particularly games) have compatibility problems due to the increased memory speed). This is based on Mike Ballman's modification as described by John Clulow, but will probably also work on console's modified using Brent Kropf's method. Of course, I can take no responsibility for mistakes. This works fine on two of my own consoles.

You'll need one single-pole single-throw (SPST) toggle switch, about a foot of wire-wrap wire, and soldering equipment. Be sure that the switch you use is NOT a center-off type. It should only have two positions. If you have modified your own console, you probably have all but the switch on hand.

First, locate the 74LS153 that is stacked on top of the 74LS194 (U613). From pin 9 of the LS153, there should be a wire going to pin 13 of a 74LS32 (U605). Remove this wire.

Next, find a convenient place to mount the switch in the console. I've found that mounting the switch on the main board makes disassembly of the console easier and lessens the chances of breaking a connection. In one console, I have it mounted on the empty space right next to the screw nearest the power supply board. In another, I have mounted it at the back of the board near the center where a 1/2" hole exists in the board. A notch is cut in the case to allow the handle of the switch to stick through and the switch is affixed to the board with 5-Minute epoxy.

Now, use the wire wrap wire to connect the center terminal on the switch to pin 13 of the 74LS32 where you removed the wire. Connect one of the outer terminals on the switch to pin 11 of the 74LS00 (U606) next to the 74LS32 (there should also be another added wire to that same pin). Connect the other terminal on the switch to pin 9 on the added 74LS153 that you removed the wire from.

Double check all connections and re-assemble before testing. If you've done everything right, one position on the switch will allow use of the fast internal memory, and the other will use the internal memory at regular speed.

\_jPg\_

## Mike Ballmann's 32K — 16 Bit Bus Project

The following is a step-by-step description of how to add 64K of RAM memory on the 16 bit bus. The present modification uses only 32K. This corresponds to the memory space of the 32K Memory Expansion. The modification yields a speed increase of about 50%.

Mike Ballmann is currently working on a circuit to allow CRU decoding of the remaining 32K. This will open up a whole new area of software, including such possibilities as a real DOS which could be loaded into RAM from disk on power-up. The 32K modification described below can easily be modified for full decoding upon completion of Mike's work.

You will need two Hitachi HM62256LP-12 RAMs. One source of these is Microprocessors Unlimited. They cost around \$13. You'll also need a 74LS21 and a 74LS153. These can be obtained from various electronics supply houses. All wiring should be done with wire-wrap wire. You should use a low wattage soldering iron with a fine, pencil type tip.

The modification is done on the main board of the Black & Silver console, and you'll need to refer to the Logic Board Component Location Diagram in the TI-99/4A Console Technical Data book.

- 1) Remove the board from the console, and identify the two ROMs. They are located between the GROM connector and the 9900 IC. One is parallel to the 9900 and the other is perpendicular to it. They are U610 and U611 on the Component Location Diagram.
- 2) Bend the pins on the HM62256 IC's closer so they will firmly contact the ROM pins when piggy-backed. One way of doing this is to place the RAM on it's side on a table and then move the body of the IC toward the table to bend the pins uniformly.
- 3) Bend out the following pins on both HM62256 RAMs: 1 2 20 22 23 26 27 28. These pins will NOT be soldered to anything on the ROMs. Holding the IC with the notch up and looking at the top, pin numbers start with pin 1 on the upper left, go down the left side, then across and up the right side. Pin 28 is opposite pin 1 on the end with the notch.
- 4) Place one HM62256 over the ROM that is parallel to the 9900. Make sure the notch points toward the 9900 and that the writing on the 9900 and the 62256 can be read from the same direction. Place the RAM such that pins 1 2 27 and 28 extend beyond the end of the ROM. The un-notched end of the

RAM should line up with the un-notched end of the ROM. There should be a sort of "spring tension" that clamps the RAM pins onto corresponding ROM pins below it. This will help to insure good solder joints. If the RAM doesn't fit tightly, remove it and bend the pins closer.

5) Solder all RAM pins not bent out to the ROM pins below. Use a low wattage soldering iron with a fine, pencil type tip. Inspect each solder joint carefully in good light, under magnification.

6) Place the second 62256 on the ROM that is perpendicular to the 9900. The notch on the RAM points away from the 9900 and toward the edge of the board. As above, solder and inspect all pins that were not bent out.

7) Bend out the 74LS21 pins 1 2 4 5 6 8 10 12 14. Note that pins 1 and 14 are across from each other on this 14 pin IC.

8) The 74LS21 will be piggy-backed on the 74LS138 U504. This IC is located adjacent to the end of the board where the edge connector is. There are two 138's next to each other. U504 is the one nearest the end of the board. You will place the 74LS21 so that the UN-NOTCHED end lines up with the un-notched end of the 138 (pointing toward the cassette connector). Pins 1 and 16 of the 138 will extend beyond the notched end of the 74LS21.

9) Before positioning the 74LS21, solder 1/2" lengths of wire-wrap wire to the 138 pins 7 and 9. Then position the 74LS21 on top of the 138 and solder all pins not bent out to the 138 pins below and inspect the connections.

10) Bend out all of the 74LS153 pins EXCEPT 8 and 16.

11) Place the 153 over U613, a 74LS194. The notch will line up with the 194 notch and point toward the edge of the board away from the 9900. Solder pins 8 and 16 of the 153 to pins 8 and 16 of the 194 below.

12) At the end of the 9900 opposite to where the RAM's have been piggy-backed, you will see a line of three ICs. They are a 74LS00, 74LS32, and 74LS04. The 74LS00 is U606 and the 74LS32 is U605. Turn the board upside down so you can see the traces. Find the trace that runs from pin 11 of the 74LS00 (U606) to pin 13 of the 74LS32 (U605). Double check to make sure you're doing the pin numbering correctly. When you've found the trace, cut it with a knife so there is no continuity between the LS00 pin 11 and the LS32 pin 13.

13) Identify the piggy-backed RAM that is perpendicular to the 9900. Solder wire-wrap wires connecting every bent out

(CONTINUED ON PAGE 6)



pin on this RAM to the corresponding bent out pin on the RAM that is parallel to the 9900. Pin 1 to pin 1, pin 2 to pin 2, etc. There will be eight wires in all to solder.

14) Solder wire-wrap wires to make the following connections on the RAM that is parallel to the 9900. Pin 1 goes to pin 24 of the 9900 (solder the wire to the 9900 pin on top of the board). Pin 2 goes to the 9900 pin 22. Pin 20 goes to two places. Connect pin 20 of the RAM to pin 22 of the RAM and also to pin 8 (bent out) of the 74LS21. There should be three wires coming off pin 20 of the RAM. Pin 23 of the RAM goes to pin 21 of the 9900. Pin 26 of the RAM goes to pin 23 of the 9900. Pin 27 of the RAM goes to pin 61 of the 9900 (fourth from the top on the right side). Finally, connect pin 28 of the RAM to pin 20 of the 74LS244 adjacent to the piggy-backed 74LS21.

15) Connect the following 74LS21 pins together with a bare wire: 1 2 4 and 14. Connect the short wire from the 138 pin 7 to the LS21 pin 5 (bent out). Connect LS21 pin 6 to LS21 pin 12. Connect LS21 pin 8 (bent out) to the piggy-backed 153 pin 2. Connect the short wire coming from the 138 pin 9 to LS21 pin 10. Finally, connect the 74LS21 pin 14 to the 74LS244 pin 20 that you connected the RAM pin 28 to.

16) OK, we're almost done, so take a break and have a beer.

17) On the 153, connect pin 9 to pin 13 on the 74LS32 (U605). Pin 10 of the 153 goes to pin 14 of the 74LS74 next to it (U607). Also connect pin 10 of the 153 to pins 11 and 13 of the 153. Connect pin 12 of the 153 to pin 15 of the 153, and then connect pin 15 of the 153 to pin 7 of the 74LS00 U612 (next to the 74LS74). Connect pin 14 of the 153 to pin 11 of the 74LS00 U606; that's the one you cut the trace on.

18) That's it! Now have another beer before putting your computer back together. When you try it out, remember that this version isn't compatible with any other 32K in the system.

If you have problems with this I can't promise I can help but feel free to give me a call or write EMAIL (419) 874-8838. Ask for John (or Hose-Head.)

*EDITORS NOTE: This file was downloaded from DELPHI on 8-10-91.*

The RAVE PS/2 Expansion Box:  
A RAVE Review (sorry, couldn't resist)  
by  
Dave Ratcliffe, Harrisburg, Pa.  
=====

At the 1990 TICOFF show, lots of people crowded around the RAVE99 table to get a 'first' look at the proposed RAVE PE/2 expansion box for the TI-99 and Geneve computers. What we saw was a prototype, set up to run a TI-99 and what a wonderful sight it was. NO console, (Rave Keyboard Interface and computer mounted INSIDE the box), hard drive (Myarc HFDC) AND quiet! Several people ordered then and my order was submitted in April. Even though I did NOT receive the unit till January 1991, I am still VERY satisfied. Why? Because every step of the way, Rave's owner, John McDevitt, kept me informed of progress and setbacks. I knew going in that I was buying an as yet unfinished product and the manufacturers openness through the whole process was both refreshing and welcomed. This is the second product I've purchased from Rave (keyboard interface was the first) and I have yet to be disappointed. Now on to the 'official' review..

There are 2 versions of the RAVE PS/2, the A and the B series. I purchased the A series, designed for the Geneve computer. The B version allows the use of both the TI/99 AND Geneve computers IN THE SAME BOX, or just the TI alone. Since mine is for a Geneve, the following description is of the PS/2-A version except where noted:

The cabinet is made by Magitronics and contains a 200 watt fully regulated power supply. There is room for 3 5.25" 1/2-height drives and 1 3.5" floppy drive all in externally accessible drive bays. The 3.5 floppy space is NOT available if the Rave keyboard interface is used (PS/2-B version). The 5.25" area CAN hold 1 full height and 1 1/2 height if desired. Additionally, there is internal space for a vertically mounted 3.5" hard drive behind the front panel and adjacent to the 5.25" bay. Let me assure you, the power

supply is fully capable of running ALL of these devices as well as the CPU and all related cards. While the power supply contains a cooling fan, RAVE saw fit to install a second fan in front of the card rack that moves air directly across the expansion cards providing extra cooling capacity.

The card rack is a well designed unit and even includes a removable section to make room for the internal 3.5" hard drive. The backplane shows good design and workmanship and all jumpers are laid out well with easy access. 1 bad note here, while the documentation refers to numbered pins at the jumper selection points, NO numbers are printed on the board. After a quick call to John I found out that the pin closest to the front at ALL jumper locations is pin #1. For the Geneve, there is a small wiring harness that requires a bit of soldering to install. It will connect the front panel reset switch to the Geneve card to provide a HARD reset when needed. An additional connection provides for use of the front panel KEYLOCK switch.

The backplane comes with 5 16 bit slots (#'s 1, 2, 6, 7 and 8) and 3 8 bit slots (#'s 3, 4 and 5). There is a reason for this. You have the option of removing your cards from the clamshells or leaving them in. If you choose the latter, you'll need to use slots 3, 4 and 5 since the clamshells have no opening for the extra connectors in the other positions. Those 3 positions CAN be made into 16 bit if desired. I purchased the extra connectors with my unit but have not installed them yet. One note here. At present, there exists no hardware to utilize the full 16 bit backplane. This is provided as a possible expansion route for the future.

The front panel contains 2 push button switches, 1 keylock switch and 3 LEDs. The 2 buttons are RESET (obvious purpose) and TURBO (inactive with the Geneve, used to PAUSE the CPU in the TI version). The keyswitch is used to disable the system when locked. 2

keys are provided with the unit. The TURBO LED (yellow) indicates bus activity. Since all cards are in the BACK of the box, there is no way to see their respective activity lights. This LED is a suitable replacement. The HDD LED (red) indicates hard drive activity. A pigtail with plug is provided to connect this to your hard drive. The POWER LED (green) serves an obvious purpose. The power switch is at the lower right front corner of the box.

The rear apron contains the openings for the card rack, a jack for the AC line, a jack for running power to a monitor, a 110/220 VAC selector switch, the power supply cooling fan and 2 knockouts for DB-25 and DB-9 connectors (not used).

With the exception of the front panel, the ENTIRE box is heavy gauge steel and VERY rugged. there are 4 rubber feet attached to the bottom. Dimensions of the entire unit are 7" H x 15" W x 16 1/4" D.

Many existing expansion cards will have to be modified for use in the RAVE expansion box but the mod is VERY simple and requires only 2 solder joints per card and a bit of wire. Here's the explanation. The TI Pbox was a power monster. It put out WELL over the 12 volts needed by the cards. In order to keep the cards from self-destructing, the manufacturers installed voltage regulators on their cards to hold the incoming voltage at 12. The excess voltage was bled off as heat. The RAVE box uses a tightly regulated supply that requires no such extra regulation. Extra regulators can, in fact, cause minor problems. So, a jumper is installed across the existing regulator to take it 'out-of-circuit'. Cards modified this way CANNOT BE USED IN A TI PBOX UNTIL THE MOD IS REMOVED! Removal, however, is as simple as cutting a wire. The manual contains adequate descriptions of how to do the mod and what to look for as well as a list of cards that DO require the change.

Now comes the critique. Internally,

the unit is well laid out with plenty of room for running cables and maneuvering. Airflow is adequate for keeping things cool. The box, while a bit large compared to the TI Pbox, is attractive. My documentation for the unit is admittedly preliminary and John tells me it will be improved so I'll skip over that.

I have only one nit to pick with RAVE. The manual recommends the removal of the clamshells around cards to help them remain cool. Unfortunately, the clamshells are also used to hold the cards in place in the card rack. Without the clamshell, the cards tend to wobble in the edge connectors. With nothing inside the cover to hold the cards in place and nothing to keep them from moving sideways, it is possible for a card to come partially out of the socket with disastrous results. This is more of a danger to cards with cables connecting them to the outside world, like Geneves and serial cards. My solution was to glue 2 strips of resilient foam inside the cabinet cover, OVER the edge connectors and perpendicular to the cards. This effectively HOLDS the cards in their sockets and keeps them from moving sideways as well. Since I set my PBox up in a 'Tower' configuration, this modification was doubly necessary. I sent John a sample of the material I used in hopes that he will add it to future versions.

I have been asked how much I paid. My answer is that it is no longer a valid price. I paid for the unit in April of '90. SEVERAL modifications and upgrades have since been made to the initial design that have changed the price upwards. Those of us who pre-paid were locked in with no further charges. For an accurate CURRENT price, contact:

RAVE99 Co.  
112 Rambling Road,  
Vernon Ct 06066

or Call John McDevitt AFTER 7pm at  
(203)871-7824

Finally, the grade. I can't grade the

documentation properly since what I recieved was VERY preliminary. On that basis, I'd say:

Documentation - B+

On the FS/2-A, taking into account workmanship and functionality, I'll say:

Product - A

On RAVE's customer relations, counting willingness to communicate, honesty and willingness to listen, a definate:

Customer Relations - A+

Do I like what I got? Yes  
Would I recommend it to others? Yes  
Was it worth the wait? YES!

\*>> Dave <<\*

#### DISCLAIMER

This newsletter is brought to you through the efforts of the officers and members of the HOOSIER USERS GROUP. Every member is encouraged to submit articles.

If you have an article you would like to share with the other members mail it to:

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"There must be some mistake. Where it says 'zip,' you've written 'plenty.'"

---

#### LITTLE TIPS AND TRICKS FROM THE TI EXPRESS

---

Funnelwebs Editor-

1. To Change screen color hit control and 3 at the same time.
2. Control and . changes the letter under the cursor to lower case.
3. Control and ; changes the letter under the cursor to UPPER CASE.
4. Control and A move screen down one screen.
5. Control and B moves screen bak one screen.
6. Control U and then Shift J puts in a linefeed. Control U return to original mode.
7. Control M can be used for a carriage return
8. Control C return you to top prompt line.
9. Control E S D I H J also act as arrow keys.
10. Control Z acts as the Tab.
11. Control T acts as a back tab.
- 12 Control G places a blank line above the line you are on.
13. Control L places cursor in the top left corner of screen.
14. Control P places a new page mark.
15. When using Show Directory using the arrow keys moves the little lines up and down 1 file hitting the space bar places a carat besides the and marks it. Then just hit enter and LF for load file the name you will now appear.

Formatter Tips

16. When at the prompt for a file name hit Function 7 for a disk directory. Then proceed as above (except no carat) Control = lings you back to the Formatter now hit Function D and the marked file will appear.
- Just a Tip
17. When at the TI Writer menu or E/A menu Function 9 allows you to exit Funnelweb in a grace ful manner. The error checking lows you to be sure that htis is what you want to do.

BY  
Warren Barnes

Currently I am working on a SQL package for the Geneve computer. I don't presently know of any such or similiar program for it( if there are any products available like this I would appreciate knowing of it.) So let's get down to business. First of all, what is a relational database?

To start with lets discuss the relational model. This model really is an intellectual concept rather than any set form. It is a model for how data appears to a user, how that data is manipulated, and how the data behaves when it is manipulated. This leads to three components of the relational model:

STRUCTURE : the way data appears  
MANIPULATION : operations performed on the data.  
INTEGRATITY : the rules the model must behave.

#### THE STRUCTURE

As you know, data is stored in databases as files. From now on, I will refer to them as tables(columns will be refered to as columns and rows as tuples.) Some of the significant properties of the structure are that all entries in columns are single-valued(no multiple entries per column in a tuple) and each tuple is unique. Each column which defines a tuple's uniqueness is called a PRIMARY KEY. A primary key(s) may never be null. A table may refer, or be connected, to another by primary keys. Such a key that refers to another is called a FOREIGN KEY. These keys take on the properties of primary keys. If a parent table is being refered to, by a child table and its foreign key, no tuple may be deleted( in the child table) until it is sure the referencing table contains no values found in the parent. There are other keys in the structure but the only others I will mention are the non-referenced keys. These keys only store values for the table and may or may not be null or unique.

#### DATA MANIPULATION

There are eight operators used for the relational model but I will only mention three significant ones( use of these three can simulate the other five.)

The RESTRICT operator selects tuples from a table based on values in the columns using comparative operators(equals, less than, etc.)

The PROJECT operator selects columns from a table, deleting any duplicate tuples.

The JOIN operator horizontally combines data from tuple of a table with another table's tuple based on values in either tables columns.

Lets look at an example of two tables with tuples included.

#### VENDOR

name	location
Mr. Barnes	indianapolis
Mr. Doe	mario land
Mr. lake	kokomo
Mrs. lake	kokomo

#### SUPPLIER

name	location	parts
Mr. smith	indiansapolis	paint
Mrs. jones	hootervillee	lights

#### VS

name 1	name 2	qty
Mr. Barnes	Mr. smith	200
Mr. Barnes	Mrs. jones	200

#### HUG OFFICERS

President	Gary McQuade	888-5654
V.President	Bryant Pedigo	255-7381
Secretary	Jeff Overton	299-2333
Treasurer	Walter Farmer	539-2679
Librarian	Bryant Pedigo	255-7381

Here we have three tables. VENDOR, SUPPLIER, and VS. In vendor, 'name' is the primary key as well as supplier. This means if another tuple were added to supplier with the name column containing Mrs. Jones, a violation of the model would occur. In vs, 'name 1' and 'name 2' are the primary keys. Notice the two tuples do not have the same values in each primary key for each tuple. These two keys can also be defined as foreign keys with supplier and vendor acting as parent tables and 'connecting' to their respective primary keys. 'qty' is a non-referenced key. Now lets look at those operators.

A restrict on the vendor table, looking for tuples who 'location' column equals kokomo would result in

```
1 Mr. lake      kokomo
1 Mrs. lake      kokomo
```

A project on the same table for the 'location' would result in

```
indianapolis
mario land
kokomo
```

A join on the vendor table and vs table, where 'name' and 'name 1' equal would result in

```
Mr Barnes      indianapolis  Mr. smith 200
Mr Barnes      indianapolis  Mrs. jones 20
```

Notice this join copied all non-repeating columns from each tuple where each value in the columns named matched.

Enough of this, lets get to what SQL is.

SQL stands for Structured Query Language. Eventhough it is not part of the model, it is considered a RELATIONAL ACCESS LANGUAGE or data sub-language (when embedded in COBOL or other languages.) Until recently, most sql packages were only glorified file management tools. Now, especially for PCs, they fully support relational theory and brilliant optimizing capabilities. Now lets look at those three tables and some of the things that can be done.

Eventhough there are eight relational operators, sql has five verbs in its language:

```
CREATE - create a table
SELECT - used with numerous clauses
        simulates the eight operators
UPDATE - update tuple and columns
DELETE - delete tuples and tables.
```

I will only concentrate on the select verb. This verb has seven clauses: SELECT, WHERE, GROUP BY, HAVING, ORDER BY, AND UNION.

The following command would list all tuples and columns from vendor:

```
SELECT * FROM VENDOR ;
```

The \* says display all columns.

This command would only list all values in the 'location' column;

```
SELECT location FROM VENDOR;
```

The following will display all values in the name 1 column from vs where name 2 equals Mr. smith.

```
SELECT name 1 FROM VS WHERE name 2='Mr. smith' ;
```

The following will act as the join operation shown above;

```
SELECT * FROM VEDNOR, VS WHERE
name=name 1.
```

Simple huh? There are literally thousands of combinations of the select verb and its clauses that make sql a very powerful relational data base tool. I hope I have gotten some people interested, if I got through to anyone at all, at how much better a relational database is compared to a hierarchial type database. Imagine having a relational database for, lets say, repairs on your car. These tables could contain data on your car, data on the store, data on what was repaired, data on insurance coverage, etc. Each table is connected and with a simple sql statement one would be able to, lets say, get information on what sub-part was put on his brake at a SEARS store in a specific store at a given date, and how much it costs(part and total cost) ; indeed a very powerful tool. Let me know what you thought of the article and the project I am working on.

## FORM SHOP

A REVIEW BY JIM MCLAREN

I was talking to Phil Townsend recently and he mentioned that he had a program called FORM SHOP. He was selling the program for Rodger Merritt. The price was \$17.00 Canadian. It included one disk and 4 pages of instructions printed with black lettering on an orange colored background.

It might be wise to print out the 3 SAMPLE files that come with FORM SHOP. One of the files has a printed keyboard with all the special characters shown with the corresponding keys.

The program auto boots from extended basic. You are then presented with an attractive title screen. I beleive they used Ti-Artist to design the screen.

You press the space bar to continue to the next screen. You can bypass the title screen by holding down the ENTER key when it first loads.

The second screen gives you 2 options.

1. To Create Form
2. To Print Form

You start by selecting #1 Create Form. On the first line when you are in the editor enter: .IF DSK1. SETUPALL or DSK1.SETUP10X depending on your type of printer. This will set up the correct characters for your printer. (Don't use a line feed here just press enter.)

Now press CONTROL U then select the particular character you want. Make sure you have the the ALPHA lock depressed. You must use capital letters. If you want to type letters again you simply press CONTROL U again. This is a nice feature once you press CONTROL U, then it is a 1

key press instead of a combination of keys.

I made up a sample file and saved it back to my ramdisk. When I used the formatter I had problems printing. There was something that I was doing wrong.

I decided to give Phil Townsend a quick call via Ma Bell.

Within a few minutes Phil had my problem solved.

1. You must have the .IF DSK1.SETUP ALL on the first line of the editor as I have mentioned earlier.

2. A line feed must be entered after every line (not including .IF DSK1.SETUPALL.) This can be done by using CONTROL U then J or you can use the example Roger included in the docs. Return to the command mode and type RS for replace string. Type in the following line.

79 79 / /CTRL U "J"/

When you type the J you will see a LF symbol. Press the letter A to replace all then you will see a LF symbol all the way down the right side of the page in column 79.

What I did to avoid putting a LF on the first line where the .IF DSK1.SETUPALL was located. I went into command mode and typed S to show line # and pressed 2. This way I had a LF from line 2 in column 79 all the way down. Remember that if you use RS to replace string and you were on line 30 in the editor the Replace String will start a line 30 and then put LF from there down. By using S for show line # and select line #2 you will avoid this problem.

3. Make sure when you use the formatter to put down PIO.CR or RS232.CR.

Phil had made a back up copy of Funnelweb and then copied the file FSFONT and changed it to CHARA1. Other files Phil copied were SETUFALL

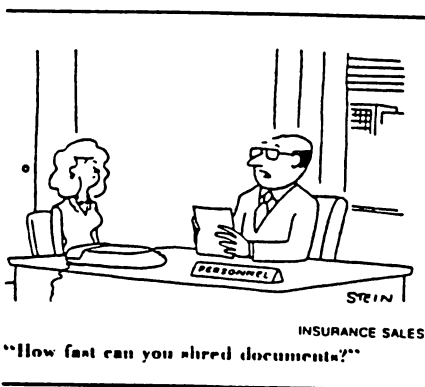
and UNSET (restores printer codes). Copying the file FSFONT is mentioned in Rodgers instructions. By using Funnelweb you can toggle back and forth through the formatter and editor. With FORM SHOP the editor brings you back to the title screen and you have to reboot the program to print out what you have created.

Once you use the program for awhile you will find it easy to use. I have always wanted to have a form maker, invoice, receipts etc etc. Being able to use Ti-Writer to produce it is a real added bonus. Once you press CONTROL U then it is a one key press operation. Using the many features of Ti-Writer like COPY REPLACE etc. etc. makes creating a form very easy and quick.

The documentation could be improved other than that it's a good program. The \$17.00 price tag is well worth it. I would recommend it highly.

NOTE: The idea was conceived by Gene Bohot. Steve Meyr's encouragement kept the research and development alive. Form Shop was created and tested by Rodger Merritt.

\*\*\*\*\*  
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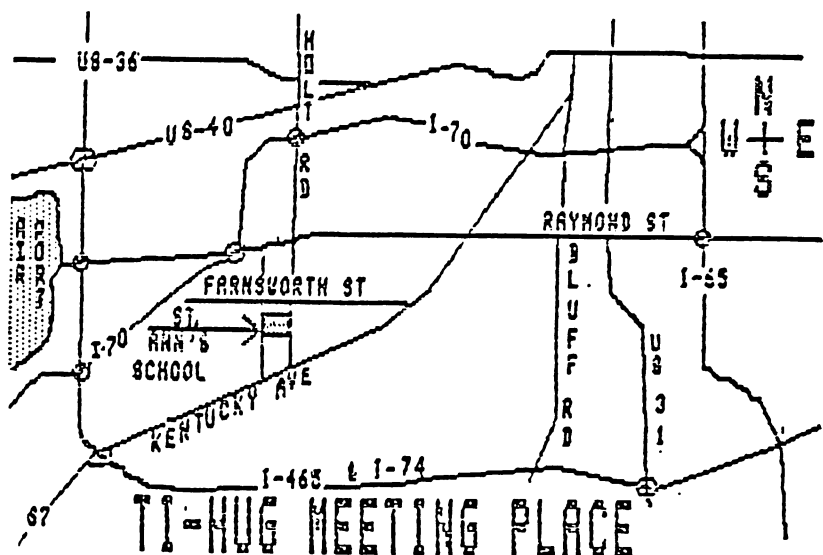
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```

=====
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```

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 MEETING STARTS  
 AT 2:00 P.M.  
 APRIL 21, 1991





## HOW TO DO A PERSON TO PERSON DOWNLOAD. by: Jeff Overton

How many times have you wished that you could get a copy of a program from someone? You could go to their home and make a copy, or you could just wait until the next HUG meeting. But what if you needed that program yesterday?

If you own a modem you can get the program that you need in a matter of minutes. You call the BBS and get programs all the time. Why not call a friend and get the program that you want? I know you're thinking, "I have tried before and it didn't work." Well I also tried it before and it didn't work, but this time it did.

I will try to take you through step by step how it is done using TELCO 2.3 .

The first thing you must do is call your friend, (on voice) and tell them what you want to do. Tell your friend what program you want. If that program has more than one file your friend should archive it, or you will have to transmit the files one at a time.

Each of you must set your terminal to HALF Duplex. If you don't do this neither of you will be able to see what you are typing. FULL Duplex sends or "echos" the recieved characters BACK to the sender only if the recieved terminal "remote echo" is set on. Let me assure you this not a good choice!! To go to HALF Duplex, you will press "fctn N" from the terminal screen, or use the Setup Terminal option screen & select option "I".

It is also a good idea to make your Setup Terminal option "C" a CR/LF. Doing this will make your text automatically advance a line at end of your line width, or every time you hit "ENTER". This is a good way to signal the other user that you are through sending text. Hit enter two or three times & your text will roll up that many lines.

One of you will have to put your modem in Auto-Answer. To set a Hayes compatible modem to Auto-Answer, type "ATSC=1".

This will answer on the first ring. The modem will return non Auto-Answer after it is powered off.

You now hang up & whoever is NOT in Auto-Answer calls the other modem. When his computer answers, you will see on your screen "CONNECT" or "CONNECT 1200" or "CONNECT 2400" (depending on your baud rate). This is just like the way that you call the BBS.

Now you can talk to each other with the keyboards and display screens.

If you are to receive the file, you must press "fctn 4" to select a transfer protocol. Both computers must be using the same protocol (Xmodem or Ymodem) and this should have already been agreed upon. In our tests Ymodem is about three times as fast as Xmodem. On paper it should be 8 times as fast as Xmodem transfers 128 bytes at a time and Ymodem transfers 1024.

The person sending you the file must press "fctn 6" and select a transfer protocol. The sender must then enter the file name exactly as it is stored on disk. However the reciever can name the file to be recieved anything, as long as it follows TI disk file header rules. (not more than 10 characters, no blanks or periods—You know the rules.) Just type in the file name and it's automatic from then on.

I am sorry to say, if neither of you have Auto-Answer I don't know how it will work. If only one has Auto-Answer it will still work.

With a little practice this will become as easy as file transfers to a BBS.

# PERFECT COLUMNIZER

"ABOUT 2COLUMNS" BY ROGER PRICE

I HAVE WANTED TO SUBMIT AN ARTICLE FOR THE NEWSLETTER EACH MONTH. HOWEVER, IT SEEMS AS IF THE TIME GOES AND OTHER THINGS INTERFER TO SUCH AN EXTENT THAT I SEEM TO MISS THE DEADLINE OFTEN. I SOMETIMES THINK I WILL DO AN ARTICLE ON A SUBJECT. THEN I GET THE MATERIAL FOR THE ARTICLE ONLY TO CHANGE MY MIND BEFORE I GET THE TEXT TYPED. I WAS GOING TO DO AN ARTICLE ON A PROGRAM IN THE NOVEMBER 1990 HUG NEWSLETTER CALLED "2COLUMNS". IF ANYONE KNOWS HOW TO SET UP THE FILE TO GET THIS TO WORK, DO AN ARTICLE IN THE NEWSLETTER SO THAT I AND OTHERS CAN GET IT TO WORK. I SPENT AT LEAST FIVE HOURS OVER SEVERAL DAYS TO GET "2 COLUMNS" TO WORK. I RAN OUT OF IDEAS ON WHAT I WAS DOING WRONG. I HAVE USED THE COLUMNIZER IN PAGEPRO WITH SUCCESS, HOWEVER, YOU ARE LIMITED TO 29 CHARACTERS PER COLUMN. I WANTED A COLUMNIZER THAT WOULD DO AT LEAST 38 CHARACTERS PER COLUMN.

"PERFECT COLUMNIZER"

THIS IS A PUBLIC DOMAIN PROGRAM AND SHOULD BE IN THE HUG LIBRARY IF IT IS NOT. WHAT I WOULD LIKE IS A DISK FULL OF THE VARIOUS COLUMNIZER PROGRAMS THAT ARE IN THE PUBLIC DOMAIN. THE INSTRUCTIONS SHOULD BE ON THE DISK ALSO TO RUN THE PROGRAMS PROPERLY. I WILL TRY TO GET THE INSTRUCTIONS FOR THIS ONE ONTO THE DISK AND DONATE IT TO THE LIBRARY THE NEXT TIME I GO TO THE MEETING. I AM USING A TI-WRITER TYPE PROGRAM TO TYPE THIS AND AM USING THE "PERFECT-COLUMNIZER" TO PUT IT INTO 2 COLUMNS FOR THE NEWSLETTER. MY PLAN IS TO GET THIS INTO THE 2 COLUMNS THEN SEE HOW MANY LINES IT IS. WHAT SPACE IS LEFT I WILL PUT SOME GRAFICS IN WITH PAGE PRO SO IT MIGHT BE A TWO RUN PRINTING. SINCE PAGEPRO HAS THE LINES NUMBERED IT WILL BE EASY TO WORK THIS OUT. THE PERFECT COLUMNIZER LOOKS AS IF IT PRINTS WITH AN 11 OR 12 SPACING. I WILL TRY TO ALTER THE PROGRAM AND THEN HAVE A VERSION THAT WILL PRINT MORE LINES ON A PAGE. THE DEFAULT IS 60 LINES TO THE PAGE WHICH WOULD BE A 40 COLUMN

FILE OF 120 LINES. THIS WOULD GIVE SPACE FOR A BORDER OR HEADLINE PRINTOUT WITH PAGEPRO. ONE OF THE FEATURES OF "PERFECT C" IS THAT YOU CAN PRINT A HEADER IN DOUBLE WIDTH. I FOUND THAT THIS FEATURE DOES NOT WORK WITH THE 99/4 PRINTER OR ELSE I'M NOT DOING SOMETHING RIGHT. THE REQUIREMENTS OF THE PROGRAM ARE A TI-WRITER TYPE WORD PROCESSOR, SINGLE SIDE DISK SYSTEM. THE STEP BY STEP INSTRUCTIONS REQUIRE VERY LITTLE SETUP OF THE FILE.

BASICALLY, YOU SETUP YOUR WORD PROCESSOR FOR 36-40 CHARACTERS PER COLUMN BY PUTTING YOUR LEFT MARGIN AT 0 AND YOUR RIGHT MARGIN TO 40. DO THIS BY EDIT TABS L TO 0 AND THE R TO 40. THE PROGRAM WILL JUSTIFY THE WORDS. THIS MEANS THE PROGRAM WILL FILL AND ADJUST TO GIVE A NICE STRAIGHT RIGHT SIDE WITHOUT ANY COMMANDS TO DO THIS. WHEN YOU TYPE USE WORD WRAP AND DO NOT HIT THE ENTER KEY EXCEPT AT THE END OF A PARAGRAPH. INDENT WORKS OK BUT SOMETIMES YOU GET 5 SPACE AND OTHER TIMES YOU GET UP TO 8 SPACES. THIS I BELIEVE IS DUE TO THE WAY THE FILL AND ADJUST WORKS. YOU GET TWO 40 COLUMNS WITH A 5 GUTTER IN THE MIDDLE FOR 85 COLUMNS TOTAL.

MORE THAN I HAVE EVER SEEN ON THE 99/4 PRINTER. I HAVE NEVER BEEN ABLE TO GET MORE THAN 80 COLUMNS ON MY PRINTER REGARDLESS OF KIND OF TYPE. BY PUTTING A RIGHT HAND APOSTROPHE IN FRONT OF A LINE, IT WILL BE CENTERED. BUT ONCE AGAIN THIS SEEMS TO MESS THINGS UP ELSEWHERE, SO DOES NOT WORK FOR ME. AFTER TYPING YOUR COLUMN, YOU HAVE TO PRINT IT TO DISK TO REMOVE THE CONTROL CODES, THEN RUN THE NEW FILE THRU THE PROGRAM AND SAVE IT ON DISK ONCE AGAIN. THEN RUN THIS FILE THRU THE PRINTER PORTION OF THE PROGRAM. SO YOU END UP WITH 3 FILES ON YOUR DISK. IT IS EASY TO DO THE SAME THING WITH TI-WRITER IF YOU WANT TO CUT AND TAPE. JUST USE THE CODES .RM 40;.LM 0;.FI;.AD AT THE START OF YOUR COLUMN, RUN IT THRU THE FORMATTER, PRINT AND CUT.

( PERFECT COLUMNIZER )

ONE OTHER THING I HAVE NEVER SEEN IS 85 COLUMNS PRINTED IN THE SPACE OF 72 COLUMNS. WOULD SOMEONE EXPLAIN TO ME HOW THIS IS DONE? HOPEFULLY I WILL FIGURE THIS OUT. THE PRINTER CODES USED ARE IN THE EX. BASIC LISTING SO IT SHOULD BE EASY TO CHECK THEM OUT. PERHAPS THERE ARE SOME CODES THAT ARE NOT LISTED IN THE TI 99/4 PRINTER MANUAL.

I MAY BE ABLE TO LEARN A LOT FROM THIS PROGRAM. I KNOW IT HAS A GOOD 'CALL GET KEY' ROUTINE THAT I HAVE NOT SEEN.

THE THIRD FILE THAT YOU GET FROM THE PROGRAM CAN BE LOADED BACK INTO TI-WRITER AND EDITED, WITH LINES ADDED OR DELETED SO LONG AS YOU DO NOT HIT THE ENTER KEY.

I NOTICED ONCE THAT AFTER REWORKING MY 1ST FILE, PF TO THE 2ND FILE AND THEN FORMATTING ON THE THIRD FILE THAT SOME WAY THE REFORMATTED FILE HAD BEEN ADDED ON TO THE PREVIOUS FILE SAVED WITH THE SAME FILENAME. I SUGGEST THAT YOU DO NOT USE THE SAME FILENAME MORE THAN ONCE.

ALWAYS MAKE SURE THAT YOU CHECK HOW MANY LINES IN THE FILE BEFORE SAVEING SO YOU WILL KNOW WHAT TO PUT INTO THE PROGRAM. IF YOU HAVE 100 LINES, YOU USE THE NUMBER 50. THE NUMBER IS ALWAYS ONE HALF OF THE TOTAL. IF I END UP WITH AN ODD NUMBER, I JUST ADD A BLANK LINE TO THE END SO THAT IT WILL DIVIDE EVENLY. I HAVE ADDED THE INSTRUCTIONS TO THE PROGRAM SO I WILL NOT PRINT OUT THE INSTRUCTION FILE. THIS FILE WILL BE ON THE DISK IN THE LIBRARY FOR A PRINTOUT.

I AM GOING TO ADD ENOUGH BLANK LINES AT THE END OF THIS ARTICLE SO IT WILL FILL ONE SIDE OF THE PAGE COMPLETELY BEFORE PUTTING LINES ON THE OTHER SIDE WITH THE FORMATTER.

CAUTION: DO NOT HAVE MORE THAN 40 CHARACTERS IN A LINE ON YOUR FIRST START FILE. IF YOU HAVE AN OLD FILE THAT HAS LINE LENGTHS OF MORE THAN 40 CHARACTERS, JUST SELECT T FOR TABS ON THE COMMAND LINE. THEN ET FOR EDIT TABS. SET THE L AT 0 AND THE R ON THE 4 THAT MARKS 40. THEN MAKE SURE YOU ERASE THE R AT ABOUT 75 TO 80 THAT MAY NOT BE VISIBLE ON THE SCREEN. OTHERWISE YOUR CHANGE TO 40 MAY NOT BE ACCEPTED AND IT WILL STILL BE

WHERE IT WAS. PRESS 'ENTER'. PUT THE CURSER AT THE START OF THE FIRST LINE IN THE FIRST PARAGRAPH. PRESS FCTN 2 FOR 'INSERT CHARACTERS'. PRSS CTRL 2 TO END INSERT. THE PARAGRAPH SHOULD NOW BE REFORMATTED TO 40 CHARACTERS. DO THE SAME THING WITH EACH PARAGRAPH AND THIS FILE WILL BE THE SAME AS A NEW TYPED IN FILE.

I HAVE EXPERIMENTED A LITTLE AND HAVE FOUND THAT A FILE FORMATTED WITH A TI-WRITER TYPE FORMATTER MAY PRINT BUT THE SPACES BETWEEN THE LINES ARE DOUBLE (EVEN WITH LF & CR ADDED TO PRINTER). SO AFTER SOME CHECKING, HERE IS WHAT YOU MUST DO TO USE THE TI-WRITER FORMATTER. USE THE CODES .RM 40,.LM-0, .FI, .AD, .IN 5 AT THE TOP OF THE FILE ON THE FIRST 5 LINES. SAVE THE FILE. FORMATTE YOUR NEW SAVED FILE. RELOAD YOUR FORMATTED FILE INTO THE EDITOR THAT IS WITH THE EDITOR ASSEMBLER. USE THE COMMAND RS (REPLACE STRING) THEN PRESS / CTRL U, SHIFT J, CTRL U / SPACE BAR / THEN 'ENTER' THEN A FOR ALL. THIS WILL REPLACE ALL OF THE LF WITH SPACES. THEN ERASE THE FIRST 5 LINES THAT YOU PUT THE FORMATTE CODES ON. NOW IT IS READY TO PRINT.

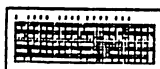
I ALSO NOTICED THAT LINE FEEDS AT THE END OF THE LINES ARE GONE ON THE FILE THAT IS FORMATTED WITH THE PERFECT C. THE SAVE FILE FORMATTED WITH THE TI-WRITER FORMATTER HAS THE LF (LINE FEEDS) STILL AT THE END.

THIS IS A GREAT PROGRAM FOR NEWSLETTER WORK. NOW WHAT I NEED NEXT IS A SPELLL CHECKERR PROGRAM.

FOR SALE: TANDON SS FULL HEIGHT DISK DRIVE. WORKS A-1 LIKE NEW. TM-100-1 THE IBM ORIGINAL. \$25 ROGER PRICE 1015 RIVER DRIVE, MARION, IND. 46952 317-664-5545.

P.S. IF YOU EVER NEED TO INSERT A CR (CARRIAGE RETURN), DO THE FOLLOWING:

PLACE THE CURSER WHERE YOU WANT THE CARRIAGE RETURN. PRESS: CTRL U, SHIFT M, CTRL U .  
END.



```

100 CALL CLEAR
110 DISPLAY AT(10,6):"COLUMN
-1-4"
120 REM V1.4 1/12/1991
130 CALL SCREEN(12)
220 DIM D$(160)
230 RESET$=CHR$(27)&"@": N
LQ$=CHR$(27)&"x"&CHR$(1)&CHR
$(27)&"k"&CHR$(0):: ELIT
E$=CHR$(27)&"M": DWON$=CHR
$(27)&"W"&CHR$(1)
240 DWOFF$=CHR$(27)&CHR$(87)
&CHR$(0):: EMON$=CHR$(27)&"E
": EMOFF$=CHR$(27)&"F"
:: FEED$=CHR$(12):: BOLD$=C
HR$(27)&"G"
250 T=0 :: CALL CLEAR :: CAL
L SCREEN(15):: DISPLAY AT(1,
1):" Q&D FORMATTING COLU
MNIZER": By: Chris Bob
bitt"
260 LNE=0
270 DISPLAY AT(5,1):"Jump ah
ead to the print functio
n?(Y/N)": CALL GETK(C)
:: ON C GOTO 280,310
280 DISPLAY AT(5,1):"Filenam
e?": "" :: ACCEPT AT(5,11)SIZ
E(15)BEEP:B$
290 DISPLAY AT(5,1):"Pagelen
gth? 60": "" :: ACCEPT AT(5,13)S
IZE(-2)VALIDATE(DIGIT)BE
EP:PL :: IF PL>80 OR PL<1 TH
EN 290
300 GOTO 610
310 DISPLAY AT(5,1):"Pagelen
gth? 60": "" :: ACCEPT AT(5,1
3)SIZE(-2)VALIDATE(DIGIT
)BEEP:PL :: IF PL>80 OR PL<1
THEN 310
320 VBT,DEND=0 :: DISPLAY AT
(7,1):"Input:";A$: "Output:
";B$ :: ACCEPT AT(7,7)SI
ZE(15)BEEP:A$ :: IF T=0 THEN
340
330 IF A$="" THEN 610 ELSE 3
50
340 ACCEPT AT(9,8)SIZE(15)BE
EP:B$
350 DISPLAY AT(22,1):"FORMAT
TING..." :: OPEN #1:A$,DISPL
AY,VARIABLE 80,INPUT ::
OPEN #2:B$,DISPLAY,VARIABLE
80,APPEND
360 LNE=LNE+1 :: DISPLAY AT(
24,5):"LINE";LNE
370 LINPUT #1:Z$ :: IF EOF(1
)THEN DEND=1
380 IF Z$<>" " THEN 410
390 IF VBT=0 THEN VBT=1 ELSE
IF VBT=1 THEN VBT=0
400 GOTO 360
410 IF VBT=1 THEN 580
420 IF POS(Z$,"~",1)=0 THEN
450

```

```

430 C=INT((40-(LEN(Z$)*2-2))
/2):: F$=RPT$(" ",C):: D=C*2
+LEN(Z$)*2-2 :: G$=F$&RP
T$(" ",40-D)
440 Z$=F$&EMON$&DWON$&SEG$(Z
$,2,LEN(Z$))&DWOFF$&G$&EMOFF
$ :: GOTO 580
450 IF POS(Z$,"~",1)=0 THEN
470
460 C=LEN(Z$):: D=INT(40-C)/
2 :: Z$=RPT$(" ",D)&SEG$(Z$,
2,C):: Z$=Z$&RPT$(" ",40
-LEN(Z$)):: GOTO 580
470 C=LEN(Z$):: IF C=40 THEN
580 ELSE IF C>40 THEN Z$=SE
G$(Z$,1,40)
480 CR=POS(Z$,CHR$(13),1)::
IF CR=0 THEN 500
490 Z$=SEG$(Z$,1,CR-1)&RPT$(
" ",40-CR+1):: GOTO 580
500 IF C=1 THEN Z$=RPT$(" ",
40):: GOTO 580
510 D=40-C :: Y$=Z$
520 IF POS(Y$," ",1)>0 THEN
540
530 Z$=Z$&RPT$(" ",40-LEN(Z$
)):: GOTO 580
540 M=1 :: FOR I=1 TO D
550 X=POS(Y$," ",M):: M=X+2
:: IF X>0 THEN 570
560 M=1 :: GOTO 550
570 U$=SEG$(Y$,1,X):: V$=SEG
$(Y$,X+1,LEN(Y$)):: Y$=U$&"
"&V$ :: NEXT I :: Z$=SEG
$(Y$,1,40)
580 PRINT #2:Z$ :: IF DEND=0
THEN 360
590 CLOSE #2 :: CLOSE #1
600 T=T+1 :: GOTO 320
610 DISPLAY AT(11,1):"Printe
r name?" :: ACCEPT AT(12,1)S
IZE(28)BEEP:PN$ :: OPEN
#1:B$,DISPLAY,VARIABLE 80,I
NPUT
620 DISPLAY AT(24,1):"PRINTI
NG..." :: OPEN #2:PN$,VARIAB
LE 254
630 PRINT #2:RESET$;ELITE$;B
OLD$;NLQ$;
640 FOR I=1 TO PL*2 :: LINPU
T #1:D$(I):: IF EOF(1)THEN 6
70
650 DISPLAY AT(22,5):"LINE":
I+1
660 NEXT I :: GOTO 720
670 CLOSE #1 :: IF I>PL THEN
690
680 FOR J=1 TO I :: PRINT #2
:D$(J):: NEXT J :: GOTO 740
690 FOR J=1 TO PL :: C=40-LE
N(D$(J)):: IF POS(D$(J),DWON
$,1)=0 THEN S$=RPT$(" ",
C+5)ELSE S$=""
700 IF PL+J>I THEN LINE$=D$(
J)ELSE LINE$=D$(J)&S$&D$(J+P
L)

```

# BUSINESS GRAPHS 99

## A REVIEW

By - Dale Kaliser

Being in management of a major insurance company, I'm always asked for reports comparing production from month to month and even year to year. To assist in my comparisons, I have always felt that utilizing charts can be most informative to the reader since in many ways they speak for themselves.

Until recently I have been using such programs as Draw N Plot and Chart Maker, both from Quality 99 Software. I then came across what I feel to be the best overall business graphics program entitled "Business Graphs 99" written by Mike McCane and distributed by Disk Only Software for \$24.95.

The 26 page booklet is highly professional in both contents and layout which kept my attention throughout the reading produces Pie Charts, Bar Graphs and Line Graphs which seems to be the normal contents of a sophisticated business graphics program. But what I like is that the program is menu driven, fast, versatile, highly professional and all options can be dumped to a printer. System requirements are: TI 99/4A, 32K, Disk Drive, Editor Assembler or Extended Basic. Optional equipment: RS232 and Printer.

Four default settings may be set up by the user for convenience. You may set the default background and foreground colors, setup default output device and micro-linefeed may be changed to accommodate your particular printer. The defaults are saved to the program disk for automatic loading upon booting of the program.

The Pie Graph allows for individual labeling of slices from 2-6, the title of the graph is displayed above the graph with a subtitle below the graph. For use on a color monitor, there are 15 colors available and 7 different B/W shadings for printouts. All are displayed on the screen for selection by

number. In addition, one of the Pie slices may be "Exploded" away from the rest of the pie. This comes in handy when illustrating the largest or smallest part of a comparison.

In order to adjust for the fact that each printer does not draw exact circles, the program has a feature called "Aspect Ratio" which allows you to adjust for the fact that a circle drawn on the screen or in the RAM looks like a football on the printer.

The next type of graph available is a Line Graph. The Line Graph option begins by asking for a title above the graph, subtitle below, horizontal axis title and vertical axis title. Next you are prompted for the vertical range or upper and lower boundaries of the display (1-500). Horizontal Display ranges from 0-10 and Horizontal Display Density controls proportional spacing between display items on the grid.

Once the data is entered, you have the option to draw or print four types of Line Graphs: HiLo, Line, Area and Grid On/Off. To briefly explain each, I'll begin with HiLo. The HiLo plots a vertical line for each data element in range, plotting vertically between MIN and MAX values. Line Plot will plot a line from MAX of one data item to MAX in the next and from MIN to MIN for all data items. Area Plot combines both Line and HiLo. Grid On/Off lets you turn on or off the grid lines.

The last type of graph is the Bar Graph. Once again you are prompted for a title above the graph, subtitle below, horizontal axis title and vertical axis title. Then you are prompted for the edit ranges very similar to the Line graph options. Next you enter the data for each bar. The Draw Graph option allows for drawing three types of Bar Graphs: Single Bar which plots a single bar for each data item with six shades of printing available, again displayed on the screen. The next option is to draw Stacked Bars which plots a bar for the MIN value then plots the difference between MAX and MIN as another bar stacked on top of the first. The last option is a Double Bar which plots a

```

710 PRINT #2:LINE$ :: NEXT J
:: GOTO 740
720 FOR J=1 TO PL :: C=40-LE
N(D$(J)):: IF POS(D$(J),DWON
$,1)=0 THEN S$=RPT$(" ",
C+5)ELSE S$=" "
730 PRINT #2:D$(J)&S$&D$(PL+
J):: NEXT J :: PRINT #2:FEED
$ :: GOTO 640
740 PRINT #2:FEED$ :: CLOSE
#2
750 DISPLAY AT(24,1):"Delete
file? (Y/N)" :: CALL GETK(C)
):: ON C GOTO 760,770
760 DELETE B$
770 CALL SAY("START AGAIN")
780 DISPLAY AT(24,1):"Again?
(Y/N)" :: CALL GETK(C):: ON
C GOTO 790,800
790 GOTO 250
800 STOP
810 !TAKES A 40-COLUMN WIDTH
FILEAND JUSTIFIES IT FULLY
(NOT PROPORTIONAL) AND T
HEN PRINTS IT IN 2 COLU
MNS."
820 !IS DESIGNED FOR USE WIT
H AN EPSON COMPATIBLE. CHANG
E CODES IN LINES 230-
240 FOR OTHERS."
830 !ALSO ACCEPTS THE FOLLOW
ING EMBEDDED COMMANDS:"
840 !USE THE ~ BEFORE LINES
THAT YOU WANT ENLARGED AND I
N BOLD FACE (GREAT FO
R TITLING!)"
850 !USE ! TO TOGGLE BETWEEN
VERBATIM PRINT AND NOT.
"
860 !USE ' ON LINES YOU WANT
CENTERED."
870 !PLACE A CARRIAGE RETURN
TO MARK THE END OF A PARAG
RAPH."
880 !BY CHRIS BOBBITT
PUBLIC DOMAIN - NO DONA
TION REQUESTED."
940 SUB GETK(C)
950 CALL KEY(O,K,S):: IF S=0
THEN 950 ELSE K$=CHR$(K)
960 C=POS("YN",K$,1):: IF C=
0 THEN 950
970 SUBEND

```

## BUISNESS GRAPHS REVIEW (continued)

pair of bars side by side representing the MAX and MIN values for each data item. The Double Bar type is very good for comparing one year to another.

Each type of chart option in the program may be saved to disk and can be easily accessed using the disk directory option of the main menu.

For my personal use, "Business Graphs 99" fits my needs but due to its wide range of options, it may not be for everyone. The program is copyrighted and may not be distributed through the Fairware concept but the program is not copy proof since I made a copy for my daily use.

You can look for a demo within the next few months.

## ALASKA UG PRESIDENT ARRIVES TO TAKE CHARGE

By - GREG LARSON

The Clark arctic expedition has successfully reached Palmer Alaska (without even succumbing to cannibalism)!

They arrived safe and sound Friday afternoon with nary a scratch (miraculously) although the vehicles suffered many casualties during the long campaign. Fortunately, they all returned to duty in order to finish the trip, but they still have dents and bruises.

With the Clark family more or less back together (Amanda's at college), now they have to figure out where to put ALL THAT STUFF.

p.s., Steve Moon said he fully expected someone to be killed or injured on the way, but then he got to see all those thousand foot drops into rivers and lakes (without guardrails) from snowy, slippery roads.

## SOME NOTES ON VIDEO

By - Delbert Wright

I was prompted to write this article because of a message on our BBS. I remember how confused I was when started in computers. You either bought what was offered by the manufacture as output, or you used a television. I thought I had gotten a lot smarter and knew I could just use any device with inputs marked "VIDEO IN" to output my TI99/4A video to and I had a much better display than with a TV.

All that smugness came to an end when I set about finding a monitor for a Myarc 9640 Geneve that I could use in 80 column mode. I initially used the Geneve in 40 column mode, and must give Myarc credit for having the sense to make an output from the 9640 that could be used without a lot more immediate cash outlay. However, those days are gone because some of the newer versions of MDOS will not allow you to use the MODE 40 command to set the output to 40 collums. You can see 80 collums on the same 40 column monitor that you have been using with your TI99/4A, but as Ron Albright said in his Computer Shopper review "it's not something you would want to spend a lot time with".

In order to understand difrernt video conventions and connections, we need at least a passing knowledge of how TV pictures are displayed.

The picture tube of a TV or computer monitor is technically know as a Cathode Ray Tube, or CRT for short. A coating of phosphorus on the face of the CRT glows when struck by electron beams. The beam is controlled by circuitry to make it move sideways from the upper left across the CRT to the upper right. Then the beam is turned off and quickly repositioned al the left side and down a little. The beam is turned on and again sweeps across the CRT from left to right. While it is moving, the brightness, or intensity is varried to form the details of the "picture".

The scanning continues until the entire screen has been covered by the beam. From the lower right corner, the beam is returned to the upper left corner and a new field, or picture is started.

If the process stopped now the phosporus would gradually lose it's glow & the screen would fade away, so the entire process is repeated 60 times a SECOND! In North America there are 525 lines scan lines per picture. If the screen is not redrawn about 60 times per second, the action of the phosporus fading out & being reilluminated causes annoying "flicker". In TV it is desireable to have quickly fading phosporus because of action on the screen. In computer monitors a more desireable scenario is "long persistence phosporus". In TV each "picture" is divided into 2 fields of 262.5 lines each. One field is all odd numbered lines & the other is all even scan lines. Not all are actually used for displaying details. Some are "turned off" retrace lines & some are off the top & bottom of the screen. there are about 15,750 lines per second. This means the whole screen is covered in 1/60 of a second. Actually all the ODD lines are scanned on the first pass and then all EVEN lines are scanned on the second pass. THIS IS CALLED INTERLACE.

Most computer monitors do NOT interlace, but instead use 262 lines repeated 60 times a second. What we have is 2 fields again for each "picture" or frame, but they are not shifted a line so they are both identical.

The black & white signal has three parts:

1. The part which tells the beam to return to the upper left corner & start a new picture. This called VERTICAL SYNC. It happens every 1/60 second.

2. The part which tells the beam to return to the left side and start a new line is called HORIZONTAL SYNC. It happens every 64 micro-seconds.

3. The part that makes the beam brighter & darker as it is moving is called LUMINANCE.

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MEETING STARTS  
AT 2:00 P.M.  
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This news letter is brought to you  
by the efforts of the officers  
members of the Hoosier Users Group.

THE OPINIONS EXPRESSED HEREIN ARE  
THE AUTHORS', and DO NOT NECESSARILY  
REFLECT THOSE OF THE PUBLISHERS.

MEMBERS ARE ENCOURAGED TO SUBMIT  
ARTICLES FOR PUBLICATION.-PLEASE!

## REMEMBER

This is ~~YOUR~~ user group too!

From : BILL  
To : ALL  
Re : EAGLE  
Date : 01/18/91 @ 20:24:33

Now in the download 8 section of this  
bbs is a GIF picture of an EAGLE or  
should I say a screaming EAGLE!!!

Enjoy this GIF picture with Barry Boone's GIF MANIA program.

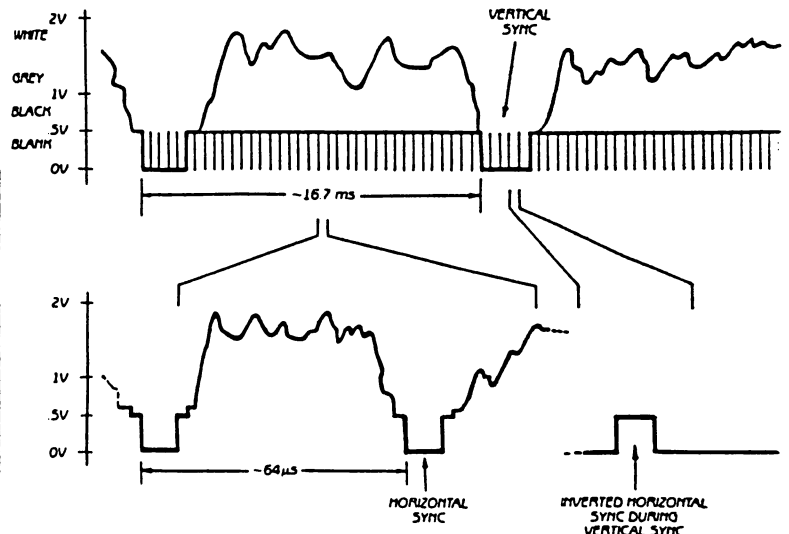
As you can see there are lots of interesting and helpful messages on the BES and all you need is a modem. Access to the HUG BES is available to the general public, but you can only download, or copy programs that appear in other sections if you are a member and your dues are current.

So Come on everybody, get your modems connected and call the HUG BES at 317-782-9942. We operate at 300,1200 and 2400 baud, 24 hours a day.

PEOPLE HELPING PEOPLE..that's our motto.

VIDEO (continued)

All of these signals on one wire is called COMPOSITE MONOCHROME VIDEO and would look something like this:



This article will be continued ,  
in the next HUG newsletter.



## Bits and Bytes

By: Dan Eicher

Many of you have probably heard that the 9900 MicroProcessor is capable of directly addressing up to 64K, but what does that really mean?

In any Microprocessing unit you have three buses, the address, data and control bus. The amount of memory that a MicroProcessor is capable of addressing is a factor of width of both the address and data bus.

It is important to remember that these two busses can be any width. For example .. lets take a very simple processor with an address bus length of two and a data bus length of 4.

Here is the math for calculating the amount of addressable memory.

Data bus = 4 bits wide

Address bus = 2 bits wide

04 Maximum number of unique address (2 2).

X 04 Number of bits held at each address.

16/8=2 bytes of addressable memory.

The 16 represents number of bits addressable, you need to divide this number by 8 to get bytes addressable ( 8 bits .EQU. byte).

Here is a picture.

Address 00 = Data 1 1 1 1 4 bits here

Address 01 = Data 1 1 1 1 4 bits here

Address 10 = Data 1 1 1 1 4 bits here

Address 11 = Date 1 1 1 1 4 bits here

4 unique address = 16 bits total.

Now - Lets discuss the good old 9900.

Data Bus = 16 bits wide

Address bus = 15 bits wide

32,768 Maximum number of unique address (2 15).

16 Number of bits held at each address.

524,288/8=65,536 bytes of addressable memory.

One K in computer byte is equal to the number 2 10=1,024. When you here people say a machine has 64K, what they really mean is the computer has 64 KiloBytes, which intern means it has 65,536 byte of memory.

In TI terms a bit is described as follows:

16 bits. Position 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

You always start counting with zero.

Bit position 0 is considered the Most Significant Bit or (MSB), this also the sign bit if you are using signed (+ or -) arithmetic.

Bit position 15 is considered the LEast Significant Bit or (LSB).

Ok, that gives the basics that we need to get into the harder material. You are probably thinking if we only have 32K worth of unique address, why do you see memory maps that go up to

>FFFF (The greater than symbol means the value that follows is in hex)? Well, thats a good question and one that confused me for quite some time. Internally the 9900 has a 16 bit address pointer, but externally it has a 15 bit address bus. All this means is it is possible to do byte related arithmetic. Here is graphics example.

In reality.

How the 9900 sees the world internally.

Address 00 16 bits of data  
Address 01 16 bits of data  
" " " "  
Address 32K " " " "

Address 00 8 bits of data  
Address 01 8 bits of data  
" " " "  
Address 64K " " " "

Here is what happens inside the 9900 when you request an address.

First an example will be an even address:

Lets say you want to inspect the contents of address 8. First the CPU takes this address and divides it by two, then it sends the appropriate commands and gives you the stored in real memory location 4.

Lets say you want to inspect the contents of address 7 (an odd address). Internally the CPU would say O'no an odd address! I can't access odd address externally! I'll decrement this address by 1 then I'll divide by 2.  $(7-1)=6/2$  resulting in real address 3 since this is 16 bits I need to read in the whole word. Now that I have the full word I know he/she wants an odd address so I will take the right half of this word (8 bits) and send it to the user.

Address!

Data

Internally Externally

Same.

0	1	0
2	3	1
4	5	2
6	7	3
8	9	4

16 bits ( Broken into a right and left byte).

< Here is our example address.

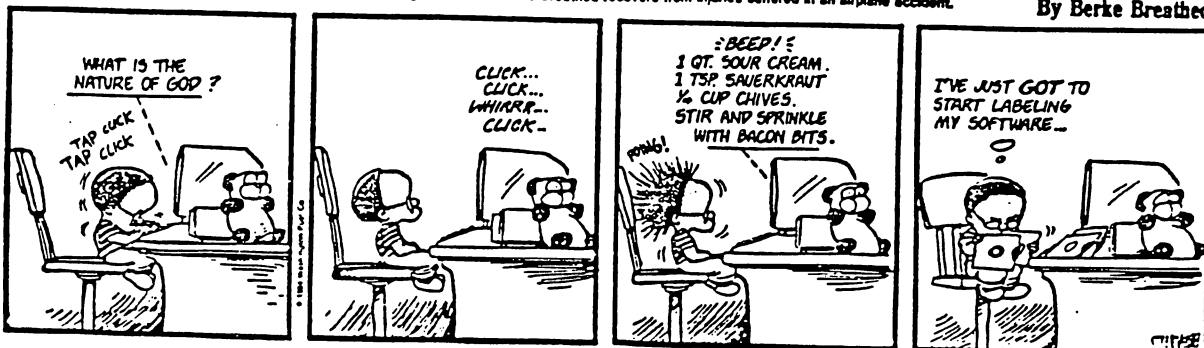
I admit all of this is a bit confusing. It is good to have a basic understanding of all of this.

Next installment we get in to some really hard stuff!

BLOOM COUNTY

These past strips are being rerun while Berke Breathed recovers from injuries suffered in an airplane accident.

By Berke Breathed



# Hardware

## Q & D HARDWARE MODS

Steve Burns  
Bluegrass 99'ers

Sometimes a simple straightforward solution is the best. Here are two examples of quite different problems that I solved in similar ways. Both took only seconds and have worked quite well.

The first problem was one that is common to nearly everyone who owns a TI and expansion box. The heavy connector and "firehose" cable that plugs in to the side of the console frequently comes loose when the console is moved. This fix requires only a small piece of adhesive backed Velcro. Cut two small strips to fit on either side of the connector and place them as shown in Fig.1. The Velcro will help prevent the "firehose" from pulling loose, even when the console is scooted all over the desk. This is cheap, easy and makes no permanent modification to either console or cable.

Another problem I had was using pinfeed labels with my NX-1000 printer. Although the printer should have handled them with no trouble, they kept jumping off the pins and jamming. The NX-1000 depends on little plastic covers to hold the labels on the pins. I took some adhesive backed sponge rubber (such as is used for weatherstripping) and placed it on top of the plastic pin covers so that when the rear printer cover is snapped in place, it prevents the little pinfeed covers from flipping up (see Fig.2). The labels now feed through flawlessly.

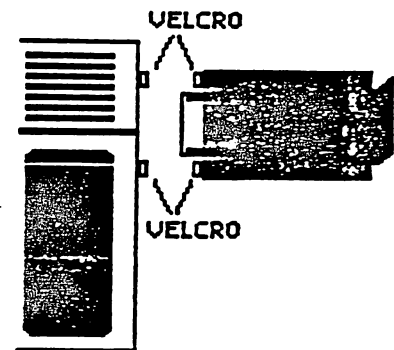


FIG. 1

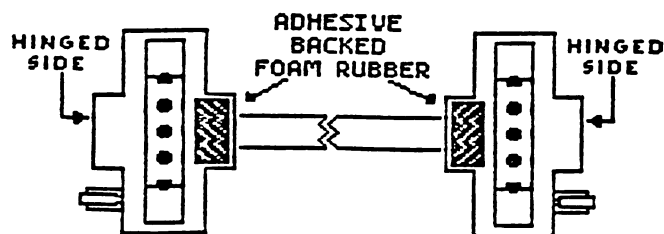
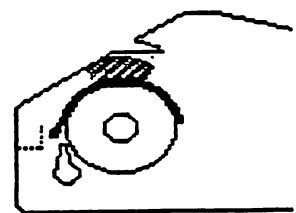
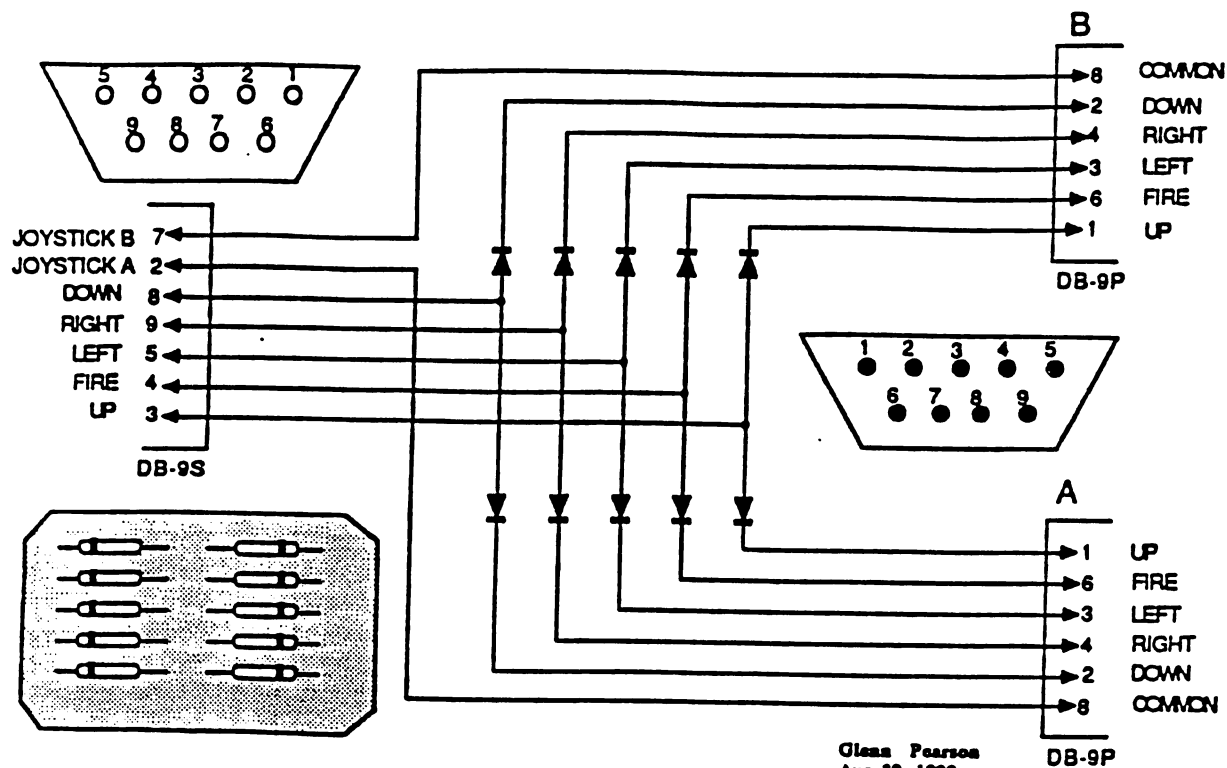


FIG. 2



SIDE VIEW  
FIG. 2

# TI & GENEVE JOYSTICK ADAPTER



Glenn Pearson  
Aug 30, 1990

As virtually all TI users know, standard joysticks may not be used with the TI (or Geneve) without an adapter. The adapter is required to accommodate three things: the pinout of the DB-9 connector on the TI does not match the standard joystick pinout, secondly, two joystick connectors will not both fit into one chassis connector, and thirdly, series diodes are required to isolate the joysticks from each other, else one joystick will try to do the work of two.

I had a commercial adapter, which was made as a potted cable assembly. When the fire button stopped functioning on one of my joysticks, I traced the problem to an open diode in the cable assembly. The first step in determining the cause of the problem was to swap joysticks. Moving the joystick from one cable connector to another showed that the problem stayed at the cable location. By using an ohmmeter, and with the help of a schematic for the TI, I was able to quickly determine that a diode in the cable assembly had opened. An attempt to non-destructively open the cable assembly failed, and I was left with no choice but to replace the adapter, if I was to continue to use the joysticks in pairs.

While I believe that joystick adapters are still available commercially, I decided to build my own, which would be serviceable. All of the parts are readily available at stores like Radio Shack. I happened to have everything but the connectors in my "junkbox" of treasures accumulated during my more active ham radio days. The diodes are low current, signal type 1N914, or equivalent. I built this assembly on a perforated breadboard. I mounted the diodes to "fleaclips", and used the wire from the original adapter. A small aluminum box was used to hold the perf-board assembly.

The three cables to the three connectors were brought out through existing holes on the box; two out one end, and one out the other end.

The unit worked immediately upon assembly, and is in use.

Another way of accomplishing the same end is to modify the joysticks themselves. This requires the disassembly of the joysticks to mount the diodes internally, and then the user must cut the original connectors off of the joysticks and run both joystick cables into one DB-9S connector. If you elect to use this approach, be aware that any warranty on the joysticks will be voided. Proceed with caution, and follow the wiring for the DB-9S connector in the above diagram.

I have used both methods successfully. I elected to put the diodes in the joysticks with some inexpensive units, but preferred an adapter for some more expensive joysticks.

Glenn Pearson 8/31/90

BY ROGER PRICE



I KEEP READING ABOUT THOSE DISASTER PRONE GENEVE'S. FOR ME THE GENEVE IS A STEP UP FROM THE TI/4A. LET ME LIST SOME OF THE REASONS WHY I SAY THIS. FIRST THE PRICE HAS DROPPED TO AROUND THE \$400 RANGE. WHAT DO WE GET? THEY NOW GIVE THE OPTIONAL KEYBOARD AS STANDARD. THIS IS A \$225 VALUE WHEN COMPARED WITH ADDING THE RAVE KEYBOARD TO THE TI/4A. FOR MEMORY YOU GET 128K FOR THE TI GPL INTERPETER. COMPARED TO A 32K CARD THIS WOULD BE A \$100 VALUE. DEPENDING UPON WHICH VERSION OF DOS, YOU HAVE FROM 96K TO 128K OF MEMORY TO USE FOR A RAM DISK. THIS WOULD BE A VALUE OF \$145 COMPARED TO 92K RAM DISK FROM BUD MILLS.

SOME PEOPLE MAY ARGUE WITH ME ON THE NEXT POINT. IF YOU HAVE A GOOD TV, YOU CAN USE THE INCLUDED PROGRAM, MYWORD IN THE 80 COLUMN MODE. I HAVE TWO TV'S THAT WILL WORK THIS WAY AND 1 TV THAT WON'T. YOU CAN ALSO USE THE 80 COLUMN VERSION OF FUNNELWEB. KEEP IN MIND I AM TALKING ABOUT USING AN ORDINARY TV AND THE TI MODULATOR. YOU DO NOT HAVE TO BUY A MONITOR FOR THE GENEVE TO USE 80 COL.

O.K. NOW ADD A \$250 VALUE FOR THE 80 COLUMN MODE. THAT IS WHAT AN 80 COLUMN CARD WOULD RUN. NEXT WE HAVE A BUILT IN GRAM CRACKER DEAL WHERE WE CAN PUT ALL OF OUR CARTRIDGE GAMES ON DISK. THESE DISKS CAN BE EASILY COPIED WITH A FILE OR DISK COPIER FOR BACKUPS. I DON'T KNOW WHAT ELSE A GRAM CRACKER DOES BUT WE WILL ADD \$180 FOR THIS VALUE. ONE OF THE BUG-A-BOOS OF THE TI/4A IS THAT THE COMPUTER SOMETIMES GOES ZIP GONE WHEN USED IN THE EXTENDED BASIC MODE. FOR THIS REASON, I LIKE MANY OTHERS GOT USED TO LOADING EVERYTHING POSSIBLE IN THE EDITOR/ASSEMBLER LOADER WHEN POSSIBLE. HAVE NO FEAR, EXTENDED BASIC WILL NOT GO ZIP IN THE GENEVE. I FIND EXTENDED BASIC TO BE VERY RELIABLE TO SUCH A POINT THAT I NEVER THINK ABOUT THIS POINT ANY MORE. WE ALSO HAVE 5 SPEEDS TO SELECT FROM FOR EXTENDED BASIC WITH ONE SPEED THAT I BELIEVE IS SLIGHTLY SLOWER THAN THAT WITH THE TI/4A. THIS MIGHT GIVE YOU AN EDGE ON SOME OF THOSE HARD GAMES. WHEN I CONSIDER THAT I PAID \$299 FOR THE TI/4A AND \$400 TODAY IS PROBABLY LESS NOW THAN \$299 THEN. LETS ADD UP THE VALUE.

RAVE 99 KEYBOARD FOR TI	\$225	
32K EXPANSION (128K)	\$100	A 128K FOUNDATION CARD WAS
92K RAM DISK (96K)	\$145	INTRODUCED AT- \$220
GRAM CRACKER	\$180	
80 COLUMN CARD	\$175?	

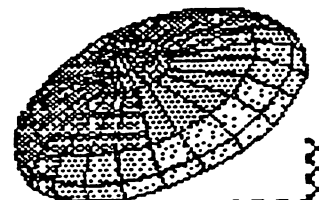
TOTAL TO ADD TO TI/4A \$825 + COST OF TI/99 4A.

I JUST THOUGHT OF ONE MORE ITEM. I BURNED UP ONE TI/994A POWER PACK. WITH THE GENEVE YOU DON'T NEED TO USE THIS ITEM. NOW YOU CAN SAVE IT FOR USE OF YOUR TI/4A.

SO, \$825 WORTH OF FEATURES FOR ONLY \$400

WE ALSO HAVE A NEW COMPUTER THAT CAN BE SERVICED IF NECESSARY AND HAS PROGRAMS THAT WILL NOT FIT IN THE MEMORY OF THE TI/4A.

(PAGE PRO, GRAPHICS TGA)



## DIAGNOSTICS Roundup by: Dan Eicher

Diagnostic softwares has always been a special area of interest to me. What I would like to do in this article is tell you about some of the diagnostic software that is available for Corcomp, Myarc and T.I. Products.

**TI DIAGNOSTICS MODULE:** This module will test all the function of the basic console. It is a grom only cartridge. What is unique about this cartridge is a mysterious test function that say it is for service personal only and is to be used with signature analiysis equipment. If you are handy with a soldering iron this product is still available. You will need to call TI parts and order grom number (), this grom chip can be piggy backed with another grom module and selected with a single pull double throw switch.

**TI DISK BASED DIAGNOSTICS:** This was literally a gift from TI to all 'recognized' user groups. To run this module you will need a known good Mini-Mem, Extended Basic and Console. This programs main use comes in testing all of your add on equipment. ( Speech, Memory Expansion, Disk Controller, RS-232 AND P-CODE card ). In order to test the rs-232 and PIO function you will need to build two loop back plugs ( schematics for doing this is included in the accompanying documentation ). The cost of this package is free from your local users group.

**MAIN FRAME RAM TRAP:** This module was designed by TI for use in house and was never released to the public. This module had several LED's and switchs on it. The module was made to be used with a debugger chart by service technicians, needless to say it was slick and easy to users.

**POWER UP TEST BOARD:** Another of TI's unreleased legends. This board was designed to sit in a modified P-box with a modified console and a special debugger cartridge. . You hooked the console and/or cards to be tested in to this set-up. Upon compleation of the test this modified setup would print on a printer what it found wrong with the equipment under test.

**CORCOMP DIAGNOSTIC MODULE:** This module was written by Galen Reed for Corcomp with this module you can test out system ram, the RS-232 port ( both TI and Corcomp ) and your disk controller/disk ( TI and Corcomp ). This is program is about the same as TI diagnostics except on a cartridge. The major pluses this cartridge has over the TI disk based software is the fact it is in a cartridge. With the TI's disk based diagnostic software you must be able to power up in to extended basic and load a program from disk, if you can do this your system is probably working O.K. anyway. The other major advantage of this cartridge over TI's software is the fact you can test both TI and Corcomp Products.

**ADVANCED DIAGNOSTICS:** This program is by Millers Graphics. Like any product from this company the program and documentation has the stamp of professionalism from top to bottom. The features of this program that are of the greatest interest to the debugger are:

1. The ability to try various head step times, adjusted from software.
2. The ability to step to any track, even on 80 track drives - once advanced diagnostics is loaded it total masks out the on-board DSR of the disk controller.
3. ~~SHOW~~ Motor Speed - This program will show you how fast you drive is turning and will show you the acceptable high and low limits.
4. Memory Test - This will test the VDP, Scratch Pad and CPU memory. It is probably the most comprehensive memory test available.

Larry Connors has a few of these left and you may be able to get it from other sources.

### OTHERS:

**Gramulator Diagnostics:** Mrak Van Cor continueing support for his Gramulator has released a new product that will test the memory in your Gramulator and report all the options that the software finds installed in the Gramulator. Source code is included with this program ( anybody game for re-writting it to work with the Gramkracker? Hats of to Mark for his continued support. Available from Cadd Electronics.

RS-232 TEST: This program written by Ron Hubbles of Florida will do a test on TI RS-232's. What is unique about this program is it doesn't use a loop back plug. Instead Ron has taken advantage of some of the test features built into the 9901. This handy, because the 9901 on RS-232 and in the console are the first chips to suspect if there is trouble.

MYARC: All the programs listed above will NOT run on Myarc equipment. There are no complete packages for testing out Myarc quipment and very few to test individual sub-systems.

BARRY BOONES SPEED TEST: This Program does the same thing for the Myarc controller that the speed check program ( in Advanced Diagnostics ) does for TI and Corcomp controllers. Unfortunately this program will not run with a Geneve.

Ron Walters Mem-Test: Ron original wrote this program to go with his Memex card. Ron was good enough to make it even more useful. This program will check not only Memex memory, but will also check the Geneve standard memory. Unfortunately this program will not check the extended VDP memory available for the 9938 video display chip used in the Geneve. There are no programs that will check this memory.. either for a Geneve or a Dijit or a Mechtronics card using the '38. This program is available on many bulliten boards.

Myarc Mem-test: This program is built into Myarcs 512K memory expansion card. It takes awhile if you have the full 512K. The program will report to you if it found a bad ram chip and if it did it will tell you in what bank.

SCAN-IT: While this is not a diagnostic program 'Per-say' it will quickly find a home in anybodys debugging tool box. What this program does is goes out and test every CRU address to see if a card is installed. If a card is installed it reads the header from the DSR found at that CRU and tries to make a positive id with those stored in its program. Third it will read a couple of bytes from the DSR it finds, write a test pattern and do a read; in this way it finds out if DSR is in ROM or RAM. Last all 3 fields ( CRU address, make of the card and whether the #DSR is ROM or RAM ) is displayed. This program is very handy for checking the actual CRU address your cards are currently setting at ( like if you want to add a ram disk ). Available for a fairware contribution to Stephen J. Tuorto.

Bud Mills Products: Bud provides many fine products for the TI community and for ever product he sends out you are provided with professional, comprehensive diagnostic software. Some of the products Bud offers are the P-Gram, Horizon ram disk and Memex card for the Geneve.  
Sources:

TI Dealer Parts: 800-741-2265 Tex-Comp: 818-366-6631

Bud Mills: 419-385-5946 Myarc: 205-854-5843

Cadd Electronics: 603-895-0119 LL Conner Enterprise: 317-742-8146

Stephen J. Tuorto: 18-Chimney Lane, Bayshore, NY 11706

TI FAIRE WEEKEND  
continued

The Faire will open the doors to the exhibits and seminars on Saturday at 9 AM CHICAGO TIME. There are seminars all day and there will be ALMOST every vender of TI hardware & software you ever heard of & some you haven't. This is a once a year chance to see an mind boggling display of TI "stuff" in one place and rub elbows (or talk to, if you'd rather) with the "movers & shakers" of the TI world. In all my trips to this event there have been only 2 people who seemed a little arrogant or rude. I think that is an amazing fact, and tribute to the closeness of the TI community as a whole.

There will be a dinner on Saturday night from 6 PM to 9:30 PM. Admission is \$15 per person. RSVP

For more information contact Hal Shanafield @ 708-864-8644 between 2 PM and 10 PM, or the CUG BBS 708-862-0182, or the CUG "Hot Line" 708-869-4304.  
DIDN'T HAVE ENOUGH TIME TO BROWSE EVERYTHING AT CHICAGO?

NO PROBLEM ! !

Just a few miles North on I-94 is the MILWAUKEE TI FAIRE. This years extravaganza is being held at:

QUALITY INN  
5311 S. Howell Ave  
Milwaukee, WI.

This is across from Mitchell Field Airport. The Faire is SUNDAY Nov 4 and will be from 9 AM to 5 PM.

AN INTRODUCTION TO SUPER BUGGER.  
BY Dan H. Eicher

The thing that turns most people on to assembly is the ability to do things that are not easy to accomplish in any other language. I am going to give you an example of some things that anybody with SUPERBUG II can do without much effort!

SUPERBUG II is a program designed to help assembly language programmers debug their own programs but it can also be an easy and fun way to explore your system. SUPERBUG II is major upgrade over the Debugger TI sent out to all the users groups several years ago.

Before under taking this article you must realize that the way Super Bugger interacts with you is kind of unique, just remember:

When entering an address after a command, do NOT enter a space just type the command ex. m and then the address.

1. Ever wanted to make a light in your p-box go on?

To do this in Super Bugger II is easy! All you have to do is write a 1 to its CRU address.

The command to inspect/change CRU bits is interestingly enough C. Lets turn on the light to our disk controller.

Type,  
C 1100,1 <Return>

Your display should say  
1100=0000, press 1 then <Return>

Your disk controller light should now be on.  
To make the light go off, repeat the process, except in the last step type a 0, then <Return>

This same technique can be used to light up cards that do not have DSR's, a good example of this is the MBP clock card, it has an LED that lights up when certain memory address are accessed. By using the Super Bugger command M (for memory inspect/change) you can make it light up.

Who said assembler is hard,

The next thing we are going to do is search for the message - 'Review Module Library', you may have received this message at one time or another after pulling out or pushing in a cartridge. TI had planned on producing a box that you could put 8 cartridges in, you would have ( after selecting review library ) saw a screen like this:

1. Extended Basic
2. TI Invaders
3. TE II
- .. ect,

You also would have been able to do things like OPEN #1:"SPEECH" from inside extended basic if you had the TE-II module also plugged into the box. The system software to do this is already built into your console.

To do this the first thing SUPERBUG needs is the string to search for, you give it this information by typing,



I  
Follow the prompts and enter:  
REVIEW <Return>

Then type CTRL-F <at the same time>, then enter g0000,ffff <Return>  
This tells the computer to search all the groms for the string  
you entered earlier.

On my computer, it found the string at G12AA (the G proceeding  
the address means that it is Grom/Gram memory).

To display the string in context you must use the handy m command.  
Type M G12AA,12FF <Return> and you should see the Review Module  
Library string that is built into our operating system.

For the next trick you will need a Geneve or a Gramulator/GramKracker

Have you ever wondered what would happen if you pulled out the  
basic groms that come in your console? Well TI must have wondered  
the same thing because in the operating system they wrote a flag  
that would handle just such an emergency. Now lets make it happen!

Every menu item that appears on your screen must have a valid grom  
header, that means the value AA must appear in the right place  
some where in memory, If you have one cartridge loaded that place  
should be GE000, all you need to do is change the AA at this address  
to a zero and the cartridge disappears.

To do this type M GE000 <RETURN>, TYPE 0000 <RETURN>

If AA does NOT appear at this address you have a slightly different  
version of the operating system and will need to repeat the find  
string procedure from above, but instead of entering REVIEW, you  
would enter the name of the Cartridge you have loaded.

After you find out what address the cartridge description line starts,  
usually about 15 bytes in front of that you should find AA, this  
of course would need to be zeroed.

In addition if you have loaded the version of Super Bugger that loads  
into the Super Cartridge you will need to type  
M 6000 <Return> 0000 <Return>, This goes to CPU memory address  
hex 6000 and wipes out the grom header here.

When you reset the computer you should get the message:

'Insert Cartridge'

Alot of you have probably heard that the only thing worst than assembler  
is machine code. Well today you are going to write your first machine  
code program! After all this work with DSR and rewriting GRAM's alot  
of the TI's internal grom address's and Status Register are messed up  
if you gave the SUPERBUG command to exit 'Q' things would just lock up  
on you. So that we may exit gracefully we are going to plug in some  
machine code. To do a reset the assembler code is:

BLWP @0000

or in machine code:

0420 > Tells the computer to perform a BLWP

0000 > Tells the computer the address to BLWP to.

The first thing we would do is use SUPERBUG's memory inspect/change  
option. so type:

M A000 <Return>

This tells the SUPERBUG two things, 1. We are going to do a memory inspect change and 2. the address we want to change in this case a address in hexadecimal A000 ( in assembler, most of the time, if a value is represented in hex it will be preceded by a > sign ).

You should type 0420 ( this will fill all the bytes at one word address ) hit the Space Bar, this will advance you to the next address of memory.

Then type 0000 <Return>, now all that remains is to execute this little Gem and the following command does just that.

E A000 <Return>

Here is something extra for all you 9640 owners, ever wonder how MyARC made the GPL interpreter so compatible? Well thats easy, they used the same code thats in your console! Want your old TI color bar back ( temporarily )? Well lets do it:

Type:

M G01AF <Return> <Now go down the line changing values, should see something like this>

\* Remember to continue changing values you MUST use the space bar. Then enter the following values.

G01AF=02

01B0=FF

01B1=03

01B2=41

01B3=AF

01B4=06 <Return>

Wonder way when you was modifying CPU memory you had to enter 4 digits and now you only need to enter two? The reason is Grom is organized in a byte fashion and CPU memory is organized in a word fashion which is TWO bytes!

If you haven't turned off your computer you should be able to execute our little hard reset program again. Know you should get your TI color bars again, complete with TI's copyright notice!

SUPERBUG can be purchased from:

Edgar Dohmann  
CO RD 149  
RT. 5, Box 84  
Alvin, Texas 77511  
Price was 15 dollars.

The program alone can be copied from the Groups library.

WIRE, by Dan Eicher

CONTINUED FROM PAGE 3

The matching of a wire and its jobs is called having good impedance, I can tell you from a personal experience how important having proper impedance is, I have hooked to my clone a composite monitor, when I was setting up the system I didn't have a cable handy, so I took one off my stereo, it was a standard RCA male to RCA male, it was thin and cheap, but it worked. I needed to replace this cable so I could get my music back, so I went down to my local Radio Shack. Radio Shack had a new cable that is a 75 ohm coax cable with gold plated RCA connectors at either end. I replaced the cheap thin cable that I was using on my clone with this new cable and the picture quality increased 75 percent.

I am sure that there are better ways to explain the concepts above, but I am a programmer by training and profession and a hardware hacker as a hobby.

**A little BIT of math**  
by Dan Eicher

To really understand how computers work the first key element that must be understood is boolean algebra. An easier way of thinking of this is as TRUTH tables.

And Table	Or Table	Exclusive or(XOR)	Not Or(NOR)	Not And(NAND)
1 and 1 = 1	1 or 1 = 1	0 XOR 0 = 0	0 NOR 0 = 1	0 NAND 0 = 1
1 and 0 = 0	0 or 1 = 1	1 XOR 0 = 1	1 NOR 0 = 0	1 NAND 0 = 1
0 and 1 = 0	1 or 0 = 1	0 XOR 1 = 1	0 NOR 1 = 0	0 NAND 1 = 1
0 and 0 = 0	0 or 0 = 0	1 XOR 1 = 0	1 NOR 1 = 0	1 NAND 1 = 0

**Examples**

00111010	00111010	00111010	00111010	00111010
01011100	01011100	01011100	01011100	01011100
-----	-----	-----	-----	-----
00011000	01111110	01100110	10000000	11100111

For the sake of terminology lets say a 1 is true or positive and 0 is negative or false. This is how the chips in our computers determine what is going on ... a negative voltage level means a negative bit and a positive voltage level means a positive bit.

Remember 8 bits make a byte, 2 bytes make a word. The ability of a single assembly instruction to operate on 16 bits (a word) at a time is what makes our machine a true 16 bit computer. This separates it from earlier technology like the 6502 or the Z-80, these cpu's move data around the computer 8 bits (a byte) at a time.

The last two logical operators Nor and Nand are used far more commonly in electrical engineering than in programming.

At this point you are probable wondering "Ya.. So whats the big deal, how is this going to help me write better programs?"

Well one of the major uses for these types of instructions are in setting "flags". A flag is an indicator to your program of a condition that can be true or false. A possible uses would be to save the configuration of the machine your program is running on in a single byte instead of wasting memory.

In one byte you could hold all the following information:

- Bit#      What it could mean.
- 1 If = 1 then color monitor, else adjust colors for black and white.
  - 2 If = 1 then disk system, else assume cassette and do not try to save high score.
  - 3 If = 1 then system has a printer, give option to output to printer else prepare all output for screen only.

Here is were you would need to use your logical operators to get at these bits, TI's extended basic is rich in these types of commands, for a detailed look at their use buy the program Night Mission by MG.

I think you get the idea of how the use of flags can save an enormous amount of memory when used properly. This is especially important in a machine like ours. In a day when most computers are counting memory by the Megabyte (thats thousands of Kilobytes which is, inturn thousands of bytes).

1 Meg = 1000K = 10,000 Bytes

One last bit of arcane knowledge that you should at least have a passing knowledge of is how to get the "Twos Compliment" of a number.

Basically the twos compliment of a number is how a computer distinguishes

between a positive and a negative number, the computer must do this internally before subtracting two numbers, actually computers can't even subtract, they have to add a positive and a negative number to get the result!

Here is how it is done.

Lets say you have the number 53 thats 00110101 in binary,  
and you want to subtract 26 thats 00011010 in binary.

First the computer must compliment 26 and heres how its done,  
first you take the number=====> 00011010 (26)  
change all 0 to 1 and all 1 to 0=====> 11100101  
add 1 for good measure=====> 1  
The complimented number is =====> 11100110

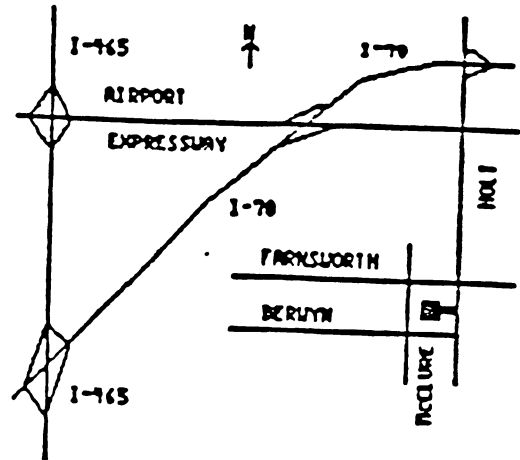
Take 53=====> 00110101  
ADD 26's compliment=====> 11100110  
The answer=====> 100011011

Since this is BYTE arithmetic the 9th digit goes in the bit buck leaving only 00011011 thats 27 decimal which is the result if you subtract 26 from 53.

#### DISCLAIMER

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THE OPPINIONS EXPRESSED HEREIN ARE THE AUTHORS AND DO NOT NECESSARILY REFLECT THE THE VIEWS OF THE PUBLISHER.



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courtesy of Gary McQuade

# CREATING A NEW LINE FONT FOR PAGE PRO BY ROGER PRICE

WHAT YOU CAN DO WITH THESE INSTRUCTIONS IS TO CREATE THE LINE FONT AS SHOWN IN FIG. 1. TAKE THE PROGRAM DISK AND COPY OFF THE FILE LNCHARS.LN ONTO A WORK DISK. CHANGE THE NAME TO BORDER1.LN. NOW LOAD A SECTOR EDITOR PROGRAM AND USE IT TO LOCATE YOUR WORK FILE SECTORS. WITH ADVANCED DIAGNOSTICS USE THE COMMAND FF BORDER1.LN. FF MEANS TO FIND FILE AND THE DISK SHOULD BE IN DRIVE 1 ONLY. IF YOU USED A BLANK DISK FORMATTED IT SS/SD, IT SHOWS THE FILE TO BE ON SECTOR 34 AND 35. IF YOU USE FUNNELWEB, SELECT 85 DISK PATCH. THEN #2 SEARCH DSK1 AND FILE IS BORDER1.LN SHOWS SECTOR 22 23. I HAVE NOT BEEN ABLE TO FIGURE OUT WHY THE TWO PROGRAMS RETURN DIFFERENT SECTOR NUMBERS BUT IF YOU STICK WITH ONE PROGRAM IT DOES NOT MATTER. JUST USE THE NUMBERS THAT IT GIVES YOU AND WRITE THE TWO NUMBERS DOWN. IF YOU USED A BLANK DISK AND ONLY HAVE THE BORDER1.LN ON IT AS OUTLINED, YOU CAN CHECK THE SECTOR IN FRONT OF 22 BY PRESSING THE FCTN 6 KEY TO CHECK SECTOR 21. IT SHOULD ALL BE E5 AND NOW TOGGLE TO SECTOR 24 BY PRESSING FCTN 4 KEY TO ADVANCE ONE SECTOR AT A TIME TO SEC. 24. IT SHOULD ALSO BE ALL E5 WHICH SHOWS IT TO ALSO BE BLANK. NOW YOU CAN SEE THAT THE BORDER1.LN FILE ONLY OCCUPIES 2 SECTORS.

EITHER PROGRAM SHOULD SHOW THE SAME ON THE TWO ORIGINAL SECTORS. BECAUSE OF COPYRIGHT LAWS, I CAN NOT SHOW OR SAY WHAT IS IN THE SECTORS. NO MATTER AS WE ARE GOING TO CHANGE THEM ANYWAY. I CAN SHOW YOU MY SECTORS FIG. 2 AND FIG. 3. NOW BE SURE YOUR FIRST SECTOR IS ON THE SCREEN AND TYPE THE NEW SECTOR CODE IN EXACTLY LIKE FIG. 2. IF YOU MAKE A MISTAKE IT WILL LIKELY SHOW UP AS A SLIGHT GRAPHIC ERROR AND SHOULD STILL LOAD UNLESS THE CODE IS NOT 0 TO 9 OR A TO F. ONCE YOU GET THE SECTOR TYPED IN, PRESS CTRL W KEY TO REWRITE THE SECTOR TO THE DISK. WITH ADVANCED DIAGNOSTICS, PRESS FCTN 9 KEY TO GO BACK TO THE COMMAND SCREEN. BEING SURE THAT THE SECTOR NUMBER YOU ARE CHANGING IS SHOWN CORRECT, CHANGE ES 34 TO WR 34 (MEANS WRITE BUFFER TO SECTOR 34) THEN PRESS ENTER AND THE NEW SECTOR YOU TYPED IN WILL BE WRITTEN OVER THE OLD SECTOR ON THE DISK.

YOU HAVE HALF OF THE BORDER1.LN CHANGED ON THE DISK. NOW GO BACK TO ES 35 WITH ADVANCED DIAGS OR WITH DISK PATCH SELECT: #1 DISK SECTOR EDITOR. DRIVE AND SECTOR NO. 23. TYPE IN THE DATA AS SHOWN IN FIG. 3. YOU WILL NOTICE THAT MOST OF THE NUMBERS ARE IN GROUPS SEPARATED WITH GROUPS OF 0'S. THE CHARACTER CODES ARE IN GROUPS OF 24 NUMBERS AND LETTERS. AT THE START OR END OF EVERY CHARACTER IS A BUNCH OF 0'S. THIS IS BECAUSE THE RECTANGLES ARE 12 DOTS HIGH AND 8 DOTS WIDE. THE BORDER DESIGNS USED ARE MOSTLY 8 X 8 LEAVING A SMALL SECTION OF UNUSED SPACE WHICH SHOWS UP IN THE CODE AS A GROUP OF 0'S. THE VERY LAST GROUP IN THE SECOND SECTOR IS NOT CHANGED AS THIS IS THE CODE FOR THE P THAT SHOWS THE SPACES RESERVED FOR THE PICTURE. A LINE IS DRAWN THRU THESE SO YOU CAN EASILY SEE WHERE THEY ARE LOCATED. YOU CAN PUT YOUR OWN DESIGN IN PLACE OF THE P BY CHANGING THIS CODE IF YOU KNOW WHAT YOU ARE DOING. IF YOU NOW HAVE ALL OF THE FIG. 3 CODE TYPED IN DOWN TO LINE 8 AND THE FOURTH BYTE (OR COLUMN FROM LEFT). THEN SAVE THIS SECTOR TO DISK AS NOTED BEFORE EXCEPT WE ARE USING THE NUMBER OF THE 2ND SECTOR OR NO. 23 WITH ADVANCED DIAGS OR 35 WITH DISK PATCH OR THE SECOND NUMBER YOU WROTE DOWN WHEN YOU FOUND THE LOCATION OF THE BORDER1.LN SECTORS. IF YOU HAVE NOW CHANGED AND SAVED THE TWO SECTORS THAT MAKE UP THE BORDER1.LN FONT, THE ONLY THING LEFT IS TO CHECK OUR WORK. LOAD YOUR PAGE PRO PROGRAM, HIT CTRL A TO SELECT LOAD ALTERNATE CHAR SETS. PRESS #1 TO SELECT LINE FONT. USE DSK1.BORDER1.LN HIT ENTER. TWO SECTORS LOADS VERY FAST. HOPE YOU DO NOT GET AN ERROR CODE. PRESS CTRL 8 TO SEE WHAT YOU HAVE. YOU SHOULD NOW HAVE SEVERAL NEW BORDERS FOR YOUR PAGE PRO PROGRAM. THESE NEW BORDERS MAY TAKE A LITTLE EXPERIMENTING TO USE SINCE THEY ARE BASED ON AN 8 X 8 DESIGN BUT THE RECTANGLE THEY FIT INTO IS 12 HIGH BY 8 WIDE. SOME OF THE PATTERNS FOR THE SIDES HAVE THE DESIGN AND THEN A RESTART OF THE DESIGN SINCE THEY HAVE TO MATCH UP ON THE SIDES. YOU MUST USE THE RIGHT ONES TO END UP WITH A CONTINUOUS PATTERN. THE CORNERS ARE KEYS A,C,D,F AND SMALL c,e,f,h. TWO OF THE BORDERS DO NOT USE SPECIAL CODES FOR THE CORNERS.

I MIGHT MENTION HERE THAT THE CODES USED ARE THE SAME AS THAT SHOWN IN THE EXTENDED BASIC MANUAL ON CHAPTER 4 PAGE 57 AND ALSO PAGE 198 USING CODES 0 TO 9 AND A TO F. THE SMALL FONT IS SET UP JUST LIKE THE LINE FONT EXCEPT MUCH LONGER. IT STARTS WITH THE ASCII CODE 32 SPACE AND CONTINUES WITH 33 AND SO ON WITH NO SPECIAL DESIGNATIONS AS WITH TI ARTIST D/V 80 FILES. THE LARGER FONT IS ALSO LIKE THE OTHER TWO EXCEPT IT USES 4 OF THE RECTANGLES PUT TOGETHER WITH TWO ON TOP AND TWO ON BOTTOM. THE ORDER THAT THE CODE IS ENTERED IS: LEFT TOP, RIGHT TOP, LEFT BOTTOM, RIGHT BOTTOM. THE CODES ARE PUT IN THE SAME ORDER AS THE OTHER CHARACTER CODES STARTING AT TOP TO BOTTOM ALTERNATING WITH LEFT THEN RIGHT CODE. IF ALL OF THE ABOVE SEEMS LIKE TOO MUCH WORK, SEND ME A DISK AND \$2 OR NO DISK AND \$3 AND I WILL SEND YOU THE BORDERS1.LN FONT. TO: ROGER PRICE, 1015 RIVER DRIVE, MARION, INDIANA, 46952. SINCE RECEIVING MY NEW GENEVE, I RECALL SAYING THAT PICASSO WOULD NOT WORK ON IT. THIS WAS INCORRECT. PICASSO WILL RUN ON THE GENEVE. THE ONLY PROGRAM I HAVE FOUND THAT WILL NOT RUN IS ADVANCED DIAGNOSTICS. ALSO, IT MAY NOT BE WELL KNOWN THAT YOU CAN GET BY WITHOUT BUYING A HIGH PRICED MONITOR AND STILL USE 80 COLUMNS. I AM PRESENTLY USING A 19 INCH T.V. WITH THE MODULATOR ADAPTOR AND IF YOU INDENT 5 AND USE 75 COLUMNS YOU GET FAIRLY GOOD RESULTS. THERE IS A METHOD TO ADJUST THE COLUMNS TO THE RIGHT OR LEFT WITH MYWORD. SO NOT HAVING THE FUNDS FOR A MONITOR IS NO EXCUSE NOT TO GET A GENEVE. ALSO, YOU CAN EASILY SWITCH FROM 40 TO 80 COLUMNS BY TYPING IN A COMMAND ON THE SCREEN.

WAITING FOR COSTS TO GO DOWN BEFORE GETTING A DISK DRIVE? WAIT NO LONGER! I HAVE TWO GOOD DISK DRIVES FOR \$25 APEICE. TANDON FULL HEIGHT SS/DD AND A TEAC 1/2 HEIGHT SS/DD. WILL SHIP U.P.S. ADD \$2. ALSO A NEW POWER TRANSFORMER I HAVE FOR A BACKUP I DON'T NEED SINCE GETTING THE GENEVE. \$15 TRYING TO FIND A SPECIAL CARTRIDGE OR A CERTAIN PROGRAM ADVERTISED YEARS AGO BUT NO LONGER AVAILABLE? PUT A NOTE IN THE NEWSLETTER. SOMEONE IN THE CLUB MAY HAVE THAT CARTRIDGE FOR SALE. SAME THING FOR HARDWARE, LETS MATCH UP THOSE WANTING TO SELL WITH THOSE WANTING TO BUY.



  
 ABCDEFGHIJKLMNOPabcdefghijklmnopqrstuvwxyz

Fig. 1

Side : 1      Sector : 34  
Byte : 0      Display: Hex

```

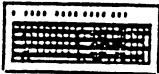
003F7F606D6E646B6866666800FF
FF00976666000000000000FCFE06
B6762616166666166B66666B6864
6E6D607F3F000000000000666697
00FFFF0016666616162676B606FE
FC00686666686866666868666668
1666661616666616166666161824
E7C3C3E724181824E7C300000000
0000000000000000C3E724181824
E7C3C3E724180000000000000000
00000000C3E724181824E7C30000
000000000000C3E724181824E7C3
000000000000000000000000A55
AA55AA55AA55AA55AA5500000000
00000000000000000000102050A15
2A55AA55AA55AA55AA55AA55AA55
000000008040A050A854AA55AA55
AA55AA55AA55AA552A150A050201
00000000
  
```

Fig. 2

# BORDER1-LN

Part 2

AFTER FINISHING THE OTHER PAGE I DECIDE TO ADD A COUPLE MORE THINGS. YOU COULD USE THE LINE FONTS FOR A THIRD CHARACTER SET BUT THEY WOULD NOT BE SAVED IN A TEXT FILE. REMEMBER DO NOT CHANGE THE LAST CHARACTER THAT MAKES UP THE "P" AND SHOWS WHERE YOUR PICTURE WILL BE LOADED. I WILL DRAW A LINE THRU IT SO YOU CAN SEE FOR SURE WHERE IT IS AT.



PAGE PRO

FIG. 3

Drive : 1 Track : 3  
Side : 1 Sector : 35  
Byte : 0 Display: Hex

AA55AA55AA55AA55AA55AA55AA54  
AB50A040B0000000000000000000  
0000000018183CFFFF3C18181818  
3CFFFF3C181818183CFFFF3C1818  
18183CFFFF3C1818000000000000  
000018183CFFFF3C1818FF00FF00  
FF00FF00FF00FF001C22404040  
221C000000000000000000000000  
00000000FFB7B7B7AFB7FFE3EBE3  
FFFF000000000000000000000000  
0000000000000000000000000000  
0000000000000000000000000000  
0000000000000000000000000000  
0000000000000000000000000000  
0000000000000000000000000000  
0000000000000000000000000000  
0000000000000000000000000000  
0000000000000000000000000000  
0000000000000000000000000000  
00000000 Fig. 3



## BBS Hard Drive

We need a Myarc HFDC card so we can permanently install a hard drive on our BBS system. Gary McQuade has started taking donations. We have \$320 so far. This is enough for the controller card, however there is still the cost of a hard drive. Donations were collected from:

Bryant Pedigo  
Delbert Wright  
Walter Farmer  
Bob Stalhut  
John Powell  
Gary McQuade  
Jim Cochran  
Rick Kuilema  
Jerry Moore  
Bill Lucid

We are hoping that some of our other members who have not donated yet will see value in doing so. Any money collected over the cost of the controller card will go towards a hard drive.

\*\*\*\*\*  
\*  
\* SOUTH SIDERS MEETING \*  
\* SECOND-----THURSDAY \*  
\* AFTER THE MEETING \*  
\* MONTHLY \*  
\* CALL 888-5654 \*  
\* FOR LOCATION \*  
\*  
\*\*\*\*\*

MONTHLY MEETING LOCATION  
LITTLE HOUSE NEXT TO THE  
ST. ANN'S SCHOOL  
2839 S. MCCLURE  
INDIANAPOLIS, IN  
MEETINGS OPEN AT  
2:00 PM  
MARCH 18 1989

BBS  
Hoosier Users Group  
Baud rate 300, 1200 & 2400  
On Line 24 Hours Daily  
782-994A

Now with a Hard Drive  
on an experimental basis  
courtesy of Gary McQuade

## TI-FD CATALOG

Tigercub Software  
156 Collingwood Ave.  
Columbus, OH 43213

During the past 7 years, a great many programmers have contributed a wealth of material to the public domain. Unfortunately, most of these programs have not been readily available to most of the TI users. Only a few of the user groups have really large public domain libraries, and even these are usually cataloged only by alphabetized abbreviated filenames. The more isolated users have even less access.

I have therefore decided to make the contents of my public domain library available to the TI world, at a copying fee so low that I hope no one will think I am unfairly profiting from the work of others (and I think you will note, in the TI-FD catalog, that I have probably contributed more to the public domain than anyone else!), but if any author objects to my distributing his work I will certainly stop. My catalog contains the author's name for each program, when available, both in order to give due credit and to aid in distinguishing between programs of the same name. Regrettably, many of the IUG programs distributed by Amnion have had the author's name deleted.

Fairware authors may reasonably object to anyone charging to distribute their work. I will therefore not offer any fairware unless I receive the author's express permission. I will not offer anything which bears a copyright notice unless I have definite information that the copyright has been abandoned or was not intended to preclude distribution. It is entirely possible that I may have obtained programs from which a copyright or fairware notice had been deleted, and I would appreciate being informed of any such in my catalog.

I have gone through my library of over 3600 public domain programs and selected enough of the better ones to fill over 200 disks, arranged by category. Each SS/SD disk contains as many programs as I could fit onto it, if

I had enough programs of that category - the number of filled sectors on each disk is indicated in parentheses. All Basic-only programs have been converted to run in Extended Basic (except those which use the TEII speech), and an XBasic loader has been provided for assembly programs whenever possible. Each disk has been provided with an autoloader by full program name, not filename.

I have added instructions to a good many of these programs, and corrected any bugs that I noticed, but I cannot guarantee them in any way, and cannot offer to provide instructions, correct bugs or make modifications. I will of course replace any bad loads, and would appreciate being informed of any program which has serious flaws.

This public domain is offered only as a copying service, not as a sale of computer software, and I take no responsibility other than providing a copy equal to the original.

If I receive a worthwhile response to this offer, I will be adding more public domain and will be asking fairware authors if they want me to distribute their products. I am always willing to make exchanges for worthwhile public domain which is not in my catalog, and am particularly interested in getting more educational software above the primary level.

The 200 TI-FD disks will be available for \$1.50 each POSTPAID in the U.S. and Canada (\$2.00 overseas by airmail). Send SASE for list, or \$1.00 (refundable on first order) for 9-page catalog listing all titles and authors. Be sure to specify TI-FD catalog.

NOTE: Tigercub Software also publishes a catalog of over 120 original copyright entertainment, educational and utility programs at \$1 each, plus full disk collections at \$5, Nuts & Bolts of programmer's utilities, etc., etc. This catalog is \$1, deductible from 1st order (specify Tigercub catalog).

### OFFICERS

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TI-PD public domain software for the TI-99/4A computer, \$1.50 per disk postpaid (minimum 8 disks please); number of sectors filled is indicated in parentheses). For a 9-page catalog listing all titles and authors, send \$1 which is deductible from first order. (specify TI-PD catalog) Offered as a copying service only, without warranty other than that copies are equal to the original. Make checks payable to Tigercub Software (no credit card orders). Send to Tigercub Software, 156 Collingwood Ave., Columbus OH 43213.

- 600. Sam Moore Jr. Music #1 (341)
- 601. Sam Moore Jr. Music #2 (343)
- 602. Sam Moore Jr. Music #3 (348)
- 603. Sam Moore Jr. Music #4 (337)
- 604. Bill Knecht Hymns (334)
- 605. Christmas Music (318)
- 606. Holiday Music (339)
- 607. Great Songs by Bill Knecht (351)
- 608. Music by Bill Knecht (295)
- 609. March Music (329)
- 610. Tigercub Country Music (356)
- 611. Christmas Sing-Along (351)
- 612. J. Stephen Foster Music #1 (332)
- 613. J. Stephen Foster Music #2 (317)
- 614. Bach Music Programs (338)
- 615. Sing-Along Music (351)
- 616. Some of the Best Music (343)
- 617. Classical Music (340)
- 618. Assorted Music (346)
- 619. Chopin's Polonaise (280)
- 620. Assorted Music #2 (351)
- 621. Hamilton US Music Package #1 (346)
- 622. Assorted Music #2 (349)
- 623. A Diskfull of J.S. Bach (345)
- 624. Assorted Music #4 (358)
- 625. Assorted Music #5 (347)
- 626. J.S. Bach Music (340)
- 627. Assorted Music #6 (354)
- 628. Some of the Very Best (349)
- 629. Ollie Hebert's Music (340)
- 630. Gregory Rashall Music Master (287)
- 631. Assorted Music #7 (352)
- 632. Sonata for Pianoforte (222)
- 633. Sonata for Pianoforte DS/SD
- 634. Strange Music (337)
- 635. Chuck Berry Tunes (218)
- 636. Christmas Songs w/Graphics (310)
- 637. Assorted Music #9 (337)
- 638. Classical Music #2 (338)
- 639. Assorted Music #10 (347)
- 640. Marches and College Songs (336)
- 641. Another Sing-Along (345)
- 642. Sing-Along Music #2 (236)
- 643. Christmas Music #2 (351)
- 644. Christmas Sing-Along #2 (340)
- 645. Classical Music #3 (352)
- 646. Assorted Music #11 (350)
- 647. Music Doodlers and Tinytunes (302)
- 648. Rhapsodie in Blue (287)
- 649. Assorted Music #8 (354)
- 650. Christmas Music w/Graphics 2 (357)
- 651. Sorgan II (145)
- 652. Christmas Music w/Graphics 3 (352)
- 653. Pop Demo VI.1 (225)
- 654. Christmas Music w/Graphics 4 (255)
- 655. Assorted Music #12 (349)
- 701. Musical Education (350)
- 702. Musical Education #2 (318)

- 703. Musical Education #3 (188)
- 710. American Flags (360)
- 711. Flags of the World (345)
- 712. Geography - U.S. States (341)
- 713. Geography - U.S. States #2 (212)
- 714. World Geography (179)
- 730. American History (48)
- 750. Alphabet w/Speech (343)
- 751. Children's Programs w/speech (357)
- 752. Alphabet for Preschool (329)
- 753. Children's Prog. w/Speech #2 (335)
- 755. Shapes, Colors, Directions (173)
- 760. Spelling (324)
- 770. Vocabulary and Reading (293)
- 780. Preschool Math (341)
- 790. Elementary Addition, Subtract (257)
- 791. Addition & Subtraction (337)
- 796. Multiplication, Division (348)
- 797. Multiplication, etc. (224)
- 800. Higher Math (355)
- 801. Higher Math #2 (228)
- 810. Typing Practice (223)
- 815. Morse Code Teacher (155)
- 820. Health (354)
- 821. Health #2 (145)
- 830. Physics (111)
- 840. Nature (277)
- 850. Chemistry (277)
- 860. Astronomy (342)
- 861. Astronomy #2 (304)
- 870. Religion (346)
- 871. Religion #2 (42)
- 890. Teacher's Helpers (203)
- 900. Home Utilities (351)
- 901. Home Utilities #2 (342)
- 902. Home Utilities #3 (350)
- 907. Screen Drawing, Doodling (160)
- 909. High-Resolution Drawing (287)
- 910. Charts & Graphs (178)
- 912. Calculators & Converters (345)
- 913. Calculators & Convert. #2 (147)
- 915. Financial Math (339)
- 916. Financial Programs (356)
- 918. Checkbook Programs (203)
- 920. Business Programs (146)
- 950. Genealogy
- 970. Astrology, Numerology etc. (171)
- 980. Radio Utilities (220)
- 990. Sports Programs (329)
- 1100. Character & Sprite Editors (254)
- 1101. Programmer's Utilities (346)
- 1102. Sorts, Scrambles, Searches (228)
- 1105. Auto-loaders (217)
- 1106. Disk Catalogers (268)
- 1107. Character Sets etc. (353)
- 1110. Assembly Utilities (357)
- 1111. Assembly Utilities, Routines (328)
- 1112. New Horizon Assembly Util. (269)
- 1119. Hardware Utilities (169)
- 1120. Sound Effects (197)
- 1130. Disk Labels & Jackets (284)
- 1131. Gemini Printer Utilities (224)
- 1132. Word Processing Utilities (182)
- 1133. Banners, Graphs, etc. (203)
- 1135. Speech Utilities & Demos (355)
- 1140. Music Composers (288)
- 1141. Assembly Music Compiler (265)
- 1145. Telecommunications Aids (342)
- 1150. Programming Tutorials (348)
- 1160. Assembly Tutorials #1 (231)
- 1161. Assembly Tutorials #2 (289)
- 1162. Assembly Tutorials #3 (357)
- 1163. Assembly Tutorials #4 (358)

- 1164. Assembly Tutorials #5 (340)
- 1300. Mathematical Games (133)
- 1301. Brain Games #1 (344)
- 1302. Brain Games #2 (345)
- 1303. Brain Games #3 (352)
- 1304. Brain Games #4 (352)
- 1305. Two-Player Brain Games (335)
- 1306. Brain Games #5 (345)
- 1307. Master Mind (322)
- 1310. Memory Games (235)
- 1315. Sargon Chess (155)
- 1320. Mazes #1 (342)
- 1321. Maze Games #2 (346)
- 1322. Maze Games #3 (338)
- 1330. Hangman Games (335)
- 1331. Wheel of Fortune #1 (249)
- 1332. Wheel of Fortune #2 (248)
- 1333. Word Games (310)
- 1340. Games by Roland Trueman (333)
- 1350. Card Games #1 (352)
- 1351. Card Games #2 (348)
- 1352. Card Games #3 (94)
- 1356. Dice Games (354)
- 1360. Board Games (321)
- 1361. Bingo (73)
- 1362. Checkers (238)
- 1363. Board Games #2 (287)
- 1367. Gambling Games (237)
- 1381. Bowling (289)
- 1382. Golf (138)
- 1383. Billiards, Boxing, etc. (250)
- 1400. Adventure Disk #1 (360)
- 1401. Adventure Disk #2 (306)
- 1402. Adventure Disk #3 (329)
- 1403. Adventure Disk #4 (324)
- 1415. Hammurabi Games (268)
- 1416. Text Games #1 (313)
- 1417. Text Adventures (340)
- 1425. Graphics/Text Adventures (354)
- 1426. Graphics/Text Adv. #2 (322)
- 1427. Graphics/Text Adv. #3 (325)
- 1430. Road Race Games (356)
- 1431. Keyboard Maneuvering (349)
- 1432. Road Crossing Games (344)
- 1433. Road Crossing Games #2 (175)
- 1434. Keyboard Games (347)
- 1435. Keyboard Maneuvering #2 (354)
- 1436. Slot Machines (343)
- 1437. Keyboard Games #2 (353)
- 1438. Keyboard Games #3 (343)
- 1440. QBert Games (288)
- 1445. King Kong Type Games (351)
- 1455. Assembly Games (231)
- 1456. Assembly Games #2 (346)
- 1460. Children's Programs (345)
- 1461. Fun Games for Kids (353)
- 1462. Easy Games for Kids (346)
- 1470. Great Games (342)
- 1471. Assorted Games #1 (348)
- 1472. Assorted Games #2 (343)
- 1473. Texas Games Medley w/speech (346)
- 1474. Sea Battle Games (329)
- 1475. Joystick Games (342)
- 1476. Joystick Games #2 (355)
- 1477. Joystick Games #3 (346)
- 1478. Joystick Games #4 (338)
- 1479. Two-Player Joystick Games (353)
- 1480. Two-Player Keyboard Games (353)
- 1481. Joystick Games #5 (345)
- 1500. Kaleidoscopes & Displays (262)
- 1501. Sprite Displays (200)
- 1505. Poetry, Prose & Nonsense (128)



MACFLIX  
Deanna Sheridan - Northcoast 99ers, Cleveland, Ohio

We though we had "arrived" when Travis Watford developed MAXRLE and we could view and download the many digitized RLE pictures available on CompuServe, GENie, etc. The new MACFLIX written by J. Peter Hoddie and distributed by Genial Computerware gives us another powerful graphics viewing program, this time for MacPaint pictures.

These are usually full-page pictures and even on my MSDOS machine with 80-columns, I am unable to see the entire picture at one time. I have downloaded lots of these pictures, but was unable to find any real use for them, I have been unable to find, at least on public bulletin boards, any utilities to transfer them into other graphics programs where they could be used for clip art.

MACFLIX for the TI lets you view them, print them and clip them. Just as on my Leading Edge, it is impossible to see the entire screen at one time, and you must scroll across and up and down. The best way to get an idea of what it looks like is to make a printout. The program supports Epsoms compatibles and Prowriter printers. You can print in your choice of 3 densities, but are warned that option 1 will cut off part of the picture, and option 3 will make it look elongated. So, with option 2, print out and see what you have.

You can save the portion of screen in view to disk in TI-Artist format. I found a disk of Christmas characters which I did just that and retrieved 8 clips for a Christmas disk. There seems to be a wide variety of pictures available and we will no doubt soon have a special section in our library just for MacPaint pictures (who would have ever thought?). Most of the ones I have are drawings rather than digitized pictures like the RLE's. Thus, those which are "clippable" are much clearer and of general use than the RLE's.

The docs state that if you have a CorComp or Myarc disk controller and PC Transfer, you can take IBM disks with MacPaint pictures and transfer them for the TI. I don't have the right disk controller or PC Transfer, but I do have a cable between my TI and my Leading Edge. I fired up both machines with a Terminal Emulator program in each. I sent some MacPaint pictures over via Xmodem, which results in a Dis/Fix 128 format. I held my breath, fired up MACFLIX and tried loading one of the files. There it was, just the same as on my other machine. Suddenly I found myself with 3 disks of MAC pictures for my lowly TI. I will download some more from the local bulletin board to which I subscribe and we should soon have a good MAC library for the club.

This program is written in assembly and only \$10.00 plus \$1.00 SH from Genial Computerware, P.O. Box 183, Grafton, MA 01519. Note: I sent a personal check because I was in no hurry to get the program and it took six weeks. If you want faster delivery, I would suggest a bank check or money order.

When I first wrote the above, I had not explored all the possibilities this program offers for us TIers. Did ever think that there would be a day that you could utilize the various graphics for PrintMaster, PrintShop, Newsroom, etc. on your TI? I have even discovered that I can reverse the procedure and use my TI graphics on those MSDOS programs.

I found an MSDOS program called "ICONVERT". This converts PrintMaster, PrintShop, Newsroom, MacPaint, RLE's and many more from any of the above to any of the above. I have several libraries of PrintMaster graphics and decided to give it a whirl. ICONVERT will take a set of PrintMaster graphics which usually are 120 individual graphics and automatically convert the first 50 of them to MacPaint format. I can convert the remaining by choosing the graphics individually. Thus it takes 3 files of MacPaint to use up one set of PrintMaster graphics. You can send them over just as described above. They are saved on a sheet which can be "clipped" out to TI-Artist. I have 26 of these files already and am just getting started. By the next meeting, I may have up to 20 disks of new clip-art.

Since this worked so well, I wondered if I could send some of my TI graphics over to the Leading Edge for use with PrintMaster (the only program I have). I took some TI-Artist files in program format. Loaded them into MAXRLE and resaved them in DF/128. I used the same method as above to send them over to the LE. I was able to view them with one of the RLE viewers I have for that machine. With ICONVERT I can put them in PrintMaster format and use my TI graphics over there.

People who got rid of their TI's when they got MSDOS machines are going to be sorrrrry.

## GET THE MOST OUT OF PRINT WIZARD

REPRINTED FROM:

*Deanna Sheridan, Northcoast 99ers, Cleveland, OH 12/88*

Print Wizard was introduced by TRIO+ Software last year at the Chicago Faire. It has gotten some nice reviews lately in the various newsletters on our exchange list.

If you have ever seen or used Print Master for the MSDOS machines, you will recognize that Print Wizard is patterned very closely after this package (within the limits of the TI's memory space). As with most long IBASIC programs, it takes a long time to load and get ready to run. In scanning the code, I cannot determine if it has utilized any Pre-Scan operations and it seems to take forever to start running.

As with Print Master, Print Wizard offers you a choice of greeting cards, signs, or letterheads. The manual is one of the best I have come across in a long time and guides you through each step. You are allowed a border, text and graphic at the same time. The card does print in all the right places to fold for a standard greeting card.

You have a choice of 3 sizes for your graphic and depending on that choice, a variety of ways to place that graphic on your screen. There is a small box on the screen which shows you how many of your graphics can go on a side and where you can choose to place them. If you also want text, it sometimes becomes tricky not to intermingle them.

You get all of the above with Print Master, also, except that with the additional memory available, you can actually see what the finished product will look like before it is printed. There are now many libraries of graphics available for Print Master, but I have yet to see any new fonts or borders. This is where our slow-poke Print Wizard has the advantage. You can convert your TI-Artist fonts and graphics (in fact all the graphics and fonts on Print Wizard come from a companion disk for TI-Artist produced by Trio+ Software) and convert them to Print Wizard format. Although I have not tried it, there are instructions to create your own borders. This makes Print Wizard a very versatile program.

But, if it wasn't so slow, you say. It takes up to 45 minutes to create and print just one card. There is no way to save your cards, or is there? There is an advertisement currently running for a discount department store where the woman chants with a one-purpose thought, "paper towels, paper towels". Computer users should always be thinking "print to disk, print to disk". This will make Print Wizard a completely new program for you.

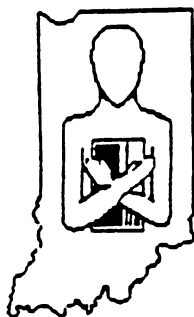
At the menu screen, where you are asked to configure your printer, use DSK1.FILENAME (whatever you want to call it) and when it comes time to print the card, it will print it to disk. The time will be the same as when printing to the printer, but if you want multiple copies, they are printed in a fraction of the original printing time.

The idea for this came from Tom Wynne of the Tacoma 99ers last fall. He said most of the graphic programs could be printed to disk and then run through an IBASIC program for multiple copies and speed (since the printer commands are already converted). In the case of Print Wizard, I use a little program similar to:

```
100 OPEN#1:"DSK1.FILENAME",INPUT,VARIABLE 128
110 OPEN#2:"PID.CR",OUTPUT
120 IF EOF(1) THEN 140
130 LINPUT #1:AS :: PRINT #2:AS :: GOTO 120
140 END
```

With this in mind, I have geared up to use Print Wizard in the following manner. I have printed out all the borders and given them the same names as in the manual. I am planning to take my favorite graphics for special occasions such as Christmas, Easter, Valentine, Birthday, etc. and make up a disk. Then as I run onto some favorite sayings or poems, I will create a disk with the various fonts provided or convert some others. THEN, when I need a card for that special occasion, I can print it out in about 5 minutes or less. If you return your paper to the starting position after printing the border, or graphic, or text, it will be perfectly placed on the paper just as though it had been printed all at once. Also, using this method, I can mix and match borders, graphics, etc. and can also print in a variety of colors and can even use more than one graphic on a page. It has made using Print Wizard a pleasure instead of frustrating. The little program above could be enclosed in an array so that multiple copies could be made without resetting. A person with a set of templates and the above program would not even need Wizard to create cards.

I have spent most of my time on Print Wizard doing cards as it seems to have more potential than others we have for doing that. The sign program is also nice, but there are much better programs available for Letterheads, and I don't plan to use that feature at all. For \$19.95 and the above suggestions, you could do some very creative Christmas cards next year!



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**THE HUGERS**  
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July 1988

THE HUGERS NEWLETTER

Volume 6, Number 5

## TALKIN' SMART

by

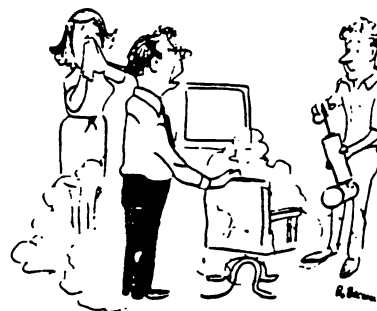
JIM ELLIS

Part I

ATH, ATZ, ATAA, ATXR. You say it looks like a lot of bad printing errors? This is the first in a series of articles dealing with the commands that are used with smart modems. But, if you are a modem user you will know some of these commands and perhaps not recognize others. I will attempt to explain some of these and others in this series of articles. What is a smart modem you ask? The basic modem that some of us started out with did only two things. It either could send (originate) or receive (answer) computer information using a 'phone line and had to be switched on and off by hand. How it does that is beyond the intent of this article. A smart modem, of which there are several in existence, contains ROM and sometimes RAM. The rom contains the software that permits your terminal program to TALK with the modem via the RS-232 card. The units that contain ram will let you make certain changes in the modem's program that are more to your need, within reason. For instance, it may give you the choice of how many rings before it answers the phone. That is only just one example, there are many others. One of the first, perhaps THE first smart modem was manufactured by Hayes Microcomputer Products, Inc. of Norcross, GA. This company set the standard as evidenced by the comment of so many modem ads that state 'Hayes compatible' in their attempt to sway you into buying their product. Some include the letters 'HC' as part of their model number. There are

varying degrees as to how 'compatible' these modems are in their operation. Not all support every command or all parts of a command set. More on this later. Most modems that use ram contain a battery, so that some of the customizing that you do may be saved in non-volatile memory. Note, I said SOME but NOT all may be saved. (To be cont').

\*\*\*\*\*  
#  
# PASTE UP PARTY #  
# HELP GET THE NEWSLETTER #  
# OUT #  
# FIRST THURSDAY EACH MONTH #  
# AT BOB STAHLHUT'S HOUSE #  
# CALL 856-4962 #  
#  
\*\*\*\*\*



"Look, when I said I wanted someone to debug the program, I meant . . ."

Reprinted from ROUGH NOTES magazine

\*\*\*\*\*  
\*  
\* SOUTH SIDERS MEETING \*  
\* SECOND-----THURSDAY \*  
\* AFTER THE MEETING \*  
\* MONTHLY \*  
\* CALL 786-3270 \*  
\* FOR LOCATION \*  
\*  
\*\*\*\*\*

# TALKIN' SMART

by  
JIM ELLIS  
Part II

(Cont'd from a previous issue) In some modems there is the possibility that you can store the phone number for your favorite BBS. It then has a command that tells the modem to call the number in memory. Among other 'smarts' is the ability to change the baud rate between the modem and the phone line or between the computer and the modem. I recently found out some commands that were not in my manual for my modem. It DOES recognize them, whether it actually does anything or not. When I say recognize I mean that when the command is issued the modem responds with 'OK' as opposed to the word 'ERROR'. Everyone should know what that word means! You may get words or numbers depending how you have one of the commands set. I will attempt to put the commands, (that I am aware of) in a table for part of these articles. There are too many to be covered in just one or two columns. These will be taken from a manual for the Hayes 300 and my manual for my 2400 baud modem that I recently purchased. What led to me writing these articles was the fact that I found the manual either inaccurate, or in some cases, incomplete. I thought that probably there were others out there that were in the same situation, but were not brave enough to say so. So this is what came about. I am sure that this series will no means cover everything as I am sure that there are other commands that I have not been made aware of myself. I will try to submit all commands (and a brief explanation of each) that I know about the smart modem commands. Keep in mind that we are talking 'Hayes (tm) compatible'! There are some that allow a subscript, for ejemplo, ATMn, with n=0-2. The command modes are as follows: dialing, control, extended, synchronous, configuration, as in changing the 'S' registers. Oh, did I mention those? (to be cont'd).

)))) Programs you should know! <<<<

By: Paul E. Scheidemantle

The words can be in the puzzle backward, forward, and diagonally. Circle them as you find them. You should be able to complete this puzzle in 20 minutes.

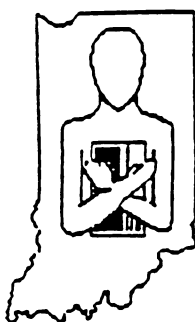
ARCHIVER	MUTIPLAN
ARTISTBORDERS	PARSEC
CHAINLINKSOLITARE	PICASSO
DMONETHOUSAND	REMINDME
FASTTERM	SEGREGATION
FUNNELWEB	TIARTIST
GRAPHX	TIRUNNER
JOLLYROGERLABELER	TIMWRITER
JOYPAINT	USABLEDISKCATALOG
MASSTRANSFER	WOODSTOCK

XTFJUDMONETHOUSANDAX  
EJKQGNFMASSTRANSFERZ  
IZGHGRAPHXSQRGKFCECV  
WFNATDQOBBKENWMSGREM  
IVWSPWOEEUVHZEROERWY  
HEFQZSWEMIRFNELLACRS  
GDYHSLPTHEYADAETNEPW  
TQPAEISCTCLRTBIOTUEC  
ZLCNKIRTZPOAALIIVXHN  
TINYTASBIBCLOTRNRQJP  
PUPRSAXTTKRSAMCETKNB  
FXAYFDLSSEKGIQNCJJTO  
IIMSKUIIGNETENEONBX  
TOOZMTDOIRYMUSTIIAIR  
HOXYRERLGEDRRSPAXNDD  
CTKALYNEENIADJPLSPKD  
BZBBLISUITPOBYCJDRLW  
GCALAVZMTMOEOKWZZWT  
DSOHSEEURWPJMYZTORGD  
UJCAPRDEKWBKWWGIRPF

## DISK DRIVE CONTROLLERS (continued from July)

### Beyond Double Density

A two format system can be managed using only the floppy disk controller's inherent ability to sense single and double density recording patterns. To get beyond this limitation, the additional data stored in sector zero must be read, stored, and used to modify the special binary commands sent to the FDC (floppy disk controller) chip.



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## THE HUGERS HOOSIER USERS GROUP People Helping People

Sept 1988

THE HUGERS NEWLETTER

Volume 6, Number 8

### TALKIN' SMART Part III

by

JIM ELLIS

(Cont'd from a previous issue) Last time I stopped with the mention of the 'S' registers, I now resume. There are registers, (places to store data), that may be changed, (depending on the modem that you may have,) to allow different settings for certain functions. Among these are how many seconds to wait for dial tone, etc. I have an Avatex 1200 modem that is only 90% Hayes (tm) compatible and its registers are NOT programmable. You take what they give you in that case. However, it is still a nice modem. The Desktalk II sports ram registers that may be be changed to suit your fancy. Most may be changed but not all may be stored in battery backed up memory. Much of the information you use to configure your modem may be saved in battery backed up memory so it will come up the way you like each time until you change it. However, there are limits to which items are stored. I'm not sure if the others specify which, but the manual for the Desktalk II doesn't tell you all that it saves. For instance, it stores one phone number, such as your favorite bbs, so that all you have to do to call it is type 'ATDS' and it will display the number in memory and dial it for you. Many are capable of returning an error code based on syntax. It can be either numeric or text based on the value you give a particular register. Included at the end of this article is the explanation of the pinout chart for RS-232C as used for most modems.

### PIN DESCRIPTION

PIN	DESCRIPTION	DIRECTION
1	Protective Ground	N/A
2	Transmitted Data	TO modem
3	Received Data	FROM modem
5	Clear To Send	FROM modem
6	Data Set Ready	FROM modem
7	Signal Ground	N/A
8	Carrier Detect	FROM modem
20	Data Terminal Ready	TO modem
22	Ring Indicator	FROM modem

(to be cont'd)

### WHAT'S NEW??

Two new data bases for the TI 99/4A.

TI-BASE - the following is a PRESS RELEASE, not a review.

TI-BASE. New from INSCEBOT, Inc.

TI-BASE is the place to collect and organize your data. Record Definitions are customized to your exact needs. Data can be freely interchanged between all types of records. Simple structured command language allows an easy implementation of needed functions. Address lists, checkbooks, business applications, all easily performed and maintained on diskette by TI-BASE.

DATA DEFINITION:  
Character  
Numerical  
Date  
Literals

MATH CAPABILITY:  
Arithmetic  
Trip  
Logical  
Boolean

DISK DIRECTIVES  
Initialization  
Catalog  
File Copy  
File Deletion

SORTED RECORDS:  
Nested command files  
Structured Directive

SORTED RECORDS:  
Sequential  
\*Find\*

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LIBRARIAN..BRYANT PEDIGO 299-5755

## MONTHLY MEETING LOCATION

ST. ANN'S SCHOOL  
2839 S. McCLURE  
INDIANAPOLIS, IN  
MEETINGS OPEN AT  
2:00 PM  
OCTOBER 9 1988

```
*****
*
* SOUTH SIDERS MEETING
* SECOND-----THURSDAY
* AFTER THE MEETING
* MONTHLY
* CALL 786-3270
* FOR LOCATION
*
*****
```

(CONTINUED FROM PAGE 1)

You will note that with all of these complaints they are all minor convenience items. The program does that it is supposed to do, and does it with good speed. One thing that the book notes is that the Mini-memory GREATLY increases the available memory. I have not had a chance to find out how this affects operation but we finally have a real use for Mini-memory.

We will be looking further at this phenomenal program at the NOVEMBER meeting.

## DISCLAIMER

This newsletter is brought to you through the efforts of the officers and members of the HOOSIER USERS GROUP. Every member is encouraged to submit articles.

If you have an article you would like to share with the other members mail it to:

John Powell  
327 M. Southern Ave.  
Indianapolis, IN 46225

Opinions expressed are those of the author and not necessarily those of the HOOSIER USERS GROUP.

## HUGger Back Issues

Back issues purchased at the monthly meeting are \$1.00 each. Mail order price is \$1.50 per Newsletter (postage included). Orders will be filled within 3 weeks of receipt.

(CONTINUED FROM PAGE 1)

Radio Shack doesn't carry any cable to do this correctly, so you may have to contact your local bell installer to see if he may have some scrap three pair cable. (to be cont'd)

Continued from PAGE 3

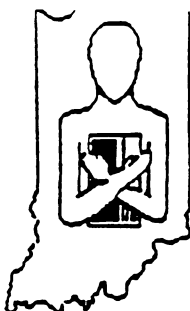
my contribution. It's a one-screen one-liner!

```
1 RANDOMIZE :: PRINT : : :
: : : A=INT(RND*7):: B=INT(R
ND*9+1):: FOR X=1 TO 5 :: Y=
A*X 2-B*X+B :: PRINT Y:: NE
XT X :: Y=A*X 2-B*X+B :: PRI
NT : : : INPUT "GUESS NEXT
NUMBER":N :: IF N=Y THEN PRI
NT : "RIGHT" :: GOTO 1 ELSE P
RINT : "CORRECT IS":Y :: GOTO
1
```

MEMORY FULL! - Jim Peterson

## NEW NEIGHBORS

THE INDIANAPOLIS COMPUTER PAPER has just published its premiere issue. This paper has articles of interest to all computer users in the Indy area and also runs free personal classified ads. Watch for them it looks like a good enterprise.



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**THE HUGgers**  
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Oct 1988

THE HUGgers NEWLETTER

Volume 6, Number 9

TALKIN' SMART Part IV

by

JIM ELLIS

(Cont'd from previous issue.) I included the direction because I know how confusing it is to figure out which is send and which is receive, let alone which way some of the other signals are going. You may or may not use every one of the lines listed above. This time I have included the diagram for the cable to go from the modem to the TI-99/4A. Of course, it goes to the RS-232 card, (or stand alone) to communicate with the Smart Modem. This diagram is probably about the least wiring you can use, but it should be adequate for just about any system, I think. I have used it very successfully for a number of years without problems.

Smart Modem	TI RS-232
Pin	Pin
2 <----->	3
3 >----->	2
6 >----->	20
7----->	7
20 <----->	6

Pin 7 is the signal ground and is used on both send and receive. You may refer to Part III for direction of data flow. The cable should be shielded, if possible. You do NOT need to connect any of the other pins, so you only need five wires to make up the necessary connections. The wire gauge can be either #22 or #24, both will solder nicely to the DB-25 connectors. Following is the parts list for the connectors:

2 conn. R/S part #276-1547 \$1.99 ea.  
2 hoods R/S part #276-1536 \$1.99 ea.

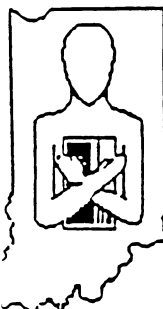
RAMblings by Carl Clark

The subject we are looking at this month is TI-BASE the new database for the 994A. It is unlike any thing that has been released for the TI before and overshadows everything else that has been released lately.

The specs have been published before and there have been many other reviews in the last few months, so I will not try to go over every detail of an extensive system.

This program truly is a system in that it can be made to handle almost any kind of data in almost any manner that the user wishes. Being a system also has it's drawbacks, the command language, while it is comprehensive, is not something you learn in one or two quick sessions. This means that the dedicated user can accomplish many things but the occasional user will want TEMPLATES that set databases up readily. While I am sure that templates will become available soon I hope that either a modification of the program or a supplemental program will be seen soon to improve the printout capabilities which are extremely limited now.

The documentation covers all commands, but is not the easiest reference book I have ever used. There are so many options that it could use a walk through of actually setting up a simple database. The blue on blue-gray paper is nothing short of eye wrenching to me.



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TELEPHONE SMART PARS V  
by  
JIM ELLIS

TELECO TIP  
by  
Jim Ellis

(Cont'd from previous issue.) The three pair cable won't be shielded but it will be OK for short runs, 5-10'. Don't forget to use hoods on your connectors as they will keep down wire breakage. If you are using other connections, etc., I would be interested in hearing about them. There are several terminal programs that will send dialing codes, etc., to the modem, but you still need to know them in order to set your terminal program to do all those neat things while you just sit there and wait to sign on. With some of these programs that is about all you do after you get it set up it's just push a few keys and you're on your favorite BBS effortlessly. Sounds easy, doesn't it? Sometimes, it may take a bit of experimenting to get the most combinations. Just hang in there! I will try to get started on the command sets next time. These will be compiled from more than one source, so some commands may or may not be supported by your modem as I had mentioned in an earlier part. By the way, I noticed that the price of the modem I purchased in March has now dropped to \$135, that is down by \$60. That is for an external 2400 baud type. Oh well, I'm always ahead of my time. I hope they have improved the manual, mine has quite a few mistakes in it, especially on the syntax of some of the commands. For instance, in the extended commands, the commands for DTE and DTR control was given as ATDT. That very properly gave me an error. So I tried ATDQ, what do you know, it worked. A very subtle difference, but remember these computers are not very forgiving. If it wants to see something a certain way, NOTHING else will do. Just remember anything created by man is subject to error. There are commands to reset the default values to those set by the factory when you decide you don't want to use the ones you created. Not all changes to the modem are saved. My manual is not very clear on what is saved and what isn't. It is too bad that these errors and shortcomings get into print where someone who is new to the BBS system has to contend with inadequate explanations. It is no wonder many become discouraged. I hope not all manuals are like that out there. I didn't mean to get on my soapbox, but I just wanted everyone to be aware that it does exist, which is one of the reasons that I started this series, to help inform you the users about the best use of smart modems and to keep you from becoming discouraged. I know many of you say, 'I'll never use all of those, I don't know how.' But that is just the point. If you know how then that is that much more you can get out of this hobby of ours. And isn't that what it is all about? For an example of some of the codes, see "TELECO TIP" elsewhere in this newsletter. (to be continued)

The information on page 25 on how to use the modem to disable call waiting didn't work with the V8.1 that I got. Instead, use the following procedure. From the Main menu, select Setup Options. From Setup Options menu, select Modem Setup. From Modem Setup menu, select Dial String. Then you will receive a prompt to enter your dial string. At this time enter ATDT\*. For some phones, then press ENTER. Use FCTN-9 to go back to Setup Options menu, then select save Changes. FCTN-9 will take you to the Main menu, select Full Screen, select M to modify, select number, select B to enter phone number. When you enter your phone numbers use the following format: 70.786-9942. I could not get the program to recognize an \* when I used it in the number line, so I could not get it to recognize \*0\*. I am using a Desktalk 2400 smart modem and this works just fine with it. I have not tried the pulse dialing, but I don't foresee any problem using this format for the phone number 1.70.786-9942. Use \*TSP for the dial string.

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## TALKIN' SMART

by

JIM ELLIS

Part VI

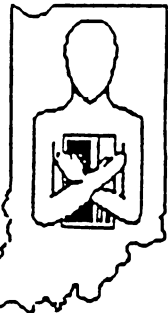
(Cont' from previous issue.) The following is the start of the "Hayes" commands that are used. The chart is an attempt to help you understand the more common commands in use. Please note that NOT all modems acknowledge ALL commands. You can refer to your manual to establish which ones your unit uses. Again the chart is an attempt to help you understand the different uses. There will be more of the chart appear in further issues.

## DIALING COMMANDS

CODE	COMMAND	FUNCTION
A/	Repeat	Repeats LAST command, (enter) not required
Cn	Carrier	Carrier control.
		C0 - turn carrier OFF.
		C1 - turn carrier ON immediately.
D	Dial	Must precede all dial commands.
T	Tone	Touch tone dialing
P	Pulse	Rotary dialing
W	Wait	Wait for second dial tone
e	Wait	Wait for answer, then dial extension
,	Pause	Pause for second dial tone (call waiting disable)
#Z	Store	Store phone # in non-volatile memory
S	Dial	Use after S command to dial # in memory
R	Reverse	Put modem in answer mode when calling originate type modem
		Reverse send and receive frequencies.
;	Command State	Return modem to command state after dialing
!	Flash	Hang-up for 1/2 second, used to transfer a call

## CONTROL COMMANDS

+++	Escape	Return to command mode without hanging up
O	On-line	Go on-line after +++ command
\$	Help	Display serial port settings and give advice
*H	Help	Displays HELP menu.
*T	Time	Displays current time.
*T=	Time	Set date and time.
A	Answer	Send answer tone and try to connect with modem calling in
Hn	Hang-up	0 = On hook (hang up)
		1 = Off hook
		2 = special off hook
En	Echo	0 = no echo
		1 = echo commands to screen
Fn	Duplex	0 = Half duplex
		1 = Full duplex
Mn	Speaker	0 = Speaker OFF
		1 = Speaker on while dialing
		2 = Speaker always ON
Ln	Volume	0 or 1 = Low volume
		2 or 3 = High volume
In	Product	0 = Product code revision
		1 = Checksum of ROM
		2 = Checksum OK
Z	Reset	Soft reset
Bn	Bell	0 = Use CCITT signals
		1 = Use Bell signals



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**THE HUGger's**  
**HOOSIER USERS GROUP**  
**People Helping People**

September 1989

THE HUGger's NEWLETTER

Volume 8, Number 7

**TALKIN' SMART**

by  
**JIM ELLIS**  
Part VII

(Cont' from previous issue.) Since the previous issue I have found two articles that go into the 'S' registers much deeper than I intended to do in this series of articles. These articles are for the Tandy Color Computer. They can be found in the July and August '89 issues of COMPUTER SHOPPER. Oddly enough the articles are found on p. 277 in BOTH issues.

**REGISTER COMMANDS**

**REG : FUNCTION**

S0?	View contents of register
S0	Number of rings before auto-answer, 0 does NOT answer
S1	Counts number of rings
S2	Escape code character
S3	ASCII character for carriage return
S4	ASCII character for line feed
S5	ASCII character for backspace
S6	Number of seconds to wait for dial tone
S7	Number of seconds to wait for carrier
S8	Duration of pause (,) in seconds
S9	Carrier Detect duration before connect in 1/10 seconds
S10	Loss of Carrier length before hang-up in 1/10 seconds
S11	NOT USED
S12	Escape code guard time in 1/50 seconds
S13	Bit mapped options
S14	Bit mapped options
S15	Flag register
S16	Modem Test Option
S17	NOT USED
S18	Test Timer, in seconds
S19	NOT USED
S20	NOT USED
S21	Bit mapped options register
S22	Bit mapped options register
S23	Bit mapped options register
S24	NOT USED
S25	Delay to DTR, in seconds
S26	RTS to CTS delay in 1/100 seconds
S27	Bit mapped options register

**EXTENDED COMMANDS**

<u>Cn</u>	DCD	0 = Carrier detect signal is always ON 1 = Carrier detect signal in ON while modem is ready 2 = Carrier detect signal is pulsed OFF for 3 sec when disconnects.
<u>Dn</u>	DTR	0 = modem ignores DTR 1 = ON to OFF of DTR puts modem in command state
<u>Gn</u>	Guard	0 = no guard tone 1 = 550 Hz Guard Tone 2 = 1800 Hz Guard Tone
<u>Ln</u>	Leased	0 = Standard phone line 1 = Leased phone line
<u>Vn</u>	CTS/DTR	0 = CTS and DSR always ON 1 = CTS duplicates CD signal per <u>Cn</u> command 2 = BOTH CTS and DSR duplicate CD signal per <u>Cn</u> command 3 = CTS is always ON. DSR indicates presence of answer tone

to be cont'd.

TALKING SMART  
Part VIII  
by JIM ELLIS

(Cont'd from previous issue.) My intent when I started this series was to help many of you to feel comfortable with your modem. I hope I have accomplished my goal. There are some commands peculiar to the modems with error correction circuitry and they will be the basis of my next installment.

SAVE CONFIG COMMANDS

SW	Store	Save configuration in memory
RF	Restore	Restore original factory set configuration

Diagnostic Commands

&T	Terminate test in progress
&T1	Initiate local analog loopback
&T3	Initiate digital loopback
&T4	Grant request for remote digital loopback
&T5	Deny request for remote digital loopback
&T6	Initiate remote digital loopback
&T7	Initiate remote digital loopback with self-test
&T8	Initiate local analog loopback with self-test

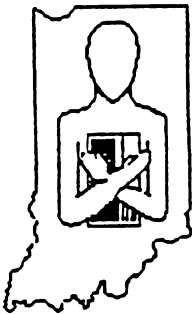
Result Code Commands/Messages

X	Codes	Selects different levels of Result Codes (0-6)
X	Codes	Selects different levels of Result Codes (0-6)
Q	Quiet	0 = send back text Result Codes (verbose) 1 = Result Codes are sent to terminal 1 = Result Codes are NOT sent to terminal

Result Messages

0	OK	No errors detected
1	CONNECT	Local modem has established connection with a remote modem
5	CONNECT 1200	Modem has established a 1200 bps connection with a remote modem
6	CONNECT 600	Modem has established a 600 bps connection with a remote modem BUSY...REDIAL IN 30 SEC. in some units.
10	CONNECT 2400	Modem has established a 2400 bps connection with a remote modem
2	RING	Incoming ring signal is detected
11	RINGING	An incoming ring signal is detected
3	NO CARRIER	Data carrier signal no longer present on telephone line
4	ERROR	Invalid command sequence, re-enter the command
6	NO DIAL TONE	Valid dial tone not detected within 5 sec. after going off-hook (DISCONNECT).
7	BUSY	Sent during X3 or X4 mode operating when modem detects busy.
8	NO ANSWER	5 sec. silence not detected within Register S7 time-out when @ command used in Auto Dial Sequence RING RESPONSE in some units.
12	VOICE	When voice communication is detected on line

(to be cont'd.)



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# THE HUGger's HOOSIER USERS GROUP People Helping People

January 1990

THE HUGger's NEWLETTER

Volume 9, Number 1

## TALKING SMART Part IX

by JIM ELLIS

(Cont'd from previous issue.) I know that these articles have taken some time to cover what some may feel could have been covered more quickly, but then I am not a writer by trade. They were easier to put together than to come up with a new topic each month. I hope I have been able to help just one person in their endeavor to operate a smart modem. As they used to say on "Hill Street Blues", "Item Last!" I would like to close this series by repeating the schematic of how to wire the cable from your computer to the smart modem. I have used it over three years and have not had any problem with it at all. I included it in part IV, in the October '88 issue of the HUGger's Newsletter. But, for those of you who may not have access to that article I will include it here, again.

Smart Modem TI RS-232

Pin Pin

2 <-----<< 3  
 3 >>-----> 2  
 6 >>-----> 20  
 7 -----> 7  
 20 <-----<< 6

The following is a list of parts:

2 conn. R/S part #276-1547 \$1.49

ea.

2 Woods R/S part #276-1536 \$1.99

ea.

Prices may vary. The wire gauge can be either #22 or #24, both will solder nicely to the connectors. If using stranded wire, make sure that none of the strands stick out and short to any of the other pins. I will not go into the labeling of the pins. The ">" and "<" signs point the direction of data flow. I will however, explain pin 7, it is ground, so consequently signals flow both ways, so I have not bothered to put an arrow on that line. Use and enjoy. This concludes the series on smart modems, if there are other articles you would like to see handled in like manner, let Bob Stahlhut or myself know and we will see if we can get someone to do series on that subject. JE

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 SECRETARY...GARY McQUADE 888-5654



MONTHLY MEETING LOCATION  
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 ST.ANN'S SCHOOL  
 2839 S. McCLURE  
 INDIANAPOLIS, IN  
 MEETINGS OPEN AT  
 2:00 PM  
 JANUARY 21 1989

\*\*\*\*\*  
 \* SOUTH SIDERS MEETING \*  
 \* SECOND-----THURSDAY \*  
 \* AFTER THE MEETING \*  
 \* MONTHLY \*  
 \* CALL 888-5654 \*  
 \* FOR LOCATION \*  
 \* \*\*\*\*\*

=====  
 " BBS "  
 " Hoosier Users Group "  
 " Baud rate 300,1200 & 2400 "  
 " On Line 24 Hours Daily "  
 " 782-994A "  
 " =====

EXTENDED BASIC GROM/ROM PARTS..... THIS INFO IS RIGHT OFF THE INVOICE I RECEIVED WITH THE PARTS FROM TI DEALER PARTS:

PART-NUMBER	DESCRIPTION	QUANTITY	UNIT-PRICE
1015960-1113	GROM, EXT. BASIC	1	3.60
1015960-1114	GROM, EXT. BASIC	1	3.60
1015960-1122	GROM, EXT. BASIC	1	3.60
1015960-3115	GROM, EXT. BASIC	1	3.60
1041016-0006	ROM, EXT. BASIC	1	6.80
1501392-1025	ROM, EXT. BASIC	1	4.60
TOTAL FOR PARTS AVAILABLE ONLY FROM T.I.-----			25.80
ADDITIONAL CHIPS NEEDED 74LS00 AND 74LS74 TO BUILD XBASIC			
1015960-1204	EDITOR ASSEMBLER	1	3.60
NO ADDITIONAL CHIPS NEEDED FOR EDITO ASSEMBLER			
T.I. WILL NOW TAKE CHARGE CARDS, AND CHARGE LOCAL SALES TAX PLUS 3.00 FOR S/H.			

I'M INCLUDING THIS UPDATED INFORMATION FOR THOSE WHO WANT TO BUILD XBASIC AND EDITOR ASSEMBLER ON THE NEW ZENO BOARD WITHOUT THE DESTRUCTION OF A CARTRIDGE. IT TAKES ABOUT 2-WEEKS TO RECEIVE THE PARTS. YOU MUST CALL DEALER PARTS AT: 806 741-2265 AND ASK FOR JOE SANCHEZ. I SOCKETED AN XBASIC CART. AND USED IT TO TEST ALL THE NEW CHIPS I RECEIVED.

### INTERNAL BOARD (ZENO BOARD)


THE INTENT HERE IS TO HELP THOSE OF YOU IN THE WEST PENN 99'ERS AS WELL AS ANY IN THE USER GROUP COMMUNITY TO GET STARTED IN THE CONSTRUCTION AND INSTALLATION OF THE BOARD. I WILL TRY TO ADDRESS SOME OF THE PITFALLS AND GIVE SOME HINTS THAT MAY BE HELPFUL. I HOPE THAT YOU REALIZE THAT EVEN THOUGH ERIC ZENO HAS HAD THIS BOARD IN DESIGN FOR ABOUT A YEAR NOW, HE LIKE MOST OF US, IS DOING THIS FOR YOUR BENEFIT, AND WILL NOT QUIT OUR JOBS TO MAKE A LIVING ON TI USERS.

FIRST, THE BOARD DOES HAVE ONE ERROR IN THE TRACE LAYOUT, AND THAT IS THE DATA BUS ON THE CLOCK CHIP U12. MOST OF YOU WILL NEVER USE THIS CIRCUIT, AND THOSE OF YOU THAT DO, SHOULD BE ABLE TO INSTALL THE SIMPLE INVERSION OF THE EIGHT DATA LINES. I.E.: REVERSE THE PINS 15 THROUGH 22 UNDER THAT CHIP. I FEEL THAT THIS SHOULD STOP NO ONE FROM BUYING AND USING THE BOARD.

SECONDLY, THE TRACES ARE SMALL AND TIGHT IN AREAS THAT WILL GIVE A NOVICE FITS. DON'T BUILD IT YOURSELF IF IT LOOKS TO TIGHT FOR YOU AND YOUR EQUIPMENT.

THIRDLY, THE INITIAL INSTRUCTIONS ARE BRIEF, AND INADEQUATE FOR MOST OF YOU, THAT IS WHY I'M INCLUDING THESE TWO PAGES IN THE NEWSLETTER. YOU NEED HELP NOW! I HAVE BUILT TWO AND SINCE I DID THEM WITHOUT INSTRUCTIONS, I FEEL THAT YOU SHOULD DO MUCH BETTER WITH A LITTLE HELP.

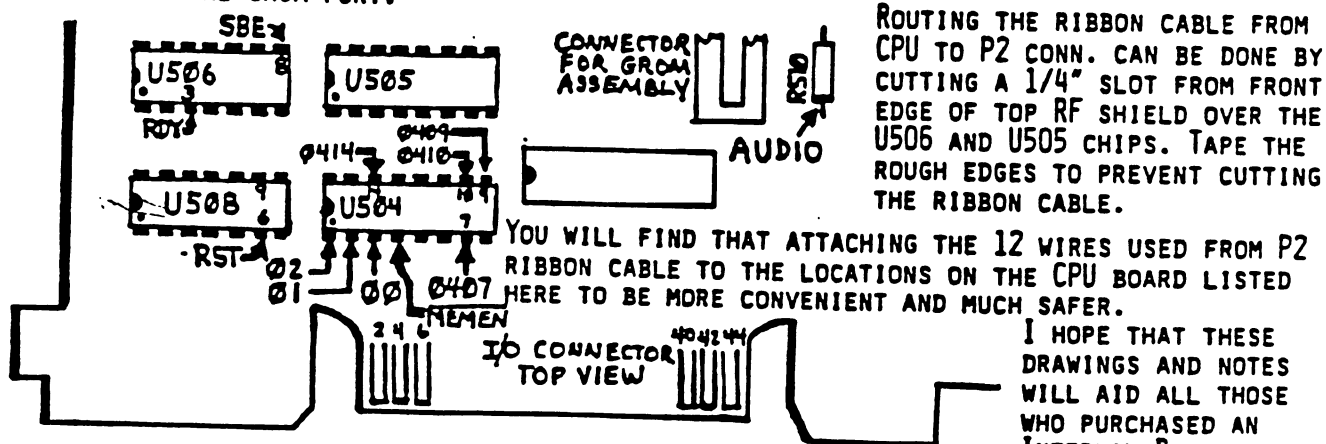
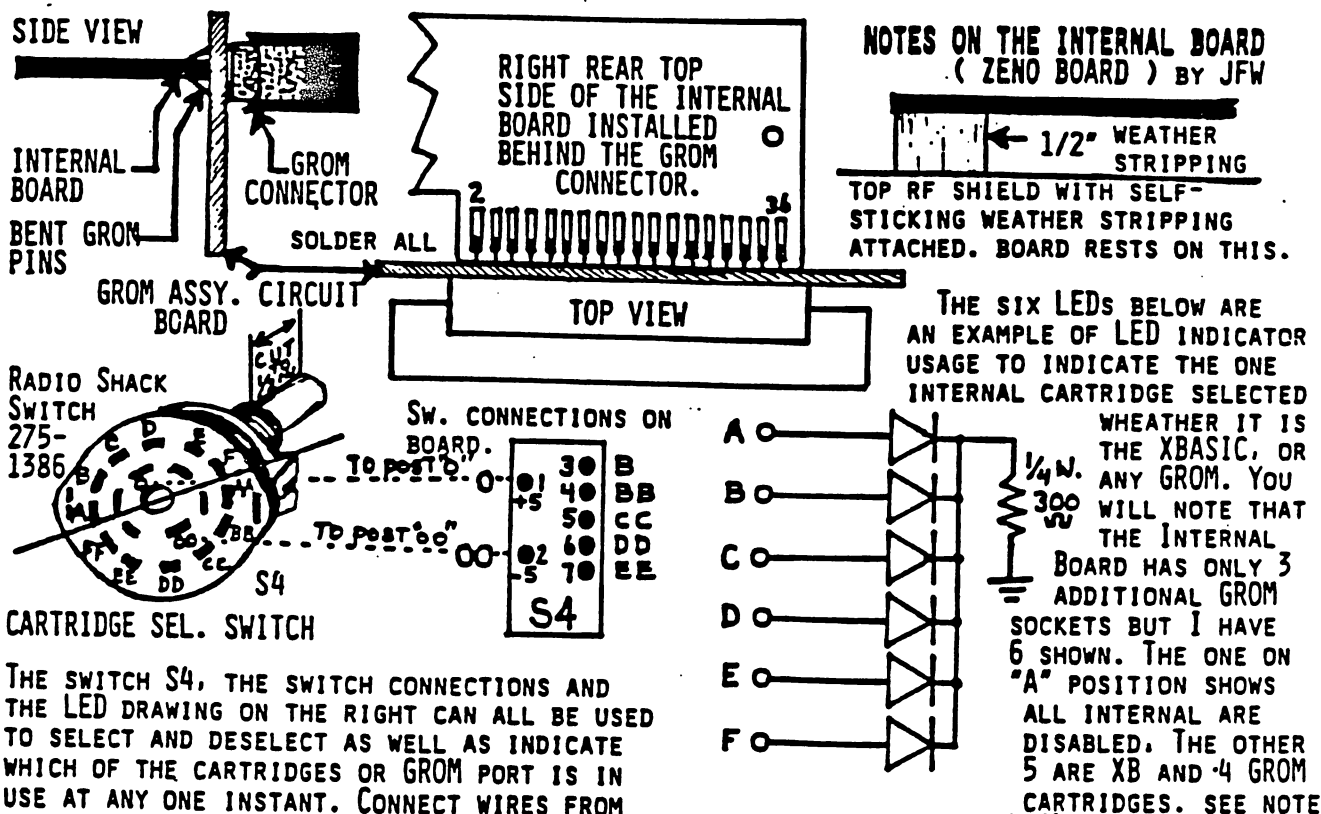
DECIDE WHAT PORTION YOU WISH TO BUILD FIRST. ATTEMPT AND GET ONE CIRCUIT WORKING AT A TIME. DO NOT FULLY SOCKET THE ENTIRE BOARD. SOCKET ONLY THE CIRCUIT YOU WILL NEED FIRST, SUCH AS THE 32K CIRCUIT. MAKE UP THE HARNESS FROM P2 TO THE CPU BOARD, SOLDER THE BOARD TO THE GROM CONNECTOR (SEE PAGE 6), AND BEFORE YOU PLUG IN P2 POWER UP THE CPU. IF ALL SEEMS WELL, THEN PLUG IN P2, THEN PLUG IN THE 32K MEMORY CHIP (FOR EXAMPLE). IF ALL IS STILL WELL, THEN RUN A MEMORY TEST BY LOADING A PROGRAM THAT USES EXPANSION MEMORY OR BY RUNNING A MEMORY DIAGNOSTIC. IF A STEP FAILS, DON'T GO ON, BUT GO BACK AND CHECK FOR A SHORT OR CHECK TO SEE IF P2 HARNESS IS WIRED CORRECTLY. HERE IS ANOTHER AREA OF CONFUSION. THE P2 CHART ON P. 7 OF ERIC'S INSTRUCTIONS DOESN'T ADHERE TO THE PIN PROTOCOL FOR THE CONNECTOR, THEREFORE USE THE CHART AT THE RIGHT, AND ON THE ASSEMBLY DRAWING ON P. 9 OF INSTRUCTIONS CHANGE THE PIN NUMBERING SCHEME TO THAT SHOWN AT THE RIGHT ALSO. THIS WILL PROVIDE YOU WITH A MEANS TO ASSEMBLE A 16-WIRE HARNESS WITH A 16-PIN RIBBON CABLE CONNECTOR TO MATE WITH A 16-PIN DOUBLE ROW HEADER AND HAVE EVERYTHING COME OUT SO THAT THE WIRES ARE IN ORDER AND EASY TO COUNT AND MATCH CONVENTION.

THE SPEECH SYNTHESIZER SCHEMATIC HAS SEVERAL ERRORS INCLUDING CR1 IS SHOWN BACKWARDS, THE ANODE SHOULD GO TO GROUND, AUD P2-8 SHOULD READ P2-10 (UNTIL YOU MAKE CORRECTIONS TO P2 CONN. CHART) AND RDY P2-9 SHOULD READ P2-4 AGAIN UNTIL YOU CHANGE THE P2 CONN. CHART. CR1 AND C2 MUST BE INSTALLED WITH CORRECT POLARITY OBSERVED SO TO HELP, PUT A PLUS SIGN TO LEFT OF C2 ON ASSEMBLY DRWG. AND ALL  REPRESENT THE CATHODE SIDE OF DIODES HERE.

### P2 CONNECTOR (CORRECTED VERSION)

P2	TERM	USE	CPU Conn.
1	0407	32K	U504 P. 7
2	00	CK/CA	U504 P. 3
3	RDY	SPCH	U506 P. 3
4	01	CK/CA	U504 P. 2
5	SBE	SPCH	U506 P. 8
6	02	CK/CA	U504 P. 1
7	RST	SPCH	U508 P. 6
8	SPARE		
9	AUD	SPCH	R510 RIGHT
10	MEMEN-	CK/CA	U504 P. 4
11	SPARE		
12	0414	32K	U504 P. 14
13	SPARE		
14	0410	32K	U504 P. 10
15	SPARE		
16	0409	32K	U504 P. 9

(Reprint from WEST PENN 99'ers Newsletter, Nov., 1989)



- CONSTRUCT IT AND ENJOY IT SOONER WITHOUT MUCH TROUBLE. BELOW ARE NOTES:
- NOTE 1. TO ADD A 4TH GROM PIGGY-BACK IT (UP TO TWO HIGH) ON ANOTHER GROM PIN FOR PIN EXCEPT PIN 14. ATTACH A WIRE FROM PIN 14 OF THE 4TH GROM TO POST FF ON S4.
- NOTE 2. DO NOT INSTALL LEDs WITHOUT A 200 OHM RESISTOR IN SERIES.
- NOTE 3. THE SPEECH SYNTHESIZER HAS TWO ERRORS, BELOW U1 AUD P2-8 SHOULD BE P2-10 AND BELOW U2 RDY P2-9 SHOULD BE P2-4. (ERROR ON SCHEMATIC)
- NOTE 4. MORE LATER

JOHN F. WILLFORTH 10-27-89

# TI-WRITER BUGS

Dr. Guy-Stefan Romano has confirmed and explained the pestiferous asterisk bug in TI-Writer. If you are printing out of the Formatter mode and your text contains an asterisk followed by two or more numeric digits - the asterisk and two digits will disappear! For instance, A\*256 becomes A6, and I've noticed that A6 in programs published in several newsletters recently.

The TI-Writer program misinterprets the asterisk and two digits as an instruction to input data from a "value file" (see Alternate Input on p. 111 of the TI-Writer manual).

The solution to this bug is to type two asterisks followed by two dummy digits, then the actual digits. For instance, instead of A\*256 type A\*\*25256. Trouble is, the bug usually shows up in a program which has been LISTed to disk and then MERGED into TI-Writer, and is usually not noticed. The solution? Run the program through my 28-Column Converter (see related file).

Dr. Romano informs me that there is an even worse bug in the Transliterate command coding, erratic and sometimes destructive. It is triggered by certain sequences of characters, but these have not been documented.

Dr. Romano says that he does not use transliteration.

I would suggest that you also avoid the use of the & and @. The & will only underline a single word unless you tie words together with the ^ sign. If you tie words together, the Fill and Adjust will leave gaping blanks in your lines and if you tie too many together the line will extend beyond the right margin! Also, the underlining is a broken line. It is better to use the escape codes (these are for an Epson or Epson compatible printer) CTRL U, FCTN R, CTRL U, SHIFT -, CTRL U, SHIFT @, CTRL U, which will give a solid underline until you turn it off with CTRL U, FCTN R, CTRL U, SHIFT -, CTRL U, SHIFT @, CTRL U.

The @ is handy to emphasize a single word, but if you want to double-strike a whole sentence or paragraph it is better to use the escape code CTRL U, FCTN R, CTRL U, SHIFT G, and turn it off again with CTRL U, FCTN R, CTRL U, SHIFT H.

The period bug is another killer - the Formatter thinks that any line which begins with a period is a formatter command, and deletes the whole line! If your text contains a decimal value such as .11 and the wrap-around puts it at the beginning of a line, the line disappears! There are two ways around this - put a 0 in front of all your decimals, as 0.11, or transliterate all your periods.

In all, the TI-Writer formatter is a temperamental and unpredictable piece of software, prone to unwanted line feeds and unexpected paper-wasting form feeds. I like to use it to right-justify text back to the disk, but from then on I prefer to print it out of the editor mode, or out of my own program.

## Using the "ImageWise" Video Digitizer with the TI 99/4A

by Steve Langguth

For the past year or so, thanks to the authors of a couple of "RLE" programs, users of the TI 99/4A have been able to view and use high resolution pictures created by the users of other brands of computers. It was great being able to take advantage of all of the picture files that could be found on the various online databases and BBS's. But it also made me realize that something was missing in the world of the 99/4A. Users of other brands of computers (even the 8 bit antiques like the Commodore 64 and Atari 800) had access to video digitizers, and TI users did not. Now, this might not seem like a very big problem to some users, but to those of us who enjoy working with computer graphics it was. Notice that I said "was". Finally, users of the TI 99/4A can digitize images from video cameras and VCR's and put those images into a format that can be used by the various bitmap mode drawing programs available for our computer. This article describes how it can be done.

### The Hardware -----

In the May and June 1987 issues of BYTE magazine, Steve Ciarcia (BYTE's resident hardware genius) described a video digitizing system that he had developed called the "ImageWise" system. This system is composed of two parts, a "digitizer/transmitter" and a "receiver/display". Each of these parts is contained on a separate printed circuit board. You can buy each board already assembled or in a kit with all the needed components. Or, you can just buy the printed circuit boards (with an EPROM containing the control software) and then buy all the other necessary components yourself. I chose to buy the components myself, and the two parts of the system wound up costing me a total of about \$150 each. When the boards arrived in the mail, they came with detailed instruction manuals and parts lists, including the various part numbers for several of the larger

electronics supply companies. Even though I had never attempted a hardware project before, I had little trouble getting everything put together. (I DO have a friend next door, who is a 99/4A hardware "genius", so I could afford to be a little "braver" than I would have been if I had to attempt a project like this totally by myself!) And once I finally got all the components soldered into the correct holes (don't ask!!), both boards worked great. The digitizer/transmitter (d/t) board is, as the name implies, the part of the "ImageWise" system that does the digitizing. Unlike some digitizers made specifically for other computer systems that take several seconds to digitize a complete image (and therefore require your "subject" to not move or your VCR to be set to "freeze frame"), the ImageWise d/t board captures a complete image in 1/60th of a second. It accepts video signals from a standard TV camera (either BW or color), VCR, laserdisc player, or camcorder, and stores the picture as 244 lines of 256 pixels with 64 levels of grey scale for each pixel. The d/t board then converts the stored video image to RS-232 serial data which can be transmitted to any computer with a RS-232 port or to the ImageWise receiver/display board. The receiver/display board (r/d) accepts serial data from the d/t board or files downloaded from a computer. It converts this data back into a picture suitable for display on a composite video input monitor. Together the two boards allow the user to create a file of digital data that represent an analog video image, use a computer to manipulate this file, and then display the newly "manipulated" image. The July and August 1987 issues of BYTE magazine both contain articles describing interesting image processing techniques that can be performed on files created this way.

### The Software -----

As I stated earlier, each board comes with an EPROM that controls what that board is doing. But you still need programs for your computer that allow you to accept the data being sent from the d/t board to the RS-232 and to send a data file from your computer to the



r/d board. Also, if you want to display the digitized images on your computer monitor, you need a program that converts the data file into a form that your computer can use. If I was an IBM PC user, this would have been no problem, because the boards come with a disk containing programs for the PC that both "grab" and "show" images. But because my little 99/4A is an "orphan", I had to write these programs myself. To "grab" a digitized image from the d/t board, you simply connect the DB-25 connector on the board to the RS-232 of the computer. The program needs to send a one byte code to the board to tell it what resolution to use (the choices are 256x244, 128x122, and 64x61), then when the program sends to the board a character >11 (XON), the board "instantly" digitizes the picture and begins sending it to the computer. (The baud rate being used is selected by a DIP switch on the board itself.) If the computer must take a "time out" to write to disk, the program simply sends a character >13 (XOFF) and the board stops sending until it receives another "XON". The file created by this program is LARGE. The board sends one byte for each screen pixel. The values of these bytes range from >00 for black to >3F for a pixel that is white. This adds up to a file of 246 sectors for each picture digitized. Of course, the file contains a lot more "data" than 99/4A users can use, because even though our high resolution screen is 256x192, we only have 15 colors to work with and each pixel cannot be colored "independently". Perhaps more of this data will be put to use on the Myarc 9640. To "show" a digitized image on the r/d board, the process is just reversed. A file is simply read one record at a time and then sent to the r/d board via the RS-232. I found that I had to use assembly language to write the "grab" program, but a very simple Extended Basic program worked fine for the "show" program. Finally, because I wanted to use my digitized images on my 99/4A, I wrote a program that will "convert" the information in the files created by the d/t board into a picture that can be saved in TI-Artist format. At first I decided to simply "turn on" a pixel if it was above a certain value

and leave it "turned off" if the value was below the "dividing line". Unfortunately, this simple method really didn't give as much detail to the pictures as I knew was possible. After a lot of experimentation I was able to create an "algorithm" that turns on more pixels in the areas that are supposed to be darker, and less in the lighter areas. The converted picture has much less resolution than the original, but it CAN be saved as a TI-Artist picture file (25 sectors), which can then be modified or printed out.

#### Summary -----

The ImageWise video digitizer system is a fairly simple to build, relatively inexpensive, very powerful video digitizer that CAN be used with the 99/4A. If all you are interested in is digitizing video from a camera or VCR, all you really need is the digitizer/transmitter board, which can be assembled for about \$150-\$175 dollars. To use the digitized images on the 99/4A itself, you will have to "sacrifice" a lot of the resolution. But because the system sends its data through a standard RS-232 interface, it will continue to be compatible as you "upgrade" your graphics capabilities.

If you have any questions that I haven't answered, just leave them on the message base here on GENie, or write to me at :

Steve Langguth 2956 South Barnes  
Springfield, MO 65804.

Also, if you would be interested in buying the programs I wrote to use with the ImageWise system and the 99/4A, I will gladly sell them to you for \$10 --\$11, if I have to supply the disk (hey, I've got to pay for this baby somehow !!!).

#### MEETING DATES

1987 Hoosier User's Group meeting dates

October 11  
November 8  
December 13

## THE TI PE BOX PROTOTYPE BOARD

Since the BB is broke again, I thought I'd put up a description of the PEB prototype card. The card is a full size expansion box card, and is designed to facilitate the construction of a wide variety of PEB box devices.

Those who have attempted construction of a home-brew PEE card from a plug board will appreciate this prototype card. It's designed especially for the PEB and takes much of the work out of a PEB project.

It has a gold plated edgcard connector. All necessary traces are in place for the standard 74LS244's drivers for address and control lines and the bi-directional 74LS245 for the data bus -- you just drop in sockets and solder. The same is true for the RBDENA line -- a 74LS125 or 74LS368 location is available with a trace running to RBDENA.

Toward the front of the card there is space for an array of eight 28 pin IC's -- e.g., the 6264 (8K) or 62256 (32K). Address and data line traces are provided in two 4-chip groups as are holes for bypass capacitors, but as would be expected with a prototype card, the user connects the address and data lines to the appropriate pads from the address and data bus drivers. With 32K IC's, one could put 256K in a single layer. At the bottom of the 28 pin IC array, there are locations for three 16 pin IC's.

Toward the back of the memory array there is space for five columns of IC's of the 16 pin width -- about sixteen such IC's could be accommodated. This area consists of columns of plated through holes with power and ground buses available, and it would also be used to mount discrete components.

Sticking out the back end of the card is a mounting area for external connectors similar to that found on the RS232 and Disk Controller cards.

Some very careful planning has obviously gone into the design of this card. I

understand that input was even solicited from the TI employee who designed all of the expansion box cards. I would say that it comes as close as anyone might want to an ideal universal prototype card for the PEB.

The first 100 cards will be available in four to six weeks and orders are being taken now. The price (as jj indicated in a BB message) is \$35. When 10 or more are purchased the price is \$25 per board. Of course if you buy one of these, you're not just buying a prototype board -- you're investing a little bit in future 4A hardware development. This project is being undertaken by John Willforth and a friend of his basically for the fun of it and to support the TI. Your purchase will help to offset the substantial cost they are incurring for set-up and the initial production run. (And that doesn't even begin to take into account the hundreds of hours of their time spend in developing the artwork.) For whatever it's worth, I've ordered three.

L. L. Conner Enterprise will be carrying this prototyping board. The telephone numbers for Larry Conner are (317) 742-8146 and (317) 423-4879.



All digitized pictures are the work of Steve Langguth using the "ImageWise" Video Digitizer with the TI 99/4A. Steve appears in the above image that was capture from a video camera.

# AMNION HELPLINE

A Non-profit Volunteer Effort

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\*

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## HOME CONTROL 99 : REVIEW BY KEN GLADYSZEWSKI - NORTHCOST 99ERS

Home Control 99 by Eagle Software is a disk-based 20K program with some assembly language routines (under development for the past four months) used to interface the TI with the I-10 POWERHOUSE.

The I-10 POWERHOUSE is an energy management system that allows one to control anything in the house which runs on electricity. It does this by sending signals over normal existing house wiring to remote modules into which lamps, etc. are plugged.

The I-10 POWERHOUSE system and Corcomp's Home Sentry Interface Cartridge were reviewed in MICROpendium (Dec.86) and by OH-MI-TI (Jan.87). The latter was reprinted in this newsletter (Feb.87). Please see these articles for a more thorough explanation of the I-10 POWERHOUSE system. The cartridge software as described in these articles requires only the TI console, TV and special cable, but does not provide any additional features (files) when used with an expanded system (Disk, IBasic, Expanded memory & RS232).

Home Control 99 uses text exclusively to an advantage, emulating the capability of I-10's software for the IBM. The user types any amount of locations and device descriptions up to the controller limitation of 256 devices. In comparison, the cartridge allows only 16 choices of locations and 9 choices of device types for a total of 126.

Using the software, the controller is programmed for up to 128 timer events. Each timer event consists of an on, off or dim command for up to 16 devices within a single housecode (while the module allows for only one device per timer event).

The best feature of this program is the ability to save collections of timer events to disk as a file. This allows one to have a file for vacation, summer, winter, etc. These files can be edited, printed and downloaded to the controller.

The I-10 POWERHOUSE controller, including required IBM RS-232 cable can be purchased for \$19.90 + S&H from BAK INDUSTRIES, INC. (Cat. No. 4410) 8200 Resnet Avenue, Canoga Park, CA 91304 1-800-BAK-0800

Home Control 99 is provided on a 5SSD disk with documentation on hardcopy, including instructions on how to re-connect 2 wires in the IBM RS-232 cable. The program sells for \$10.00 and is available from:

(IN Ohio)

EDU-COMP

6516 O'Henry Circle

North Ridgeville, OH 44039

216-327-6579

(OUTSIDE OHIO)

EAGLE SOFTWARE

1269 E. 348th St.

Eastlake, OH 44094

The August and September

Hoosier User's Group

Meetings have been

CANCELLED!!!

## XBASHER, A Review

=====

by Scott Darling, (C)opyright 1987

Written by Mike Dodd, Distributed by Genial Computerware,  
Box 183, Grafton, Ma. 01519, \$10.00, All A+'s.

This program is needed by anyone and everyone!! No clarification you say?? EVERYONE has an Extended Basic program! AT LEAST one!! This program will make that one program run faster and reduce its size. GUARANTEED!! Most of us who have been around the TI World for awhile remember what SMASH is. The BAD part about SMASH is you had to start it at night and HOPE it was done by morning!! You won't have to worry about XBASHER! Xbasher runs out of the Extended Basic environment. There are two versions available. One for TI XB and one for Myarc XB II. No mention was made of the 9640 compatibility. Probably because the 9640 will be so much faster. You can even run XBASHER on combined XB and A/L programs. Complete instructions are given on how to do this!

To run XBASHER requires that you save your Program in Merge format using the following: "OLD DSKn.filename" then "SAVE DSKn.mergenase, MERGE". Then insert the XBASHER disk in drive and select XB. The disk files will determine which XB you are using and load the correct version of XBASHER. After the program has loaded, you are presented with a title screen. Next is the option screen. Which is: Shorten Variables, Crunch Lines, Remove REMS and !'s, Remove Let's, Change CALL CLEAR to DISPLAY ERASE ALL (this one alone saves you 5 Bytes!), Don't Change CALL SUB routine Digits, and Change Constants. Some of these are obvious as to what is going on.

Shorten Variables will take all your String and Nonstring Variables and shorten them to one then two character variables. There is an immense saving in memory by doing this. Tho, most people like to have a 'name' for variables. If the variable name is less than 3 characters it is no saving in memory. Its when you go over this limit that memory is being eaten away. There is also an option to print the Variable list to an output device.

Next is crunch lines. This was VERY impressive. XBASHER will crunch or combine lines together. So what about the lines that are GOTO'ed you ask?? (Well somebody will ask!!) The A/L in XBASHER keeps track of the logic flow of the program! THIS part makes the program FAR superior to SMASH!! The only bad thing about this function is that the line length of a line number is so long you may not be able to edit the new line!! Considering this is the only drawback, it is a worthwhile option! I have been able to get 8 lines of code to a line number.....so did XBASHER. Next is REMOVE REM's and !'s. Remarks are good for developing a program but are a hindrance when actually running the program. This option will delete them and restructure the resulting deletion of them. Remove LET's. PLEASE I hope everyone by now realizes the LET statement is inconsequential to programming!

Change CALL CLEAR to DISPLAY ERASE ALL. Nothing irks me more in XB programs than to see a "345 CALL CLEAR" then "350 DISPLAY AT(12,1):...". If you use "350 DISPLAY AT(12,1)ERASE ALL:" it does the same thing as CALL CLEAR and saves memory!!

Next is Don't change Sub Digits. What this option does is change the numeric constants to the characters 0, \, [, ], and \_ . This saves 2 bytes per each occurrence of the variable. But, because of the nature of CALL SUB routines this may cost you MORE memory than any savings. Also, note. CALL SUB routines are like a separate XB program within a program. Consequently you can use identical variable names in CALL SUB's as in the program without any type of error received by the Basic Interpreter. Also, CALL SUBS are slower processing than GOSUB's. The only advantage is to CALL SUB's is variable variable passing!! (Are we confused yet??) Lastly is the Change Constants option. Basically what was said in the previous paragraph applies to this option. EXCEPT in this environment, this option will save you memory. Don't ask me why there is a difference. Just believe me!! So much for the option list. Each option has a letter reference. By pressing that letter toggles each option on and off. Hitting X says you like what you see on the Screen.

Next screen asks for the input file name. The one you saved in MERGE format and checks to see if you remembered the filename correctly. Then asks for an output name. And even provides a suggested name. Next is an output device and name for the variable listing if you selected that option. FINALLY the computer starts doing the work!! The screen will show you the status of the program. A line count, the last line number referenced by a goto, gosub statement will be shown on the screen. Xbasher makes two passes thru a program. First to make lists of variables, line numbers and other info. The second pass will write the new program to disk. How long will it take?? The size of the program involved is the ONLY factor. I ran an 11 sector file thru XBasher and it took 5 minutes to do the job. The savings were 500 bytes. Next I ran the ultimate EGO test on XBASHER. I wrote a BBS program that is 90 plus sectors long. Almost 23K in bytes. So, I ran XBASHER against it. I felt I was a decent XB programmer and there was no way XBASHER was going to save any bytes in MY program!!

Well after about 30 minutes and my selecting ALL the options. The darn program found 200 bytes somewhere!! I'm still trying to see where it found them!!

To sum it up, Xbasher is the perfect compliant to any XB program. You only need to run it once, and save the resulting code. XBASHER will show you what XB programming is all about! There is a lot of power in that cartridge!!

## **XB:BUG, A Review**

=====

by Scott Darling, (C)opyright 1987

XB:BUG is written by J. Peter Hoddie and Distributed by Genial Ccomputerware. XB:BUG is an unusual program. It is like DEBUB for the Editor Assembler. It can be resident in memory and called upon at any time. It allows you to follow a program as it progresses through what YOU programmed. As an experienced XB programmer, I can't tell you how many Hours I spent MANUALLY tracing, deciphering, and endless mapping of a program to see where I went wrong!! We now have such a program to take all the FUN(?) out of the old methods. XB:BUG requires XB version 110 and above, Disk, and 32K. Printer is optional tho almost essential. I also ran XB:BUG on the new Triton Superxb with no problems. XB:BUG will NOT work with Myarc XB II. as the memory locations are totally different.

The only limitation to XB:BUG is not the program but the memory limitations of XB. The program is 5K long. If you attempt to use XB:BUG on hybrid XB/AL files. You will have to remember that XB:BUG loads in Low Memory. There is a >A000 version on the distribution disk. You will be limited to and 18K program in the >A000 space. Like I mentioned, this is not a limitation of XB:BUG, but the 4A's.

To load XB:BUG, use the standard "RUN DSK1.LOAD" format or auto boot from power up. Normally you would load XB:BUG first, If, for some reason, you want to load XB:BUG after your code, there is a version on the distribution disk. After XB:BUG is loaded the READY prompt will return on the screen. Now you can load your XB program in the normal method. To activate XB:BUG you press the Control and Shift keys simultaneously, or you can do a CALL LINK("SOBUB"). Then you will be presented with the main debugger prompt. The following commands are available. Arrays: This allows you to inspect the contents of an string or non string array.

Breakpoints: Setting breakpoints allows you to stop the execution of the program at various points to check for the other functions of XB:BUG. It is NOT necessary to do this in all cases. But, sometimes the program may execute too fast for XB:BUG to literally catch what you want to examine.

Change: This allows you to change the value of any numeric variable. You first have to invoke a V or A commands.

Data: This gives the line number from which the next READ will get its DATA and also shows the next actual DATA item that will be read.

Files: Lists the unit number and device name associated with each open file. The "mode" of the file was opened in is also given. Input,update,append, or output. Any data in the I/O buffer will be displayed.

Graphics: This item gives you information on 3 items. 1) Character definitions. 2) Color Definitions, and 3) Sprite status. You can manipulate all 3 items.

Kill Sounds: This turns off the sound chip. You will like this after going back and forth from XB:BUG and XB.

List: Will list the program you are working on. You can set the line numbers you want to list.

Other Variable Space: This item is a beauty. It allows you to inspect variables in the main program AND also in Subprograms. This one is complicated to explain so read the manual!

Program: This supplies information about your program. Line number executing, ON ERROR line number, and OPTION BASE. Also, On BREAK, and TRACE if they are active.

Quit: Quits XB:BUG.

Subprograms: Lists all defined subprograms.

Trace: This will trace back all pending GOSUB and SUBPROGRAM returns.

Variables: List variables and functions with their current values. If there is an array, it will list the DIM. This also works on Subprograms. ?: Will list a line of valid keystroke commands for XB:BUG.

Math functions: Allows you to perform simple calculations.

Match Functions: Several of the commands in XB:BUG will prompt for a MATCH string. The one thing I will explain about this concerns the manual. It says you can use a wildcard character. Well, the printer made the Asterisk so SMALL you may miss this in the manual! I DID!! The quotation marks and the asterisk combined to make a nice inl blob to my old eyes!!

This is all of the commands. The manual documents each command far more than I have here.

In the manual are detailed instructions on how to manipulate some actual code. There are 5 sample files to play with. I would recommend that these are followed through, before attempting to work on a program that you are writing. XB:BUG is NOT a beginners program, it is very powerful and as such has the capability to destroy a program in memory! If this were to happen and you saved the resultant memory to disk.....you may be cussing for a long time! So what GRADE do I give XB:BUG? I have to give it an A in everything except Ease of Use. Why? As I stated above, this program is not for the novice. If they feel they are buying a program that will teach them XB programming or literally do it all for them. They are sadly mistaken.

**COPY/VALUE**

**CALL-1888**

P-9888

TK-11

**DATA:**

71-0017E

## MULTIPLAN

**NAME\_ RTD0**

2017/ASW

**PORTW**

21839

ADV/DIAO

## GRAPH

**THE 00**

2017

- 124 -

99 FORTRAN from LGMA Products  
A Review of First Impressions  
by Ralph Landrum, HUG member

I recently bought the LGMA 99 FORTRAN package that is advertised in the new TENEX catalog. So far I've studied the manual and compiled and linked the example programs that come with the package. It is well planned for the user. The manual is well written. It will be clear to anyone the least bit familiar with FORTRAN at any level. It is clearly meant for people who use the TI99 in XBASIC, but who want compiled versions of their programs. Assembly language programmers can also use internal TI99 subroutines and their own assembled code within the structure.

WHY FORTRAN?

FORTRAN has a conversational syntax like BASIC, and is therefore easier to use for me than A/L or C. In fact, the LGMA package is actually a combination of BASIC and FORTRAN II, being a subset of FORTRAN 77, rather than FORTRAN IV as advertised. I am familiar with (though not a trained programmer in) several forms of BASIC, FORTRAN II, and IV.

FORTRAN uses true subroutines, which I need in what I want to do with a computer. XBASIC uses true subroutines also.

FORTRAN is a compileable language. I want to be able to compile to machine language for speed. BASIC is compileable in some versions (for example IBM PC), but no one has brought out a good compiler, using true subroutines, for the TI99.

SO, FORTRAN could let me have a more familiar language, using true subroutines, but compiled for operating speed.

THE LGMA 99 FORTRAN Package

LGMA Products, Box 210, RD4,

Apple-Butter Hill Road, Coopersburg, PA, 18036, is a company unknown to me. Alan L. Beard signs letters for them. Their 99 FORTRAN package was advertised in the latest TENEX catalog for \$49.95. The package comprises two disks of ver. 2.1.3, and an excellent manual.

One disk has the boot (in E/A, M/M, BASIC, or TIW); the Full-screen Editor, Optimized Compiler, Linker, Debug, and example programs. The second disk has an excellent object module library with 78 functions and subroutines, including math functions (both single and double precision), and all the graphics and sound functions of TI BASIC. Included are: CHAR, CHARPA, COLOR, DELAY, DELETE, DELSPRITE, FILES, GCHAR, HCHAR, JOYST, KEY, MAGNI, MOTION, POSITI, SCREEN, SET32, SET40, SOUND, VCHAR, WAIT.

I find the manual to be VERY well written and organized. It explains things very simply for average programmers like me, but it also goes into detail for those excellent systems programs who will want to use internal subroutines of the TI99 roms, or want to add their own assembled routines to the library. Of course, you can write FORTRAN functions and subroutines, compile them, and add them to the library. Whoever did the manual must be an expert programmer AND user.

Your system requires 32K, at least one SSSD disk drive, and E/A, TIW, XBASIC, or MM.

Remember that this FORTRAN is a SUBSET of FORTRAN 77, with a few extra features. For example, it does not support the ENTRY statement of FORTRAN 77, but it does support the DOWHILE statement form PASCAL-- NOT FORTRAN 77. It is a subset in other ways, of course, being shoehorned into a small computer. Its program limit is 2 segments of 8K each. Integer constants take 2 Bytes as do logical constants. Single-precision constants occupy 4 Bytes, while Double-precision ones occupy 8 Bytes. The author includes a section of the manual explaining various tricks of the system to save space.

## IS THE PROGRAM WORTH THE MONEY?

If you are comparing the too cheap cost of the programs from Clint Pulley, and the FREE and from the heart contributions of Warran Agee, Ron Albright, and many others who gave and taught us our c99 language, then you will look at \$50 as a lot. However, because of the quality of work, the completeness, and comparison with the cost of other commercial programs, I find it reasonable.

I have not tried to program and run benchmarks against other programs, nor have I yet tested the optimizer by comparing routines like double-nested DO LOOPS compiled from source and written in assembler, but my elation in finding the system to be 77 instead of IV, the first programs I've compiled, the obvious effort of the author to make the system comparable to the XBASIC system we know with graphics and sound, and the excellent manual make me vote overwhelmingly YES, the program is more than I expected, and worth the money.

---

DIJIT Systems, the San Diego based company that brought professional quality RGB display to the TI-99/4A, introduced its latest product at the 99/FEST-WEST/87 in Los Angeles: The Advanced Video Processor Card. The AVPC fits into the Periphael Expansion Box and is compatible with existing TI-99/4A software. It features 80 column text and advanced graphics with up to 512 colors. The AVPC also supports Mouse and Light Pen inputs. The DIJIT Systems card contains 192K of video RAM and is designed to work with the "DIJIT-EYEzer", an external Gen-lock and video digitizing accessory. It will allow titling and graphic overlays on home videos as well as computer manipulation of external video images. The DIJIT Systems AVDP gives the TI-99/4A video processing power comparable with the Atari ST and the Amiga. The product is scheduled for release in August for \$195.00.

DIJIT Systems 4345 Hortensia Street San Diego, CA. 92103 (619) 295-3301

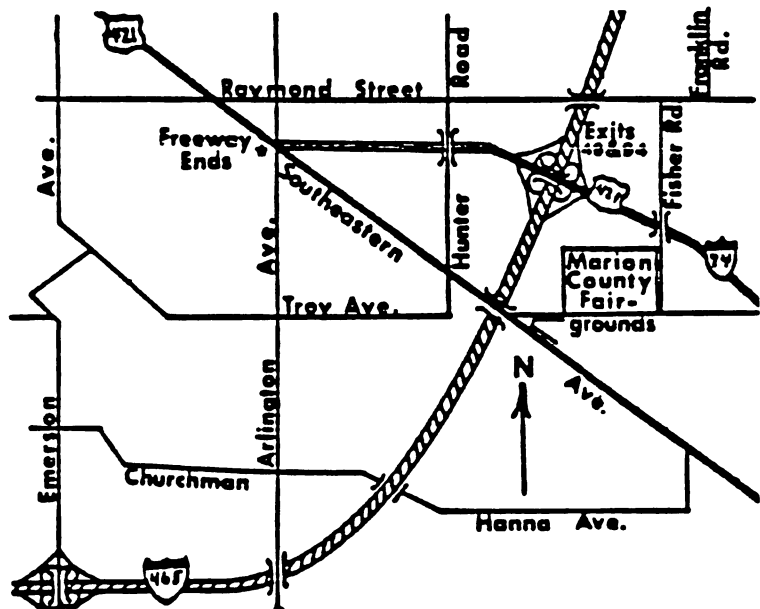
## INDIANAPOLIS HAMFEST

The 17th annual Indianapolis Hamfest and Indiana State ARRL Convention will be Saturday, July 11 and Sunday, July 12 at the Marion County Fairgrounds in southeastern Marion County.

The Saturday gates open 6:00 am and close at 5:00 pm. Sunday gates open 6:00 am and close 4:00 pm. Admission: Registration (required by everyone) is \$5.00 per person.

## DIRECTIONS

Map represents I-465 in southeastern Marion County at the I-74 and Southeastern Avenue Exits. Take Southeastern Exit west and follow the small green signs saying: "Marion County Fairgrounds."



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CHECK mail label on this newsletter for either a RED or YELLOW highlight mark. RED indicates this is your last newsletter, until your renewal is received. YELLOW indicates you will receive one more issue, before receive issue with RED highlight mark.



# TAMING YOUR GORILLA

by Jim Ellis

Do you have one of those? It just won't do what you want it to! Well, perhaps I can help. After some time spent looking through the manual, (if you don't care what you call it), I found that I didn't know anymore about my son's gorilla than he did. I called Leading Edge some time back, and they sent me a program that supposedly would help, HELP! Recently, I purchased a book from Radio Shack that had been marked down, (the only time to buy), that contained information on their many various assorted printers. Oh, hadn't I mentioned we're talking about the Gorilla Banana printer? Well, it seems that many of the printers may have several things in common even though made entirely for someone else. To get on with why I'm writing this article, I have made some discoveries that may help some of you in your effort to use the Gorilla for something besides a paper weight. First off, I don't know if the serial and the parallel versions are the same or not. The one we have is the serial version. You can get what looks like a European/special characters set by using `PRINT CHR$(n)`, where n has a value from 160 to 191. This I found by trial and error, but was pointed out in the book on R/S printers. If you are interested in all points addressable graphics, (why else did you buy it?), I discovered by studying the listing that Leading Edge sent me and the R/S book some interesting commands as follows:

`CHR$(8)` - Enter graphics mode  
`CHR$(15)` - Reset to normal (10 cpi)  
`CHR$(28),CHR$(n1),CHR$(n2)` - Repeat print data, where n1=number of desired character to be printed, and n2=ASCII value of the character desired printed.

For instance, `PRINT CHR$(28);PRINT CHR$(200);PRINT CHR$(193)`, will print a double line using the 1 and 64 dots, the 128 is added to tell the printer of the correct graphics code. It should not do anything if you gave it 65 only. Characters are 7 dots high by 6 dots wide giving 480 dot columns per 8.5 inch page. Now to determine the column number, which ranges from 128 to 255, we use the

following format.

```

1      X
2      X X
4      X  X
8      X   X
16     X    X
32     X     X
64     XXXXXXXXXXXX
      /IIIIII
      /IIIIII
      /IIIIII
same as  IIIII--64+128=192
right side  IIII---32+64+128=224
            IIII----16+64+128=208
            III-----8+64+128=200
            II-----4+64+128=196
            I-----2+64+128=194
            -----1+64+128=193

```

Upon entering graphics mode the range of values needed to tell the printer what to print is from 128 (blank) to 255 (column of 7 dots). If the printer has incremental line feeds, I have not found out that information as yet. To get you started here is a little program that will print out all of the possible dot column combinations.

```

10 OPEN #1:"RS232.BA=1200"
20 PRINT #1:CHR$(8);
30 FOR X=128 TO 255
40 PRINT #1:CHR$(X);
50 NEXT X
60 PRINT #1:CHR$(15);
70 PRINT #1:"NOW LOOK AT THE COLUMNS CLOSELY TO SEE HOW THEY CHANGE."
80 CLOSE #1

```

You must use the proper statement when talking to your printer if you are using another basic, just make the proper changes to converse with your printer port and baud rate. I hope that this will help someone who has not been able to use these features before. I know how trying it has been for my son. If you have any questions just let me know on the HUGbbs or at the meeting.

## SOUTH REGIONAL MEETING

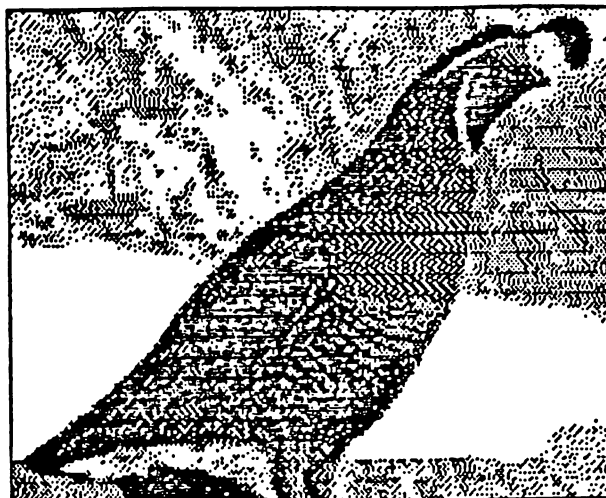
The South Regional meeting will be held on Wednesday, June 17, 1987, beginning at 7:30 P.M. You can obtain additional information by calling 881-5918.

DATA BASE MANAGERS by George F. Steffen

I have been looking for a good data base manager for some time. In most cases, I have found that writing an EXTENDED BASIC program to do the job is much more satisfactory than using a manager. My preference among those I have used is Navarone's DBMS because the files are compatible with standard TI files and thus are easily accessible from BASIC or EXTENDED BASIC. I found it impossible, for instance, to produce a report in our desired format for our group library list. Therefore, I set up a DBMS file for entry of the programs and wrote a program to produce the printed report. The DBMS is used for entry and sorting.

My objections to most data base managers are: 1) Because fields are fixed length, variable length data occupies too much space. 2) No way to restrict entered data to a desired range. 3) Lack of calculation ability.

The following two articles on data base managers were extracted from other newsletters. The first, by Bill Gaskill has appeared in The Front Ranger, Northern Nevada Ninety-Miners Newsletter and Chicago Times. None give credit to any other newsletter nor claim that Gaskill is a member of their group. Therefore, the original source is not known. The other article by Jack Tophas is an extract of an article which appeared in Chicago Times. I omitted his comments on ACORN 99 and PRBASE since they were covered by Bill Gaskill.



An RLE Graphic picture, printed using a using TI-ARTIST program and the PROWRITER 8510AP printer.

	FEATURE	ACORN99	DBMS	DB1	DB99	DB I	PRBASE	TURBO DM
F	RECORDS/FILE	LIMITED BY DISK	32,000	LIMITED BY DISK	330-1400	LIMITED BY DISK	330/710	LIMITED BY DISK
E								
A	FIELDS/REC.	54	25	10	28	10	32	30
T	MAX. RECORD LENGTH	253	253	245	246	246	246	253
U	MAX. FIELD LENGTH	40	40	28	28	28	246	28
R								
E	MEMORY REQ'D	32K	32K	32K	32K	16K	32K	32K
S	LANGUAGE	XB/ASSM	ASSM	XB/ASSM	XB/ASSM	XBASIC	ASSM	XB/ASSM
	CUSTOM DESIGN SCREEN LAYOUT	NO	YES	NO	YES	NO	YES	YES
T	SCRN GRAPHICS CAPABILITY	NO	NO	NO	NO	NO	YES	YES
A								
B	ALTERED CHAR SET USED	NO	YES	YES	NO	NO	YES	NO
L	CUSTOM REPORT DEFINITION	YES	YES	YES	YES	YES	YES	YES
E								
	SAVES REPORT DEFINITION	NO	YES	YES	NO	NO	YES	YES

DATA BASE MANAGERS FOR THE TI-99/4A by Bill Gaskill

Some owners/authors of the applications I have covered in this article will no doubt be angered by the apparent brutality of it. I choose to view it as honesty rather than brutality. Too many reviewers white wash the weaknesses of TI software they critically review. I will not. I think sometimes that we are afraid that the software market will dry up and blow away unless we give favorable reports on the software products that do appear for our computer. I prefer to think of it in another way: if we promote junk software in a favorable light, those that publish product reviews will lose credibility, and those that buy software based upon those reviews will simply be that much more reluctant to get burned a second time.

In the process of searching for the perfect data base manager, I have purchased several programs and spent over \$300. All of the programs that I own have positive points and all have negative points. What I have discovered to date is that the "perfect" data base manager does not exist yet (not even in the business world). What I am going to do will perhaps save you a little time and money if you too are looking for that perfect application.

The programs I own are:

- ACORN 99 from Oak Tree Systems
- DBMS from Navarone Industries
- DATA BASE 1 from SPC Software
- DATA BASE 99 from Quality 99 Software
- DATA BASE 300 from the International Users Group
- DATA BASE X from Western Ware
- PRBASE V1.2 and V2.0 from William
- TURBO DATAMAN from Easy Ware

I have used these programs enough to feel comfortable with each and could probably write several pages about each one. Unfortunately, publication space is limited and such a voluminous article would never see print because of it. Thus I have tried to be brief, but to the point, in my comments on each program. Also, please keep in mind that my comments are subjective, based upon how each product meets MY needs and expectations. Yours may be different.

For ease of reference I have included some of the information in a comparison table that allows analysis at a glance. In the paragraphs that follows I will try to provide a little detail to each issue and cover special features, lack of what I view as standard features and product performance of each program. I apologize in advance for the cryptic style you will read, however, I needed to be brief. The DATA BASE 300 program will not be looked at since it is not available.

ACORN 99:

Among the top three DBM's available to the TI community. The only relational data base available. Also, the only

one with a programming language interface for custom applications. EXTREMELY powerful and well designed. Can support three active files at one time. Allows existing data file formats to be edited, copied to another file, resequenced and can reformat a file structure into another file format. Does not have the ability to show number of records in a file. Can hold more than 1500 records per file on a SS/SD disk (depending on file size). Sorts alpha characters and strings better than numbers, indexes record location for subfile creation and main file is then concatenated to create the subfile as another database. Possesses ability to search using, "equal to, unequal, greater than, less than, ignore" logical operators. Supports relational operators in search routines through the use of a true/false convention that allows selection of records where all parameters are met, or any parameters are met. CAN print a single record from a display screen. EXTREMELY slow in operation. Uses 40 column text mode. Allows duplicate key field data entries. Allows printer control codes to be encrypted in setup file. Provide input checking for "numeric, integer, money, string, flag and date" entries. Overall, a fabulous program, with almost limitless potential. The best documentation of the group, giving many examples along with explanations. SUPERB application.

DBMS (Navarone):

Allows 32,000 records per file, but only 350 per SS/SD diskette. Limits you to half that amount if you wish to sort the file since it creates a second sorted file that demands equal space on your data disk. Most interesting report generator I have ever seen, a cut and paste type affair that is really neat, but poorly documented. Excellent custom screen design module which includes help screens that you design. FAST FAST FAST. Requires unique key field entries only, which I find inconvenient. Documentation is better than originally written, but still confusing at times, and incomplete. Notes on mundane things and skips over, or entirely omits, important things. Does totalling in reports, but no other computational work. Does not support single record printing, but can use the report module to scroll data on screen, write it to disk or send it to your printer. Can append new files to the end of an existing record, but cannot reformat the record in any other way. Can create subfiles, but you have to figure out how to do it for yourself because the documentation does not tell you how. It doesn't even mention subfiles. Allows printer control codes to be encrypted in Report Generation file. Does not perform input checking of any type. All data is considered to be a string entry. Best suited for a hard disk environment. Not difficult to use once you have "played" with it, but can be intimidating at first.

DATA BASE 1:

Best suited for mailing lists or other LIST type data files. Cumbersome design setup requiring records to be accessed by their relative position in the file (record number). You must first list the records by a specified

Reprinted from the LA 99ers TOPICS, Dec. 1986 issue.

#### TURBO DATAMAN:

This is the second most powerful and useful data manager, taking a backseat only to PR BASE. It runs slightly ahead of ACORN because it performs number crunching and is faster in operation. Like ACORN, TURBO DATAMAN allows you to create a dictionary of data items (fields) and then lets you choose from that library of fields to put a record together. Up to 30 fields are allowed per record. Twenty pre-defined records (file formats) can exist on one disk. Allows custom screen layout design, complete with graphics for borders/windows etc. Does input checking, allows secondary screen access, like ACORN's Detail Records. Allows formulas to be created and saved that perform the four basic math functions. Report definitions can be saved. Allows wildcard type operators in searches, will print single record from screen display. Provides "less than, greater than, equal to, not equal to, greater than or equal to, less than or equal to" operators in screen display and report generation modules. Permits sub-totals in reports that can be formatted like TI Extended Basic does with the IMAGE statement. Subfiles can be created through the report generator by sending the output selected to a disk file rather than a printer. The results must be converted back to INTERNAL, FIXED from DISPLAY FIXED before you can use it in the program, however. TURBO DATAMAN does not provide you with that utility. The documentation instructs you to "write a program" to do it. Names used for different modules in the program are confusing. Eg: ETCH, SKETCH, SKETCHR, FETCH. Should change names to more accurately reflect function of module. Documentation acceptable, but lacks adequate coverage in some areas. Utilities are provided to perform some mundane operations, such as counting the amount of records in a database. Reformatting or restructuring of an existing file is not permitted, unless the input field is appended to the end of a record format. This program needs some "fine tuning" in some areas, but is still an exciting productivity tool with immense possibilities. Its speed of operation is not fast, but acceptable. It is faster than ACORN. One can set up the SKETCH program to auto-load if desired, but the whole application should be centered around a menu, in my opinion. As it is now, you must RUN each module from the READY prompt when you need to use it, because every module exits with an END statement. If you don't own this program, you should. Whether you want to manage a mailing list or do accounting, TURBO DATAMAN is for you.

#### SOFTWARE REVIEWS: Jack Topham

Back in May 1985, I reviewed several DATA BASE MANAGEMENT programs and concluded that ACORN99 was the one to beat. Indeed, ACORN99 has remained one of the few really complete data base managers available for the TI99. Since it has remained my benchmark program, I will review its features once again.

Now along comes two new FreeWare programs from two different parts of the TI99 world. I'll start with CREATIVE FILING SYSTEM from Mark Beck in ARKANSAS. CFS has 24 pages of documentation as well as a set of example files that the DOCS walk you thru step by step. A nice touch! CFS requires a full system and can be loaded using any of the load modules. Two drives or a lot of disk swapping is required. Data goes on one and the CFS files on another. This permits auto load of data files which I find great. Up to 1400 8 line records can be created on one DS/DD disk. Each line can have its own printing default characters. Sub files can be created on user defined criteria. Mailing labels can be printed up to 4 across. Any number of files can be merged together and files can be converted to DV/80 to be used with TIWRITER. Any file can be converted to a TIWRITER VALUE file as well. Mathematical operations can be performed in the REPORT mode. I trust I have whetted your appetite by now.

RECORDS can be up to 16 fields of 14 characters each and are defined in the CREATE mode. With up to 16 field headings of 14 characters each, the record screen is 16 lines. Once the fields are created, you can enter data record by record. Once entered, you can display the files in several ways. Start to finish, from start at to end at, selected files, or letter to letter in any field. Sub files can be created in this manner as well. The APPEND mode allows adding more records to a file.

In the SEARCH mode single or multiple conditions may be used. Since every field is searched, it takes a short while. If any one field only is searched, the search is fast! The CHANGE mode allows records to be edited for changes on a single record or on all records. Up to 1300 records can be sorted on any one or two fields. Even a variable sort is offered if the data is in different fields in different records.

A unique option is GRAPH. If numeric data in one of the fields is preceded by a \$ sign and a date is in another field, CFS will display a screen graph in-color and/or print out the data. Two graph options are offered.

CFS was designed to use FOUNDATION's 128K card if you have one to increase the speed of SORT and GRAPH. NOTE the files "DISK" and/or "PRINTER" delete them before starting. They will be created uniquely for your system after loading the first time. CFS will print out reports in various ways including mathematical operations on the data. For example, add col 3 and 4 for each line and print total in col 5. Or totalling can be done vertically. And finally, CFS will let you CATALOG 20 disks of up to 50 files each and then use all of CFS utilities to SORT, SEARCH and REPORT. If you like CFS send \$10 to MARK at 166 DELAWARE CIRCLE, JACKSONVILLE, AR 72076.

Another hot data base these days is PRBASE, A PERSONAL RECORD MANAGEMENT SYSTEM BY William Warren, ...

PILOT/99 LANGUAGE REFERENCE SUMMARY  
by  
Sid Smart  
MICRO/99 Users Group, Bloomington, IL

LANGUAGE ELEMENTS

Statement form:

op-code[modifier]: operands

where:

- op-code is 1 or 2 characters telling what the statement does,  
e.g., CS for Compute String, DC for Draw Circle.
- modifier is an optional true or false logical expression,  
e.g., Y for yes, N for no, (#A>0).
- operands are data required by the op-code,  
e.g., sprite numbers, variable names, literals.

User variables:

26 numeric variables,      #A thru #Z  
13 character variables,    \$A thru \$M

Answer buffer:

A system variable filled by Accept, Accept Single, or REad, and  
which is examined by any form of the Match statement.

Yes flag:

A system true/false variable set by any form of the Match statement  
or by Fire Button or Sprites Atouch statements. Modified statements  
will be executed only if the modifier matches the yes flag.

Labels:

\*name where name is 1 to 10 upper case alphabetic characters.  
@A targets the most recently executed Accept statement.  
@M targets the next Match statement.  
@P targets the next PProblem statement.  
A label occupies a line by itself, and is a target for jumps.

STATEMENT FORMATS

Primary statements:

A: [variable]	Accept input data from keyboard
AS: [variable]	Accept Single character from keyboard
C: #A <- expression	Compute numeric variable
CH:	Clear screen, Home cursor
CS: \$A <- expression	Compute String
E:	End program or subroutine
J: label	Jump
JM: label[,label,...]	Jump on Match to corresponding label
M: string[,string,...]	Match answer buffer to strings
MJ: string[,string,...]	Match or Jump to next match statement
PR:	PProblem starting point
R: remark	Remark
T: data	Type to the screen
TH: data	Type and Hang cursor
TP: data	Type to Printer
U: label	User subroutine invocation

#### Character graphics statements:

CC: charset,color,color	Character Color
CP: code,pattern	Character Pattern
HC: row,col,code,repeat	Horizontal Character output to screen
IT:	Initialize Text mode
SN: color	Screen color
TC: row,col	Text Cursor positioning
VC: row,col,code,repeat	Vertical Character output to screen

#### Sprite control statements:

GP: sprite,pattern	Graphic Pattern
SA:	Sprites Atouch
SC: sprite,color	Sprite Color
SD: sprite	Sprite Delete
SG:	Sprites Gone
SH: sprite, sprite	Sprite Hit
SL: sprite,row,col	Sprite Location
SM: sprite,row-vel,col-vel	Sprite Motion
SP: sprite,code	Sprite Pattern
SS: size	Sprite Size (1-4)

#### Bit map graphics statements:

DC: row,col,radius	Draw Circle
DL: row1,col1,row2,col2	Draw Line
DR: row1,col1,row2,col2	Draw Rectangle
GC: color,color	Graphic Color
IG:	Initialize Graphics mode
PP: row,col	Plot Point
TG: row,col,characters	Type in Graphic mode
UP: row,col	Unplot Point

#### File control statements:

CF: filename	Close File
OF: filename	Open File
RE: [variable]	REad file
RF: [rec#]	Restore File
WA:	Write Answer buffer to file
WR: data	WRite data to file

#### Miscellaneous statements:

LP: count	Loop
EL:	End Loop
BW:	Begin While control loop
WH: expression	WHile
JS: #,x,y	Joy Stick
FB: #	Fire Button
S: duration,freq,vol,voice	Sound

```

A: #A
M:
JY: #A
M: 9999
JY: *AVERAGE
C: #SK-#S+#A
C: #NK-#N+1
J: *MORE
*AVERAGE
C: #AK-#S/#N
T: The average of #N
T: entries is: #A
T: Press M for More!
T: Press any key but Enter to Stop
AS:
M: M
JY: *START

```

☆☆☆☆☆☆☆☆☆☆☆☆☆☆

```

R: *** SCREEN LOCATIONS in the      : Same as REM
R: *   graphic mode, using DC:
R: *
IG:                                   : Initialize Graphocs
GC: 7,8                             : color Graphics RED on CYAN
T: at 30,40 - 30,120 - 30,200       : TYPE 1st line...
DC: 30,40,10                        : DrawCircle..Top left of screen
DC: 30,120,10                      : Another...Top center of screen
DC: 30,200,10                      : And one...Top right of screen
A:                                  : Used to wait for a key (ENTER)
GC: 13,8                           : Graphics now GREEN on CYAN
T: 70,40 - 70,120 - 70,200         : TYPE 2nd line...
DC: 70,40,10                       : DrawCircles at center of screen
DC: 70,120,10
DC: 70,200,10
A:                                  : Graphics to MAGENTA on CYAN
GC: 14,8                           : Wait again
T: 110,40 - 110,120 - 110,200     : TYPE 3rd line...
DC: 110,40,10                      : DrawCircles near the bottom
DC: 110,120,10
DC: 110,200,10
T:                                  : TYPE a blank line
T: Press <ENTER> to quit           : TYPE "quit" instructions
A:                                  : Wait for <ENTER> to be hit...
E:                                  : and END program.

```

NOTE: At the "PROGRAM IS DONE" message, to run another program enter PILOT. If this doesn't work, enter -PILOT. (Because you are in FORTH you can also type MON to leave. Chick

STRANGE FIGURES reprinted from  
MANNERS NEWSLETTER, FEB. 1987

STRANGE FIGURES  
by Keith G. Koch

So how accurate is it? Huh?? When all is said and done computers are really nothing more than elaborate, expensive, number manipulators. All of our programming and visual results on the screen are nothing more than the results of "number crunching"--the very fast switching of ones and zeroes.

One of the tests for a computer, therefore, is its accuracy in handling and manipulating numbers. CREATIVE COMPUTING Magazine (vol. 10, #4) gave the results of 170 tests of a benchmark program involving 140 different computers: mainframes, mini's, micros and one TI SR-50 calculator. These tests were designed to determine the speed, accuracy and ability of the random number generator.

The results are "strange figures":

speed: fastest was the Cray 1 in 0.1 second, the slowest was the TI SR-50 in 12.7 days. Five computers were under 1 sec., 58 under 1 min., 39 between 1-2 min., 15 in 2-4 min., and 23 over 4 min. The TI 99 4/A finished in 3 min., 46 sec.

accuracy: the best (DEC 11/24) came in at .0000000000160298 and the worst (OSI Challenger 1P) was .32959. The 99 4/A had an error of only .00000011 (only 22 computers were better and none were the large mainframe types.)

random: the TI 99 4/A ranked 5th with a 2.7--remember these rankings are against 140 different computers, including the Cray 1, IBM mainframes, DEC Vax's, etc.

Let's compare the TI with the "home" computers (remember, the smaller the number the more accurate the computer):

<u>COMPUTER</u>	<u>ACCURACY</u>	<u>RANDOM</u>
TI 99 4/A	.00000011	2.7
Timex Sinclair	.0041294098	8.7
Coleco Adam	.000426292419	6.2
RS Color Computer	.000596284867	7.3
Commodore 64	.0010414235	8.9
Vic 20	.0010414235	23.7
Apple //e	.0010414235	12.0
DEC Rainbow 100	.005859375	7.2
IBM PC	.01159668	6.3
Atari 400/800	.012959	23.8
TRS-80 Model III	.0338745	5.8
Heath/Zenith H-98A	.187805	7.4
TI SR-50 (12.7 days later was:)	.193704289	16.4



**\*\*\* CSGD III \*\*\*  
A Review**

by Bill Sager  
NEW HORIZONS

This program allows the 99/4A owner to design and create unique and distinctive labels, letterheads, messages and signs, as well as print out TI-Writer type files in six new and different font styles.

Some examples of the output appears on a separate page. Once you have stepped through the process to create a label or letterhead, it can be saved as a file for future printing. Let's take a look at some of the sections of the program:

**LABELS**

You can choose from over 80 font styles and sizes. Twenty-five of these are included in the CSGD 3 package. Each line of the label can be the same font or different - the choice is yours. The number of label lines is determined by the size of the label and the font style chosen. You also have the option of printing each and every font in either the regular or a compressed mode. The program will either center your label lines or print them starting at the left hand side.

A small graphic picture can be included on the label if you so desire. Forty of these are in the package, but over 320 are available. The graphic can be on the right side, left side or both sides. If on both sides, then it can be two different graphics. For large labels up to four graphics can be used. As if that was not enough, each graphic can be printed in it's normal way, or as a negative (black is white, white is black) and in mirror image (right is left, left is right). This makes for really customized labels.

Common peel and stick labels come in three heights and varying widths. The program supports all of these standards so that you can print your labels for whatever size you need.

One of the neatest features is the ability to have a frame printed around the label. There are eight different frames built into the program. Of course, you can choose not to have a frame too. The frame is not "saved" as part of the file so a different frame can be used when you print labels the next time.

**LETTERHEADS**

You can create custom designed neat and professional letterhead and stationery for business or personal correspondence. One large font text line for your name or business followed by up to three small font text lines for the address and telephone number is provided for. As in the labels, graphics can be included if you wish. A choice of top only, bottom only, or both top and bottom design letterhead is allowed.

There are fewer user selectable options when creating a letterhead, however the huge number of fonts to pick from and the fact that they can be used in the regular or compressed mode, along with the hundreds of graphics gives thousands of possible combinations.

Once you have "saved" your letterhead file you can print out as many sheets as you need.

**MESSAGES**

This section of the program provides for printing headlines, signs, greeting cards, T-shirt iron-on transfers, and has limitless possibilities.

Some portions of this newsletter are made using printed messages. Again, many options in the program allow for a great deal of flexibility. Some have been described already, such as the regular or compressed mode for printing out the fonts, use of graphics and the ability to produce a negative or mirror image. But there are many other features too.

The text/graphic lines can be centered. Not only can they be centered on a full width page, but they can also be centered on either the right or left side of the page, which is particularly useful when making cards. To make a greeting card from a eight and one half by eleven sheet of paper we must be able to print the text and graphics upside-down so when the paper is folded the cards inside text will be correct. Yes - this can be done.

Have you ever wished you could turn out a T-shirt, sweatshirt or baseball hat with your own wording for a gift, team, or club? Or maybe you need to mark your child's name on their clothing for school or camp. Special ribbons or paper for your printer allow you to do iron-on transfers. The catch is that the wording must be printed out backwards so when it's ironed-on the message will be right. The program does this also.

**DOCU PRINTER**

This section of CSGD III allows you to print out TI-Writer files in any one of six different fonts by using the graphics capabilities of your printer. You no longer have to select from just the type styles that your printer offers. Line spacing can be varied and you can print in full page or two columns.

Page numbers can be added as well as setting the top and bottom margins of the documents. For notes and other short writings, a typewriter mode is available so that you do not even have to prepare a TI-Writer file first. Just sit down and type in the words and they will be printed in whatever one of the six font styles you have selected.

**CSGD III**

There are some other features that permits the user to further customize the printer output from this package but they are minor. What do you need to run CSGD III? A disk drive, 32K memory, X-Basic, and a Epson compatible (Star, 10-X) or Prowriter printer.

CSGD III consists of three disks. If this is the kind of program you might be interested in owning, then there is good news for you! Our users group has made special arrangements on a bulk purchase to offer this to our members at a price substantially below the regular cost. There will be a presentation at the January 10 New Horizons meeting on this program package. If there is sufficient interest, we can also obtain any of the other CSGD programs and TI-Artist Companion sets at a special price also.

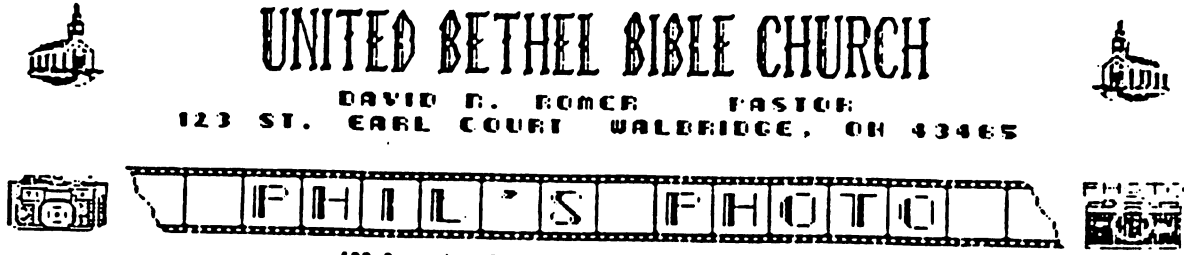
EXAMPLES PAGE FROM CSGD 3 PROGRAM

P.R.H.T. Q.A.B.R. W.O.W. V.A.S

Above Line Printed Backwards-Hold To Mirror To See

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BILL SAGER  
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→ FIRST CLASS

A VERY HAPPY  
BIRTHDAY NEW  
HORIZON 99ERS

ANDY SAGER  
612 MEADOW SPRING  
MAUMEE, OHIO 43537

LABELS

```

*****
*                                     *
*           FONT WRITER             *
*           =====                 *
*                                     *
*           Review by               *
*           Steve Langguth          *
*           Ozark 99'er Users Group *
*                                     *
*****

```

#### REPORT CARD

```

Performance.....B-
Ease of Use.....A-
Documentation.....A-
Value.....B-
Final Grade.....B

```

Cost: \$24.95

Manufacturer: Asgard Software  
P.O. Box 10306  
Rockville, MD 20850

Requirements: console, monitor or TV,  
memory expansion, disk  
system, RS232 interface,  
"Epson-compatible"  
printer, Extended Basic.  
(TI Writer or similar  
editor and TI Artist  
strongly recommended.)

I wanted to like Font Writer, I REALLY did. The ad in MICROpendium described it as "the greatest thing for 99/4A computer graphics since, well, the introduction of the 99/4A". It was compared to programs like Printshop and Newsroom for Apple, Atari, and Commodore computers and Fontrix for the IBM PC. Supposedly, we could now "combine any TI-Writer text files, TI Artist or CSGD fonts, and TI Artist instances the way (we) want them" and "make an otherwise drab report, letter, or article come alive". Well, apparently the person who wrote the copy for the ads doesn't expect much creativity from 99/4A users because Font Writer provides only a limited ability to combine the various

graphics files and text on the same page. I have seen pages created with the Newsroom program in various newsletters, and after working with Font Writer for several weeks, I was not able to produce anything even close to their quality. The various programs that make up the Font Writer package all work pretty much like the documentation says they will, it's just that they are not as powerful as the ads would have you believe. If you purchase Font Writer expecting to get a 99/4A version of Newsroom, you WILL be disappointed. This review will attempt to give you a better idea of what you CAN do with Font Writer. If it fills your needs, by all means BUY IT. Just don't think that because some other programs are mentioned in the ads that Font Writer is in their league.

But that's enough (too much ?) about the evils of advertising. Let's look at Font Writer itself.

#### Performance -----

Font Writer has three main sections. The Font Editor is used to create or "edit" character fonts and graphic images. The Font Manager allows the user to manipulate font files in several ways, such as merging two font files into one, and to convert graphics and pictures created with the Character Sets and Graphics Design (CSGD) packages into TI Artist image format, or vice versa. Finally, the Formatter is the part of the package that allows the user to combine text and graphics on the same page. The program is written in Extended Basic with assembly language subroutines, which probably explains why it seems to run fairly slow at times.

The Font Editor is similar to many of the other character/sprite editors most of us have seen before. It consists of a large grid of boxes that are turned on or off one at a time to create the particular character you are working on. In the lower right corner of the screen is a smaller box that displays the current character in its normal size. Along with the ability to move the cursor around the grid one box at a

time, this Font Editor allows the user to jump eight boxes at a time at the press of a key. Also included is the ability to invert an image around either a vertical or horizontal axis, (which makes converting a "p" into a "q" or an "m" into a "w" a snap). Images can also be "slid" right, left, up, or down within the grid at the touch of a key. One feature that this Font Editor has which makes it more powerful than some others is the ability to define and use "Macros". Character sets are made up of pieces, many of which are common to several letters in the set. The Font Writer Editor allows the user to "assign" a macro to each of these pieces (for example a vertical or horizontal line of a certain length); and then instead of drawing each piece over and over again as each letter is designed, the macro functions can be "called" one at a time to "piece together each character. Once a user learns to use this feature it can save a lot of repetitive drawing. All of this makes it fairly easy to create new fonts or modify old ones. The Font Editor will only accept fonts that can be used with TI Artist, however fonts created with CSGD and be converted using the Font Manager section of Font Writer. This means that the large number of fonts available for both TI Artist and CSGD can be used, which is a plus because time does not have to be spent creating fonts from scratch.

As I mentioned above, the Font Manager portion of Font Writer allows the user to convert CSGD fonts to the TI Artist format. It also allows conversion from TI Artist format to that used by CSGD. (In other words, if you have a version of a font that works with one of these programs, you can now manipulate that font so that it will work with all three programs.) The user can also change formats for the various graphics, pictures, and instances used by the respective programs. And finally, the Font Manager will allow two different font files to be "merged" and saved as a single file (for example, putting the numbers from one font together with the letters from another).

Formatter. This is the portion that allows the user to combine text with the various graphics. This Formatter is very similar to the one that comes with TI Writer. It requires the user to use a text editor program to create a text file with various formatting commands included that tell the printer what to do. Many of the formatting commands are identical to those in TI Writer, some vary only slightly in how they work, and some are unique to Font Writer. Those that are unique fall into two groups. The first group puts the printer into graphics mode and allows text to be printed out using one of the fonts from TI Artist or CSGD. This group also contains commands that allow the user to position graphics from either TI Artist or CSGD on the page. The second unique group of commands allows the user to select various "printer-resident" print styles (pica, elite, condensed, expanded, etc) without having to remember the proper codes. All of this sounds pretty powerful, and it is. But it is rather limited, too. A file can only use one font. If you want a headline in one font and the body of the text in another, the only way you can do it is to use one of the type styles built into the printer for either the headline or the text. Text and graphics can be printed on the same line only if the text is printed with a font file. There is no way I could find to print two different graphics on the same line. Printer-resident type styles cannot be used on the same line as graphics. The ".CE" command, which is supposed to work with fonts and graphics, as well as with regular text, worked fine on the text but poorly when the printer was in graphics mode. Finally, there is no built-in way to get text printed out in multiple columns (just like there is no built-in way with TI Writer). Even with these limitations, a lot of creative things can be done with Font Writer. However, it definitely does not provide the flexibility of page layout that other programs (e.g. Newsroom for other computers and The Printer's Apprentice for the 99/4A) do, and that's why I feel the ads are misleading.

The third part of Font Writer is the

Ease of Use -----

In general, Font Writer is very easy to use. The Font Editor section has "drop down" menus and the choices in both the Font Editor and the Font Manager are very straight-forward. The "macro" functions may be a bit confusing at first, but like many powerful features of other programs, they become easier (and more useful) with practice. The Formatter is almost "second nature" to anyone who is familiar with the TI Writer formatter. Only a few new commands have to be learned. The only real problems I encountered were with the ".CE" command (as I mentioned above), and with several of the formatting commands that were supposed to change the printer type styles for me (elite, expanded, etc). Apparently a Gemini 10X is not as "Epson-compatible" as I thought. Luckily, the author supplied a list of the line numbers where the various codes were in the program, so they were fairly easy to change.

#### Documentation -----

The documentation for Font Writer is well-written. Each of the three main sections of the program has a separate part of the instructions to describe how it is used. The Font Editor instructions are in the form of a tutorial, which is helpful in learning how to use the various features of the Font Editor itself. The Formatter instructions consist of a section showing how to run two "tests" to check how well the Font Writer Formatter works with your printer, a section describing how to prepare text files to be used by the formatter (which contains the list of formatting commands recognized by Font Writer), a section on sending various control codes to the printer, and finally, a section on how to run a file through the Formatter. The Font Manager instructions simply describe each of the menu choices available in the Font Manager section and what it does. Also included at the end of the documentation are several charts. The first chart is simply a list of what functions various keys perform when using the Font Editor. The second is a list of the Macro commands. The third

is a list of Formatter commands, and the last lists the printer control commands.

These charts are particularly useful as a quick reference after you have had some experience using the program. My only complaint is that in several places, the instructions were not specific enough about whether only TI Artist files or both TI Artist and CSGD files could be used. By experimenting it seems that the Font Editor will only use TI Artist files, but both the Formatter and the Font Manager will use files from TI Artist OR CSGD. Just where which kind of files can be used could have been specified a little more clearly.

#### Value -----

If it did everything that the advertising implied it would, a price of \$24.95 for Font Writer might be appropriate. But there are programs available for the 99/4A that do a better job of mixing text with graphics that cost less, and to use Font Writer most effectively you will have to either already own or purchase TI Artist, and/or CSGD, and/or one of the various companion disk sets with ready-to-use fonts and graphics. Compatibility with other programs is good and the capability to change fonts and graphics from one format to another is one of Font Writer's strongest points. Nevertheless, at least a portion of Font Writer's value is derived from these other programs. All of this makes its \$24.95 price seem a bit high.

In summary then, Font Writer consists of a powerful Font Editor, a useful Font Manager, and a somewhat limited Formatter. If you are looking for a "page layout" type of program that gives you a lot of control over the placement of text and graphics using multiple fonts on the same page, this program will disappoint you. But, if you already own TI Artist or CSGD, and you are looking for an easy-to-use program to occasionally add a small amount of graphics to your text files, you will probably be well-satisfied with Font Writer.

## SPEEDY MULTIPLAN OR HOW FAST IS FAST?

by Jim Ellis

Recently I got the idea that I could speed things up on Multiplan if I set a few things up a certain way. Such as, the interlace on the disk track, which is programmable with the CorComp disk controller, perhaps others. So using 10 disks, I initialized them using as a value of interlace 1 through 10. I then placed the Multiplan program on the disks in alphabetical order. Then I timed the loading from the time you press <enter> until the cursor appears behind 'ALPHA'. All tests were made on the same disk drive, a TEAC 55BV, using 3 ms head step on the CorComp and 20 ms with the TI card, that being its ONLY value. After that I selected two of the faster speeds and placed the files on these disks using the order that the Multiplan module calls them namely: MPCHAR, MPDATA, MPINTR, MPBASE, OVERLAY, and MPHLP. This did not have the effect that I expected. However, I have included the results in a chart below for your consideration. So the next time you ask if you can get something to execute faster, the answer is just to try it differently and check the results.

MULTIPLAN SSSD					
-----					
11	CC 3MS	IGROM ORD.	TI 20MS	IGROM ORD.	
-----					
11	35.28		35.44		
12	22.76		25.60		
13	19.91	21.38	19.70	19.91	
14	27.70		27.97		
15	36.70		35.38		
16	21.60		19.73		
17	21.00	19.54	21.79	22.12	
18	24.91		25.12		
19	33.00		35.41		
10	27.91		27.85		
-----					

As you can see, there are some results that you might not expect. I know they sure fooled me. Yes, you can run the TEAC drives and probably many of the newer drives at 3ms head step. Even though it doesn't seem to make much gain in this particular case, it sure does make the drives quieter. Some time

back, in one of my articles I told how to modify Multiplan so that the default drive was DSK2. See March 1986 Newsletter, page 3. I later saw a note from someone regarding this change. I would like to clarify the modification at this time. First, it does change the default to 'DSK2'. Second, it does NOT display this on the screen under the TRANS command. There is no reason why it should. It never displayed the original option of DSK1. But, rest assured it will access DSK2 just the same as if you had performed <TRANS>, <OPTIONS>, <CTRL A>, 'DSK2', <ENTER>. Of course, just the same as the original default could be changed, you can change it to another drive. As usual if you have any questions, just leave me E-mail in box 7 of the HUG bbs or have a friend do it if you don't use a modem. Later.....

### Multiplan Users Note Original author unknown

The time it takes to initialize Multiplan and the response time when it is working with the OVERLAY file is effected by the location of the files on the disk. You can load the files in the desired order by copying them one at a time to a newly initilized disk named TIMP. The best order seems to be: OVERLAY, MPHLP, MPCHAR, MPDATA, MPINTR, and then MPBASE.

(Editor's comment: There is a series of MULTIPLAN help files in the HUG library on the disk named MULTIPLAN2. The filenames are MUTIPHELP1 thur MUTIHELP6.)

RETURN YOUR  
USER GROUP  
1986 SURVEY?

## NEW PRODUCTS FROM MILLERS GRAPHICS

### GK UTILITY I - \$10.00 (INCLUDING S&H)

This Utility Disk adds the following new enhancements to TI Extended Basic and the Editor/Assembler Modules for Gram Kracker Owners:

#### Extended Basic Enhancements:

LIST	Now allows you to specify the column length (i.e. 28,132,etc.)
RES	Resequence all or just part of a program.
TRACE	The output from TRACE can now be sent to a printer or any other output device.
COPY	Copies a block of program lines to another location in your program.
DEL	Deletes selected blocks of program lines.
MOVE	Moves blocks of program lines and automatically adjust all GOTOs, GOSUBs, etc. to point to the new location.
CALL LOAD	No longer checks to see if CALL INIT has been executed
CALL PEEK6	For peeking values from GRAM or GROM addresses.
CALL POK6	For poking the values into GRAM addresses.
CALL PEEKV	For peeking values from VDP memory.
CALL POKEV	For poking values into VDP memory.
CALL QUITON	Enables use of the QUIT key.
CALL QUITOFF	Disables use of the QUIT key.

New Cursor Control for program Line, Inputs and Accept A/s editing. FCTN-Shift and the Up and Down arrow keys now allow you to move up and down screen rows within a program line listing on the screen. FCTN-Shift and the Left and Right arrow keys move you to the beginning and end of the program line listing on the screen.

All Error Messages are now in Upper and Lower case.

Auto-Load of the file DSK1)LOAD can now be bypassed with the press of ANY key.

ALL of the XBCALLS from the MILK disk are still available (NEW, BYE, CLSALL, CLOCK, CLKOFF, CAT).

A new lower case character set with better ascenders and descenders is placed in GRAM 0.

#### Editor/Assembler Enhancements:

For E/A input prompts, the Auto Repeat and Erase ( FCTN3) are now active.

Clear (FCTN 4) will erase the input line from the cursor to the end of the line.

FCTN-Shift Left and Right Arrow will place the cursor at the beginning and end of the input line.

Automatic Filename Recall - The last filename input will always be retained (even after powering off).

3 new items have been added to the E/A menu: (6) Extended Basic - directly executes XB without going through the Title Screen. (7) Format RAMdisk - Formats the Myarc Ram disk by doing a CALL PART and CALL EMDK; (8) Catalog Disk - Catalogs a disk or Ram disk without leaving the E/A module.

### NEW PROM SET FOR CORCOMP DISK CONTROLLER CARD - \$34.95 (incl S&H)

This new PROM SET enhances the usefulness of the Double Density Disk Controller Cards. The following NEW features have now been added and can be accessed from TI BASIC, Extended BASIC and a GRAM KRACKER MSAVED Basic program. This will allow you to build a menu of all your favorite software and load it with a single key press. These new enhancements will allow you to load any type of assembly program without using the Editor/Assembler module. The new CALLS added to the card are:

1. CALL ILR - Loads the standard E/A utilities into Low Memory.
2. CALL LR("DSKx.filename") - Loads a DIS/FIX 80, compressed or uncompressed, auto start or non-auto start Assembly Language Program. (This is exactly the same as option 3 - Load and Run, on the E/A menu, including the automatic loading of the E/A utilities)
3. CALL LLR("startname") - This starts a non-auto start program. This is the same as option 4 - Run, on the E/A menu.
4. CALL RUN("dSKx.filename") - This loads Assembly PROGRAM IMAGE files like option 5 - Run Program, on the E/A menu. This CALL also automatically sets up the E/A environment in VDP Memory. (i.e. Characters, colors, registers, etc.)
5. CALL RUN - This CALL without brackets or a filename automatically loads DSK1.UTIL1.
6. DELETE "XILR" - Sets up the E/A utilities into low memory from a running Extended Basic Program. It also sets up the Link names for the above CALLS and the other Tool Shed Utilities so they can be accessed from a running program!

Other enhancements include: (1) Removed "9900 Disk Controller" Title Screen which eliminates the lockup problems with some modules; (2) Improved error handling on all utilities; (3) decrease error time out; (3) The Disk Manager will now auto load; (5) For the advanced user we have added a DIRECT CPU RAM SECTOR I/O ROUTINE for faster loading; (6) For Gram Kracker Owners we have modified the Tool Shed Utilities to allow them to be used in a running MSAVED program.

**CorComp PDM99-Diagnostic Module**  
**A review. By Terry Atkinson**

---

Some years ago, TI produced a diagnostics module for the TI99/4a which, although limited in scope, served a usefull purpose in it's own right. Though this review will eventually lean towards the PDM99, I feel it necessary to do a comparison between the two modules so that potential readers of this article can draw their own conclusions and perhaps purchase one of the modules for their own use. I will not go into the other diagnostics programs which are available. Most notably, the MG Advanced Diagnostics, and at least two other disk-based diag programs. I will comment, however on their limited usefulness. Being disk-based, you would need a WORKING system in order to load and execute those programs. In other words, 32K, disk-drive and consol. With the module based diagnostics, one only needs a working consol to be able to CHECK OUT those other peripherals... which is the whole purpose behind a diagnostics program in the first place! I am going to touch briefly on the TI Diagnostics Module (PHM3000, circa 1979). I find this module excellent for comprehensive tests of the consol itself but useless for peripherals and external memory. Some of the tests performed are keyboard, RAM, video, sound, calculation, cassette and joystick ports. A final test is for maintenance personnel only, and requires a signature analyser in order to evaluate this test. The question may be asked; "Well, if the consol is not working, why have a diagnostics module to check it out?". My response is very simple. For most faults other than a power supply fault, the module would indeed work. In fact, a long time ago, I had a fault with my computer and this module told me where the fault was. Replacing a chip solved the problem, which has not recurred. Also, it was brought to my attention the TI technicians used the module to initially identify trouble areas when computers were returned for repair. Now on to the more recent trouble shooting diagnostics module released in Dec 85 by CorComp. Called the PDM99 (Peripheral

Diagnostics Module), it goes beyond where the PHM3000 left off in that it checks out the external equipment, such as disk-drives, RS232/PIO and 32K expansion. Since it is menu driven, it is very easy to use and the results easily interpreted. The opening screen allows you to select the above tests, along with which disk-drive to access. Drive tests include formatting in 1S1D, 1S2D, 2S1D, or 2S2D format. Once the disk is initialized, it will randomly check a number of sectors for correct information. If an error is found, the program will let you know where the problem is. You can also check to see what the track-to-track access time is set at. This is not so important with the TI controller as the time is fixed at 10 or 20MS. However, the CC controller and the later 9900 systems allow a variation on access times. I have mine set for 3ms access using Teac half-heights, and find it works excellently using all formats and have had virtually no problems with other TI systems reading/writing to my disks. Like the MG AD, the PDM99 will also check drive motor speed. No fancy graph-like display, though. The PDM99 give you an indication of motor speed with real numbers negating any error of interpretation. The 32K test has two parts. First the program writes to the full 32K memory and reads the information back to see if it is the same. If so, the memory is good. The second part of the memory test is a refresh test. The program writes information to the full 32K and then counts down from 20 and goes back and reads the information. This ensures that data is not being lost due to a bad refresh. The final major check is for the RS232 card, in that a test is sent to either RS232 port or the PIO port if desired. A printer is required for these tests. Another feature is the loop-back test. Supplied with the PDM99 is a DB25 plug, already wired for this test. This connector is hooked to your RS232 port, and the test executed. Data is sent from port 1 through port 2 and checked for accuracy. Although I find these modules usefull, I would not recommend purchase of them by individuals. Rather, I would suggest that users groups purchase the modules



for loan to their members as required. The cost of the PDM99 is about \$25 (U.S.) and is available at CorComp or TexComp. However, the TI version may be hard to come-by. I had to borrow one from the Ottawa 99/4 Users Group in order to refresh my memory (no pun intended) as to it's capabilities. I certainly wish I had not sold my original as I have had occassion to use it in the past, and probably will in the future. The documentation supplied with the PDM99 is adequate. Since the program is menu-driven, it is extremely easy to use anyway. Once a problem has been discovered and diagnosed with the PDM, however, there is no further instructions on how to correct the problem, or to even narrow it down further. The only way out at that point would be to take it to a technician, or a member of the users group who is technically inclined. Later... Terry Atkinson/TI6450/75376,1277/A147E

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### DM1000 REVISION RECORD

MODIFIED BY RALPH ROMANS:

VER 3.0 FIXES TO VER 2.4: - INCORRECT FILE COUNT WHEN GOING FROM 'M' TO 'C' - FILE COPY WOULD GIVE YOU A BAD COPY IF THE FILE BEING COPIED WAS STORED ON THE MASTER DISK AS A NON CONTINUOUS FILE AND THE SIZE OF THE FIRST SEGMENT WAS EXACTLY 39 SECTORS WITH ADDITIONAL SECTORS IN ANOTHER SEGMENT ON THE DISK.  
VER 3.1 FIXES TO VER 3.0: - FILE COPY WOULD GIVE YOU A BAD COPY IF THE MASTER FILE WAS A FRACTURED FILE OF EXACTLY 39 SECTORS AND THE SAME FILE NAME WAS ON THE COPY DISK. - WHEN ENTERING A FILE NAME IN VARIOUS MODES, IT WAS POSSIBLE TO MESS IT UP. UNFIXED BUGS IN VER 3.1 - UNABLE TO DISPLAY SOME DIS/VAR 80 FILES THAT ARE FULL OF CONTROL CHARACTERS. COMPUTER HANGS UP!

VER 3.3-CHANGED DEFAULTS ON SWEEP AND DISK INITIALIZATION - DISK INITIALIZATION WORKS FOR MYARC AND CORCOM - READ/WRITE ERRORS GETS CLEARED AFTER 1ST USE ON DISK COPY - FILE 'MGR1' MAY NOW BE CALLED ANY NAME AND ALL FEATURES OF DM1000 WILL WORK!!! THIS WILL ONLY WORK WITH TI CONTROLLER AND CORCOM CONTROLLER - THE LOADER FOR MYARC CONTROLLER IS CALLED LOADMY - DURING DISK INITIALIZATION MENU, YOU CAN USE THE UP ARROW TO GO BACK TO PREVIOUS QUESTION.

VER 3.4- ABLE TO DELETE/MOVE/COPY 1 SECTOR FILES - ADDED 'UP ARROW ACTIVE' NOTICE WHEN UP ARROW WILL TAKE YOU BACK TO PREVIOUS QUESTION.

VER 3.5- ABLE TO TYPE/PRINT DISPLAY VAR 80/FIXED 80 FILES WHILE THE FILE LISTING IS ON THE SCREEN BY PRESSING A 'T' FOR TYPE(DISPLAY) FILE TO SCREEN OR 'P' FOR PRINT TO LIST DEVICE WITH OPTIONAL CONTROL CODES SENT TO PRINTER FIRST. THE 'P' AND 'T' FOR PRINT OR TYPE ARE ONLY VALID IN THE LEFT MOST FIELD. - 'EOF' noticed added in lower left corner of screen

- DISPLAY VAR 80/FIXED 80 MENU REMOVED

# I/O PORT PIN ASSIGNMENTS GROM PORT

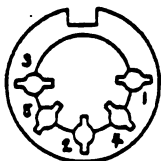


PIN	DESCRIPTION	PIN	DESCRIPTION
1	RESET	2	GND (SYSTEM)
3	D7	4	CRU CLK
5	D6	6	CRU IN
7	D5	8	A15/CRU OUT
9	D4	10	A13
11	D3	12	A12
13	D2	14	A11
15	D1	16	A10
17	D0	18	A9
19	+5 VOLT	20	A8
21	GS (GROM SELECT)	22	A7
23	MO/A14	24	A3
25	M1 (DBIN)	26	A6
27	GROM CLOCK	28	A5
29	-5 VOLT	30	A4
31	GR (GROM READY)	32	WE
33	GND (GROM)	34	ROM G
35	GND (SYSTEM)	36	GND (SYSTEM)

# I/O PORT PIN ASSIGNMENT PERIPHERAL I/O PORT

PIN	DESCRIPTION	PIN	DESCRIPTION
1	+5 VOLT	2	SSE (SPEECH SELECT)
3	RESET	4	EXT INT
5	A5	6	A10
7	A4	8	A11
9	DBIN	10	A3
11	A12	12	READY/HOLD
13	LOAD	14	A8
15	A13	16	A14
17	A7	18	A9
19	A15	20	A2
21	GND	22	CRU CLK
23	GND	24	D 3
25	GND	26	WE
27	GND	28	MSE
29	A6	30	A1
31	A0	32	MEMEN
33	CRU IN	34	D7
35	D4	36	D6
37	D0	38	D5
39	D2	40	D1
41	HOLD/IAQ	42	D3
43	-5 VOLT	44	SPEECH

# I/O PORT PIN ASSIGNMENTS VIDEO JACK



PIN	DESCRIPTION
1	+12 VOLT SUPPLY FOR EXTERNAL UNITS SUCH AS MODULATOR
2	SHIELDING CONNECTION
3	SOUND OUTPUT
4	COMPOSITE VIDEO OUTPUT
5	GROUND CONNECTION

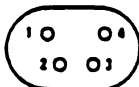
# I/O PORT PIN ASSIGNMENTS REMOTE WIRED HANDHOLD CONTROLS I/O PORT

## MALE PLUG FRONT VIEW



PIN	DESCRIPTION
1	NOT CONNECTED
2	JOYSTICK B
3	KEY 0 (UP)
4	KEY 4 (PUSH BUTTON)
5	KEY 3 (LEFT)
6	NOT CONNECTED
7	JOYSTICK A
8	KEY 1 (DOWN)
9	KEY 2 (RIGHT)

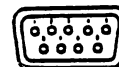
## I/O PIN ASSIGNMENT POWER RECEPTACLE (USA)



PIN	DESCRIPTION
1	NOT USED
2	16 VOLT AC
3	COMMON
4	5 VOLT AC

# I/O PORT PIN ASSIGNMENTS CASSETTE I/O PORT

## MALE PLUG FRONT VIEW



PIN	DESCRIPTION
1	CS1 MOTOR CONTROL (POS)
2	CS1 MOTOR CONTROL (NEG)
3	GND (SYSTEM)
4	SOUND OUT
5	RECORD OUTPUT
6	CS2 MOTOR CONTROL (POS)
7	CS2 MOTOR CONTROL (NEG)
8	AUDIO IN
9	AUDIO GROUND



